



**A7N8X-XE**

User Guide

**Motherboard**

E2126

First Edition

July 2005

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# Notices

## Federal Communications Commission Statement

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

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

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

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



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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

## How this guide is organized

This manual contains the following parts:

- **Chapter 1: Product Introduction**

This chapter describes the features of the motherboard and the new technology it supports. It also lists the hardware setup procedures that you have to perform when installing system components. It includes description of the jumpers and connectors on the motherboard.

- **Chapter 2: BIOS Information**

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

- **Chapter 3: Software Support**

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

## Conventions used in this guide

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



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



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



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



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

## Where to find more information

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

1. **ASUS websites**

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

2. **Optional documentation**

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

## A7N8X-XE Specifications Summary

CPU	Socket A for AMD Athlon™ XP/Sempron™/Duron™ processors
Chipset	NVIDIA® nForce 2 Ultra 400 NVIDIA® nForce 2 MCP-RAID
Front Side Bus (FSB)	400/333/266 MHz
Memory	3 x 184-pin DDR DIMM Dockets for up to 3GB memory Support DDR 400/333/266, non-ECC, un-buffered memory Support Dual Channel Architecture
Expansion Slots	1 x AGP 8X 5 x PCI
Storage	2 x UltraDMA 133/100/66/33 2 x Serial ATA, RAID 0, RAID 1, RAID 0 + 1 support
Audio	C-Media CMI9761A 6-channel CODEC S/PDIF out interface
LAN	Realtek RTL8201BL 10/100Mbps LAN PHY
USB	Supports up to eight USB 2.0 ports
ASUS Special features	ASUS C.P.R. ASUS C.O.P. (CPU Overheating Protection) ASUS MyLogo2 SFS (Stepless Frequency Selection) from 200MHz up to 400MHz at 1MHz increment
Rear panel I/O ports	1 x Parallel port 1 x Serial (COM1) port 1 x PS/2 Keyboard port (purple) 1 x PS/2 Mouse port (green) 1 x Audio I/O port 1 x LAN (RJ-45) port 1 x S/PDIF Out (Coaxial) port 4 x USB 2.0 ports
Internal I/O connectors	1 x Floppy disk drive connector 2 x IDE connectors 2 x Serial ATA connectors 2 x USB connectors supports additional 4 USB ports 20-pin ATX power connector CD/AUX audio in connectors CPU/Chassis FAN connectors Front panel audio connector
BIOS features	4 Mb Flash ROM, AMI BIOS, PnP, DMI2.0, WfM2.0, SM BIOS 2.3, ASUS EZ Flash, ASUS CrashFree BIOS
Industry standard	PCI 2.2, USB 2.0/1.1
Manageability	WfM 2.0, DMI 2.0, WOL by PME, WOR by PME

(continued next page)

## A7N8X-XE Specifications Summary

Support CD	Drivers ASUS PC Probe Anti-Virus Software ASUS LiveUpdate
Accessory	User's Manual UltraDMA cable FDD cable I/O shield SATA cable
Form factor	ATX, 12" x 7.8" (30.5cm x 19.8cm)

\* Specifications are subject to change without notice.



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

# 1 Product Introduction

# 1.1 Welcome!

Thank you for buying an ASUS® A7N8X-XE motherboard!

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

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

## 1.2 Package contents

Check your motherboard package for the following items.

Motherboard	ASUS A7N8X-XE motherboard
Cables	Serial ATA signal cable and Serial ATA power cable Ultra DMA cable Floppy Disk Drive cable
Accessories	I/O shield
Application CDs	ASUS motherboard support CD
Documentation	User guide



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

## 1.3 Special features

### 1.3.1 Product highlights

#### 400 MHz FSB Athlon XP CPU Support



The motherboard supports 400MHz front side bus frequency for AMD's Athlon XP and Sempron processors allowing increased office productivity and enhanced digital media experience. See page 1-8.

#### Dual-Channel DDR 400

The 128-bit TwinBank DDR Memory architecture doubles the DDR 400 (PC3200) bandwidth. System bottlenecks are eliminated with balanced architecture and peak bandwidths up to 6.4 GB/s. See page 1-9 for details.

## Serial ATA technology

Serial ATA is the next generation ATA specification that provides scalable performance for today and tomorrow. With up to 150MB/s data transfer rate, Serial ATA is faster than current Parallel ATA, while providing 100% software compatibility. A7N8X-XE supports RAID 0, RAID 1 and RAID 0 + 1. See page 1-19 for details.

## Integrated 10/100 LAN controller

A 10/100Mbps Fast Ethernet controller is embedded in this motherboard to give you a fast and reliable connection to a local area network (LAN) and the Internet. See page 1-20

## Coaxial S/PDIF out

This motherboard provides convenient connectivity to external home theater audio systems via an coaxial S/PDIF-out (SONY-PHILIPS Digital Interface) jack. It allows to transfer digital audio without converting to analog format and keeps the best signal quality. See page 1-17 for details.

## USB 2.0 technology

USB 2.0 is the latest connectivity standard for next generation components and peripherals. Backwards compatible with current USB 1.1 peripherals, USB 2.0 delivers transfer speeds up to 40 times faster at 480 MB/s, for easy connectivity and ultra-fast data transfer rate. See pages 1-17 & 1-20 for details.

## AGP8X

AGP8X (AGP 3.0) is the mainstream VGA interface specification that enables enhanced graphics performance with high bandwidth up to 2.13 GB/s. See page 1-14 for details.

## 1.3.2 Innovative ASUS features

### CrashFree BIOS

CrashFree BIOS allows users to restore BIOS data from a floppy diskette even when BIOS code and data are corrupted during upgrade or invaded by virus. Unlike other competing vendors' products, ASUS motherboards now enable users to enjoy this protection feature without the need to pay for an extra ROM. See page 2-5 for details.

### ASUS EZ Flash BIOS

With ASUS EZ Flash, you can update BIOS before entering operating system. No more DOS-based flash utility and bootable diskette required. See page 2-6 for details.

### ASUS C.O.P. (CPU Overheating Protection)

The ASUS C.O.P. (CPU Overheating Protection) is a hardware protection circuit that automatically shuts down the system power before temperatures go high enough to permanently damage the CPU. See page 2-26 for details.

### C.P.R. (CPU Parameter Recall)

When the system hangs due to overclocking failure, there is no need to open the case to clear CMOS data. Just simply restart the system, the BIOS would show the previous setting and then users can amend the CPU setting again.

### ASUS MyLogo 2

You can convert your favorite photo into a 256-color boot logo for a more colorful and vivid image on your screen.

## 1.4 Before you proceed

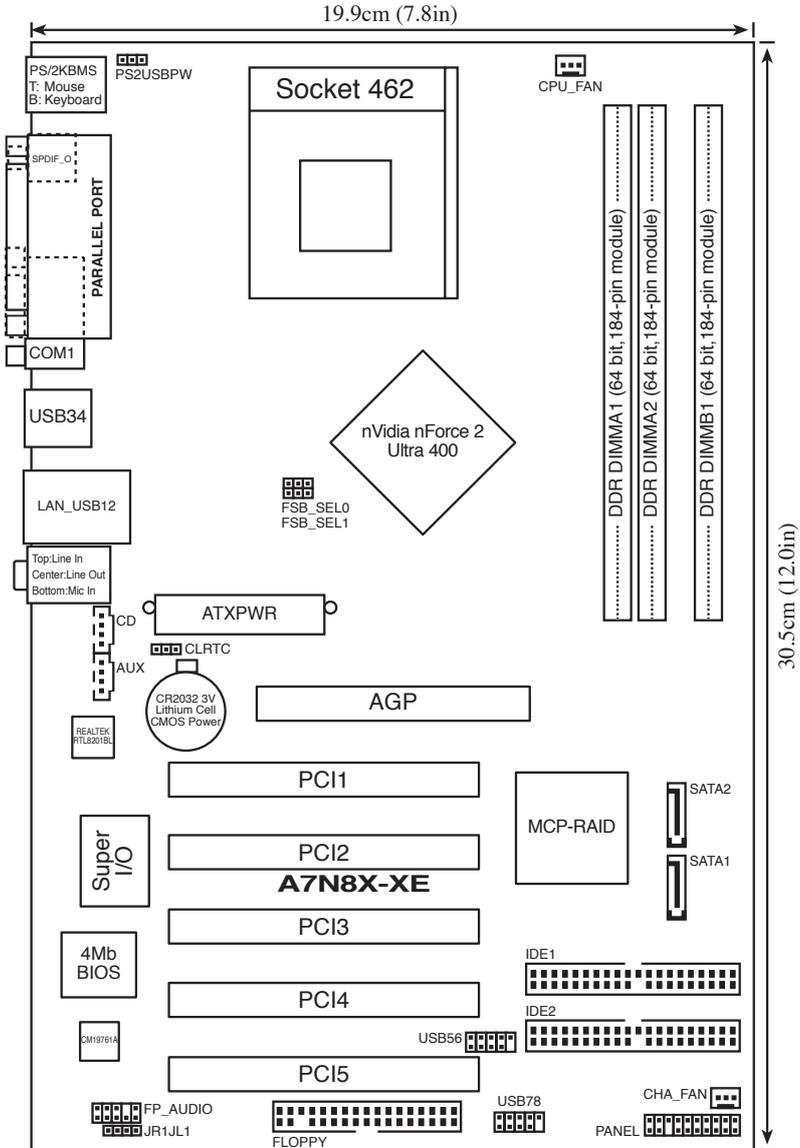
Take note of the following precautions before you install motherboard components or change any motherboard settings.



