A8V-MX

Motherboard

E2166

First Edition V1
August 2005

Contents

Contents

Contents

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.

A8V-MX specifications summary

CPU	Socket 939 for AMD Athlon™ 64FX/Athlon™ 64/ Sempron™ 64 processors
Chipset	Northbridge: VIA K8M800 Southbridge: VT8251
System Bus	800/533 MHz
Memory	Dual-channel memory architecture 2 x 184-pin DIMM sockets support up to 2 GB of unbufferred ECC/non-ECC 400/333/266 MHz DDR memory modules
Expansion slots	1 x PCI Express™ x1 slot 1 x AGP 8X slot 2 x PCI slots
Graphics	Integrated in the Northbridge
Storage	VT8251 Southbridge supports: - 4 x UltraDMA 133/100/66/33 hard disk drives - 4 x Serial ATA I/Serial ATA II hard disk drives with RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD configuration
Audio	Realtek® ALC653 6-channel CODEC S/PDIF out interface
LAN	Realtek® RTL8201CL 10/100 LAN PHY
USB	Supports up to 8 USB 2.0 ports
Special feature	ASUS Q-Fan
BIOS features	4 Mb Flash ROM, AMI BIOS, PnP, DMI, WfM2.0, ACPI 2.0a, SM BIOS 2.3, PXE flash utility ASUS EZ Flash ASUS CrashFree BIOS 2 ASUS C.P.R. (CPU Parameter Recall)

A8V-MX specifications summary

Rear panel	1 x Parallel port 1 x LAN (RJ-45) port 4 x USB 2.0 ports 1 x Serial port (COM) 1 x PS/2 keyboard port 1 x PS/2 mouse port 6-channel audio ports
Internal connectors	1 x Floppy disk drive connector 1 x Primary IDE connector 1 x Secondary IDE connector 4 x Serial ATA connectors 1 x Chassis intrusion connector 1 x CPU fan connector 1 x Chassis fan connector 2 x USB 2.0 connectors for four additional USB 2.0 ports 1 x Optical drive audio in connector 1 x AUX connector 1 x Front panel audio connector 1 x S/PDIF connector 24-pin ATX power connector 4-pin x ATX 12V power connector System panel connector
Power Requirement	ATX power supply (with 24-pin and 4-pin 12 V plugs) ATX 12 V 2.0 compliant
Form Factor	mATX: 9.6 in. x 8.6 in. (24.5cm x 21.8cm)
Manageability	WOR by Ring, WOL/WOR by PME, WO USB, WO KB/MS
Support CD contents	Device drivers ASUS PC Probe II ASUS Live Update utility Anti-virus software (OEM version)

*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® A8V-MX 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 A8V-MX motherboard
Cables	1 x Serial ATA signal cable 1 x Serial ATA power cable 1 x Ultra DMA 133/100/66 cable 1 x Floppy disk drive cable
Accessories	I/O shield
Application CDs	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 939-pin surface mount, Zero Insertion Force (ZIF) socket that supports AMD Athlon™ 64/Athlon™ 64FX/AMD Sempron™ 64 processors. With an integrated low-latency high-bandwidth memory controller and a highly-scalable HyperTransport™ technology-based system bus, the motherboard provides a powerful platform for your diverse computing needs, increased office productivity, and enhanced digital media experience. See page 1-8.

Dual-channel DDR memory support

Employing the Double Data Rate (DDR) memory technology, the motherboard supports up to 2 GB of system memory using DDR400/333 DIMMs. The ultra-fast 400MHz memory bus delivers the required bandwidth for the latest 3D graphics, multimedia, and Internet applications. See page 1-10 for details.

PCI Express™ interface

The motherboard fully supports PCI Express, the latest I/O interconnect technology that speeds up the PCI bus. PCI Express features point-to-point serial interconnections between devices and allows higher clockspeeds by carrying data in packets. This high speed interface is software compatible with existing PCI specifications. See page 1-17 for details.

AGP 8X support

The AGP 8X (AGP 3.0) VGA interface specification enables enhanced graphics performance with high bandwidth speeds up to 2.12 GB/s. See page 1-18 for details.

Serial ATA technology

The motherboard supports the Serial ATA technology through the Serial ATA interfaces and the VIA VT8251 Southbridge. The Serial ATA II specification provides twice the bandwidth of the current Serial ATA products with a host of new features, including Native Command Queueing (NCQ), Power Management (PM) Implementation Algorithm, and Hot Swap. Serial ATA allows for thinner, more flexible cables with lower pin count, reduced voltage requirement, and data transfer rates of up to 150 MB/s for SATA I and 300 MB/s for SATA II. See page 1-26 for details.

S/PDIF digital sound ready

The motherboard supports the S/PDIF Out function through the S/PDIF interfaces on the rear panel and at midboard. The S/PDIF technology turns your computer into a high-end entertainment system with digital connectivity to powerful audio and speaker systems. See page 1-27 for details.

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 1-23 and 1-28 for details.

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 ROM chip. See page 2-6 for details.

ASUS EZ Flash BIOS

With the ASUS EZ Flash, you can easily update the system BIOS even before loading the operating system. No need to use a DOS-based utility or boot from a floppy disk. See page 2-3 for details.

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. See page 2-33 for details.

C.P.R. (CPU Parameter Recall)

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

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 a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity

- Hold components by the edges to avoid touching the ICs on them.

- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

- **Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply.** Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

Onboard LED

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

SB_PWR

ON
Standby
Power

OFF
Powered
Off

A8V-MX Onboard LED
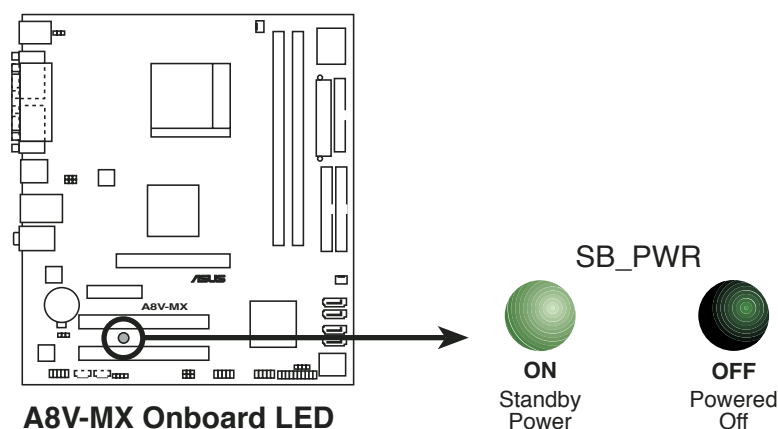
1.5   Motherboard overview

1.5.1   Motherboard layout

21.8cm (8.6in)

PS/2KBMS
T: Mouse
B: Keyboard
KBPWR
CPU_FAN
Super I/O

COM1

PARALLEL PORT

Socket 939

DDR DIMM_A1 (64 bit,184-pin module)

DDR DIMM_B1 (64 bit,184-pin module)

EATXPWR

FLOPPY

VGA

USB12

USBPW12
USBPW34
ATX12V

LAN_USB34

VIA
K8M800

PRI_IDE

SEC_IDE

Top:Line In
Center:Line Out
Below:Mic In

AGP

RTL8201CL

CHA_FAN

PCIEX1

CR2032 3V
Lithium Cell
CMOS Power

A8V-MX

PCI1

VIA
VT8251

SATA2

SATA1

SATA4

SATA3

CLRTC

SB_PWR

ALC653

PCI2

BIOS
Flash
ROM

FP_AUDIO

AUX   CD   SPDIF

USBPW56
USBPW78

USB56

PANEL

CHASSIS

USB78

24.5cm (9.6in)

1.5.2   Placement direction

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

1.5.3   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
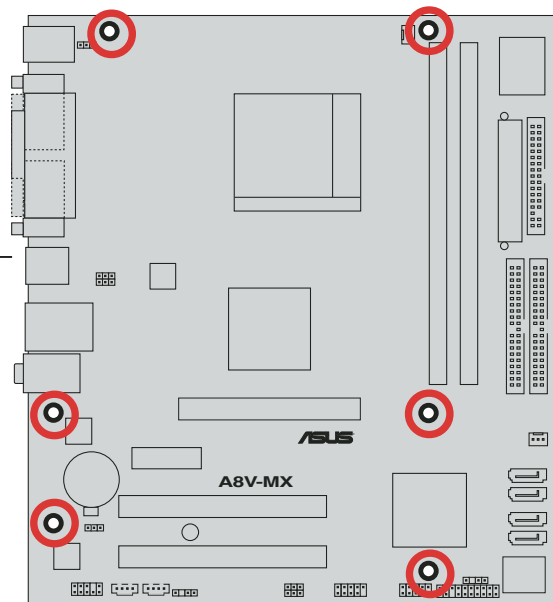
1.6   Central Processing Unit (CPU)

The motherboard comes with a surface mount 939-pin Zero Insertion Force (ZIF) socket designed for the AMD Athlon™ 64FX/AMD Athlon 64™ /AMD Sempron™ processor.

The 128-bit-wide data paths of these processors can run applications faster than processors with only 32-bit or 64-bit wide data paths.

Take note of the marked corner (with gold triangle) on the CPU. This mark should match a specific corner on the socket to ensure correct installation.
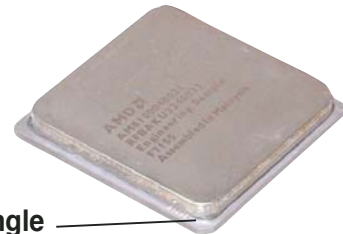
Gold triangle

Installing the CPU

Follow these steps to install a CPU.

1.   Locate the 939-pin ZIF socket on the motherboard.
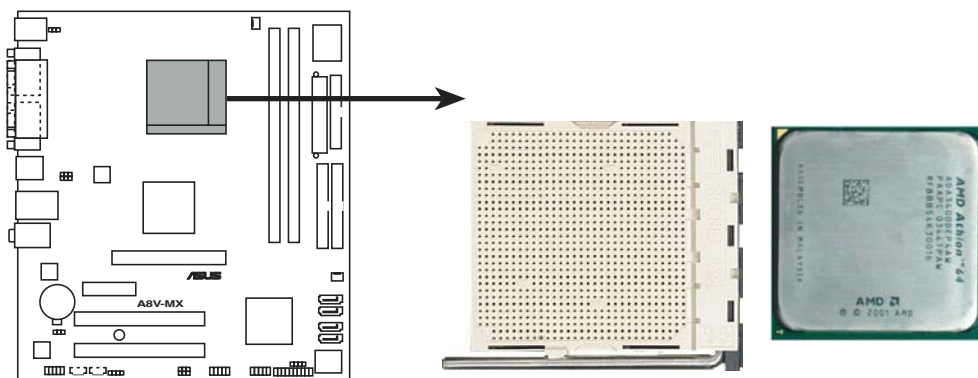
A8V-MX CPU Socket 939

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

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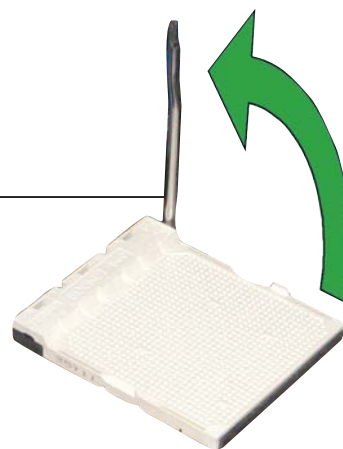
> Make sure that the socket lever is lifted up to 90°-100° angle, otherwise the CPU does not fit in completely.

3. Position the CPU above the socket such that the CPU corner with the gold triangle matches the socket corner with a small triangle.

4. Carefully insert the CPU into the socket until it fits in place.

Small triangle

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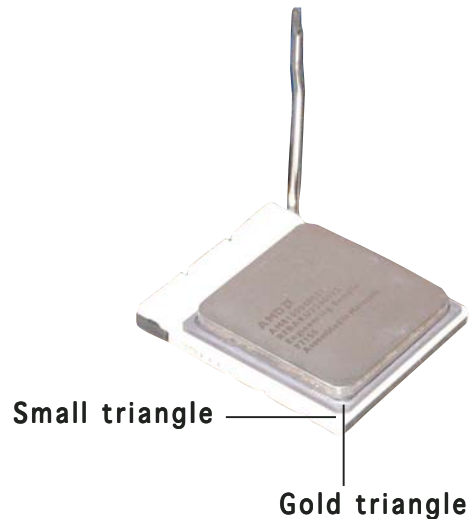
⚠️ The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to prevent bending the pins and damaging the CPU!

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

6. Install a CPU heatsink and fan following the instructions that came with the heatsink package.

7. Connect the CPU fan cable to the CPU_FAN connector on the motherboard.

CPU_FAN

GND
+12V
Rotation
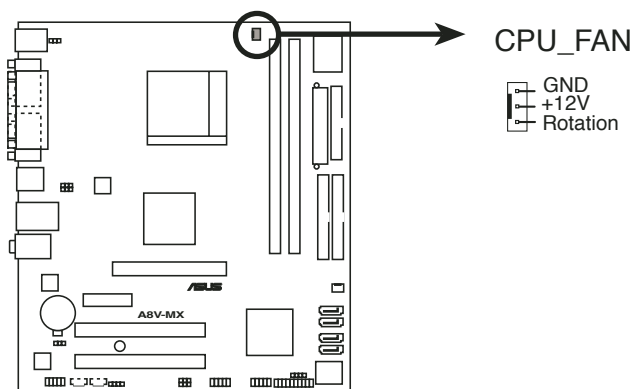
A8V-MX CPU fan connector

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

1.7   System memory

1.7.1   Overview

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

The following figure illustrates the location of the sockets:
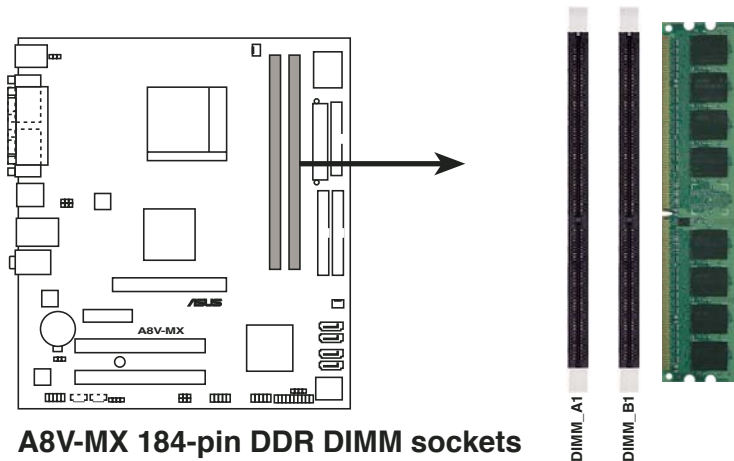
A8V-MX 184-pin DDR DIMM sockets

1.7.2   Memory configurations

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

- Installing DDR DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations on the next page.

- Install only identical (the same type and size) DDR DIMM pairs for each channel.

- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.

- Due to chipset limitation, this motherboard does not support DIMM modules with less than or equal to 128 Mb memory chips.

