A7V880

User Guide

Motherboard

ASUS

E1791

Revised Edition V3

January 2005

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Notices

Federal Communications Commission Statement

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

- This device may not cause harmful interference, and

- This device must accept any interference received including interference that may cause undesired operation.

> 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.

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. The ASUS websites are listed in the ASUS Contact Information on the inside front cover.

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.

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 adpater 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

Conventions used in this guide

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

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.
Italics	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 /iA7V880.ROM`

A7V880 specifications summary

CPU	Socket A for AMD Athlon™ XP processor Supports AMD Thoroughbred/Barton core
Chipset	VIA KT880 VIA VT8237
Front Side Bus	400/333/266/200 MHz

Memory	Dual-channel memory architecture
	4 x 184-pin DDR DIMM sockets for up to 4GB unbuffered
	    non-ECC PC3200/PC2700/PC2100/PC1600 SDRAM
	    memory

Expansion slots	1 x AGP 8X 5 x PCI 1 x ASUS proprietary WiFi slot for wireless LAN upgrade
Storage	2 x Ultra DMA 133/100/66/33 connectors 2 x Serial ATA with RAID 0, RAID 1
Audio	ADI AD1888 SoundMAX® 6-channel audio Codec Supports S/PDIF-out interface
LAN	Marvell® 88E8001 Gigabit LAN controller with Virtual Cable Tester™ (VCT) Net-diagnosing utility
USB	Maximum of eight USB 2.0 ports
Overclocking Features	CPU and memory voltage adjustable SFS (Stepless Frequency Selection) at 1 MHz increment Adjustable FSB/DDR ratio ASUS JumperFree ASUS C.P.R. (CPU Parameter Recall)
Special features	ASUS AI NET ASUS C.O.P. (CPU Overheating Protection) ASUS C.P.R. (CPU Parameter Recall) ASUS EZ Flash ASUS CrashFree BIOS 2 ASUS MyLogo™ ASUS Instant Music Lite ASUS Q-Fan Wake on Ring, LAN, USB, Keyboard and Mouse STR (Suspend-to-RAM) STD (Suspend-to-Disk)

A7V880 specifications summary

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 S/PDIF out 1 x RJ-45 port Line In/Line Out/Microphone ports
Internal I/O	2 x USB 2.0 connector for 4 additional USB ports CPU/Chassis fan connectors 20-pin/4-pin ATX 12V power connectors CD/AUX connectors S/PDIF out connector GAME/MIDI connector Audio Line In/Out/Mic connectors Front Panel connector Chassis intrusion connector
BIOS features	4Mb Flash EEPROM, Award BIOS, PnP, DMI2.0, WfM2.0, SM BIOS 2.3, ACPI, ASUS EZ Flash, CrashFree BIOS 2, C.P.R., MyLogo™
Industry standard	PCI 2.2, USB 2.0/1.1
Manageability	WfM 2.0, DMI 2.0, WOL by PME, WOR by PME
Power Requirement	ATX power supply
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 ASUS Live Update Utility Anti-virus utility

* Specifications are subject to change without notice.

This chapter describes the features of the motherboard. It includes brief descriptions of the motherboard components, and illustrations of the layout, jumper settings, and connectors.

Product introduction

1.1   Welcome!

Thank you for buying the ASUS® A7V880 motherboard!

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

The motherboard combines the powers of the AMD Athlon™ XP processor and the VIA KT880 chipset to set a new benchmark for an effective desktop platform solution.

Supporting up to 4GB of system memory with PC3200/PC2700/PC2100/PC1600 DDR SDRAM, high-resolution graphics via an AGP 8X slot, Serial ATA RAID, USB 2.0, and 6-channel audio features, the motherboard takes you ahead in the world of power computing!

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 motherboard
- ✓   ASUS support CD
- ✓   1 x Serial ATA 2-in-1 cable'
- ✓   1 x Serial ATA power cable
- ✓   1 x 2-port USB module with cable
- ✓   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 motherboard supports the latest AMD Athlon™, Athlon™ XP and AMD Duron™ processors via a 462-pin surface mount ZIF socket. The AMD Athlon™ and AMD Athlon™ XP processors features a 400Mhz front side bus and the QuantiSpeed™ architecture for rapid execution of applications.

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.

Serial ATA RAID

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 an additional two Serial ATA connectors for RAID 0 and RAID 1 functions.

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.

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.

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.

6-Channel Audio solution

The motherboard uses an onboard audio Codec that lets you enjoy high-quality 6-channel audio without having to buy advanced sound cards.

1.3.2 Unique ASUS features

ASUS Wi-Fi slot

The ASUS Wi-Fi slot is designed for the ASUS WiFi-b™ add-on card to set up an environment for wireless LAN. The ASUS WiFi-b™ add-on card bundles the exclusive software Access Point (AP) to save the extra cost of a stand-alone AP. In addition, the card comes with user-friendly utilities and applications that allow quick connection to notebooks, PDAs and other wireless LAN peripherals. See page 1-16.

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 32-bit 10/100/1000BASE-T Gigabit Ethernet Media Access Control (IEEE 802.3 compliant) 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.

ASUS Q-Fan technology

The ASUS Q-Fan technology smartly adjusts the fan speeds according to the system loading to ensure quiet, cool, and efficient operation. See page 2-26.

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 2-6.

ASUS MyLogo™

This feature present in the motherboard allows you to personalize and add style to your system with customizable boot logos. See pages 2-28.

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 and the BIOS shows the previous setting so users can amend the CPU setting again.

C.O.P. (CPU Overheating Protection)

With AMD® Athlon XP™ installed, the motherboard offers automatic CPU Overheating Protection to prolong the life of the entire system. If the CPU temperature exceeds the set criteria, the PC shuts down automatically.

ASUS EZ Flash BIOS

With the ASUS EZ Flash, you can easily update the system BIOS even before loading the operating system. No need to use a DOS-based utility or boot from a floppy disk. See page 2-5.

ASUS Instant Music Lite

This unique feature allows you to playback audio files even without booting the system to Windows™. Just press the ASUS Instant Music special function keys and enjoy the music! See pages 2-14, 3-5

1.4   Before you proceed

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

1. Unplug the power cord from the wall socket before touching any component.
2. 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.
3. Hold components by the edges to avoid touching the ICs on them.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
5. 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 stand-by 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.

A7V880 Onboard LED

SB_PWR

ON
Standby
Power

OFF
Powered
Off
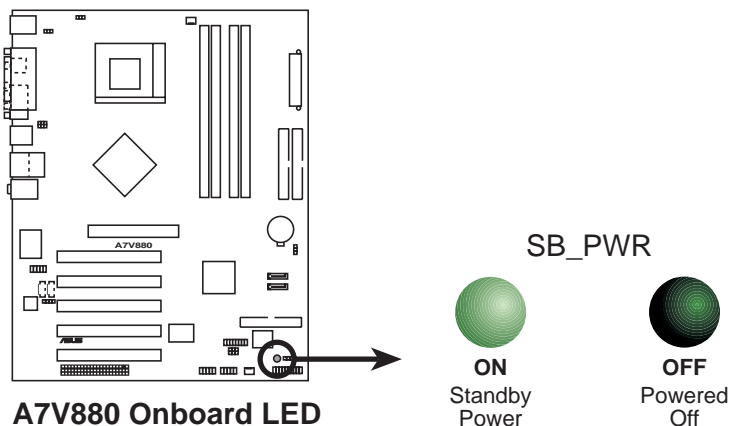
1.5   Motherboard overview

1.5.1   Motherboard layout

24.5cm (9.6in)

30.5cm (12.0in)

PS/2KBMS
T: Mouse
B: Keyboard

OVER_VOLT1

CPU_FAN

KBPWR

SPDIF_O

PARALLEL PORT

COM1

Socket 462

DDR DIMM_A1 (64/72 bit;184-pin module)
DDR DIMM_A2 (64/72 bit;184-pin module)
DDR DIMM_B1 (64/72 bit;184-pin module)
DDR DIMM_B1 (64/72 bit;184-pin module)

ATX Power Connector

USBPW12
USBPW34

USB1
USB2

USB2.0
T: USB4
B: USB3

Top:
RJ-45

VIA
KT880
Chipset

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

PRI_IDE
SEC_IDE

CR2032 3V
Lithium Cell
CMOS Power

Accelerated Graphics Port (AGP)

A7V880

CLRTC

Marvell
Gigabit
LAN

PCI1

FP_AUDIO

PCI2

VIA
VT8237
South
Bridge

SATA2

SATA1

CD

AUX

SPDIF_OUT

AD1888
CODEC

PCI3

PCI4

Super
I/O

FLOPPY

GAME

2Mbit
Low Pin
Count

PCI5

USBPW56
USBPW78

CHASSIS

SB_PWR

WIFI

USB56   USB78   CHA_FAN

PANEL

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

> ⚠️ Do not overtighten the screws! Doing so may damage the motherboard.

Place this side towards the rear of the chassis
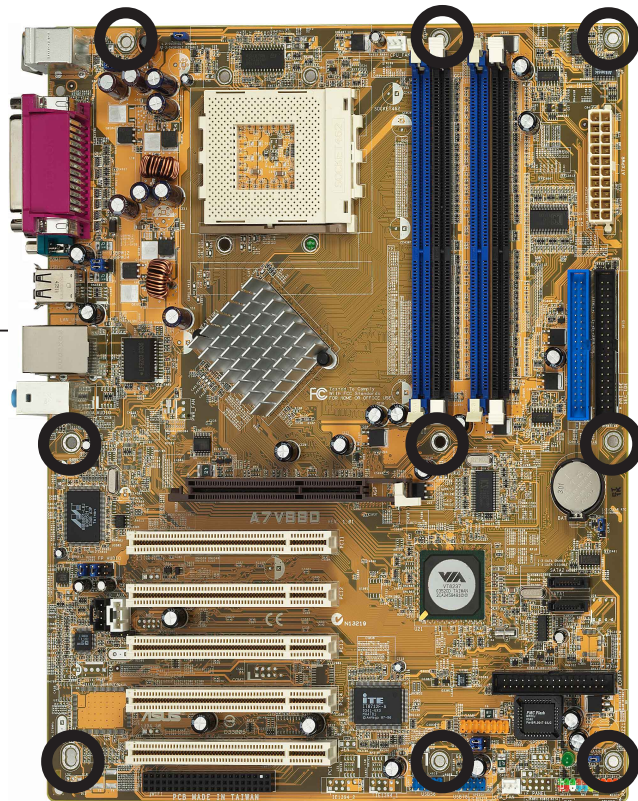
1.6 Central Processing Unit (CPU)

1.6.1 Overview

The motherboard comes with a surface mount 462-pin Zero Insertion Force (ZIF) socket designed for the AMD Athlon™ XP, AMD Athlon™ XP, AMD Duron™ processors

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

Gold triangle
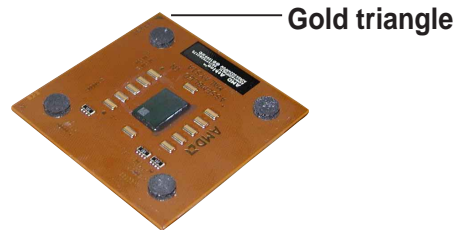
Do not use processors with core speeds of less than 1GHz on this motherboard.

1.6.2 Installing the CPU

Follow these steps to install a CPU.

1. Locate the 462-pin ZIF socket on the motherboard.
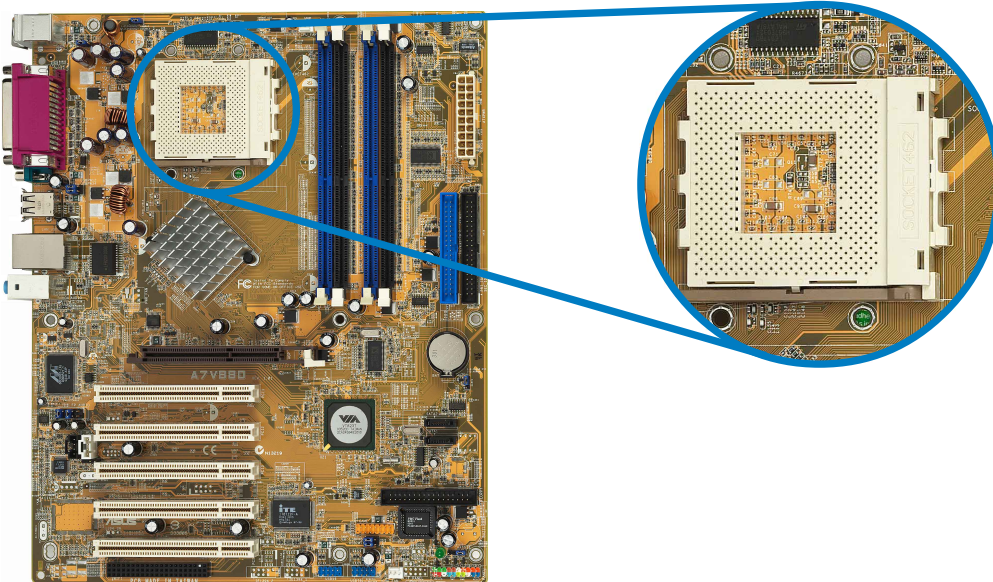
2. Unlock the socket by pressing the lever sideways, then lift it up to a 90°-100° angle.