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

# 1.5 Motherboard overview

## 1.5.1 Motherboard layout



## 1.5.2 Placement direction

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

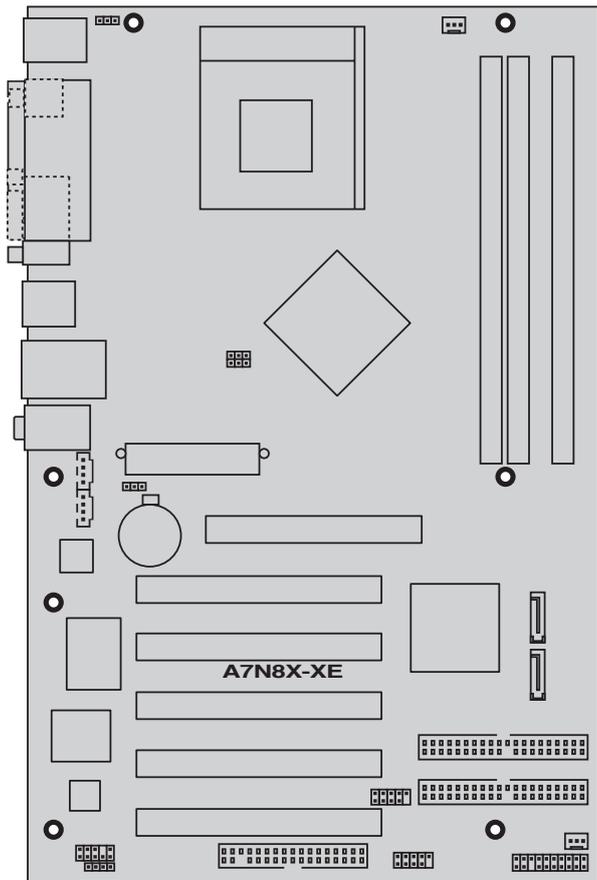
## 1.5.3 Screw holes

Place seven screws into the holes indicated by circles to secure the motherboard to the chassis.



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

Place this side towards--  
the rear of the chassis



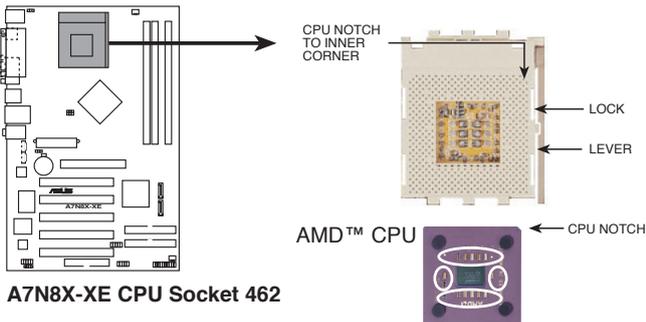
# 1.6 Central Processing Unit (CPU)

## 1.6.1 Overview

The motherboard has a Socket A for installation. The AMD Athlon™/Sempron™/Duron™ CPU has a “marked” corner. This corner is usually indicated with a notch, and/or a golden square or triangle. Refer to this indicator when orienting the CPU. A fan and heatsink should be installed on top of the CPU to prevent overheating.



Do not use processors with core speeds of less than 1GHz.

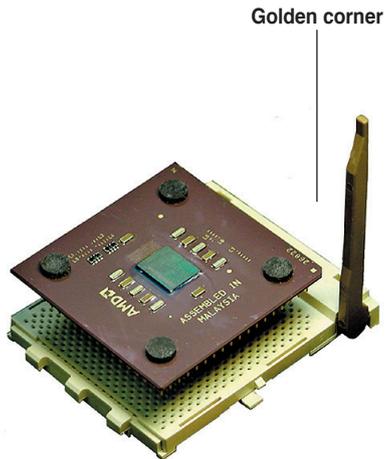


A7N8X-XE CPU Socket 462

## 1.6.2 Installing the CPU

Follow these steps to install a CPU:

1. Locate the CPU socket. Open the socket by pulling the lever gently sideways away from the socket, then lift the lever upwards to a 90 to 100-degree angle.
2. Insert the CPU with the correct orientation. The notched or golden corner of the CPU must be oriented toward the inner corner of the socket base nearest to the lever hinge.

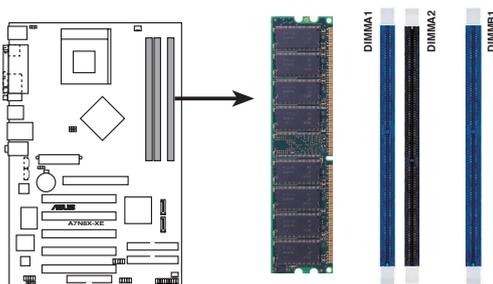


The CPU should drop easily into place. Do not force the CPU into the socket to avoid bending the pins. If the CPU does not fit, check its alignment and look for bent pins.

# 1.7 System memory

## 1.7.1 Overview

The motherboard has three Double Data Rate (DDR) DIMM sockets that support up to 3 GB unbuffered non-ECC DDR400/333/266 DDR SDRAM DIMMs. Each DIMM socket is double-sided.



A7N8X-XE 184-pin DDR DIMM sockets

## 1.7.2 Memory configurations

You may install single or double-sided 64 MB, 128 MB, 256 MB, 512 MB, and 1 GB DDR DIMMs to the sockets.

Table 1 Recommended memory configurations

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



1. DIMMs with more than 8 devices on each side of the module are not supported.
2. Make sure the memory frequency and bus frequency setting in the BIOS are the same or set to [Auto] ensure system stability.
3. 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.
4. For optimum compatibility, it is recommended that you obtain memory modules from qualified vendors. See the next page for a list of qualified DDR400 DIMM vendors.
5. Visit ASUS website ([www.asus.com](http://www.asus.com)) for latest DDR400 Qualified Vendor List.

## DDR400 Qualified Vendors List

Size	Vendor	Model	CL	Brand	SS/DS	Component	DIMM socket support (Optional)		
							A*	B*	C*
256MB	Kingston	KVR333X64C25/256	N/A	Kingston	SS	D3208DH1T-6	Pass	Pass	Pass
256MB	Kingston	KVR333X64C25/256	N/A	Hynix	SS	HY5DU56822BT-J	Pass	Pass	Pass
256MB	Kingston	KVR333X64C25/256	N/A	Hynix	DS	HY5DU56822BT-D43	Pass	Pass	Pass
512MB	Kingston	KVR333X64C25/512	N/A	Kingston	DS	D3208DH1T-6	Pass	Pass	-
512MB	Kingston	KVR333X64C25/512	N/A	Hynix	DS	HY5DU56822BT-J	Pass	Pass	Pass
512MB	Kingston	KVR400X64C3A/512	N/A	Hynix	DS	HY5DU56822BT-D43	Pass	Pass	Pass
512MB	Kingston	KVR400X64C3A/512	N/A	Kingston	DS	D3208DH1T-5	Pass	Pass	Pass
256MB	Kingston	KVR400X64C3A/256	N/A	Hynix	SS	HY5DU56822BT-D43	Pass	Pass	-
256MB	Infineon	HYS64D32300GU-5-C		Infineon	SS	HYB25D256800CE-5C	Pass	Pass	Pass
512MB	Infineon	HYS64D64320GU-5-C		Infineon	DS	HYB25D256800CE-5C	Pass	Pass	Pass
256MB	Infineon	HYS64D32300GU-5-C	N/A	Infineon	SS	HYB25D256800CE-5C	Pass	Pass	Pass
512MB	Infineon	HYS64D64320GU-6-C	N/A	Infineon	DS	HYB25D256800CE-6C	Pass	Pass	Pass
256MB	HY	DDR400-256	N/A	Hynix	SS	HY5DU56822BT-D43	Pass	Pass	Pass
512MB	HY	DDR400-512	N/A	Hynix	DS	HY5DU56822BT-D43	Pass	Pass	Pass
256MB	HY	DDR333-256	N/A	Hynix	SS	HY5DU56822BT-J	Pass	Pass	Pass
512MB	HY	DDR333-512	N/A	Hynix	DS	HY5DU56822BT-J	Pass	Pass	-
256MB	Corsair	VS256MB400	N/A	Value select	SS	VS32M8-5 2B0409	Pass	Pass	Pass
256MB	Corsair	XMS3202v3.1		Infineon	SS	HYB25D256807BT-5B	Pass	Pass	Pass
512MB	Corsair	VS512MB400	N/A	Value select	DS	VS32M8-5 2B0402	Pass	Pass	-
256MB	Corsair	VS256MB333	N/A	Samsung	SS	K4H5608380-TCB3	Pass	Pass	Pass
512MB	Corsair	XMS2702v3.1		Mosel	DS	V58C2256804SAT6	Pass	Pass	Pass
512MB	Corsair	XMS2702v1.2		Winbond	DS	W942508CH-6	Pass	Pass	-
512MB	Corsair	VS512MB333	N/A	Value select	DS	VS32M8-6 2B0412	Pass	Pass	-
512MB	Micron	MT16VDDT6464AG-335GB	N/A	Micron	DS	MT46V32M8TG-6TG	Pass	Pass	Pass
256MB	Micron	MT8VDDT3264AG-335GB		Micron	SS	MT46V32M8TG-6TG	Pass	Pass	Pass
256MB	Micron	MT8VDDT3264AG-40BGB		Micron	SS	MT46V32M8TG-5BG	Pass	Pass	Pass
512MB	Micron	MT16VDDT6464AG-40BCB		Micron	DS	MT46V32M8TG-5BC	Pass	Pass	Pass
256MB	Samsung	M368L3223FTN-CCC		Samsung	SS	K4H560838F-TCCC	-	-	Pass
512MB	Samsung	M368L6423FTN-CCC		Samsung	DS	K4H560838F-TCCC	Pass	Pass	Pass
256MB	Samsung	M368L3223FTN-CB3		Samsung	SS	K4H560838F-TCB3	Pass	Pass	Pass
512MB	Samsung	M368L6423FTN-CB3		Samsung	DS	K4H560838F-TCB3	Pass	Pass	Pass

