



# *A7V600-F*

User Guide

# Motherboard

**E1341**

**First Edition**

**August 2003**

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# Notices

## Federal Communications Commission Statement

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

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

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

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



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

---

## Canadian Department of Communications Statement

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

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

# Safety information

## Electrical safety

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

## Operation safety

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

# About this guide

This user guide contains the information you need when installing the ASUS A7V600-F motherboard.

## How this guide is organized

This manual contains the following parts:

- **Chapter 1: Product introduction**

This chapter describes the features of the A7V600-F motherboard. It includes brief descriptions of the special attributes of the motherboard and the new technology it supports.

- **Chapter 2: Hardware information**

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

- **Chapter 3: Powering up**

This chapter describes the power up sequence and gives information on the BIOS beep codes.

- **Chapter 4: BIOS setup**

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

## Conventions used in this guide

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



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



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



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



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

## Where to find more information

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

### 1. ASUS Websites

The ASUS websites worldwide provide updated information on ASUS hardware and software products. The ASUS websites are listed in the ASUS Contact Information on page ix.

### 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.



# ASUS contact information

## **ASUSTeK COMPUTER INC. (Asia-Pacific)**

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Support Email: [tsd@asus.com](mailto:tsd@asus.com)

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Support Fax: +49-2102-9599-11  
Support Email: [www.asuscom.de/support](http://www.asuscom.de/support) (for online support)

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General Fax: +9714-283-1775  
Web Site: [www.ASUSarabia.com](http://www.ASUSarabia.com)

# A7V600-F specifications summary

<b>CPU</b>	Socket A for AMD Athlon XP/Athlon with Thoroughbred/ Barton Core support
<b>Chipset</b>	Northbridge: VIA KT600 Southbridge: VIA VT8237
<b>Front Side Bus (FSB)</b>	400/333/266 Mhz
<b>Memory</b>	3 x 184-pin DDR DIMM Sockets support a maximum of 3GB unbuffered non-ECC PC2700/2100 DDR SDRAM memory. (Note: PC3200 maximum to 2 DIMMs only.) Visit the ASUS website for the latest qualified DDR400 module list
<b>Expansion slots</b>	1 x AGP 8X 5 x PCI 1 x ASUS proprietary CNR connector
<b>Storage</b>	2 x UltraATA133/100/66/33 2 x Serial ATA connectors
<b>Audio</b>	Realtek ALC655 6-channel CODEC S/PDIF in/out interface
<b>LAN</b>	Realtek® 8201BL LAN PHY
<b>Special Features</b>	ASUS MyLogo ASUS EZ Flash Power Loss Restart ASUS C.O.P. (CPU Overheating Protection) ASUS Instant Music Lite
<b>Back Panel I/O</b>	1 x Parallel 1 x Serial 1 x PS/2 Keyboard 1 x PS/2 Mouse 1 x Audio I/O 4 x USB 2.0 1 x RJ-45 Port 1 x S/PDIF out port 1 x 1394 port
<b>Internal I/O Connectors</b>	CPU/power/chassis fan connectors 2 x Serial ATA connectors 20 pin ATX power connector CD/AUX audio connectors Front panel audio connector 2 x USB 2.0 connector supports additional 4 USB 2.0 ports S/PDIF-In connector

(continued on the next page)

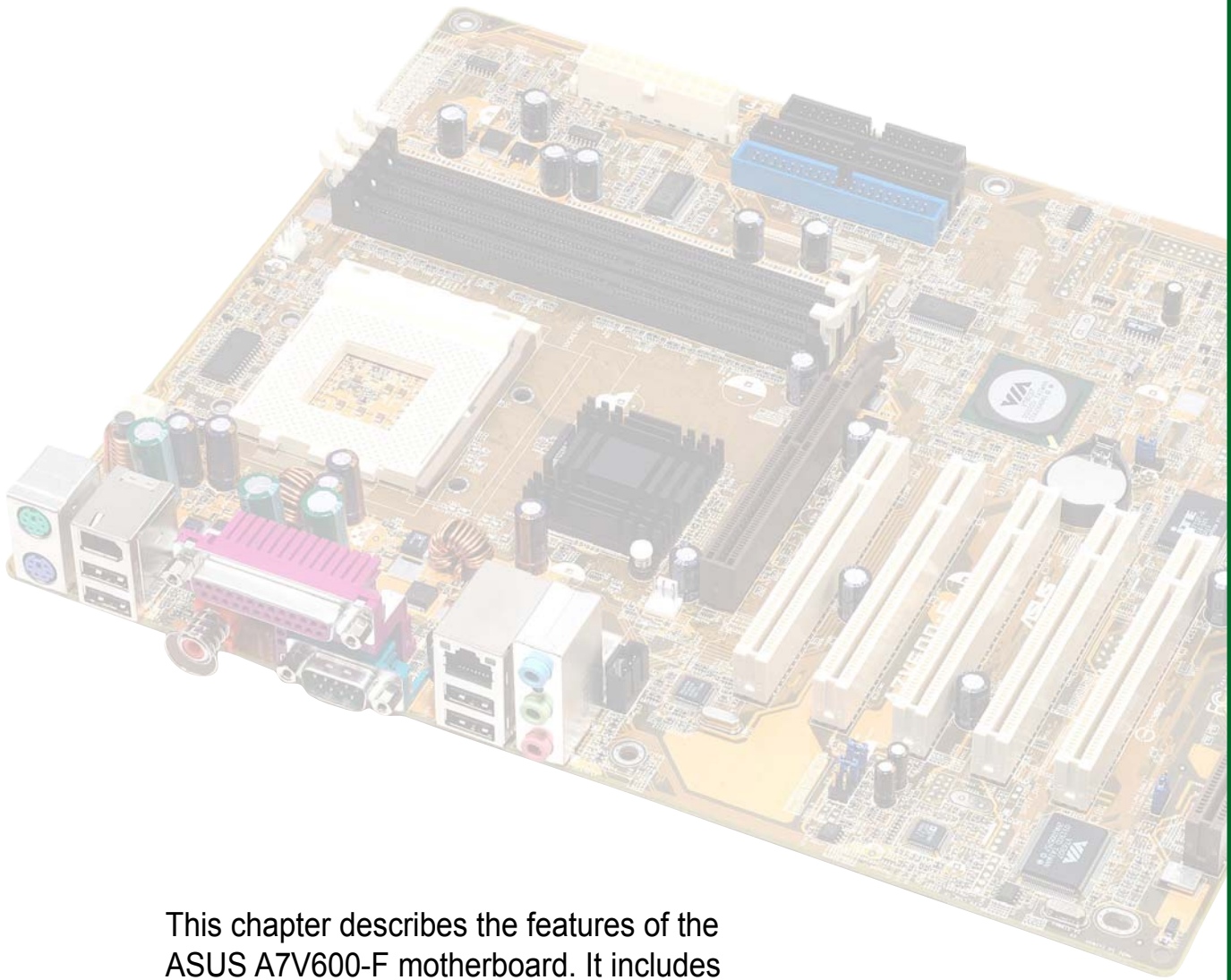
# A7V600-F specifications summary

<b>BIOS features</b>	2Mb Flash ROM, ASUS Jumperfree, Award BIOS, TCAV, PnP, DMI2.0, WfM2.0, SM BIOS2.3, ASUS EZ Flash, ASUS MyLogo
<b>Industry standard</b>	PCI 2.2, USB 2.0
<b>Manageability</b>	WfM 2.0, DMI 2.0, WOR, WOL
<b>Form Factor</b>	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.5 cm)
<b>Support CD contents</b>	Device drivers ASUS PC Probe Trend Micro™ PC-cillin 2002 anti-virus software (OEM version) ASUS LiveUpdate Utility

*\* Specifications are subject to change without notice.*



# *Chapter 1*



This chapter describes the features of the ASUS A7V600-F motherboard. It includes brief explanations of the special attributes of the motherboard and the new technology it supports.

## **Product introduction**

## Chapter summary

<b>1.1</b>	<b>Welcome! .....</b>	<b>1-1</b>
<b>1.2</b>	<b>Special features .....</b>	<b>1-1</b>
<b>1.3</b>	<b>Motherboard overview .....</b>	<b>1-4</b>

# 11 Welcome!

## **Thank you for buying the ASUS® A7V600-F motherboard!**

The ASUS A7V600-F motherboard is loaded with the most advanced technologies to deliver the maximum performance for socket A processors. Based on the advanced VIA KT600 chipset with FSB 400 and DDR 400 support, the ASUS A7V600-F also features Serial ATA support, AGP 8X, USB 2.0 as well as 6-channel audio, 10/100 LAN PHY and S/PDIF interfaces. Trademark ASUS features such as ASUS C.O.P., ASUS Instant Music Lite and more are included to ensure the best user experience and value in a motherboard.

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

## 12 Special features

### 1.2.1 Product highlights

#### **400 FSB K7 Platform**

The ASUS A7V600-F motherboard is loaded with the most advanced technologies to deliver the maximum performance for socket A processors. Based on the advanced VIA KT600 chipset with FSB 400 and DDR 400 support, the ASUS A7V600-F features AGP8X, USB 2.0 as well as a 6-channel audio CODEC. Unique ASUS features such as ASUS C.O.P., ASUS MyLogo and more are included to ensure the best user experience and value in a motherboard.

#### **400MHz FSB Athlon XP CPU support**

AMD's Athlon XP 3200+ and all follow-up CPUs now support 400MHz Front Side Bus (FSB) for increased office productivity and enhanced digital media experience.

#### **Serial ATA technology**



The motherboard supports the new Serial ATA technology through the SATA interfaces. The SATA specification allows for thinner, more flexible cables with lower pin count, reduced voltage requirement, and up to 150MB/s data transfer rate.

## DDR400 (PC3200) support

DDR400 (PC3200), the latest and fastest DDR memory standard, supports bandwidth up to 3.2 GB/s to provide enhanced system performance.

*(Note: PC3200 maximum to 2 DIMMs only. Visit the ASUS website for the latest qualified DDR400 module list.)*

## AGP 8X support

AGP 8X (AGP 3.0) is the next generation VGA interface specification that enables enhanced graphics performance with high bandwidth speeds up

## 8 x USB 2.0 ports support

USB 2.0 is the latest connectivity standard for next generation components and peripherals. USB 2.0 delivers fast transfer speeds up to 40 times faster at 480 MB/s, for easy connectivity and ultra-fast data transfers. The higher bandwidth of USB 2.0 allows connection of devices such as high resolution video conferencing cameras, next generation scanners, printers, and fast storage units. USB 2.0 is backward compatible with USB 1.1.

## Digital audio support

The A7V600-F provides convenient connectivity to external home theater audio systems via an S/PDIF out interface in the rear panel and an onboard S/PDIF In connector. Experience 5.1-channel surround sound and enhanced 3D audio while playing your favorite DVDs or games.

## 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 MyLogo™

This new feature present in the A7V600-F motherboard allows you to personalize and add style to your system with customizable boot logos.

## 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.



## **1.2.2 Value-added solutions**

### **Temperature, fan, and voltage monitoring**

The CPU temperature is monitored by the ASUS ASIC to prevent overheating and damage. The system fan rotations per minute (RPM) is monitored for timely failure detection. The system voltage levels are monitored to ensure stable supply of current for critical components.

### **ASUS update**

This utility allows you to update the motherboard BIOS through a user-friendly interface. Connect to the Internet then to the ASUS FTP site nearest you to obtain the latest BIOS version for your motherboard.

## 1.3 Motherboard overview

Before you install the A7V600-F motherboard, familiarize yourself with its physical configuration and available features to facilitate the motherboard installation and future upgrades. A sufficient knowledge of the motherboard specifications will also help you avoid mistakes that may damage the board and its components.

### 1.3.1 Major components

The following are the major components of the A7V600-F motherboard as pointed out in the picture on page 1-7.

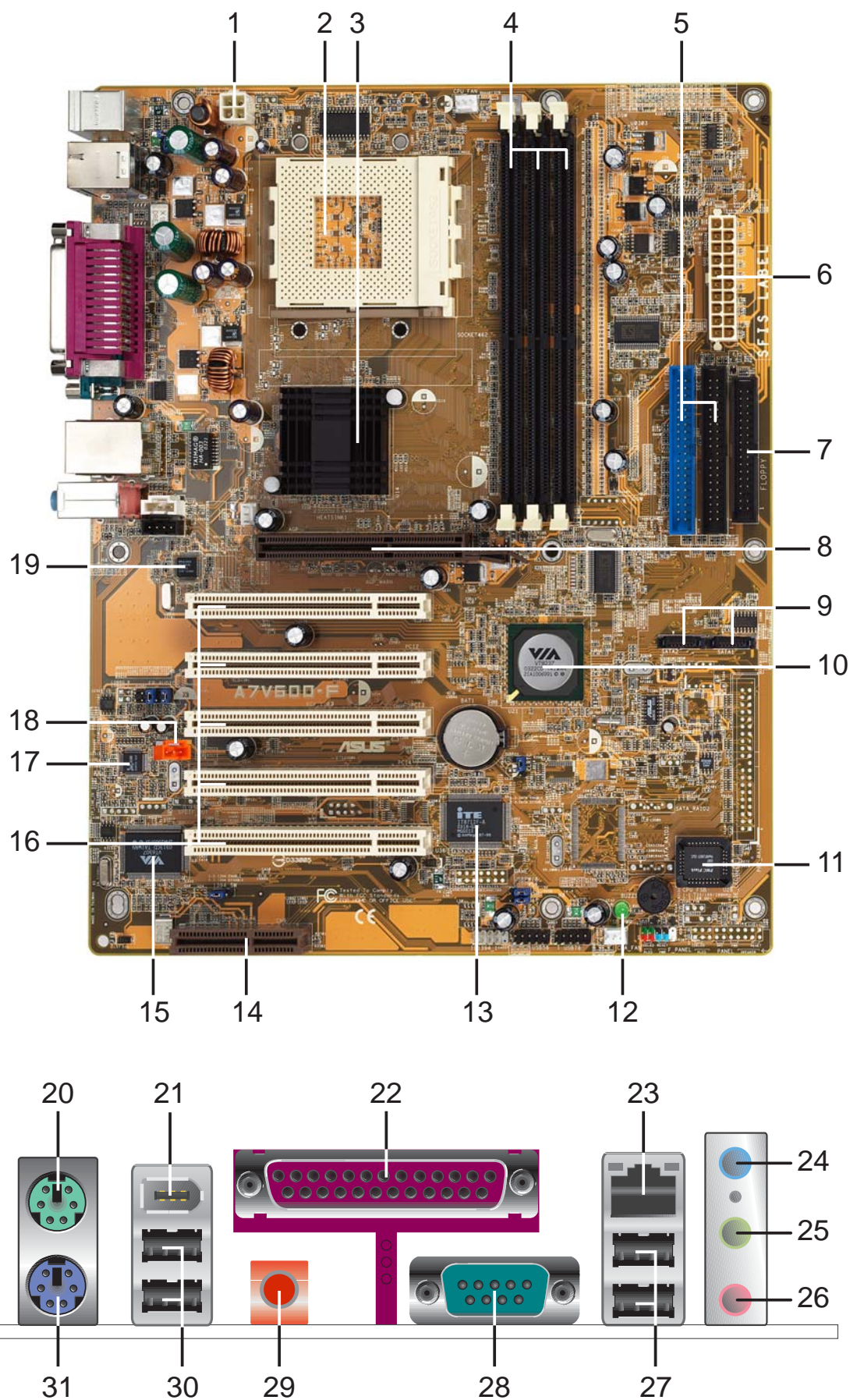
- |                              |                           |
|------------------------------|---------------------------|
| 1. 4-pin ATX power connector | 17. Audio CODEC           |
| 2. CPU socket                | 18. S/PDIF in             |
| 3. North Bridge controller   | 19. LAN controller        |
| 4. DDR DIMM sockets          | 20. Mouse port            |
| 5. IDE connectors            | 21. IEEE 1394 port        |
| 6. ATX power connector       | 22. Parallel port         |
| 7. Floppy disk connector     | 23. RJ-45 port            |
| 8. AGP slot                  | 24. Line In jack          |
| 9. Serial ATA connectors     | 25. Line Out jack         |
| 10. South Bridge controller  | 26. Microphone jack       |
| 11. Flash ROM                | 27. USB 2.0 ports 1 and 2 |
| 12. Stand-by LED             | 28. Serial port (COM1)    |
| 13. Super I/O controller     | 29. S/PDIF out port       |
| 14. CNR slot                 | 30. USB 2.0 ports 3 and 4 |
| 15. IEEE 1394 controller     | 31. Keyboard port         |
| 16. PCI slots                |                           |



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See page 1-7 for the specifications of each major component. Refer to Chapter 2 for detailed information on the components.

