

A8V

User Guide



Motherboard

E1994

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Notices

Federal Communications Commission Statement

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

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

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

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



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

Canadian Department of Communications Statement

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

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

Safety information

Electrical safety

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

Operation safety

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

About this guide

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

How this guide is organized

This manual contains the following parts:

- **Chapter 1: Product introduction**
This chapter describes the motherboard features and the new technologies it supports.
- **Chapter 2: Hardware information**
This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the jumpers and connectors on the motherboard.
- **Chapter 3: Powering up**
This chapter describes the power up sequence and ways of shutting down the system.
- **Chapter 4: BIOS setup**
This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.
- **Chapter 5: Software support**
This chapter describes the contents of the support CD that comes with the motherboard package.

Where to find more information

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

1. ASUS websites

The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. Optional documentation

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

Conventions used in this guide

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



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



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



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



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

Typography

Bold text	Indicates a menu or an item to select.
<i>Italics</i>	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign indicates that you must press the enclosed key. Example: <Enter> indicates that you must press the Enter or Return key.
<Multiple key names>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: <Ctrl+Alt+D>
Command	Means that you must enter the command exactly as shown then supply the appropriate values that appear in brackets. Example: At the DOS prompt, type the command line: afudos /i[filename] In this example, you must supply a filename for [filename]. afudos /iA8VB.ROM

A8V specifications summary

CPU	Socket 939 for AMD Athlon™ 64FX / Athlon™ 64 processor Supports AMD 64 architecture that enables simultaneous 32-bit and 64-bit computing Supports AMD Cool 'n' Quiet!™ Technology
Chipset	VIA K8T800Pro VIA VT8237
System Bus	2000 MT/s
Memory	Dual-channel memory architecture 4 x 184-pin DDR DIMM sockets support ECC/non-ECC unbuffered 400/333/266 MHz DDR memory modules
Expansion slots	1 x AGP 8X/4X 5 x PCI
Storage	2 x UltraDMA 133 connectors 2 x Serial ATA with RAID 0, RAID 1, and JBOD
AI Audio	Realtek® ALC850 8-channel CODEC Audio Sensing and Enumeration Technology S/PDIF out interface support
AI Net	Marvell® 88E8001 Gigabit Ethernet controller Virtual Cable Tester (VCT) Technology support
USB	Maximum of eight USB 2.0 ports
AI Overclocking Features	CPU, Memory, and AGP voltage adjustable SFS (Stepless Frequency Selection) from 200 MHz up to 300 MHz at 1 MHz increment ASUS JumperFree ASUS C.P.R. (CPU Parameter Recall)
Special features	ASUS EZ Flash ASUS CrashFree BIOS 2 ASUS MyLogo2™ ASUS Q-Fan Technology
Back panel I/O	1 x Parallel port 1 x Serial port 1 x PS/2 keyboard port 1 x PS/2 mouse port 4 x USB 2.0 ports 1 x Coaxial S/PDIF output port 1 x RJ-45 port 1 x 8-channel audio ports

(continued on the next page)

A8V specifications summary

Internal I/O	2 x USB 2.0 connectors for 4 additional USB ports CPU/Chassis/Power fan connectors 20-pin/4-pin ATX 12V power connectors CD/AUX connectors GAME/MIDI connector Front panel audio connector System panel connector
BIOS features	4Mb Flash EEPROM AMI BIOS with enhanced ACPI, PnP, DMI2.0, Green
Industry standard	PCI 2.2, USB 2.0/1.1
Manageability	DMI 2.0, WOL by PME, WOR by PME
Power Requirement	ATX power supply (with 4-pin 12V plug)
Form Factor	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.4 cm)
Support CD contents	Device drivers ASUS PC Probe Anti-virus software (OEM version)

* Specifications are subject to change without notice.

Chapter 1

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

Product introduction

Chapter summary

1.1	Welcome!	1-1
1.2	Package contents	1-1
1.3	Special features	1-2

1.1 Welcome!

Thank you for buying the ASUS® A8V 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.

- ✓ ASUS A8V motherboard
- ✓ ASUS motherboard support CD
- ✓ 2 x Serial ATA cables
- ✓ 2 x Serial ATA power cables
- ✓ 1 x 80-conductor ribbon cable for Ultra DMA 133/100/66 IDE drives
- ✓ 1 x 40-conductor IDE cable
- ✓ 1 x Ribbon cable for a 3.5-inch floppy drive
- ✓ I/O shield
- ✓ Bag of extra jumper caps
- ✓ 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 AMD Athlon™ 64FX and Athlon™ 64 desktop processors are based on AMD's 64-bit and 32-bit architecture, which represents the landmark introduction of the industry's first x86-64 technology. These processors provide a dramatic leap forward in compatibility, performance, investment protection, and reduced total cost of ownership and development.

See page 2-6.

HyperTransport™ Technology



HyperTransport™ Technology is a high-speed, low latency, point-to-point link designed to increase the communication speed between integrated circuits in computers, networking and telecommunications equipment up to 48 times faster than other existing technologies.

AMD Cool 'n' Quiet!™ Technology



The motherboard supports the AMD Cool 'n' Quiet!™ Technology that dynamically and automatically changes the CPU speed, voltage and amount of power depending on the task the CPU performs. See pages 4-20 and 5-21.

Dual Channel DDR memory support



Employing the Double Data Rate (DDR) memory technology, the motherboard supports up to 4GB of system memory using DDR400/333/266 DIMMs. The ultra-fast 400MHz memory bus delivers the required bandwidth for the latest 3D graphics, multimedia, and Internet applications.

See page 2-11.

Serial ATA solution



The motherboard supports four interfaces compliant to the Serial ATA (SATA) specification, an evolutionary replacement of the Parallel ATA storage interface. The Serial ATA specification allows for thinner, more flexible cables with lower pin count, reduced voltage requirement, up to 150 MB/s data transfer rate. See page 2-23.

Serial ATA RAID support

The motherboard provides a high-performance Serial ATA RAID controller that enhance hard disk performance and data backup protection without the cost of additional RAID cards. The onboard VIA VT8237 RAID controller provides RAID 0, RAID 1, and JBOD configuration to two Serial ATA connectors. See pages 2-23 and 5-11.

AGP 8X support

AGP 8X (AGP 3.0) is the VGA interface specification that enables enhanced graphics performance with maximum bandwidth speed of up to 2.12 GB/s. See page 2-17.

S/PDIF out

The motherboard's S/PDIF out function turns your computer into a high-end entertainment system with digital connectivity to powerful speaker systems. See page 2-21.

USB 2.0 technology

The motherboard implements the new Universal Serial Bus (USB) 2.0 specification, extending the connection speed from 12 Mbps on USB 1.1 to a fast 480 Mbps on USB 2.0 - supporting up to eight USB 2.0 ports. The higher bandwidth of USB 2.0 allows connection of devices such as high resolution video conferencing cameras, next generation scanners and printers, and fast storage units. USB 2.0 is backward compatible with USB 1.1. See pages 2-21.

1.3.2 Unique ASUS features

AI NET solution

The Marvell® Gigabit LAN controller chipset is onboard to provide a single-chip solution for LAN on Motherboard (LOM) applications. The controller integrates a 32-bit IEEE 802.3 compliant Gigabit Ethernet Media Access Controller (GMAC) and Physical Layer Transceiver solution to support high performance network applications. The controller is equipped with the Virtual Cable Tester™ (VCT) net-diagnosing utility that intelligently diagnoses and reports cable faults from a remote location up to 100 meters. This feature helps maintain a more stable network connection. See pages 2-20 and 5-9.

AI Audio technology

The motherboard supports 8-channel audio through the onboard ALC850 CODEC with 16-bit DAC, a stereo 16-bit ADC, and an AC97 2.3 compatible multi-channel audio designed for PC multimedia systems. It also provides Jack-Sensing function, S/PDIF out support, interrupt capability and includes the Realtek® proprietary UAJ® (Universal Audio Jack) technology. See page 2-20 and 5-10.

ASUS Q-Fan technology

The ASUS Q-Fan technology smartly adjusts the CPU fan speed according to the system load and temperature to ensure quiet, cool, and efficient operation. See page 4-32.

CrashFree BIOS 2

This feature allows you to restore the original BIOS data from the ASUS support CD in case when the BIOS codes and data are corrupted. This protection eliminates the need to buy a replacement ROM chip. See page 4-5.

AI Overclocking

This feature allows convenient overclocking up to 30% (depending on the installed CPU and DRAM) to enhance system performance while maintaining system stability. See page 4-27.

ASUS MyLogo2™



This new feature present in the motherboard allows you to personalize and add style to your system with customizable boot logos. See pages 4-35, 5-7.

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 reboot the system to restore the previously saved settings.

ASUS EZ Flash BIOS



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

Chapter 2

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

Hardware information

Chapter summary

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2.4	System memory	2-11
2.5	Expansion slots	2-15
2.6	Jumpers	2-18
2.7	Connectors	2-20

2.1 Before you proceed

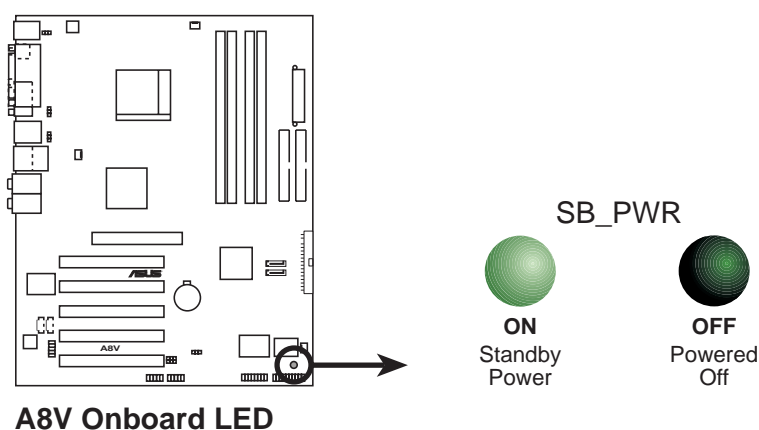
Note of the following precautions before you install motherboard components or change any motherboard settings.



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

Onboard LED

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



2.2 Motherboard overview

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



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

2.2.1 Placement direction

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

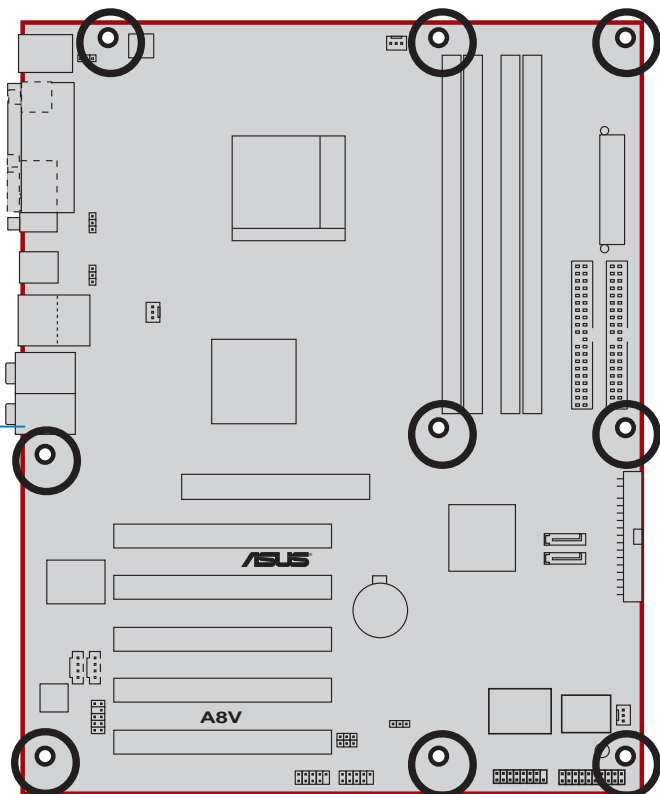
2.2.2 Screw holes

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

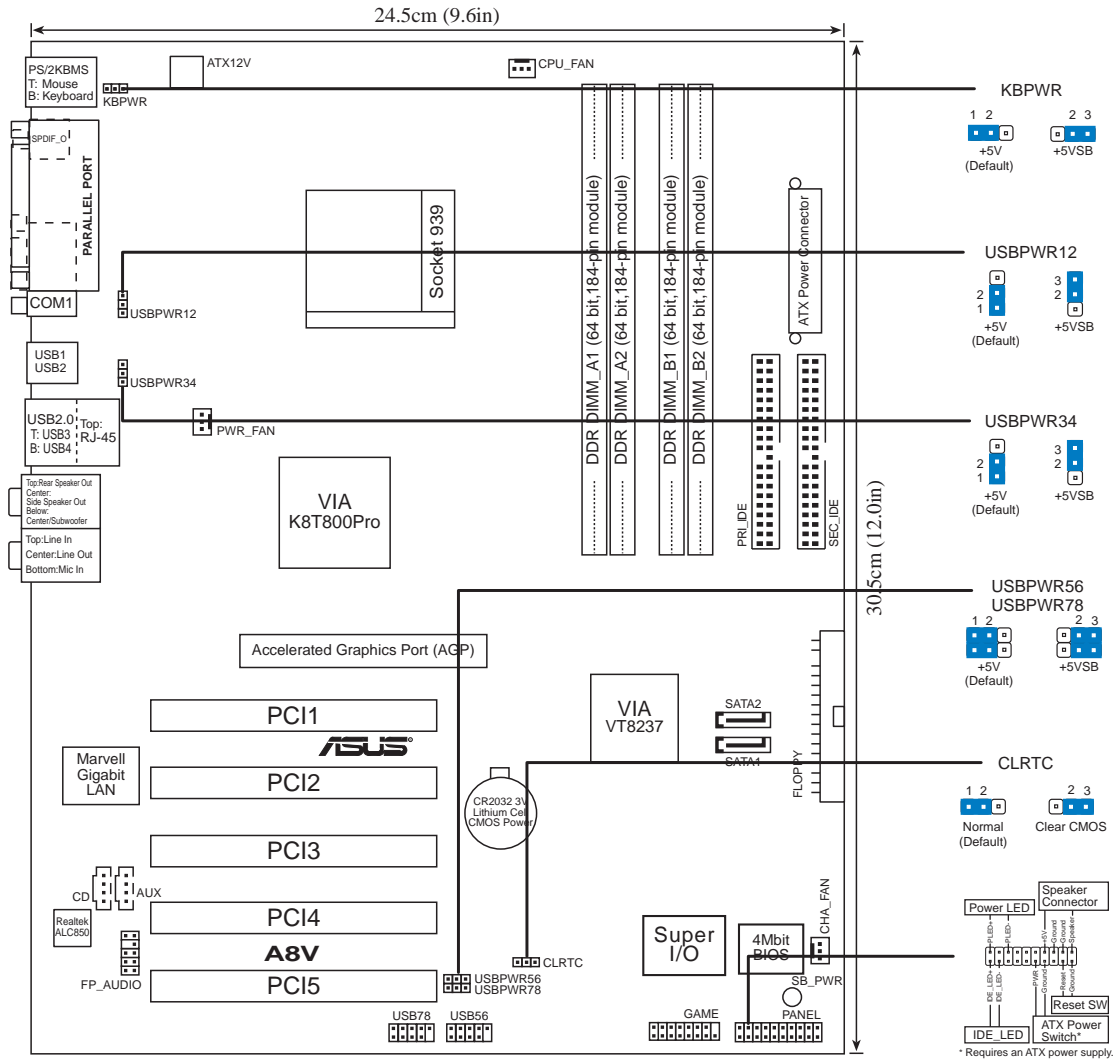


Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis



2.2.3 Motherboard layout



2.2.4 Layout Contents

Slots	Page
1. DDR DIMM slots	2-11
2. PCI slots	2-17
3. AGP slot	2-17

Jumpers	Page
1. Clear RTC RAM (3-pin CLRTC)	2-18
2. Keyboard power (3-pin KBPWR)	2-19
3. USB device wake-up (3-pin USBPWR12, USBPWR34, USBPWR56, USBPWR78)	2-19

Rear Panel Connectors	Page
1. PS/2 mouse port	2-20
2. Parallel port	2-20
4. Gigabit LAN port (RJ-45)	2-20
5. Rear Speaker out jack	2-20
6. Side Speaker out jack	2-20
7. Line In jack	2-20
8. Line Out jack	2-20
9. Microphone jack	2-20
10. Center/Subwoofer jack	2-20
11. USB 2.0 ports 3 and 4	2-21
12. USB 2.0 ports 1 and 2	2-21
13. Serial connector	2-21
15. S/PDIF coaxial cable jack	2-21
16. PS/2 keyboard port	2-21

Internal Connectors	Page
1. Primary IDE connector (40-1 pin PRI_IDE)	2-22
2. Secondary IDE connector (40-1 pin SEC_IDE)	2-22
3. Floppy disk connector (34-1 pin FLOPPY)	2-22
4. Serial ATA connectors (7-pin SATA1, SATA2)	2-23
5. CPU fan connector (3-pin CPU_FAN)	2-24
6. Power fan connector (3-pin PWR_FAN)	2-24
7. Chassis fan connector (3-pin CHA_FAN)	2-24
8. CD connector (4-pin CD)	2-24
9. AUX connector (4-pin AUX)	2-24
8. ATX power connector (20-pin ATXPWR)	2-25
9. ATA 12V power connector (4-pin ATX12V)	2-25
10. USB headers (10-1 pin USB56, USB78)	2-26
13. Front panel audio connector (10-1 pin FP_AUDIO)	2-27
14. GAME/MIDI connector (16-1 pin GAME)	2-27
15. System panel connector (20-pin PANEL)	2-28
- System power LED (Green 3-pin PLED)	
- System warning speaker (Orange 4-pin SPEAKER)	
- Reset switch (Blue 2-pin RESET)	
- ATX Power switch (Yellow 2-pin PWRSW)	
- Hard Disk activity LED (Red 2-pin IDE_LED)	

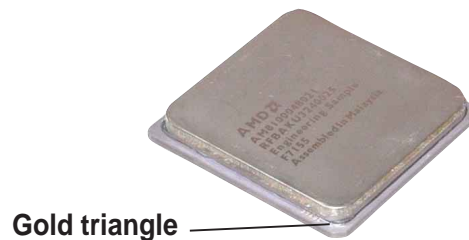
2.3 Central Processing Unit (CPU)

2.3.1 Overview

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

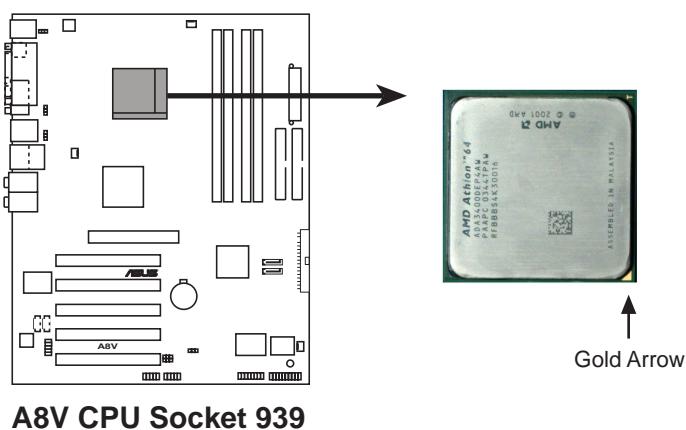
Take note of the marked corner (with gold triangle) on the CPU. This mark should match a specific corner on the socket to ensure correct installation.