Socket lever
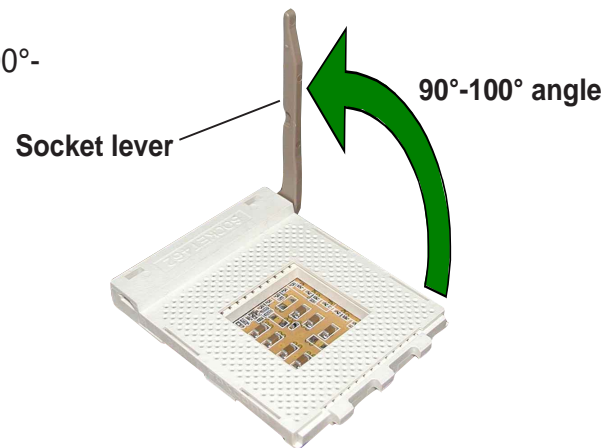
90°-100° angle

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 base of the socket lever.

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

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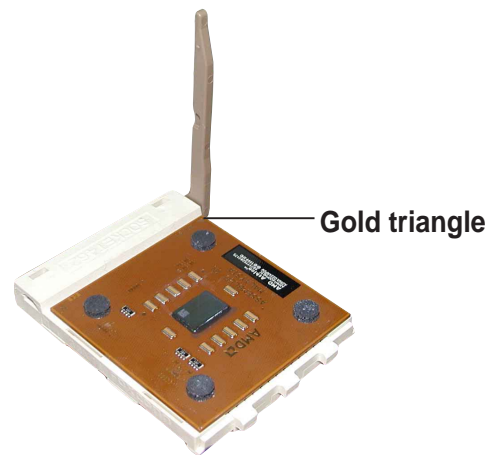
The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to prevent bending the pins and damaging the CPU!

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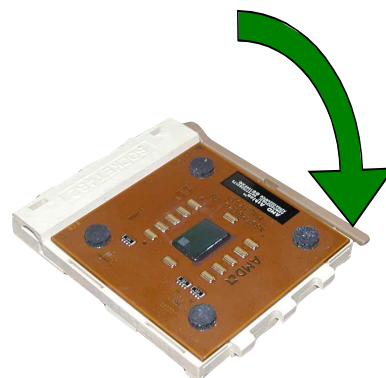
1.7   System memory

1.7.1   DIMM sockets location

The following figure illustrates the location of the DDR DIMM sockets.
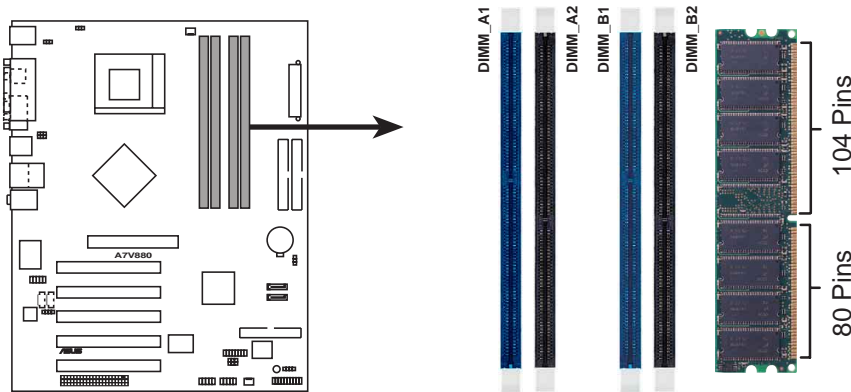
A7V880 184-Pin DDR DIMM Sockets

> ⚠️
> - It is recommended to use the blue DIMM slots first.
>
> - 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.
>
> - When installing long AGP cards, it is recommended to install the memory modules first. Long AGP cards, when installed, may interfere with the memory sockets.

1.7.2   Memory configurations

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

Important notes

> - Installing DDR DIMMs other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended DIMM 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 1-11.

DDR Qualified Vendor List

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

Table 1 DDR400 Qualified Vendors List

Size	Vendor	Model	Brand	SS/DS	Component	DIMM config A*	B*	C*
256MB	A DATA	MDOAD5F3G31YB1EZ2	ADATA	SS	ADD8608A8A-5B	•	•	•
256MB	A DATA	MDOAD5F3G315B1EC2	ADATA	SS	ADD8608A8A-5B	•	•	•
256MB	A DATA	MDOSS6F3G31JB1EAE	SAMSUNG	SS	K4H560838D-TCC4	•	•	•
256MB	A DATA	MDOSS6F3G31YK1EZZ	SAMSUNG	SS	K4H560838E-TCCC	•	•	•
256MB	A DATA	MDOWB5F3G316B1EAE	Winbond	SS	W942508BH-5	•	•	•
256MB	A DATA	MDOWB5F3G31JB1EAZ	Winbond	SS	W942508BH-5	•	•	•
256MB	Apacer	77.10728.11A	Infineon	DS	HYB25D256800BT-6B			•
256MB	Apacer	77.10636.11G	Infineon	SS	HYB25D256800BT-5B	•	•	•
512MB	Apacer	77.10736.11G	Infineon	DS	HYB25D256800BT-5B	•	•	•
512MB	Apacer	77.10736.18G	Infineon	DS	HYB25D256809BT-5B		•	
512MB	Apacer	77.10736-18G	Infineon	DS	HYB25D256809BT-5B	•	•	•
256MB	Apacer	77.10636.465	SAMSUNG	SS	K4H560838D-TCC4	•	•	•
512MB	Apacer	77.10736.464	SAMSUNG	DS	K4H560838D-TCC4	•	•	•
256MB	ATP	AG32L64T8SQC4S	SAMSUNG	SS	K4H560838D-TCC4	•	•	•
512MB	ATP	AG64L64T8SQC4S	SAMSUNG	DS	K4H560838D-TCC4	•	•	•
512MB	ATP	AG64L72T8SQC4S	SAMSUNG	DS	K4H560838D-TCC4(ECC)	•	•	•
256MB	Brain Power	B6U808-256M-SAM-400	SAMSUNG	SS	K4H560838D-TCC4	•	•	•
512MB	Brain Power	B6U808-512M-SAM-400	SAMSUNG	DS	K4H560838D-TCC4	•	•	
256MB	CENTURY	DXV6S8SSCCD3K27C	SAMSUNG	SS	K4H560838D-TCCC	•	•	•
512MB	CENTURY	DXV2S8SSCCD3K27C	SAMSUNG	DS	K4H560838D-TCCC	•	•	•
512MB	CENTURY	DXV2S8SSCCE3K27E	SAMSUNG	DS	K4H560838E-TCCC	•	•	•
256MB	CENTURY	DXV6S8MC5BC3U27E	MICRON	SS	MT46V32M8TG-5BC	•	•	•
512MB	CENTURY	DXV2S8MC5BC3U27E	MICRON	DS	MT46V32M8TG-5BC	•	•	•
512MB	CORSAIR	CMX512-3200C2	Winbond	DS	Heat-Sink Package	•	•	•
512MB	CORSAIR	VS512MB400	VALUE seLecT	DS	VS32M8-5	•	•	
256MB	CORSAIR	CMX256A-3200C2PT	Winbond	SS	W942508BH-5	•	•	•
256MB	elixir	M2U25664DS88B3G-5T	NANYA	SS	N2DS25680BT-5T	•	•	•
256MB	hynix	HYMD232646B8J-D43 AA	Hynix	SS	HY5DU56822BT-D43	•	•	•
512MB	hynix	HYMD264646B8J-D43 AA	Hynix	DS	HY5DU56822BT-D43	•	•	•
512MB	Infineon	HYS64D64320GU-5-B	Infineon	DS	HYB25D256800BT-5B	•	•	
256MB	Infineon	HYS64D32300GU-5-B	Infineon	SS	HYB25D256800BT-5B	•	•	•
512MB	Infineon	HYS64D64320HU-5-C	Infineon	DS	HYB25D256800CE-5C	•		
256MB	KINGMAX	MPXB62D-38KT3R	KINGMAX	SS	KDL388P4EA-50	•	•	•
512MB	KINGMAX	MPXC22D-38KT3R	KINGMAX	DS	KDL388P4EA-50	•	•	•
256MB	KINGMAX	MPXB62D-38LT3R	MOSEL	SS	V58C2256804SAT5B	•	•	•
512MB	KINGMAX	MPXC22D-38LT3R	MOSEL	DS	V58C2256804SAT5B	•	•	•
256MB	KINGSTON	KVR400X64C3A	KINGSTON	SS	D3208DL2T-5	•	•	•
512MB	KINGSTON	KVR400X64C3A	KINGSTON	DS	D328DIB-50	•	•	•
512MB	KINGSTON	KHX3200A	N/A	DS	Heat-Sink Package	•	•	
256MB	KINGSTON	KVR400X64C3A	Hynix	SS	HY5DU56822BT-D43	•	•	
512MB	KINGSTON	KVR400X64C3A	Hynix	DS	HY5DU56822BT-D43	•	•	•
256MB	KINGSTON	KVR400X64C3A	Infineon	SS	HYB25D256800BT-5B	•	•	•
512MB	KINGSTON	KVR400X64C3A	Infineon	DS	HYB25D256809BT-5B	•	•	
256MB	Kingston	N/A	Mosel	SS	V58C2256804SAT5		•	
256MB	Kingston	N/A	Winbond	SS	W942508BH-5		•	
256MB	Kreton	N/A	VT	SS	VT3225804T-5	•	•	•
512MB	Kreton	N/A	VT	DS	VT3225804T-5	•	•	•
256MB	MICRON	MT8VDDT3264AG-40BCB	MICRON	SS	MT46V32M8TG-5BC	•	•	
512MB	MICRON	MT16VDDT6464AG-40BCB	MICRON	DS	MT46V32M8TG-5BC	•	•	
256MB	Pmi	MD44256VIT3208GMHA01	MOSEL	SS	V58C2256804SAT5B	•	•	•
512MB	Pmi	MD44512VIT3208GATA03	MOSEL	DS	V58C2256804SAT5B	•	•	•
512MB	PSC	AL6D8A53T1-5B	PSC	DS	A2S56D30ATP	•	•	•
256MB	PSC	AL5D8B53T-5B1K	PSC	SS	A2S56D30BTP	•	•	•

(Continued on the next page)

Table 1 DDR400 Qualified Vendors List

Size	Vendor	Model	Brand	SS/DS	Component	DIMM config A*	B*	C*
512MB	PSC	AL6D8B53T-5B1K	PSC	DS	A2S56D30BTP	•	•	•
512MB	SAMSUNG	M368L6423ETM-CCC	SAMSUNG	DS	K4H560838E-TCCC	•		•
256MB	SAMSUNG	M368L3223ETM-CCC	SAMSUNG	SS	K4H560838E-TCCC	•	•	
256MB	SAMSUNG	M368L3223FTN-CCC	SAMSUNG	SS	K4H560838F-TCCC	•	•	•
512MB	SAMSUNG	M368L6423FTN-CCC	SAMSUNG	DS	K4H560838F-TCCC	•	•	•
1024MB	Transcend	TS128MLD64V4A3	SAMSUNG	DS	K4H560438E-GCCC	•	•	•
256MB	Transcend	TS32MLD64V4F3	SAMSUNG	SS	K4H560838D-TCCC	•	•	•
512MB	Transcend	TS64MLD64V4F3	SAMSUNG	DS	K4H560838D-TCCC	•	•	•
512MB	Transcend	TS64MLD64V4F3	SAMSUNG	DS	K4H560838E-TCCC	•	•	•
256MB	Transcend	TS32MLD64V4F3	Mosel	SS	V58C2256804SAT5B	•	•	•
512MB	Transcend	TS64MLD64V4F3	Mosel	DS	V58C2256804SAT5B	•	•	•
512MB	TwinMos	M2G9J16AJATT9F0811DDT	TwinMos	DS	TMD7608F8E50B	•	•	•
256MB	TwinMos	M2G9I08AIATT9F081AADT	TwinMos	SS	TMD7608F8E50D	•	•	•
512MB	TwinMos	M2G9J16AJATT9F081AADT	TwinMos	DS	TMD7608F8E50D	•	•	•
512MB	TwinMos	M2G9J16AGATT9F081AA4T	TwinMos	DS	TMD7608F8E50D	•	•	•
256MB	TwinMos	M2G9I08AFATT9F081AA4T	TwinMos	SS	TMD7608F8E50D	•	•	•
256MB	Veritech	VT400FMV/2561103	VT	SS	VT56DD32M8PC-5	•	•	•
512MB	Veritech	VT400FMV/5121003	VT	DS	VT56DD32M8PC-5	•	•	•
256MB	Winbond	W9425GCDB-5	Winbond	SS	W942508CH-5	•	•	•
512MB	Winbond	W9451GCDB-5	Winbond	DS	W942508CH-5	•	•	•

Legend:

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

B* - Supports any two modules.