Recommended memory configurations

Single-core CPU

	Sockets	
Mode	**DIMM_A1 (black)**	**DIMM_B1 (black)**
Single-channel	—	Populated
Dual-channel	Populated	Populated

Dual-core CPU

	Sockets	
Mode	**DIMM_A1 (black)**	**DIMM_B1 (black)**
Single-channel	Populated	—
	—	Populated
Dual-channel	Populated	Populated

DDR400 Qualified Vendors List

						DIMM support		
Size	**Vendor**	**Model**	**Brand**	**Side(s)**	**Component**	**CL**	**A**	**B**
256 MB	KINGSTON	KVR400X72C3A/256	Mosel	SS	V58C2256804SAT5(ECC)	–	•	
512 MB	KINGSTON	KVR400X72C3A/512	Mosel	DS	V58C2256804SAT5(ECC)	–		
512 MB	KINGSTON	KHX3200A/512	–	DS	N/A	–	•	•
1024 MB	KINGSTON	KHX3200ULK2/1G	–	DS	N/A	2		
256 MB	KINGSTON	KVR400X64C3A/256	–	SS	D3208DL3T-5A	–	•	•
256 MB	KINGSTON	KVR400X64C3A/256	–	SS	A2S56D30BTP511ALM09	–	•	
512 MB	KINGSTON	KVR400X64C3A/512	–	DS	V58C2256804SAT5	–		•
512 MB	KINGSTON	KVR400X64C3A/512	–	SS	HY5DU12822BT-D43	–	•	•
1024 MB	KINGSTON	KVR400X64C3A/1G	–	DS	HYB25D512800BE-5B	–	•	•
256 MB	SAMSUNG	M381L3223ETM-CCC	SAMSUNG	SS	K4H560838E-TCCC(ECC)	3ECC		
512 MB	SAMSUNG	M381L6423ETM-CCC	SAMSUNG	DS	K4H560838E-TCCC(ECC)	–	•	•
256 MB	SAMSUNG	M368L3223ETM-CCC	SAMSUNG	SS	K4H560838E-TCCC	–	•	•
256 MB	SAMSUNG	M368L3223FTN-CCC	SAMSUNG	SS	K4H560838F-TCCC	3	•	•
512 MB	SAMSUNG	M368L6423FTN-CCC	SAMSUNG	DS	K4H560838F-TCCC	3	•	•
512 MB	SAMSUNG	M368L6523BTM-CCC	SAMSUNG	SS	K4H510838B-TCCC	3	•	•
256 MB	MICRON	MT8VDDT3264AG-40BCB	MICRON	SS	MT46V32M8TG-5BC	–	•	•
512 MB	MICRON	MT16VDDT6464AG-40BCB	MICRON	DS	MT46V32M8TG-5BC	–	•	•
256 MB	Infineon	HYS64D32300HU-5-C	Infineon	SS	HYB25D256800CE-5C	3	•	•
512 MB	Infineon	HYS64D64320HU-5-C	Infineon	DS	HYB25D256800CE-5C	–	•	•
256 MB	Infineon	HYS64D32301HU-5-C	Infineon	SS	HYB25D512160CE-5C	3	•	•
512 MB	Infineon	HYS64D64300HU-5-C	Infineon	SS	HYB25D512800CE-5C	3	•	•
1024 MB	Infineon	HYS64D128320HU-5-C	Infineon	DS	HYB25D512800CE-5B	3	•	•
256 MB	CORSAIR	CMX256A-3200C2PT	Winbond	SS	W942508BH-5	2	•	•

(Continued on the next page)

Size	Vendor	Model	Brand	Side(s)	Component	CL	A	B
512 MB	CORSAIR	CMX512-3200C2	Winbond	DS	–	2	•	•
512 MB	CORSAIR	VS512MB400	VALUE seLecT	DS	VS32M8-5	2.5	•	•
1024 MB	CORSAIR	TWINX2048-3200C2	–	DS	–	3	•	•
256 MB	Hynix	HYMD232646D8J-D43	Hynix	SS	HY5DU56822DT-D43	3	•	•
512 MB	Hynix	HYMD264646D8J-D43	Hynix	DS	HY5DU56822DT-D43	3	•	•
256 MB	TwinMOS	M2G9I08AIATT9F081AADT	TwinMOS	SS	TMD7608F8E50D	2.5		
512 MB	TwinMOS	M2G9J16AJATT9F081AADT	TwinMOS	DS	TMD7608F8E50D	2.5		
256 MB	TwinMOS	M2G9I08A8ATT9F081AADT	TwinMOS	SS	TMD7608F8E50D	2.5		
512 MB	TwinMOS	M2G9J16A8ATT9F081AADT	TwinMOS	DS	TMD7608F8E50D	2.5		
256 MB	Transcend	TS32MLD64V4F3	SAMSUNG	SS	K4H560838F-TCCC	3		
512 MB	Transcend	TS64MLD64V4F3	SAMSUNG	DS	K4H560838F-TCCC	3		
1024 MB	Transcend	TS128MLD64V4J	SAMSUNG	DS	K4H510838B-TCCC	3		
256 MB	Apacer	77.10636.33G	Infineon	SS	HYB25D256800CE-5C	3		
512 MB	Apacer	77.10736.33G	Infineon	DS	HYB25D256800CE-5C	3		
256 MB	Apacer	77.10639.60G	ProMOS	SS	V58C2256804SCT5B	2.5		
512 MB	Apacer	77.10739.60G	ProMOS	DS	V58C2256804SCT5B	2.5		
256 MB	A DATA	MDOSS6F3G31Y0K1E0Z	SAMSUNG	SS	K4H560838E-TCCC	3		
512 MB	A DATA	MDOSS6F3H41Y0N1E0Z	SAMSUNG	DS	K4H560838F-TCCC	3		
256 MB	A DATA	MDOHY6F3G31Y0N1E0Z	Hynix	SS	HY5DU56822CT-D43	3		
512 MB	A DATA	MDOHY6F3H41Y0N1E0Z	Hynix	DS	HY5DU56822CT-D43	3		
256 MB	A DATA	MDOAD5F3G31Y0D1E02	–	SS	ADD8608A8A-5B	2.5		
512 MB	A DATA	MDOAD5F3H41Y0D1E02	–	DS	ADD8608A8A-5B	2.5		
256 MB	Winbond	W9425GCDB-5	Winbond	SS	W942508CH-5	3		
512 MB	Winbond	W9451GCDB-5	Winbond	DS	W942508CH-5	–		
256 MB	PSC	AL5D8B53T-5B1K	PSC	SS	A2S56D30BTP	2.5		
512 MB	PSC	AL6D8B53T-5B1K	PSC	DS	A2S56D30BTP	2.5		
256 MB	KINGMAX	MPXB62D-38KT3R	–	SS	KDL388P4LA-50	–		
512 MB	KINGMAX	MPXC22D-38KT3R	–	DS	KDL388P4LA-50	–		
256 MB	NANYA	NT256D64S88C0G-5T	–	SS	NT5DS32M8CT-5T	3		
512 MB	NANYA	NT512D64S8HC0G-5T	–	DS	NT5DS32M8CT-5T	3		
256 MB	NANYA	NT256D64SH4B0G-5T	–	SS	NT5DS32M16BT-5T	3		
512 MB	NANYA	NT512D64S88B0G-5T	–	DS	NT5DS64M8BT-5T	3		
1024 MB	NANYA	NT1GD64S8HB0G-5T	–	DS	NT5DS64M8BT-5T	–		
256 MB	CENTURY	DXV6S8SSCCE3K27E	SAMSUNG	SS	K4H560838E-TCCC	–		
512 MB	CENTURY	DXV2S8SSCCE3K27E	SAMSUNG	DS	K4H560838E-TCCC	–		
256 MB	CENTURY	DXV6S8EL5BM3T27C	–	SS	DD2508AMTA	–		
512 MB	CENTURY	DXV2S8EL5BM3T27C	–	DS	DD2508AMTA	–		
256 MB	CENTURY	DXV6S8EL5B	–	SS	DD2508AMTA	–		
256 MB	CENTURY	DXV6S8HXD43B	–	SS	HY5DU56822BT-D43	–		
256 MB	CENTURY	DXV6S8HXD43D	–	SS	HY5DU56822DT-D43	–		
512 MB	CENTURY	DXV2S8EL5B	–	DS	DD2508AMTA	–		
512 MB	CENTURY	DXV2S8HXD43B	–	DS	HY5DU56822BT-D43	–		
512 MB	CENTURY	DXV2S8HXD43D	–	DS	HY5DU56822DT-D43	–		
256 MB	CENTURY	DXV6S8EL5B/HP	–	SS	DD2508AKTA-5B-E	–		
512 MB	CENTURY	DXV2S8EL5B/HP	–	DS	DD2508AKTA-5B-E	–		

(Continued on the next page)

Chapter 1: Product introduction

Size	Vendor	Model	Brand	Side(s)	Component	CL A B
256 MB	CENTURY	DXV6S8MC5B	–	SS	MT46V32M8TG-5BG	–
512 MB	CENTURY	DXV2S8MC5B	–	DS	MT46V32M8TG-5BG	–
256 MB	elixir	M2U25664DS88C3G-5T	elixir	SS	N2DS25680CT-5T	3
512 MB	elixir	M2U51264DS8HC1G-5T	elixir	DS	N2DS25680CT-5T	3
256 MB	Kreton	–	VT	SS	VT3225804T-5	–
512 MB	Kreton	–	VT	DS	VT3225804T-5	–
256 MB	Veritech	VU256FLTM25C	VT	SS	VT56DD32M8PC-5	3
512 MB	Veritech	VU512FLTM25C	VT	DS	VT56DD32M8PC-5	3
256 MB	Pmi	MD44256VIT3208GMHA01	MOSEL	SS	V58C2256804SAT5B	2.5
512 MB	Pmi	MD44512VIT3208GATA03	MOSEL	DS	V58C2256804SAT5B	2.5
256 MB	ProMOS	V826632K24SCTG-D0	–	SS	V58C2256804SCT5B	2.5
512 MB	ProMOS	V826664K24SCTG-D0	–	DS	V58C2256804SCT5B	2.5
256 MB	Deutron	AL5D8C53T-5B1T	PSC	SS	A2S56D30CTP	2.5
512 MB	Deutron	AL6D8C53T-5B1T	PSC	DS	A2S56D30CTP	2.5
256 MB	GEIL	GL5123200DC	–	SS	GL3LC32G88TG-35	–
512 MB	GEIL	GL1GB3200DC	–	DS	GL3LC32G88TG-35	–
256 MB	GEIL	GLX2563200UP	–	SS	GL3LC32G88TG-5A	–
256 MB	GEIL	GD3200-512DC	–	SS	WLCSP Package	–
256 MB	crucial	BL3264Z402.8TG	Ballistix	SS	–	2
512 MB	crucial	BL6464Z402.16TG	Ballistix	DS	–	2
256 MB	Novax	96M425653CE-40TB6	CEON	SS	C2S56D30TP-5	2.5
512 MB	Novax	96M451253CE-40TB6	CEON	DS	C2S56D30TP-5	2.5
256 MB	Aeneon	AED560UD00-500C88X	Aeneon	SS	AED83T500	3
256 MB	V-DATA	MDYVD6F4G2880B1E0H	–	SS	VDD9616A8A-5C	–

Legend:

SS - Single Sided

DS - Double Sided

CL - CAS Latency

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

B - supports one pair of modules inserted into both slots as one pair of Dual-channel memory configuration.

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

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.

DDR DIMM notch

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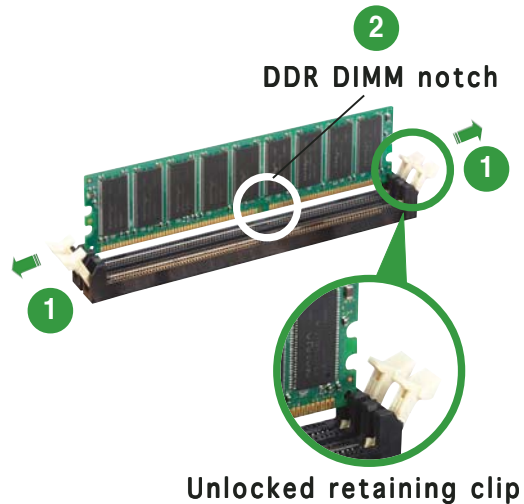
> A DDR DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

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

Locked Retaining Clip
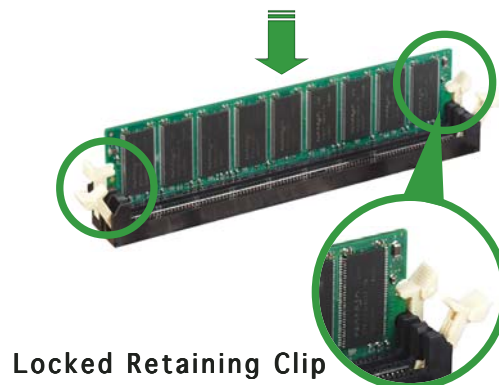
1.7.4 Removing a DIMM

To remove a DIMM:

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

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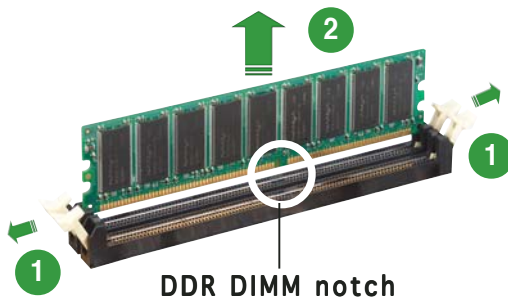
> Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

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.

Standard interrupt assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	–	Re-direct to IRQ#9
3	11	IRQ holder for PCI steering*
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT1)*
8	3	System CMOS/Real Time Clock
9	4	IRQ holder for PCI steering*
10	5	IRQ holder for PCI steering*
11	6	IRQ holder for PCI steering*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE 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	E	F	G	H
PCI slot 1	shared	—	—	—	—	—	—	—
PCI slot 2	—	shared	—	—	—	—	—	—
IDE (0, 0f, 0)	—	shared	—	—	—	—	—	—
USB controller 1	shared	—	—	—	—	—	—	—
USB controller 2	—	—	shared	—	—	—	—	—
USB controller 3	—	used	—	—	—	—	—	—
USB controller 4	—	—	—	shared	—	—	—	—
USB 2.0 controller	—	—	shared	—	—	—	—	—
AC'97	—	—	shared	—	—	—	—	—
Ethernet	shared	—	—	—	—	—	—	—
AGP	shared	—	—	—	—	—	—	—
PCIE x1	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.

1.8.3   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.
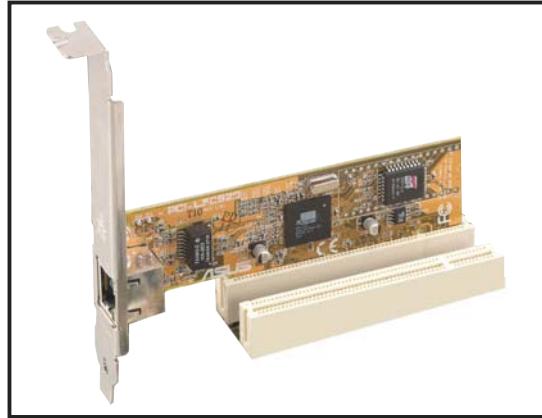
1.8.4   PCI Express x1 slot

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

1.8.5 AGP 8X slot

This motherboard has an Accelerated Graphics Port (AGP) slot that supports AGP 8X (+0.8V) and AGP 4X (+1.5V) cards. When you buy an AGP card, make sure that you ask for one with +0.8V or +1.5V specification.