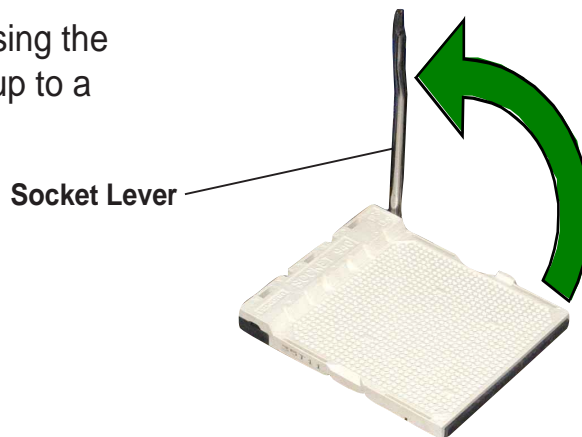
2.3.2 Installing the CPU

Follow these steps to install a CPU.

1. Locate the 939-pin ZIF socket on the motherboard.



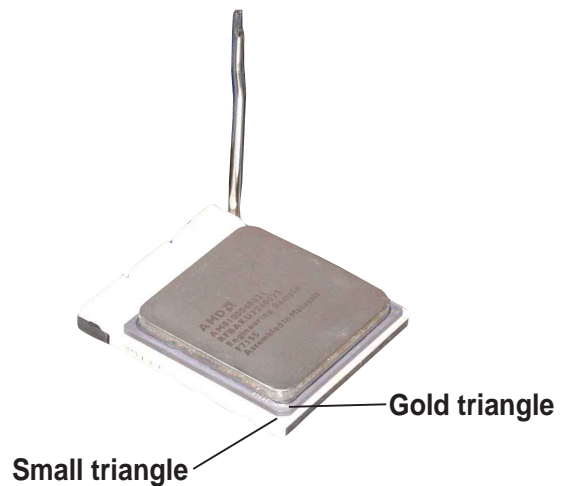
2. Unlock the socket by pressing the lever sideways, then lift it up to a 90°-100° angle.



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

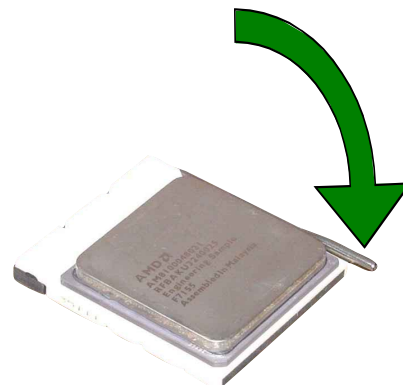
3. Position the CPU above the socket such that the CPU corner with the gold triangle matches the socket corner with a small triangle.

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



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

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



2.3.3 Installing the heatsink and fan

The AMD Athlon™ 64FX or AMD Athlon 64™ processor require a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.



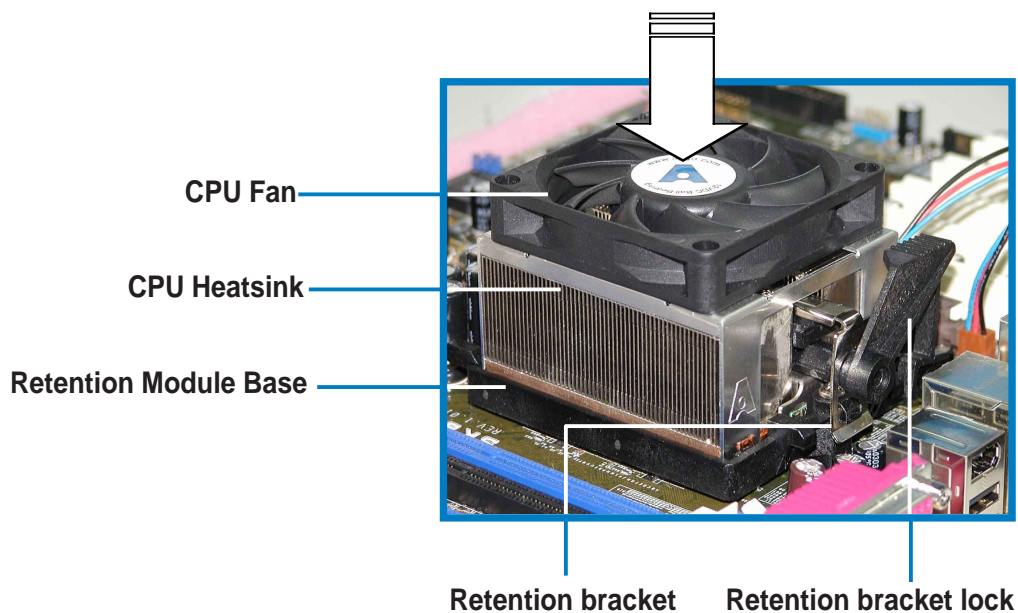
Make sure that you use only qualified heatsink and fan assembly.

Follow these steps to install the CPU heatsink and fan.

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

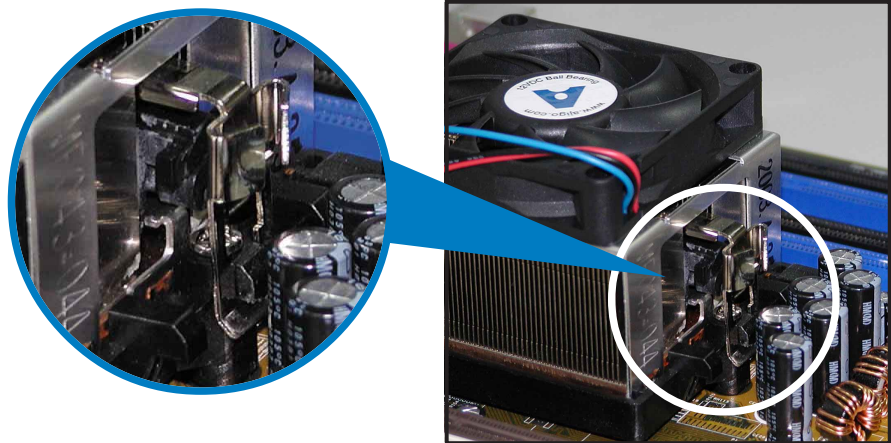


-
- The retention module base is already installed on the motherboard upon purchase.
 - You do not have to remove the retention module base when installing the CPU or installing other motherboard components.
-



Your boxed CPU heatsink and fan assembly should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

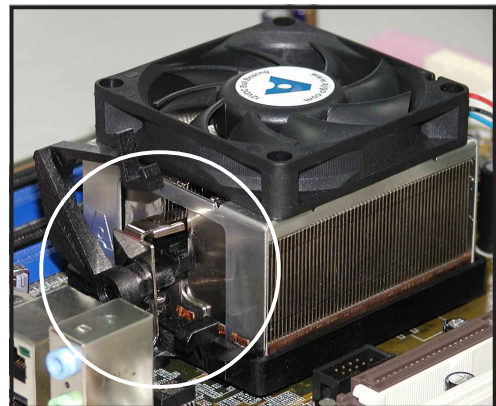
2. Attach one end of the retention bracket to the retention module base.



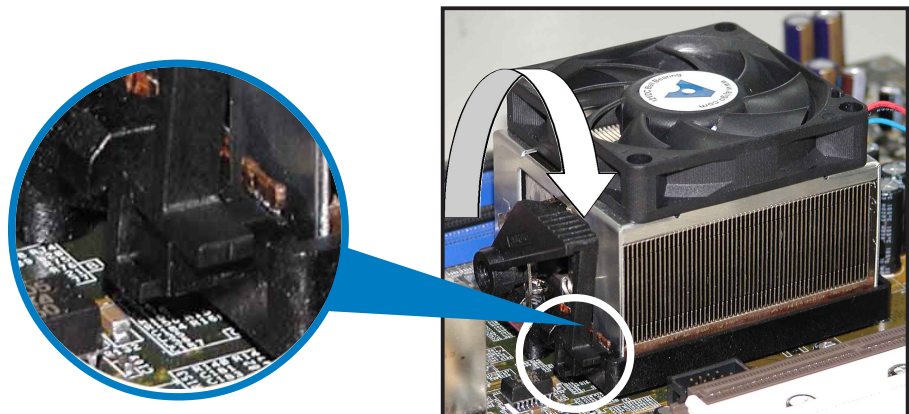
3. Align the other end of the retention bracket (near the retention bracket lock) to the retention module base. A clicking sound denotes that the retention bracket is in place.



Make sure that the fan and heatsink assembly perfectly fits the retention mechanism module base, otherwise you cannot snap the retention bracket in place.

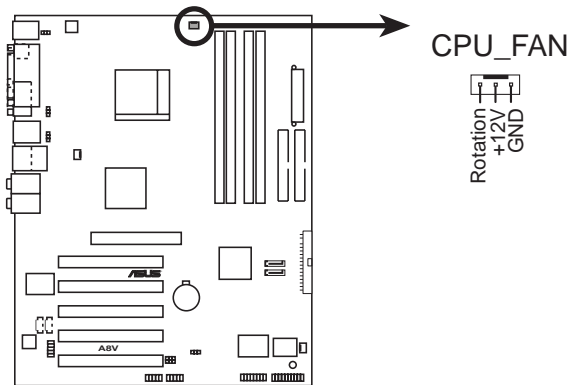


4. Push down the retention bracket lock on the retention mechanism to secure the heatsink and fan to the module base.



2.3.4 Connecting the CPU fan cable

When the heatsink and fan assembly is in place, connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.



A8V CPU fan connector



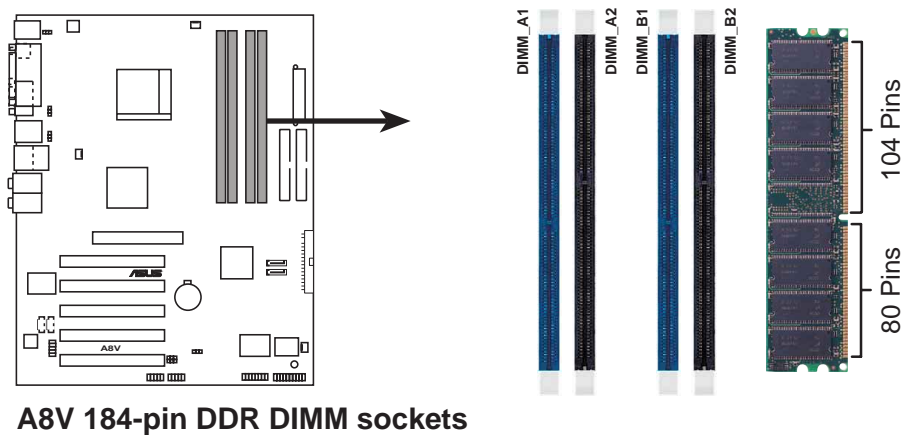
Do not forget to connect the CPU fan connector! CPU overheating and hardware monitoring errors may occur if you _ to plug this connector.

2.4 System memory

2.4.1 Overview

The motherboard comes with four Double Data Rate (DDR) Dual Inline Memory Module (DIMM) sockets.

The following figure illustrates the location of the sockets.



2.4.2 Memory configurations

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

Important notes on memory configurations



- Installing DDR DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations in Table 1.
- In Dual-channel configurations, install only identical (the same type and size) DDR DIMM pairs for each channel.
- Use the blue DIMM slots first.
- Stacked RAM and DDR DIMM modules with more than 18 chips are not supported.
- Always install DIMMs with the same CAS Latency. For optimum compatibility, obtain memory modules from the same vendors. See Qualified Vendors List on page 2-13.
- When all four sockets are populated with 1GB DIMMs (total 4GB), the system may detect only 3+GB (a little less than 4GB) due to the Southbridge resource allocation.

Table 1 Recommended memory configurations

Mode		Sockets			
		DIMM_A1	DIMM_A2	DIMM_B1	DIMM_B2
Single-channel	(1)	—	—	Populated	—
Dual-channel*	(1)	Populated	—	Populated	—
	(2)	Populated	Populated	Populated	Populated

* Use only identical DDR DIMM pairs.

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

- *install identical DIMMs in all four sockets*

or

- *install identical DIMM pair in DIMM_A1 and DIMM_B1 (blue sockets)*

DDR Qualified Vendors List

The following table lists the PC3200 (DDR400) memory modules that have been tested and qualified for use with this motherboard.

Table 2 DDR400 Qualified Vendors List

Size	Vendor	Model	Brand	SS/DS	Component	DIMM support		
						A*	B*	C*
256MB	Kingston	KVR333X64C25/256	Kingston	SS	D3208DH1T-6	•	•	•
256MB	Kingston	KVR333X64C25/256	Hynix	SS	HY5DU56822BT-J	•	•	•
512MB	Kingston	KVR333X64C25/512	Hynix	DS	HY5DU56822BT-J	•	•	•
512MB	Kingston	KVR400X64C3A/512	Hynix	DS	HY5DU56822DT-D43	•	•	•
512MB	Kingston	KVR400X64C3A/512	Kingston	DS	D3208DH1T-5	•	•	•
256MB	Kingston	KVR400X64C3A/256	Hynix	SS	HY5DU56822BT-D43	•	•	•
256MB	Infineon	HYS64D32300GU-5-C	Infineon	SS	HYB25D256800CE-5C	–	–	•
512MB	Infineon	HYS64D64320GU-5-C	Infineon	DS	HYB25D256800CE-5C	•	•	•
256MB	Infineon	HYS64D32300GU-6-C	Infineon	SS	HYB25D256800CE-6C	•	•	–
512MB	Infineon	HYS64D64320GU-6-C	Infineon	DS	HYB25D256800CE-6C	•	•	•
256MB	HY	DDR400-256	Hynix	SS	HY5DU56822BT-D43	–	–	•
512MB	HY	DDR400-512	Hynix	DS	HY5DU56822BT-D43	•	•	•
256MB	HY	DDR333-256	Hynix	SS	HY5DU56822BT-J	•	•	•
512MB	HY	DDR333-512	Hynix	DS	HY5DU56822BT-J	•	•	•
256MB	Corsair	XMS3202v3.1	Infineon	SS	HYB25D256807BT-5B	•	•	–
512MB	Corsair	XMS3205v1.2	Winbond	DS	W942508CH-5	•	•	•
512MB	Corsair	VS512MB400	Value select	DS	VS32M8-5 2B0402	•	•	•
256MB	Corsair	VS256MB333	Samsung	SS	K4H5608380-TCB3	•	•	•
512MB	Corsair	XMS2702v3.1	Mosel	DS	V58C2256804SAT6	•	•	•
512MB	Corsair	XMS2702v1.2	Winbond	DS	W942508CH-6	•	•	•
512MB	Corsair	VS512MB333	Value select	DS	VS32M8-6 2B0412	•	•	–
512MB	Micron	MT16VDDT6464AG-335GB	Micron	DS	MT46V32M8TG-6TG	•	•	–
256MB	Micron	MT8VDDT3264AG-335GB	Micron	SS	MT46V32M8TG-6TG	•	•	•
512MB	Micron	MT16VDDT6464AG-40BGB	Micron	DS	MT46V32M8TG-5BG	•	•	•
256MB	Samsung	M368L3223FTN-CCC	Samsung	SS	K4H560838F-TCCC	•	–	•
512MB	Samsung	M368L6423FTN-CCC	Samsung	DS	K4H560838F-TCCC	•	•	•
256MB	Samsung	M368L3223FTN-CB3	Samsung	SS	K4H560838F-TCB3	•	•	•
512MB	Samsung	M368L6423FTN-CB3	Samsung	DS	K4H5608838F-TCB3	•	•	•

A* - Supports one module inserted in DIMM_B1 (blue) slot.

B* - Supports one pair of modules inserted into the blue slots as one pair of Dual-channel memory configuration.

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



Visit the ASUS website (www.asus.com) for the latest DDR 400 Qualified Vendor List for this motherboard.



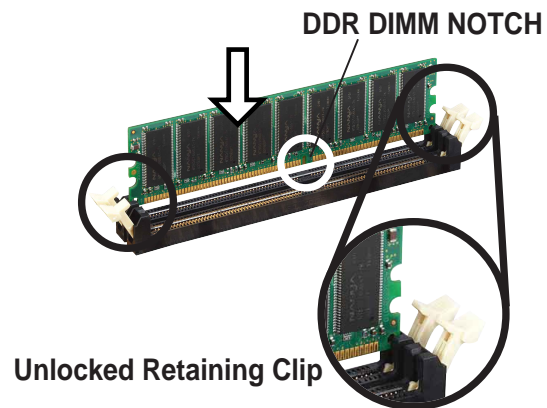
Obtain DDR DIMMs only from ASUS qualified vendors for better system performance.

2.4.3 Installing a DIMM



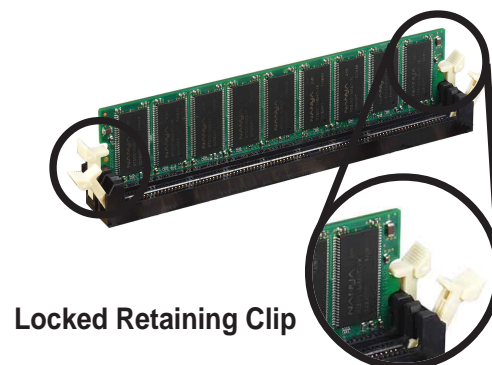
Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

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



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

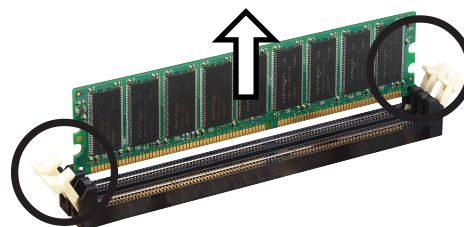
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



2.4.4 Removing a DIMM

Follow these steps to remove a DIMM.

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



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

2. Remove the DIMM from the socket.

2.5 Expansion slots

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



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

2.5.1 Installing an expansion card

Follow these steps to install an expansion card.

1. Read the documentation that came with the expansion card 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 screws.
6. Replace the system cover.

2.5.2 Configuring an expansion card

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

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

2.5.3 Interrupt assignments

Standard Interrupt Assignments

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

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

IRQ assignments for this motherboard

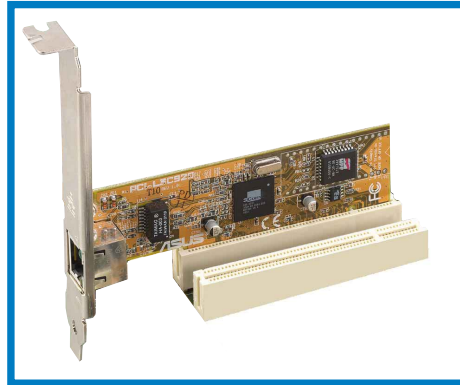
	INT A	INT B	INT C	INT D
PCI slot 1	shared	—	—	—
PCI slot 2	—	shared	—	—
PCI slot 3	—	—	shared	—
PCI slot 4	—	—	—	used
PCI slot 5	shared	—	—	—
Gigabit LAN	—	shared	—	—
Serial ATA	—	—	shared	—
AGP slot	shared	—	—	—



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

2.5.4 PCI slots

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

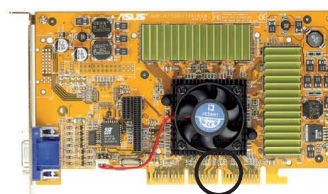
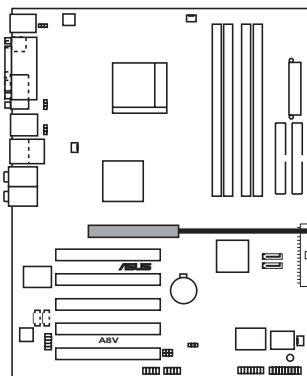


2.5.5 AGP slot

The Accelerated Graphics Port (AGP) slot supports AGP8X/4X cards. When you buy an AGP card, make sure that you ask for one with +1.5V specification. Note the notches on the card golden fingers to ensure that they fit the AGP slot on your motherboard.



Install only 1.5V AGP cards on this motherboard! 3.3V AGP cards are not supported in this motherboard.