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

SS - Single-Sided DIMMs

DS - Double-Sided DIMMs

• Use a maximum of two DDR DIMM slots when using Dual-channel DDR400 (PC3200) DIMMs for stable performance.

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

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

1.7.3   Installing a DIMM

Follow these steps to install a DIMM.

DDR DIMM

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

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

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

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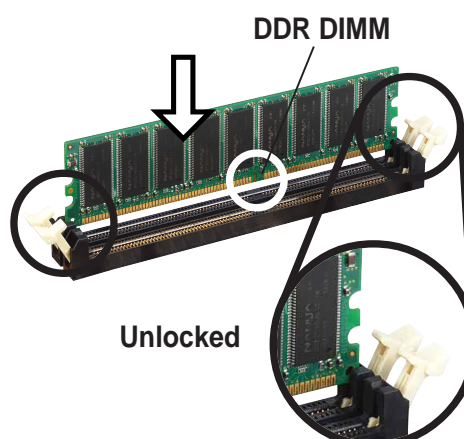
> A DDR DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

1.8   Expansion slots

To install and configure an expansion card:

1. Install an expansion card following the instructions that came with the chassis.

2. Turn on the system and change the necessary BIOS settings, if any. See Chapter 2 for BIOS information.

3. Assign an IRQ to the card. Refer to the tables next page.

4. Install the drivers and/or software applications for the expansion card according to the card documentation.

1.8.1   Interrupt assignments

Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	N/A	Programmable Interrupt
3*	11	Communications Port (COM2)
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.

1.8.2   IRQ assignments for this motherboard

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

1.8.3   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.
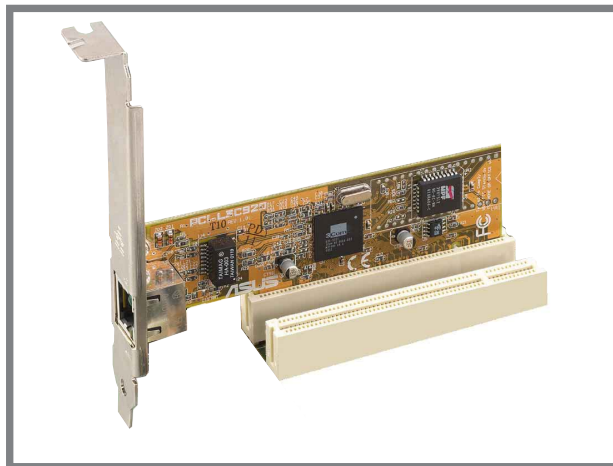
1.8.4 AGP slot

The Accelerated Graphics Port (AGP) slot supports AGP 8X/4X (+1.5V) 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 the motherboard.

Install only +1.5V AGP cards.

Keyed for 1.5v
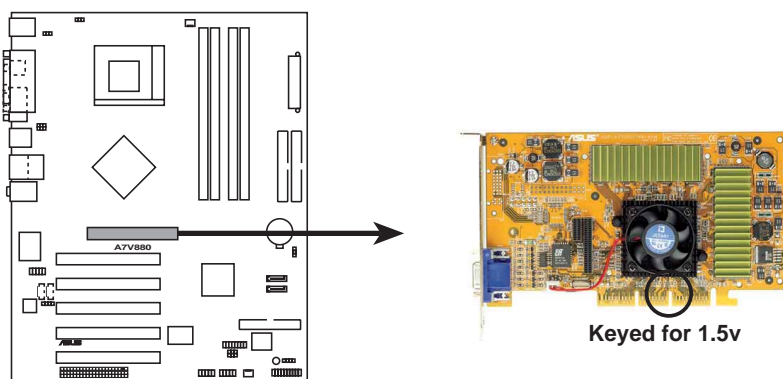
A7V880 Accelerated Graphics Port (AGP)

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.

1.8.5 Wi-Fi slot

The Wi-Fi (Wireless Fidelity) slot will support the ASUS Wi-Fi module. Visit the ASUS website (www.asus.com) for product updates.

The Wi-Fi slot conforms to the Institute of Electrical and Electronics Engineers (IEEE) 802.11b standard for wireless devices operating in the 2.4 GHz frequency band.

A7V880 WIRELESS Connectors
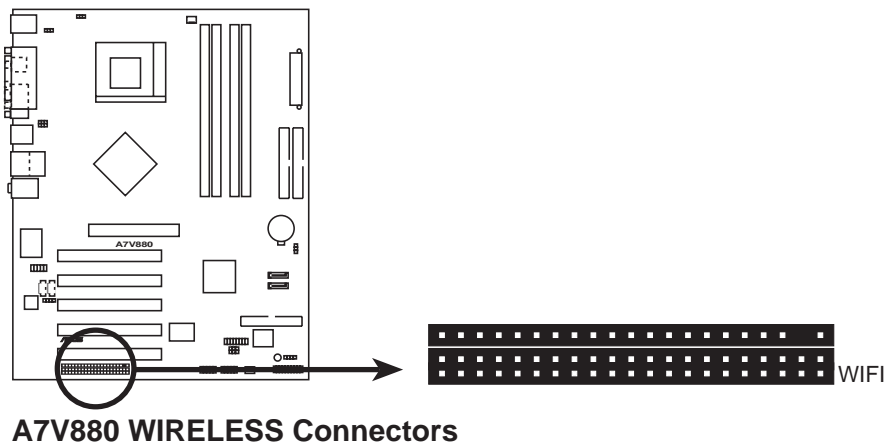
ASUS WiFi-b™ Setup
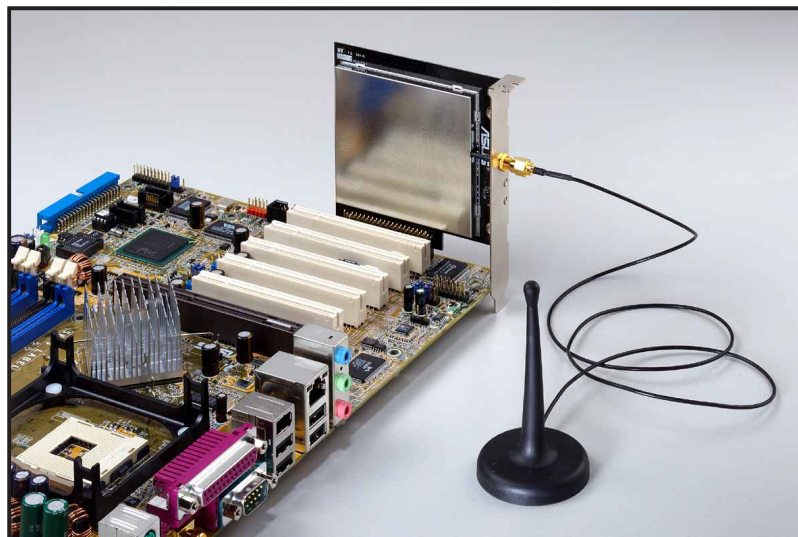
- The PCI 5 slot and the Wi-Fi slot can not be used at the same time.
- The ASUS Wi-Fi module is purchased separately.

1.9 Jumpers

1. Clear RTC RAM (CLRTC)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The 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. 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.

3. Plug the power cord and turn ON the computer.

4. Hold down the **<Del>** key during the boot process and enter BIOS setup to re-enter data.

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

CLRTC

A7V880 Clear RTC RAM

3
2
1
Normal
(Default)

3
2
1
Clear CMOS
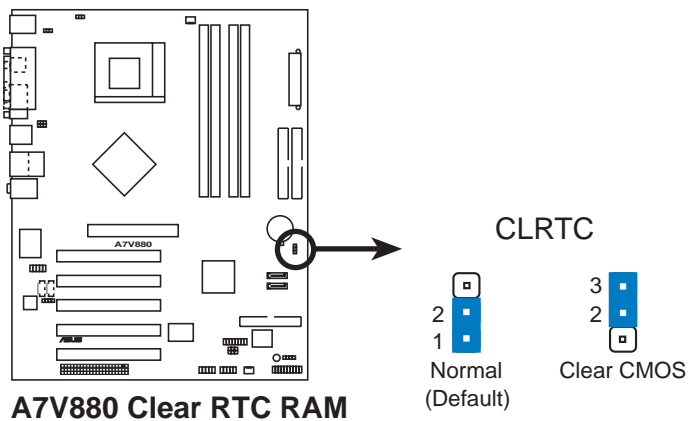
> ✋ You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so BIOS can automatically reset parameter settings to its previous values.

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.

KBPWR

1 2   2 3

+5V (Default)   +5VSB
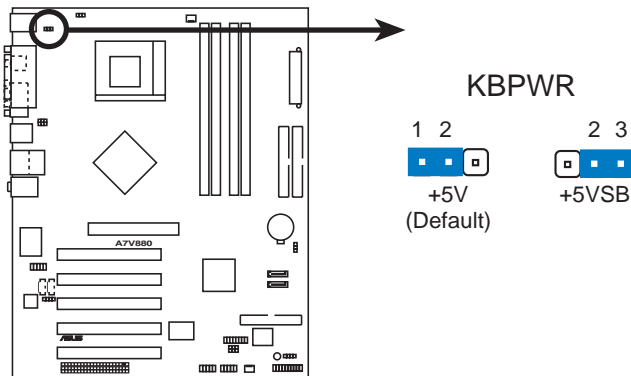
A7V880 Keyboard Power Setting

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).

USBPW12
USBPW34

1 2   2 3

+5V (Default)   +5VSB

USBPW56
USBPW78

1 2   2 3

+5V (Default)   +5VSB
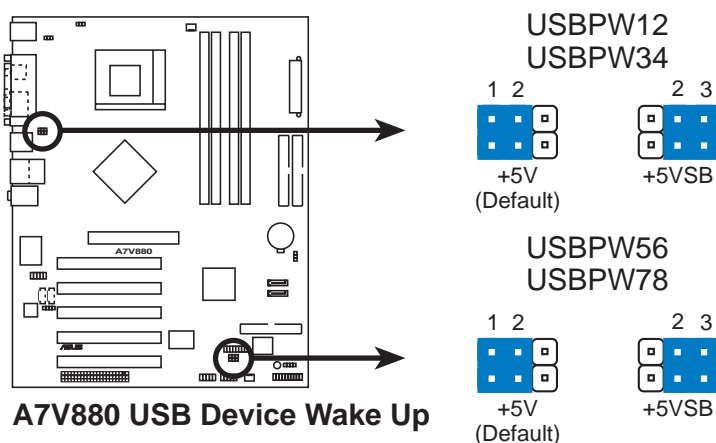
A7V880 USB Device Wake Up

- 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.

4. V_{CORE} over-voltage (3-pin OVER_VOLT1)

When enabled, this jumper allows CPU V_{CORE} ranges of 1.75V ~ 1.95V.

When this jumper is disabled, V_{CORE} setting has a range of +1.65V ~ +1.85V. You may adjust the CPU V_{CORE} through the BIOS Setup.

Setting to a very high core voltage may cause permanent damage to the CPU. It is recommended that you keep the default setting (Disable).
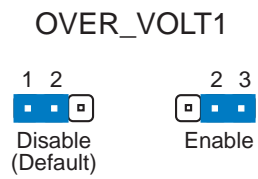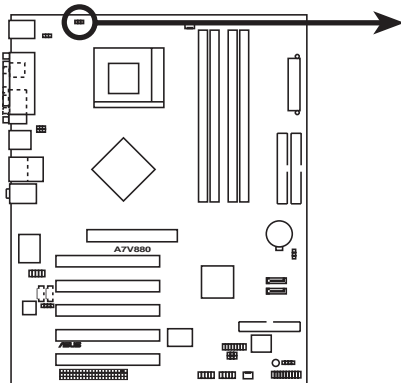
A7V880 OVER_VOLT Setting

1.10   Connectors

This section describes and illustrates the motherboard rear panel and internal connectors.