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## 1.3.2 Core specifications

- 1 ATX 12V connector.** This power connector connects the 4-pin 12V plug from the ATX 12V power supply.
- 2 CPU socket.** Socket 462 (Socket A) surface mount, Zero Insertion Force (ZIF) socket for the AMD Athlon XP/Athlon Processors.
- 3 North bridge controller.** The **VIA® KT600** supports AGP 8X mode, 400/333/266MHz Front Side Bus, and the latest 400/333/266MHz 64-bit memory bus.
- 4 DDR DIMM sockets.** These three 184-pin DIMM sockets support up to 3GB system memory using unbuffered non-ECC PC2700/2100 DDR DIMMs. (*Note: PC3200 maximum to 2 DIMMs support only. Visit the ASUS website ([www.asus.com](http://www.asus.com)) for the latest qualified DDR400 module list.*)
- 5 IDE connectors.** These dual-channel bus master IDE connectors support up to four Ultra DMA133/100/66, PIO Modes 3 & 4 IDE devices. Both the primary (blue) and secondary (black) connectors are slotted to prevent incorrect insertion of the IDE ribbon cable.
- 6 ATX power connector.** This 20-pin connector connects to an ATX +12V power supply. The power supply must have at least 1A on the +5V standby lead (+5VSB).
- 7 Floppy disk connector.** This connector accommodates the provided ribbon cable for the floppy disk drive. One side of the connector is slotted to prevent incorrect insertion of the floppy disk cable.
- 8 AGP slot.** This Accelerated Graphics Port (AGP) slot supports 1.5V AGP8X mode graphics cards for 3D graphical applications.
- 9 SATA connectors.** These connectors support Serial ATA HDDs and allows up to 150MB/s data transfer rate, faster than the standard Parallel ATA with 133MB/s.
- 10 South bridge controller.** The **VIA® VT8237** integrated peripheral controller supports various I/O functions including 2-channel ATA/133 bus master IDE controller, up to eight USB 2.0 ports, LPC Super I/O interface, AC'97 interface and PCI 2.2 interface.
- 11 Flash ROM.** This 2Mb firmware contains the programmable BIOS program.

- 12 Standby power LED.** This LED lights up if there is a standby power on the motherboard. This LED acts as a reminder to turn off the system power before plugging or unplugging devices.
- 13 Super I/O controller.** This Low Pin Count (LPC) interface provides the commonly used Super I/O functionality. The chipset supports a high-performance floppy disk controller for a 360K/720K/1.44M/2.88M floppy disk drive, a multi-mode parallel port, two standard compatible UARTs, and a Flash ROM interface.
- 14 CNR slot.** This slot is specifically designed for the Communications and Networking Riser (CNR) card. The CNR supports V.90 analog modem.
- 15 IEEE 1394 controller.** The VIA® VT6307 controller chipset supports two low power IEEE 1394 connectors to allow 100Mbps, 200Mbps, and 400Mbps data transfers between the 1394 devices.
- 16 PCI slots.** These five 32-bit PCI 2.2 expansion slots support bus master PCI cards like SCSI or LAN cards with 133MB/s maximum throughput.
- 17 Audio CODEC .** The ALC 655 is an AC'97 compliant audio CODEC for PC multimedia systems.
- 18 S/PDIF In connector.** This connector is for an additional S/PDIF audio module that allows digital instead of analog sound input.
- 19 LAN PHY.** The Realtek® 8201BL LAN PHY with the 10/100 MAC built in the VT8237 chipset provides your local area networking needs. Ideal for handling large amounts of data such as video, audio and voice.
- 20 PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
- 21 IEEE 1394 port.** This port connects IEEE 1394-compliant devices like camcorders, VCRs, printers, or digital cameras.
- 22 Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
- 23 RJ-45 port.** This port allows connection to a Local Area Network (LAN) through a network hub.
- 24 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 Rear Speaker Out.

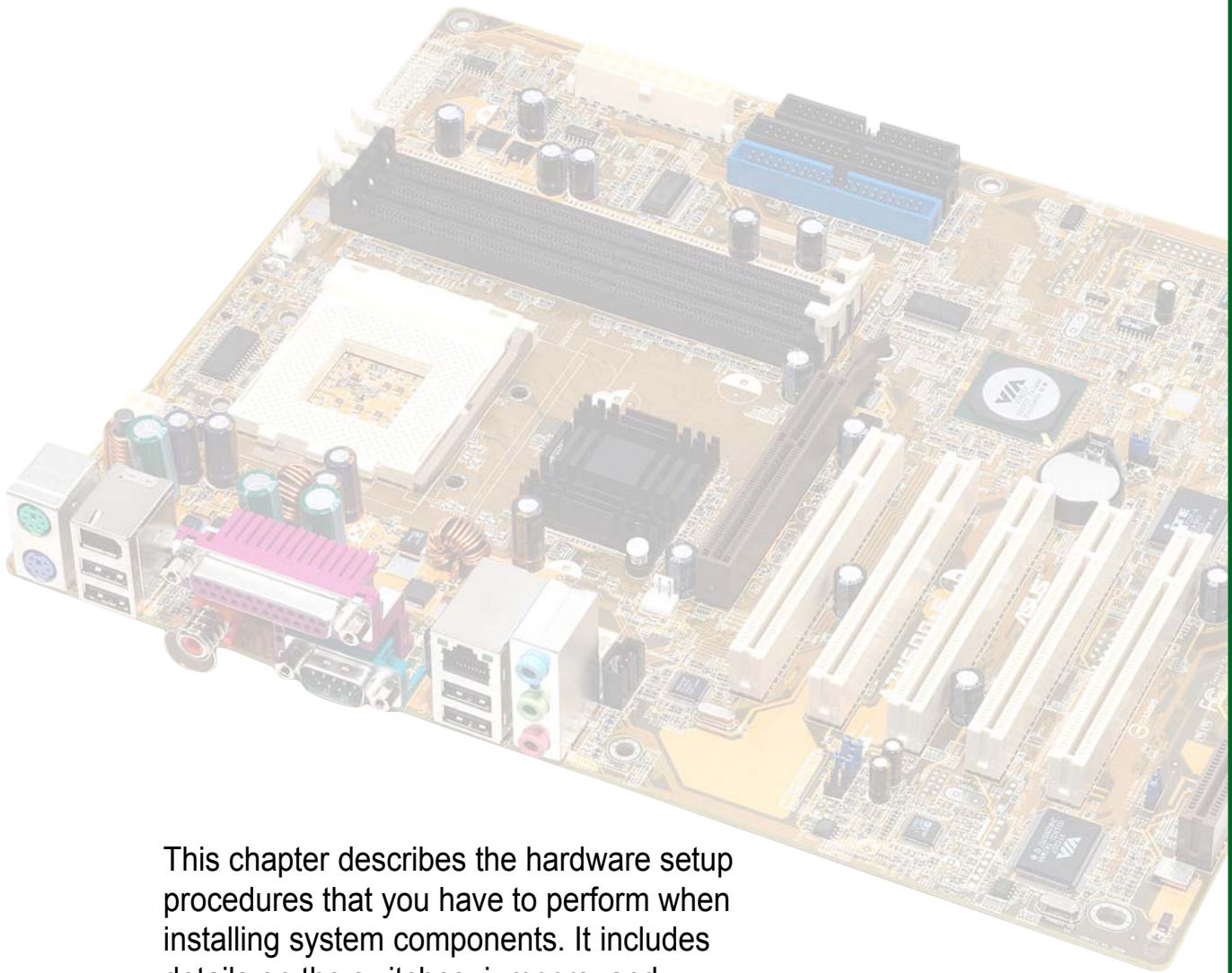
- 25 Line Out jack.** This Line Out (lime) jack connects a headphone or a speaker. In 6-channel mode, the function of this jack becomes Front Speaker Out.
- 26 Microphone jack.** This Mic (pink) jack connects a microphone. In 6-channel mode, the function of this jack becomes Center Speaker/ Subwoofer.

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

- 27 USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 28 Serial port (COM1).** This 9-pin serial port is for an additional serial device.
- 29 S/PDIF out jack.** This jack connects to external audio output devices.
- 30 USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 31 PS/2 keyboard port.** This purple 6-pin connector is for a PS/2 keyboard.



# *Chapter 2*



This chapter describes the hardware setup procedures that you have to perform when installing system components. It includes details on the switches, jumpers, and connectors on the motherboard.

## **Hardware information**

## Chapter summary

<b>2.1</b>	<b>Motherboard installation .....</b>	<b>2-1</b>
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# 21 Motherboard installation

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. The A7V600-F uses the ATX form factor that measures 12 inches x 9.6 inches (30.5 x 24.5 cm).



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

## 2.1.1 Placement direction

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

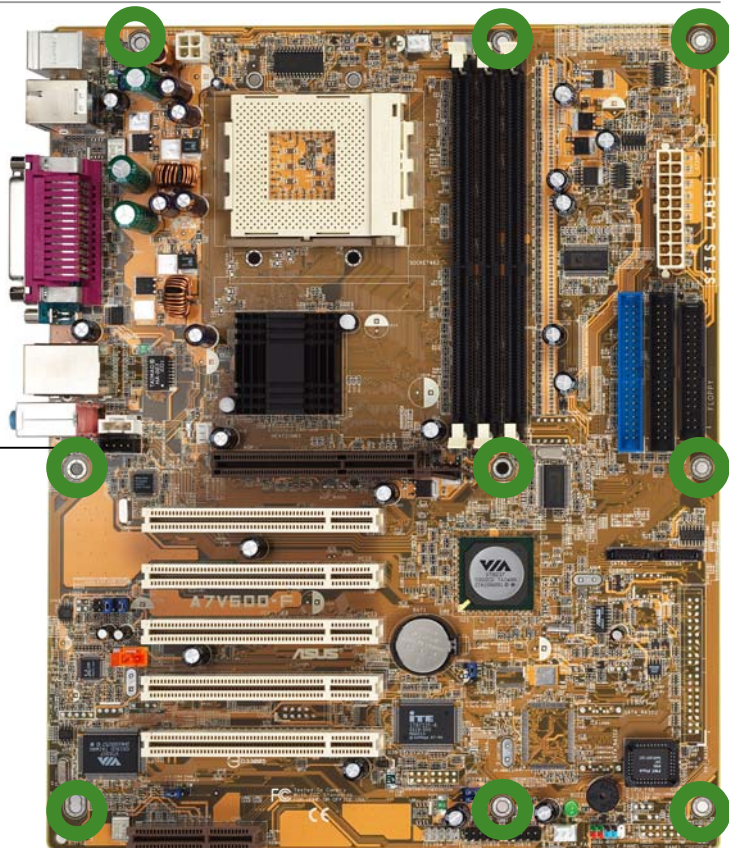
## 2.1.2 Screw holes

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

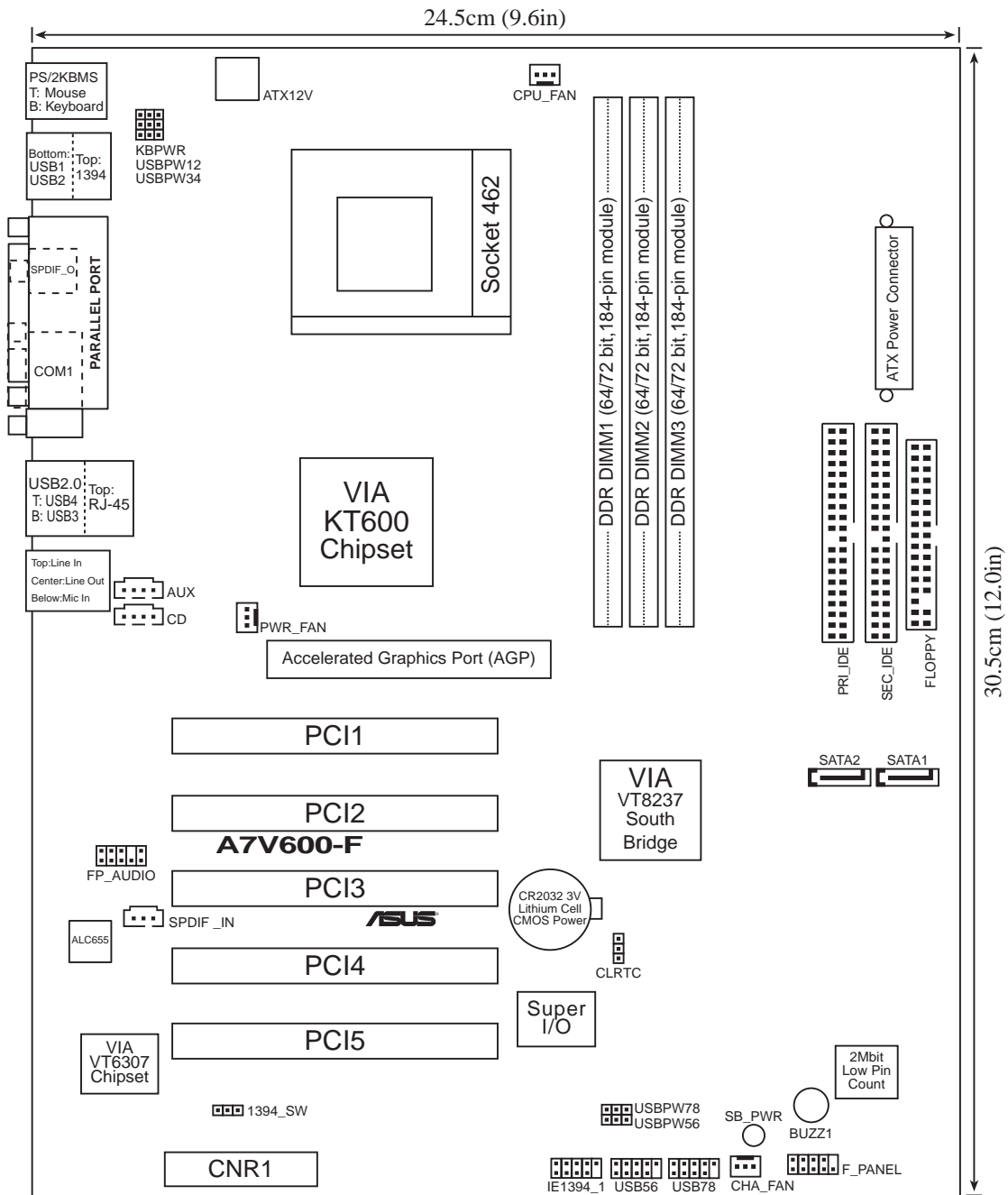


Do not overtighten the screws! Doing so may damage the motherboard.

Place this side towards  
the rear of the chassis



## 2.2 Motherboard layout



## 2.3 Before you proceed

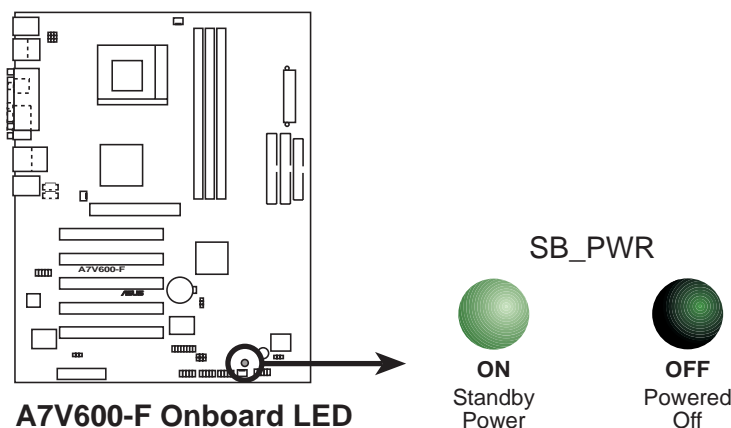
Take note of the following precautions before you install motherboard components or change any motherboard settings.



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.



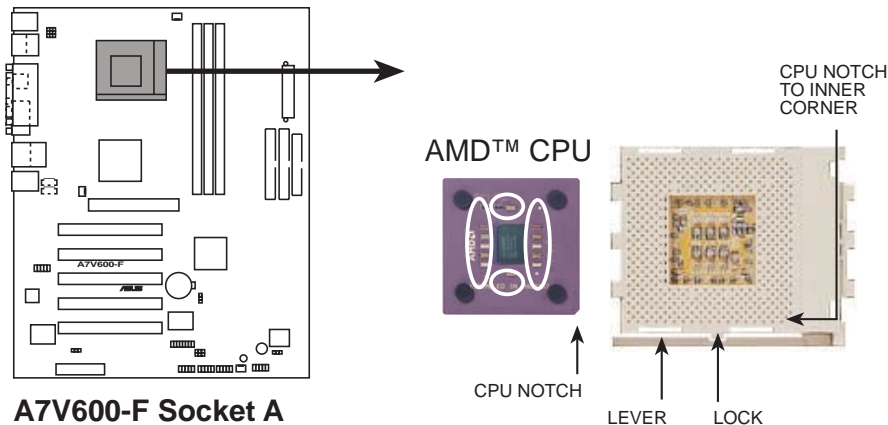
When lit, the green LED (SB\_PWR1) indicates that the system is ON, in sleep mode, or in soft-off mode, a reminder that you should shut down the system before removing or plugging in any motherboard component.