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

B\*: Supports one pair of modules inserted into either the blue slots or the black slots as one pair of Dual-channel memory configuration

C\*: Supports 3 modules inserted into both the blue and black slots as two pairs of Dual-channel memory configuration

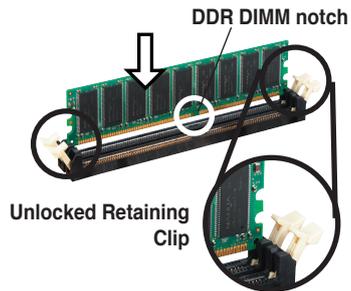
## 1.7.3 Installing a DIMM



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

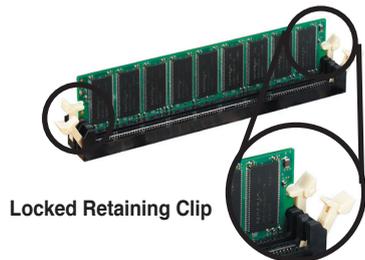
Follow these steps to install a DIMM.

1. Locate the DIMM sockets in the motherboard.
2. Unlock a DIMM socket by pressing the retaining clips outward.
3. 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.

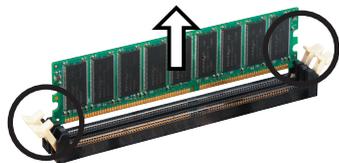
4. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



## 1.7.4 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.

## 1.8 Expansion slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.



---

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

---

### 1.8.1 Installing an expansion card

To install an expansion card:

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

### 1.8.2 Configuring an expansion card

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

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

## Standard interrupt assignments

IRQ	Standard Function
0	System Timer
1	Standard 101-102-key or microsoft natural keyboard
2	Programmable interrupt controller
3	ACPI IRQ hold for PCI IRQ steering
4	Communications Port (COM1)
5	C-Media AC 97 audio device
6	Standard floppy disk controller
7	ECP printer port
8	System CMOS/Real Time Clock
9	SCI IRQ used by ACPI bus
10	ACPI IRQ holder for PCI IRQ steering
11	ACPI IRQ holder for PCI IRQ steering
12	PS/2 Mouse and Keyboard
13	Numeric Data Processor
14	Primary IDE controller
15	Secondary IDE Channel

## IRQ assignments for this motherboard

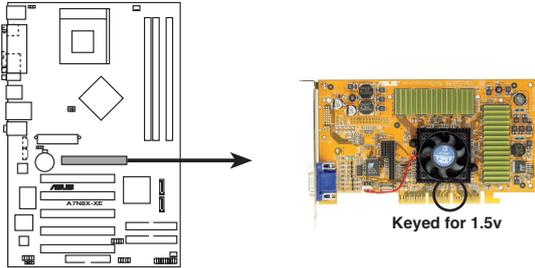
	A	B	C	D
PCI slot 1	—	—	shared	—
PCI slot 2	—	—	—	used
PCI slot 3	used	—	—	—
PCI slot 4	—	used	—	—
PCI slot 5	—	—	shared	—



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

### 1.8.3 AGP slot

The motherboard has an Accelerated Graphics Port (AGP) slot that supports +1.5 V 8X AGP graphics card. Note the notches on the card golden fingers to ensure that they fit into the AGP slot.



**A7N8X-XE Accelerated Graphics Port (AGP)**

### 1.8.4 PCI slots

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



# 1.9 Jumpers

## 1. Clear RTC RAM (CLRRTC)

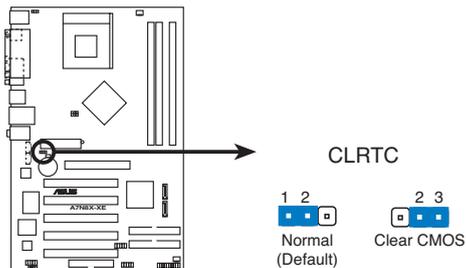
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

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



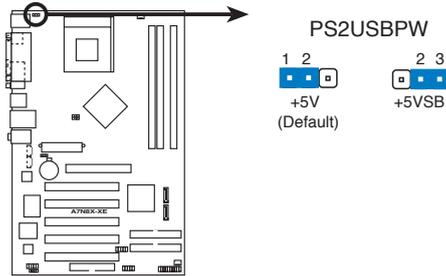
Except when clearing the RTC RAM, never remove the cap on CLRRTC jumper default position. Removing the cap will cause system boot failure!



**ASUS A7N8X-XE Clear RTC RAM**

## 2. PS2/USB Device Wake-up (3-pin PS2USBPW)

This jumper allows you to enable or disable the USB/PS2 keyboard or mouse wake-up feature. Set this jumper to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected keyboard, mouse or USB devices. Set this jumper to pins 2-3 (+5VSB) to wake up from S3 and S4 sleep modes (no power to CPU, DRAM in slow refresh, power supply in reduced power mode).



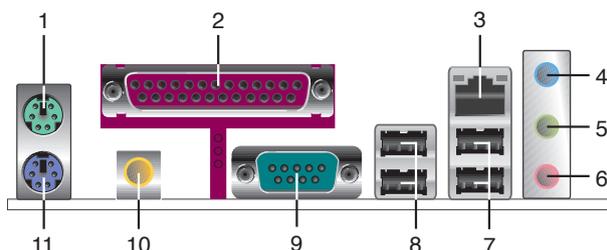
**A7N8X-XE PS2/USB Device Wake-up**



1. This device wake-up feature requires a power supply that can provide 500mA on the +5VSB lead for each USB, keyboard and mouse devices, otherwise, the system will not power up.
2. The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

# 1.10 Connectors

## 1.10.1 Rear panel connectors



1. PS/2 mouse port (green). This port is for a PS/2 mouse.
2. Parallel port. This 25-pin port connects a parallel printer, a scanner, or other devices.
3. LAN (RJ-45) port. This port allows 10/100 Mbps connection to a Local Area Network (LAN) through a network hub.
4. Line In port (light blue). This port connects a tape, CD, DVD player or other audio sources. In 4/6-channel mode, the function of this port becomes Surround (Rear Speaker) Out.
5. Line Out port (lime). This port connects a headphone or a speaker. In 4/6-channel mode, the function of this port becomes Front Speaker Out.
6. Microphone port (pink). This port connects a microphone. In 6-channel mode, the function of this port becomes Bass/Center.



The functions of the Line Out, Line In, and Microphone ports change when you select the 4 or 6-channel audio configuration as shown in the following table.

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

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

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

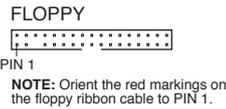
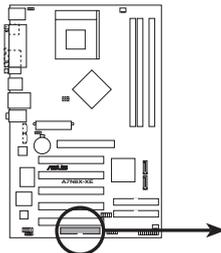
## 1.10.2 Internal connectors

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

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



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



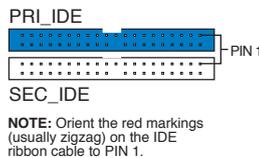
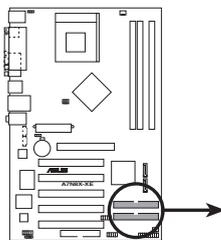
A7N8X-XE Floppy disk drive connector

### 2. IDE connectors (40-1 pin PRI\_IDE, SEC\_IDE)

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



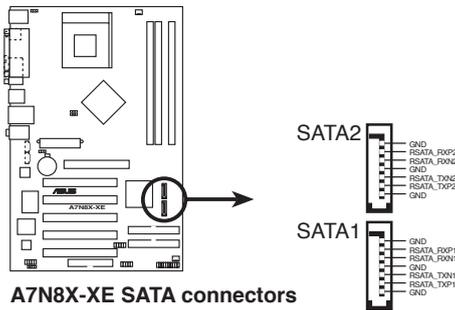
- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 133/100/66 IDE devices.



A7N8X-XE IDE connectors

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

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



**A7N8X-XE SATA connectors**



#### Important notes on Serial ATA

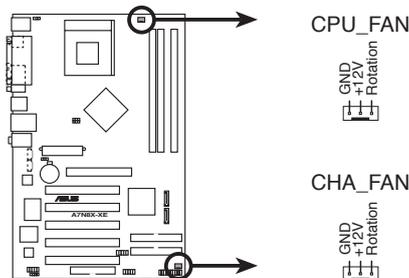
- You must install Windows® 2000 SP4, Windows® XP SP1, Windows® 2003, or newer OS versions before using Serial ATA hard disk drives.
- The Serial ATA interface is not supported when using Windows® 98SE/Me operating system.