Install only +0.8V or +1.5V AGP cards. This motherboardboard does not support +3.3V AGP cards.

Unplug the power cord before adding or removing expansion cards. Failure to do so can cause you physical injury and damage the motherboard.

Keyed for 1.5v
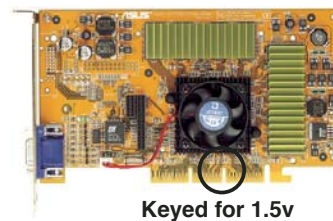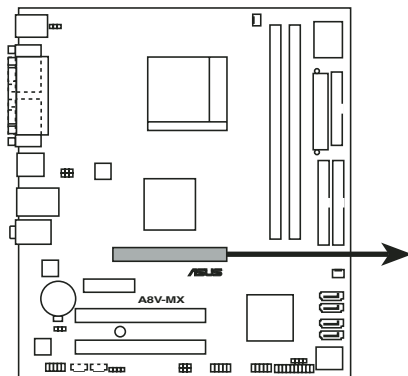
A8V-MX Accelerated Graphics Port (AGP)

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!

A8V-MX Clear RTC RAM

CLRTC

1 2   Normal (Default)

2 3   Clear CMOS
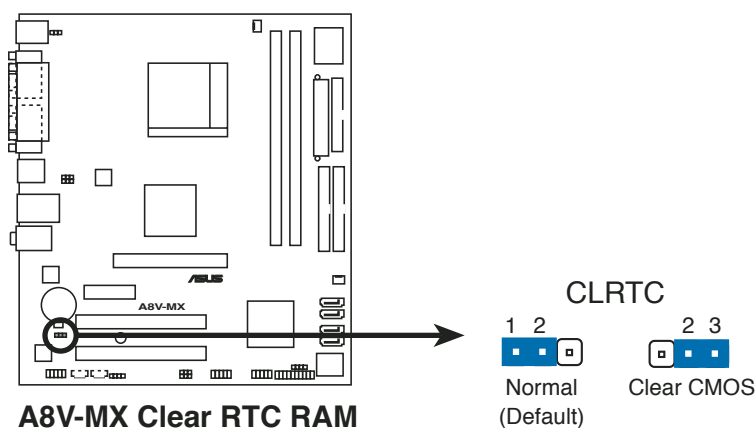
You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

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

Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 and S4 sleep modes.

The USBPW12 and USBPW34 jumpers are for the rear USB ports. The USBPW56 and USBPW78 jumper is for the internal USB connectors that you can connect to additional USB ports.

A8V-MX USB device wake-up

USBPW12
USBPW34

1 2   2 3

+5V   +5VSB
               (Default)

USBPW56
USBPW78

1 2   2 3

+5V   +5VSB
               (Default)
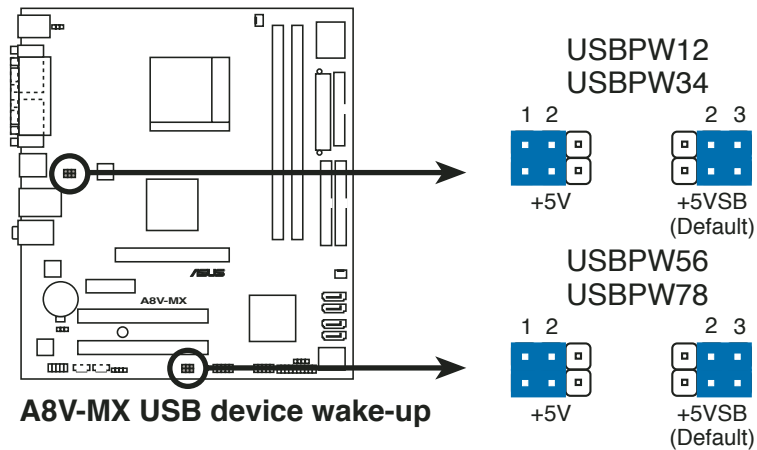
- The USB device wake-up feature requires a power supply that can provide 500mA on the +5VSB lead for each USB port; otherwise, the system would not power up.

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

3. Keyboard power (3-pin KBPWR)

This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) 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 +5VSB lead, and a corresponding setting in the BIOS.
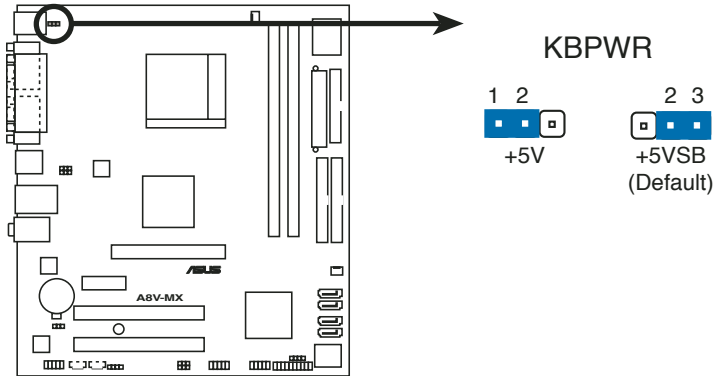
A8V-MX Keyboard power setting

1.10 Connectors

1.10.1 Rear panel connectors
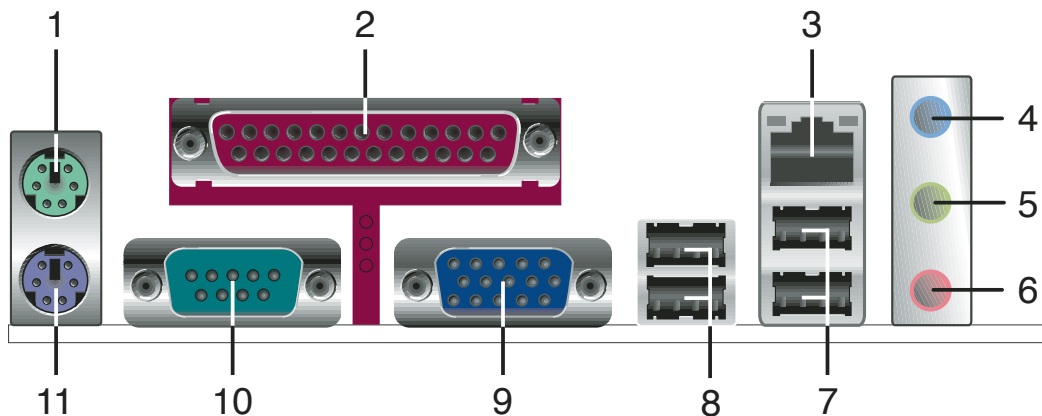
1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.

2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.

3. **LAN (RJ-45) port.** This port allows connection to a Local Area Network (LAN) through a network hub.

4. **Line In port (light blue).** This port connects a tape, CD, DVD player, or other audio sources.

5. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel/ 6-channel configuration, the function of this port becomes Front Speaker Out.

6. **Microphone port (pink).** This port connects a microphone.

> 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	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In

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. **Video Graphics Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.

10. **Serial connector.** This 9-pin COM1 port is for serial devices.

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

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

PIN 1
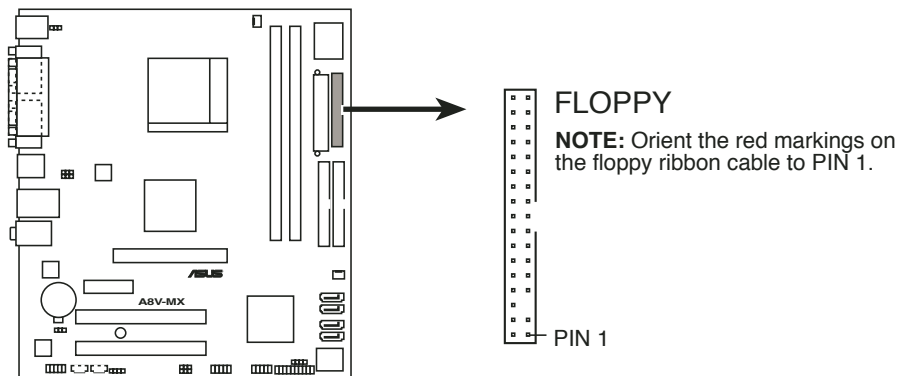
A8V-MX Floppy disk drive connector

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

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

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

CHASSIS

+5VSB_MB

Chassis Signal

GND

(Default)
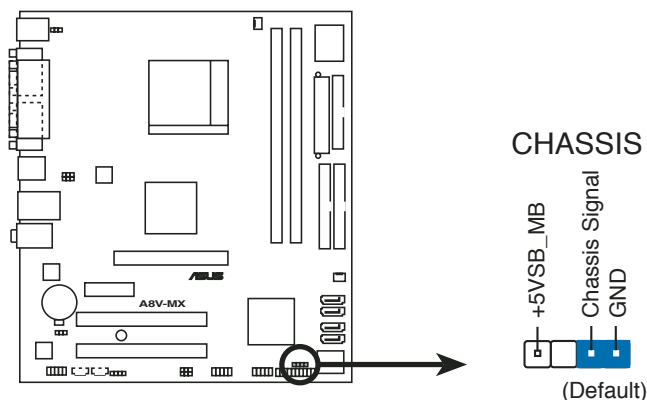
A8V-MX Chassis intrusion connector

3. IDE connectors (40-1 pin PRI_IDE, 40-1 pin SECI_IDE)

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

- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.

- Use the 80-conductor IDE cable for Ultra DMA 100/66 IDE devices.
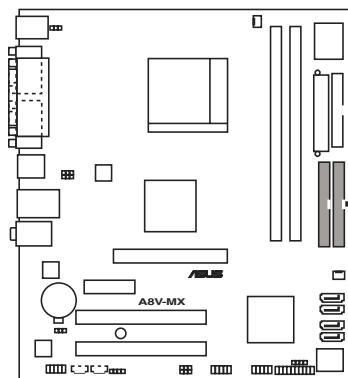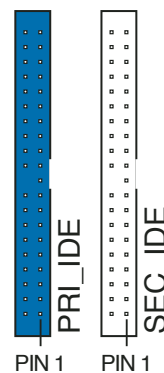
NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

PRI_IDE   SEC_IDE

PIN 1   PIN 1

A8V-MX IDE connectors

4. Serial ATA connectors
(7-pin SATA1, SATA2, SATA3, SATA4)

These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives. The current Serial ATA I interface allows up to 150 MB/s data transfer rate while Serial ATA II allows up to 300 MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (Ultra DMA/133)

A8V-MX SATA connectors
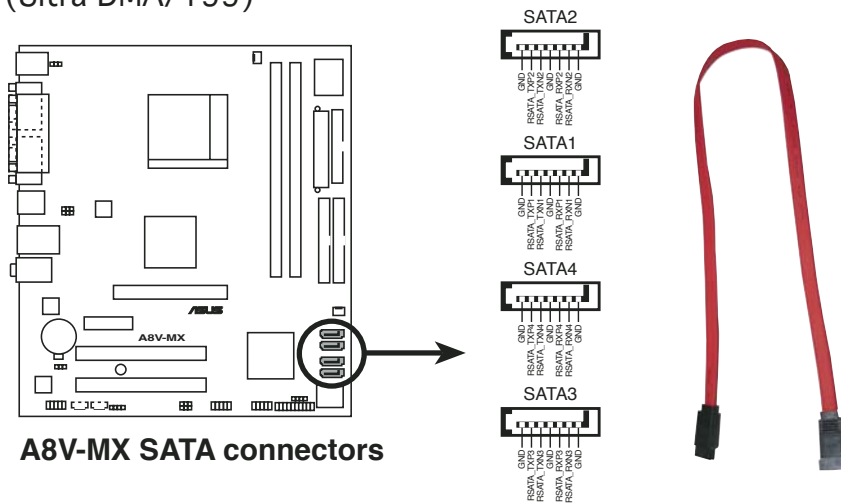
Important notes on Serial ATA

- Install the Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 before using Serial ATA.

- Plug your Serial ATA boot disk on the master port (SATA1 and SATA2) to support S3 function. Refer to the table below for details.

Serial ATA Master/Slave connectors

Connector	Setting	Use
SATA1, SATA2	Master	Boot disk
SATA3, SATA4	Slave	Data disk

5. CPU and Chassis fan connectors (3-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

GND
+12V
Rotation

CHA_FAN

Rotation
+12V
GND

A8V-MX Fan connectors
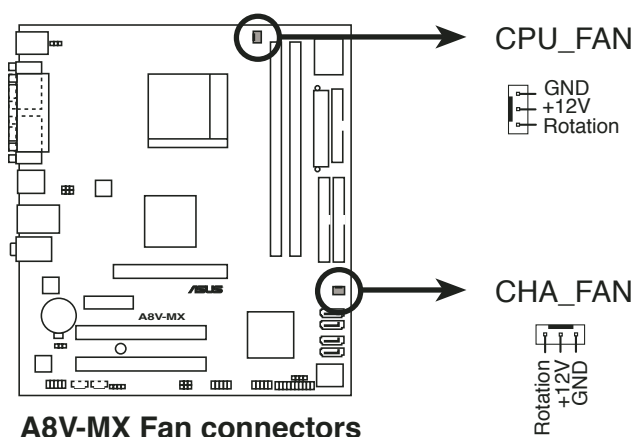
6. Digital audio connector (4-1 pin SPDIF_OUT)

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

The S/PDIF module is purchased separately.