## 2.4 Central Processing Unit (CPU)

### 2.4.1 Overview

The motherboard provides a Socket A (462) for CPU installation. AMD processors offer gigahertz speeds to support all the latest computing platforms and applications. The A7V600-F supports Athlon™ XP and Athlon™ processors with Thoroughbred/Barton core support.



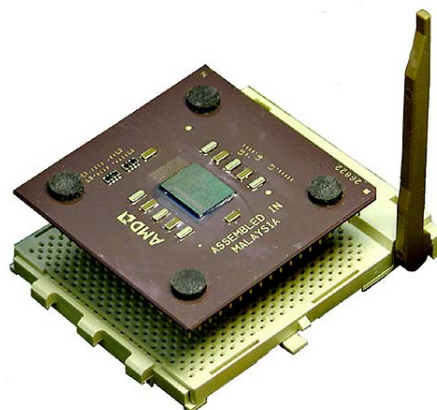
Each AMD CPU has a “marked” corner. This corner is indicated with a notch, and/or a golden square or triangle. Refer to this indicator while orienting the CPU. See the next section for installation details.

A fan and heatsink should be attached to the CPU to prevent overheating.

## 2.4.2 Installing the CPU

Follow these steps to install a CPU:

1. Locate the Socket 462 and open it by pulling the lever gently sideways away from the socket. Then lift the lever upwards. The socket lever must be fully opened (90 to 100 degrees).
2. Insert the CPU with the correct orientation. The **notched or golden corner** of the CPU must be oriented toward the inner corner of the socket base nearest to the lever hinge.



---

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

---

4. Once completely inserted, press the CPU firmly and close the socket lever until it snaps shut.
5. Place the CPU fan and heatsink on the CPU. The heatsink should entirely cover the CPU. Carefully attach the heatsink locking brace to the plastic clips on the socket base. With the added weight of the CPU fan and heatsink locking brace, no extra force is required to keep the CPU in place



---

Take care not to scrape the motherboard surface when mounting a clamp-style processor fan, or else damage may occur. When mounting a heatsink onto your CPU, make sure that exposed CPU capacitors do not touch the heatsink, or damage may occur!

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Do not neglect to set the correct Bus Frequency and leave the CPU Multiple setting at default to avoid start-up problems.

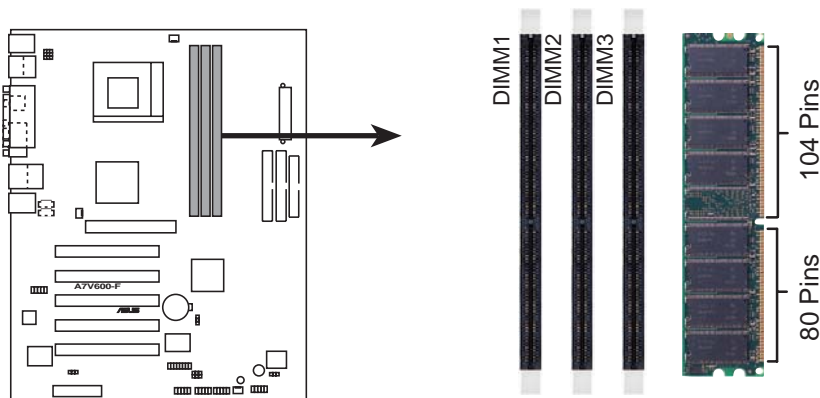
---

## 2.5 System memory

### 2.5.1 Overview

The motherboard comes with three Double Data Rate (DDR) Dual Inline Memory Module (DIMM) sockets. These sockets support up to 3GB system memory using 184-pin unbuffered non-ECC PC2700/2100 DDR DIMMs.

(Note: PC3200 maximum to 2 DIMMs support only. Visit the ASUS website ([www.asus.com](http://www.asus.com)) for the latest qualified DDR400 module list.)



**A7V600-F 184-Pin DDR DIMM Sockets**



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.

The DDR SDRAM technology evolved from the mainstream PC66, PC100, PC133 memory known as Single Data Rate (SDR) SDRAM. DDR memory however, has the ability to perform two data operations in one clock cycle, thus providing twice the throughput of SDR memory. For example, a 266MHz DDR DIMM will support a 133MHz memory bus, and a 333MHz DDR DIMM will support a 166MHz memory bus.

DDR Data Transfer Rate	DDR Base Frequency
400MHz	200MHz
333MHz	166MHz
266MHz	133MHz

A DDR DIMM has the same physical dimensions as an SDR DIMM, but it has a 184-pin footprint compared to the 168-pin of the SDR DIMM. Also, a DDR DIMM is single notched while an SDR DIMM is double notched. Therefore, a DDR DIMM is not backward compatible with SDR, and should be installed only in a socket specially designed for DDR DIMMs.

## 2.5.2 DDR400 Qualified Vendor List

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

### 2.5.2.1 DDR400 One DIMM support only

Vendor	Size	Type	P/N	Chip
Samsung	512MB	DS	M368L6432ETM-CCC	K4H560838E-TCCC
KingMax	512MB	DS	MPXC22D-38KT3R	KDL388P4EA-50
Micron	256MB	SS	MT8VDDT3264AG-40BC4	MT46V32MTG-5BC
Micron	512MB	DS	MT16VDDT6464AG-40BC4	MT46V32M8TG-5BC

### 2.5.2.2 DDR400 Two DIMM support only

Vendor	Size	Type	P/N	Chip
GEIL	512MB	DS	MAG16UL3264D1TG5A-KC	GL3LC32G88TG-5A
Micron	512MB	DS	MT16VDDT6464AG-40BC4	MT46V32M8TG-5BC
Nanya	256MB	SS	NT256D64S88B1G-5T	NT5DS32M8BT-5T



Make sure to use only the tested and qualified DDR400 DIMMs listed above. Other DDR DIMMs manufactured by other vendors may not be suitable for this motherboard. Visit the ASUS website ([www.asus.com](http://www.asus.com)) for the latest qualified vendor DDR400 module list.



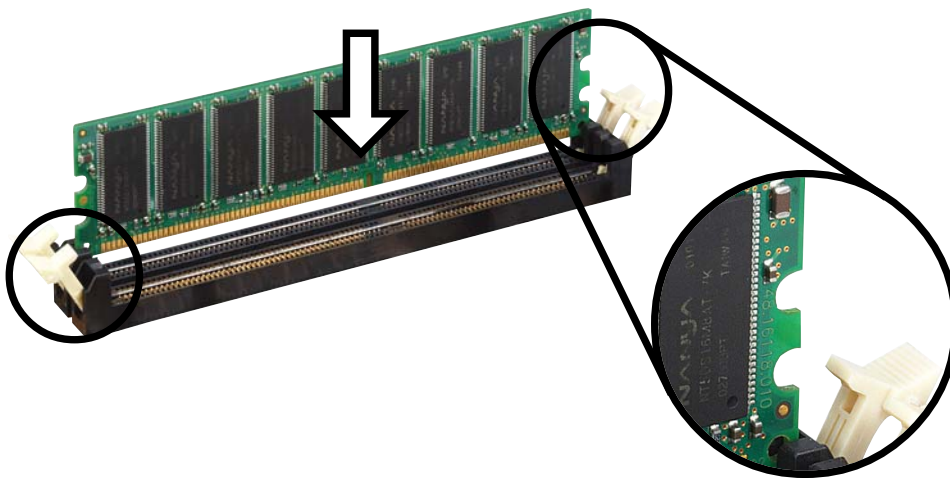
## 2.5.3 Installing a DIMM



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

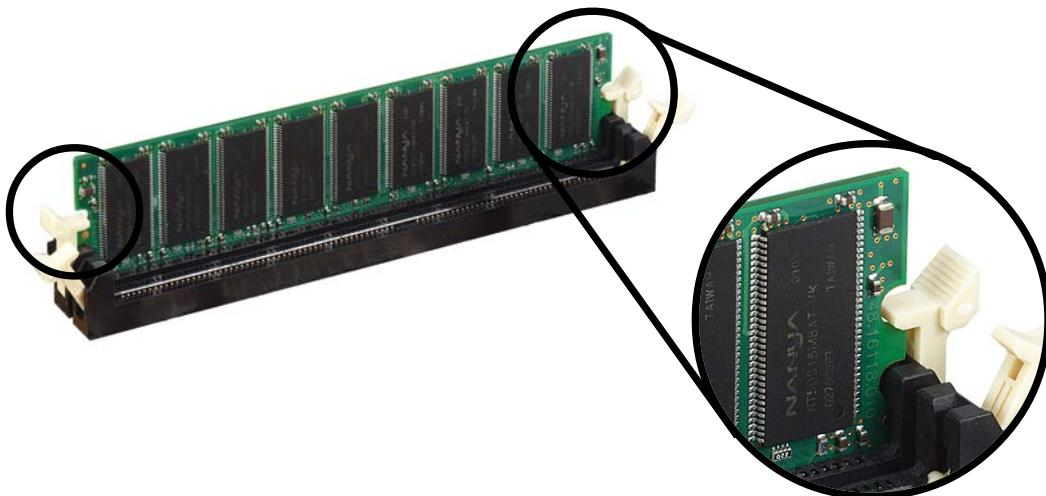
Follow these steps to install a DIMM.

1. 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.



Unlocked Retaining Clip

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



Locked Retaining Clip



## 2.5.4 Removing a DIMM

Follow these steps to remove a DIMM.

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

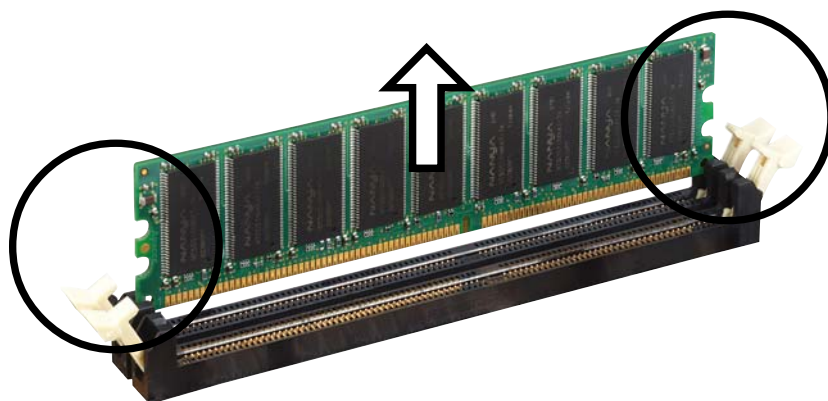


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Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

---

2. Remove the DIMM from the socket.



## 2.6 Expansion slots

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



---

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

---

### 2.6.1 Installing an expansion card

Follow these steps to install an expansion card.

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

### 2.6.2 Configuring an expansion card

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

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

## 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.

## IRQ assignments for this motherboard

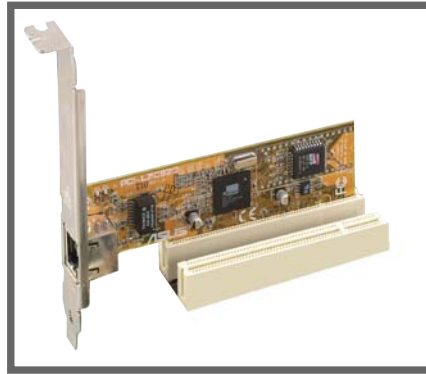
	A	B	C	D	E	F	G	H
PCI slot 1	—	—	—	shared	—	—	—	—
PCI slot 2	shared	—	—	—	—	—	—	—
PCI slot 3	—	shared	—	—	—	—	—	—
PCI slot 4	—	—	shared	—	—	—	—	—
PCI slot 5	—	—	—	shared	—	—	—	—
AGP slot	shared	—	—	—	—	—	—	—
USB 1.1 UHCI 1	—	—	—	—	shared	—	—	—
USB 1.1 UHCI 2	—	—	—	—	shared	—	—	—
USB 1.1 UHCI 3	—	—	—	—	—	shared	—	—
USB 1.1 UHCI 4	—	—	—	—	—	shared	—	—
USB 2.0 EHCI	—	—	—	—	—	—	shared	—
USB Device	—	—	—	—	—	—	—	shared
AC97 Codec	—	—	—	—	—	—	shared	—
Onboard LAN	—	—	shared	—	—	—	—	—
Onboard IDE	—	—	—	—	shared	—	—	—
Onboard 1394	—	shared	—	—	—	—	—	—
Onboard SATA	—	—	—	—	shared	—	—	—



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

## 2.6.3 PCI slots

There are five 32-bit PCI slots in this motherboard. The slots support PCI cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. The following figure shows a LAN card installed on a PCI slot.



## 2.6.4 AGP slot

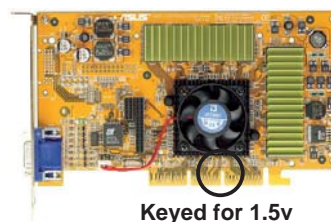
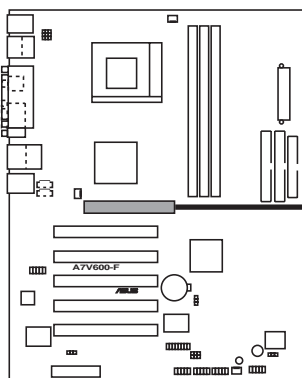
This motherboard has an Accelerated Graphics Port (AGP) slot that supports +1.5V AGP cards. When you buy an AGP card, make sure that you ask for one with +1.5V specification. Note the notches on the card golden fingers to ensure that they fit the AGP slot on your motherboard.



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Install only 1.5V AGP cards on this motherboard!

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**A7V600-F Accelerated Graphics Port (AGP)**

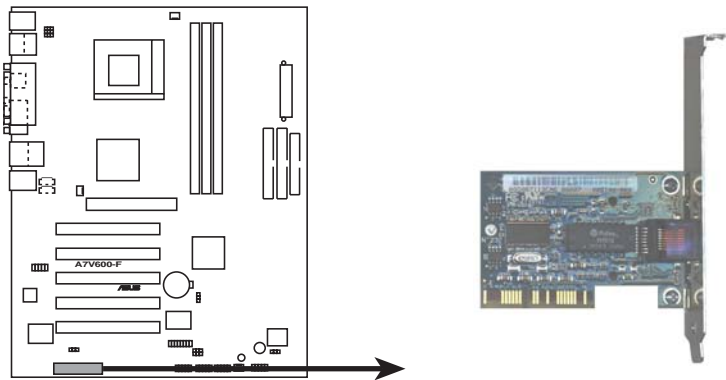
## 2.6.5 CNR slot

The Communications and Networking Riser (CNR) slot supports interface cards that integrates audio, modem, and network functionality.

The CNR specification supports interfaces including:

- Audio Codec '97 (AC '97) - for audio and/or modem functions
- System Management Bus (SMB) - for Plug-n-Play functionality
- Power - to provide the signals required for power management, and the main power supplies to operate the CNR circuitry

The CNR is tagged to replace the current Audio Modem Riser (AMR) slot because of its flexibility and added features. Also, the CNR slot does not take up the motherboard space for one PCI slot because it is a shared slot; rather, it provides you more options.

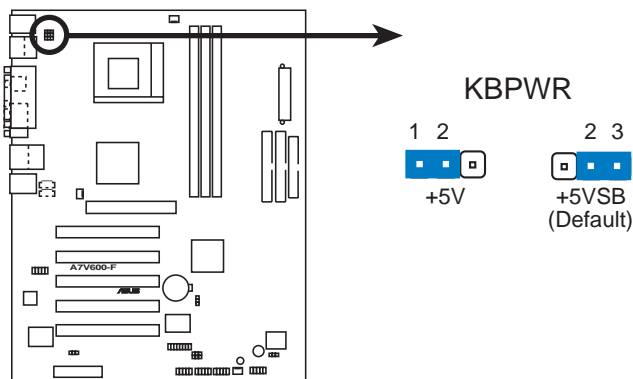


**A7V600-F Communication & Networking Riser Slot**

## 27 Jumpers

### 1. Keyboard power (3-pin KBPWR)

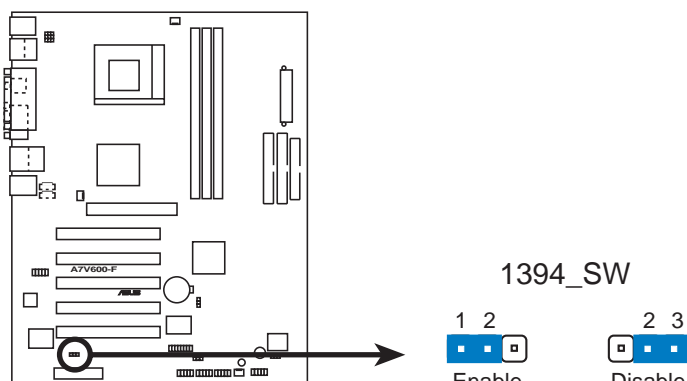
This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) if you wish to wake up the computer when you press a key on the keyboard (the default value is [Disabled]). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS (see section 4.5.1 Power Up Control).