1.10.1 Rear panel connectors
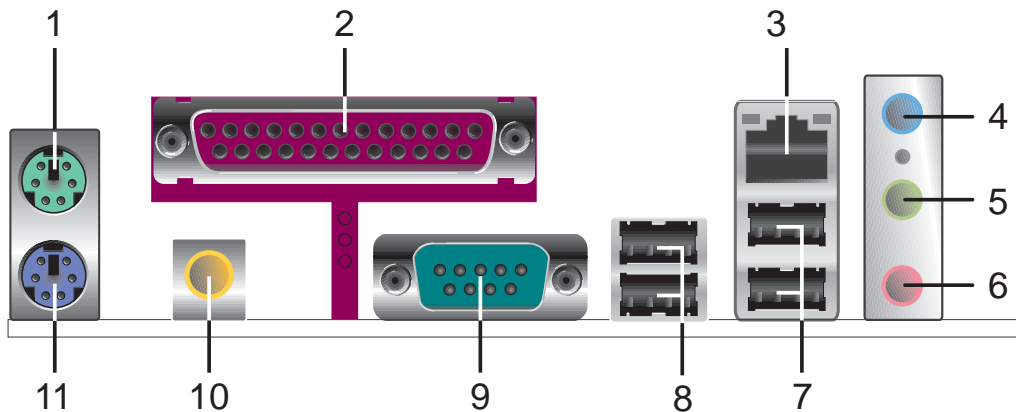
1. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.

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. **Line In jack.** This Line In (light blue) jack connects a tape player or other audio sources. In 6-channel mode, the function of this jack becomes Bass/Center.

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

6. **Microphone jack.** This Mic (pink) jack connects a microphone. In 6-channel mode, the function of this jack becomes Rear Speaker Out.

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

Audio 2, 4 or 6-channel configuration

	Headphone/ 2-Speaker	4-Speaker	6-Speaker
Light Blue	Line In	Line In	Bass/Center
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Rear Speaker Out	Rear Speaker Out

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

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

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

10. **S/PDIF out jack.** This jack connects to external audio output devices.

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

1.10.2 Internal connectors

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

This connector supports the provided UltraATA133 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 UltraATA133 slave device (hard disk drive) and the black connector to the UltraATA133 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 UltraATA cable connector. This prevents incorrect orientation when you connect the cables.

- The hole near the blue connector on the UltraATA cable is intentional.

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

PRI_IDE   SEC_IDE

PIN 1   PIN 1
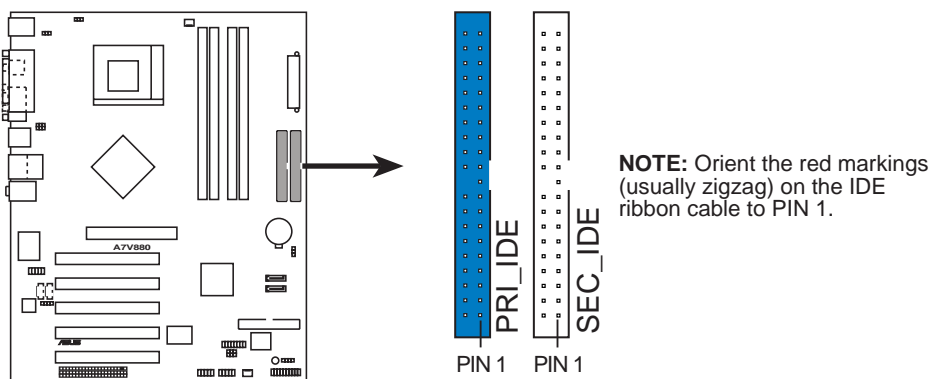
A7V880 IDE Connectors

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).

FLOPPY   PIN 1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.
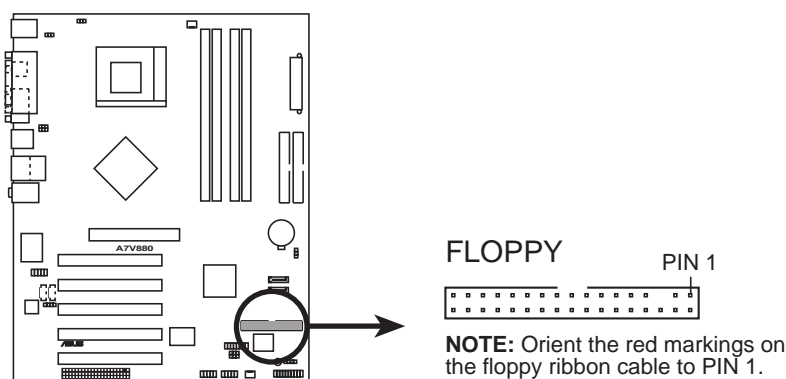
A7V880 Floppy Disk Drive Connector

3. ATX power connectors (20-pin ATXPWR)

These connectors connect to an 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.

> 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 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.

ATXPWR

Pin 1

+12.0VDC	+5.0VDC
+5VSB	+5.0VDC
PWR_OK	-5.0VDC
GND	GND
+5.0VDC	GND
GND	GND
+5.0VDC	PS_ON#
GND	GND
+3.3VDC	-12.0VDC
+3.3VDC	+3.3VDC
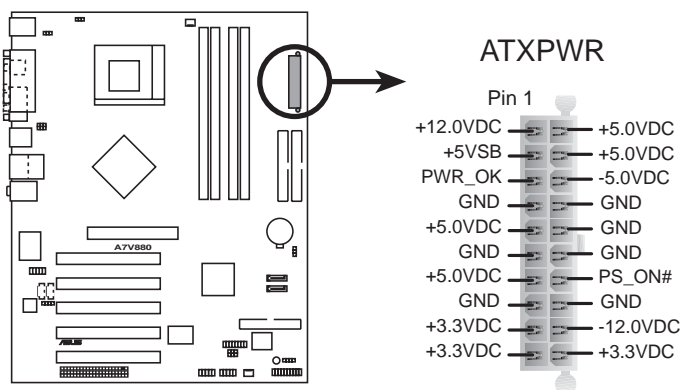
A7V880 ATX Power Connector

4. 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.

CD(Black)   AUX(White)

Left Audio Channel
Ground
Ground
Right Audio Channel
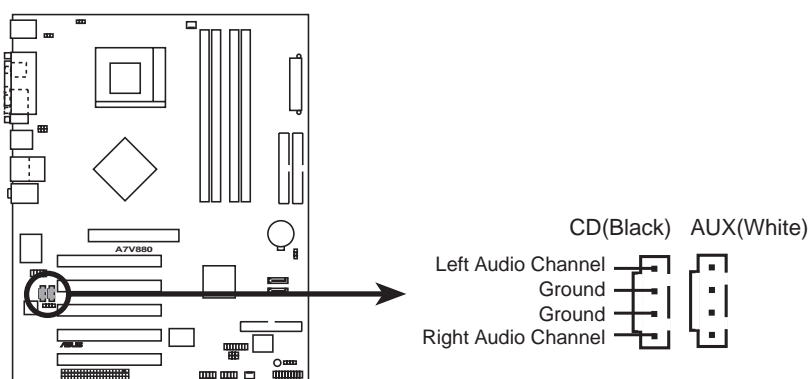
A7V880 Internal Audio Connectors

5. CPU and chassis fan connectors (3-pin CPU_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!

CPU_FAN

GND
+12V
Rotation

CHA_FAN

Rotation
+12V
GND

A7V880 12-Volt Fan Connectors
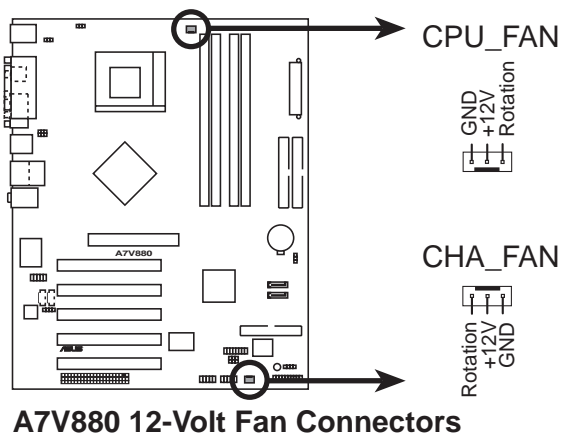
6. USB header (10-1 pin USB56, USB78)

If the USB ports on the rear panel are inadequate, two USB headers are available for additional USB ports. Connect the USB cable of the USB 2.0 module to these headers. You may install the USB module in the chassis front panel. The module has two USB 2.0 ports for connecting USB peripherals such as high resolution cameras, scanners, and printers.

USB56

USB+5V
USB_P6-
USB_P6+
GND
NC

1

USB+5V
USB_P5-
USB_P5+
GND

USB78

USB+5V
USB_P8-
USB_P8+
GND
NC

1

USB+5V
USB_P7-
USB_P7+
GND

A7V880 USB 2.0 Header
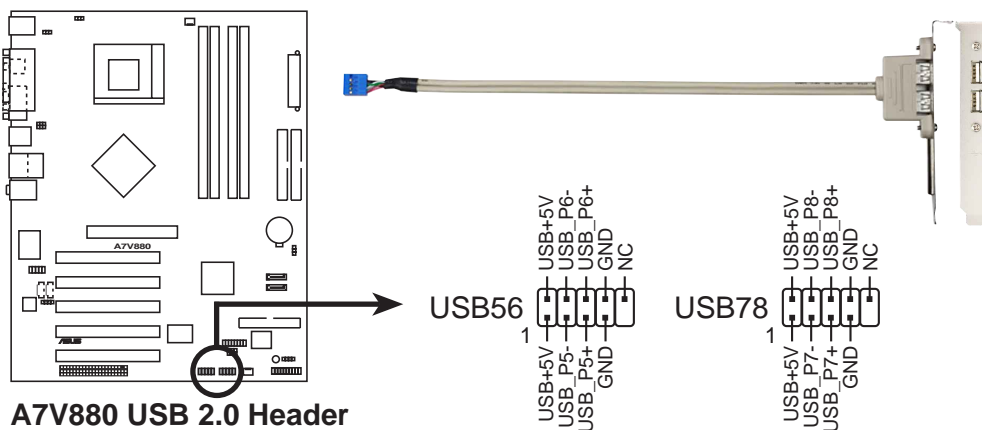
> Install the USB 2.0 driver before using the USB 2.0 feature.

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

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

Be default, the pins labeled LINE OUT_R/BLINE_OUT_R and the pins LINE OUT_L/BLINE_OUT_L are shorted with jumper caps. Remove the caps only when you are connecting the front panel audio cable.
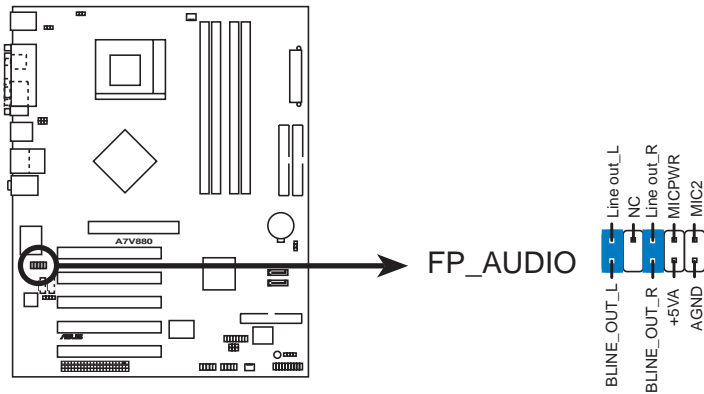
A7V880 Front Panel Audio Connector

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

This lead is for a chassis designed with intrusion detection feature. This requires an external detection mechanism such as a chassis intrusion sensor or microswitch. When you remove any chassis component, the sensor triggers and sends a high-level signal to this lead to record a chassis intrusion event.

By default, the pins labeled "Chassis Signal" and "Ground" are shorted with a jumper cap. If you wish to use the chassis intrusion detection feature, remove the jumper cap from the pins.
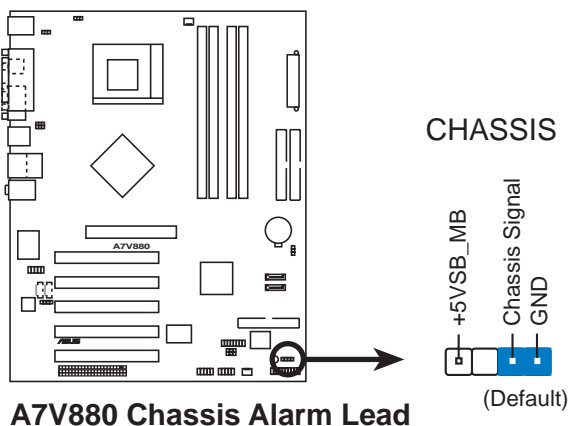
A7V880 Chassis Alarm Lead

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.