SPDIF

+5V
SPDIFOUT
GND

A8V-MX Digital audio connector
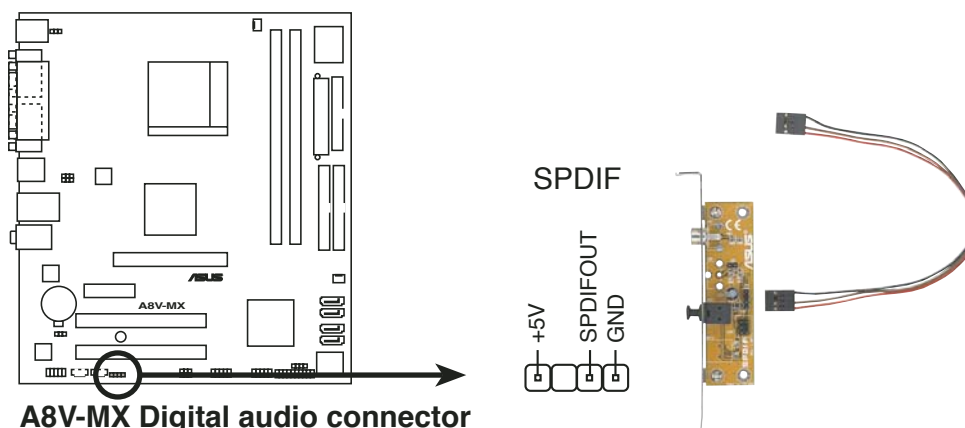
7. USB connectors (10-1 pin USB56, USB78)

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

A8V-MX USB 2.0 connectors

USB56

USB+5V
USB_P6-
USB_P6+
GND
NC

USB+5V
USB_P5-
USB_P5+
GND

USB78

USB+5V
USB_P8-
USB_P8+
GND
NC

USB+5V
USB_P7-
USB_P7+
GND
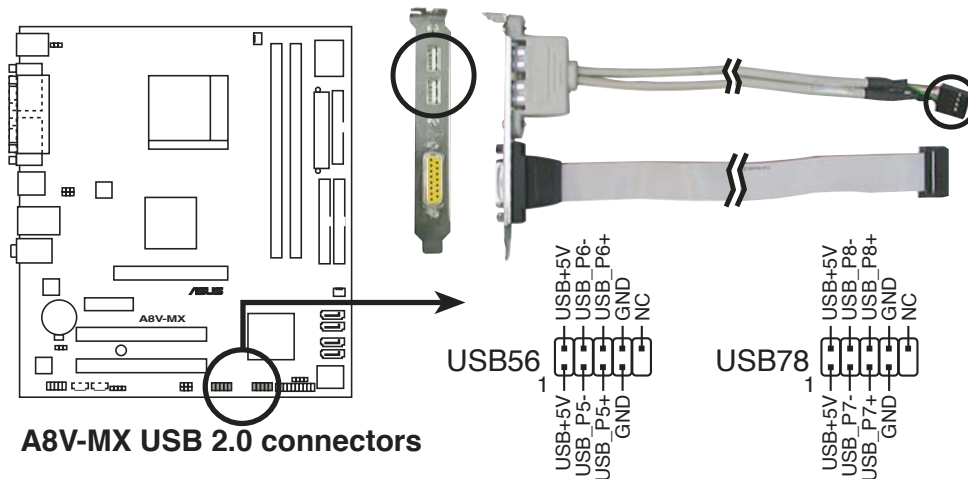
Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!

The USB 2.0 module is purchased separately.

8. Internal audio connectors (4-pin CD [black], 4-pin AUX [white])

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

A8V-MX Internal audio connectors

AUX
(White)

Left Audio Channel
Ground
Ground
Right Audio Channel

CD
(Black)

Left Audio Channel
Ground
Ground
Right Audio Channel
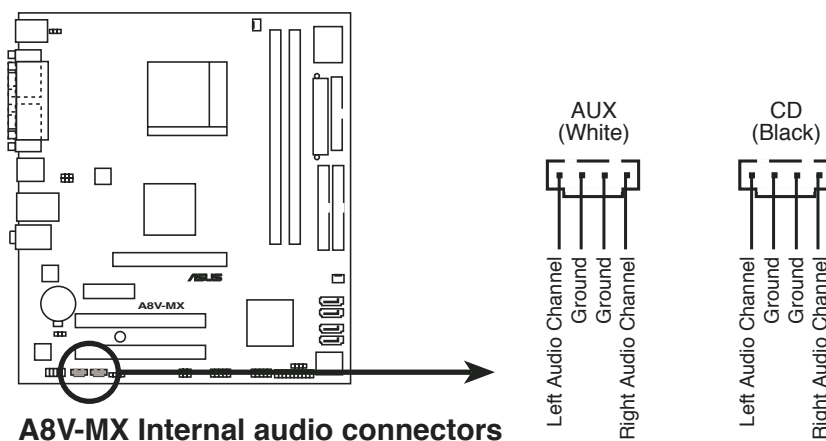
9. ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

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.

- We recommend that you use an ATX 12 V Specification 2.0-compliant power supply unit (PSU) with a minimum of 300 W power rating. This PSU type has 24-pin and 4-pin power plugs.

- If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15 A on +12 V and that the PSU has a minimum power rating of 300 W. The system may become unstable or may not boot up if the power is inadequate.

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

- We recommend that you use a PSU with higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.

- You must install a PSU with a higher power rating if you intend to install additional devices.

A8V-MX ATX power connectors
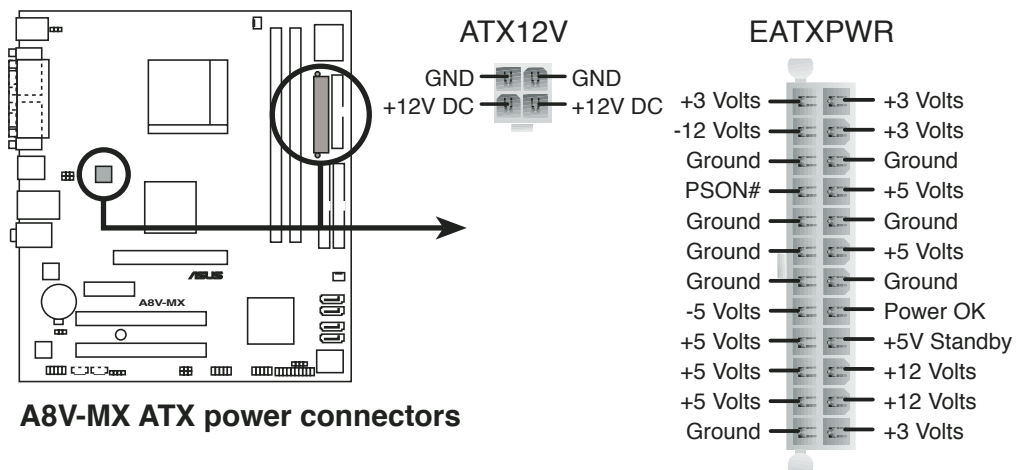
10. Front panel audio connector (10-1 pin FP_AUDIO)

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

A8V-MX Front audio connector
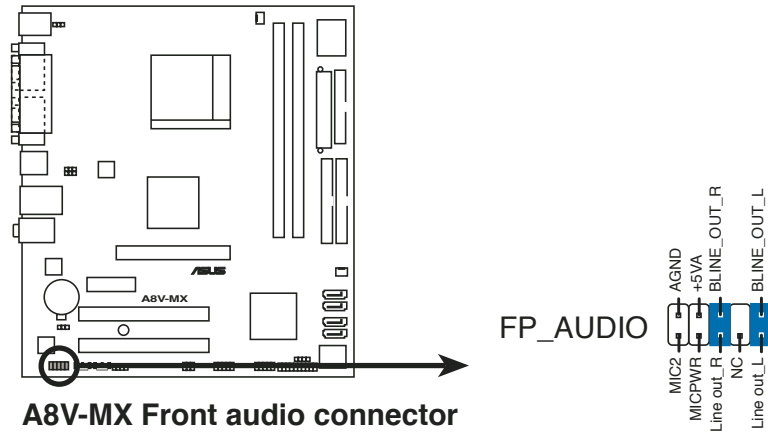
11. System panel connector (20-1 pin PANEL)

This connector supports several chassis-mounted functions.

A8V-MX System panel connector

* Requires an ATX power supply.
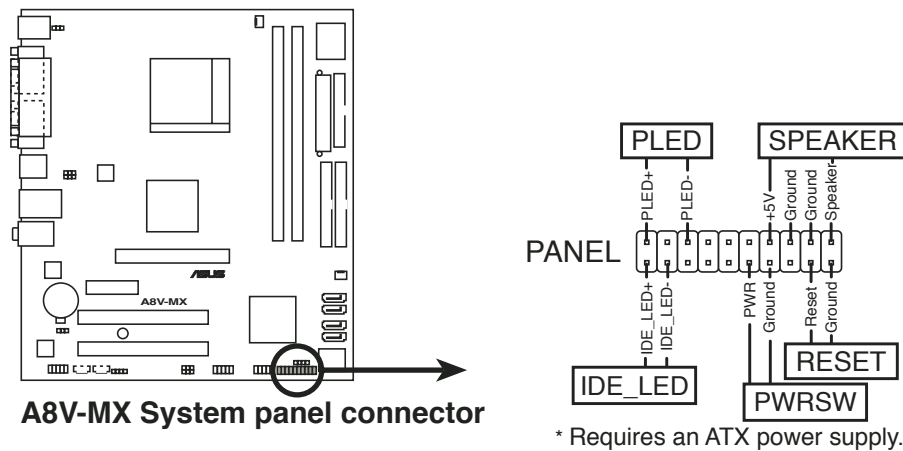
The sytem panel connector is color-coded for easy connection. Refer to the connector description below for details.

- **System power LED (Green 3-pin PLED)**
  This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity (Red 2-pin IDE_LED)**
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **System warning speaker (Orange 4-pin SPEAKER)**
  This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

- **Power/Soft-off button (Yellow 2-pin PWRSW)**
  This connector is for the system power button. Pressing the power button turns the system ON or puts the system in SLEEP or SOFT-OFF mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Reset button (Blue 2-pin RESET)**
  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

Chapter 1: Product introduction

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

Refer to the corresponding sections for details on these utilities.

> Save a copy of the original motherboard BIOS file to a bootable floppy disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

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 **A8V-MX.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 "A8V-MX.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 A8V-MX.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 A8V-MX.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 600 KB free space to save the file.

• The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be exactly the same as shown.

1. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

2. Boot the system in DOS mode, then at the prompt type:

   afudos /o[filename]

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

```
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 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
   Reading flash ..... done
A:\>
```

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

Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

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

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

2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

3. Boot the system in DOS mode, then at the prompt type:

    `afudos /i[filename]`

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

    ```
    A:\>afudos /iA8V-MX.ROM
    ```

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

    ```
    A:\>afudos /iA8V-MX.ROM
    AMI Firmware Update Utility - Version 1.10
    Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
       Reading file ..... done
       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 /iA8V-MX.ROM
    AMI Firmware Update Utility - Version 1.10
    Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
       Reading file ..... done
       Erasing flash .... done
       Writing flash .... 0x0008CC00 (9%)
       Verifying flash .. done
    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 to **A8V-MX.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 "A8V-MX.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 "A8V-MX.ROM". Completed.
Start flashing...
```

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

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

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

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 VX.XX.XX**. See page 3-3 for the **Utilities** screen menu.
3. The ASUS Update utility is copied to your system.

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

Updating the BIOS through the Internet

To update the BIOS through the Internet:

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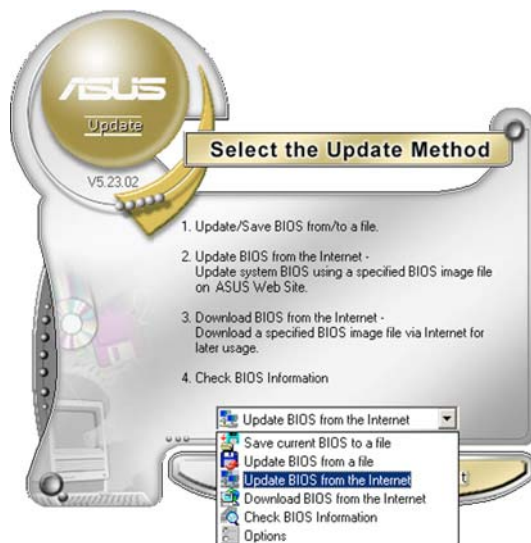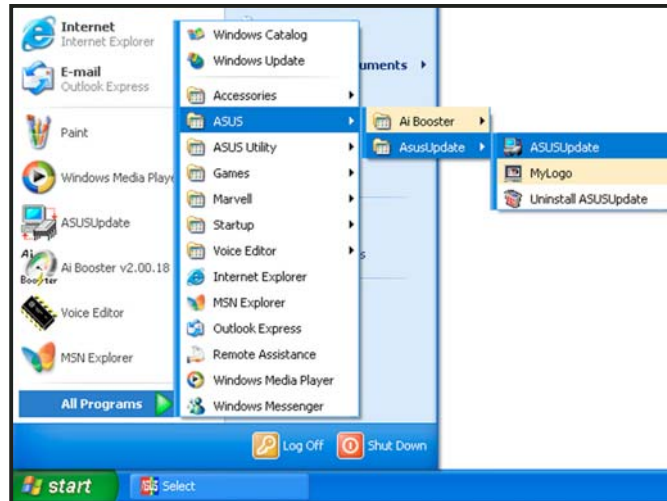
2. Select **Update BIOS from the Internet** option from the drop-down menu, then click **Next**.

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

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

5. Follow the screen instructions to complete the update process.

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

Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

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

2. Select **Update BIOS from a file** option from the drop-down menu, then click **Next**.
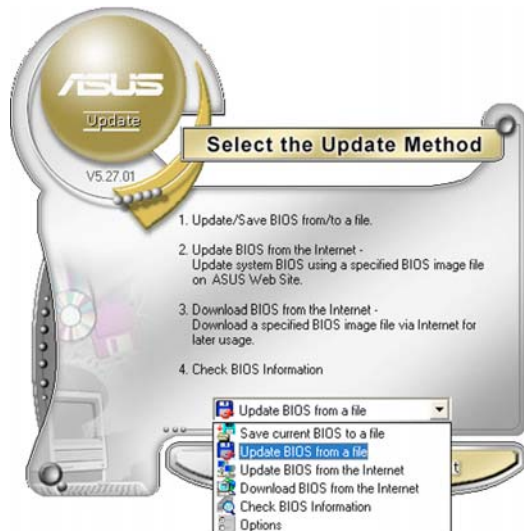
3. Locate the BIOS file from the **Open** window, then click **Save**.

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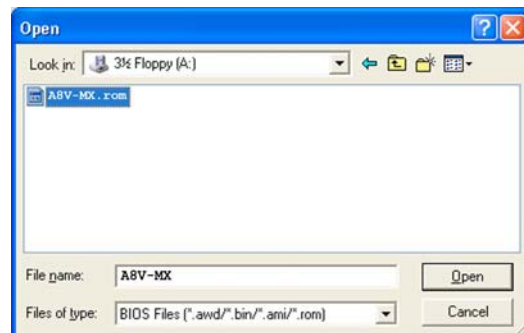
2.2 BIOS setup program

This motherboard supports a programmable firmware 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 firmware hub.

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

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

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

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

2.2.1 BIOS menu screen


```
                            BIOS SETUP UTILITY
  Main     Advanced     Power    Boot        Exit

    System Time                [10:55:25]              Use [ENTER], [TAB] or
    System Date                [Thu 07/21/2005]        [SHIFT-TAB] to select
    Legacy Diskette A          [1.44M, 3.5 in]         a field.

  ▶ Primary IDE Master         [ST320410A]             Use [+] or [-] to
  ▶ Primary IDE Slave          [ASUS CD-S520/A]        configure the System
  ▶ Secondary IDE Master       [Not Detected]          Time.
  ▶ Secondary IDE Slave        [Not Detected]
  ▶ Third IDE Master           [Not Detected]
  ▶ Third IDE Slave            [Not Detected]
  ▶ Fourth IDE Master          [Not Detected]
  ▶ Fourth IDE Slave           [Not Detected]          ←→   Select Screen
                                                       ↑↓   Select Item
  ▶ System Information                                  +-   Change Field
                                                       Tab  Select Field
                                                       F1   General Help
                                                       F10  Save and Exit
                                                       ESC  Exit

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```

Menu items   Menu bar   Configuration fields   General help

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.