**A7V600-F Keyboard Power Setting**

### 2. IEEE 1394 Setting (3-pin 1394\_SW)

This jumper permits selection of the IEEE 1394 onboard connector for connection of the IEEE 1394 module. The default setting [1-2] enables the onboard IEEE 1394 connector. Disable the connector by changing the jumpers to [2-3].



**A7V600-F 1394 Setting**

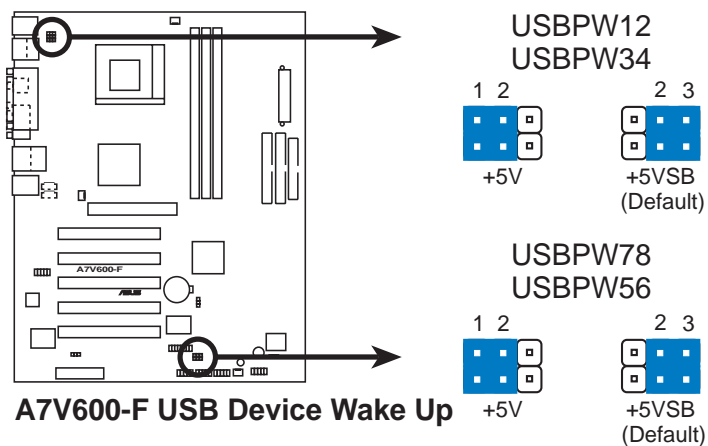
### 3. USB device wake-up (3-pin USBPW12, USBPW34, USBPW56, USBPW78)

Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 sleep mode (no power to CPU, DRAM in slow refresh, power supply in reduced power mode). All jumpers are set to pins 2-3 (+5VSB) by default.

The USBPW12 and USBPW34 jumpers are for the rear USB ports. The USBPW56 and USBPW78 jumpers are for the internal USB header that you can connect to the front USB ports.



1. This feature requires a power supply that can provide at least 2A on the +5VSB lead when these jumpers are set to +5VSB. Otherwise, the system does not power up.
2. The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

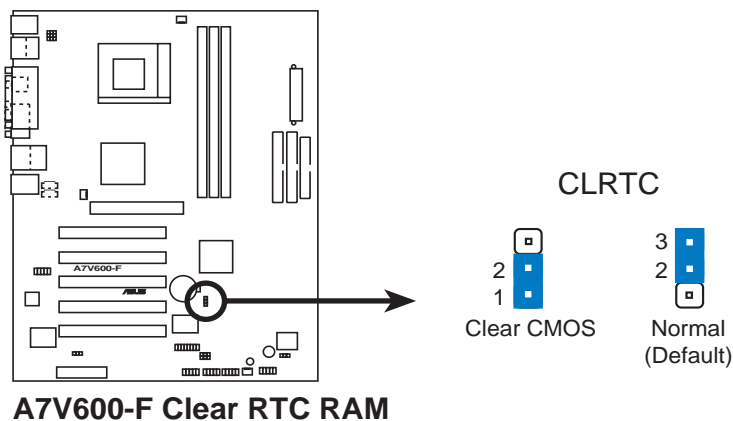


#### 4. Clear RTC RAM (CLRRTC)

These jumpers allow 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 is powered by the onboard button cell battery.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the battery.
3. Move the jumper cap to pin [1-2] to clear CMOS then replace the jumper cap back to pin [2-3] after 3 seconds.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.





## 2.8 Connectors

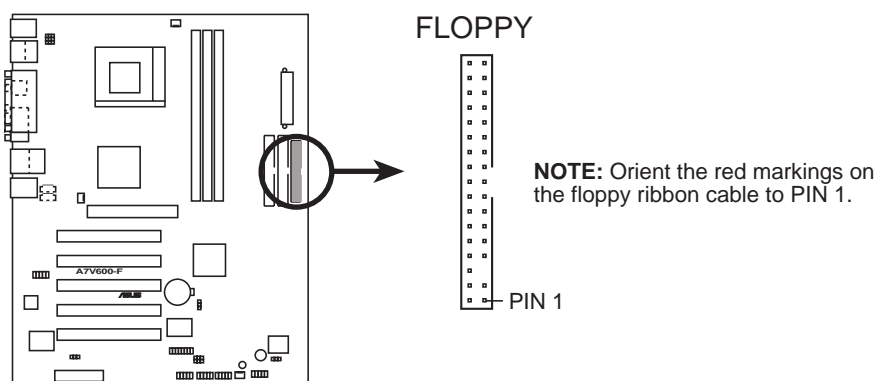
This section describes and illustrates the internal connectors on the motherboard.



Always connect ribbon cables with the red stripe to Pin 1 on the connectors. Pin 1 is usually on the side closest to the power connector on hard drives and CD-ROM drives, but may be on the opposite side on floppy disk drives.

### 1. 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).



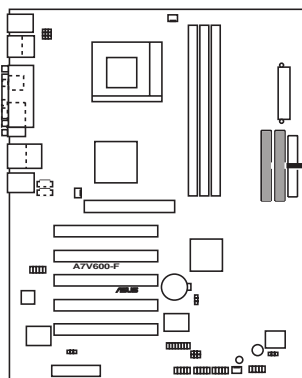
**A7V600-F Floppy Disk Drive Connector**

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

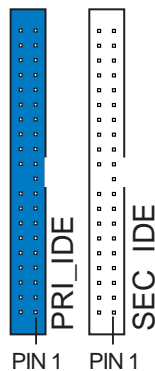
This connector supports the provided UltraDMA133/100/66 IDE hard disk ribbon cable. Connect the cable's blue connector to the primary (recommended) or secondary IDE connector, then connect the gray connector to the UltraDMA133/100/66 slave device (hard disk drive) and the black connector to the UltraDMA133/100/66 master device. It is recommended that you connect non-UltraDMA133/100/66 devices to the secondary IDE connector. If you install two hard disks, you must configure the second drive as a slave device by setting its jumper accordingly. Refer to the hard disk documentation for the jumper settings. BIOS supports specific device bootup. If you have more than two UltraDMA133/100/66 devices, purchase another UltraDMA133/100/66 cable. You may configure two hard disks to be both master devices with two ribbon cables – one for the primary IDE connector and another for the secondary IDE connector.



1. Pin 20 on each IDE connector is removed to match the covered hole on the UltraDMA cable connector. This prevents incorrect orientation when you connect the cables.
2. The hole near the blue connector on the UltraDMA133/100/66 cable is intentional.



**A7V600-F IDE Connectors**



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



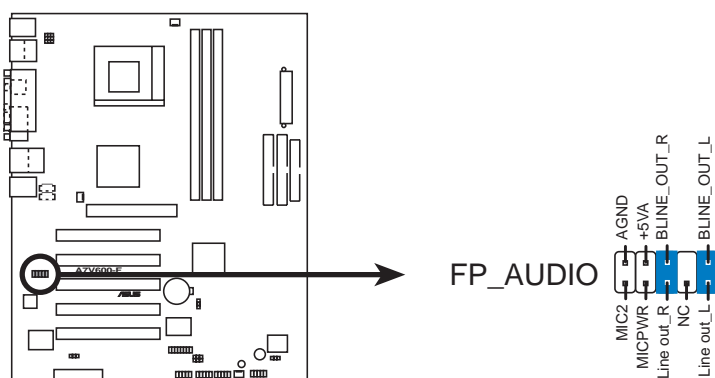
For UltraDMA133/100/66 IDE devices, use an 80-conductor IDE cable. The UltraDMA/66 cable included in the motherboard package also supports UltraDMA133/100.

### 3. Front panel audio connector (10-1 pin FP\_AUDIO)

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



Make sure to remove the caps from the Line out\_R, BLINE\_OUT\_R, Line out\_L and BLINE\_OUT\_L jumpers if you installed the Intel front panel audio cable.



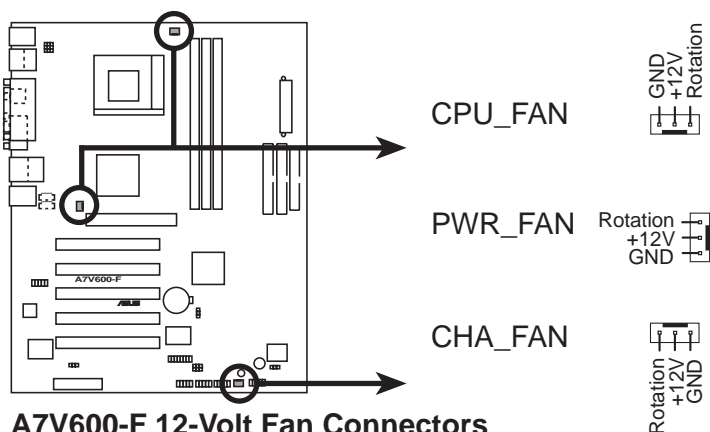
**A7V600-F Front Panel Audio Connector**

### 4. CPU, Chassis, and Power Fan Connectors (3-pin CPU\_FAN, PWR\_FAN, CHA\_FAN)

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



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



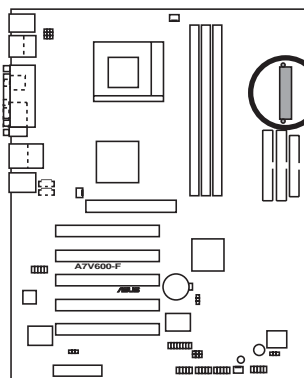
**A7V600-F 12-Volt Fan Connectors**

## 5. ATX power connectors (20-pin ATXPWR1)

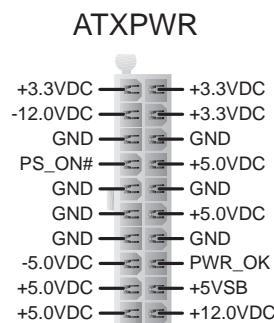
These connectors connect to an ATX 12V power supply. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit. In addition to the 20-pin ATXPWR connector, this motherboard requires that you connect the 4-pin ATX +12V power plug to provide sufficient power to the CPU.



1. Do not forget to connect the 4-pin ATX +12V power plug. Otherwise, the system does not boot up.
2. 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.

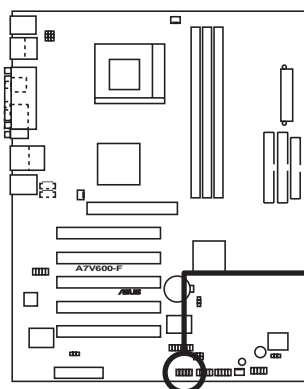


**A7V600-F ATX Power Connector**

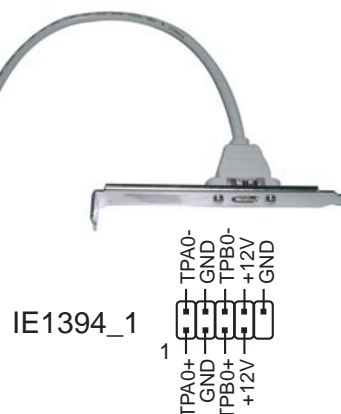


## 6. IEEE 1394 connector (10-1 pin IE1394\_1)

This connector is for an optional 1394 module. Attach the 10-1 pin 394 cable plug from the module to this connector. You may also connect a 1394-compliant internal hard disk to this connector.



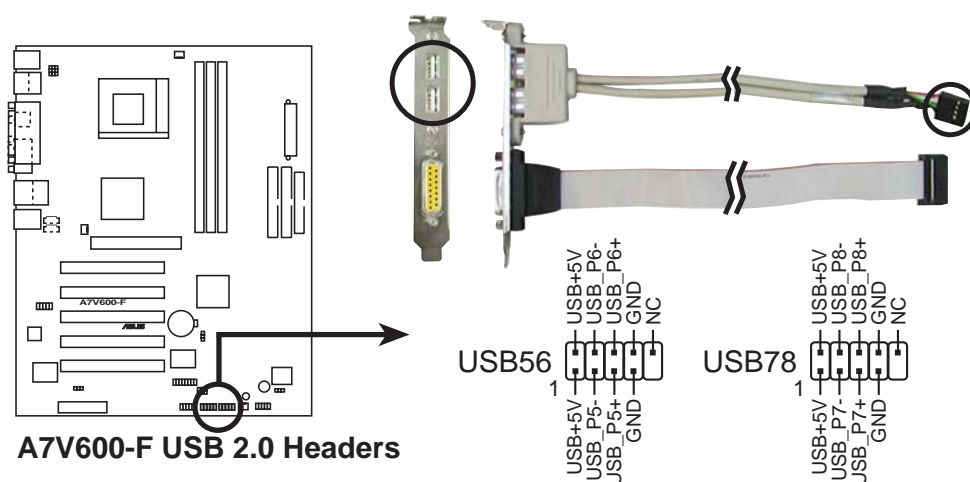
**A7V600-F IEEE-1394 Connector**



## 7. USB header (4-1 pin USB56, USB78)

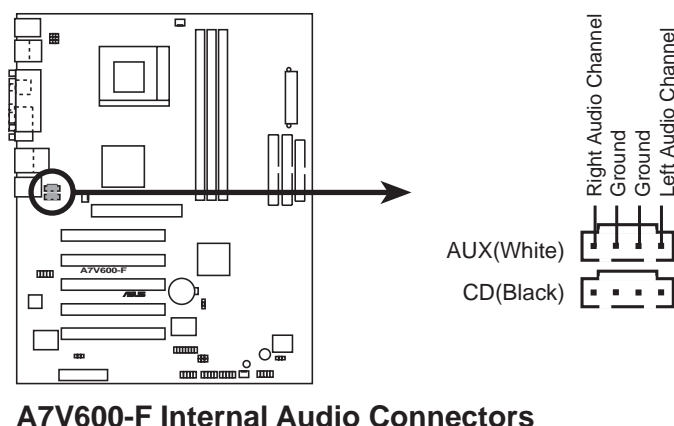
If the USB ports on the rear panel are inadequate, a USB header is available for additional USB ports. The USB header complies with USB 2.0 specification that supports up to 480 Mbps connection speed. This speed advantage over the conventional 12 Mbps on USB 1.1.

If your package came with a USB 2.0/GAME module, connect the USB cable to this header. The module has two USB 2.0 ports that support the next generation USB peripherals such as high resolution cameras, scanners, and printers.



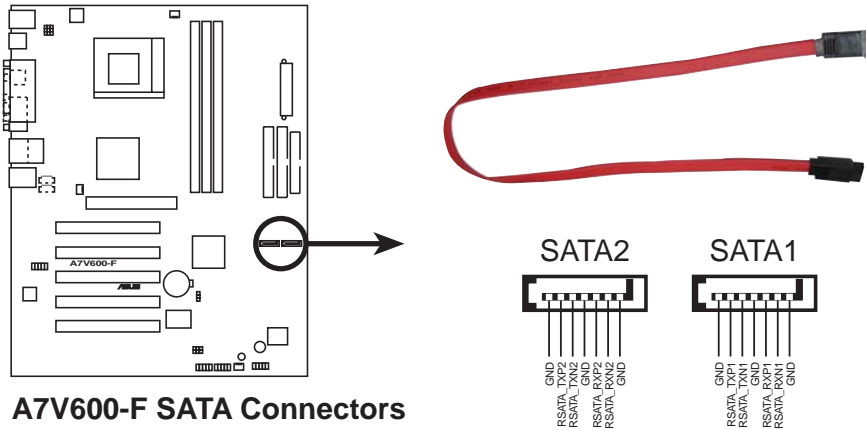
## 8. Internal audio connectors (4-pin CD, AUX, MODEM)

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card. The MODEM connector allows the onboard audio to interface with a voice modem card with a similar connector. It also allows the sharing of mono\_in (such as a phone) and a mono\_out (such as a speaker) between the audio and a voice modem card.



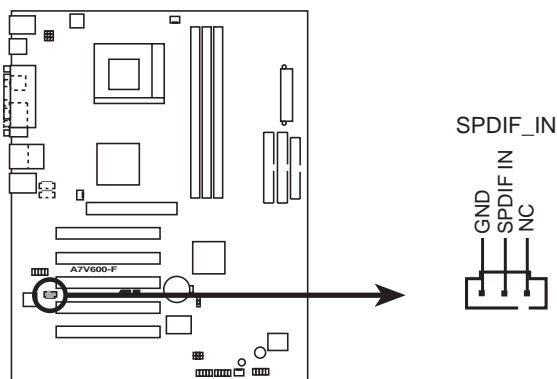
## 9. Serial ATA connectors (7 pin SATA1, SATA2)

These next generation connectors support the thin Serial ATA cables for Serial ATA hard disks. The current Serial ATA interface allows up to 150MB/s data transfer rate, faster than the standard parallel ATA with 133MB/s (UltraATA133).