Keyed for 1.5v

A8V Accelerated Graphics Port (AGP)



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

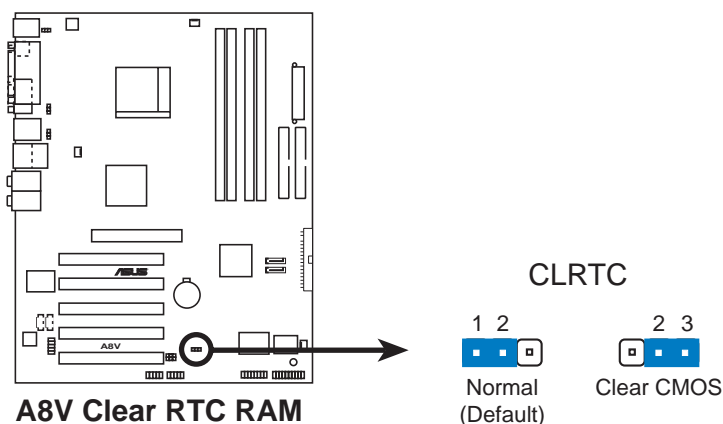
2.6 Jumpers

1. Clear RTC RAM (CLRRTC)

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

To erase the RTC RAM:

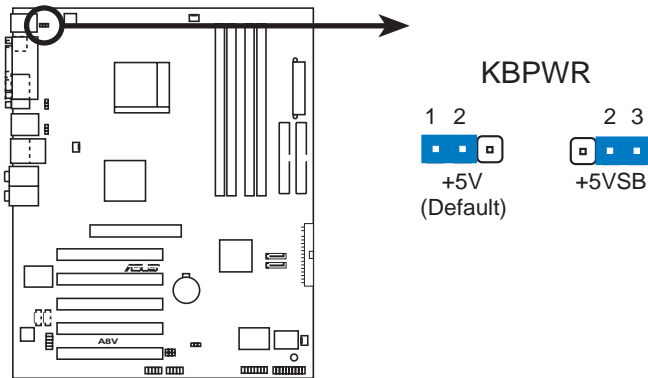
1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Replace the battery.
5. Plug the power cord and turn ON the computer.
6. Hold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



You do not need to clear the RTC when the system hands 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 the parameter settings to the default values.

2. Keyboard power (3-pin KBPWR)

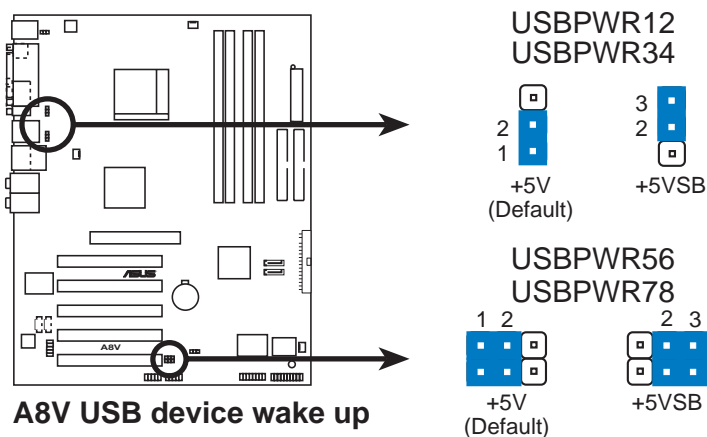
This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) if you wish to wake up the computer when you press a key on the keyboard. This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS .



A8V Keyboard power setting

3. USB device wake-up (3-pin USBPWR12, USBPWR34, USBPWR56, USBPWR78)

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



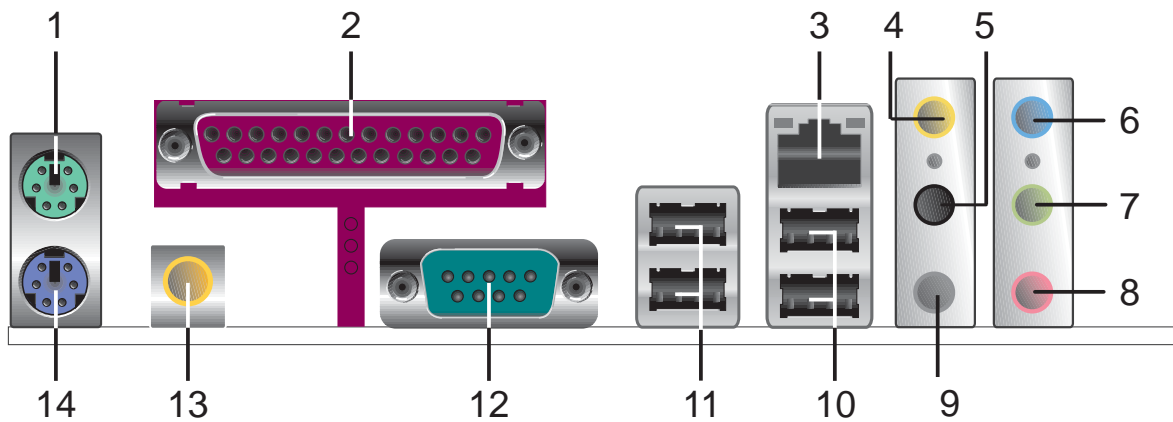
A8V USB device wake up



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

2.7 Connectors

2.7.1 Rear panel connectors



1. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **RJ-45 port.** This port allows connection to a Local Area Network (LAN) through a network hub.
4. **Rear Speaker-Out port.** This Rear Speaker (gray) port connects to the rear speakers on a 4-channel, 6-channel or 8-channel audio configuration.
5. **Side Speaker-Out port.** This Side Speaker out (black) port connects to the side speakers in an 8-channel audio configuration.
6. **Line-In port.** This Line In (light blue) port connects a tape player or other audio sources.
7. **Line-Out port.** This Line Out (lime) port connects a headphone or a speaker. In 4-channel, 6-channel and 8-channel mode, the function of this jack becomes Front Speaker Out.
8. **Microphone port.** This Mic (pink) port connects a microphone.
9. **Center/Subwoofer port.** This Center/Subwoofer (yellow orange) port connects to the center/subwoofer speakers on a 6-channel or 8-channel audio configuration.

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

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

10. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
11. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
12. **Serial connector.** This 9-pin COM1 port is for serial devices.
13. **S/PDIF coaxial out port.** This port connects to external audio output devices with coaxial cable connectors.
14. **PS/2 keyboard port.** This purple connector is for a PS/2 keyboard.

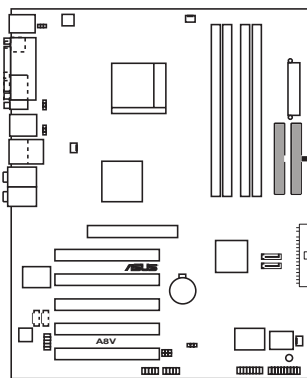
2.7.2 Internal connectors

1. IDE connectors (40-1 pin PRI_IDE, SEC_IDE)

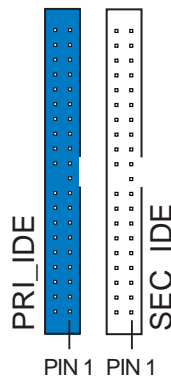
This connector supports the provided UltraDMA IDE hard disk ribbon cable. Connect the cable's blue connector to the primary (recommended) or secondary IDE connector, then connect the gray connector to the UltraDMA slave device (hard disk drive) and the black connector to the UltraDMA master device.



- Follow the hard disk drive documentation when setting the device in master or slave mode.
- Pin 20 on each IDE connector is removed to match the covered hole on the UltraDMA cable connector. This prevents incorrect orientation when you connect the cables.



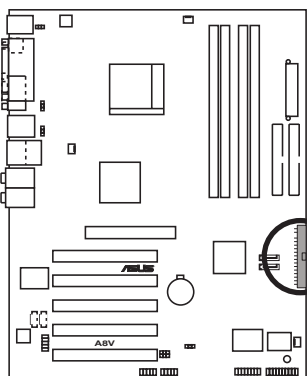
A8V IDE connectors



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

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

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



A8V Floppy disk drive connector



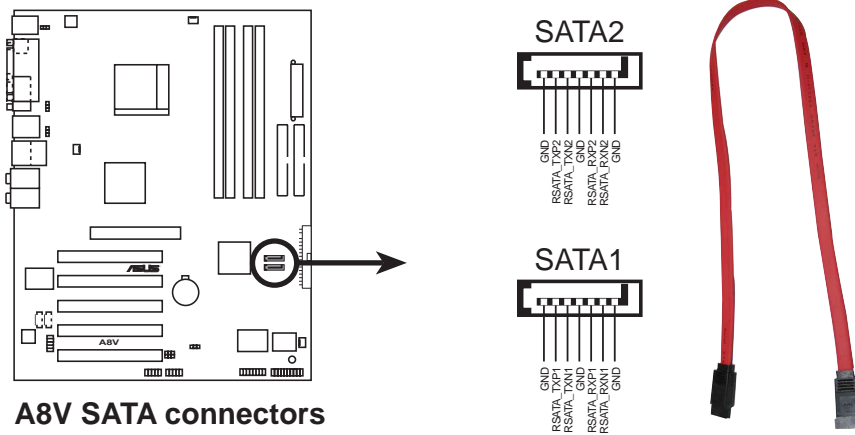
FLOPPY

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

3. Serial ATA connectors (7-pin SATA1, SATA2)

These connectors support the thin Serial ATA cables for primary internal storage devices. The current Serial ATA interface allows up to 150 MB/s data transfer rate, faster than the standard parallel ATA with 133 MB/s (UltraDMA133).

You can configure a RAID 0, RAID 1, or JBOD set using these connectors.



Important notes on Serial ATA solution:

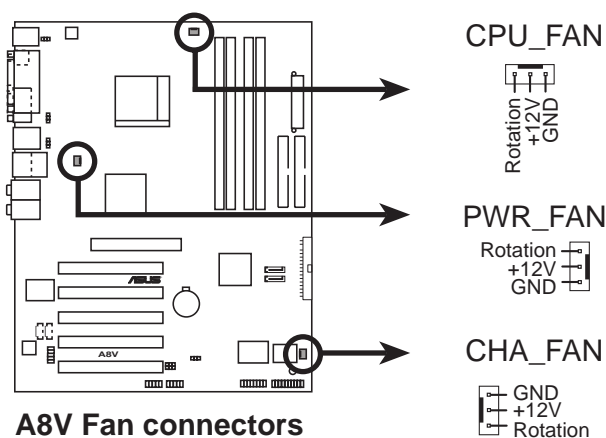
- The Serial ATA cable is smaller and more flexible, allowing easier routing inside the chassis. The lower pin count of the Serial ATA cable eliminates the problem caused by the wide, flat ribbon cables of the Parallel ATA interface.
 - Hot plug support for Serial ATA drive and connections is not available on this motherboard.
 - Install Windows® XP Service Pack 1 or later versions when using Serial ATA drives.
-

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

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

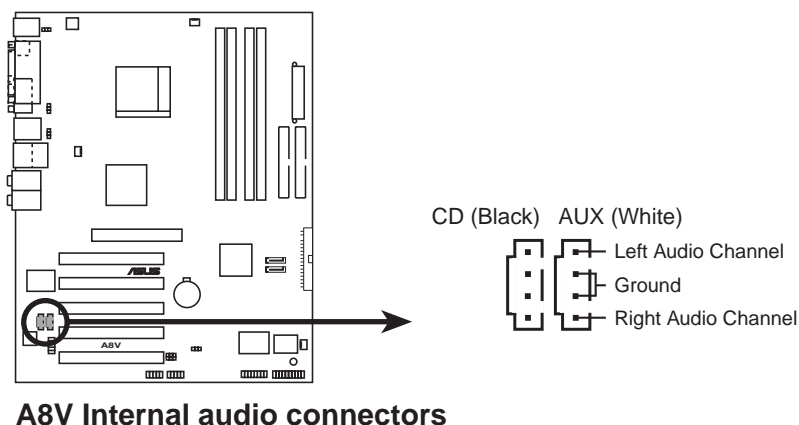


Do not forget to connect the fan cables to the fan connectors. Lack of sufficient air flow within the system may damage the motherboard components. These are not jumpers! **DO NOT** place jumper caps on the fan connectors!



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

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



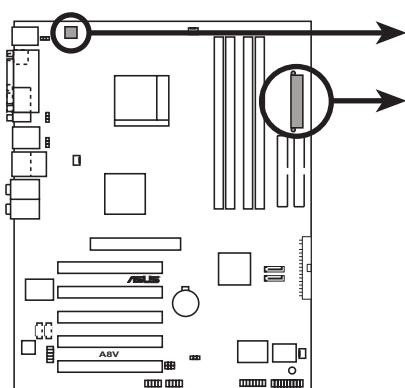
6. ATX power connectors (20-pin ATXPWR, 4-pin ATX12V)

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

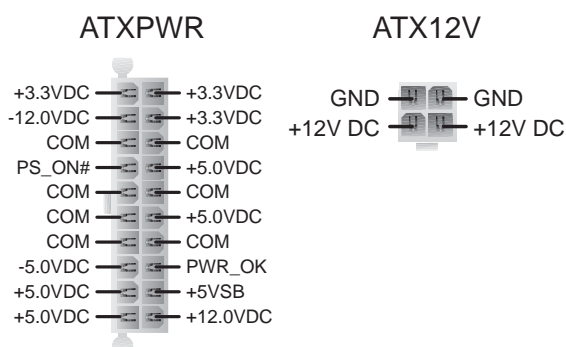
In addition to the 20-pin ATX power connector, this motherboard requires that you connect the 4-pin ATX +12V power plug to provide sufficient power to the CPU.



- Do not forget to connect the 4-pin ATX +12V power plug. Otherwise, the system does not boot up.
- Make sure that your ATX 12V power supply can provide 8A on the +12V lead and at least 1A on the +5-volt standby lead (+5VSB). The minimum recommended wattage is 300W, or 350W for a fully configured system. The system may become unstable or might not boot up, if the power is inadequate.



A8V ATX power connectors

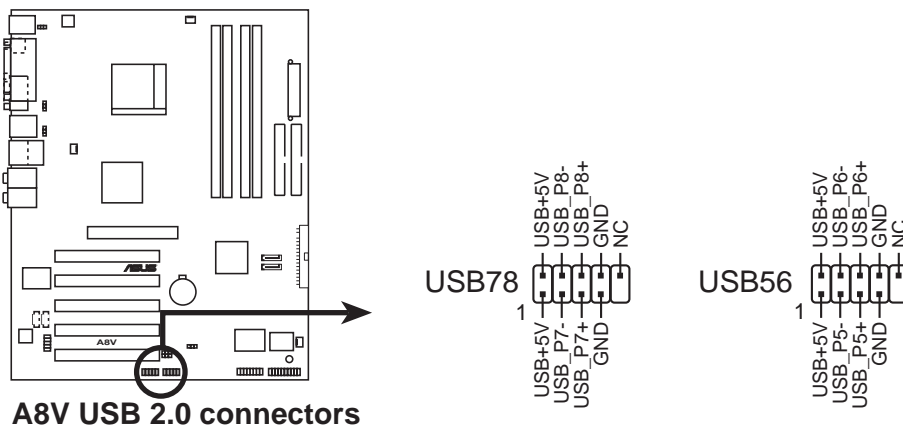


7. USB headers (10-1 pin USB56, USB78)

If the USB ports on the rear panel are inadequate, a USB header is available for additional USB ports. The USB header complies with USB 2.0 specification that supports up to 480 Mbps connection speed. This speed advantage over the conventional 12 Mbps on USB 1.1 allows faster Internet connection, interactive gaming, and simultaneous running of high-speed peripherals.



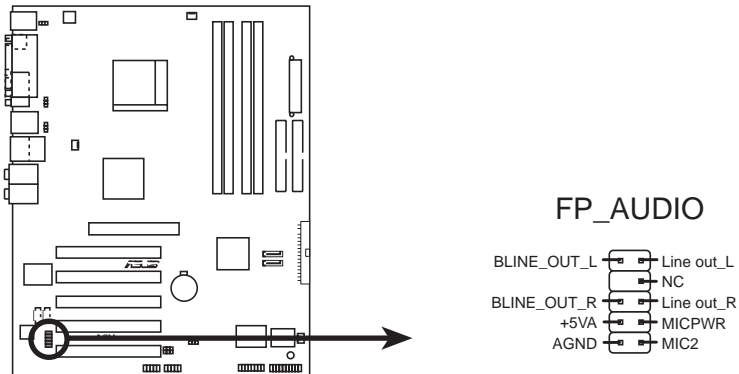
You must install the driver before you can use the USB 2.0 capability.



NEVER connect a **1394 cable** to any of the USB (blue) connectors. Doing so will damage the motherboard!

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

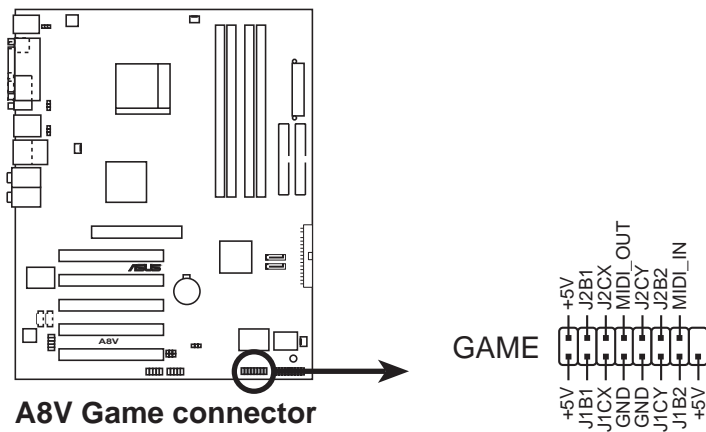
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.



A8V Front panel audio connector

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

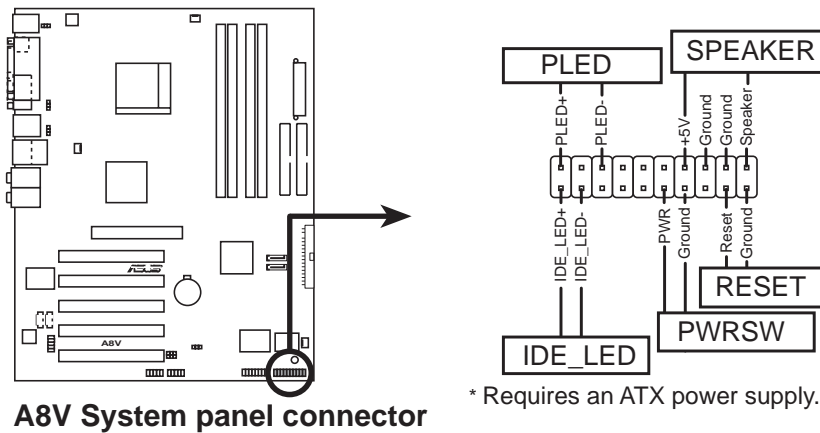
This connector supports a GAME/MIDI module. If a GAME/MIDI module is available, connect the GAME/MIDI cable to this connector. The GAME/MIDI port on the module connects a joystick or a game pad for playing games, and MIDI devices for playing or editing audio files.



A8V Game connector

10. System panel connector (20-pin PANEL)

This connector accommodates several system front panel functions.



The System Panel connector is color-coded for easy and foolproof connection. Take note of the specific connector colors as described.