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.
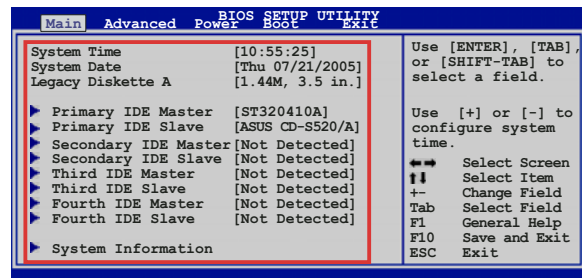
Main menu items

2.2.5 Sub-menu items

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

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 Scroll bar

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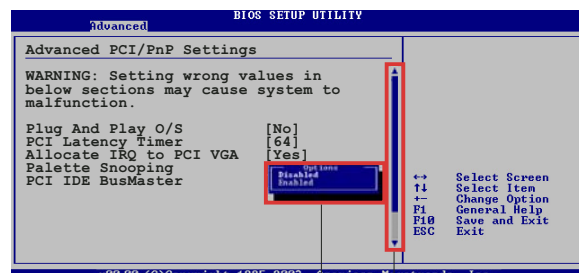
Pop-up window

Scroll bar

2.2.9 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                  [10:55:25]                 Use [ENTER], [TAB] or
  System Date                  [Thu 07/21/2005]           [SHIFT-TAB] to select
  Legacy Diskette A            [1.44M, 3.5 in]            a field.

▶ Primary IDE Master          [ST320410A]                Use [+] or [-] to
▶ Primary IDE Slave           [ASUS CD-S520/A]           configure the System
▶ Secondary IDE Master        [Not Detected]             Time.
▶ Secondary IDE Slave         [Not Detected]
▶ Third IDE Master            [Not Detected]
▶ Third IDE Slave             [Not Detected]
▶ Fourth IDE Master           [Not Detected]             ←→   Select Screen
▶ Fourth IDE Slave            [Not Detected]             ↑↓   Select Item
                                                         +-   Change Field
▶ System Information                                     Tab  Select Field
                                                         F1   General Help
                                                         F10  Save and Exit
                                                         ESC  Exit

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```

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] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

2.3.4 Primary, Secondary, Third, and Fourth 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

 Primary IDE Master                          Select the type of
                                             device connected to
 Device       : Hard Disk                    the system.
 Vendor       : ST320410A
 Size         : 20.0GB
 LBA Mode     : Supported
 Block Mode   : 16 Sectors
 PIO Mode     : 4
 Async DMA    : MultiWord DMA-2
 Ultra DMA    : Ultra DMA-5
 SMART Monitoring: Supported

 Type                        [Auto]
 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.

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] [UDMA6]

SMART Monitoring [Auto]

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

32Bit Data Transfer [Enabled]

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

2.3.5 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     : 0116
    Build Date  : 08/02/05

    Processor
    Type        : AMD Athlon(tm) 64 X2 Dual Core Processor
    Speed       : 2310 MHz
    Count       : 2

    System Memory
    Size        : 192 MB

                                            ←→     Select Screen
                                            ↑↓     Select Item
                                            F1     General Help
                                            F10    Save and Exit
                                            ESC    Exit


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```
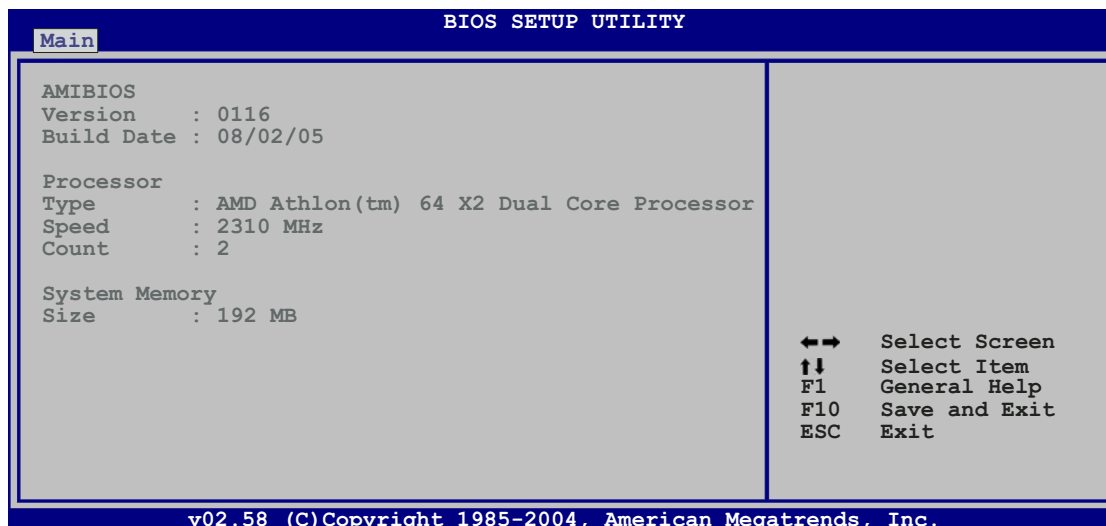
AMI BIOS

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
┌──────────────────────────────────────────┬────────────────────────────┐
│ ► Jumperfree Configuration               │ Adjust system              │
│ ► USB Configuration                      │ Frequency/Voltage,etc.     │
│                                          │                            │
│ ► CPU Configuration                      │                            │
│ ► Chipset                                │                            │
│ ► Onboard Devices Configuration          │                            │
│ ► PCI PnP                                │                            │
│                                          │                            │
│                                          │                            │
│                                          │  ←→     Select Screen      │
│                                          │  ↑↓     Select Item        │
│                                          │  Enter  Go to Sub Screen   │
│                                          │  F1     General Help       │
│                                          │  F10    Save and Exit      │
│                                          │                            │
└──────────────────────────────────────────┴────────────────────────────┘
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```

2.4.1 JumperFree Configuration

```
                          BIOS SETUP UTILITY
        Advanced
┌──────────────────────────────────────────┬────────────────────────────┐
│ Config System Frequency/Voltage          │ Adjust CPU FSB             │
│                                          │ frequency.                 │
│ CPU FSB Frequency         [200 MHz]      │                            │
│ AGP/PCI Frequency (MHz)   [Auto]         │                            │
│ PCIE Frequency (MHz)      [Auto]         │                            │
│                                          │                            │
│                                          │                            │
│                                          │                            │
│                                          │                            │
│                                          │  ←→     Select Screen      │
│                                          │  ↑↓     Select Item        │
│                                          │  +-     Change Option      │
│                                          │  F1     General Help       │
│                                          │  F10    Save and Exit      │
│                                          │  ESC    Exit               │
└──────────────────────────────────────────┴────────────────────────────┘
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```

CPU FSB Frequency [200 MHz]

Allows you to adjust the CPU FSB frequency.
Configuration options: [200 MHz] [201 MHz] [203 MHz]... [300 MHz]

AGP/PCI Frequency (MHz) [Auto]

Allows you to set the AGP/PCI frequency.
Configuration options: [Auto] [66.66/33.33] [75.4/37.7] [80/40]

PCIE Frequency (MHz) [Auto]

Sets the PCI Express frequency.
Configuration options: [Auto] [Fixed Clock]

2.4.2 USB Configuration

```
                          BIOS SETUP UTILITY
         Advanced

 USB Configuration                                    Enables 1.1 USB host
                                                      controllers.
 Module Version - 2.24.0-10.4

 USB Devices Enabled:
            None

 USB 1.1 Ports Configuration    [USB 8 Ports]
 USB 2.0 Ports Enable           [Enable]
 Legacy USB Support             [Auto]
 Port 64/60 Emulation           [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

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```

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

USB 1.1 Ports Configuration [USB 8 Ports]

Allows you to choose the number of USB 1.1 ports to enable. Setting to
[Disabled] disables the USB 1.1 host controllers.
Configuration options: [Disabled] [USB 2 ports] [USB 4 ports]
[USB 6 ports] [USB 8 ports]

USB 2.0 Ports Enable [Enable]

Allows you to enable or disable the USB 2.0 host controllers.
Configuration options: [Disabled] [Enabled]

Legacy USB Support [Auto]

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

Port 64/60 Emulation [Disabled]

Allows you to enable or disable I/O port 60h/64h emulation support. This item should be set to [Enabled] for complete USB keyboard legacy sypport for non-USB aware operating systems. Configuration options: [Disabled] [Enabled]

USB 2.0 Controller Mode [HiSpeed]

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

BIOS EHCI Hand-Off [Enabled]

Allows you to enable support for operating systems without an EHCI hand-off feature. Configuration options: [Disabled] [Enabled]

2.4.3 CPU Configuration

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

```
                          BIOS SETUP UTILITY
       Advanced

  CPU Configuration                                  Sets the ratio between
  Module Version: 14.04                              CPU Core Clock and the
  Physical Count: 1                                  FSB Frequency.
  Logical Count: 2                                   NOTE: If an invalid
                                                     ratio is set in CMOS
  AMD Athlon(tm) 64 X2 Dual Core Processor 4200+     then actual and
  Revision: E4                                       setpoint values may
  Cache L1    : 64KB*2                               differ.
  Cache L2    : 512KB*2
  Speed       : 2310MHz
  Current FSB Multiplier: 11x
  Maximum FSB Multiplier: 11x
  Able to Change Freq.  : Yes
  uCode Patch Level     : 0x4D                       ◄►      Select Screen
                                                     ↑↓      Select Item
  Cool 'n' Quiet                 [Disabled]          Enter  Update
                                                     F1     General Help
                                                     F10    Save and Exit
                                                     ESC    Exit

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```

Cool 'n' Quiet [Disabled]

Allows you to enable or disable the AMD Cool 'n' Quiet technology feature. Configuration options: [Enabled] [Disabled]

2.4.4 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 NB

  WARNING: Setting wrong values in below sections may
           cause system to malfunction.

  ▶  Northbridge Configuration
  ▶  AGP Bridge VIA K8M800 Configuration
  ▶  Southbridge VIA VT8251 Configuration
  ▶  Hypertransport Configuration



                                              ←→    Select Screen
                                              ↑↓    Select Item
                                              Enter Go to Subscreen
                                              F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```

Northbridge Configuration

```
                              BIOS SETUP UTILITY
       Advanced

 Northbridge Chipset Configuration

  ▶  Memory Configuration
  ▶  ECC Configuration

   Memory CLK                : 200 MHz
   CAS Latency (Tcl)         : 3.0
   RAS/CAS Delay (Trcd)      : 3 CLK
   Min Active RAS (Tras)     : 8 CLK
   Row Precharge Time (Trp)  : 3 CLK
   RAS/RAS Delay (Trrd)      : 2 CLK
   Row Cycle (Trc)           : 11 CLK
   Row Refresh Cycle (Trfc)  : 14 CLK         ←→    Select Screen
   Read Write Delay (Trwt)   : 4 CLK          ↑↓    Select Item
   Read Preamble             : 5.5 ns         Enter Go to Sub Screen
   Asynchronous Latency      : 7 ns           F1    General Help
                                              F10   Save and Exit
                                              ESC   Exit

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```

Memory Configuration

```
                              BIOS SETUP UTILITY
       Advanced

 Memory Configuration                               MEMCLK can be set by
                                                    the code using AUTO,
  Memclock Mode              [Auto]                 or if you use LIMIT,
  MCT Timing Mode            [Auto]                 you can set one of
  User Config Mode           [Auto]                 the standard values.
  Bank Interleaving          [Auto]
  Burst Length               [4 Beats]
```

Memclock Mode [Auto]

[Auto] allows the BIOS to set the memclock mode automatically.
[Limit] allows you to select from any of the standard values.
Configuration options: [Auto] [Limit]

> The following item appears when the **Memclock Mode** item is set to [Limit].

Memclock Value [100 MHz]

Allows you to set the memclock value.
Configuration options: [100 MHz] [133 MHz] [166 MHz]
[183 MHz] [200 MHz] [216 MHz] [233 MHz] [250 MHz]

MCT Timing Mode [Auto]

[Auto] allows the BIOS to set the MCT timing mode automatically.
[Manual] allows you to set the values by yourself.
Configuration options: [Auto] [Manual]

> The following items appear when the **MCT Timing Mode** item is set to [Manual].

CAS Latency (CL) [2.5]
Configuration options: [2.0] [2.5] [3.0]

TRAS [8 CLK]
Configuration options: [5 CLK] [6 CLK]... [15 CLK]

TRP [4 CLK]
Configuration options: [2 CLK] [3 CLK]... [6 CLK]

TRCD [4 CLK]
Configuration options: [2 CLK] [3 CLK]... [6 CLK]

TRRD [2T]
Configuration options: [2T] [3T] [4T]

TRC [12 T]
Configuration options: [7T] [8T] [9T]... [22T]

TRFC [24 T]
Configuration options: [9T] [10T] [11T]... [24T]

TRWT [4 CLK]
Configuration options: [1 CLK] [2 CLK]... [6 CLK]

User Config Mode [Auto]

Configuration options: [Auto] [Manual]

Bank Interleaving [Auto]

Configuration options: [Auto] [Disabled]

Burst length [4 Beats]

Sets the burst length.
Configuration options: [8 Beats] [4 Beats] [2 Beats]

ECC Configuration

```
                        BIOS SETUP UTILITY
       ┌─────────┐
       │Advanced │
       └─────────┘
 ┌─────────────────────────────────────────────┬─────────────────────┐
 │ ECC Configuration                            │ DRAM ECC allows     │
 │                                              │ hardware to report and│
 │ DRAM ECC Enable            [Enabled]         │ correct memory errors │
 │   MCA DRAM ECC Logging     [Disabled]        │ automatically,      │
 │   ECC Chip Kill            [Disabled]        │ maintaining system  │
 │   DRAM SCRUB REDIRECT      [Disabled]        │ integrity.          │
 │   DRAM BG Scrub            [Disabled]        │                     │
 │ L2 Cache BG Scrub          [Disabled]        │                     │
 │ Data Cache BG Scrub        [Disabled]        │                     │
 │                                              │                     │
 └─────────────────────────────────────────────┴─────────────────────┘
```
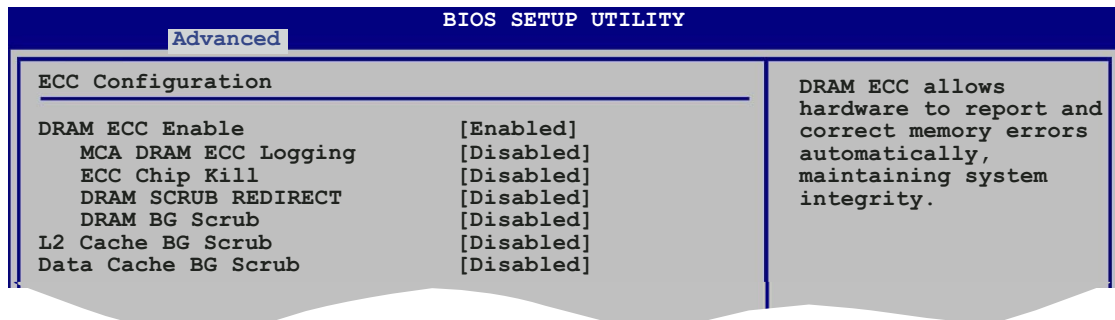
DRAM ECC Enable [Enabled]

Allows you to enable or disable DRAM ECC, which allows the hardware
to report and correct memory errors automatically to maintain system
integrity. Configuration options: [Disabled] [Enabled]

MCA DRAM ECC Logging [Disabled]

Allows you to enable or disable MCA DRAM ECC logging/reporting.
Configuration options: [Disabled] [Enabled]

ECC Chip Kill [Disabled]

Allows you to enable or disable ECC chip kill.
Configuration options: [Disabled] [Enabled]

DRAM SCRUB REDIRECT [Disabled]

Allows you to enable or disable DRAM scrub redirect, which allows
the system to correct DRAM ECC errors immediately when they
occur, even if background scrubbing is on. Configuration options:
[Disabled] [Enabled]

DRAM BG Scrub [Disabled]

Allows DRAM scrubbing to correct memory errors so later reads are correct. Doing this while memory is not being used improves performance. Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5 us] [41.0us] [81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms] [5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

When AMD's node interleave feature is enabled, the BIOS will force DRAM scrub-off.