## 10. S/PDIF In connector (3 pin S/PDIF\_IN)

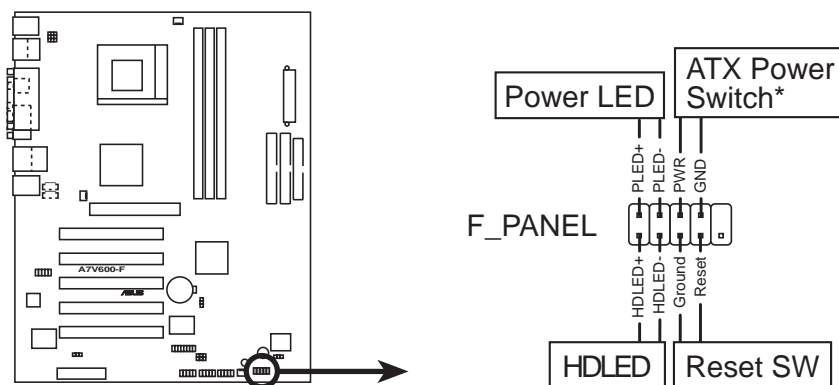
This connector is for an additional S/PDIF audio module that allows digital instead of analog sound input.



**A7V600-F Digital Audio Connector**

## 11. System panel connector (20-pin PANEL1)

This connector accommodates several system front panel functions.



A7V600-F Front Panel Audio Connector

- **System Power LED Lead (2-pin PLED)**

This 2-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.

- **ATX Power Switch/Soft-off Switch Lead (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.

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

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

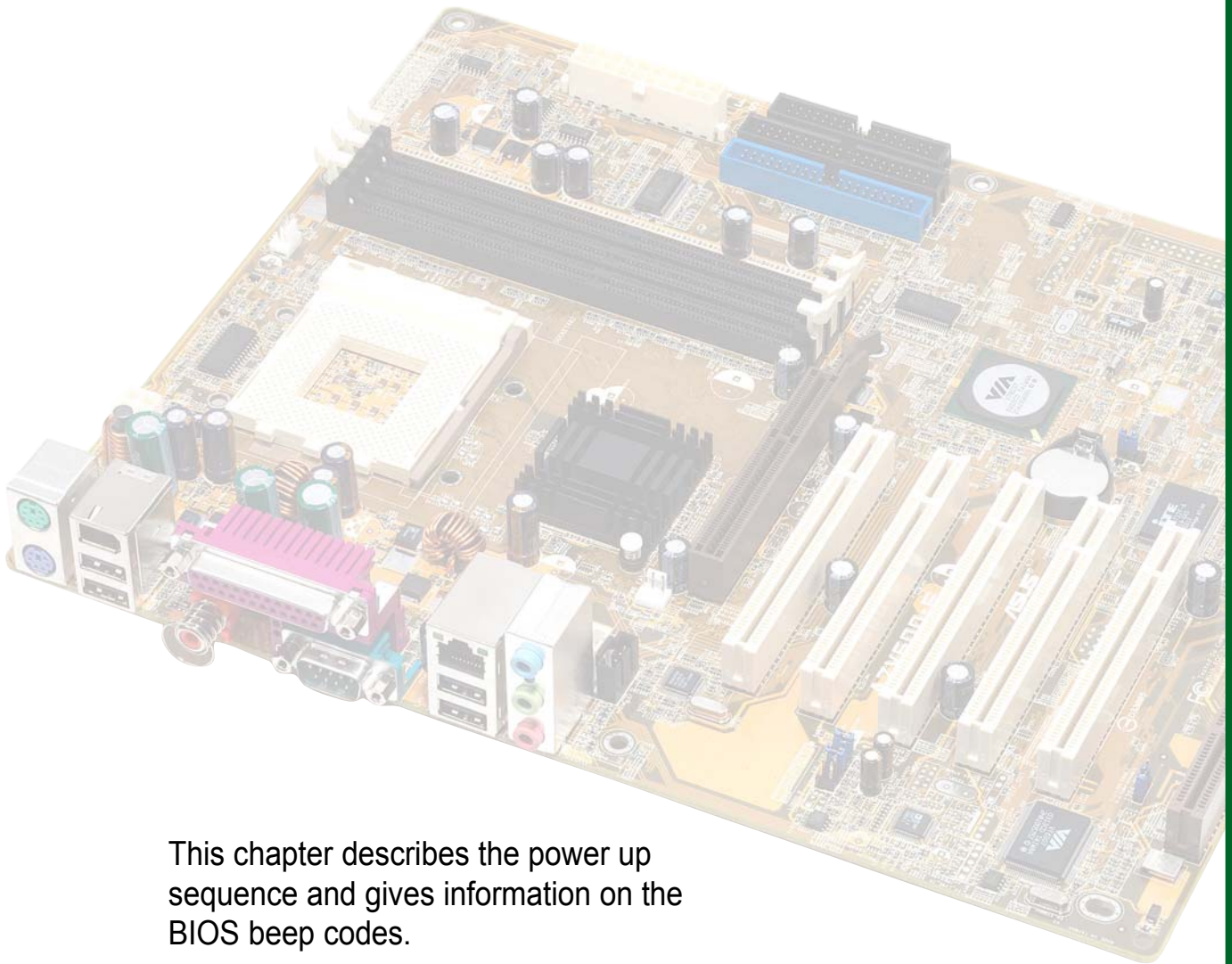
- **Hard Disk Activity Lead (2-pin IDE\_LED)**

This connector supplies power to the hard disk activity LED. The read or write activities of any device connected to the primary or secondary IDE connector cause this LED to light up.





# *Chapter 3*



This chapter describes the power up sequence and gives information on the BIOS beep codes.

## **Powering up**

## Chapter summary

<b>3.1</b>	<b>Starting up for the first time .....</b>	<b>3-1</b>
<b>3.2</b>	<b>Powering off the computer .....</b>	<b>3-2</b>

## 31 Starting up for the first time

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

## 3.2 Powering off the computer

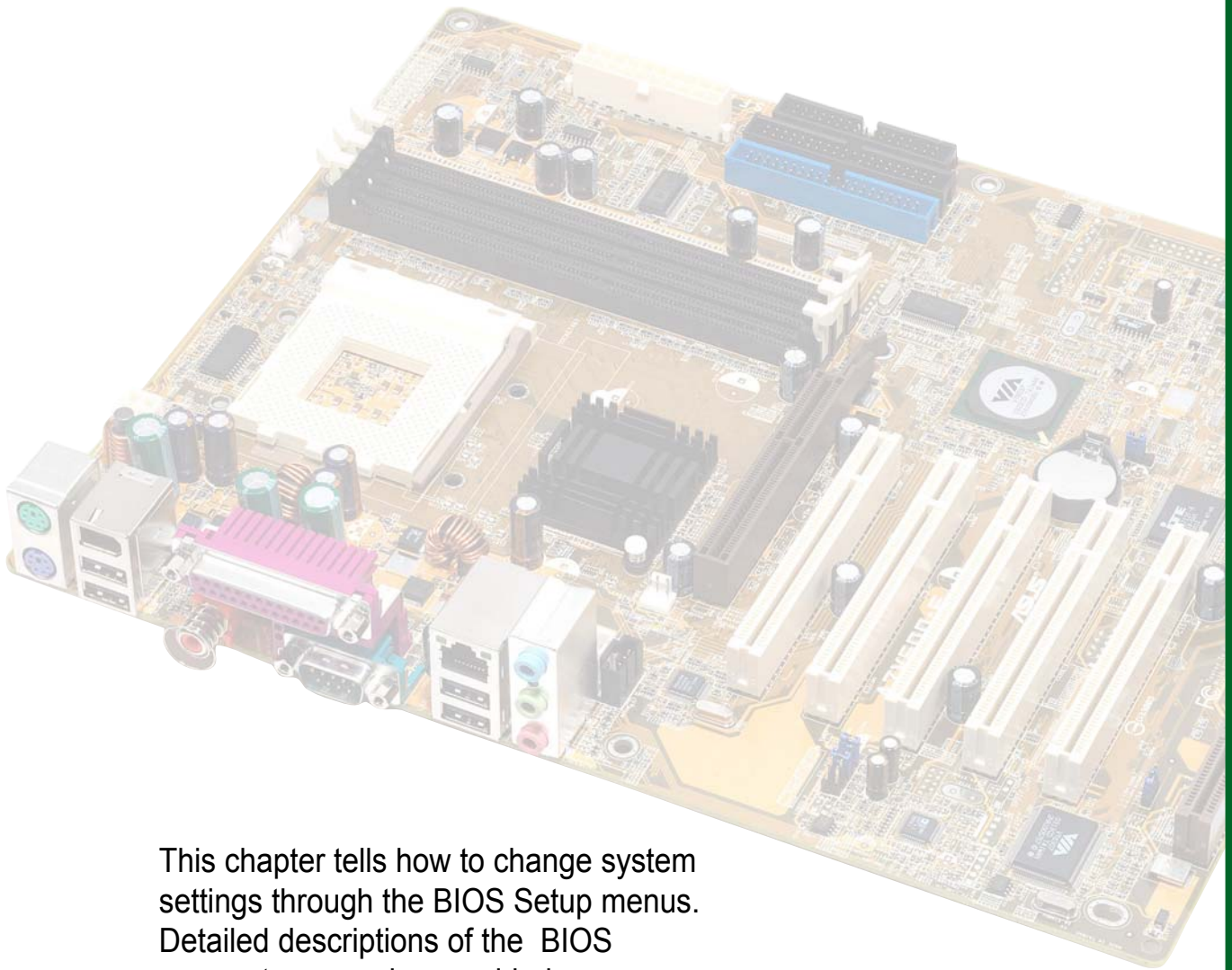
### Using the OS shut down function

If you use Windows 98SE/ME/2000/XP, click the **Start** button, click **Shut Down**, then the **OK** button to shut down the computer. The power supply should turn off after Windows shuts down.

### Using the dual function power switch

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

# Chapter 4



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

## BIOS setup

## Chapter summary

<b>4.1</b>	<b>Managing and updating your BIOS .....</b>	<b>4-1</b>
<b>4.2</b>	<b>BIOS Setup program .....</b>	<b>4-9</b>
<b>4.3</b>	<b>Main Menu .....</b>	<b>4-12</b>
<b>4.4</b>	<b>Advanced Menu .....</b>	<b>4-19</b>
<b>4.5</b>	<b>Power Menu .....</b>	<b>4-30</b>
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<b>4.7</b>	<b>Exit Menu .....</b>	<b>4-37</b>

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# 4.1 Managing and updating your BIOS



It is recommended that you save a copy of the motherboard's **original BIOS** to a bootable floppy disk in case you need to reinstall the original BIOS later.

## 4.1.1 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).

Follow these steps to update the BIOS using ASUS EZ Flash.

1. Download the latest BIOS file from the ASUS website (see ASUS contact information on page x). Save the file to a floppy disk.



Write down the BIOS file name on a piece of paper. You need to type the **exact BIOS file name** at the EZ Flash screen.

2. Reboot the computer.
3. To use EZ Flash, press <Alt> + <F2> during POST to display the following screen.

```
ASUS EZ Flash V1.00
Copyright (C) 2002, ASUSTeK COMPUTER INC.

[Onboard BIOS Information]
BIOS Version      : ASUS A7V600-F ACPI BIOS Revision 1001 Beta
003
BIOS Model        : A7V600-F
BIOS Built Date   : 06/03/03

Please Enter File Name for NEW BIOS: _
*Note: EZ Flash will copy file from A:\, Press [ESC] to reboot
```



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

4. Insert the disk that contains the new BIOS file into the floppy drive. You will receive the error message, “**WARNING! Device not ready.**” if you proceed to step 5 without the disk in the drive.

5. At the prompt, “**Please Enter File Name for NEW BIOS: \_**”, type in the BIOS file name that you downloaded from the ASUS website, then press <Enter>.

EZ Flash will automatically access drive A to look for the file name that you typed. When found, the following message appears on screen.

```
[BIOS Information in File]
BIOS Version:  A7V600-F Boot Block

WARNING! Continue to update the BIOS (Y/N)? _
```

If you accidentally typed in a wrong BIOS file name, the error message, “**WARNING! File not found.**” appears. Press <Enter> to remove the message, then type in the correct file name. Press <Enter>.

6. At the above prompt, type **Y** to continue with the update process. Pressing **N** exits the EZ Flash screen and reboots the system without updating the BIOS.

The following prompts appear if you typed **Y**.

```
Flash Memory:  SST 49LF004

1. Update Main BIOS area      (Y/N)? _
```

7. Press **Y** to completely update the main BIOS area.



---

DO NOT shutdown or reset the system while updating the BIOS boot block area! Doing so may cause system boot failure.

---

8. When the update process is done, the message, “**Press a key to reboot**” appears. Press any key to reboot the system with the new BIOS.



## 4.1.2 Using AFLASH to update the BIOS

### Creating a bootable disk

AFLASH.EXE is a Flash Memory Writer utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the motherboard. This file works only in DOS mode. To determine the BIOS version of your motherboard, check the last four numbers of the code displayed on the upper left-hand corner of your screen during bootup. Larger numbers represent a newer BIOS file.

1. Type `FORMAT A:/S` at the DOS prompt to create a bootable system disk. DO NOT copy `AUTOEXEC.BAT` and `CONFIG.SYS` to the disk.
2. Type `COPY D:\AFLASH\AFLASH.EXE A:\` (assuming D is your CD-ROM drive) to copy `AFLASH.EXE` to the boot disk you created.



AFLASH works only in DOS mode. It does not work in the DOS prompt within Windows, and does not work with certain memory drivers that may be loaded when you boot from the hard drive. It is recommended that you reboot using a floppy disk.

3. Reboot the computer from the floppy disk.



BIOS setup must specify “Floppy” as the first item in the boot sequence.

4. In DOS mode, type `A:\AFLASH <Enter>` to run AFLASH.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V2.0
Copyright (C) 1994-2001 ASUSTeK COMPUTER INC.

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB

Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01

Choose one of the followings:

1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD

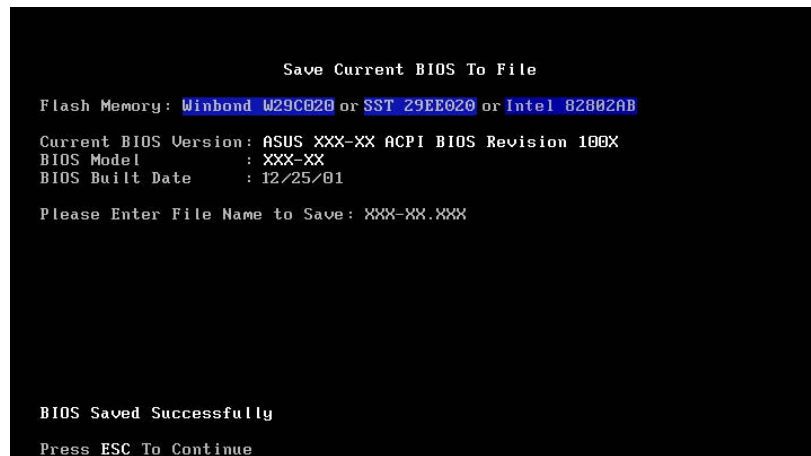
Enter choice: [1]

Press ESC To Exit
```



If the word “unknown” appears after Flash Memory:, the memory chip is either not programmable or is not supported by the ACPI BIOS and therefore, cannot be programmed by the Flash Memory Writer utility.

5. Select 1. Save Current BIOS to File from the Main menu and press <Enter>. The Save Current BIOS To File screen appears.



6. Type a filename and the path, for example, A:\XXX-XX.XXX, then press <Enter>.

## Updating the BIOS



Update the BIOS only if you have problems with the motherboard and you are sure that the new BIOS revision will solve your problems. Careless updating may result to more problems with the motherboard!

1. Download an updated ASUS BIOS file from the Internet (WWW or FTP) (see ASUS CONTACT INFORMATION on page x for details) and save to the boot floppy disk you created earlier.
2. Boot from the floppy disk.
3. At the "A:\:" prompt, type AFLASH and then press <Enter>.
4. At the Main Menu, type 2 then press <Enter>. The Update BIOS Including Boot Block and ESCD screen appears.
5. Type the filename of your new BIOS and the path, for example, A:\XXX-XX.XXX, then press <Enter>.

To cancel this operation, press <Enter>.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01
Please Enter File Name for NEW BIOS: A:\XXX-XX.XXX
```

6. When prompted to confirm the BIOS update, press Y to start the update.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB
BIOS Version
[CURRENT] ASUS XXX-XX ACPI BIOS Revision 100X
[test.awd] ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model
[CURRENT] XXX-XX
[test.awd] XXX-XX
Date of BIOS Built
[CURRENT] 09/25/99
[XXXX.XXX] 05/29/00
Check sum of 1001.010 is F266.
Are you sure (Y/N) ? [Y]
Press ESC To Return to Main Menu
```

7. The utility starts to program the new BIOS information into the Flash ROM. The boot block is updated automatically only when necessary. This minimizes the possibility of boot problems in case of update failures. When the programming is done, the message “*Flashed Successfully*” appears.