A7V880 Game Connector

GAME

+5V
J1B2
J1CY
GND
GND
J1CX
J1B1
+5V

MIDI_IN
J2B2
J2CY
MIDI_OUT
J2CX
J2B1
+5V
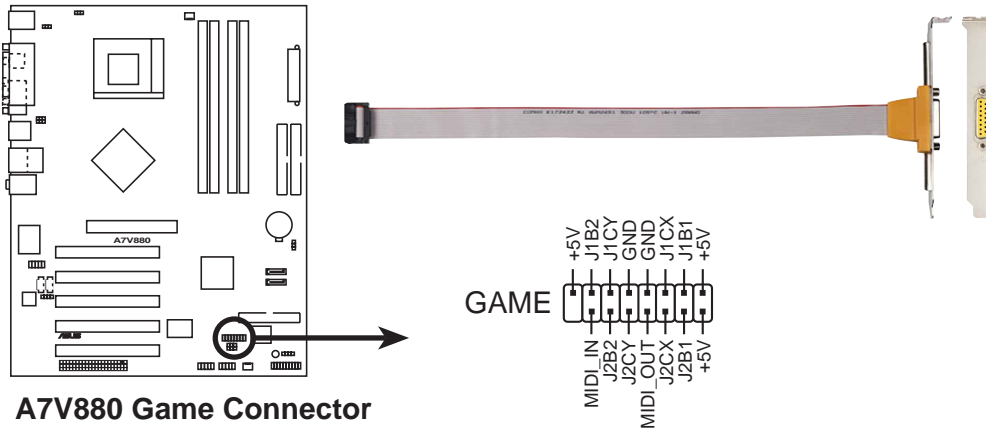
The GAME/MIDI module is purchased separately.

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

These next generation 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 133MB/s (Ultra ATA/133).

A7V880 SATA Connectors

SATA1

GND
RSATA_TXP1
RSATA_TXN1
GND
RSATA_RXP1
RSATA_RXN1
GND

SATA2

GND
RSATA_TXP2
RSATA_TXN2
GND
RSATA_RXP2
RSATA_RXN2
GND
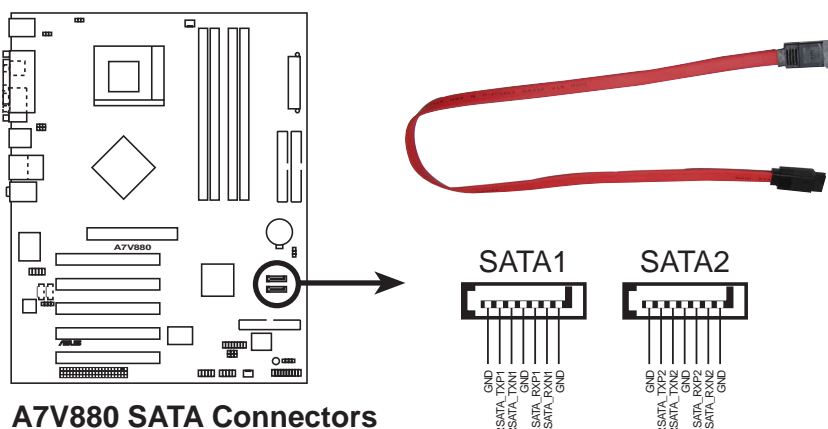
11. Digital Audio connector (6-1 pin SPDIF_OUT)

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

A7V880 Digital Audio Connector
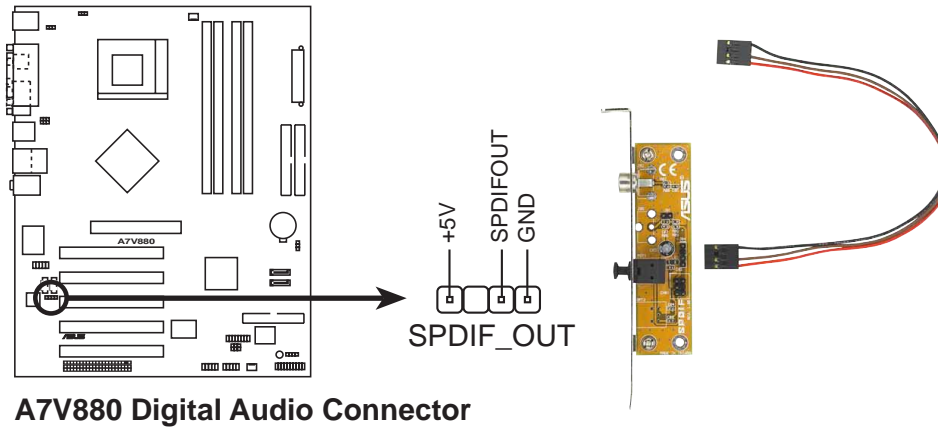
The S/PDIF out module is purchased separately.

12. System panel connector (10-1 pin PANEL)

This connector accommodates several system front panel functions.

A7V880 System Panel Connectors
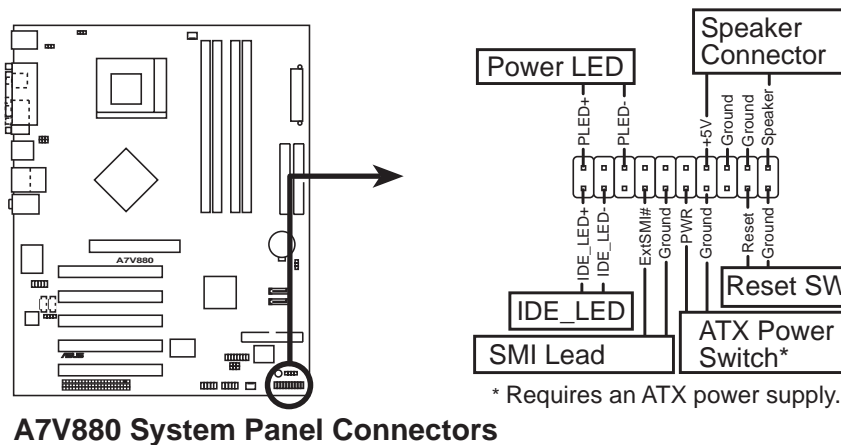
* **System Power LED Lead (Green 3-1 pin PLED)**

   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 connects to the case-mounted speaker and allows you to hear system beeps and warnings.

- **Reset Switch Lead (Blue 2-pin RESET)**

  This 2-pin connector connects to the case-mounted reset switch for rebooting the system without turning off the system power.

- **ATX Power Switch / Soft-Off Switch Lead (Yellow 2-pin PWR)**

  This connector connects a switch that controls the system power. 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 4 seconds turns the system OFF.

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

  This 2-pin connector allows you to manually place the system into a suspend mode, or "green" mode, where system activity is instantly decreased to save power and to expand the life of certain system components. Attach the case-mounted suspend switch to this 2-pin connector.

- **Hard disk activity LED (Red 2-pin IDELED)**

  This connector supplies power to the hard disk activity LED. Any read or write activity of an IDE device cause this LED to light up.

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

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

BIOS information

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 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.

Refer to the corresponding sections for details on these utilities.

Important notes

- It is recommended that you 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 AFUDOS (refer to section "2.1.3 Using AFUDOS to copy BIOS from PC")

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

2.1.1 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**.

   Windows® 2000 environment

   To create a set of boot disks for Windows® 2000, run the Makeboot.exe tool from the Windows® 2000 CD:

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

b.   Insert the Windows® 2000 CD into the CD-ROM drive.

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

d.   From the Open box, type

   `D:\bootdisk\makeboot a:` then press <Enter>,

   assuming that D: is your CD-ROM drive.

e.   Follow succeeding screen instructions.

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

2.1.2   Using AFUDOS to update the BIOS

To update the BIOS using the AFUDOS.EXE utility:

1.   Visit the ASUS website (www.asus.com) 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 /iA7V880.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 shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

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

```
A:\>afudos /iA7V880.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.

2.1.3   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 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%)
```
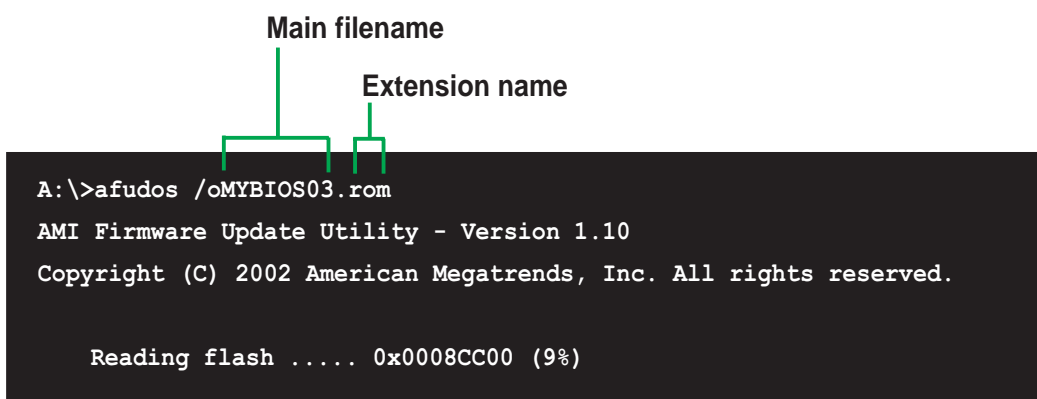
3. The utility will copy the current system BIOS by default to the floppy disk. Make sure that the floppy disk has at least 600KB of free disk space and is not write-protected.

```
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.

2.1.4   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 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 **A7V880.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 "A7V880.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.

```
User recovery requested. Starting BIOS recovery...

Checking for floppy...

Floppy found!

Reading file "A7V880.ROM". Completed.

Start flashing...

Flashed successfully. Rebooting.
```

2.1.5   Recovering the BIOS with CrashFree BIOS 2

The CrashFree BIOS 2 auto recovery tool allows you to restore BIOS from the motherboard support CD, or from a floppy disk that contains the BIOS file, in case the current BIOS on the motherboard fails or gets corrupted.

- Prepare the **support CD** that came with the motherboard or a **floppy disk that contains the motherboard BIOS** before proceeding with the BIOS update process.

- If you have saved a copy of the original motherboard BIOS to a bootable floppy disk, you may also use this disk to restore the BIOS. See section "2.1.1 Creating a bootable floppy disk."

To recover the BIOS from a floppy disk:

1.   Boot the system.

2.   When a corrupted BIOS is detected, the following screen message appears.

```
Bad BIOS checksum. Starting BIOS recovery...

Checking for floppy...
```

3.   Insert a floppy disk that contains the original or the latest BIOS file for this motherboard. If all the necessary files are found in the floppy disk, the BIOS update process continues.

Make sure that the BIOS file in the floppy disk is renamed as "**A7V880B.ROM**".

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "A7V880.ROM". Completed.
Start flashing...
```

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

4. When the BIOS update process is complete, reboot the system.

To recover the BIOS from the support CD:

1. Boot the system.
2. When a corrupted BIOS is detected, the following screen message appears.

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

✏️ If there is no floppy disk found in the drive, the system automatically checks the CD-ROM.

3. Place the support CD in the CD-ROM. The support CD contains the a working BIOS for this motherboard.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found.
Reading file "A7V880.ROM". Completed.
Start flashing...
```

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

4. When the BIOS update process is complete, reboot the system.

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

2.2   BIOS Setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section "2.1 Managing and updating your BIOS."

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

Even if you are not prompted to use the Setup program, you 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 **<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. It is a menu-driven program, which means you can 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 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.

2.2.1 BIOS menu screen

Menu items   Menu bar   Configuration fields   General help

```
                         BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

   System Time                [11:51:19]            Use [ENTER], [TAB]
   System Date                [Thu 08/05/2003]      or [SHIFT-TAB] to
   Legacy Diskette A          [1.44M, 3.5 in]       select a field.
                                                    Use [+] or [-] to
      Primary IDE Master      : [ST320413A]         configure system time.
      Primary IDE Slave       : [ASUS CD-S340]
      Secondary IDE Master    : [Not Detected]
      Secondary IDE Slave     : [Not Detected]
                                                    ←→    Select Screen
      System Information                            ↑↓    Select Item
                                                    +-    Change Option
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit

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

Sub-menu items   Navigation keys

2.2.2 Menu bar

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

Main   For changing the basic system configuration

Advanced   For changing the advanced system settings

Power   For changing the advanced power management (APM)
               configuration

Boot   For changing the system boot configuration

Exit   For selecting the exit options and loading default settings

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

2.2.3 Navigation keys

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

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

2.2.4   Menu items

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

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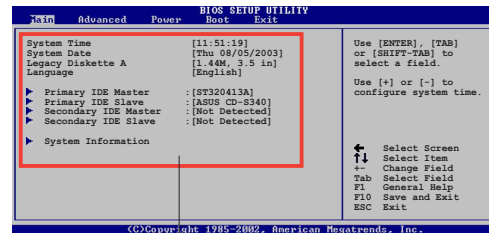
Main menu items

2.2.5   Sub-menu items

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>**.

2.2.6   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 "2.2.7 Pop-up window."