### 4. CPU and chassis fan connectors (3-pin CPU\_FAN, CHA\_FAN)

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



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



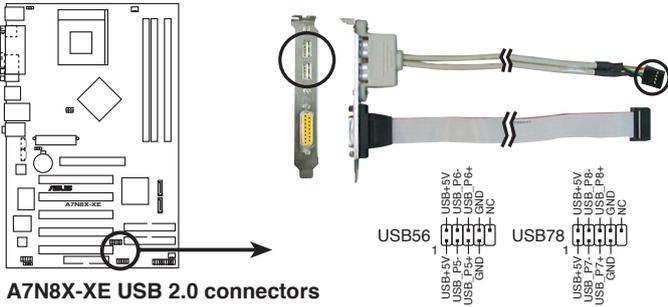
**A7N8X-XE Fan connectors**

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

These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis.



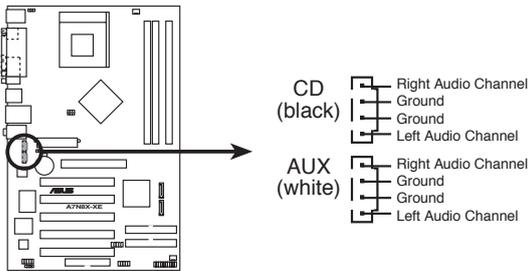
The USB module is purchased separately.



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

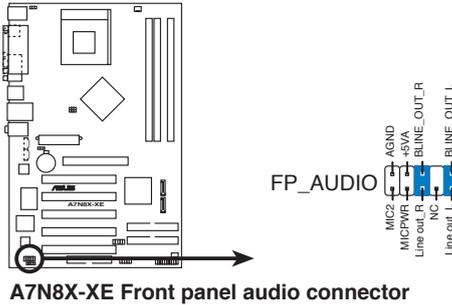
**6. Internal audio connectors (4-pin CD, AUX)**

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



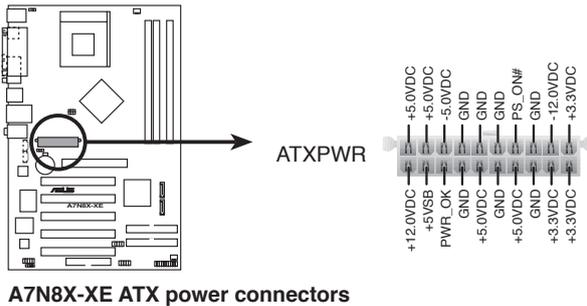
## 7. Front panel audio connectors (10-1 pin FP\_AUDIO)

This connector is for the front panel audio cable. This connector supports the front panel audio I/O ports.



## 8. ATX power connector (20-pin ATXPWR)

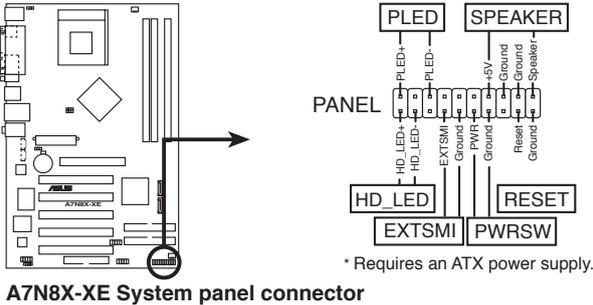
This connector is for the 20-pin ATX power supply plug. The plug from the power supply is designed to fit this connector in only one orientation. Find the proper orientation and push down firmly until the connector completely fit.



If you will need to replace the power supply in the future, make sure that your new ATX 12V power supply can provide 8 A on the +12 V lead and at least 1 A on the +5 V standby lead (+5VSB). The minimum recommended wattage is 230W, or 300W for a fully configured system. The system may become unstable and may experience difficulty powering up if the power supply is inadequate.

## 9. System panel connector (20-pin PANEL)

This connector supports several chassis-mounted functions.



- **System power LED (3-1 pin PLED)**

This connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **System warning speaker (4-pin SPEAKER)**

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

- **Reset button (2-pin RESET)**

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

- **ATX power button/soft-off button (2-pin PWRBTN)**

This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **System Management Interrupt (2-pin SMI)**

This connector is for the chassis-mounted suspend switch that allows you to manually place the system into a suspend mode, or “green” mode. When in suspend mode, the system activity is instantly decreased to save power and to expand the life of certain system components.

- **Hard disk drive activity LED (2-pin HDLED)**

This connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

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

# BIOS Setup **2**

## 2.1 Managing and updating your BIOS

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

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

Refer to the corresponding sections for details on these utilities.



---

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

---

### 2.1.1 Creating a bootable floppy disk

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

DOS environment

- a. Insert a 1.44MB floppy disk into the drive.
- b. At the DOS prompt, type `format A: /S` then press <Enter>.

Windows® XP environment

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

Windows® 2000 environment

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

- a. Insert a formatted, high density 1.44 MB floppy disk into the drive.
  - b. Insert the Windows® 2000 CD to the optical drive.
  - c. Click **Start**, then select **Run**.
  - d. From the **Open** field, type  
`D:\bootdisk\makeboot a:`  
assuming that D: is your optical drive.
  - e. Press <Enter>, then follow screen instructions to continue.
2. Copy the original or the latest motherboard BIOS file to the bootable floppy disk.

## 2.1.2 Using AFUDOS to copy the current BIOS

The AFUDOS.EXE utility can also be used to copy the current system BIOS settings to a floppy or hard disk. The copy can be used as a backup in case the system BIOS fails or gets corrupted.

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

**afudos /o[filename]**

where “filename” can be any user-provided filename of not more than eight alphanumeric characters for the main filename and three alphanumeric characters for the extension name.

Press <Enter>.



---

The BIOS information on the screen is for reference only. What you see on your screen may 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%)
```

2. The utility will copy the current system BIOS by default to the floppy disk. Make sure that the floppy disk is not write-protected and has enough space (at least 600KB) to store the file.

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

## 2.1.3 Using AFUDOS to update the BIOS

The AFUDOS is a DOS-based application that lets you update the BIOS file using a bootable floppy diskette. AFUDOS also allows you to copy the original BIOS file to a floppy diskette.

To update the BIOS using the AFUDOS.EXE:

1. Download the latest BIOS file from the website provided by the system builder.



---

Write the BIOS filename 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.rom]**

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

5. Press <Enter>. The 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 /iA7N8X-XE.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 /iA7N8X-XE.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.

## 2.1.4 ASUS CrashFree BIOS utility

The ASUS CrashFree BIOS allows you to update the BIOS file when it fails or gets corrupted. You can update a corrupted BIOS file using a floppy disk that contains the updated BIOS file and the AFUDOS utility.



---

Before using this utility, prepare the floppy disk containing the updated motherboard BIOS. The AFUDOS.EXE utility is available from the support CD.

---

To update the BIOS using CrashFree BIOS:

1. Turn on the system.
2. When prompted, place the floppy disk with the updated BIOS file to the floppy disk drive.
3. Follow the instructions in the previous section to update the BIOS.



---

Before using the ASUS CrashFree BIOS feature on this motherboard, you must install an AGP or PCI VGA card to one of the expansion slots before you turn on the computer.

---

## 2.1.5 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 floppy disk and using a DOS-based utility. The EZ Flash is built-in the BIOS LPC chip 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 system builder's website to download the latest BIOS file for your motherboard and rename it to **A7N8X-XE.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 found in the floppy disk, the error message "A7N8X-XE.ROM not found!" is displayed.

4. Insert the floppy disk that contains the BIOS file. If the **A7N8X-XE.ROM** file is 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 "a7n8x-xe.rom". Completed.
Start flashing...
Flashed successfully. Rebooting.
```

## 2.1.6 ASUS Update utility

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

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

This utility is available in the support CD that comes with the motherboard package.

### Installing ASUS Update

To install ASUS Update:

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

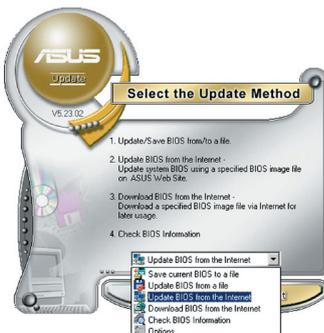


- ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).
- Quit all Windows<sup>®</sup> applications before you update the BIOS using this utility.

### Updating the BIOS through the Internet

To update the BIOS through the Internet:

1. Launch the ASUS Update utility from the Windows<sup>®</sup> desktop by clicking Start > Programs > ASUS > ASUSUpdate > ASUSUpdate. The ASUS Update main window appears.
2. Select Update BIOS from the Internet option from the drop-down menu, then click Next.
3. Select the ASUS FTP site nearest you to avoid network traffic, or click Auto Select. Click Next.



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



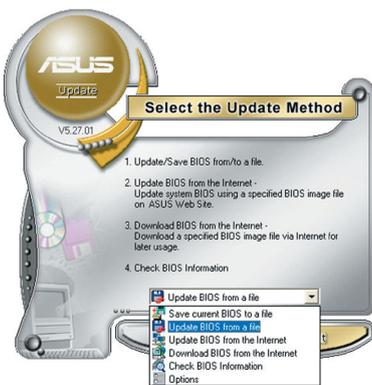
The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.