```
Update BIOS Including Boot Block and ESCD

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB

BIOS Version
[CURRENT] ASUS XXX-XX ACPI BIOS Revision 100X
[Test.awd] ASUS XXX-XX ACPI BIOS Revision 100X

BIOS Model
[CURRENT] XXX-XX
[Test.awd] XXX-XX

Date of BIOS Built
[CURRENT] 12/25/01
[XXXX.XXX] 05/29/00

Check sum of 1001.010 is F266.

Are you sure (Y/N) ? [Y]
Block Erasing -- Done
Programming -- 3FFFF
Flashed Successfully

Press ESC To Continue
```

8. Follow the onscreen instructions to continue.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V2.0
Copyright (C) 1994-2001 ASUSTeK COMPUTER INC.

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB

Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 12/25/01

Choose one of the followings:

1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD

Enter choice: [1]

You have flashed the EPROM: It is recommended that you turn off
the power, enter SETUP and LOAD Setup Defaults to have CMOS
updated with new BIOS when exits.

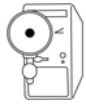
Press ESC To Exit
```



If you encounter problems while updating the new BIOS, DO NOT turn off the system because this may cause boot problems. Just repeat the process, and if the problem persists, load the original BIOS file you saved to the boot disk. If the Flash Memory Writer utility is not able to successfully update a complete BIOS file, the system may not boot. If this happens, call the ASUS service center for support.

## 4.1.3 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.



1. 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.
2. 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 “4.1.1 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.

```
Bad BIOS checksum. Starting BIOS recovery...  
Checking for floppy...  
Floppy found!  
Reading file "A7V600-F.rom". Completed.  
Start flashing...
```