- **System Power LED Lead (Green 3-1 pin PLED)**
This 3-1 pin connector connects to the system power LED. The LED lights up when you turn on the system power, and blinks when the system is in sleep mode.
- **System Warning Speaker Lead (Orange 4-pin SPEAKER)**
This 4-pin connector is for the case-mounted speaker. It allows you to hear system beeps and warnings.
- **Reset Switch Lead (Blue 2-pin RESET)**
This 2-pin connector is for the case-mounted reset switch to reboot the system without turning off the system power.
- **ATX Power Switch / Soft-Off Switch Lead (Yellow 2-pin PWRSW)**
This connector is for the system power switch. Pressing the power switch turns the system between ON and SLEEP, or ON and SOFT OFF, depending on the BIOS or OS settings. Pressing the power switch while in the ON mode for more than four seconds turns the system OFF.
- **Hard disk activity LED (Red 2-pin IDE_LED)**
This connector supplies power to the hard disk activity LED. Any read or write activity of an IDE device causes this LED to light up.

Chapter 3

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

Powering up

Chapter summary

- 3.1 Starting up for the first time 3-1**
- 3.2 Powering off the computer 3-2**

3.1 Starting up for the first time

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

3.2 Powering off the computer

3.2.1 Using the OS shut down function

If you are using Windows® 98SE/ME/2000:

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

If you are using Windows® XP:

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

3.2.2 Using the dual-function power switch

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

Chapter 4

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

Chapter summary

4.1	Managing and updating your BIOS	4-1
4.2	BIOS Setup program	4-9
4.3	Main menu	4-12
4.4	Advanced menu	4-15
4.5	Power menu	4-29
4.6	Boot menu	4-33
4.7	Exit menu	4-38

4.1 Managing and updating your BIOS

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

1. ASUS AFUDOS - Updates the BIOS using a bootable floppy disk in DOS mode.
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.
4. ASUS Update - Updates the BIOS in a Windows® environment.

Refer to the corresponding sections for details on these utilities.

Important notes



- 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 AFUDOS utility.
- Visit the ASUS website (www.asus.com) and download the latest BIOS file for this motherboard using the ASUS Update utility.

4.1.1 Creating a bootable floppy disk

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

DOS environment

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

```
format A: /S then press <Enter>.
```

Windows® 98SE/ME/XP environment

- a. Insert a 1.44 MB floppy disk into the floppy disk drive.
- b. From your Windows desktop, click on **Start**, then select **My Computer**.
- c. Select the **3 1/2 Floppy Drive** icon.
- d. Click **File** from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.
- e. If you are using Windows® XP, select **Create an MS-DOS startup disk** from the format options field, then click **Start**.

OR

If you are using Windows® 98SE/ME, select **Full** option button from the format type, then click **Start**.

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

4.1.2 Using AFUDOS to update the BIOS

To update the BIOS using the AFUDOS.EXE utility:

1. Visit the ASUS website to download the latest BIOS file for your motherboard. Save the BIOS file to a bootable floppy disk.



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

2. Copy the AFUDOS.EXE utility from the support CD to the bootable floppy disk that contains the BIOS file.
3. Boot the system from the floppy disk.
4. At the DOS prompt, type the command line:

```
afudos /i[filename]
```

where **[filename]** means the latest (or original) BIOS file that you copied to the bootable floppy disk.

5. Press <Enter>. The succeeding screen displays the status of the update process.



The BIOS information on the screen is for reference only. What you see on your screen may not be exactly the same as shown.

```
A:\>afudos /iA8VB.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!
Doing so can cause system boot failure!

When the BIOS update process is complete, the utility returns to the DOS prompt.

```
A:\>afudos /iA8VB.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:\>
```

6. Reboot the system from the hard disk.

4.1.3 Using AFUDOS to copy BIOS from PC

You can use the AFUDOS.EXE utility to copy the current system BIOS to a floppy or hard disk and use it as a backup in case the system BIOS fails or gets corrupted.

To copy the BIOS from your PC using AFUDOS.EXE:

1. At the DOS prompt, type the command line:

```
afudos /o[filename]
```

where **[filename]** string of not more than eight (8) alpha-numeric characters for the main filename and three (3) alpha-numeric characters for the extension name.

2. Press <Enter>.



The BIOS information on the screen is for reference only. What you see on your screen might not be exactly the same as shown.

Main filename

Extension name

```
A:\>afudos /oMYBIOS03.ROM
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

Reading flash ..... 0x0008CC00 (9%)
```

3. The utility will copy the current system BIOS by default to the floppy disk. Make sure that the floppy disk has at least 600KB of free disk space and is not write-protected.

```
A:\>afudos /oMYBIOS03.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

Reading flash ..... done

A:\>
```

When the copy process is complete, the utility returns to the DOS prompt.

4.1.4 Using ASUS EZ Flash to update the BIOS

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

To update the BIOS using ASUS EZ Flash:

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for your motherboard and rename the downloaded file as **A8VB.ROM**. Save the BIOS file to a floppy disk.
2. Reboot the system.
3. To launch EZ Flash, press <Alt+F2> during POST to display the following.

```
User recovery requested. Starting BIOS recovery...
Checking for floppy...
```



- If there is no floppy disk in the drive, the error message “Floppy not found!” appears.
- If the correct BIOS file is not in the floppy disk, the error message “Floppy not found!” is displayed. Make sure to rename the downloaded BIOS file as “A8VB.ROM”.

4. Insert the floppy disk that contains the BIOS file. If all the necessary files are found in the floppy disk, EZ Flash performs the BIOS update process and automatically reboots the system when done.



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

```
User recovery requested. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "A8VB.ROM". Completed.
Start flashing...
Flashed successfully. Rebooting.
```

4.1.5 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.

Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1. Turn on the system.
2. Insert the motherboard support CD to the optical drive.
3. The utility displays the following message and automatically checks the CD for the BIOS file.

```
Award BootBlock BIOS v1.0
Copyright (c) 2000, Award Software, Inc.

BIOS ROM checksum error
Detecting IDE ATAPI device...
```

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

```
Award BootBlock BIOS v1.0
Copyright (c) 2000, Award Software, Inc.

BIOS ROM checksum error
Detecting IDE ATAPI device...
  Found CDROM, try to Boot from it... Pass
```



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 a floppy disk

To recover the BIOS from the support CD:

1. Remove any CD from the optical drive, then 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.

```
Award BootBlock BIOS v1.0
Copyright (c) 2000, Award Software, Inc.

BIOS ROM checksum error
Detecting IDE ATAPI device...
```

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

```
Award BootBlock BIOS v1.0
Copyright (c) 2000, Award Software, Inc.

BIOS ROM checksum error
Detecting IDE ATAPI device...
  Found CDROM, try to Boot from it... Fail