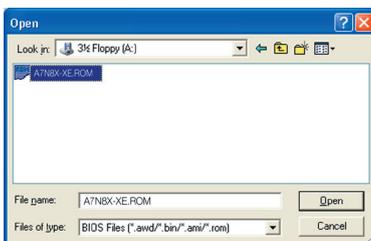
## Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

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



- Locate the BIOS file from the Open window, then click Open.
- Follow the screen instructions to complete the update process.



## 2.2 BIOS setup program

This motherboard supports a programmable FLASH ROM that you can update using the provided utility described in section “2.1 Managing and updating your BIOS.”

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

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

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

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

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



- 
- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the Load Default Settings item under the Exit Menu. See section “2.7 Exit Menu.”
  - The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
  - Visit the ASUS website ([www.asus.com](http://www.asus.com)) to download the latest BIOS file for this motherboard.
-

## 2.2.1 BIOS menu bar

The top of the screen has a menu bar with the following selections:

- MAIN** Use this menu to make changes to the basic system configuration.
- ADVANCED** Use this menu to enable and make changes to the advanced features.
- POWER** Use this menu to configure and enable Power Management features.
- BOOT** Use this menu to configure the default system device used to locate and load the Operating System.
- EXIT** Use this menu to exit the current menu or to exit the Setup program.

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

## 2.2.2 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.

<b>Navigation Key(S)</b>	<b>Function Description</b>
<b>Left or Right arrow</b>	Selects the menu item to the left or right
<b>Up or Down arrow</b>	Moves the highlight up or down between fields
<b>+ (plus) and - (minus)</b>	Change the configuration field and data
<b>&lt;Tab&gt;</b>	Select the configuration field.
<b>&lt;F1&gt;</b>	Displays the General Help screen
<b>&lt;F10&gt;</b>	Save changes and Exit
<b>&lt;ESC&gt;</b>	Jumps to the Exit menu or returns to the main menu from a sub-menu



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

## General help

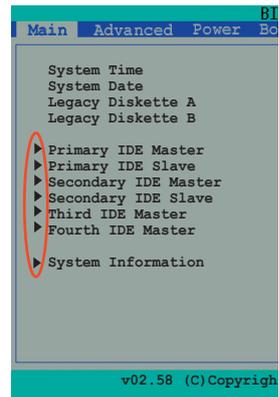
In addition to the Item Help window, the BIOS setup program also provides a General Help screen. You may launch this screen from any menu by simply pressing <F1>. The General Help screen lists the legend keys and their corresponding functions.

## Scroll bar

When a scroll bar appears to the right of a help window, it indicates that there is more information to be displayed that will not fit in the window. Use <PgUp> and <PgDn> or the up and down arrow keys to scroll through the entire help document. Press <Home> to display the first page, press <End> to go to the last page. To exit the help window, press <Enter> or <Esc>.

## Sub-menu

The right pointer symbol that appears at the left of certain parameters indicates that a sub-menu exists for this field. A sub-menu offers additional parameter options. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. Use the legend keys to navigate and enter values within each sub-menu as you would within a menu. Use the <Esc> key to return to the main menu. Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus. While moving around through the Setup program, note that explanations appear in the Item Help window located to the right of each menu. This window displays the help text for the highlighted field.

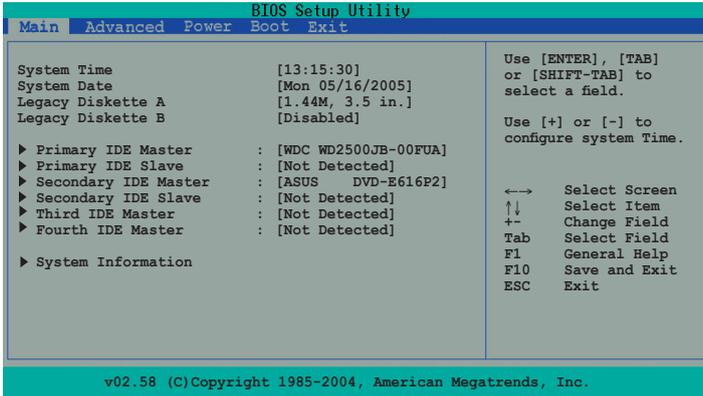


## Saving changes and exiting the Setup program

See “2.7 Exit menu” for detailed information on saving changes and exiting the setup program.

## 2.3 Main menu

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



### System Time [hh:mm:ss]

Sets the system to the time that you specify (usually the current time). The format is hour, minute, second. Valid values for hour, minute and second are Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59). Use the <Tab> key to move between the hour, minute, and second fields.

### System Date [day, mm dd yyyy]

Sets the system to the date that you specify (usually the current date). The format is month, day, year. Valid values for month, day, and year are Month: (1 to 12), Day: (1 to 31), Year: (1999 to 2099). Use the <Tab> key to move between the month, day, and year fields.

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

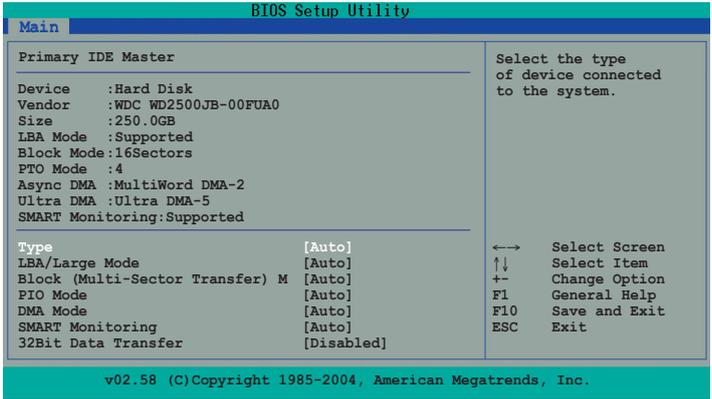
Sets the type of floppy drive installed. Configuration options: [None] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

### Legacy Diskette B [Disabled]

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

# Primary and Secondary IDE Master/Slave; Third and Fourth IDE Master

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



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

## Type [Auto]

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

## LBA/Large Mode [Auto]

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

## Block (Multi-sector Transfer) M [Auto]

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

### PIO Mode [Auto]

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

### DMA Mode [Auto]

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



If the hard disk supports DMA6, UDMA6 will appear in the configuration options.

### SMART Monitoring [Auto]

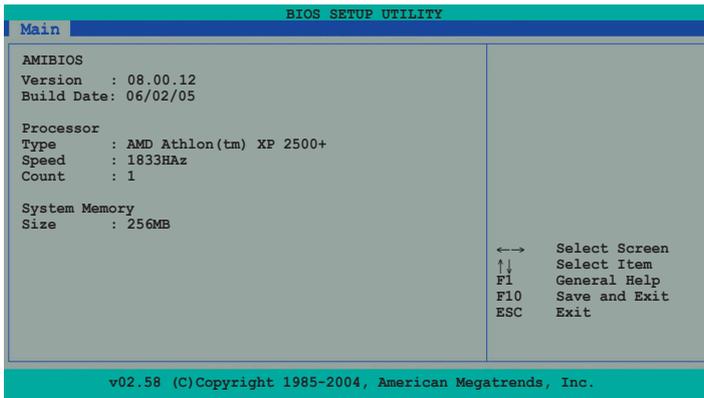
Sets the Self-Monitoring, Analysis, and Reporting Technology. Configuration options: [Auto] [Disabled] [Enabled]

### 32Bit Data Transfer [Disabled]

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

## System Information

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



### AMI BIOS

Displays the auto-detected BIOS information.

### Processor

Displays the auto-detected CPU specification.

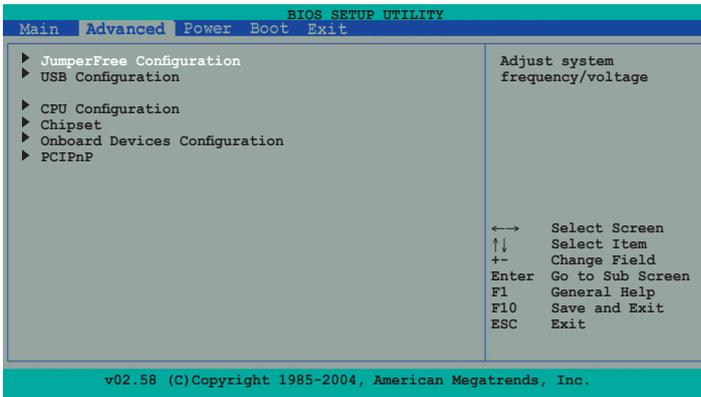
### System Memory

Displays the auto-detected system memory.