2.2.7   Pop-up window

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

2.2.8   Scroll bar

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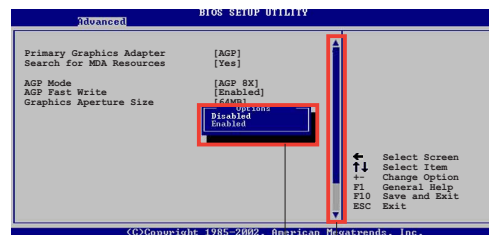
Pop-up window

Scroll bar

2.2.9   General help

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

2.3 Main menu

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

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

```
                           BIOS SETUP UTILITY
  Main     Advanced    Power    Boot    Exit

  System Time                    [11:51:19]            Use [ENTER], [TAB]
  System Date                    [Thu 08/05/2003]      or [SHIFT-TAB] to
  Legacy Diskette A              [1.44M, 3.5 in]       select a field.
                                                       Use [+] or [-] to
  ▶ Primary IDE Master         : [ST320413A]           configure system time.
  ▶ Primary IDE Slave          : [ASUS CD-S340]
  ▶ Secondary IDE Master       : [Not Detected]
  ▶ Secondary IDE Slave        : [Not Detected]

                                                       ↔    Select Screen
  ▶ System Information                                 ↑↓   Select Item
                                                       +-   Change Option
                                                       F1   General Help
                                                       F10  Save and Exit
                                                       ESC  Exit

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```

2.3.1 System Time [xx:xx:xxxx]

Allows you to set the system time.

2.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

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

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

2.3.4   Primary 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.

```
                         BIOS SETUP UTILITY
       Advanced

   Primary IDE Master                                 Select the type
                                                      of device connected
   Device       : Hard Disk                           to the system
   Vendor       : ST320413A
   Size         : 20.0GB
   LBA Mode     : Supported
   Block Mode   : 16 Sectors
   PIO Mode     : Supported
   Async DMA    : MultiWord DMA-2
   Ultra DMA    : Ultra DMA-5
   SMART Monitoring: Supported
                                                  ←→   Select Screen
   Type                          [Auto]          ↑↓   Select Item
   LBA/Large Mode                [Auto]          +-   Change Option
   Block(Multi-sector Transfer)  [Auto]          F1   General Help
   PIO Mode                      [Auto]          F10  Save and Exit
   DMA Mode                      [Auto]          ESC  Exit
   Smart Monitoring              [Auto]
   32Bit Data Transfer           [Disabled]

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```

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]

2.3.5 System Information

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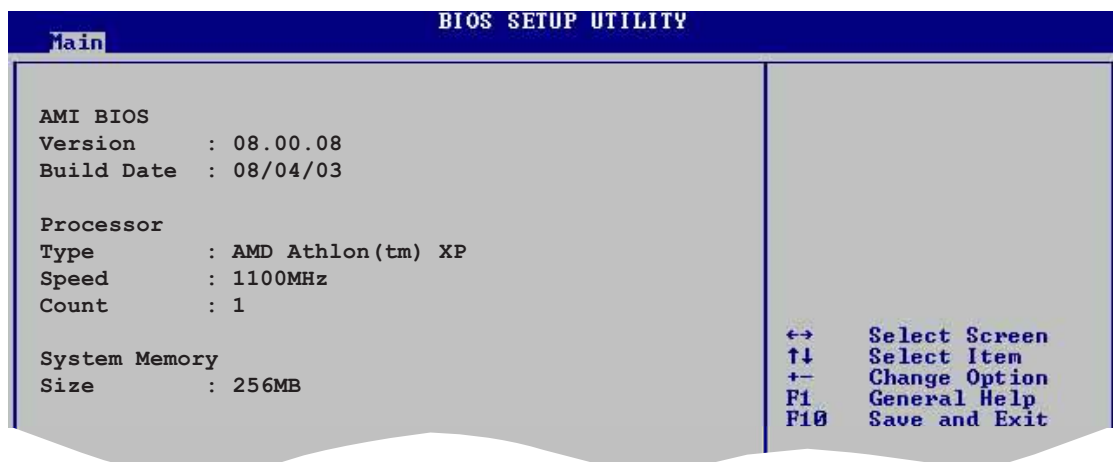
AMI BIOS
Displays the auto-detected BIOS information.

Processor
Displays the auto-detected processor information.

System Memory
Displays the auto-detected system memory.

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 may cause the system to malfunction.

```
                        BIOS SETUP UTILITY
 Main    Advanced    Power    Boot    Exit

   ▶  Instant Music Configuration              Configure CPU.

   ▶  Chipset
   ▶  Onboard Devices Configuration
   ▶  PCI PnP
   ▶  JumperFree Configuration
   ▶  USB Configuration


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


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```

2.4.1   Instant Music Configuration

```
                        BIOS SETUP UTILITY
         Advanced

 Instant Music Option                          If enabled, power up
                                               by PS/2 keyboard
 Instant Music              [Disabled]         function will be
                                               disabled.
```

Instant Music [Disabled]
Allows you to enable or disable the Instant Music feature in BIOS.
Configuration options: [Disabled] [Enabled]

> 🖊 When Instant Music is enabled, the PS/2 keyboard power up feature is automatically disabled. See page 3-5 for details.

Instant Music CD-ROM Drive [IDE Secondary Master]
Allows you to select the CD-ROM drive that you wish to use for the Instant Music CD playback. Configuration options: [IDE Primary Master] [IDE Primary Slave] [IDE Secondary Master] [IDE Secondary Slave]

> 🖊 The above item appears only if you enabled the Instant Music item.

2.4.2 Chipset

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

```
                        BIOS SETUP UTILITY
     Advanced

   ▶   NorthBridge VIA KT880 Configuration
   ▶   SouthBridge VIA VT8237 Configuration
```

NorthBridge VIA KT880 Configuration

```
                        BIOS SETUP UTILITY
     Advanced

   ******** DRAM Timing ********
   DRAM Clock                   [Auto]
   DRAM Timing                  [Auto by SPD]
   DRAM BUS Selection           [Auto]

   Primary Graphics Adapter     [AGP]
   V-Link 8X Supported          [Enabled]
   V-Link Data 2X Support       [Disabled]

   AGP Mode                     [AGP 8X]
   AGP Read Synchronization     [Disabled]
   AGP Fast Write               [Disabled]
   Graphics Aperture Size       [128MB]       ↔    Select Screen
   AGP Master 1 W/S Read        [Disabled]    ↑↓   Select Item
   AGP Master 1 W/S Write       [Disabled]    +-   Change Option
                                                   General Help
```

DRAM Clock [Auto]
Sets the DRAM Clock.
Configuration options: [Auto] [266 MHz] [333 MHz] [400 MHz]

DRAM Timing [Auto By SPD]
Sets the DRAM timing parameters according to the DRAM SPD (Serial Presence Detect). When set to Manual, you can manually set the DRAM timing parameters through the DRAM sub-items.
Configuration options: [Manual] [Auto By SPD]

> The following sub-items appear when the item **DRAM Timing** item is set to Manual.

SDRAM CAS# Latency [2.5]

Controls the latency between the SDRAM read command and the time the data actually becomes available. Configuration options: [1.5] [2.0] [2.5] [3.0]

SDRAM Bank Interleave [Disabled]

This item controls the latency between the SDRAM read command and the time the data actually becomes available.
Configuration options: [Disabled] [2-Way] [4-Way]

Precharge to Active(Trp) [4T]

Allows you to set the Precharge to Active timing.
Configuration options: [2T] [3T] [4T] [5T]

Active to Precharge(Tras) [9T]

Allows you to set the Active to Precharge timing.
Configuration options: [6T] [7T] [8T] [9T]

Active to CMD(Trcd) [4T]

Allows you to set the Active to CMD timing.
Configuration options: [2T] [3T] [4T] [5T]

REF to ACT/REF to REF (Trcfc) [15T]

Allows you to set the REF to ACT/REF to REF timing.
Configuration options: [12T] [13T] [14T] [15T]

DRAM Command Rate [2T Command]

Allows you to set the DRAM Command Rate timing.
Configuration options: [2T Command] [1T Command]

DRAM Bus Selection [Auto]

Sets the DRAM Bus Selection channel.

Configuration options: [Auto] [Single Channel] [Dual Channel]

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]

V-Link 8X Supported [Enabled]

Enables or disables the bus link between the NorthBridge and SouthBridge.
Configuration options: [Disabled] [Enabled]

V-Link Data 2X Support [Disabled]

Enables or disables the V-Link Data 2X 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 Read Synchronization [Disabled]

Enables or disables AGP synchronization.
Configuration options: [Disabled] [Enabled]

AGP Fast Write [Disabled]

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

Graphics Aperture Size [128MB]

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

AGP Master 1 W/S Read [Disabled]

Enables or disables the AGP Master 1 W/S Read function.
Configuration options: [Disabled] [Enabled]

AGP Master 1 W/S Write [Disabled]

Enables or disables the AGP Master 1 W/S Write function.
Configuration options: [Disabled] [Enabled]

SouthBridge VIA VT8237 Configuration

```
                        BIOS SETUP UTILITY
        Advanced

    MPS Revision               [1.4]
    PCI Delay Transaction      [Enabled]
    Onboard Giga LAN           [Enabled]
     Onboard Giga LAN Boot ROM [Disabled]
    VIA RAID SATA BOOTROM      [Enabled]
    OnBoard AC'97 Audio        [Enabled]
```

MPS Revision [1.4]

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

PCI Delay Transaction [Enabled]

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

OnBoard Giga LAN [Enabled]

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

OnBoard Giga LAN Boot ROM [Disabled]

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

VIA SATA BOOTROM [Enabled]

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

OnBoard AC'97 Audio [Enabled]

Enables or disables the onboard AC'97 Audio controller.
Configuration options: [Disabled] [Enabled]

2.4.3   Onboard Devices Configuration

```
                         BIOS SETUP UTILITY
       Advanced

  Configure ITE8712 Super IO Chipset

  OnBoard Floppy Controller      [Enabled]
  Serial Port1 Address           [3F8/IRQ4]
  Parallel Port Address          [378]
  OnBoard Game Port              [Disabled]
  OnBoard MIDI Port              [Disabled]
```
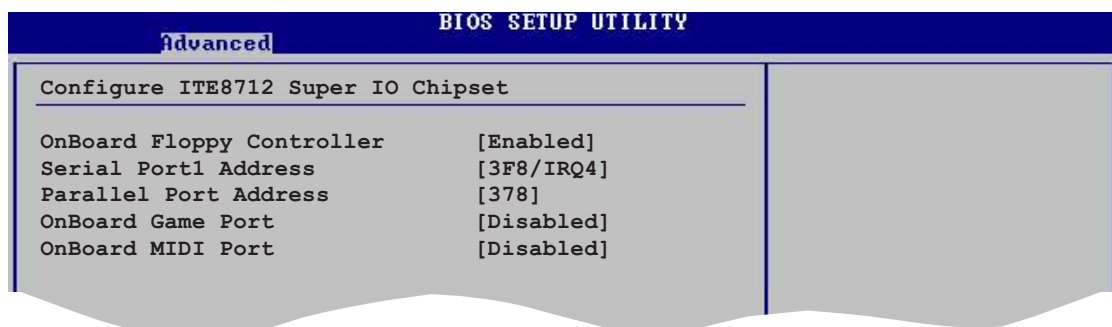
OnBoard Floppy Controller [Enabled]

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 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. This item appears only when the
Parallel Port Address is not Disabled.
Configuration options: [Normal] [EPP] [ECP] [EPP+ECP]

EPP Version [1.9]

Appears only when the Parallel Port Mode is set to [EPP]. This item allows you to to select the Parallel Port EPP version.
Configuration options: [1.9] [1.7]

ECP Mode DMA Channel [DMA3]

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

Parallel Port IRQ [IRQ7]

Sets the Parallel Port IRQ. Configuration options: [IRQ5] [IRQ7]

Onboard Game Port [Disabled]
Enables or disables the onboard GAME port.
Configuration options: [Disabled] [Enabled]

Onboard MIDI Port [Disabled]
Disables or sets the onboard MIDI port.
Configuration options: [Disabled] [300] [330]

2.4.4   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 may cause the system to malfunction.