Detecting floppy drive A media...
```



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

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



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

4.1.6 ASUS Update

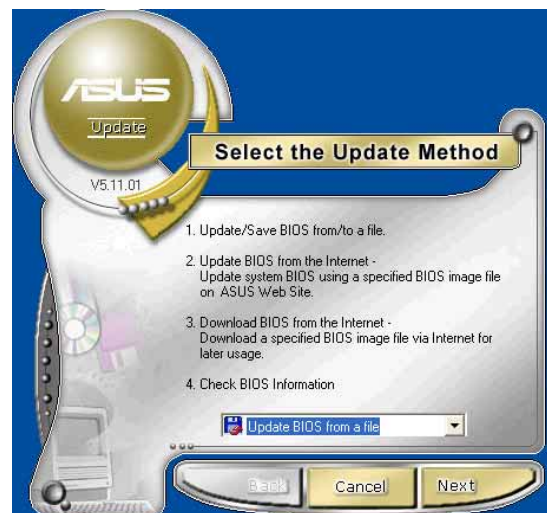
The ASUS Update is a utility that allows you to update the motherboard BIOS in Windows® environment. This utility is available in the support CD that comes with the motherboard package. ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

To install ASUS Update:

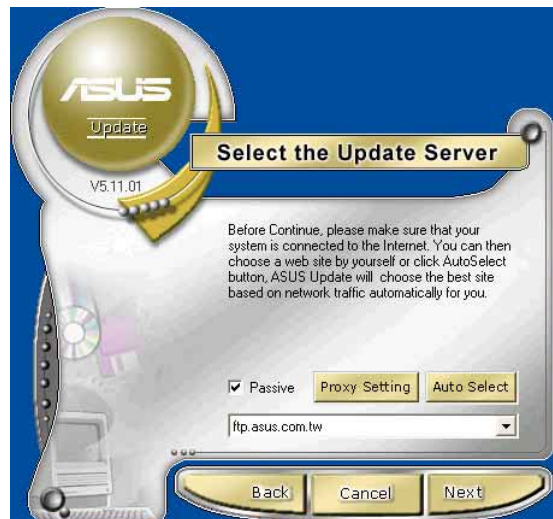
- Insert the support CD into the CD-ROM drive. The **Drivers** menu appears.
- Click the **Utilities** tab, then click **Install ASUS Update VX.XX.XX**. See page 5-3 for the **Utilities** menu screen.
- The ASUS Update utility is copied into your system.

To update the BIOS using ASUS Update:

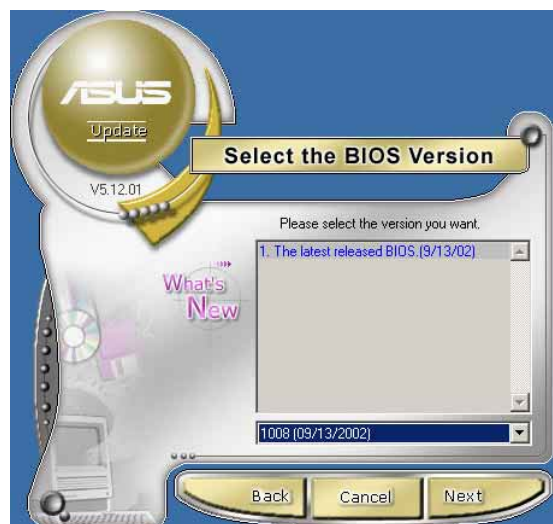
- Launch the utility from the Windows desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update initial screen appears.
- Select your desired update method, then click **Next**.



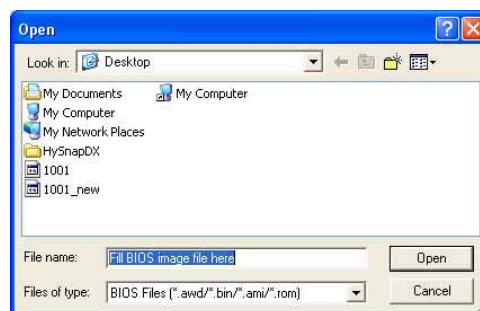
3. If you select updating/downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic, or choose **Auto Select**. Click **Next**.



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



6. If you select the option to update the BIOS from a file, a window prompts you to locate the file. Select the file, click **Save**, then follow the screen instructions to complete the update process.



4.2 BIOS Setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section “4.1 Managing and updating your BIOS.”

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

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

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

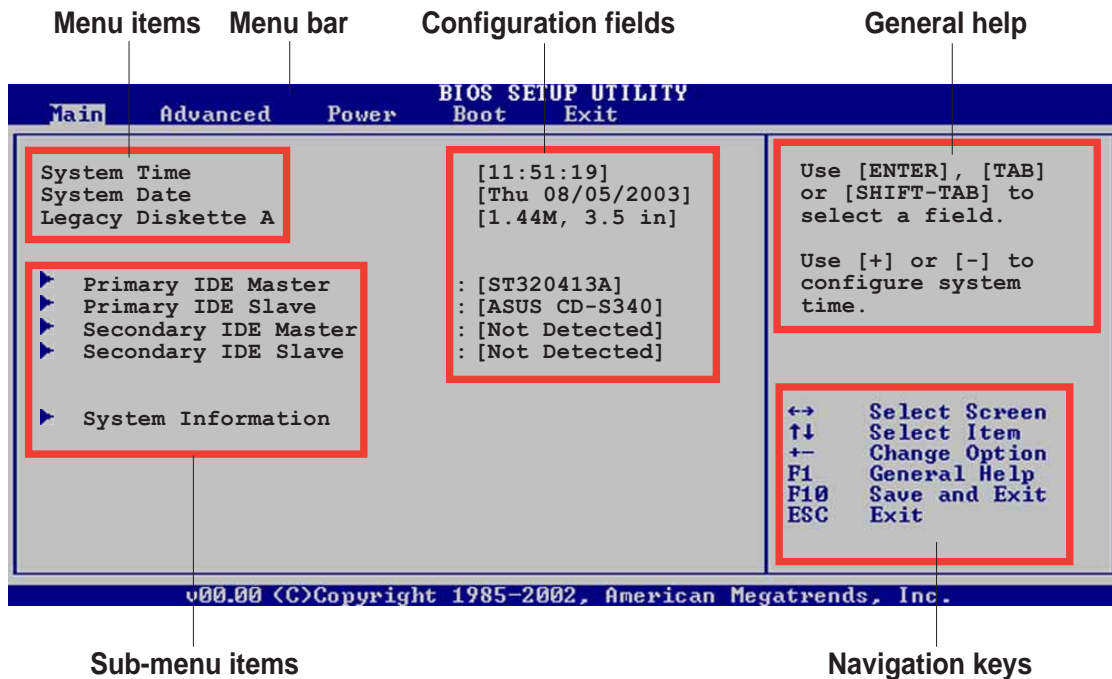


The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Default Settings** item under the Exit Menu.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



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

4.2.1 BIOS menu screen



4.2.2 Menu bar

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

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

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

4.2.3 Navigation keys

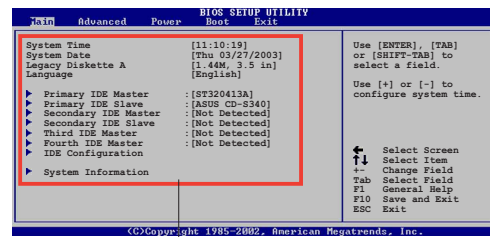
At the **bottom right corner** of a menu screen are the navigation keys for that particular menu. Use the navigation keys to select items in the menu and change the settings.



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

4.2.4 Menu items

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



Main menu items

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

4.2.5 Sub-menu items

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

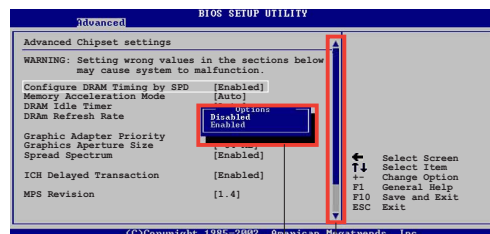
4.2.6 Configuration fields

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

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

4.2.7 Pop-up window

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



Pop-up window

Scroll bar

4.2.8 Scroll bar

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

4.2.9 General help

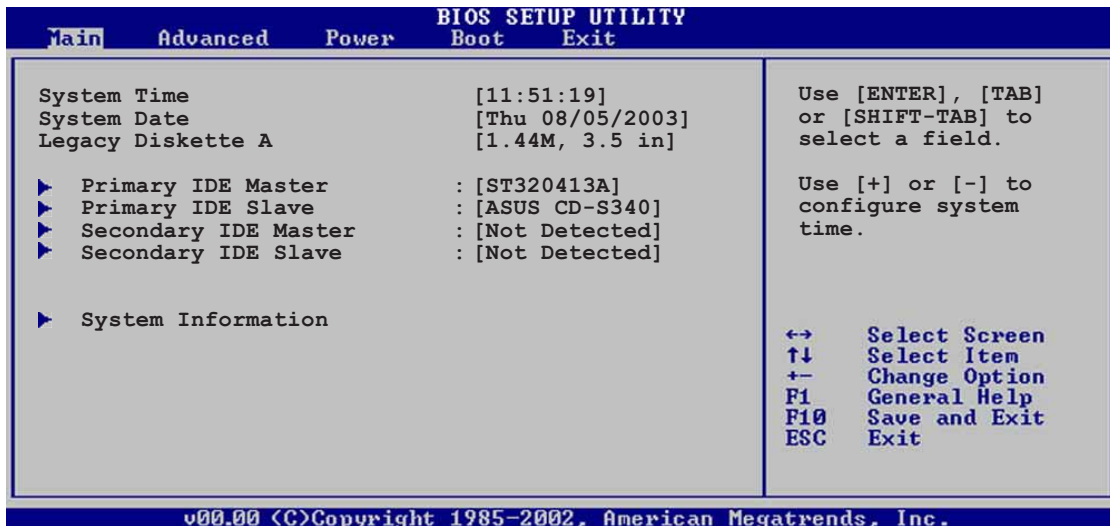
At the top right corner of the menu screen is a brief description of the selected item.

4.3 Main menu

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



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



4.3.1 System Time [xx:xx:xxxx]

Allows you to set the system time.

4.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

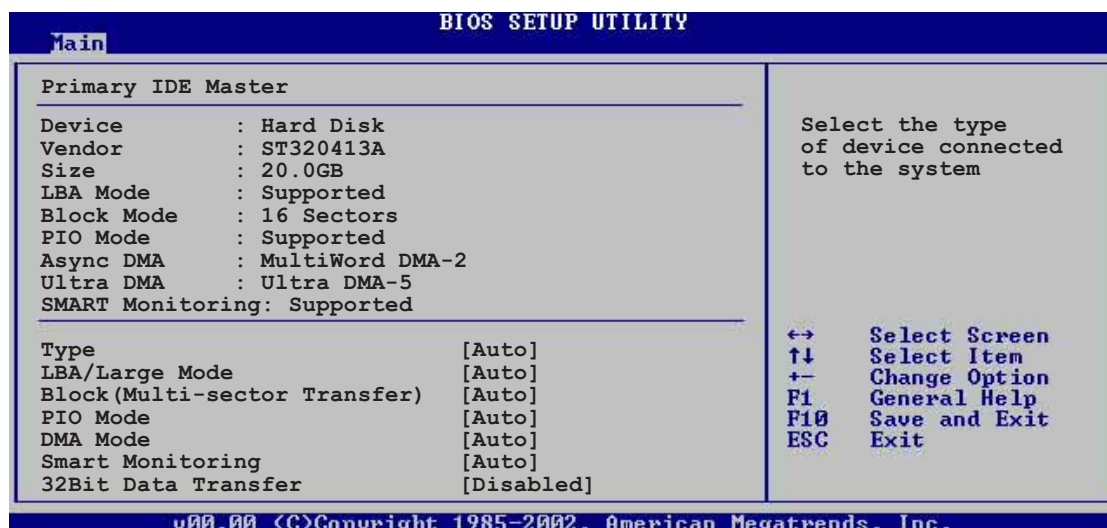
4.3.3 Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed.

Configuration options: [Disabled] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

4.3.4 Primary and Secondary IDE Master/Slave

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



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

Type [Auto]

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

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled.

Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) [Auto]

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

Disabled, the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

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

DMA Mode [Auto]

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

SMART Monitoring [Auto]

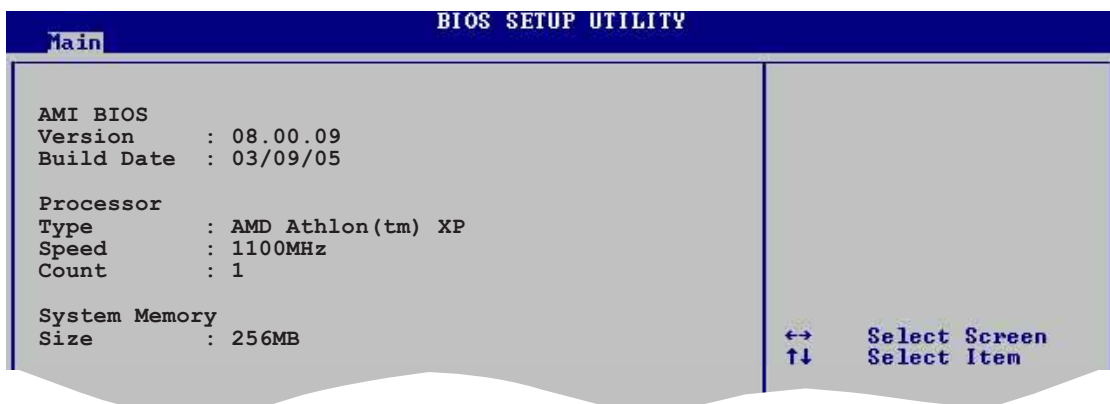
Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Disabled]

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

4.3.5 System Information

This menu gives you an overview of the general system specifications. The items in this menu are auto-detected by BIOS.



AMI BIOS

Displays the auto-detected BIOS information.

Processor

Displays the auto-detected processor information.

System Memory

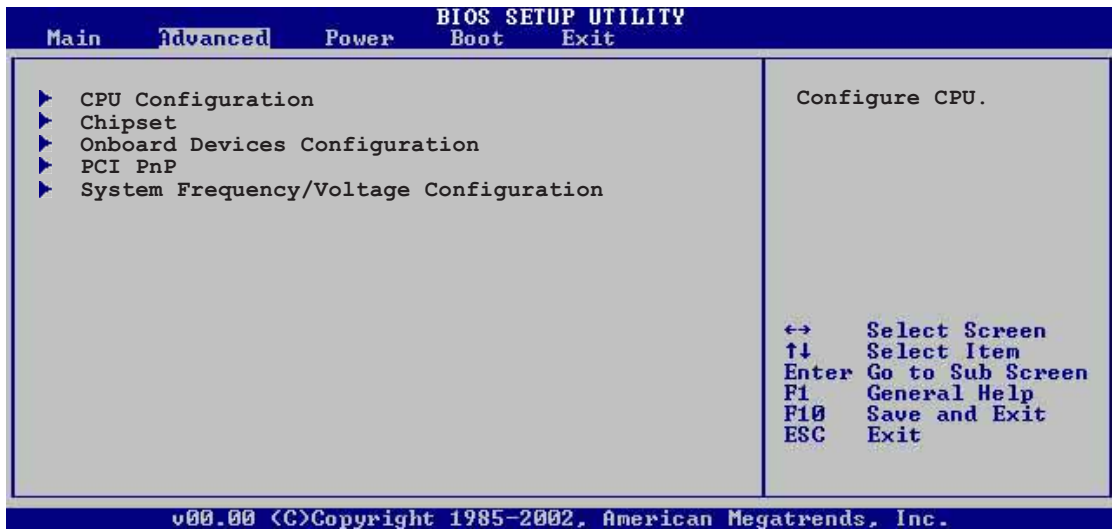
Displays the auto-detected system memory.

4.4 Advanced menu

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

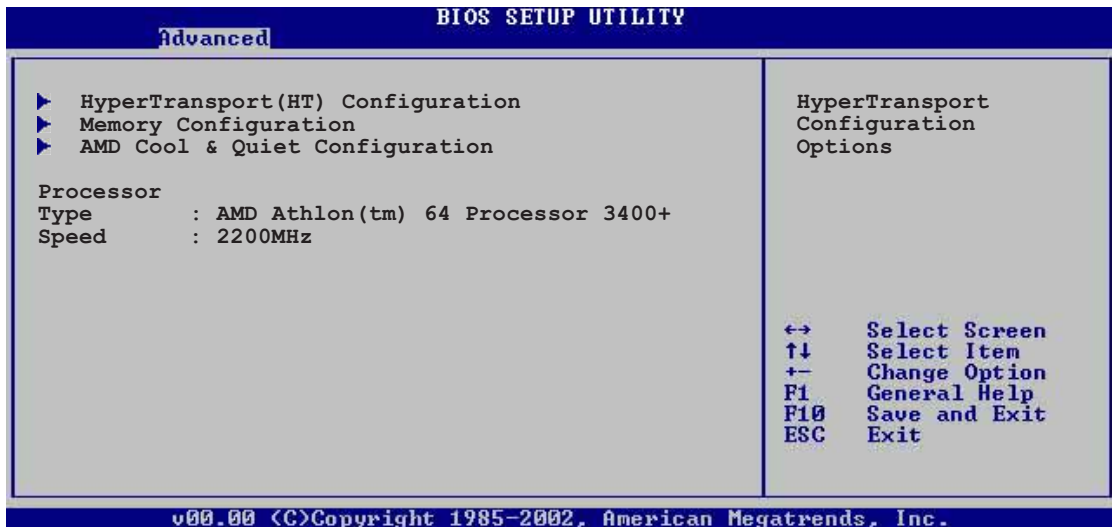


Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.



4.4.1 CPU Configuration

The items in this menu show the CPU-related information auto-detected by BIOS.



HyperTransport Configuration

Advanced		BIOS SETUP UTILITY
HyperTransport Configuration		K8 CPU to AGP HyperTransport Frequency Selection
HT Frequency	[1000 MHz]	
HT DATA Width (Upstream)	[16 BIT]	
HT DATA Width (Downstream)	[16 BIT]	

HT Frequency [1000 MHz]

Allows frequency selection of HyperTransport transfer from K8 CPU to AGP. Configuration options: [200 MHz] [400 MHz] [600 MHz] [800 MHz] [1000 MHz]

HT DATA Width (Upstream) [16 BIT]

Allows selection of HyperTransport upstream data width. Configuration options: [16 BIT] [8 BIT]

HT DATA Width (Downstream) [16 BIT]

Allows selection of HyperTransport downstream data width. Configuration options: [16 BIT] [8 BIT]

Memory Configuration

Advanced		BIOS SETUP UTILITY
Memory Configuration		MEMCLK can be set by the code using AUTO, or if you use LIMIT, you can set one of the standard values.
Memclock Mode	[Auto]	
DRAM Over 4G Remapping	[Disabled]	
Bank Interleaving	[Auto]	
Node Interleaving	[Disabled]	
Burst Length	[8 Beats]	
CAS Latency (CL)	[Auto]	
TRC	[Auto]	
TRFC	[Auto]	
TRCD	[Auto]	
TWR	[Auto]	
TRWT	[Auto]	
TRAS	[Auto]	
TRP	[Auto]	
TWCL	[Auto]	
AsyncLat	[Auto]	
Read Preamble Setting	[Auto]	
2T Command	[Auto]	
		↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit

Memclock Mode [Auto]

Allows you to set the memory clock mode. Set by the code using [Auto] or select [Manual] to set using one of the standard values. Configuration options: [Auto] [Limit]

DRAM Over 4G Remapping [Disabled]

Enable this item when 4 gigabytes or more DRAM is installed to remap the memory block just below 4G and move it above 4G.

Configuration options: [Disabled] [Enabled]

Bank Interleaving [Auto]

Sets whether to allow memory accesses to be spread out over BANKS on the same node or across nodes, decreasing access contention.

Configuration options: [Auto] [Enabled] [Disabled]

Node Interleaving [Disabled]

Sets whether to allow memory accesses to be spread out over BANKS on the same node or across nodes, decreasing access contention.

Configuration options: [Auto] [Disabled]

Burst Length [8 Beats]

Sets the burst length in beats. Set to 4 Beats when using 64-bit Dq.

Configuration options: [8 Beats] [4 Beats]

CAS Latency (CL) [Auto]

Sets the CAS Latency. Configuration options: [Auto] [2.0] [3.0] [2.5]

TRC [Auto]

Sets the TRC. Configuration options: [Auto] [7 CLK] [8 CLK] [9 CLK] [10 CLK] [11 CLK] [12 CLK] [13 CLK]

TRFC [Auto]

Sets the TRFC.

Configuration options: [Auto] [9 CLK] [10 CLK] [11 CLK] [12 CLK] [13 CLK] [14 CLK] [15 CLK]

TRCD [Auto]

Sets the TRCD. Configuration options: [Auto] [2 CLK] [3 CLK] [4 CLK] [5 CLK] [6 CLK]

TWR [Auto]

Sets the TWR. Configuration options: [Auto] [2 CLK] [3 CLK]

TRWT [Auto]

Sets the TRWT. Configuration options: [Auto] [1 CLK] [2 CLK] [3 CLK] [4 CLK] [5 CLK] [6 CLK]

TRAS [Auto]

Sets the TRAS.

Configuration options: [Auto] [5 CLK] [6 CLK] [7 CLK] [8 CLK] [9 CLK]
[10 CLK] [11 CLK] [12 CLK] [13 CLK] [14 CLK] [15 CLK]

TRP [Auto]

Sets the TRP. Configuration options: [Auto] [2 CLK] [3 CLK] [4 CLK]
[5 CLK] [6 CLK]

TWCL [Auto]

Sets the TWCL. Configuration options: [Auto] [1 CLK] [2 CLK]

Asynclat [Auto]

Sets the Asynclat. Configuration options: [Auto] [4 CLK] [5 CLK] [6 CLK]
[7 CLK] [8 CLK] [9 CLK]

Read Preamble Setting [Auto]

Sets the Read Preamble in nano seconds.

Configuration options: [Auto] [2.0 ns] [2.5 ns] [3.0 ns] [3.5 ns] [4.0 ns]
[4.5 ns] [5.0 ns] [5.5 ns] [6.0 ns] [6.5 ns] [7.0 ns] [7.5 ns] [8.0 ns] [8.5 ns]
[9.0 ns]

2T Command [Auto]

Sets the 2T Command. Configuration options: [Auto] [Enabled]

ECC Configuration

Advanced		BIOS SETUP UTILITY
ECC Configuration		Master ECC Enables support on all nodes for ECC error detect and correction.
Master ECC Enable	[Disabled]	

Master ECC Enable [Disabled]

Enables or disables support on all nodes for ECC error detect and correction. Configuration options: [Disabled] [Enabled]



The following items appear only when the **Master ECC Enable** item is set to [Enabled].

DRAM ECC Enable [Disabled]

Enables or disables the DRAM ECC that allows hardware to report and correct memory errors automatically to maintain system integrity. Configuration options: [Disabled] [Enabled]



The following items appear only when the **DRAM ECC Enable** item is set to [Enabled].

DRAM BG Scrub [60ns]

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

DRAM SCRUB REDIRECT [Disabled]

Sets the system to correct DRAM ECC errors immediately when they occur, even if background scrubbing is on. Configuration options: [Disabled] [Enabled]

ECC Chip Kill [Disabled]

Enables or disables the ECC chip kill feature. Configuration options: [Disabled] [Enabled]

L2 Cache BG Scrub [Disabled]

Disables or sets the L2 data cache RAM to be corrected when idle.
Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns]
[1.28us] [2.56us] [5.12us] [10.2us] [20.5us] [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]

Disables or sets the L1 data cache RAM to be corrected when idle.
Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns]
[1.28us] [2.56us] [5.12us] [10.2us] [20.5us] [41.0us] [81.9us] [163.8us]
[327.7us] [655.4us] [1.31ms] [2.62ms] [5.24ms] [10.49ms] [20.97ms]
[42.00ms] [84.00ms]

AMD Cool & Quiet Configuration

BIOS SETUP UTILITY	
Advanced	
AMD Cool & Quiet Configuration	Enable/Disable AMD K8 Cool N'Quiet function.
Cool N'Quiet [Disabled]	

Cool N' Quiet [Disabled]

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



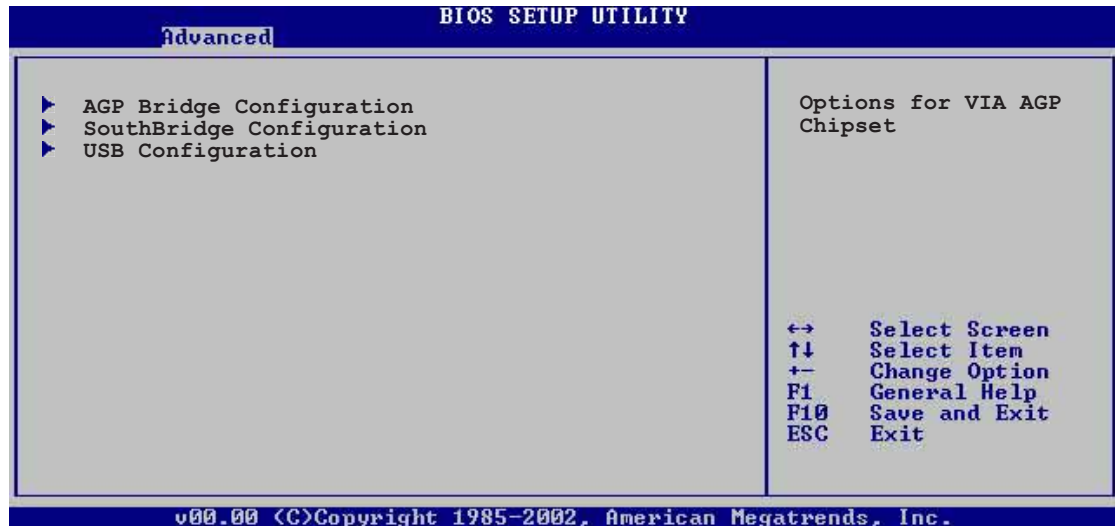
- Make sure that the above item is set to **Enabled** if you want to use the AMD CPU Cool 'n' Quiet!™ Technology feature.
- This feature requires the AMD CPU heatsink and fan assembly with monitor chip. If you purchased a separate heatsink and fan package, use the ASUS Q-Fan Technology feature to automatically adjust the CPU fan speed according to your system loading.

Processor

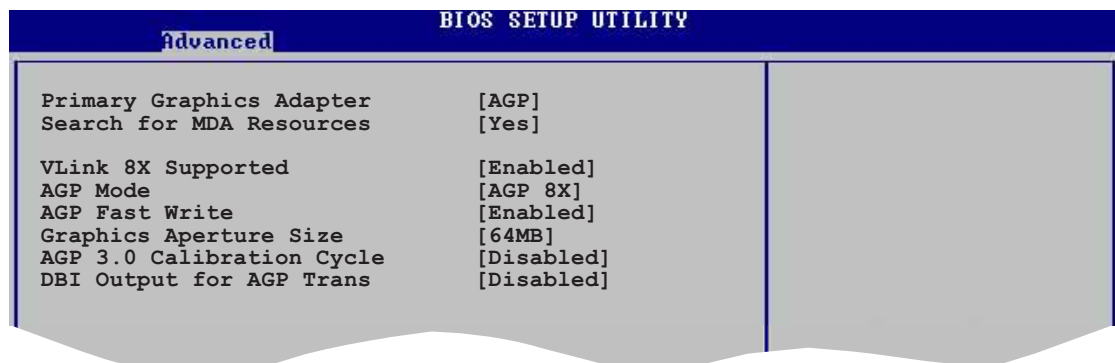
Displays the processor type and speed.

4.4.2 Chipset

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



AGP Bridge Configuration



Primary Graphics Adapter [AGP]

Switches the PCI Bus scanning order while searching for a video card. This allows you to select the type of Primary VGA in case of multiple video controllers. Configuration options: [PCI] [AGP]

Search for MDA Resources [Yes]

Sets whether to allow search for MDA resources. Configuration options: [Yes] [No]