**DO NOT** shutdown 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 original 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 "A7V600-F.rom". Completed.  
Start flashing...
```



DO NOT shutdown 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](http://www.asus.com)) to download the latest BIOS file.

## 4.2 BIOS Setup program

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

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

Even if you are not prompted to use the Setup program, you may want to change the configuration of your computer in the future. For example, you may want to enable the security password feature or make changes to 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 Flash ROM.

The Flash ROM on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Delete> 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 among the predetermined choices.



---

Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purposes only, and may not exactly match what you see on your screen.

---

## 4.2.1 BIOS menu bar

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

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

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

## 4.2.2 Legend bar

At the bottom of the Setup screen is a legend bar. The keys in the legend bar allow you to navigate through the various setup menus. The following table lists the keys found in the legend bar with their corresponding functions.

<b>Navigation Key(s)</b>	<b>Function Description</b>
<b>&lt;F1&gt; or &lt;Alt + H&gt;</b>	Displays the General Help screen from anywhere in the BIOS Setup
<b>&lt;Esc&gt;</b>	Jumps to the Exit menu or returns to the main menu from a sub-menu
<b>Left or Right arrow</b>	Selects the menu item to the left or right
<b>Up or Down arrow</b>	Moves the highlight up or down between fields
<b>- (minus key)</b>	Scrolls backward through the values for the highlighted field
<b>+ (plus key) or spacebar</b>	Scrolls forward through the values for the highlighted field
<b>&lt;Enter&gt;</b>	Brings up a selection menu for the highlighted field
<b>&lt;F5&gt;</b>	Resets the current screen to its Setup Defaults
<b>&lt;F10&gt;</b>	Saves changes and exits Setup



## General help

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

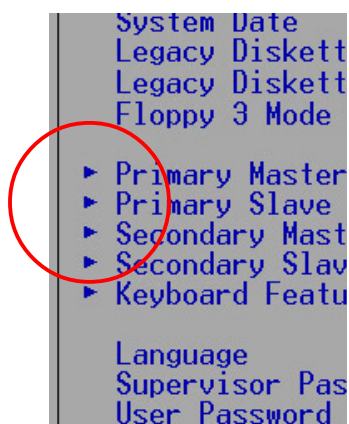
## Saving changes and exiting the Setup program

See “4.7 Exit Menu” for detailed information on saving changes and exiting the setup program.

## Scroll bar

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

## Sub-menu



Note that a right pointer symbol (as shown on the left) appears to the left of certain fields. This pointer indicates that you can display a sub-menu from this field. A sub-menu contains additional options for a field parameter. To display a sub-menu, move the highlight to the field and press <Enter>. The sub-menu appears. Use the legend keys to enter values and move from field to field within a sub-menu as you would within a menu. Use the <Esc> key to return to the main menu.

Take some time to familiarize yourself with the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus. If you accidentally make unwanted changes to any of the fields, use the set default hot key <F5> to load the Setup default values. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

## 4.3 Main Menu

When you enter the Setup program, the following screen appears.

AwardBIOS Setup Utility				
Main	Advanced	Power	Boot	Exit
System Time	[18:22:25]			Item Specific Help  <Enter> to select field; <+>,<-> to change value.
System Date	[06/03/2003]			
Legacy Diskette A	[1.44M, 3.5 in.]			
Legacy Diskette B	[None]			
Floppy 3 Mode Support	[Disabled]			
▶ Primary Master	[Auto]			
▶ Primary Slave	[Auto]			
▶ Secondary Master	[Auto]			
▶ Secondary Slave	[Auto]			
▶ Keyboard Features				
Supervisor Password	[Disabled]			
User Password	[Disabled]			
Halt On	[All Errors]			
Installed Memory	0 MB			
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults ESC Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit				

### System Time [XX:XX:XX]

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

### System Date [XX/XX/XXXX]

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

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

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

### Floppy 3 Mode Support [Disabled]

This is required to support older Japanese floppy drives. The Floppy 3 Mode feature allows reading and writing of 1.2MB (as opposed to 1.44MB) on a 3.5-inch diskette. Configuration options: [Disabled] [Enabled]

## **Supervisor Password [Disabled] / User Password [Disabled]**

These fields allow you to set passwords. To set a password, highlight the appropriate field and press <Enter>. Type in a password then press <Enter>. You can type up to eight alphanumeric characters. Symbols and other characters are ignored. To confirm the password, type the password again and press <Enter>. The password is now set to [Enabled]. This password allows full access to the BIOS Setup menus. To clear the password, highlight this field and press <Enter>. The same dialog box as above appears. Press <Enter>. The password is set to [Disabled].

### **A note about passwords**

The BIOS Setup program allows you to specify passwords in the Main menu. The passwords control access to the BIOS during system startup. Passwords are not case sensitive, meaning, passwords typed in either uppercase or lowercase letters are accepted. The BIOS Setup program allows you to specify two different passwords: a Supervisor password and a User password. If you did not set a Supervisor password, anyone can access the BIOS Setup program. If you did, the Supervisor password is required to enter the BIOS Setup program and to gain full access to the configuration fields.

### **Forgot the password?**

If you forget your password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. See section “2.7 Switches and jumpers” for information on how to erase the RTC RAM.

## **Halt On [All Errors]**

This field specifies the types of errors that will cause the system to halt. Configuration options: [All Errors] [No Error] [All but Keyboard] [All but Disk] [All but Disk/Keyboard]

## **Installed Memory [XXX MB]**

This field automatically displays the amount of conventional memory detected by the system during the boot process.

## 4.3.1 Primary and Secondary Master/Slave

AwardBIOS Setup Utility		
Main		
Primary Master [Auto]		Item Specific Help
Type	[Auto]	<p>&lt;Enter&gt; to select the type of the IDE drive. [User Type HDD] allows you to set each entry on your own.</p> <p>WARNING: Ultra DMA mode 3/4/5 can be enabled only when BIOS detects shielded 80-pin cable.</p>
Cylinders	[ 1024 ]	
Head	[255]	
Sector	[63]	
CHS Capacity	8422MB	
Maximum LBA Capacity	25590MB	
Multi-Sector Transfers	[Maximum]	
SMART Monitoring	[Disabled]	
Acoustic Management	[Disabled]	
PIO Mode	[4]	
ULTRA DMA Mode	[Disabled]	
F1 Help	↑↓ Select Item	Change Values
ESC Exit	↔ Select Menu	Enter Select ► Sub-Menu
		F5 Setup Defaults
		F10 Save and Exit

### Type [Auto]

Select [Auto] to automatically detect an IDE hard disk drive. If automatic detection is successful, Setup automatically fills in the correct values for the remaining fields on this sub-menu. If automatic detection fails, this may be because the hard disk drive is too old or too new. If the hard disk was already formatted on an older system, Setup may detect incorrect parameters. In these cases, select [User Type HDD] to manually enter the IDE hard disk drive parameters. Refer to the next section for details.



Before attempting to configure a hard disk drive, make sure you have the correct configuration information supplied by the drive manufacturer. Incorrect settings may cause the system to fail to recognize the installed hard disk.

## [User Type HDD]

AwardBIOS Setup Utility		
Main		
Primary Master [User Type HDD]		Item Specific Help
Type	[User Type HDD]	<Enter> to select the type of the IDE drive. [User Type HDD] allows you to set each entry on your own.  WARNING: Ultra DMA mode 3/4/5 can be enabled only when BIOS detects shielded 80-pin cable.
Translation Method	[LBA]	
Cylinders	[ 1024 ]	
Head	[255]	
Sector	[63]	
CHS Capacity	8422MB	
Maximum LBA Capacity	25590MB	
Multi-Sector Transfers	[Maximum]	
SMART Monitoring	[Disabled]	
Acoustic Management	[Disabled]	
PIO Mode	[4]	
ULTRA DMA Mode	[Disabled]	
F1 Help	↑↓ Select Item	~/+ Change Values
ESC Exit	↔ Select Menu	Enter Select ▶ Sub-Menu
		F5 Setup Defaults
		F10 Save and Exit

Manually enter the number of cylinders, heads and sectors per track for the drive. Refer to the drive documentation or on the drive label for this information.



After entering the IDE hard disk drive information into BIOS, use a disk utility, such as FDISK, to partition and format new IDE hard disk drives. This is necessary so that you can write or read data from the hard disk. Make sure to set the partition of the Primary IDE hard disk drives to active.

If no drive is installed or if you are removing a drive and not replacing it, select [None].

Other options for the Type field are:

**[CD-ROM]** - for IDE CD-ROM drives

**[LS-120]** - for LS-120 compatible floppy disk drives

**[ZIP]** - for ZIP-compatible disk drives

**[MO]** - for IDE magneto optical disk drives

**[Other ATAPI Device]** - for IDE devices not listed here

After making your selections on this sub-menu, press the <Esc> key to return to the Main menu. When the Main menu appears, the hard disk drive field displays the size for the hard disk drive that you configured.

## **Translation Method [LBA]**

Select the hard disk drive type in this field. When Logical Block Addressing (LBA) is enabled, the 28-bit addressing of the hard drive is used without regard for cylinders, heads, or sectors. Note that LBA Mode is necessary for drives with more than 504MB storage capacity. Configuration options: [LBA] [LARGE] [Normal] [Match Partition Table] [Manual]

## **Cylinders**

This field configures the number of cylinders. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

## **Head**

This field configures the number of read/write heads. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

## **Sector**

This field configures the number of sectors per track. Refer to the drive documentation to determine the correct value. To make changes to this field, set the Type field to [User Type HDD] and the Translation Method field to [Manual].

## **CHS Capacity**

This field shows the drive's maximum CHS capacity as calculated by the BIOS based on the drive information you entered.

## **Maximum LBA Capacity**

This field shows the drive's maximum LBA capacity as calculated by the BIOS based on the drive information you entered.

### **Multi-Sector Transfers [Maximum]**

This option automatically sets the number of sectors per block to the highest number that the drive supports. Note that when this field is automatically configured, the set value may not always be the fastest value for the drive. You may also manually configure this field. Refer to the documentation that came with the hard drive to determine the optimum value and set it manually. To make changes to this field, set the Type field to [User Type HDD]. Configuration options: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors] [32 Sectors] [Maximum]

### **SMART Monitoring [Disabled]**

This field allows you to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system that utilizes internal hard disk drive monitoring technology. This parameter is normally disabled because the resources used in the SMART monitoring feature may decrease system performance. Configuration options: [Disabled] [Enabled]

### **Acoustic Management [Disabled]**

As well as hard disk and optical data drives such as CD-ROM, CD-RW and DVD are also responsible for generating noise in the PC. Therefore the BIOS support the acoustic management feature to reduce the noise. In the Standard CMOS Features please select the IDE drive, which should be support the Acoustic management and press Enter. When the IDE device can support the acoustic management then you can see this option in the BIOS setup. The following options are available:

[Hard Drive] Configuration options: [Disabled] [Silent]

[Optical Drive] Configuration options: [Disabled:] [Medium] (default) [Silent]

For optimal performance for hard drive and optical drive please disabled the acoustic management.

### **PIO Mode [0]**

This option lets you set a PIO (Programmed Input/Output) mode for the IDE device. Modes 0 through 4 provide successive increase in performance. Configuration options: [0] [1] [2] [3] [4]

### **Ultra DMA Mode [Disabled]**

Ultra DMA capability allows improved transfer speeds and data integrity for compatible IDE devices. Set to [Disabled] to suppress Ultra DMA capability. To make changes to this field, set the Type field to [User Type HDD]. Configuration options: [0] [1] [2] [3] [4] [5] [6] [Disabled]



## 4.3.2 Keyboard Features

AwardBIOS Setup Utility	
Main	
Keyboard Features	Item Specific Help
Boot Up NumLock Status [On] Keyboard Auto-Repeat Rate [12/Sec] Keyboard Auto-Repeat Delay [1/4 Sec]	Select Power-on state for Numlock
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults ESC Exit ↔ Select Menu Enter Select ► Sub-Menu F10 Save and Exit	

### Boot Up NumLock Status [On]

This field enables users to activate the Number Lock function upon system boot. Configuration options: [Off] [On]

### Keyboard Auto-Repeat Rate [12/Sec]

This controls the speed at which the system registers repeated keystrokes. Options range from 6 to 30 characters per second. Configuration options: [6/Sec] [8/Sec] [10/Sec] [12/Sec] [15/Sec] [20/Sec] [24/Sec] [30/Sec]

### Keyboard Auto-Repeat Delay [1/4 Sec]

This field sets the time interval for displaying the first and second characters. Configuration options: [1/4 Sec] [1/2 Sec] [3/4 Sec] [1 Sec]



## 4.4 Advanced Menu

AwardBIOS Setup Utility				
Main	Advanced	Power	Boot	Exit
<div>CPU Speed [Manual] CPU Frequency Multiple [ 5.0x] CPU External Frequency (MHz) [100/33] Memory Frequency (MHz) [Auto] CPU Vcore Setting [Auto] CPU Vcore [1.850V] CPU Level 1 Cache [Enabled] CPU Level 2 Cache [Enabled] PS/2 Mouse Function Control [Auto] USB Legacy Support [Auto] OS/2 Onboard Memory &gt; 64M [Disabled] Instant Music [Disabled] Instant Music CD-ROM  ▶ Chip Configuration ▶ I/O Device Configuration ▶ PCI Configuration</div>				<div>Item Specific Help  To make changes to the first 4 fields, the motherboard must be set to jumperfree mode.  To set the following 2 fields, the CPU speed must be set to [Manual]. If the frequency multiple or bus frequency are adjusted too high, the system may hang. Please turn off the system and then restart to set the CPU settings.</div>
F1	Help	↑↓	Select Item	-/+
ESC	Exit	↔	Select Menu	Enter
			Change Values	F5
			Select ▶ Sub-Menu	Setup Defaults
				F10
				Save and Exit

### CPU Speed [Manual]

When the motherboard is set to JumperFree™ mode, this field allows you to select the internal frequency of the CPU. Select [Manual] if you want to make changes to the two subsequent fields. Note that selecting a frequency higher than the CPU manufacturer recommends may cause the system to hang or crash.

### CPU Frequency Multiple (when CPU Speed is set to [Manual])

This field sets the frequency multiple between the CPU's internal frequency (CPU speed) and external frequency. Set this field in conjunction with CPU Frequency (MHz) to match the speed of the CPU.



The item **CPU Frequency Multiple** is accessible only if you have an unlocked processor. If your processor frequency multiple is locked, you cannot change the setting of this item.

### CPU External Frequency (MHz) (when CPU Speed is set to [Manual])

This feature tells the clock generator what frequency to send to the system bus and PCI bus. The bus frequency (external frequency) multiplied by the bus multiple equals the CPU speed.

### **Memory Frequency (Mhz) [Auto]**

This field allows you to select a higher memory frequency for better system performance. The options that appear in the popup menu vary according to the CPU Frequency (MHz). Configuration options: [Auto] [266] [333] [400]

### **CPU VCore Setting [Auto]**

The [Manual] setting allows you to manually select the core voltage supplied to the CPU (see next item). This item can only be changed in JumperFree mode, otherwise, it is recommended that you keep the default setting [Auto] to allow the system to automatically determine the appropriate CPU core voltage.

### **CPU VCore [1.850V]**

When the CPU VCore Setting parameter above is set to [Manual], the CPU VCore item allows you to select a specific CPU core voltage. This field is not accessible when the CPU VCore Setting is set to [Auto].

### **CPU Level 1 Cache, CPU Level 2 Cache [Enabled]**

These fields allow you to choose from the default [Enabled] or choose [Disabled] to turn on or off the CPU Level 1 and Level 2 built-in cache. Configuration options: [Disabled] [Enabled]

### **PS/2 Mouse Function Control [Auto]**

The default setting [Auto] allows the system to detect a PS/2 mouse at startup. If a mouse is detected, the BIOS assigns IRQ12 to the PS/2 mouse. Otherwise, IRQ12 can be used for expansion cards. When you set this field to [Enabled], BIOS reserves IRQ12, whether or not a PS/2 mouse is detected at startup. Configuration options: [Enabled] [Auto]

### **USB Legacy Support [Auto]**

This motherboard supports Universal Serial Bus (USB) devices. The default of [Auto] allows the system to detect a USB device at startup. If detected, the USB controller legacy mode is enabled. If not detected, the USB controller legacy mode is disabled.

When you set this field to [Disabled], the USB controller legacy mode is disabled whether or not you are using a USB device. Configuration options: [Disabled] [Enabled] [Auto]

## **OS/2 Onboard Memory > 64M [Disabled]**

When using OS/2 operating systems with installed DRAM of greater than 64MB, you need to set this option to [Enabled]. Otherwise, leave to the default setting [Disabled]. Configuration options: [Disabled] [Enabled]

## **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.

---

## **Instant Music CD ROM**

Allows you to select the CD-ROM drive that you wish to use for the Instant Music CD playback. Configuration options depends on the optical drives installed on your system.

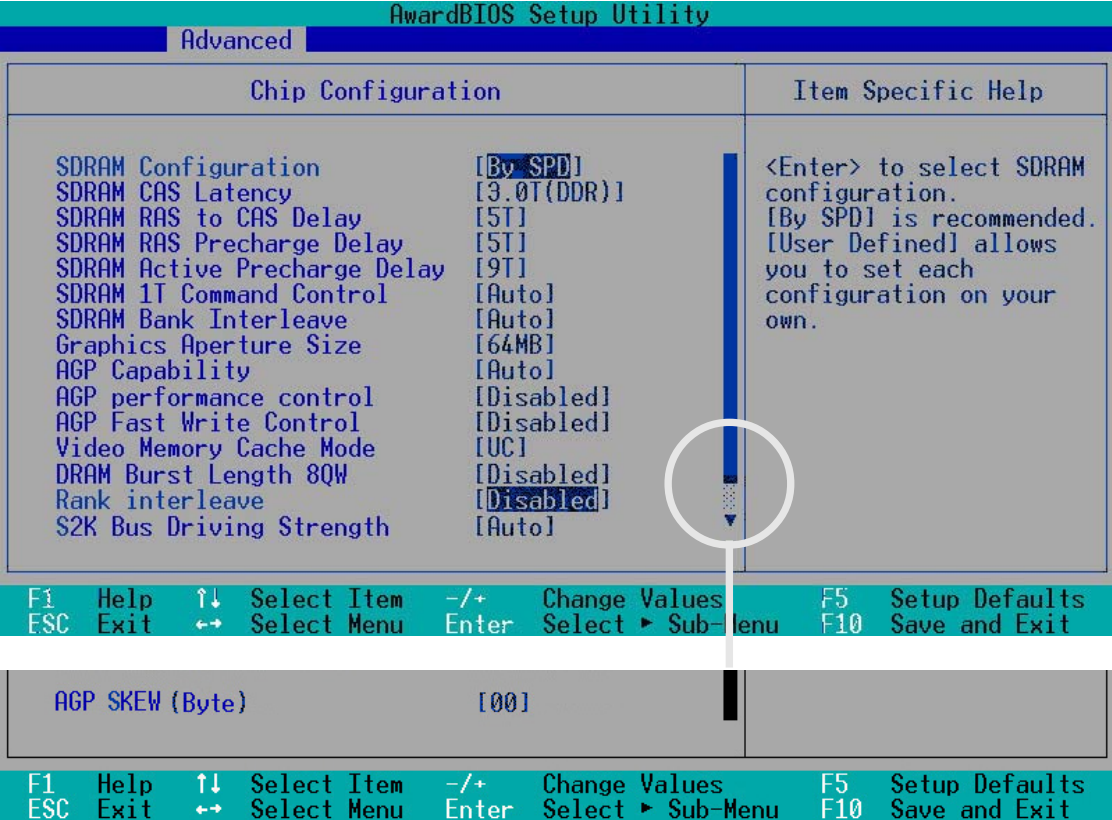


---

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

---

# 4.4.1 Chip Configuration



## SDRAM Configuration [By SPD]

This parameter allows you to set the optimal timings for items 2–5, depending on the memory modules that you are using. The default setting is [By SPD], which configures items 2–5 by reading the contents in the SPD (Serial Presence Detect) device. The EEPROM on the memory module stores critical information about the module, such as memory type, size, speed, voltage interface, and module banks.