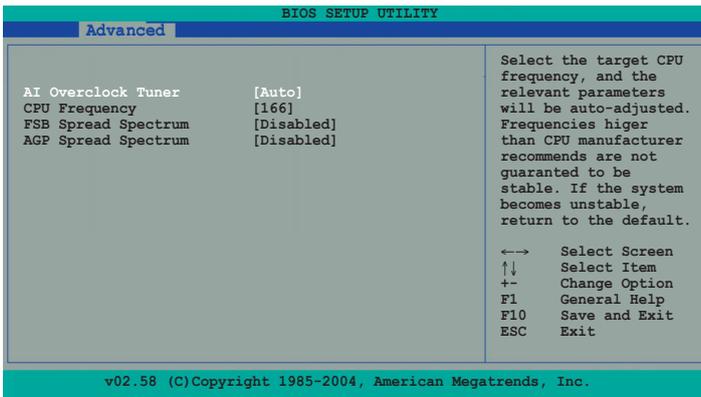
## 2.4 Advanced menu

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

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



### 2.4.1 JumperFree Configuration



#### AI Overclock Tuner [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]

### CPU Frequency [166]

Allows you to set the CPU host frequency. Range: 100MHz-300MHz.

### FSB Spread Spectrum [Disabled]

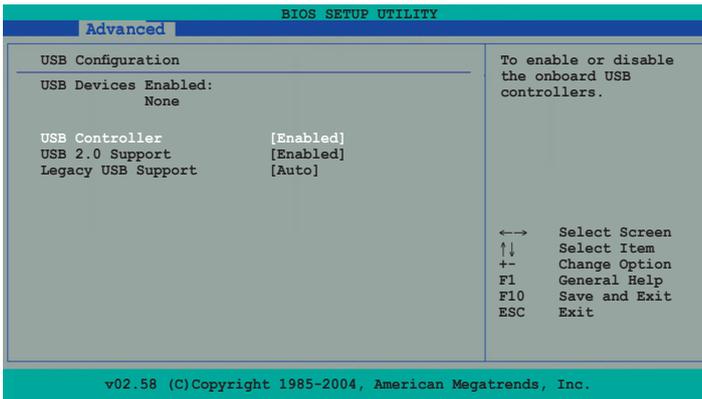
Allows you to enable and disable the FSB clock generator spread spectrum. Configuration options: [Auto] [Disabled]

### AGP Spread spectrum [Disabled]

Allows you to enable and disable the AGP clock generator spread spectrum. Configuration options: [Auto] [Disabled]

## 2.4.2 USB Configuration

The USB Configuration menu allows you to adjust the settings for the onboard USB controllers. Select an item then press <Enter> to display the sub-menu.



### USB Controller [Enabled]

Allows you to enable or disable the integrated USB controller. Configuration options: [Enabled] [Disabled]

### USB 2.0 Support [Enabled]

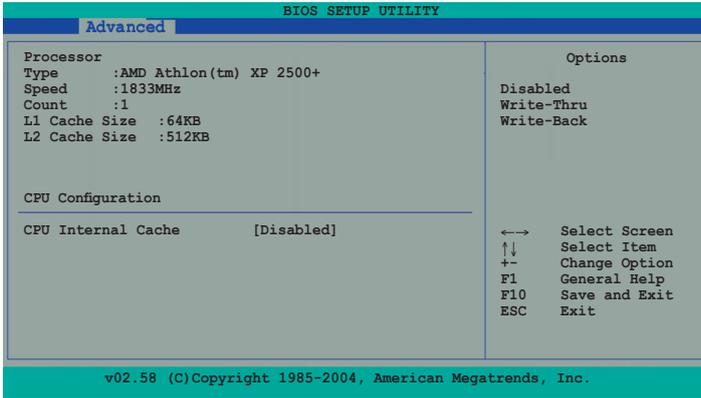
Configuration options: [Enabled] [Disabled]

### Legacy USB Support [Auto]

Allows you to enable or disable support for legacy USB devices. Configuration options: [Enabled] [Disabled] [Auto]

## 2.4.3 CPU Configuration

This menu displays the CPU type, speed, cache RAM, and current front side bus frequency auto-detected by the BIOS.

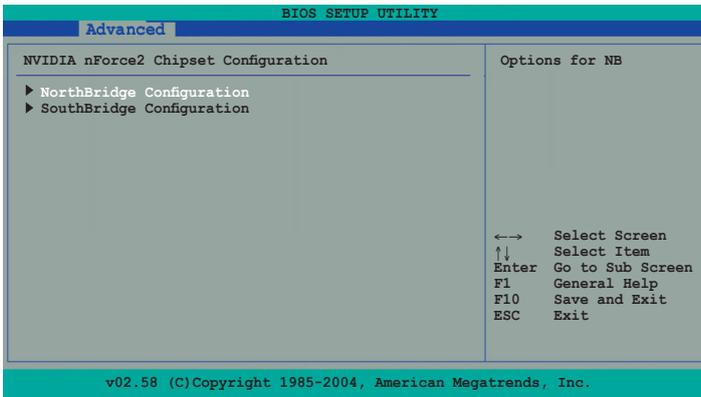


### CPU Internal Cache [Disabled]

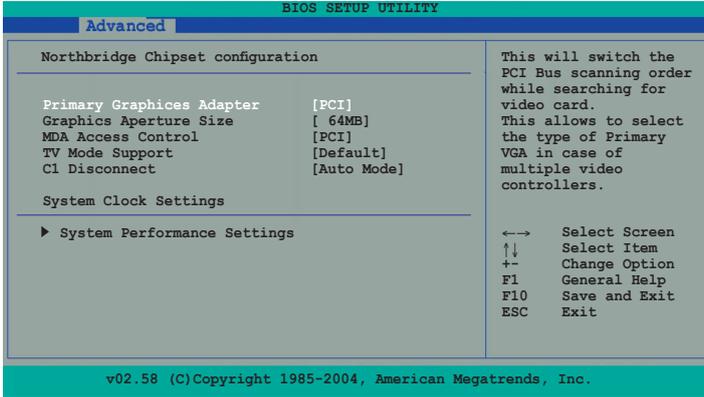
Allows you to enable and disable the CPU Internal Cache. Configuration options: [Disabled] [Write-Thru] [Write-Back]

## 2.4.4 Chipset

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



# NorthBridge Chipset Configuration



## Primary Graphics Adapter [PCI]

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

## Graphics Aperture Size [64MB]

Allows you to select the size of mapped memory for AGP graphic data. Configuration options: [Disabled] [32MB] [64MB] [128MB] [256MB] [512MB]

## MDA Access Control [PCI]

Allows you to control MDA Access. Configuration options: [PCI] [AGP]

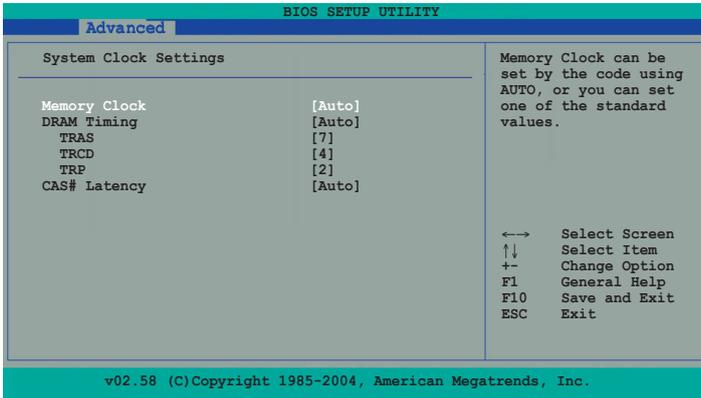
## TV Mode Support [Default]

Configuration options: [NTSC-M] [NTSC-J] [PAL-M] [PAL-BDGH] [PAL-N] [PAL-NC] [Default]

## C1 Discounect [Auto Mode]

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

## System Performance Settings



### Memory Clock [Auto]

Allows you to set the Memory Clock. Configuration options: [Auto] [133MHz (DDR266)] [166MHz (DDR333)] [200MHz (DDR400)]

### DRAM Timing [Auto]

Allows you to set the DRAM Timing. Configuration options: [Auto] [Manual]

### TRAS [7]

Allows you to set the TRAS. Range: 2-15

TRCD [4]

Allows you to set the TRCD. Range: 2-7

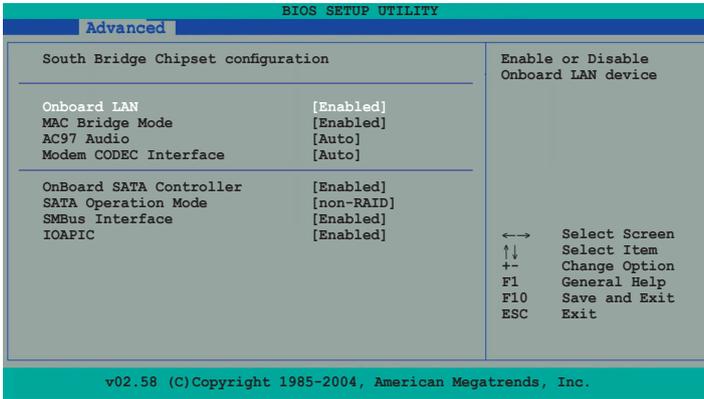
### TRP [2]

Allows you to set the TRP. Range: 2-7

### CAS# Latency [Auto]

Configuration options: [Auto] [2.0] [2.5] [3.0]

# South Bridge Chipset Configuration



## Onboard LAN [Enabled]

Allows you to enable and disable the Onboard LAN. Configuration options: [Enabled] [Disabled]

## MAC Bridge Mode [Auto]

Allows you to enable and disable the MAC Bridge Mode. Configuration options: [Enabled] [Disabled]