VLink 8X Supported [Enabled]

Enables or disables VLink 8X support. Configuration options: [Disabled] [Enabled]

AGP Mode [AGP 8X]

Allows you to set the data throughput of your AGP graphics card. This motherboard supports the AGP 8X interface that transfers video data at 2.12GB/s. The default and configuration options vary depending on the speed of AGP card you installed. If you installed an AGP 8X graphics card, the configuration options are as follows: [8X] [4X] or if you installed an AGP 4X graphics card, the configuration options are as follows: [4X] [2X].

AGP Fast Write [Enabled]

Enables or disables the AGP Fast Write feature.
Configuration options: [Disabled] [Enabled]

Graphics Aperture Size [64MB]

Allows you to select the size of mapped memory for AGP graphic data.
Configuration options: [32MB] [64MB] [128MB] [256MB]

AGP 3.0 Calibration Cycle [Disabled]

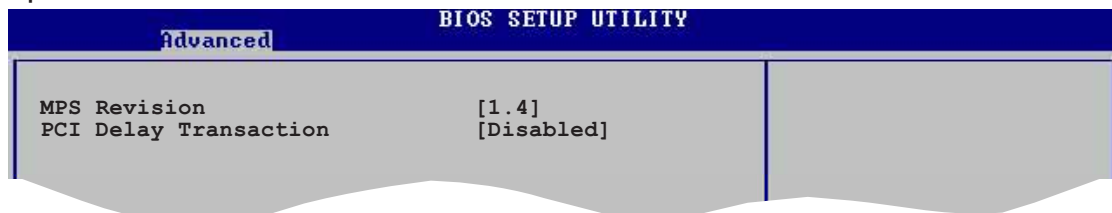
Enables or disables the AGP 3.0 Calibration cycle.
Configuration options: [Disabled] [Enabled]

DBI Output for AGP Trans [Disabled]

Enables or disables the DBI Output for AGP trans.
Configuration options: [Disabled] [Enabled]

SouthBridge Configuration

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



MPS Revision [1.4]

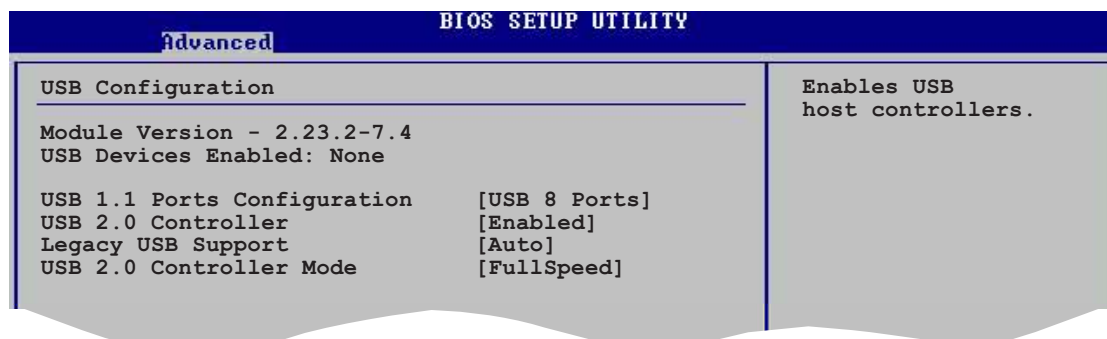
Sets the MPS revision value. Configuration options: [1.1] [1.4]

PCI Delay Transaction [Disabled]

Enables or disables the PCI Delay transaction feature.
Configuration options: [Disabled] [Enabled]

USB Configuration

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



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 set the number of USB ports to activate.

Configuration options: [Disabled] [USB 2 Ports] [USB 4 Ports] [USB 6 Ports] [USB 8 Ports]

USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 ports controller.

Configuration options: [Disabled] [Enabled]

Legacy USB Support [Auto]

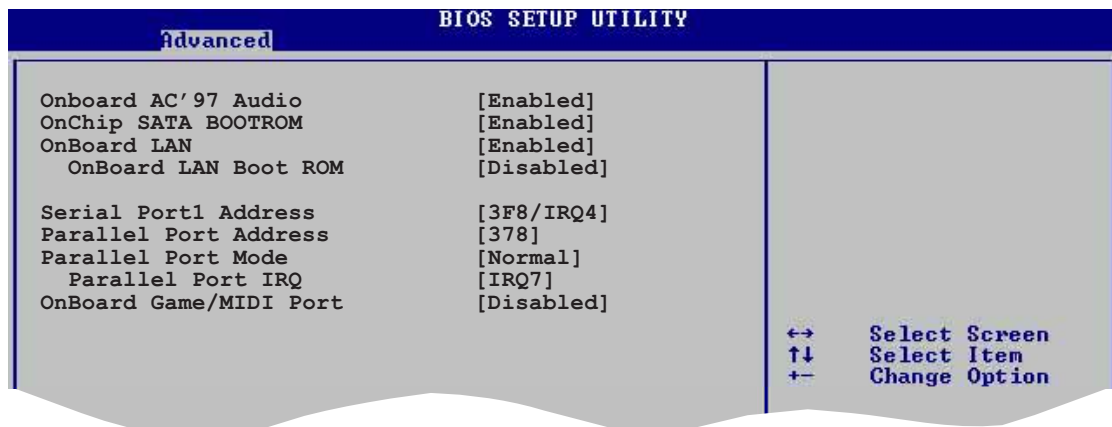
Allows you to enable or disable support for legacy USB devices. Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

Configuration options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller Mode [FullSpeed]

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

4.4.3 Onboard Devices Configuration



OnBoard AC'97 Audio [Enabled]

[Auto] allows the BIOS to detect whether you are using any audio device. If an audio device is detected, the onboard audio controller is enabled; if no audio device is detected, the controller is disabled.

Configuration options: [Disabled] [Enabled]

OnChip SATA Boot ROM [Enabled]

Allows you to enable or disable the onchip Serial ATA boot ROM.

Configuration options: [Disabled] [Enabled]

OnBoard LAN [Enabled]

Allows you to enable or disable the onboard LAN controller.

Configuration options: [Disabled] [Enabled]

OnBoard LAN Boot ROM [Disabled]

Allows you to enable or disable the onboard LAN boot ROM.

Configuration options: [Disabled] [Enabled]

Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address.

Configuration options: [Disabled] [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 [Normal]

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]

Onboard Game/MIDI Port [Disabled]

Enables or disables the onboard Game/MIDI port.

Configuration options: [Disabled] [Enabled]

4.4.4 PCI PnP

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



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



Plug and Play O/S [No]

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

Configuration options: [No] [Yes]

PCI Latency Timer [64]

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

Allocate IRQ to PCI VGA [Yes]

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

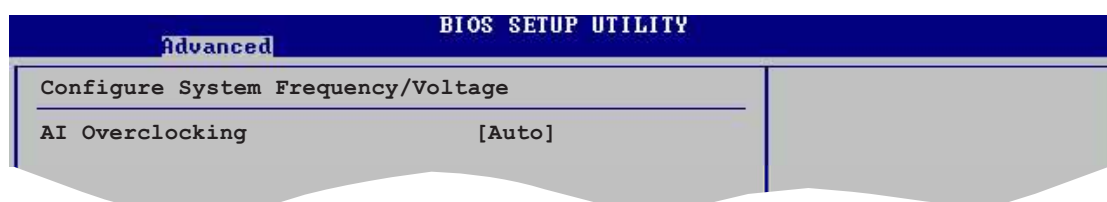
Palette Snooping [Disabled]

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. Setting to [Disabled] deactivates this feature. Configuration options: [Disabled] [Enabled]

IRQ xx [Available]

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

4.4.5 System Frequency/Voltage Configuration



AI Overclocking [Auto]

Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Select either one of the preset overclocking options and the relevant parameters will appear.

Configuration options: [Auto] [Manual] [Standard] [Overclock 3%]
[Overclock 5%] [Overclock 7%] [Overclock 10%] [Adaptive Overclocking]



The following items appear only when the **AI Overclocking** field is set to Manual.

CPU FSB Frequency [200MHz]

Allows you to adjust the CPU FSB operating frequency.

Configuration options: [200MHz] [201 MHz] ~ [300MHz]



Selecting a very high CPU frequency may cause the system to become unstable! If this happens, revert to the default setting.

CPU Speed/Voltage Setting [Auto]

Allows you to set a specific VCore offset voltage.

Configuration options: [Auto] [Manual]

CPU Multiplier [11.0]

Allows you to manually set the CPU speed. The configuration options vary depending on the speed of the processor installed. This item appears only when the **CPU Speed/Voltage Setting** item is set to Manual.

CPU Voltage [1.450 V]

Allows you to manually set the CPU voltage. The configuration options vary depending on the speed of the processor installed. This item appears only when the **CPU Speed/Voltage Setting** item is set to Manual.



Setting a low CPU voltage can cause system boot failure!

AGP/PCI Frequency (MHz) [Auto]

Sets the AGP/PCI frequency.

Configuration options: [Auto] [66.66/33.33] [75.4/37.7]

DDR Voltage [Auto]

Allows you to automatically detect or select from a list the DDR operating voltage. Configuration options: [Auto] [2.6V] [2.7V] [2.8V]

AGP Voltage [1.5V]

Adjusts the AGP voltage setting.

Configuration options: [1.5V] [1.6V]

V-Link Voltage [2.5V]

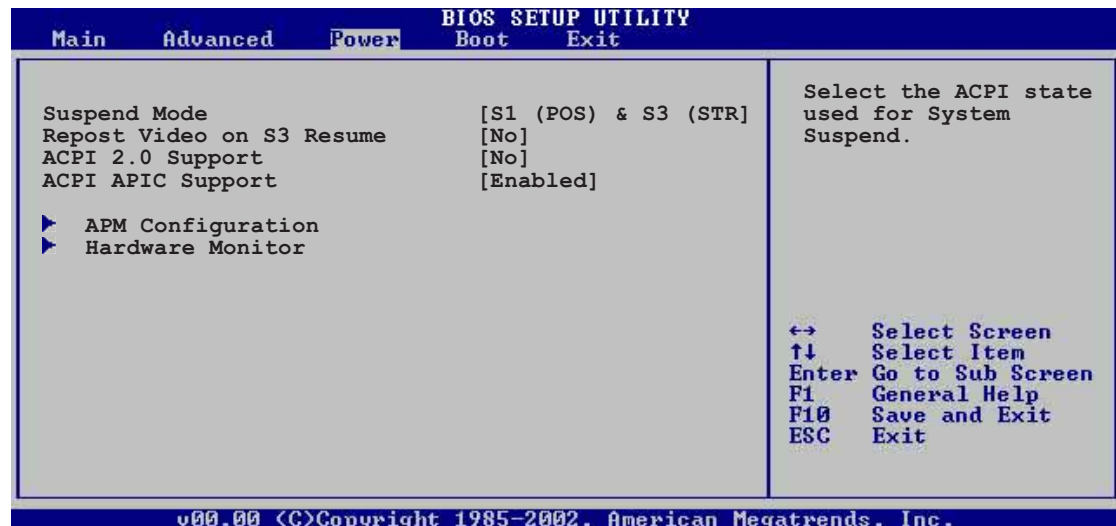
Adjusts the V-Link voltage setting. Configuration options: [2.5V] [2.6V]



The following item appears only when the **AI Overclocking** field is set to Adaptive Overclocking.

4.5 Power menu

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



4.5.1 Suspend Mode [S1 (POS) & S3 (STR)]

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

4.5.2 Repost Video on S3 Resume [No]

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

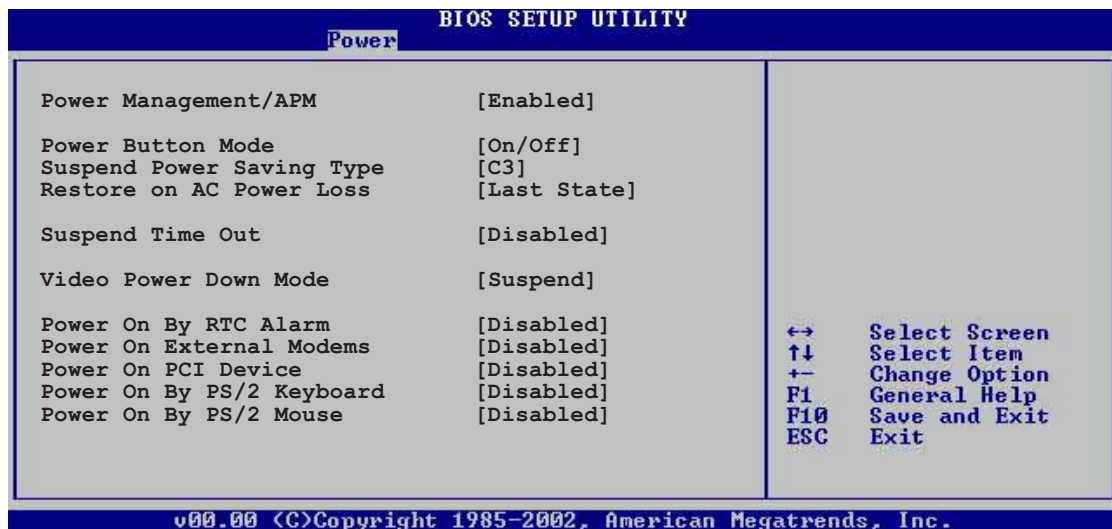
4.5.3 ACPI 2.0 Support [No]

Allows you to add more tables for ACPI 2.0 specifications.
Configuration options: [No] [Yes]

4.5.4 ACPI APIC Support [Enabled]

Enables or disables the ACPI support in the ASIC. When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list.
Configuration options: [Disabled] [Enabled]

4.5.5 APM Configuration



Power Management/APM [Enabled]

Allows you to enable or disable the Advanced Power Management (APM) feature. Configuration options: [Disabled] [Enabled]



The following items appear only when the Power Management/APM item is set to [Enabled].

Power Button Mode [On/Off]

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

Suspend Power Saving Type [C3]

Sets the Suspend Power Saving Type. Configuration options: [C3] [S1]

Restore on AC Power Loss [Last State]

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 before the AC power loss.

Configuration options: [Power Off] [Power On] [Last State]

Suspend Time Out [Disabled]

Allows you to select the specified time at which the system goes on suspend mode. Configuration options: [Disabled] [1 Min] [2 Min] [4 Min] [8 Min] [10 Min] [20 Min] [30 Min] [40 Min] [50 Min] [60 Min]

Video Power Down Mode [Suspend]

Allows you to select the video power down mode.

Configuration options: [Disabled] [Suspend]

Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On External Modems [Disabled]

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



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

Power On PCI Device [Disabled]

Allows you to enable or disable the PME# to generate a wake event. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By PS/2 Keyboard [Disabled]

Allows you to enable or disable the keyboard wake-up feature. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

Power On By PS/2 Mouse [Disabled]

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

Configuration options: [Disabled] [Enabled]

4.5.6 Hardware Monitor

BIOS SETUP UTILITY	
Power	
Hardware Monitor	CPU Temperature
CPU Temperature	[48°C/118°F]
MB Temperature	[35°C/95°F]
Power Temperature	[57°C/134.5°F]
CPU Fan Speed	[3260RPM]
Chassis Fan Speed	[N/A]
Power Fan Speed	[N/A]
CPU Q-Fan Control	[Disabled]
VCORE Voltage	[1.504V]
3.3V Voltage	[3.360V]
5V Voltage	[5.160V]
12V Voltage	[11.328V]

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

CPU Temperature [xxx °C/xxx °F]

MB Temperature [xxx °C/xxx °F]

Power Temperature [xxx °C/xxx °F]

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

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

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

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

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

CPU Q-Fan Control [Disabled]

Allows you to enable or disable the Chassis fan control function. When this field is set to [Enabled], the item **CPU Fan Ratio** appears.

Configuration options: [Disabled] [Enabled]

CPU Fan Ratio [11/16]

Allows you to select the fan speed ratio. This item appears only if the **CPU Q-Fan Control** item is Enabled.

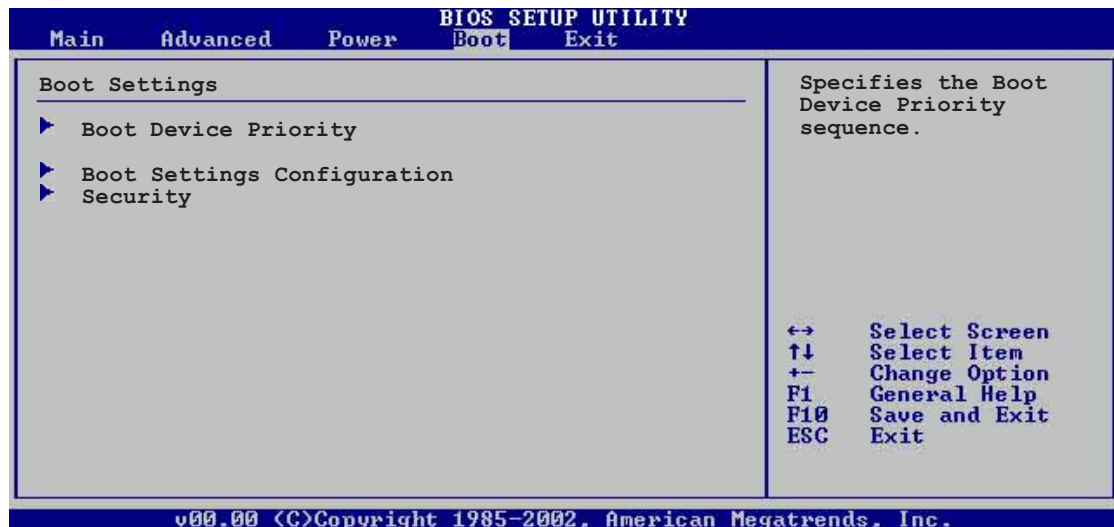
Configuration options: [11/16] [12/16] [13/16] [14/16] [15/16]

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

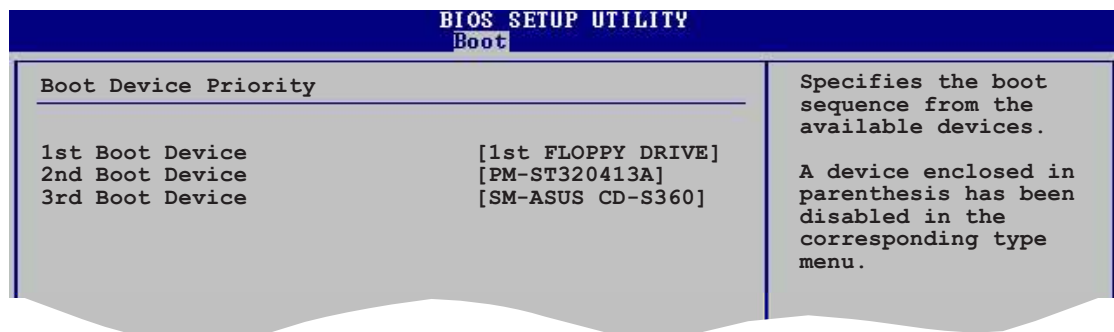
The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

4.6 Boot menu

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



4.6.1 Boot Device Priority

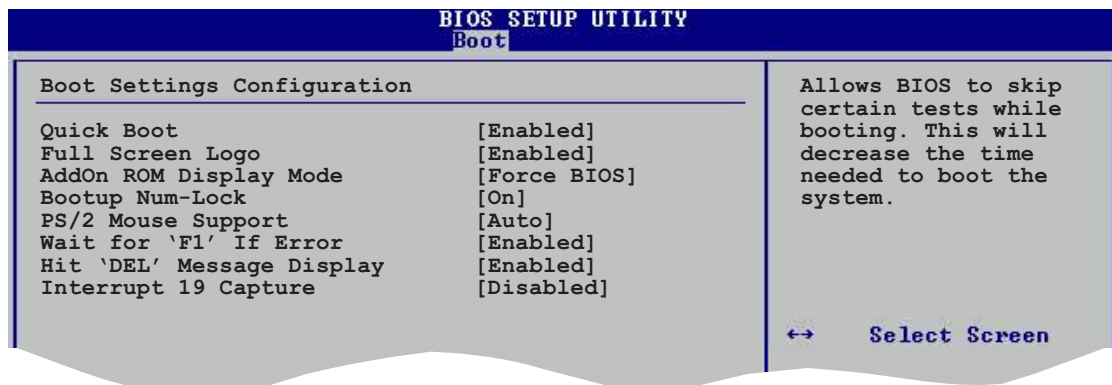


1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available devices. The number of device items that appear on the screen depends on the the number of devices installed in the system.

Configuration options: [xxxxx Drive] [Disabled]

4.6.2 Boot Settings Configuration



Quick Boot [Enabled]

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

Full Screen Logo [Enabled]

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



Make sure that the above item is set to [Enabled] if you want to use the ASUS MyLogo2™ feature.

Add On ROM Display Mode [Force BIOS]

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

Bootup Num-Lock [On]

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

PS/2 Mouse Support [Auto]

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

Wait for 'F1' If Error [Enabled]

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

Hit 'DEL' Message Display [Enabled]

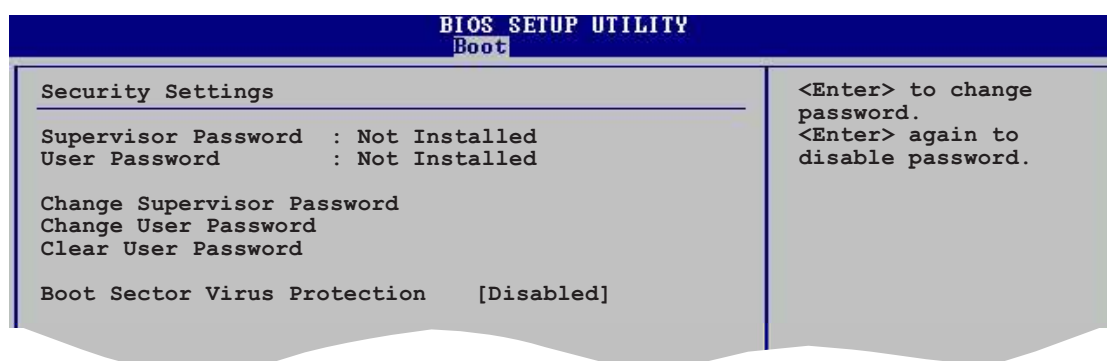
When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

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

4.6.3 Security

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



Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default **Not Installed**. After you have 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 combination of at least six (6) letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.
The message "Password Installed" appears after you have successfully set your password.
The Supervisor Password item now shows **Installed**.

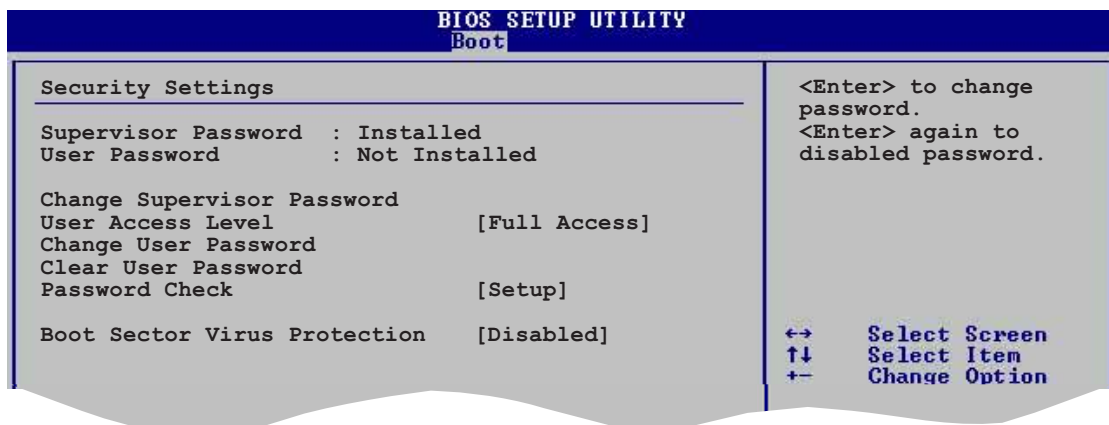
To change the supervisor password, follow the same steps as in setting a user password.

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



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