L2 Cache BG Scrub [Disabled]
Allows the L2 Data Cache RAM to be corrected while idle. Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5 us] [41.0us] [81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms] [5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

Data Cache BG Scrub [Disabled]
Allows the L1 Data Cache RAM to be corrected while idle. Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5 us] [41.0us] [81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms] [5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

AGP Bridge VIA K8M800 Configuration

```
                        VIA K8M800 Chipset Configuration
       ┌──────────┐
       │ Advanced │
       └──────────┘
  OnChip VGA Frame Buffer Size      [64MB]              ┌──────────────────────┐
  Primary Graphics Adapter          [AGP]               │       Options        │
  VLink 8X Supported                [Enabled]           └──────────────────────┘
  AGP Mode                          [AGP 8X]             None
  AGP Fast Write                    [Disabled]           8MB
  Graphics Aperture Size            [64MB]               16MB
  AGP 3.0 Calibration Cycle         [Disabled]           32MB
  DBI Output for AGP Trans          [Disabled]           64MB


                                                         ←→     Select Screen
                                                         ↑↓     Select Item
                                                         +-     Change Option
                                                         F1     General Help
                                                         F10    Save and Exit
                                                         ESC    Exit

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```

OnChip VGA Frame Buffer Size [64MB]
Allows you to set the frame buffer size of the onchip VGA.
Configuration options: [None] [8MB] [16MB] [32MB] [64MB]

Primary Graphics Adapter [AGP]
Allows selection of the graphics controller to use as a primary boot
device. Configuration options: [PCI] [AGP]

VLink 8X Supported [Enabled]
Allows you to enable or disable VLink 8X support.
Configuration options: [Disabled] [Enabled]

AGP Mode [AGP 8X]
Allows you to set the AGP mode.
Configuration options: [8X] [4X]

AGP Fast Write [Disabled]
Allows you to enable or disable the AGP Fast Write feature.
Configuration options: [Disabled] [Enabled]

Graphics Aperture Size [64MB]
Allows you to set the graphics aperture size.
Configuration options: [256MB] [128MB] [64MB] [32MB]

AGP 3.0 Calibration Cycle [Disabled]
Configuration options: [Disabled] [Enabled]

DBI Output for AGP Trans [Disabled]
Configuration options: [Disabled] [Enabled]

SouthBridge VIA VT8251 Configuration

```
                     VIA VT8251 South Chipset Configuration
        Advanced
 * Serial ATA IDE Controller        [SATA]                       Options
 * LAN Controller                   [Enabled]
   LAN BIOS Execute                 [Disabled]          Disabled
 OnChip AC`97 Audio                 [Auto]              SATA
   AC`97 Variable Sample Rate       [Enabled]           RAID
                                                        AHCI




                                                      ←→    Select Screen
                                                      ↑↓    Select Item
                                                      +-    Change Option
                                                      F1    General Help
                                                      F10   Save and Exit
                                                      ESC   Exit

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```
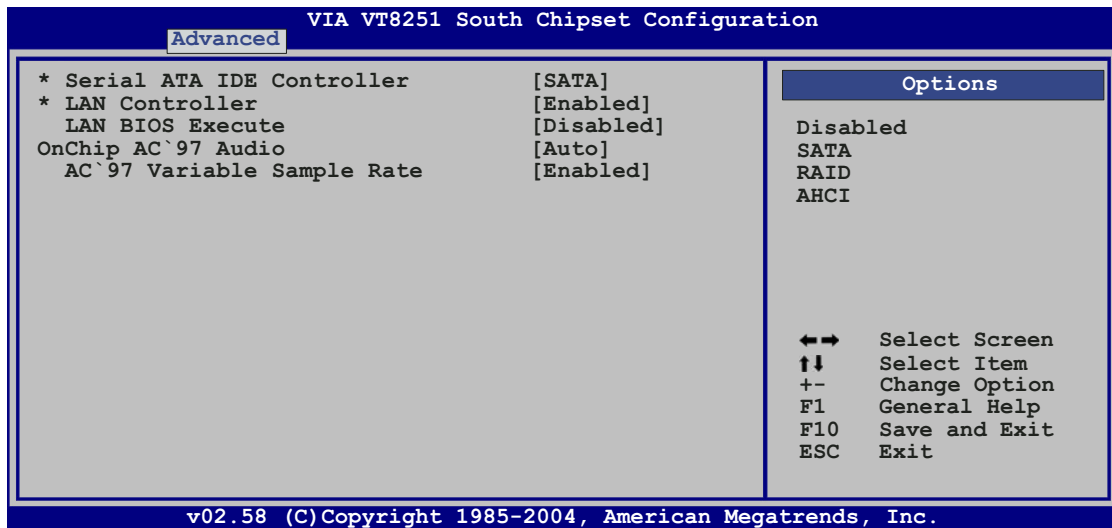
Serial ATA IDE Controller [SATA]
Allows you to set the Serial ATA mode.
Configuration options: [Disabled] [SATA] [RAID] [AHCI]

Serial-ATA BOOTROM [Disabled]

Allows you to enable or disable the Serial ATA BootROM.
Configuration options: [Disabled] [Enabled]

The above item appears only when the **Serial ATA IDE Controller** item is set to [RAID] or [AHCI]

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

LAN BIOS Execute [Disabled]
Allows you to enable or disable the BIOS execute feature of the onboard LAN. Configuration options: [Disabled] [Enabled]

OnChip AC`97 Audio [Auto]
Enables or disables the AC'97 CODEC.
Configuration options: [Disabled] [Enabled]

AC`97 Variable Sample Rate [Enabled]
Configuration options: [Disabled] [Enabled]

HyperTransport Configuration

```
                              BIOS Setup Utility
     Advanced

   LDT to AGP Lokar Frequency          [800 MHz]       LDT to AGP Lokar
   LDT to AGP Lokar (Upstream)         [16 BIT]        frequency selection.
   LDT to AGP Lokar (Downstream)       [16 BIT]




                                                    ←→    Select Screen
                                                    ↑↓    Select Item
                                                    +-    Change Option
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit

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```
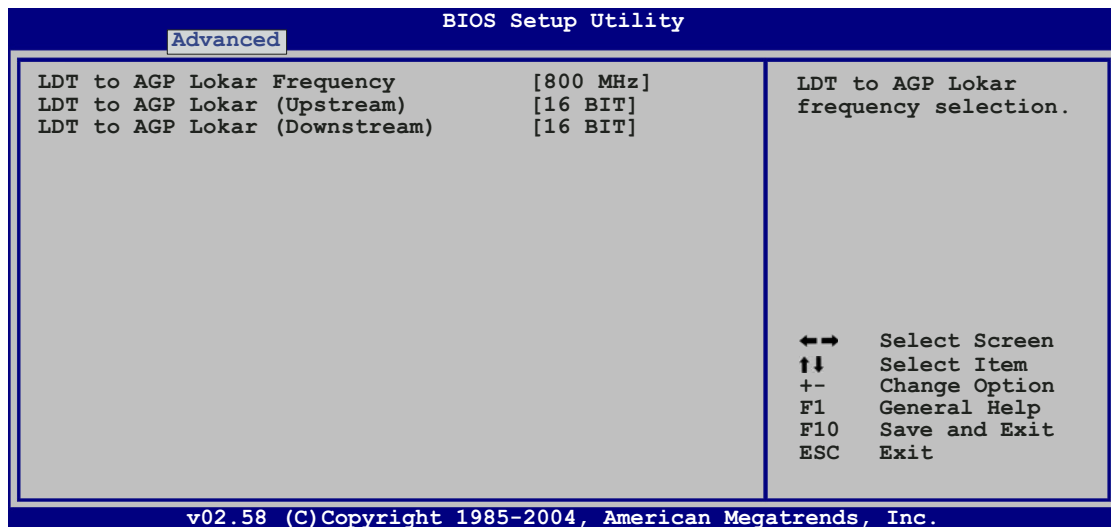
LDT to AGP Lokar Frequency [800 MHz]
Allows you to set the LDT to AGP Lokar Frequency.
Configuration options: [200 MHz] [400 MHz] [600 MHz] [800 MHz]

LDT to AGP Lokar (Upstream) [16 BIT]
Configuration options: [8 BIT] [16 BIT]

LDT to AGP Lokar (Downstream) [16 BIT]
Configuration options: [8 BIT] [16 BIT]

2.4.5 Onboard Devices Configuration

```
                          BIOS SETUP UTILITY
       Advanced

 Configure Win627EHF 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

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```
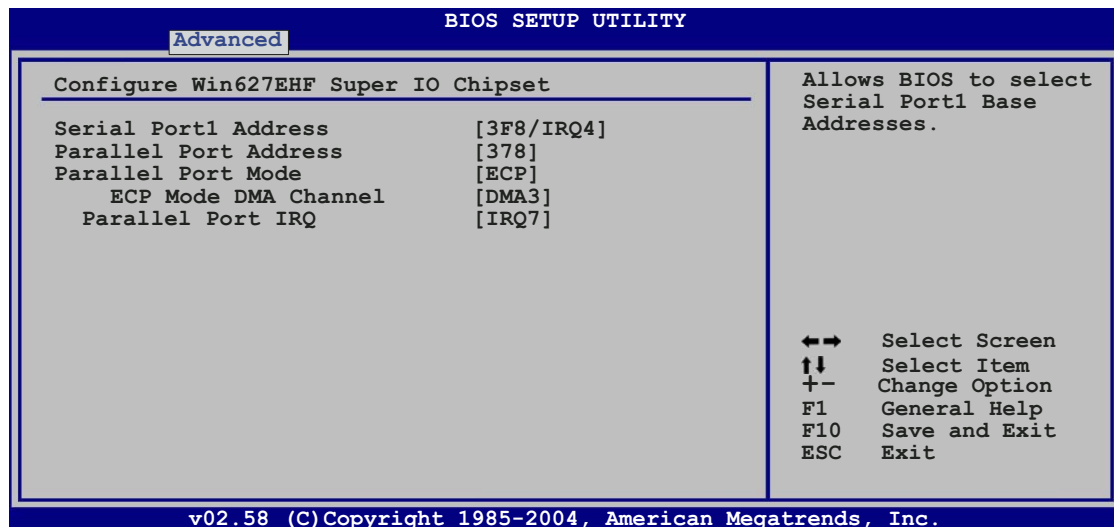
Serial Port1 Address [3F8/IRQ4]

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

Allows you to select the Parallel Port mode.
Configuration options: [Normal] [Bi-directional] [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]

EPP Version [1.9]

Allows selection of the Parallel Port EPP version. This item appears
only when the **Parallel Port Mode** is set to **EPP**.
Configuration options: [1.9] [1.7]

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

2.4.6   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
                                                     configure 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]
    IRQ-5 assigned to              [PCI Device]      ←→     Select Screen
    IRQ-7 assigned to              [PCI Device]      ↑↓     Select Item
    IRQ-9 assigned to              [PCI Device]      +-     Change Option
    IRQ-10 assigned to             [PCI Device]      F1     General Help
    IRQ-11 assigned to             [PCI Device]      F10    Save and Exit
    IRQ-14 assigned to             [PCI Device]      ESC    Exit
    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 palette 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.

```
                              BIOS SETUP UTILITY
    Main      Advanced      Power      Boot        Exit
 ┌──────────────────────────────────────────────┬─────────────────────────┐
 │ Suspend Mode                  [Auto]          │ Select the ACPI state   │
 │ Repost Video on S3 Resume     [No]            │ used for System         │
 │ ACPI 2.0 Support              [No]            │ Suspend.                │
 │ ACPI APIC Support             [Enabled]       │                         │
 │                                               │                         │
 │ ▶  APM Configuration                          │                         │
 │ ▶  Hardware Monitor                           │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │                         │
 │                                               │  ←→    Select Screen    │
 │                                               │  ↑↓    Select Item      │
 │                                               │  +-    Change Field     │
 │                                               │  F1    General Help     │
 │                                               │  F10   Save and Exit    │
 │                                               │  ESC   Exit             │
 │                                               │                         │
 └──────────────────────────────────────────────┴─────────────────────────┘
        v02.58 (C)Copyright 1985-2004, American Megatrends, Inc.
```
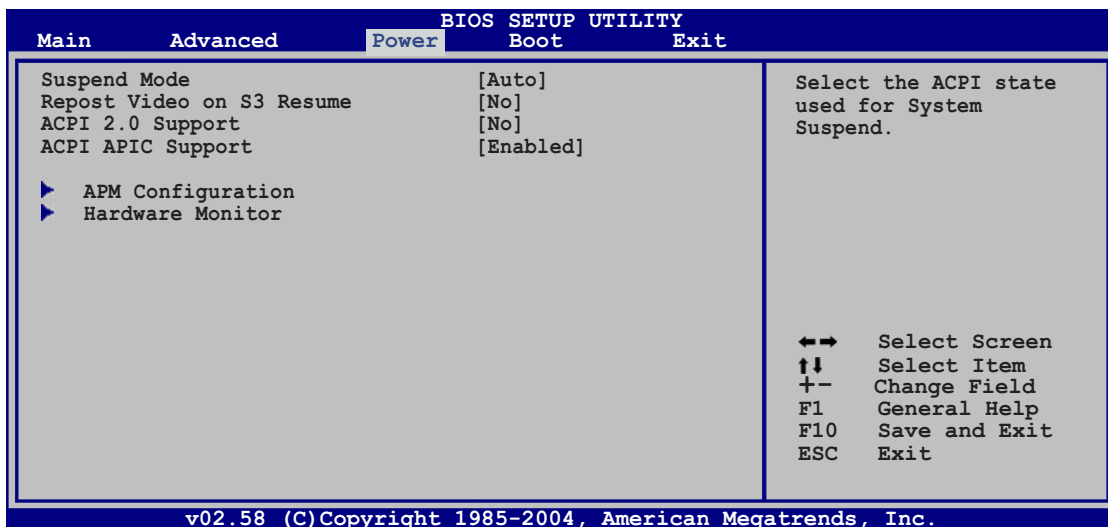
2.5.1   Suspend Mode [Auto]