```
                        BIOS SETUP UTILITY
        Advanced

     Advanced PCI/PnP Settings                       NO: Lets the BIOS
                                                     configure all the
     WARNING: Setting wrong values in below sections devices in the system.
              may cause system to malfunction.       YES: Lets the
                                                     operating system
     Plug And Play O/S            [No]               configure Plug and
     PCI Lantency Timer           [64]               Play (PnP) devices not
     Allocate IRQ to PCI VGA      [Yes]              required for boot if
     Palette Snooping             [Disabled]         your system has a Plug
     PCI IDE BusMaster            [Enabled]          and Play operating
                                                     system.
     IRQ3                         [Available]
     IRQ4                         [Available]        ↔    Select Screen
     IRQ5                         [Available]        ↑↓   Select Item
     IRQ7                         [Available]        +-   Change Option
     IRQ9                         [Available]        F1   General Help
     IRQ10                        [Available]        F10  Save and Exit
     IRQ11                        [Available]        ESC  Exit
     IRQ14                        [Available]
     IRQ15                        [Available]

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```

Plug and Play O/S [No]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you 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 pallete 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]

PCI IDE BusMaster [Enabled]

Allows BIOS to use PCI bus mastering when reading/writing to IDE devices.
Configuration options: [Disabled] [Enabled]

IRQ xx [Available]

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

2.4.5 JumperFree Configuration

```
                         BIOS SETUP UTILITY
   Advanced

 Configure System Frequency/Voltage

 CPU Multiple                  [Auto]
 AI Overclock Tuner            [Standard]
 Spread Spectrum               [Enable]
 Asynchronous Frequency        [Disable]
 VCORE Voltage                 [Auto]
 DDR Reference Voltage         [Auto]
 AGP Reference Voltage         [Auto]
```

CPU Multiple [Auto]
Allows selection of the AMD K7 CPU frequency multiple option.
Configuration options: [Auto] [5.0x] [5.5x] [6.0x] [6.5x] [7.0x] [7.5x] [8.0x] [8.5x] [9.0x] [9.5x] [10.0x] [10.5x] [11.0x] [11.5x] [12.0x] [12.5x] [13.0x] [13.5x] [14.0x] [15.0x] [16.0x] [16.5x] [17.0x] [18.0x] [19.0x] [20.0x] [21.0x] [22.5x]

AI Overclock Tuner [Standard]
Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Select either one of the preset overclocking options. Configuration options: [Manual] [Standard] [Overclock 5%] [Overclock 10%] [Overclock 20%] [Overclock 30%]

CPU Frequency [100]
Allows you to manually set the CPU frequency. The configuration options vary depending on the processor installed. Use the plus **<+>** or minus **<->** keys to adjust the value. This item appears only when the **AI Overclock Tuner** item is set to Manual.

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

Spread Spectrum [Enable]
Disables or enables the spread spectrum.
Configuration options: [Disable] [Enable]

Asynchronous Frequency [Disable]
Disables or enables the asynchronous frequency.
Configuration options: [Disable] [Enable]

VCORE Voltage [Auto]
Sets the VCore voltage.
Configuration options: [Auto] [1.65V] [1.70V] [1.75V] [1.80V] [1.85V]

DDR Reference Voltage [Auto]

Allows you to automatically detect or select from a list the DDR operating voltage.
Configuration options: [Auto] [2.55V] [2.65V] [2.75V] [2.85V]

AGP Reference Voltage [Auto]

Adjusts the AGP voltage setting.
Configuration options: [Auto] [1.5V] [1.6V] [1.7V] [1.8V]

2.4.6   USB Configuration

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

```
                        BIOS SETUP UTILITY
        Advanced

 USB Configuration                              Enables USB
                                                host controllers.
 Module Version - 2.23.2-7.4
 USB Devices Enabled: None


 USB 1.1 Ports Configuration    [USB 8 Ports]
 USB 2.0 Controller             [Enabled]
 VIA USB Device Function Enabled [Enabled]
 Legacy USB Support             [Auto]
 Port 64/60 Emulation           [Disabled]     ↔   Select Screen
 USB 2.0 Controller Mode        [HiSpeed]      ↑↓  Select Item
                                                +-  Change Option
```
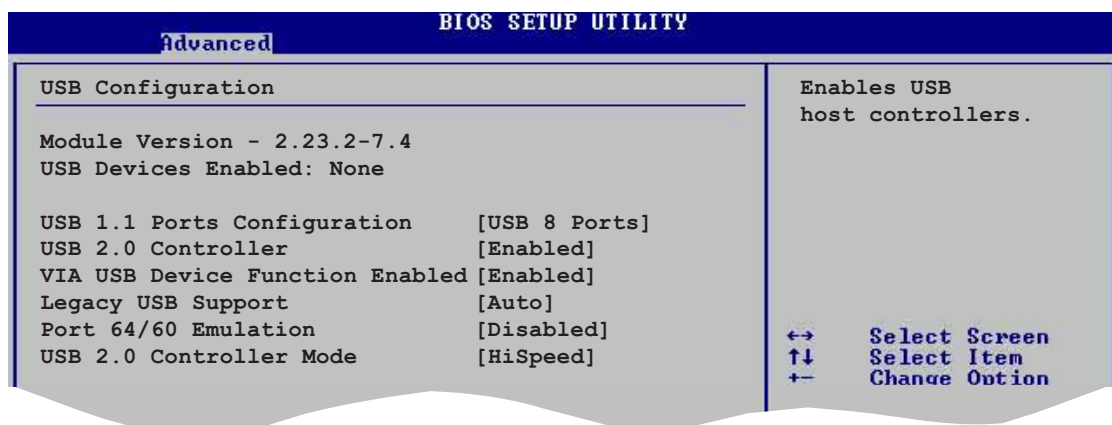
The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None.

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]

VIA USB Device Function Enabled [Enabled]

Allows you to enable or disable the VIA USB 2.0 Device function.
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]

Port 64/60 Emulation [Disabled]

Enables or disables the I/O port 60h/64h emulation support. Enable this item to support USB keyboards on non-USB aware operating systems.
Configuration options: [Disabled] [Enabled]

USB 2.0 Controller Mode [HiSpeed]

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

2.5   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.

```
                         BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

                                              Select the ACPI state
   Suspend Mode               [Auto]          used for System
   Repost Video on S3 Resume  [No]            Suspend.
   ACPI 2.0 Support           [No]
   ACPI APIC Support          [Enabled]

 ▶ APM Configuration
 ▶ Hardware Monitor


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


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```
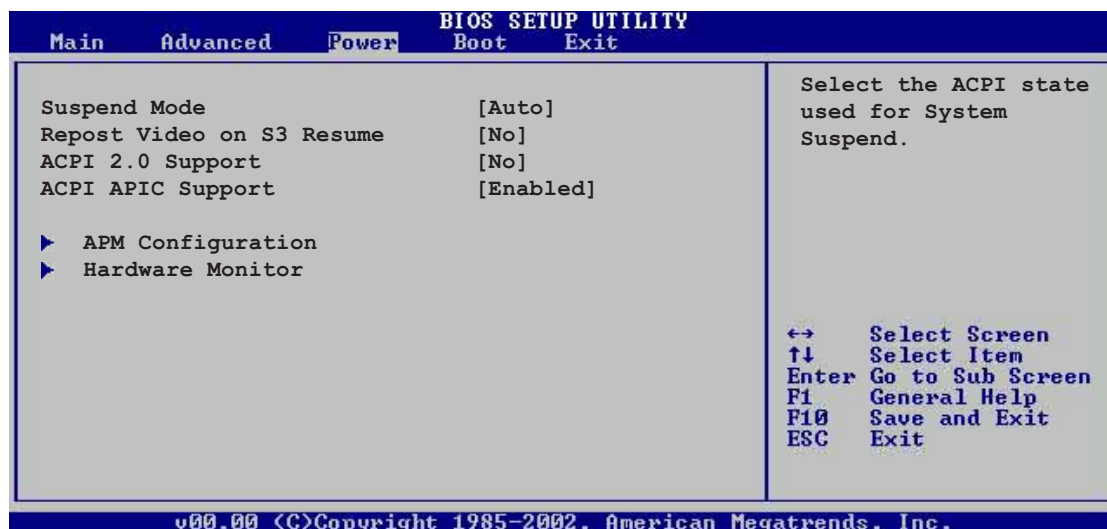
2.5.1   Suspend Mode [Auto]

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

2.5.2   Repost Video on S3 Resume [No]

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

2.5.3 ACPI 2.0 Support [No]

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

2.5.4 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]

2.5.5 APM Configuration

```
                          BIOS SETUP UTILITY
                    Power

  Power Management/APM        [Enabled]

  Video Power Down Mode       [Suspend]
  Hard Disk Power Down Mode   [Suspend]

  Power Button Mode           [On/Off]
  Restore on AC Power Loss    [Power Off]

  Wake Up/Power On By Ring    [Disabled]
  Power On PCI Devices        [Disabled]          ←→    Select Screen
  Power On RTC Alarm          [Disabled]          ↑↓    Select Item
  Power On PS/2 Mouse         [Disabled]          +-    Change Option
  Power On PS/2 Keyboard      [Disabled]          F1    General Help
                                                  F10   Save and Exit
                                                  ESC   Exit
```

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].

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]

Power Button Mode [On/Off]

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

Restore on AC Power Loss [Power Off]

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

Wake Up/ Power On By Ring [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 By PCI Devices [Disabled]

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

Power On By RTC Alarm [Disabled]

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

Power On By 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]

Power On By PS/2 Keyboard [Disabled]

Allows you to disable or set the keyboard wake-up feature. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Space Bar] [Ctrl-Esc] [Power Key] [AnyKey]

2.5.6 Hardware Monitor

```
                        BIOS SETUP UTILITY
           Power

 Hardware Monitor                               CPU Temperature

 MB Temperature                  [33ªC/91°F]
 CPU Temperature                 [40.5°C/102.5°F]

 CPU Fan Speed                   [3260RPM]
 Chassis Fan Speed               [N/A]

 VCORE Voltage                   [ 1.504V]
 3.3V Voltage                    [ 3.360V]          ↔    Select Screen
 5V Voltage                      [ 5.160V]          ↑↓   Select Item
 12V Voltage                     [11.328V]          +-   Change Option
                                                    F1   General Help
 Smart Q-Fan Function            [Disabled]         F10  Save and Exit
                                                    ESC  Exit
```

MB Temperature [xxx ºC/xxx ºF]
CPU Temperature [xxx ºC/xxx ºF]

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, the specific field shows N/A.

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

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

Smart Q-Fan Function [Disabled]

Allows you to enable or disable the ASUS Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. When this field is set to [Enabled] the following items appear. Configuration options: [Disabled] [Enabled]

> The following items appear only when the Smart Q-Fan item is set to [Enabled].

Fan Auto Mode Start Voltage [5.0V]

Allows you to set the fan auto mode start voltage.
Configuration options: [4.0V] [2.5V] [5.0V] [5.5V] [6.0V]

Fan Auto Mode Start Speed Temp [25ºC]

Allows you to set the fan auto mode start speed temperature.
Configuration options: [25ºC] ~ [75ºC]

Fan Auto Mode Full Speed Temp [55ºC]

Allows you to set the fan auto mode full speed temperature.
Configuration options: [25ºC] ~ [75ºC]

2.6 Boot menu

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

```
                         BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

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

▶ Boot Settings Configuration
▶ Security


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


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```

2.6.1 Boot Device Priority

```
                         BIOS SETUP UTILITY
                             Boot

  Boot Device Priority                         Specifies the boot
                                               sequence from the
  1st Boot Device          [1st FLOPPY DRIVE]  available devices.
  2nd Boot Device          [PM-ST320413A]
  3rd Boot Device          [SM-ASUS CD-S360]   A device enclosed in
                                               parenthesis has been
                                               disabled in the
                                               corresponding type
```

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]