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



User Access Level (Full Access]

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 change 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 have 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 combination of at least six (6) letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.
The message "Password Installed" appears after you have successfully set your password.
The User Password item now shows **Installed**.

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

Clear User Password

Select this item to clear the user password.

Password Check [Setup]

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

Configuration options: [Setup] [Always]

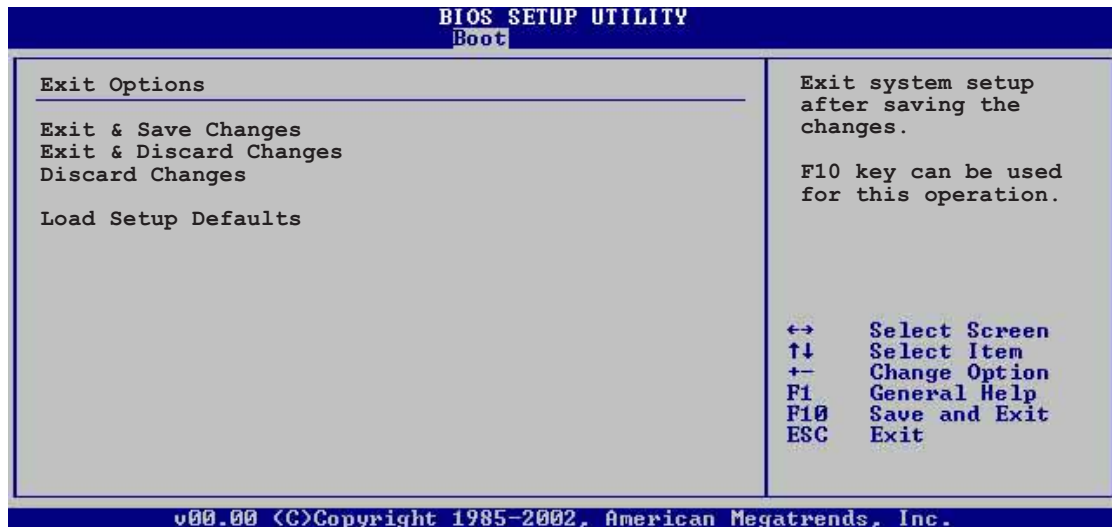
Boot Sector Virus Protection [Disabled]

Allows you to enable or disable the boot sector virus protection.

Configuration options: [Disabled] [Enabled]

4.7 Exit menu

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



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

Exit & Save Changes

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



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

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

Load Setup Defaults

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

Chapter 5

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

Software support

Chapter summary

5.1	Installing an operating system	5-1
5.2	Support CD information	5-1
5.3	Software Information	5-7
5.4	AI Net feature	5-9
5.5	Audio configurations	5-10
5.6	RAID configurations	5-11
5.7	Creating a RAID driver disk	5-20
5.8	Cool 'n' Quiet!™ Technology	5-21

5.1 Installing an operating system

This motherboard supports Windows® 98SE/ME/2000/XP/2003 Server 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, so use the setup procedures presented in this chapter for general reference only. Refer to your OS documentation for more information.

5.2 Support CD information

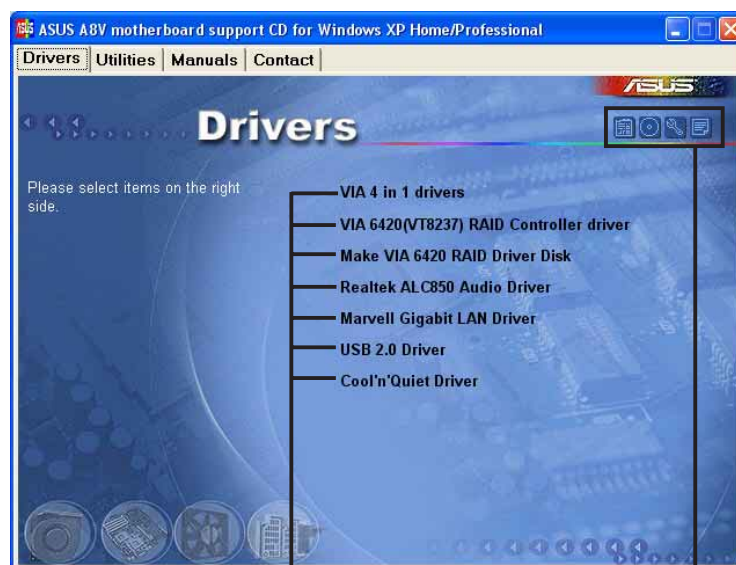
The support CD that came with the motherboard contains useful software and several utility drivers that enhance the motherboard features.



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

5.2.1 Running the support CD

To begin using the support CD, simply insert the CD into your CD-ROM drive. The CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.



Click an item to install

Click an icon to display more information



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

5.2.2 Drivers menu

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



VIA 4 in 1 drivers

This item installs the following drivers:

- VIA Registry (INF) driver
- VIA AGP VxD driver
- VIA ATAPI vendor support driver
- VIA PCI IRQ Miniport driver.

VIA 6420 RAID Controller driver

Installs the VIA 6420 RAID controller driver and application.

Realtek ALC850 Audio Driver

Installs the Realtek® ALC850 audio controller and application.

Marvell Gigabit LAN Driver

Installs the Marvell® 88E8001 Gigabit LAN drivers for Gigabit LAN solution that provides up to 1000Mbps data transfer rates.

USB 2.0 Driver

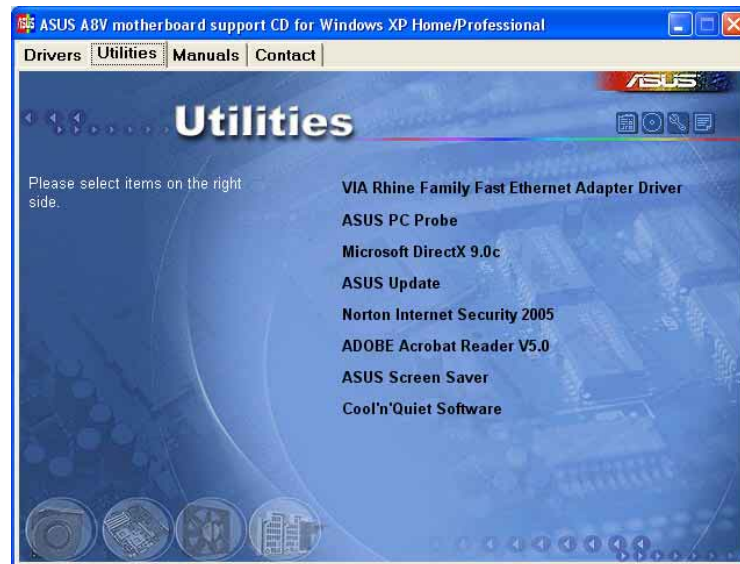
Installs the USB 2.0 driver.

Cool 'n' Quiet Driver

Installs the AMD Cool 'n' Quiet!™ Technology driver.

5.2.3 Utilities menu

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



ASUS PC Probe

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

ASUS Update

Allows you to download the latest version of the BIOS from the ASUS website.



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

Anti-virus Utility

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

ADOBE Acrobat Reader

Installs the Adobe Acrobat® Reader V5.0.

ASUS Screen Saver

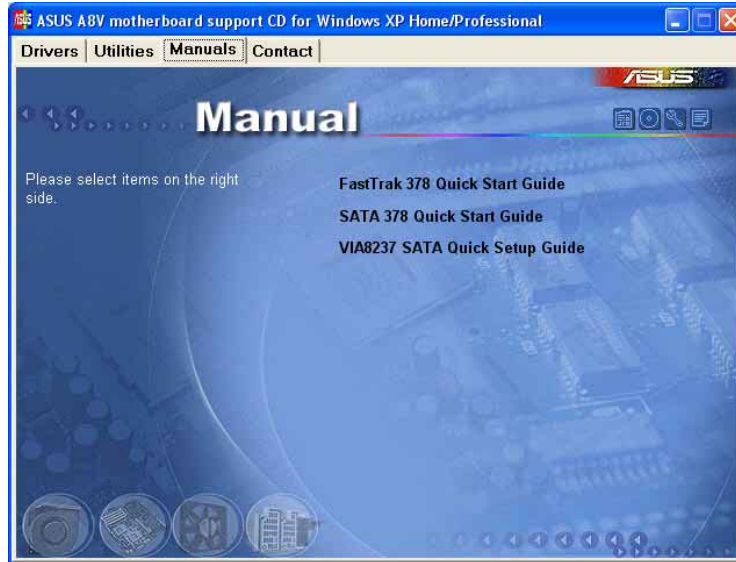
Installs the ASUS screen saver.

Cool 'n' Quiet Software

Installs the Cool 'n' Quiet! Technology software.

5.2.4 Manuals menu

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



Install the Adobe® Acrobat® Reader from the Utilities menu to open the manual files in PDF.

5.2.5 ASUS Contact information

Clicking the ASUS Contact Information tab displays as stated. You can also find this information on the inside front cover of this user guide.

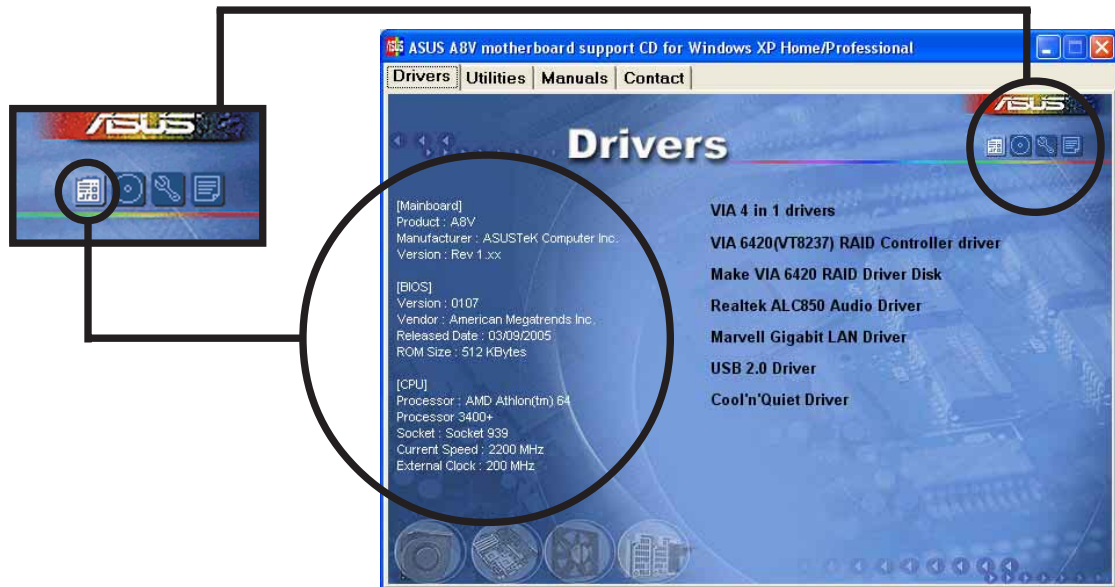


5.2.6 Other information

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.

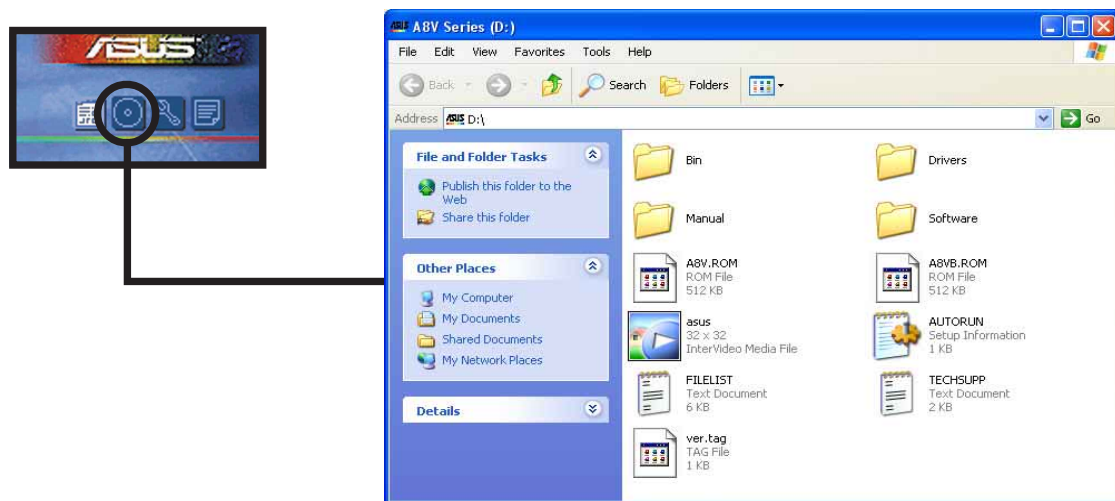
Motherboard Info

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.



TECHSUPP - Notepad

ASUSTeK TECHNICAL SUPPORT REQUEST FORM DATE: _____

ORIGINATOR DESCRIPTION

COMPANY NAME : CONTACT NAME :
PHONE (AREA) : FAX # (AREA) :
EMAIL ADDRESS :

HARDWARE DESCRIPTION

MOTHERBOARD :	REVISION #:	BIOS:#401A
CPU BRAND :	SPEED(MHZ):	
DRAM BRAND :	SPEED(ns) :	SIZE(MB):
CACHE BRAND :	SPEED(ns) :	SIZE(KB):
HARD DISK :	MODEL NAME:	SIZE(MB):
CDROM BRAND :	MODEL NAME:	
BACKUP BRAND :	MODEL NAME:	SIZE(MB):
OTHER STORAGE:	MODEL NAME:	SIZE(MB):

ADD-IN CARD DESCRIPTION (MODEL NAME/VENDOR)

(E)ISA SLOT 1:
(E)ISA SLOT 2:
(E)ISA SLOT 3:
(E)ISA SLOT 4:

Filelist

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



FILELIST - Notepad

File list for the included support software for ASv Series motherboard

File Name	Description

--Drivers	
-AMD	
-Cool'n'quiet	-ASUS cool&quiet driver V1.0.1.7 for windows 2000.
	-ASUS Cool&quiet driver V1.1.0.14 for Windows XP.
	-ASUS Cool&quiet driver V1.1.0.0 for Windows 2003.
-Audio	
-ALC850	-ALC850 Avance AC'97 Driver & Application A3.57 WHQL.
-64bit	-ALC850 Avance AC'97 Driver V5.10.00.578L for windows 64bit XP/2003.
-Lan	
-Marvell	-Marvell yukon Gigabit Ethernet Driver V7.21.1.3 for windows 2000/XP/2003/W
	-Marvell yukon Gigabit Ethernet driver V7.14.1.3 for Windows 98/ME.
	-Marvell yukon Gigabit Ethernet driver V7.14.2.3 for Windows NT.
-XP_2003_64bit	-Marvell yukon Gigabit Ethernet driver V7.31.1.3 for windows 64bit XP/2003.
-VCT	-Marvell VCT package V2.11.1.3 For windows 64bit XP/2003.
-Promise	
-378RAID	-FastTrak 376/378 driver.
-nt4	-Windows NT4 miniport driver 1.00.1.37.
-win2000	-Windows 2000 miniport driver 1.00.1.37 WHQL.
-98-me	-Windows 98-ME miniport driver 1.00.1.37.
-winxp	-Windows XP miniport driver 1.00.1.37 WHQL.
-win2003	-Windows 2003 miniport driver 1.00.1.37 WHQL.
-Makedisk	-Make Promise RAID driver Floppy for windows NT4/2000/XP/2003.
-378ATA	-Promise SATA378 Driver V1.00.0.27.
-Makedisk	-Make Promise SATA driver Floppy for windows NT4/2000/XP.
-Linux	-PROMISE 20378 Driver for Redhat 7.3 & 8.0 and SUSE 8.0 & 8.1.
-Netware	-Netware5.1/6.0 Promise FastTrak 378 Controller Driver.
-PAM	-Promise Array Management for windows 2000/XP/2003.

5.3 Software Information

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

This section provides details of the software applications that the motherboard supports.

ASUS MyLogo2™

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



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



Make sure that the BIOS Item Full Screen Logo is set to [Enabled] if you want to use ASUS MyLogo2™. See section “4.6.2 Boot Settings Configuration”.

Follow these steps to use ASUS MyLogo2.

1. Launch the ASUS Update utility. See section “4.1.6 ASUS Update.”
2. When prompted for the BIOS update method, select the option “Update BIOS from a file.”
3. Specify the location of the BIOS file, such as from a floppy disk. Click **Next**.



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



You can create your own boot logo image in GIF, JPG, or BMP file formats.



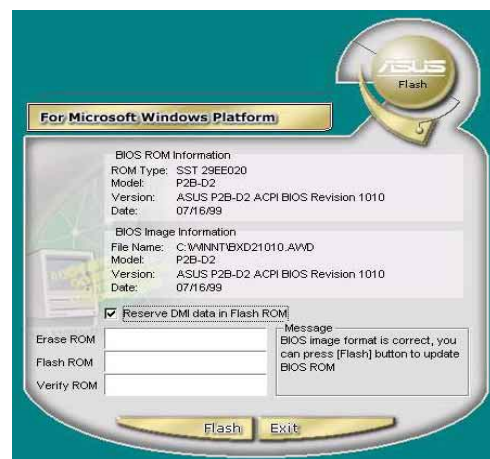
- When you click on an image, it displays larger on the MyLogo2™ screen.



- ASUS MyLogo2™ might encounter problems with complex images. If a problem occurs, replace with a simpler image or make the image smaller.
- To reduce the logo image, click on the arrow on the Ratio item and select your desired scale.



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



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

5.4 AI Net feature

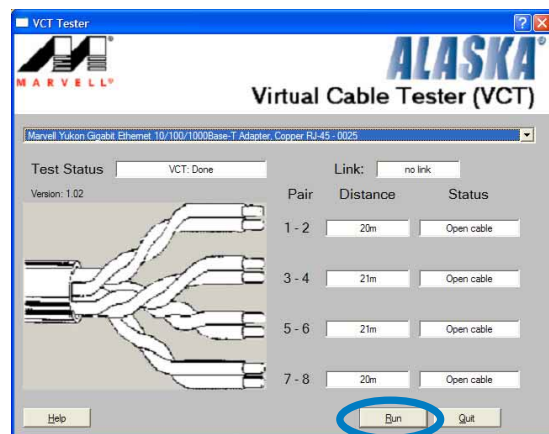
The motherboard supports the Marvell® Virtual Cable Tester (VCT) Technology. The VCT virtually diagnoses and reports cable faults using the Time Domain Reflectometry (TDR). The VCT technology detects and reports open and shorted cables with up to one meter of accuracy. It also detects impedance mismatches, pair swaps, pair polarity problems, and pair skew problems of up to 64ns.

VCT remarkably reduces networking and support costs complementing a highly manageable and controlled network system. Also, this tool can be incorporated in the network systems software, making it ideal for field support as well as development diagnostics.

Using the Virtual Cable Tester™

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

1. Click the **Start** button. Select **All Programs > Marvell > Virtual Cable Tester**.
2. From the menu, click **Virtual Cable Tester**. The following screen display appears.
3. Click on **Run** to execute test.



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

5.5 Audio configurations

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

Follow the installation wizard to install the **Realtek ALC850 Audio Driver and Application** from the support CD that came with the motherboard package.

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



Realtek SoundEffect icon

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



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

5.6 RAID configurations

The motherboard comes with the VIA VT8237 controller integrated in the SouthBridge to support Redundant Array of Independent Disks (RAID) configurations. Using two Serial ATA hard disks, you can set up RAID 0, RAID 1, and JBOD configurations. The following defines the different RAID set configurations:

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

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

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



If you use either Windows® XP or Windows® 2000 operating system (OS), copy first the RAID driver from the support CD to a floppy disk before creating RAID configurations. Refer to section “5.7 Creating a RAID driver disk” for details.

5.6.1 Installing hard disks

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



-
- If you are creating a **RAID 0 (striping)** array for performance, use two new drives.
 - If you are creating a **RAID 1 (mirroring)** array for protection, you can use two new drives or use an existing drive and a new drive with the same or larger size than the existing drive.
-

Installing Parallel ATA hard disks

To install the hard disks for RAID configuration:

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

Installing Serial ATA (SATA) hard disks

To install the SATA hard disks for RAID configuration:

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

5.6.2 VIA RAID configurations

The motherboard includes a high performance IDE RAID controller integrated in the VIA VT8237 southbridge chipset. It supports RAID 0 and RAID 1 with two independent Serial ATA channels.



Refer to **VIA8237 SATA Quick Setup guide** found in the support CD for detailed information on RAID configurations under different operating systems.

Entering VIA Tech RAID BIOS Utility

1. Boot-up your computer.
2. During POST, press <Tab> to enter VIA RAID configuration utility. The following menu options will appear.



The RAID BIOS information on the setup screen shown below is for reference only. What you see on your screen may not exactly match what is shown here.