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   Repost Video on S3 Resume [No]

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

2.5.3   ACPI 2.0 Support [No]

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

2.5.4   ACPI APIC Support [Enabled]

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

2.5.5   APM Configuration

```
                              BIOS SETUP UTILITY
                         Power

   Power Management/APM        [Enabled]                     Options

   Restore on AC Power Loss    [Power Off]          Disabled
                                                    Enabled
   Resume On Ring              [Disabled]
   Resume On LAN               [Disabled]
   Resume On PME#              [Disabled]
   Resume On KBC               [Disabled]
      Wake-Up Key              [Any Key]
   Resume On PS/2 Mouse        [Disabled]
   Resume On RTC Alarm         [Disabled]
                                                 ←→     Select Screen
                                                 ↑↓     Select Item
                                                 +-     Change Option
                                                 F1     General Help
                                                 F10    Save and Exit
                                                 ESC    Exit

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```

Power Management/APM [Enabled]

Allows you to enable or disable the advanced power management feature.
Configuration options: [Disabled] [Enabled]

Restore On AC Power Loss [Power Off]

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

Resume On Ring [Disabled]

When set to [Enabled], the system enables the RI to generate a wake
event while the computer is in Soft-off mode.
Configuration options: [Disabled] [Enabled]

Resume On LAN [Disabled]

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

Resume On PME# [Disabled]

When set to [Enabled], the system enables the PME to generate a wake
event while the computer is in Soft-off mode.
Configuration options: [Disabled] [Enabled]

Resume On KBC [Disabled]

Configuration options: [Disabled] [S3] [S3/S4/S5]

> The **Wake-Up Key** item becomes user-configurable when the **Resume On KBC** item is set to [S3] or [S3/S4/S5].

Wake-Up Key [Any Key]

Allows you to use any key or a specific key on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Any Key] [Specific Key]

Power On By PS/2 Mouse [Disabled]

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

Resume On RTC Alarm [Disabled]

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

2.5.6 Hardware Monitor

```
                                BIOS SETUP UTILITY
                        Power

Hardware Monitor                                      CPU Temperature

CPU Temperature              [51°C/122.5°F]
MB Temperature               [41°C/105.5°F]

CPU Fan Speed                [3813 RPM]
CPU Q-Fan Control            [Disabled]
Chassis Fan Speed            [N/A]

VCORE Voltage                [ 1.320V]
3.3V Voltage                 [ 3.345V]
5V Voltage                   [ 5.094V]           ←→    Select Screen
12V Voltage                  [11.880V]           ↑↓    Select Item
                                                 +-     Change Field
Chassis Intrude              [Disabled]          F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit


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```

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

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

CPU Fan Speed [xxxxRPM] or [Ignored]

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

CPU Q-Fan Control [Disabled]

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

> The **CPU Fan Ratio** and **CPU Target Temperature** items appear when you enable the **CPU Q-Fan Control** feature.

CPU Fan Ratio [Auto]

Allows you to select the appropriate CPU fan speed ratio for the system. The default [Auto] automatically selects the fan speed ratio when operating at low CPU temperature. Select a higher ratio if you installed additional devices and the system requires more ventilation. Configuration options: [Disabled] [90%] [80%] [70%] [60%]

CPU Target Temperature [XXXºC]

Allows you to set the CPU temperature threshold when the CPU fan speed is increased to lower CPU temperature. The configuration options for this item depend on the recommended temperature settings. Target temperature options are at 3ºC intervals.

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

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

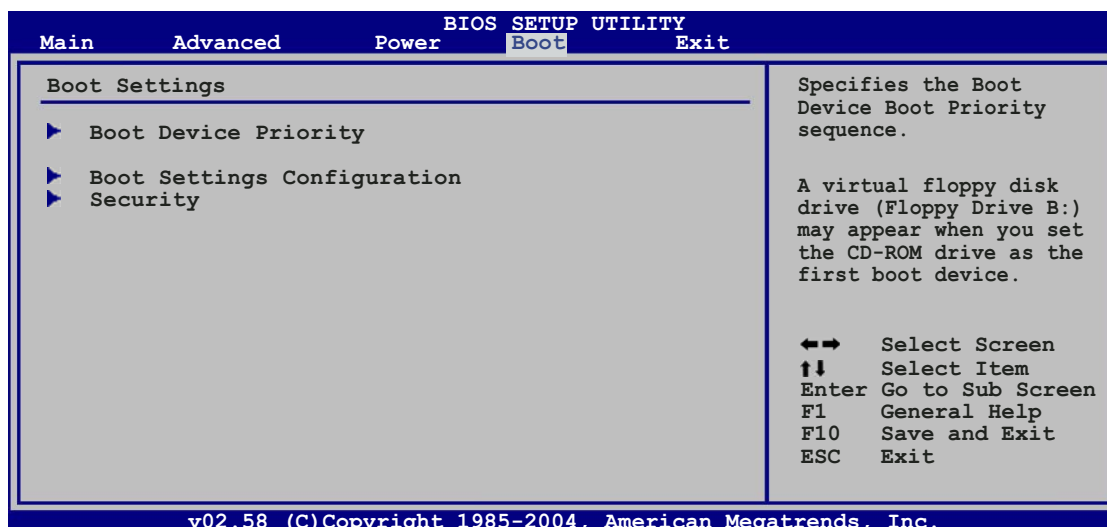### VCORE Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.
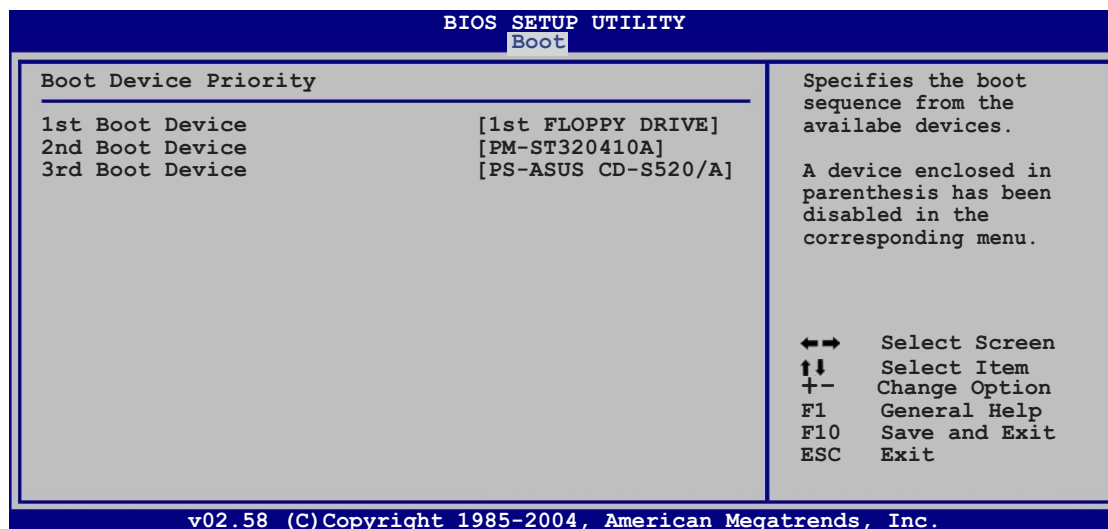
Chassis Intrude [Disabled]

Allows you to enable or disable the chassis intrusion function.
Configuration options: [Disabled] [Enabled]

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 Boot Priority │
│ ▶  Boot Device Priority                    │ sequence.            │
│ ▶  Boot Settings Configuration             │                      │
│ ▶  Security                                │ A virtual floppy disk│
│                                            │ drive (Floppy Drive B:)│
│                                            │ 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
                           Boot
┌────────────────────────────────────────────┬──────────────────────┐
│  Boot Device Priority                      │ Specifies the boot   │
│ ───────────────────────────────────────── │ sequence from the    │
│  1st Boot Device        [1st FLOPPY DRIVE] │ availabe devices.    │
│  2nd Boot Device        [PM-ST320410A]     │                      │
│  3rd Boot Device        [PS-ASUS CD-S520/A]│ A device enclosed in │
│                                            │ parenthesis has been │
│                                            │ disabled in the      │
│                                            │ corresponding menu.  │
│                                            │                      │
│                                            │                      │
│                                            │ ←→    Select Screen  │
│                                            │ ↑↓    Select Item    │
│                                            │ +-    Change Option  │
│                                            │ F1    General Help   │
│                                            │ F10   Save and Exit  │
│                                            │ ESC   Exit           │
└────────────────────────────────────────────┴──────────────────────┘
     v02.58 (C)Copyright 1985-2004, American Megatrends, Inc.
```
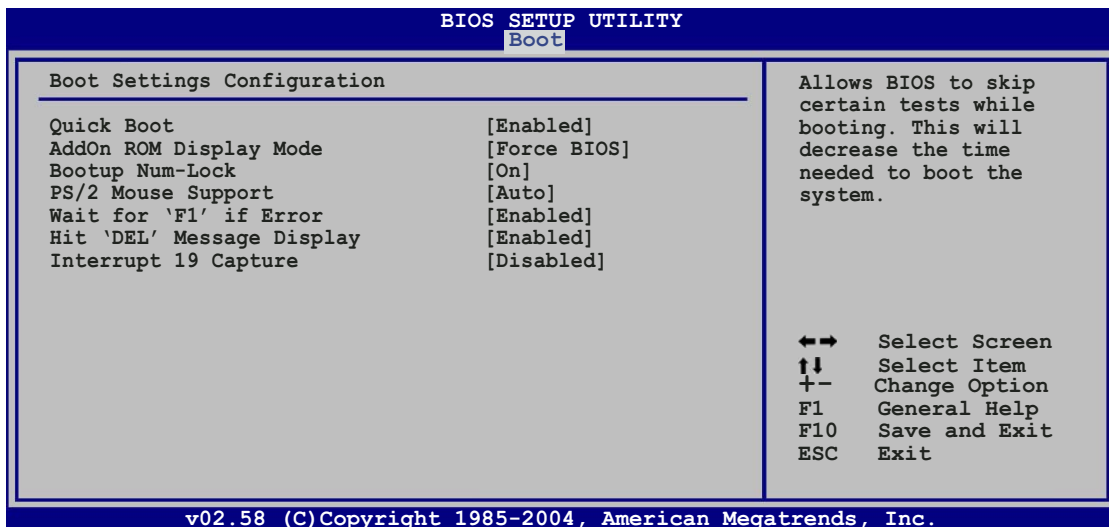
1st ~ xxth Boot Device [1st Floppy Drive]

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
                              Boot

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


                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Option
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit

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```

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]

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]

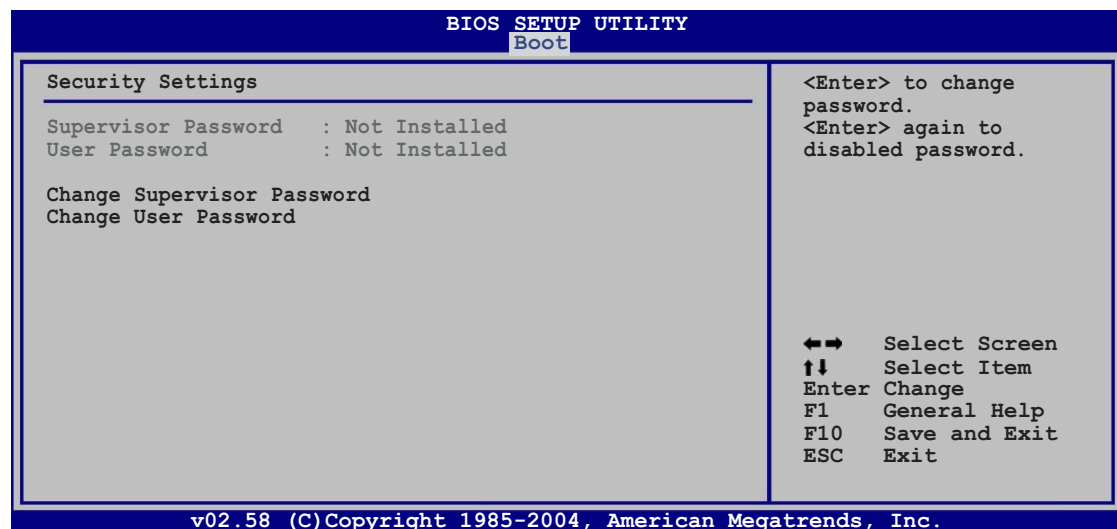## Hit 'DEL' Message Display [Enabled]

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

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

```
                          BIOS SETUP UTILITY
                              Boot

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

    Change Supervisor Password
    Change User Password




                                                   ←→      Select Screen
                                                   ↑↓      Select Item
                                                   Enter   Change
                                                   F1      General Help
                                                   F10     Save and Exit
                                                   ESC     Exit

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```

Change Supervisor Password

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

To set a Supervisor Password:

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

The message "Password Installed" appears after you successfully set your password.
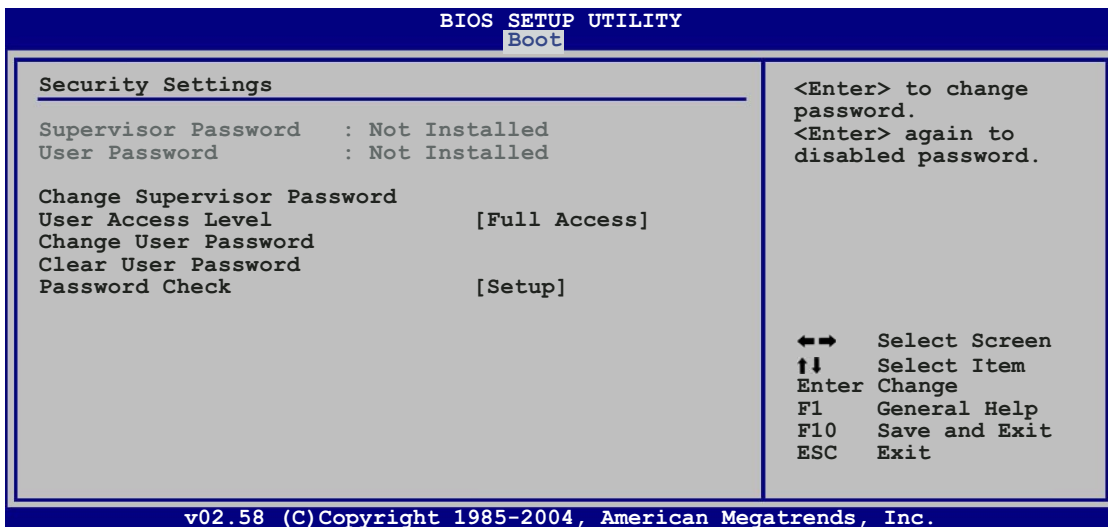
To change the supervisor password, follow the same steps as in setting a user password.