## AC97 Audio [Auto]

Allows you to enable and disable the AC97 Audio. Configuration options: [Enabled] [Disabled] [Auto]

## Modem CODEC Interface [Auto]

Allows you to enable and disable the Modem CODEC Interface. Configuration options: [Enabled] [Disabled] [Auto]

## OnBoard SATA Controller [Enabled]

Allows you to enable and disable the OnBoard SATA Controller. Configuration options: [Enabled] [Disabled]

## SATA Operation Mode [non-RAID]

Allows you to set the SATA Operation Mode. Configuration options: [non-RAID] [RAID]

## SMBus Interface [Enabled]

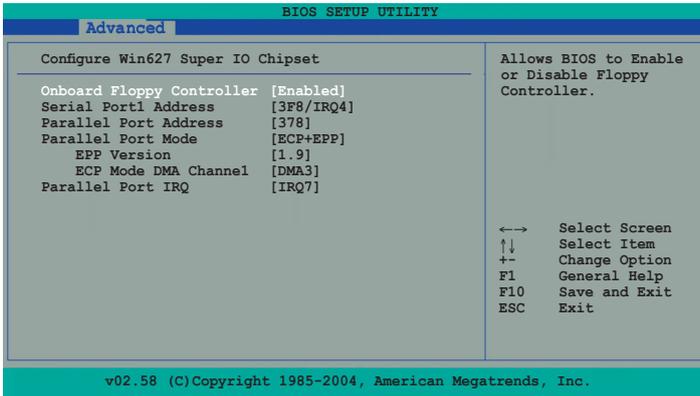
Allows you to enable and disable the SMBus Interface. Configuration options: [Enabled] [Disabled]

## IOAPIC [Enabled]

Allows you to enable and disable the IOAPIC. Configuration options: [Enabled] [Disabled]

## 2.4.5 Onboard Devices Configuration

The Onboard Devices Configuration menu allows you to adjust the settings for onboard devices. Select an item then press <Enter> to display the sub-menu.



### Onboard Floppy Controller [Enabled]

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

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

Allows you to select the Serial Port 1 base address. Configuration options: [Disabled] [3F8/IRQ4] [2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]

### Parallel Port Address [378]

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

### Parallel Port Mode [ECP+EPP]

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

### 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] or [EPP+ECP]. Configuration options: [1.9] [1.7]

### ECP Mode DMA Channel [DMA3]

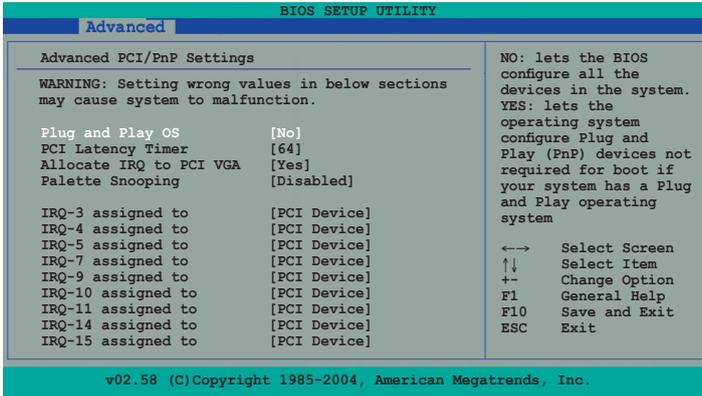
Allows you to set the Parallel Port ECP DMA. This item appears only when the Parallel Port Mode is set to [ECP] or [EPP+ECP]. Configuration options: [DMA0] [DMA1] [DMA3]

### Parallel Port IRQ [IRQ7]

Allows selection of the Parallel Port IRQ. Configuration options: [IRQ5] [IRQ7]

## 2.4.6 PCIPnP

The PCIPnP menu allows you to change the settings for installed PCI devices. Select an item then press <Enter> to display the sub-menu.



### Plug and Play OS [No]

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

### PCI Latency Timer [64]

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

### Allocate IRQ to PCI VGA [Yes]

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

### Palette Snooping [Disabled]

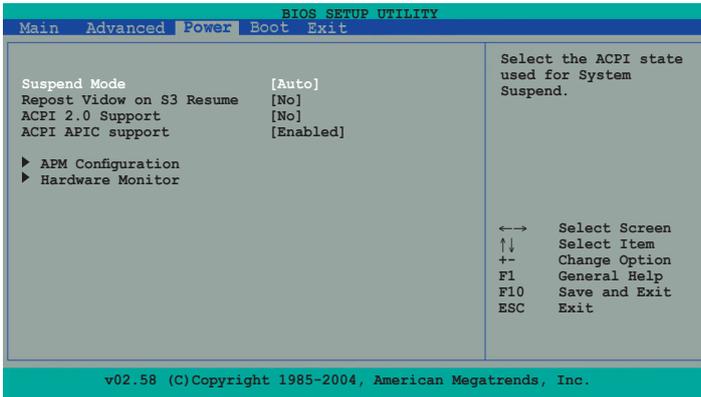
When set to [Enabled], the palette snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Setting to [Disabled] deactivates this feature. Configuration options: [Disabled] [Enabled]

### IRQ xx [PCI Device]

Allows you to set the PCI slot IRQ preference. Configuration options: [PCI Device] [Reserved]

## 2.5 Power menu

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



### Suspend Mode [Auto]

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

### Repost Video on S3 Resume [No]

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

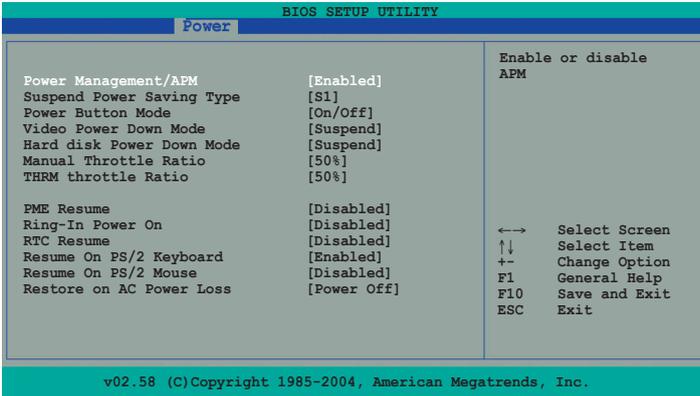
### ACPI 2.0 Support [Yes]

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

### ACPI APIC Support [Enabled]

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

## 2.5.1 APM Configuration



### Power Management/APM [Enabled]

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

### Suspend Power Saving Type [S1]

Configuration options: [C2] [S1]

### Power Button Mode [On/Off]

Configuration options: [On/Off] [Suspend]

### Video Power Down Mode [Suspend]

Allows you to select the video power down mode. Configuration options: [Disabled] [Suspend]

### Hard Disk Power Down Mode [Suspend]

Allows you to select the hard disk power down mode. Configuration options: [Disabled] [Suspend]

### Manual Throttle Ratio [50%]

Configuration options: [87.5%] [75.0%] [62.5%] [50%] [37.5%] [25%] [12.5%]

### THRM throttle Ratio [50%]

Configuration options: [87.5%] [75.0%] [62.5%] [50%] [37.5%] [25%] [12.5%]

## **PME Resume [Disabled]**

Configuration options: [Disabled] [Enabled]

## **Ring-In Power On [Disabled]**

This field allows you to enable or disable the Ring-In Power on function.

Configuration options: [Disabled] [Enabled]

## **RTC Resume [Disabled]**

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

Configuration options: [Disabled] [Enabled]

## **Resume On PS/2 Keyboard [Enabled]**

Allows you to use any key on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.

Configuration options: [Disabled] [Enabled]

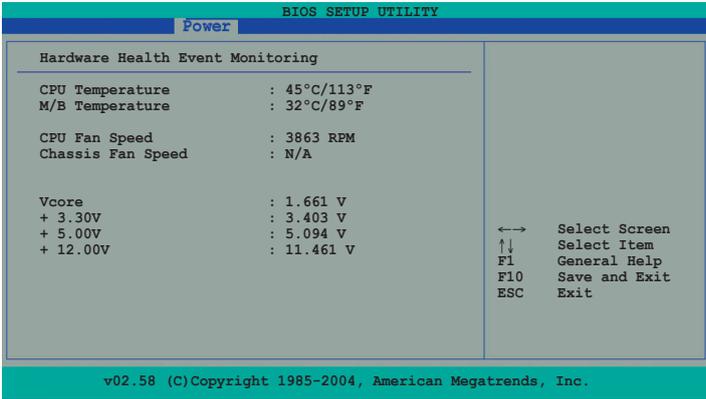
## **Resume On PS/2 Mouse [Disabled]**

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

## **Restore on AC Power Loss [Power Off]**

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

## 2.5.2 Hardware Monitor



### MB Temperature [xxx°C/xxx°F]

### CPU Temperature [xxx°C/xxx°F]

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

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

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

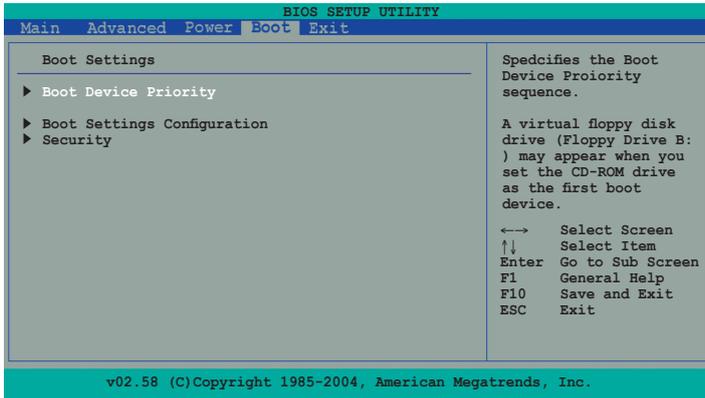
The onboard hardware monitor automatically detects and displays the CPU and chassis fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, that field shows N/A.