Configuration options: [User Defined] [By SPD]



The SDRAM parameters (items 2~5) become configurable only when you set the SDRAM Configuration to [User Defined].

## SDRAM CAS Latency (value depends on SDRAM SPD)

This item controls the latency between the SDRAM read command and the time the data actually becomes available.

Configuration options: [3.0T(DDR)] [2.5T(DDR)] [2.0T(DDR)] [1.5T(DDR)]

### **SDRAM RAS to CAS Delay** (value depends on SDRAM SPD)

This item controls the latency between the DDR SDRAM active command and the read/write command. Configuration options: [5T] [4T] [3T] [2T].

### **SDRAM RAS Precharge Delay** (value depends on SDRAM SPD)

This item controls the idle clocks after issuing a precharge command to the DDR SDRAM. Configuration options: [5T] [4T] [3T] [2T]

### **SDRAM Active Precharge Delay** (value depends on SDRAM SPD)

This item controls the number of DDR SDRAM clocks used for DDR SDRAM parameters. Configuration options: [9T] [8T] [7T] [6T]

### **SDRAM 1T Command Control**

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

### **SDRAM Bank Interleave**

Configuration options: [Disabled] [2 Bank] [4 Bank] [Auto]

### **Graphics Aperture Size [64MB]**

This feature allows you to select the size of mapped memory for AGP graphic data. Configuration options: [8MB] [16MB] [32MB] [64MB] [128MB] [256MB] [512MB] [1024MB]



---

The [1024MB] and [512MB] configuration options are available only when you use AGP 8X graphics card.

---

### **AGP Capability [Auto]**

This motherboard supports the AGP 8X interface that enables enhanced graphics performance with high bandwidth speeds up to 2.12GB/s. AGP8X is backward-compatible. When set to [1X Mode], the AGP interface only provides a peak data throughput of 266MB/s even if you are using an AGP 8X card.

Configuration options: [Auto] [1X Mode] [2X Mode] [4X Mode] [8X Mode]

### **AGP performance control [Disabled]**

Configuration options: [Disabled] [Enabled]

### **AGP Fast Write control [Disabled]**

Configuration options: [Disabled] [Enabled]

### **Video Memory Cache Mode [UC]**

USWC (uncacheable, speculative write combining) is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must set this to UC (uncacheable) if your display card does not support this feature, otherwise the system may not boot. Configuration options: [UC] [USWC]

### **DRAM Burst Length 8QW [Disabled]**

This item enables or disables the DRAM Burst Length 8QW. Configuration options: [Disabled] [Enabled]

### **Rank Interleave [Disabled]**

This item enables or disables the rank interleave item. Configuration options: [Disabled] [Enabled]

### **S2K Bus Driving Strength [Auto]**

This item enables you to input the S2K bus driving strength. When set to [Manual], the **S2K Strobe P Control** and **S2K Strobe N Control** items appear. Configuration options: [Auto] [Manual]

### **S2K Strobe P Control [2]**

Configuration options: [0] [1] [2] [3] [4] [5] [6] [7] [8] [9] [A] [B] [C] [D] [E] [F]

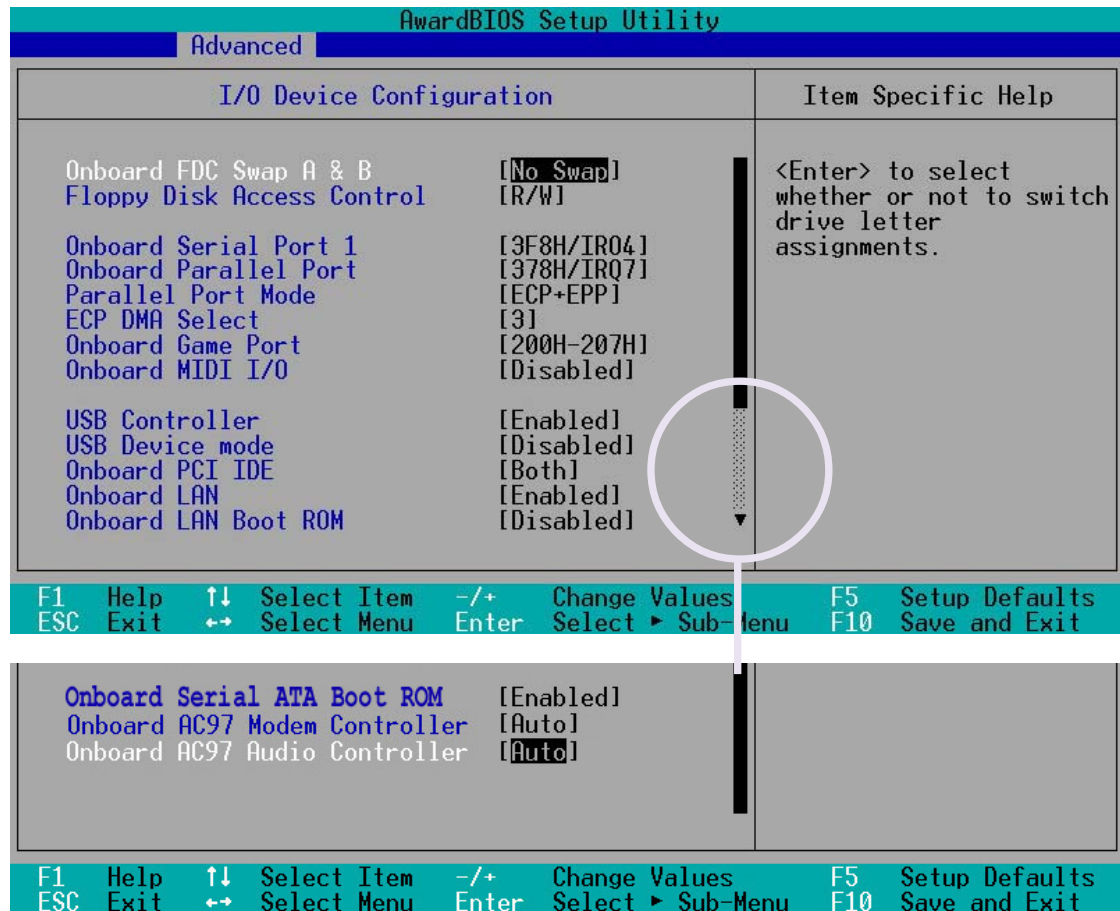
### **S2K Strobe N Control [3]**

Configuration options: [0] [1] [2] [3] [4] [5] [6] [7] [8] [9] [A] [B] [C] [D] [E] [F]

### **AGP SKEW (Byte 14) [11]**

Configuration options: [00] [01] [10] [11]

## 4.4.2 I/O Device Configuration



### Onboard FDC Swap A & B

These fields set option to switch drive letter assignments. Configuration Options: [No Swap] [Swap AB]

### Floppy Disk Access Control [R/W]

When set to [Read Only], this parameter protects files from being copied to floppy disks by allowing reads from, but not writes to, the floppy disk drive. The default setting [R/W] allows both reads and writes. Configuration options: [R/W] [Read Only]

### Onboard Serial Port 1 [3F8H/IRQ4]

This field allows you to set the address for the onboard serial connector. Configuration options: [3F8H/IRQ4] [2F8H/IRQ3] [3E8H/IRQ4] [2E8H/IRQ10] [Disabled]



### **Onboard Parallel Port [378H/IRQ7]**

This field allows you to set the address of the onboard parallel port connector. If you disable this field, the Parallel Port Mode and ECP DMA Select configurations are not available. Configuration options: [Disabled] [378H/IRQ7] [278H/IRQ5]

### **Parallel Port Mode [ECP+EPP]**

This field allows you to set the operation mode of the parallel port. [Normal] allows normal-speed operation but in one direction only; [EPP] allows bidirectional parallel port operation; [ECP] allows the parallel port to operate in bidirectional DMA mode; [ECP+EPP] allows normal speed operation in a two-way mode. Configuration options: [Normal] [EPP] [ECP] [ECP+EPP]

### **ECP DMA Select [3]**

This field allows you to configure the parallel port DMA channel for the selected ECP mode. This selection is available only if you select [ECP] or [ECP+EPP] in Parallel Port Mode above. Configuration options: [1] [3]

### **Onboard Game Port [200H-207H]**

These fields allow you to set the addresses for the onboard game connectors. Game ports must have different addresses. Configuration options: [200H/207H] [208H-20FH] [Disabled]

### **Onboard MIDI I/O [Disabled]**

These fields allow you to set the addresses for the onboard MIDI connectors. MIDI ports must have different addresses. Configuration options: [330H-331H] [300H-301H] [Disabled]

### **USB Controller [Enabled]**

These fields allow you to enable or disable the onboard USB controller. Configuration options: [Disabled] [Enabled]

### **USB Device Mode [Disabled]**

These fields allow you to enable or disable the USB device mode. Configuration options: [Disabled] [Enabled]

### **Onboard PCI IDE [Both]**

These fields allow you to select or disable the onboard PCI IDE drive for use. Configuration options: [Both] [Primary] [Secondary] [Disabled]



### **Onboard LAN [Enabled]**

These fields allow you to enable or disable the onboard LAN controller.  
Configuration options: [Disabled] [Enabled]

### **Onboard LAN Boot ROM [Enabled]**

These fields allow you to enable or disable the onboard LAN boot ROM.  
Configuration options: [Disabled] [Enabled]

### **Onboard Serial ATA Boot ROM [Enabled]**

These fields allow you to enable or disable the onboard Serial ATA boot ROM. Configuration options: [Disabled] [Enabled]

### **Onboard AC97 Modem Controller [Auto]**

These fields allow you to disable or set to auto detect the onboard AC97 modem controller. Configuration options: [Auto] [Disabled]

### **Onboard AC97 Audio Controller [Auto]**

These fields allow you to disable or set to auto detect the onboard AC97 audio controller. Configuration options: [Auto] [Disabled]

## 4.4.3 PCI Configuration

AwardBIOS Setup Utility		
Advanced		
PCI Configuration		Item Specific Help
Slot 1/5 IRQ	[Auto]	<Enter> to select an IRQ.
Slot 2/6 IRQ	[Auto]	
Slot 3 IRQ	[Auto]	
Slot 4 IRQ	[Auto]	
PCI/VGA Palette Snoop	[Disabled]	
PCI Latency Timer	[ 32]	
PCI Delayed Transaction	[Disabled]	
Primary VGA BIOS	[PCI VGA Card]	
Onboard ATA Device First	[ No]	
► PCI IRQ Resource Exclusion		
F1 Help	↑↓ Select Item	-/+ Change Values
ESC Exit	↔ Select Menu	Enter Select ► Sub-Menu
F5 Setup Defaults		F10 Save and Exit

### Slot 1/5, Slot 2/6, Slot 3, Slot 4 IRQ [Auto]

These fields automatically assign the IRQ for each PCI slot. The default setting for each field is [Auto], which utilizes auto-routing to determine IRQ assignments. Configuration options: [Auto] [NA] [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]

### PCI/VGA Palette Snoop [Disabled]

Some non-standard VGA cards, like graphics accelerators or MPEG video cards, may not show colors properly. Setting this field to [Enabled] corrects this problem. If you are using standard VGA cards, leave this field to the default setting [Disabled]. Configuration options: [Disabled] [Enabled]

### PCI Latency Timer [32]

Leave this field to the default setting [32] for best performance and stability.

### PCI Delayed Transaction [Disabled]

This field enables or disables the PCI delayed transaction function. Configuration options: [Disabled] [Enabled]

### Primary VGA BIOS [PCI VGA Card]

This field allows you to select the primary graphics card. Configuration options: [PCI VGA Card] [AGP VGA Card]

## Onboard ATA Device First [No]

This field allows you to select the onboard ATA first.

Configuration options: [No] [Yes]

### 4.4.3.1 PCI IRQ Resource Exclusion

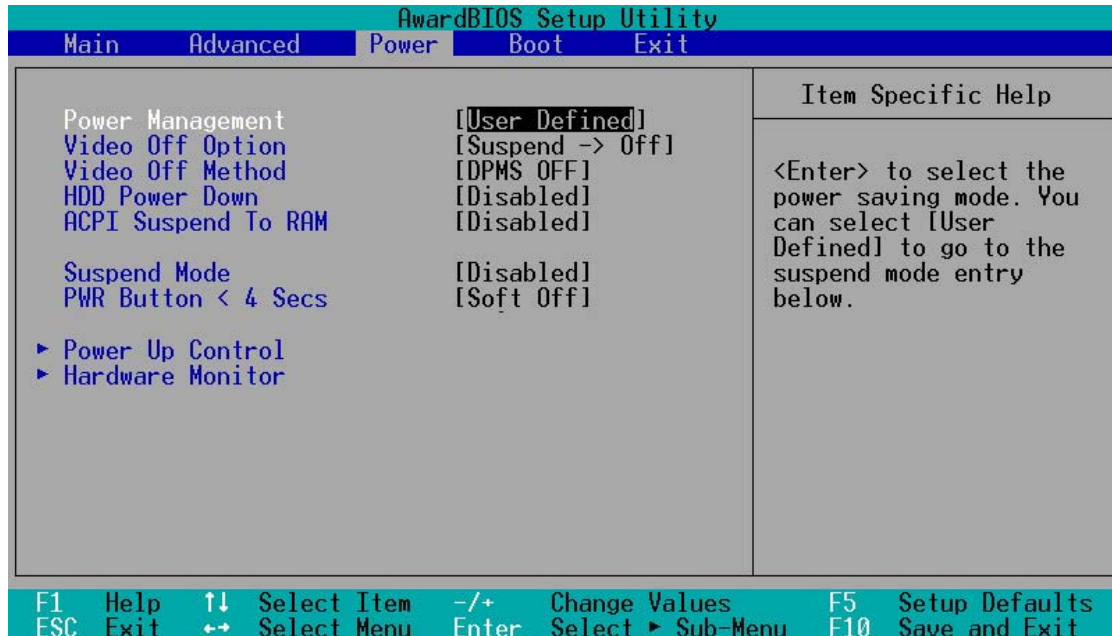
AwardBIOS Setup Utility			
Advanced			
PCI IRQ Resource Exclusion			Item Specific Help
IRQ	3 Reserved	[No/ICU]	Select [Yes] if this IRQ is required by a legacy ISA card and you are not using ICU; otherwise, select [No/ICU].
IRQ	4 Reserved	[No/ICU]	
IRQ	5 Reserved	[No/ICU]	
IRQ	7 Reserved	[No/ICU]	
IRQ	9 Reserved	[No/ICU]	
IRQ	10 Reserved	[No/ICU]	
IRQ	11 Reserved	[No/ICU]	
IRQ	12 Reserved	[No/ICU]	
IRQ	14 Reserved	[No/ICU]	
IRQ	15 Reserved	[No/ICU]	
F1	Help	↑↓	Select Item
ESC	Exit	↔	Select Menu
-/+	Change Values	Enter	Select ► Sub-Menu
F5	Setup Defaults		
F10	Save and Exit		

## IRQ XX Reserved [No/ICU]

These fields indicate whether or not the displayed IRQ for each field is being used by a legacy (non-PnP) ISA card. The setting [No/ICU] for an IRQ field indicates that you are using the ISA Configuration Utility (ICU), and that this particular IRQ is NOT required by a legacy ISA card. Set the IRQ field to [Yes] if you install a legacy ISA card that requires a unique IRQ and you are NOT using ICU. Configuration options: [No/ICU] [Yes]

## 4.5 PowerMenu

The Power menu allows you to reduce power consumption. This feature turns off the video display and shuts down the hard disk after a period of inactivity.



### Power Management [User Defined]

This field allows you to activate or deactivate the automatic power saving features. When set to [Disabled], the power management features do not function regardless of the other settings on this menu. The [User Defined] option allows you to set the period of inactivity before the system enters suspend mode. Refer to “Suspend Mode” item.

When set to [Max Saving], system power is conserved to its greatest amount. This setting automatically puts the system into suspend mode after a brief period of system inactivity. [Min Saving] allows the least power saving as the system enters suspend mode only after a long period of inactivity. Configuration options: [User Defined] [Disabled] [Min Saving] [Max Saving]

### Video Off Option [Suspend -> Off ]

This field determines when to activate the video off feature for monitor power management. Configuration options: [Always On] [Suspend -> Off]

## Video Off Method [DPMS OFF]

This field defines the video off features. The Display Power Management System (DPMS) feature allows the BIOS to control the video display card if it supports the DPMS feature. [Blank Screen] only blanks the screen. Use this for monitors without power management or “green” features.



---

Even if installed, your screen saver does not display when you select [Blank Screen] for the above field.

---

[V/H SYNC+Blank] blanks the screen and turns off vertical and horizontal scanning. Configuration options: [Blank Screen] [V/H SYNC+Blank] [DPMS Standby] [DPMS Suspend] [DPMS OFF] [DPMS Reduce ON]

## HDD Power Down [Disabled]

Shuts down any IDE hard disk drives in the system after a period of inactivity as set in this user-configurable field. This feature does not affect SCSI hard drives. Configuration options: [Disabled] [1 Min] [2 Min] [3 Min]...[15 Min]

## ACPI Suspend to RAM [Enabled]

This field allows you to enable or disable the ACPI Suspend-to-RAM feature. To support this feature, the +3.3VSB of the power supply should have the capability to provide more than 720mA current. Configuration options: [Disabled] [Enabled]

## Suspend Mode [Disabled]

Sets the time period before the system goes into suspend mode. Configuration options: [Disabled] [1~2 Min] [2~3 Min] [4~5 min] [8~9 Min] [20 Min] [30 Min]

## PWR Button < 4 Secs [Soft Off]

When set to [Soft off], the ATX switch can be used as a normal system power-off button when pressed for less than 4 seconds. [Suspend] allows the button to have a dual function where pressing less than 4 seconds puts the system in sleep mode. Regardless of the setting, holding the ATX switch for more than 4 seconds powers off the system. Configuration options: [Soft off] [Suspend]

## 4.5.1 Power Up Control

AwardBIOS Setup Utility		
Power		
Power Up Control		Item Specific Help
AC Power Loss Restart	[Disabled]	<Enter> to select whether or not to restart the system after AC power loss.
Wake/Power Up On External Modem	[Disabled]	
Wake/Power Up By PS/2 Keyboard	[Disabled]	
Wake/Power Up By PS/2 Mouse	[Disabled]	
Power Up On PCI Device	[Disabled]	
Automatic Power Up	[Disabled]	
F1 Help	↑↓ Select Item	-/+ Change Values
ESC Exit	←→ Select Menu	Enter Select ► Sub-Menu
F5 Setup Defaults		F10 Save and Exit

### AC PWR Loss Restart [Enabled]

This allows you to set whether or not to reboot the system after power interruptions. [Disabled] leaves your system off while [Enabled] reboots the system. [Previous State] sets the system back to the state it was before the power interruption. Configuration options: [Disabled] [Enabled] [Previous State]

### Wake/Power Up On External Modem [Disabled]

This 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.

### **Wake/Power Up By PS/2 Keyboard [Disabled]**

This parameter allows you to use specific keys on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Space Bar] [Ctrl-Esc] [Power Key]

### **Wake/Power Up By PS/2 Mouse [Disabled]**

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

### **Power Up On PCI Device [Disabled]**

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

### **Automatic Power Up [Disabled]**

This allows an unattended or automatic system power up. You may configure your system to power up at a certain time of the day by selecting [Everyday] or at a certain time and day by selecting [By Date]. Configuration options: [Disabled] [Everyday] [By Date]



## 4.5.2 Hardware Monitor

AwardBIOS Setup Utility		
Power		
Hardware Monitor		Item Specific Help
MB Temperature	[N/A]	<Enter> to switch between monitoring or ignoring.
CPU Temperature	[N/A]	
CPU Fan Speed	[N/A]	
POWER Fan Speed	[N/A]	
CHASSIS Fan Speed	[N/A]	
VCORE Voltage	[N/A]	
+3.3V Voltage	[N/A]	
+5V Voltage	[N/A]	
+12V Voltage	[N/A]	
F1 Help	↑↓ Select Item	-/+ Change Values
ESC Exit	↔ Select Menu	Enter Select ► Sub-Menu
F5	Setup Defaults	
F10	Save and Exit	

### **MB Temperature [xxx°C/xxx°F]**

### **CPU Temperature [xxx°C/xxx°F]**

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures.

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

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

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

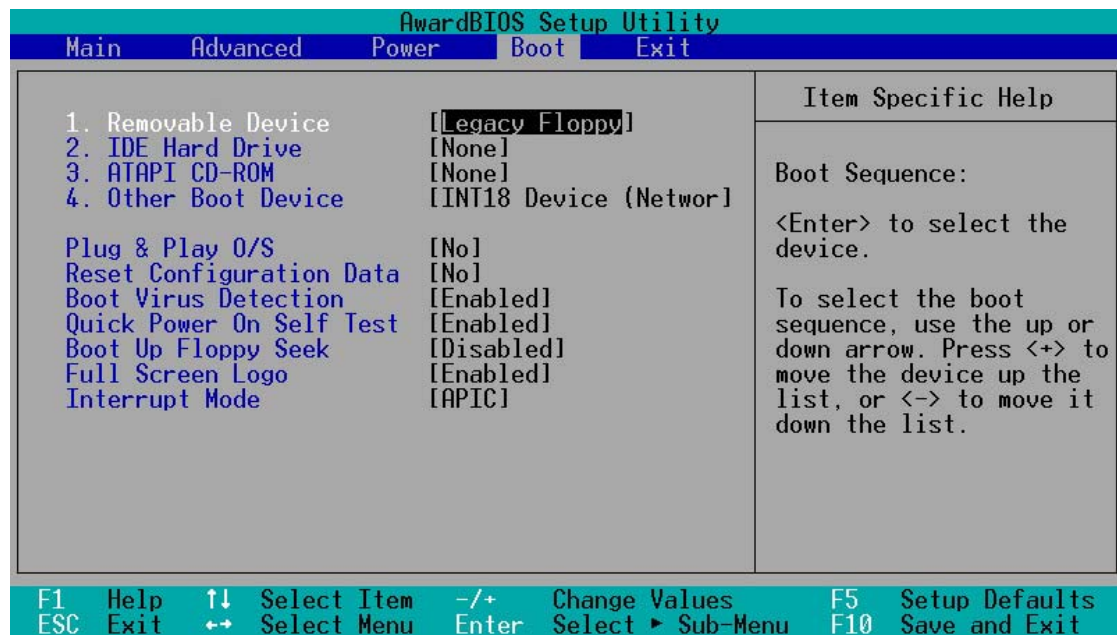
The onboard hardware monitor automatically detects and displays the CPU, power, and chassis fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, the specific field shows N/A.

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

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



## 4.6 Boot Menu



### Boot Sequence

The Boot menu allows you to select among the four possible types of boot devices listed using the up and down arrow keys. By using the <+> or <Space> key, you can promote devices and by using the <-> key, you can demote devices. Promotion or demotion of devices alters the priority which the system uses to search for a boot device on system power up. Configuration fields include Removable Devices, IDE Hard Drive, ATAPI CD-ROM, and Other Boot Device.

### Removable Device [Legacy Floppy]

Configuration options: [Disabled] [Legacy Floppy] [LS-120] [ZIP] [ATAPI MO]

### IDE Hard Drive

This field allows you to select which IDE hard disk drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all connected IDE hard disk drives.

### ATAPI CD-ROM

This field allows you to select which ATAPI CD-ROM drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all your connected ATAPI CD-ROM drives.

### Other Boot Device Select [INT18 Device (Network)]

Configuration options: [Disabled] [SCSI Boot Device] [INT18 Device (Network)]

### **Plug & Play O/S [Yes]**

This field allows you to use a Plug-and-Play (PnP) operating system to configure the PCI bus slots instead of using the BIOS. When [Yes] is selected, interrupts may be reassigned by the OS. If you installed a non-PnP OS or if you want to prevent reassigning of interrupt settings, set this item as [No]. Configuration options: [No] [Yes]

### **Reset Configuration Data [No]**

The Extended System Configuration Data (ESCD) contain information about non-PnP devices. It also holds the complete record of how the system was configured the last time it was booted. Select [Yes] if you want to clear these data during the Power-On-Self-Test (POST). Configuration options: [No] [Yes]

### **Boot Virus Detection [Enabled]**

This field allows you to set boot virus detection, ensuring a virus-free boot sector. The system halts and displays a warning message when it detects a virus. If this occurs, you can either allow the operation to continue or use a virus-free bootable floppy disk to restart and investigate your system. Configuration options: [Disabled] [Enabled]

### **Quick Power On Self Test [Enabled]**

This field speeds up the Power-On-Self Test (POST) routine by skipping retesting a second, third, and fourth time. Configuration options: [Disabled] [Enabled]

### **Boot Up Floppy Seek [Disabled]**

When enabled, the BIOS will seek the floppy disk drive to determine whether the drive has 40 or 80 tracks. Configuration options: [Disabled] [Enabled]

### **Full Screen Logo [Enabled]**

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



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

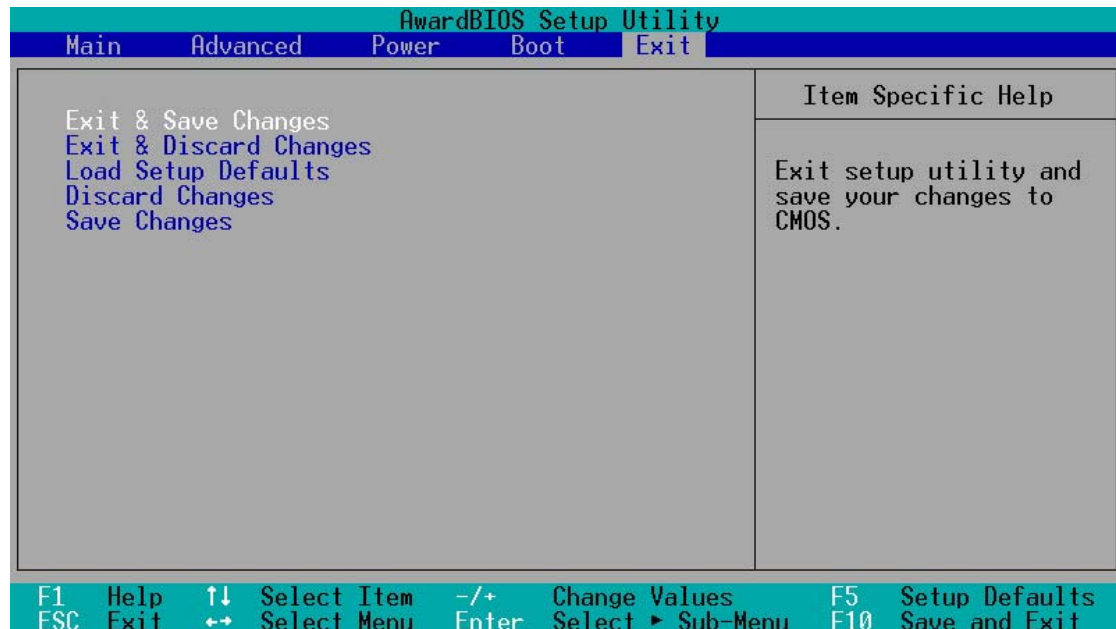
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### **Interrupt Mode [APIC]**

The Advanced Programmable Interrupt Controller (APIC) setting allows you to distribute interrupt routings other than the 16 IRQs. The Programmable Interrupt Controller (PIC) setting allows you to use the 16 IRQs only. Configuration options: [PIC] [APIC]

## 4.7 Exit Menu

When you have made all of your selections from the various menus in the Setup program, save your changes and exit Setup. Select Exit from the menu bar to display the following menu.



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 and Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery 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. Pressing <Enter> saves the changes while exiting.

### Exit and 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.

## **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.

## **Discard Changes**

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

## **Save Changes**

This option saves your selections without exiting the Setup program. You can then return to other menus and make further changes. After you select this option, a confirmation window appears. Select [Yes] to save any changes to the non-volatile RAM.