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

> If you forget your BIOS password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "1.9 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.

```
                         BIOS SETUP UTILITY
                            Boot

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

    Change Supervisor Password
    User Access Level            [Full Access]
    Change User Password
    Clear User Password
    Password Check               [Setup]


                                                   ←→    Select Screen
                                                   ↑↓    Select Item
                                                   Enter Change
                                                   F1    General Help
                                                   F10   Save and Exit
                                                   ESC   Exit

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```

User Access Level (Full Access]

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

No Access prevents user access to the Setup utility.

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

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

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

Change User Password

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

To set a User Password:

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

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

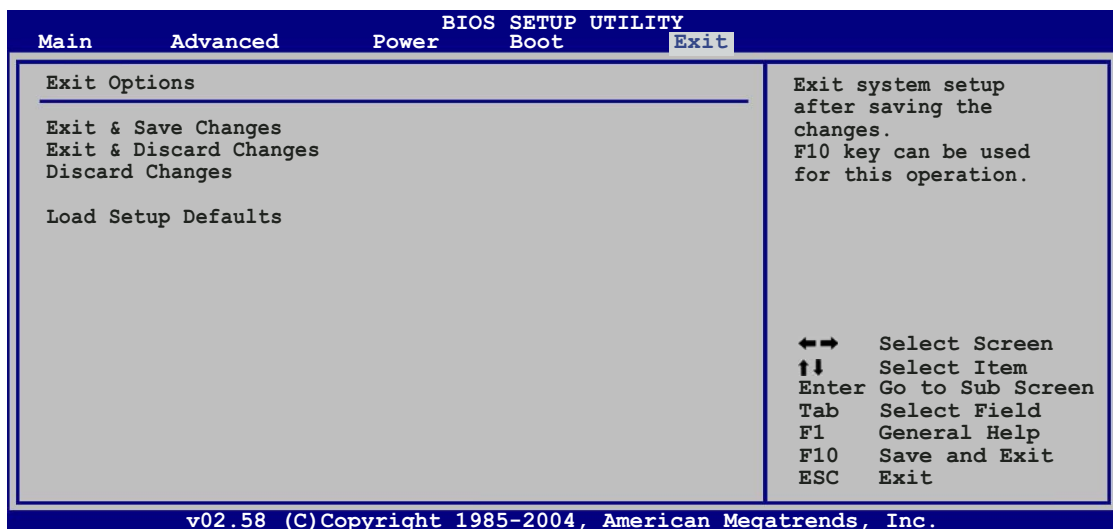To change the user password, follow the same steps as in setting a user password.

Password Check [Setup]

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

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                    F10 key can be used
  Discard Changes                           for this operation.

  Load Setup Defaults




                                         ←→    Select Screen
                                         ↑↓    Select Item
                                         Enter Go to Sub Screen
                                         Tab   Select Field
                                         F1    General Help
                                         F10   Save and Exit
                                         ESC   Exit

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```

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® 2000/2003 Server/XP operating systems (OS). Always install the latest OS version and corresponding updates to maximize the features of your hardware.

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

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.
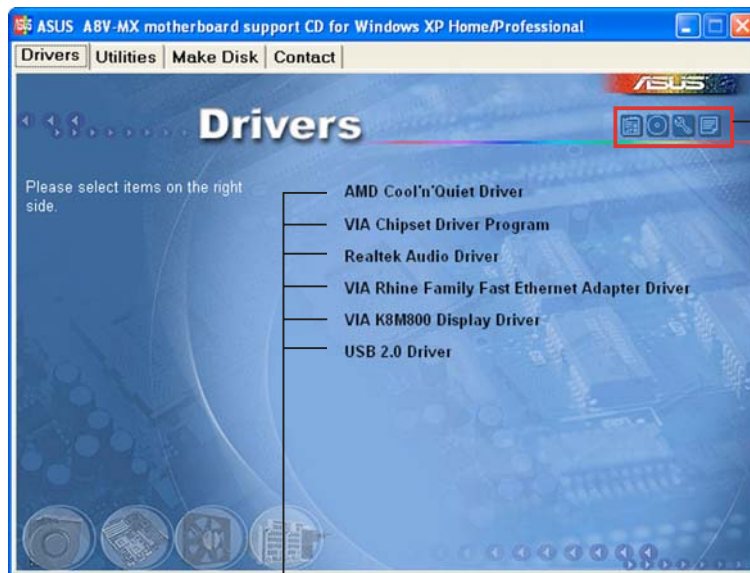
Click an icon to display support CD/motherboard information

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.
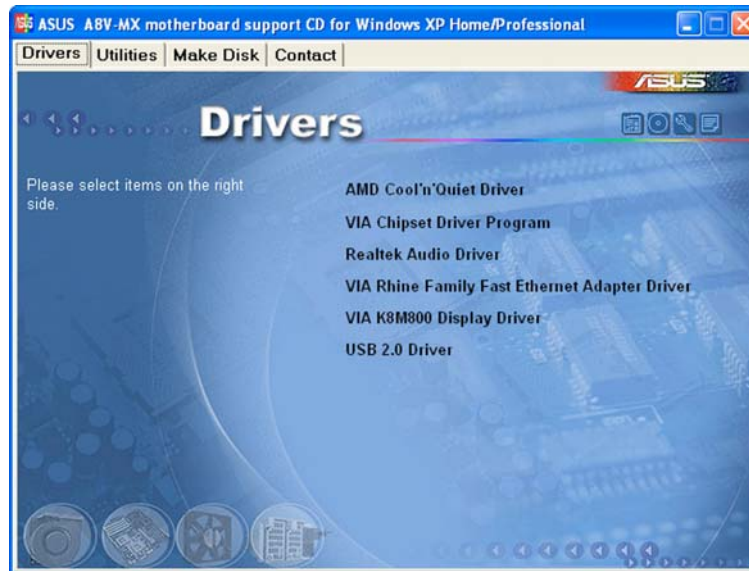
AMD Cool 'n' Quiet Driver

Installs the AMD Cool 'n' Quiet driver.

VIA Chipset Driver Program

Installs the VIA Chipset Driver program.

Realtek Audio Driver

Executes the wizard to install the Realtek® ALC653 audio driver and application.

VIA Rhine Family Fast Ethernet Adapter Driver

Installs the VIA Rhine Family Fast Ethernet Adapter driver.

VIA K8M800 Display Driver

Installs the VIA K8M800 display driver.

USB 2.0 Driver

Installs the USB 2.0 driver.

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

3.2.3 Utilities menu

The Utilities menu shows the applications and other software that the motherboard supports.
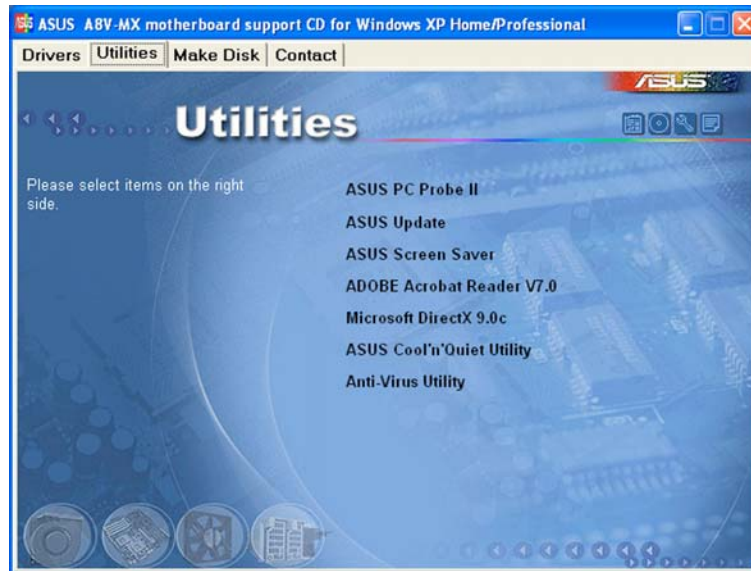
ASUS PC Probe II

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).

ASUS Screen Saver

Installs the ASUS screen saver.

ADOBE Acrobat Reader V7.0

The Adobe® Acrobat® Reader V7.0 is for opening, viewing, and printing documents in Portable Document Format (PDF).

Microsoft DirectX

The Microsoft® DirectX® 9.0c is a multimedia technology that enhances computer graphics and sounds. DirectX® improves the multimedia features of your computer so you can enjoy watching TV and movies, capturing videos, or playing games on your computer.

Microsoft Windows XP Service Pack 2 already includes Microsoft Direct X 9.0c. If your system is Microsoft Windows XP Service Pack 2-embedded, skip Microsoft Direct X 9.0c installation.

ASUS Cool 'n' Quiet Utility

This item installs the ASUS Cool 'n' Quiet utility.

Anti-virus utility

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

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

3.2.4   Make Disk menu

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

Make VIA RAID Driver Disk

Allows you to create a VIA RAID driver disk.

3.2.5 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.
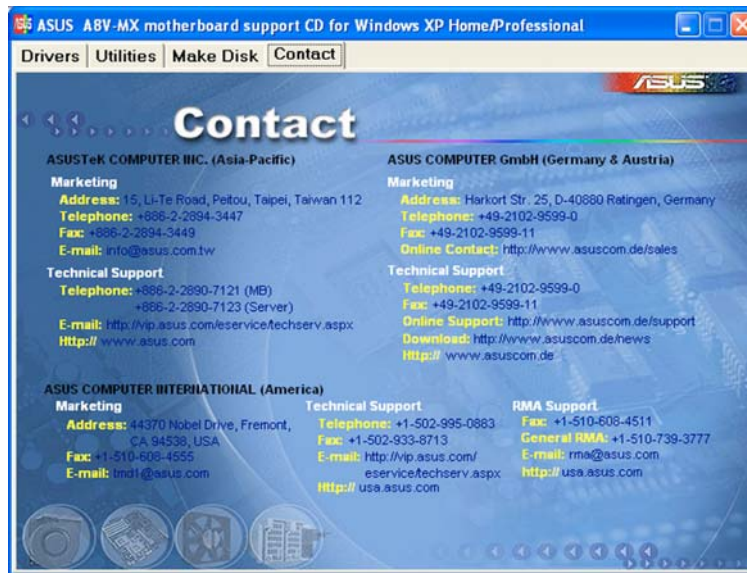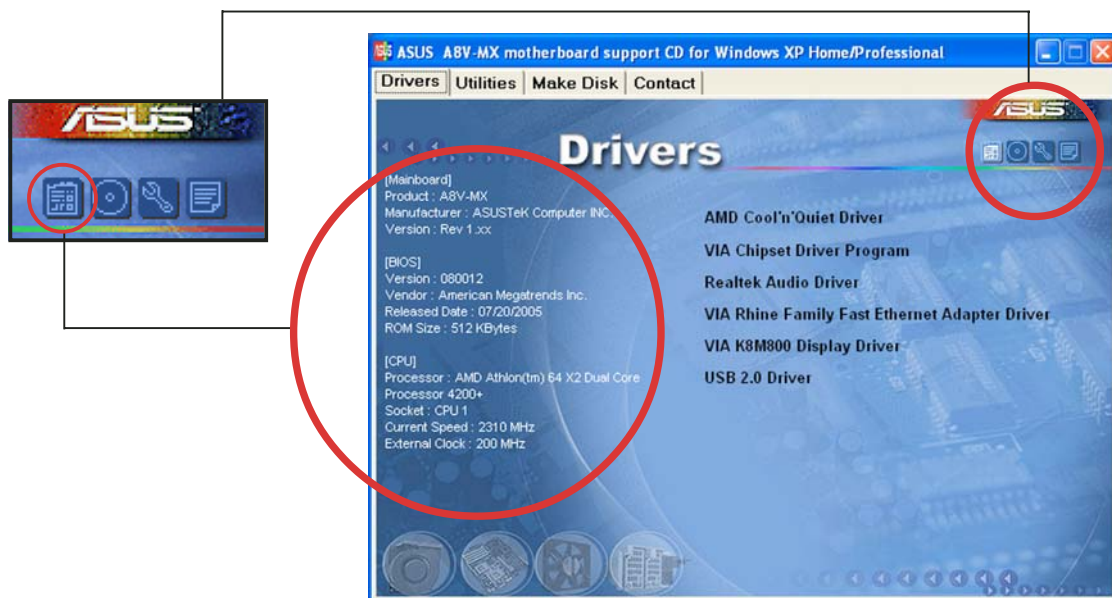

3.2.6 Other information

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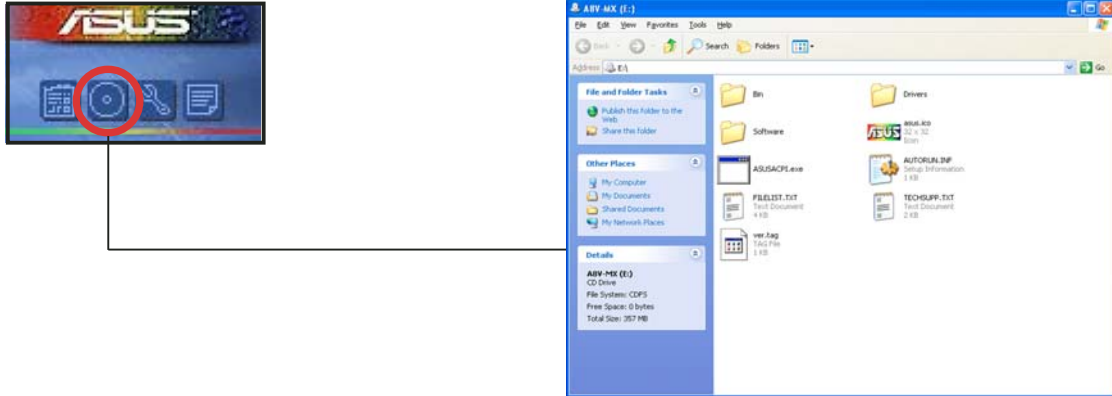
Motherboard Info

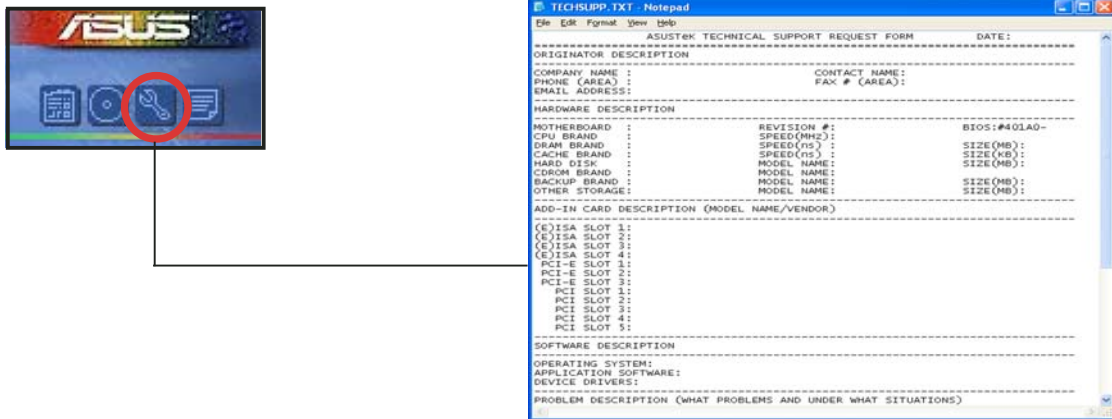Displays the general specifications of the motherboard.

Browse this CD

Displays the support CD contents in graphical format.

Technical support Form

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

Filelist

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