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

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

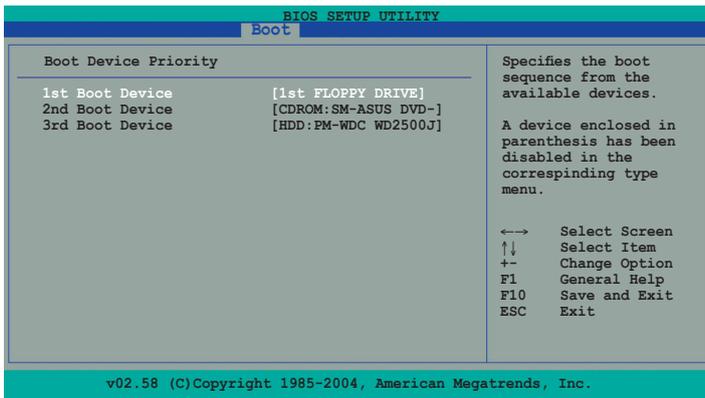
## 2.6 Boot menu

The Boot menu items allow you to change the system boot settings. Select a sub-menu, then press <Enter> to display the configuration options.



### 2.6.1 Boot Device Priority

This menu allows you to arrange the boot device priority.

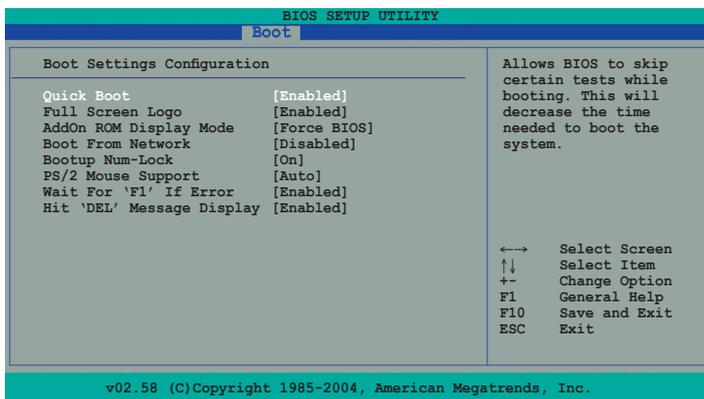


#### 1st ~ xxth Boot Device [Removable]

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

## 2.6.2 Boot Settings Configuration

This menu allows you to adjust the system boot settings.



### Quick Boot [Enabled]

Allows you to enable or disable the system quick boot feature. When enabled, the system skips certain tests while booting. Configuration options: [Disabled] [Enabled]

### Full Screen Logo [Enabled]

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



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

### AddOn ROM Display Mode [Force BIOS]

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

### Boot From Network [Disabled]

Allows you to boot from network. Configuration options: [Disabled] [Enabled]

### Bootup Num-Lock [On]

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

### PS/2 Mouse Support [Auto]

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

## Wait for 'F1' If Error [Enabled]

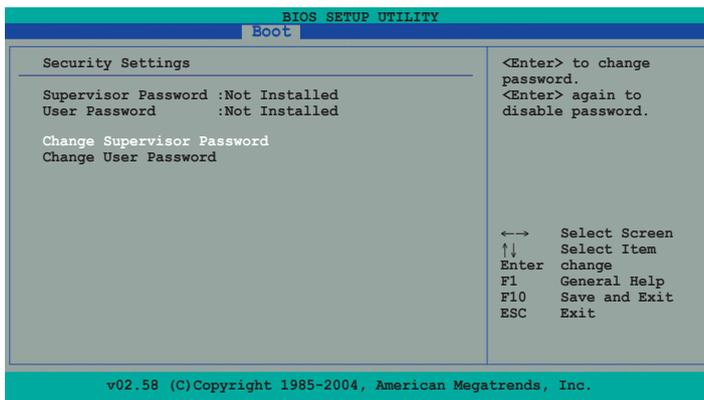
When set to Enabled, the system waits for the F1 key to be pressed when error occurs. configuration options: [Disabled] [Enabled]

## Hit 'DEL' Message Display [Enabled]

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

## 2.6.3 Security

This menu allows you to adjust the system security settings.



### Change Supervisor Password

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

To set a password:

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

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

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

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

If you forget your BIOS password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section “1.6 Jumpers” for information on how to erase the RTC RAM.

## **Change User Password**

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

To set a password:

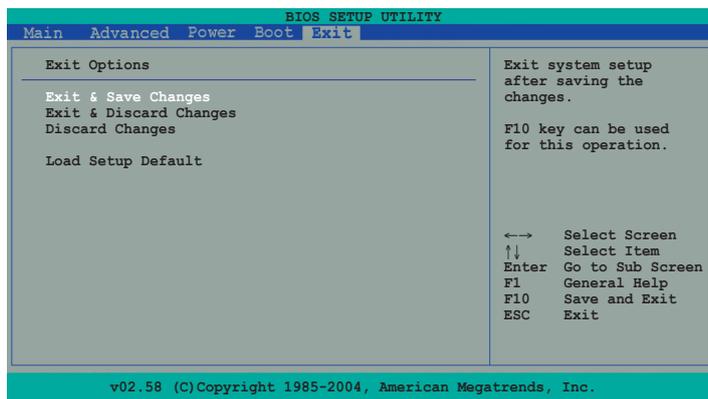
1. Select the Change User Password item and press <Enter>.
2. On the password box that appears, type a password composed of at least six letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.

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

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

## 2.7 Exit menu

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



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

### Exit & Save Changes

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

### Exit & Discard Changes

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

### Discard Changes

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

### Load Setup Defaults

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

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

# Software Support **3**

# 3.1 Installing an operating system

This motherboard supports Windows® 98SE/ME/2000/XP operating systems (OS). Always install the latest OS version and corresponding updates to maximize the features of your hardware.



Motherboard settings and hardware options vary. Use the setup procedures presented in this chapter for reference only. Refer to your OS documentation for detailed information.

# 3.2 Support CD information

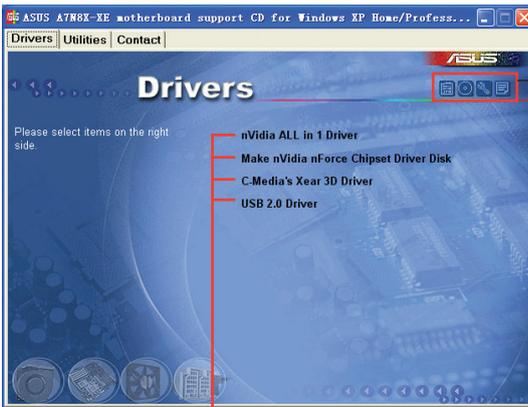
The support CD that came with the motherboard package contains the drivers, software applications, and utilities that you can install to avail all motherboard features.



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

## 3.2.1 Running the support CD

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



Click an icon to display support CD/motherboard information

Click an item to install



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

## 3.2.2 Drivers menu

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

### **NVIDIA ALL in 1 Driver**

Install NVIDIA ALL in 1 Driver.

### **Make NVIDIA nForce Chipset Driver Disk**

Make NVIDIA nForce Chipset Driver Disk.

\*Note: you can browse the path\Drivers\NVIDIA\winxp\_2kIDE Driver to refer the uncompressed files.

### **C-Media's Xear 3D Driver**

Install C-Media's Xear 3D Driver.

### **USB 2.0 Driver**

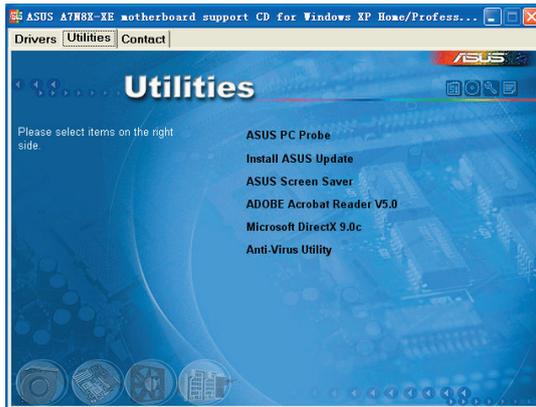
Install USB 2.0 driver.



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

## 3.2.3 Utilities menu

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



### **ASUS PC Probe**

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

## ASUS Update

The ASUS Update utility allows you to update the motherboard BIOS in a Windows® environment. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP). See pages 2-7 to 2-8 for details.

## ASUS Screen Saver

Bring life to your idle screen by installing the ASUS screen saver.

## ADOBE Acrobat Reader V5.0

The Adobe Acrobat® Reader V5.0 is for opening, viewing, and printing documents in Portable Document Format (PDF).

## Microsoft DirectX 9.0c

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

## Anti-Virus Utility

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

## 3.2.4 Contacts menu

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