```
VIA Tech. RAID BIOS Ver 1.xx

▶ Create Array
▶ Delete Array
▶ Create/Delete Spare
▶ Select Boot Array
▶ Serial Number View

Create a RAID array with
the hard disks attached to
VIA RAID controller

F1 : View Array/Disk Status
↑,↓ : Move to next item
Enter : Confirm the selection
ESC : Exit

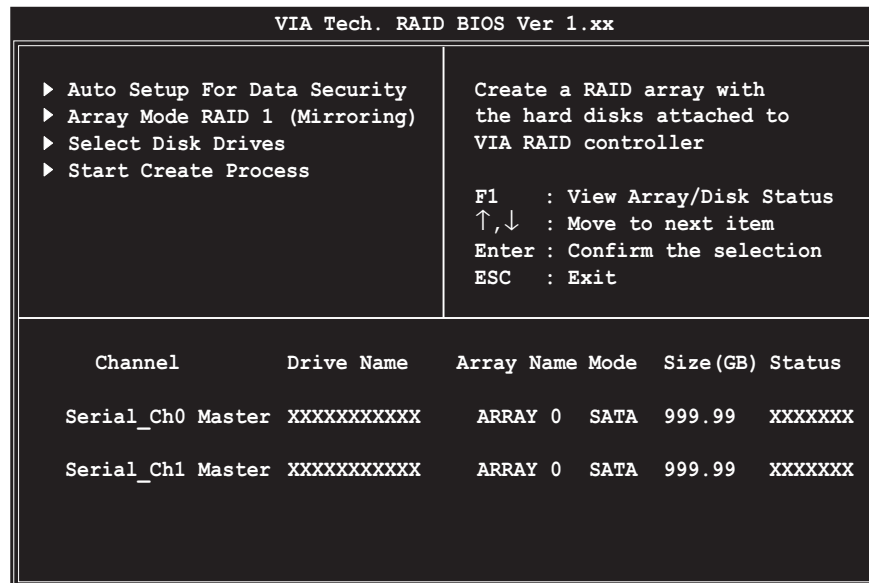
Channel      Drive Name      Array Name Mode  Size(GB) Status
Serial_Ch0 Master XXXXXXXXXXXX    ARRAY 0  SATA  999.99  XXXXXXXX
Serial_Ch1 Master XXXXXXXXXXXX    ARRAY 0  SATA  999.99  XXXXXXXX
```

On the upper-right side of the screen is the message and legend box. The keys on the legend box allows you to navigate through the setup menu options. The message describes the function of each menu item. The following lists the keys found in the legend box with their corresponding functions.

<F1> : View Array/Disk Status
↑, ↓ : Move to the next item
<Enter> : Confirm the selection
<ESC> : Exit

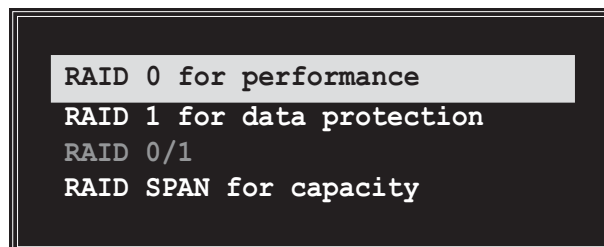
Create Array

1. From the VIA RAID BIOS utility main menu, select **Create Array** then press **<Enter>**. The main menu items on the upper-left corner of the screen are replaced with create array menu options.



RAID 0 for performance

1. From the create array menu, select **Array Mode**, then press **<Enter>**. The supported RAID configurations appear on a pop-up menu.



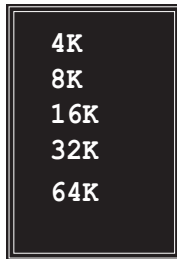
2. Select **RAID 0 for performance** then press **<Enter>**.

From this point, you may choose to auto-configure the RAID array by selecting **Auto Setup for Performance** or manually configure the RAID array for striped sets. If you want to auto-configure, proceed to the next step, otherwise, skip to step 5.

3. Select **Auto Setup for Performance** and press **<Enter>**. The following confirmation message appears.

```
Auto create array will destroy all
data on disks, Continue? (Y/N)
```

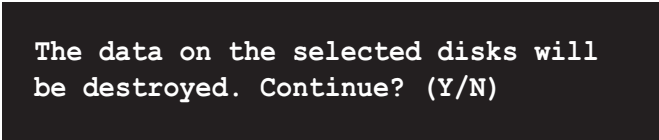

4. Press <Y> to confirm or <N> to return to the configuration options. If you selected <Y>, proceed to step 9.
5. Select **Select Disk Drives**, then press <Enter>. Use arrow keys to select disk drive, then press <Enter> to mark selected drive. An asterisk appears before a selected drive.
6. Select **Block Size**, then press <Enter> to set array block size. A list of valid array block sizes are displayed on a pop-up menu.



TIP: For server systems, use of a lower array block size is recommended. For multimedia computer systems used mainly for audio and video editing, a higher array block size is recommended for optimum performance.

Use arrow keys to move selection bar on items and press <Enter> to select.

7. Select **Start Create Process** and press <Enter> to set up hard disk for RAID system. The following confirmation message appears:

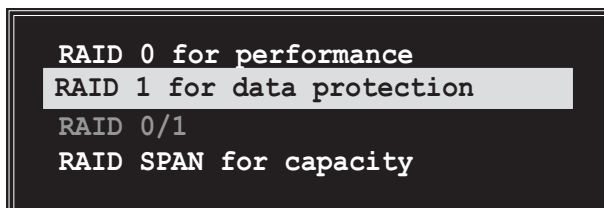
A screenshot of a confirmation message displayed in a black box with white text. The text reads: "The data on the selected disks will be destroyed. Continue? (Y/N)".

The data on the selected disks will be destroyed. Continue? (Y/N)

8. Press <Y> to confirm or <N> to return to the configuration options.
9. Press <Esc> to go back to main menu.

RAID 1 for data protection

1. From the create array menu, select **Array Mode**, then press <Enter>. The supported RAID configurations appear on a pop-up menu.



2. Select **RAID 1 for data protection** then press <Enter>.

3. From this point, you can auto-configure the RAID array by selecting **Auto Setup for Data Security** or manually configure the RAID array for mirrored sets. If you want to auto-configure, proceed to the next step, otherwise, skip to step 6.
4. Select **Auto Setup for Data Security** and press <Enter>. The following confirmation message appears.

```
Auto create array will destroy all
data on disks, Continue? (Y/N)
```

5. Press <Y> to confirm or <N> to return to the configuration options. If you selected <Y>, proceed to step 11.
6. Select **Select Disk Drives**, then press <Enter>. Use arrow keys to select disk drive/s, then press <Enter>. An asterisk appears before a selected drive.
7. Select **Start Create Process** and press <Enter> to setup hard disk for RAID system. The following inquiry appears:

```
Save the data on source disk to
mirror after creation? (Y/N)
```

8. If you select <Y> the utility will duplicate your data. Press <Y> anytime if you want to exit the duplication process.

```
Duplicating...
Press Yes(Y) to Escape
```

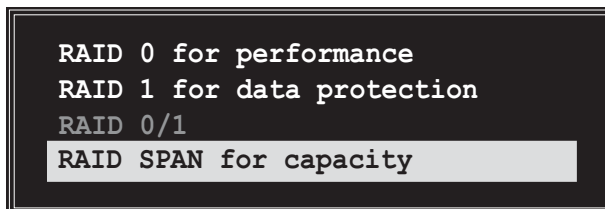
9. If you select <N>, the following confirmation message appears.

```
The data on the selected disks will
be destroyed. Continue? (Y/N)
```

10. Press <Y> to confirm or <N> to return to the configuration options.
11. Press <Esc> to go back to main menu.

RAID Span for capacity

1. From the create array menu, select **Array Mode**, then press <Enter>. The supported RAID configurations appear on a pop-up menu.



2. Select **RAID SPAN for capacity** then press <Enter>.
3. From this point, you can auto-configure the RAID array by selecting **Auto Setup for Capacity** or manually configure the RAID array for spanned sets. If you want to auto-configure, continue with next step; otherwise, proceed to step 6.
4. Select **Auto Setup for Capacity** and press <Enter>. The following confirmation message appears.

```
Auto create array will destroy all
data on disks, Continue? (Y/N)
```

5. Press <Y> to confirm or <N> to return to the configuration options. If you selected <Y>, proceed to step 11.
6. Select **Select Disk Drives**, then press <Enter>. Use arrow keys to select disk drive/s, then press <Enter>. An asterisk appears before a selected drive.
7. Select **Start Create Process** and press <Enter> to start RAID system setup. The following inquiry appears:

```
Save the data on Span 0 disk
after creation? (Y/N)
```

8. If you select <Y>, the utility will save your disk data on Span 0 disk then configure the RAID set. Proceed to step 11.
9. If you select <N>, the following confirmation message appears.

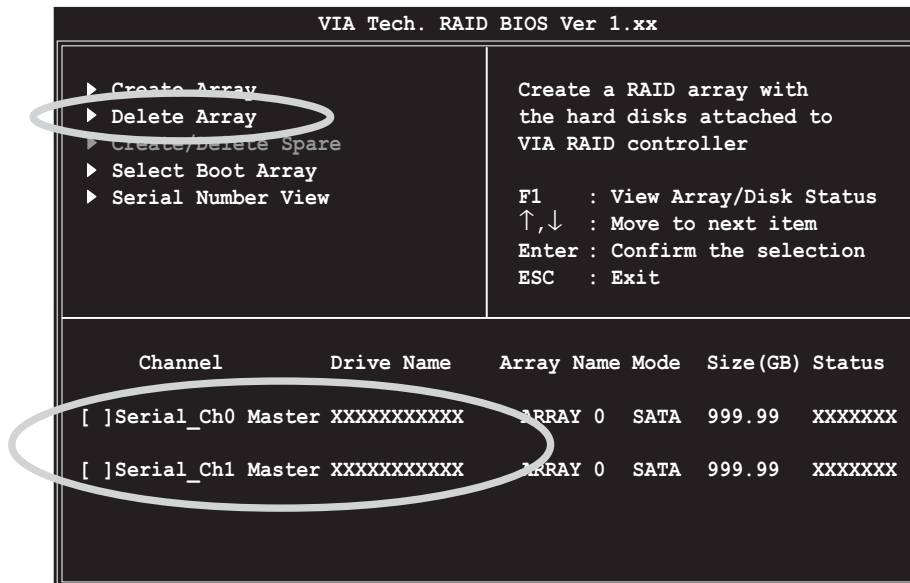
```
The data on the selected disks will
be destroyed. Continue? (Y/N)
```

10. Press <Y> to confirm or <N> to return to the configuration options.

11. Press <Esc> to go back to main menu.

Delete Array

1. From the VIA RAID BIOS utility main menu, select **Delete Array** then press <Enter>.



2. From the list of channel used for IDE RAID arrays, press <Enter> to select a RAID array to delete. The following confirmation message appears.

```
The selected array will be destroyed.  
Are you sure? Continue? Press Y/N
```

3. Press <Y> to confirm or <N> to return to the configuration options.

Select Boot Array

1. From the VIA RAID BIOS utility main menu, select **Select Boot Array** then press <Enter>.
2. From the list of channel used for IDE RAID arrays, press <Enter> to select a RAID array for boot. After selection, the **Status** of the selected array will change to Boot.
3. Press <ESC> to return to the menu items. Follow the same procedure to deselect the the boot array.

Serial Number View

1. From the VIA RAID BIOS utility main menu, select **Serial Number View** then press <Enter>.
2. From the list of channel used for IDE RAID arrays, use the arrow keys to move the selection bar on each item. The serial number for the selected drive is displayed at the bottom of the screen.



This option is useful for identifying same model disks.

```
VIA Tech. RAID BIOS Ver 1.xx
```

<ul style="list-style-type: none">▶ Create Array▶ Delete Array▶ Create/Delete Spare▶ Select Best Array▶ Serial Number View	<p>Create a RAID array with the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/Disk Status ↑,↓ : Move to next item Enter : Confirm the selection ESC : Exit</p>
---	--

Channel	Drive Name	Array Name	Mode	Size(GB)	Status
Serial_Ch0	Master XXXXXXXXXXXX	ARRAY 0	SATA	999.99	XXXXXXX
Serial_Ch1	Master XXXXXXXXXXXX	ARRAY 0	SATA	999.99	XXXXXXX

Serial Number: XXXXXXXX

5.7 Creating a RAID driver disk

A floppy disk with the RAID driver is required when installing Windows® XP/2000 operating system. You can create a RAID driver disk using Makedisk.exe utility.

To create a RAID driver disk:

1. Insert the motherboard support CD into the CD-ROM drive and locate the Makedisk.exe utility in “\Drivers\VIARAID\6420RAID\Makedisk.exe” of the motherboard support CD.
2. Insert a clean floppy disk into the floppy disk drive and execute Makedisk.exe. Follow succeeding screen instructions to complete the process.
3. Write-protect the floppy disk to avoid computer virus infection.

To install the RAID driver:

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



For additional information on RAID installation and configuration, refer to the Manuals menu of the support CD.

5.8 Cool 'n' Quiet!™ Technology

The motherboard supports the AMD Cool 'n' Quiet!™ Technology that dynamically and automatically change the CPU speed, voltage, and amount of power depending on the task the CPU performs.

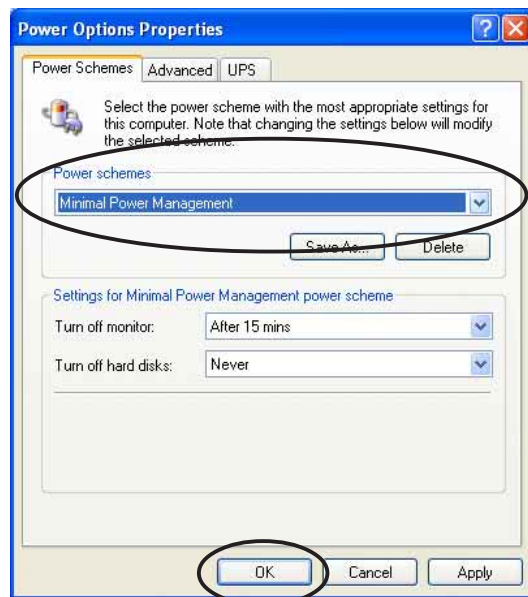
5.8.1 Enabling Cool 'n' Quiet!™ Technology

To enable Cool 'n' Quiet!™ Technology:

1. Turn on the system and enter BIOS by pressing the key during the Power On Self-Tests (POST).
2. In the **Advanced > CPU Configuration > AMD CPU Cool & Quiet Configuration** menu, select the item **Cool N'Quiet** and set it to **Enabled**. See section "4.4 Advanced Menu" in the user guide.
3. In the **Power** menu, select the item **ACPI 2.0 Support** and set it to **Yes**. See section "4.5 Power Menu" in the user guide.
4. Save your changes and exit BIOS Setup.
5. Reboot your computer and set your Power Option Properties depending on your operating system.

Windows® 2000/XP

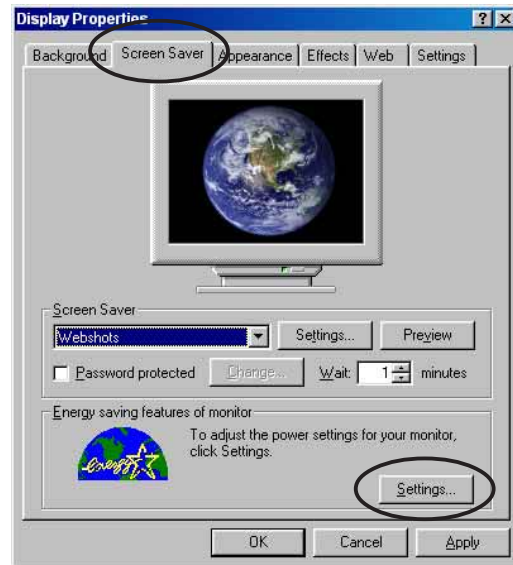
1. From the Windows® 2000/XP operating system, click the **Start** button. Select **Settings**, then **Control Panel**.
2. Make sure the Control Panel is set to Classic View.
3. Double-click the **Display** icon in the Control Panel then select the **Screen Saver** tab.
4. Click the **Power...** button. The following dialog box appears.
5. From the **Power schemes** combo list box, select **Minimal Power Management**.
6. Click **OK** to effect settings.



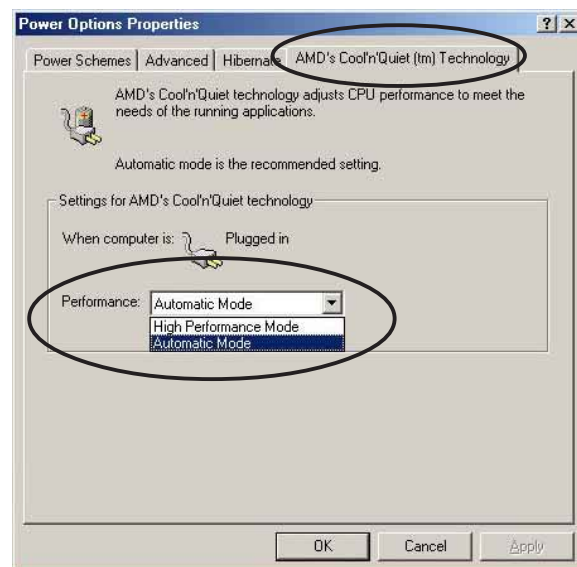
Make sure to install the Cool 'n' Quiet!™ driver and application before using this feature.

Windows® 98SE/ME

1. From the Windows® 98SE/ME operating system, click the **Start** button. Select **Settings**, then **Control Panel**.
2. Double-click the **Display** icon in the Control Panel then select the **Screen Saver** tab.
3. From the **Energy saving features of monitor** group, click the **Settings...** button.



4. From the **Power Options Properties** dialog box, select the **AMD's Cool 'n' Quiet(tm) Technology** tab.
5. Click the **Performance** combo list box to select desired mode. Automatic Mode is the recommended setting.
6. Click **OK** to effect settings.



- Make sure to install the AMD Cool 'n' Quiet!™ driver and application before using this feature.
- The AMD Cool 'n' Quiet!™ Technology feature works only with the AMD heatsink and fan assembly with monitor chip.
- If you purchased a separate heatsink and fan package, use the ASUS Q-Fan Technology feature to automatically adjust the CPU fan speed according to your system loading.

5.8.2 Launching the Cool 'n' Quiet!™ software

The motherboard support CD includes the Cool 'n' Quiet!™ software that enables you to view your system's real-time CPU Frequency and voltage.



Make sure to install the Cool 'n' Quiet!™ software from the motherboard support CD. Refer to section "5.2.3 Utilities menu", for details.

To launch the Cool 'n' Quiet!™ program:

1. If you are using Windows® 98SE/ME/2000, click the **Start** button. Select **Programs > ASUS > Cool & Quiet > Cool & Quiet**.
2. If you are using Windows® XP, click the **Start** button. Select **All Programs > ASUS > Cool & Quiet > Cool & Quiet**.
3. The Cool 'n' Quiet!™ technology screen appears and displays the current CPU Frequency and CPU Voltage.