2.6.2 Boot Settings Configuration

```
                        BIOS SETUP UTILITY
                          Boot

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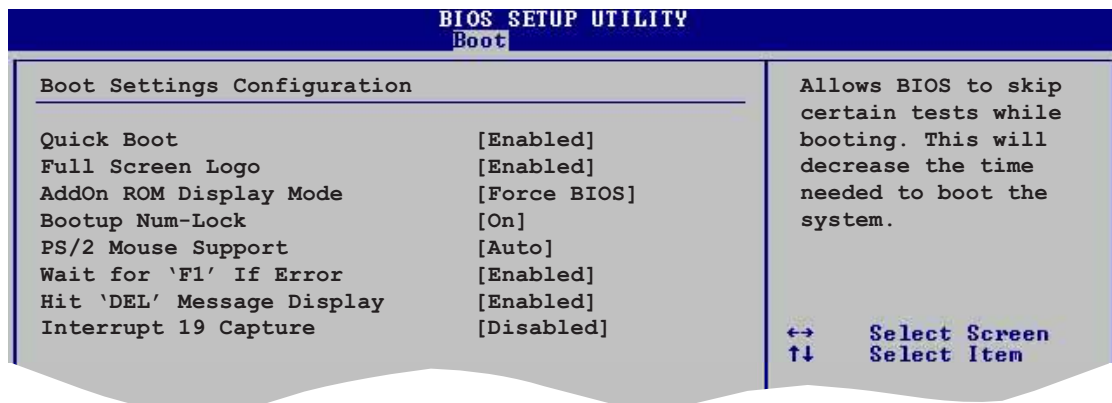
Quick Boot [Enabled]

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 wish to use the ASUS MyLogo™ feature.

Add On ROM Display Mode [Force BIOS]

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

Bootup Num-Lock [On]

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

PS/2 Mouse Support [Auto]

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

Wait for 'F1' If Error [Enabled]

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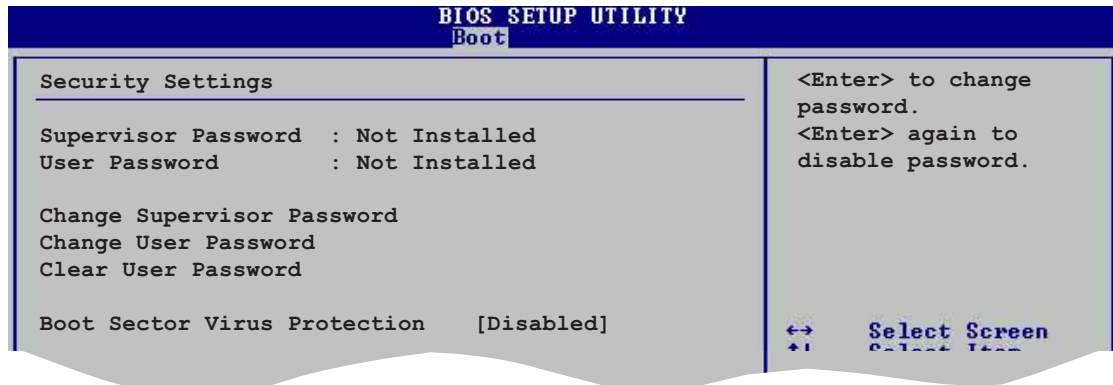
Hit 'DEL' Message Display [Enabled]

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

Interrupt 19 Capture [Disabled]

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

2.6.3 Security

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

```
                         BIOS SETUP UTILITY
                            Boot

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

  Change Supervisor Password
  Change User Password
  Clear User Password

  Boot Sector Virus Protection    [Disabled]    ↔    Select Screen
                                                ↕    Select Item
```

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 clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "1.9 Jumpers" for information on how to erase the RTC RAM.

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

```
                        BIOS SETUP UTILITY
                              Boot

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

  Change Supervisor Password
  User Access Level               [Full Access]
  Change User Password
  Clear User Password
  Password Check                  [Setup]        ←→    Select Screen
                                                 ↑↓    Select Item
  Boot Sector Virus Protection    [Disabled]     +−    Change Option
                                                 F1    General Help
```

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 if you wish to clear the user password.
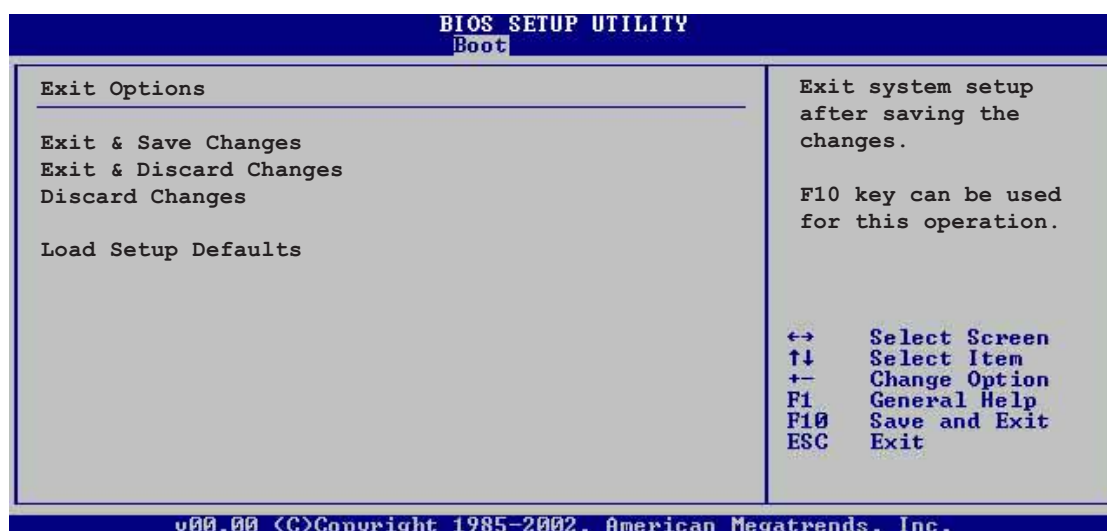
Password Check [Setup]

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]

2.7   Exit menu

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

```
                    BIOS SETUP UTILITY
                        Boot

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


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

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```

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

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure 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 3

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

Software support

3.1 Install an operating system

This motherboard supports Windows® 98SE/ME/2000/XP operating system (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.

3.2 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.

3.2.1 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 on an item to install.
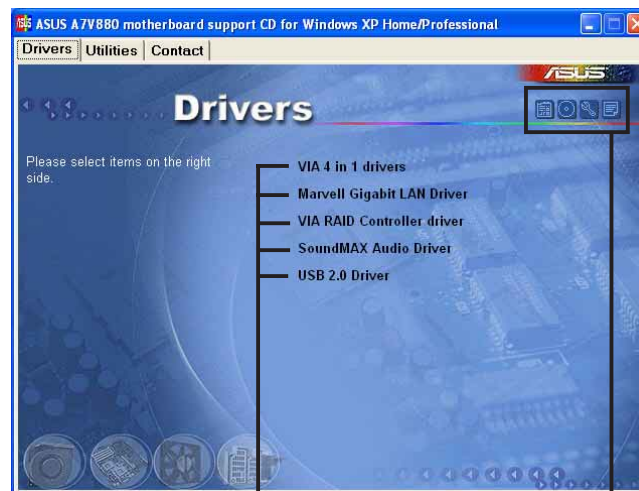
Click an item to install   **Click an icon to display more information**

> 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.

3.2.2 Drivers menu

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

VIA 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.

Marvell Gigabit LAN Driver

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

VIA RAID Controller driver

Installs the VIA 8237 RAID controller driver and application.

SoundMAX Audio Driver

Installs the ADI 1888 SoundMAX® AC'97 compliant audio controller and application.

USB 2.0 Driver

Installs the USB 2.0 driver to upgrade your USB 1.1 ports to USB 2.0.

3.2.3 Utilities menu

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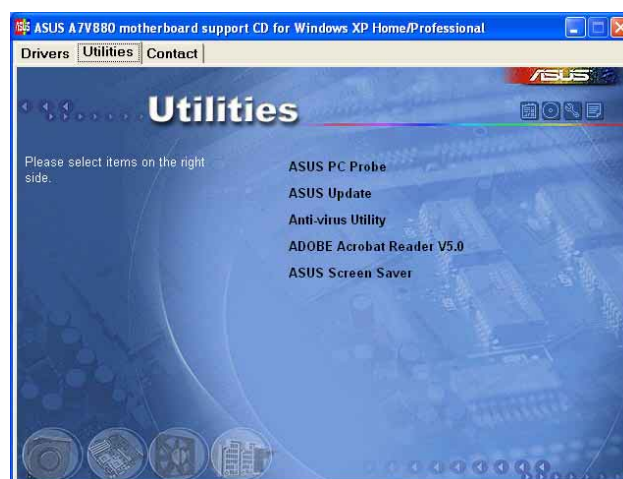
ASUS PC Probe

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

Install ASUS Update

This program 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. Installing ASUS Update also installs ASUS Mylogo™.

Anti-virus Utility

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

Acrobat Reader

Installs the Adobe Acrobat® Reader V5.0. The Acrobat® Reader software is for viewing files saved in Portable Document Format (PDF).

ASUS Screen Saver

Installs the ASUS screen saver.

3.2.4   ASUS Contact Information

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

3.3 ASUS Instant Music Lite

The motherboard is equipped with a BIOS-based audio playback feature called **Instant Music Lite**. This feature is supported by the onboard audio AC'97 Codec, and requires an optical drive (CD-ROM, DVD-ROM, or CD-RW).

> • Instant Music Lite only supports CDs in audio format.
> • Instant Music Lite does not work if you installed and enabled an add-on sound card.
> • Instant Music Lite only supports PS/2 keyboard.

To enable ASUS Instant Music Lite:

1. Connect the analog audio cable from the optical drive (CD-ROM, DVD-ROM, or CD-RW drive) to the 4-pin CD-In connector on the motherboard. See section "1.10 Connectors" for the connector location.

> Make sure to connect the CD-ROM audio cable. Otherwise, you cannot control the audio volume using the Instant Music Lite function keys.

2. Turn on the system and enter the BIOS by pressing the **<Del>** key during the Power On Self-Tests (POST).

3. In the **Advanced Configuration** menu, select the item **Instant Music** and set it to **Enabled**. See section "2.4 Advanced Menu" in the user guide.

4. Highlight the **Instant Music CDROM** item and press Enter to display the CD-ROM options. Select the CD-ROM drive that you wish to use for this feature. See section "2.4 Advanced Menu" in the user guide.

> If you have only one optical drive (either CD-ROM, DVD-ROM, or CD-RW) installed in the system, you don't have to set Instant Music CDROM item. BIOS automatically detects and displays the installed drive type.

5. Save your changes and exit BIOS Setup.

> • The Scroll Lock LED is fixed to ON after enabling Instant Music.
> • The Caps Lock LED is turns ON when you pause the CD playback.
> • When set to Instant Music Lite mode, the system wake-up features (LAN, keyboard, mouse, USB) are deactivated. In this case, power up the system using the power switch.
> • If the system loses connection or does not detect any optical drive, the Instant Music Lite feature turns OFF (disabled) automatically. A "beep" indicates this condition.

To use ASUS Instant Music Lite:

1. Ensure that the power cord is plugged to a grounded power source, so that the system has a standby power.

2. Use either one of the two sets of special function keys on your keyboard to play audio CDs. These keys only function as indicated if you enabled the Instant Music item in the BIOS.

Instant Music function keys (Set 1)
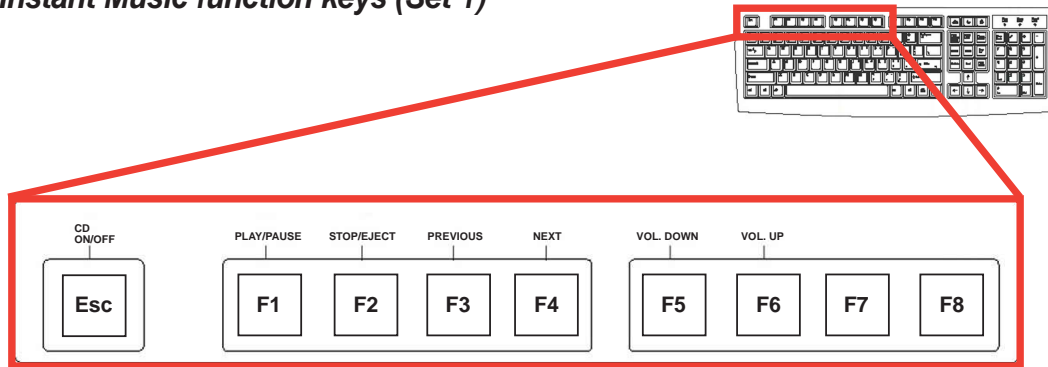
Instant Music function keys (Set 2)
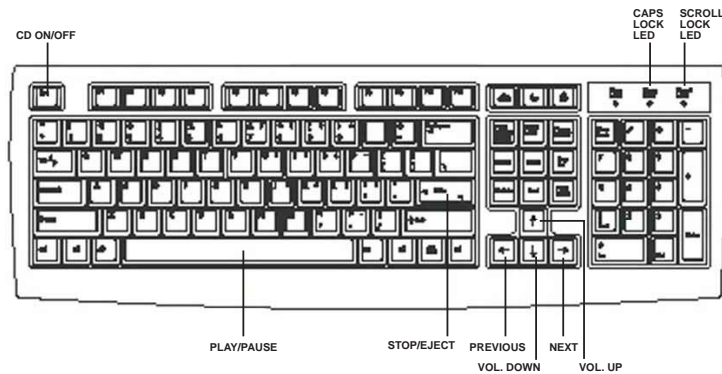
3. Connect speakers or a headphone to the Line Out (lime colored) port on the rear panel for audio output. You may also connect a headphone to the headphone jack on the CD-ROM drive front panel.

4. Press **Esc** to turn ON Instant Music Lite.

5. Place an audio CD into the drive.

6. Press **F1** or the **Space Bar** to play the first track on the CD.

> If there is no CD in the drive and you press F1 or Space Bar, the drive tray ejects.

7. Refer to the Instant Music function key definitions on the previous page to select other tracks or control the volume.

8. Press **F2** or **Enter** *once* to stop playing the CD.
Press **F2** or **Enter** *one more time* to eject the CD.