

**AK21**

**SocketA**

**AMD Athlon/Duron Processor**

**Based Main Board**

*User's Manual*

# Shuttle® Spacewalker™ AK21

SocketA

AMD Athlon/Duron Processor

based Mainboard

Manual Version 1.0

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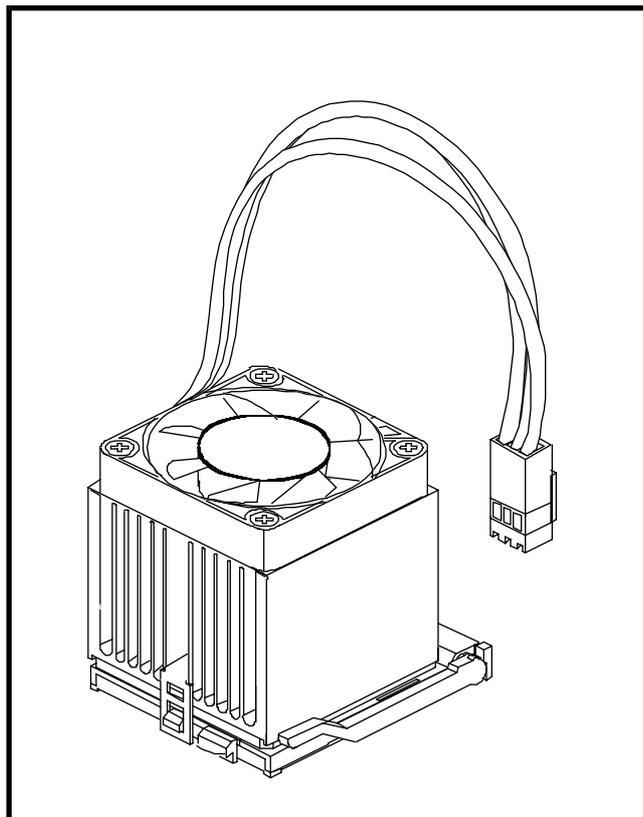
# WARNING

Thermal issue is highly essential for processors with a speed of 600MHz and above. Hence, we recommend you to use the CPU fan qualified by AMD or motherboard manufacturer. Meanwhile, please make sure CPU and fan are securely fastened well. Otherwise, improper fan installation not only gets system unstable but also could damage both CPU and motherboard because insufficient thermal dissipation.

If you would like to know more about thermal topic please see **AMD website** for detailed thermal requirement through the address:

**<http://www.amd.com/products/athlon/thermals>**

**<http://www.amd.com/products/duron/thermals>**



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## About This Manual

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# 1 INTRODUCTION

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## 1.1 To Different Users

### **First-Time DIY System Builder**

Welcome to the DIY world! Building your own computer system is not as difficult as you may think. To make your first computer DIY experience successful, right from the start, we have designed the **Chapter 3 Hardware Installation** section in a step-by-step fashion for all the first-time DIY system builders. Prior to installation, we also suggest you to read the whole manual carefully to gain a complete understanding of your new Shuttle AK21 mainboard.

### **Experienced DIY User**

Congratulate on your purchase of the Shuttle AK21 mainboard. You will find that installing your new Shuttle AK21 mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated AK21 mainboard provides you with a total solution to build the most stable and reliable system. Refer to sections **3.2 Jumper Settings** and **Chapter 4 Software Utility** to find out how to get the best out of your new mainboard. **Chapter 5 BIOS Setup** also contains the relevant information on how to tune up your system to achieve higher performance.

### **System Integrator**

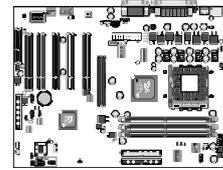
You have wisely chosen Shuttle AK21 to construct your system. Shuttle AK21 incorporates all the state-of-the-art technology of the KT266 chipset from VIA. It integrates the most advanced functions you can find to date in a compact ATX board.

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## 1.2 Item Checklist

Check all items with you AK21 mainboard to make sure nothing is missing.  
The complete package should include:

- ★ One piece of Shuttle AK21 Mainboard



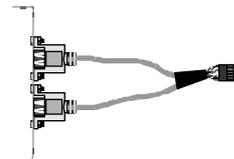
- ★ One piece of ATA100/66/33 Ribbon Cable



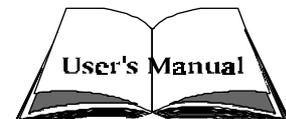
- ★ One piece of Floppy Ribbon Cable



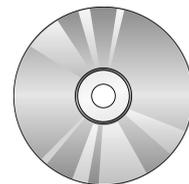
- ★ One piece of twin ports USB Cable (optional)



- ★ AK21 User's Manual



- ★ One piece of Bundled CD-ROM with containing:
  - AK21 user's manual on PDF format
  - VIA 4-IN-1 driver
  - VIA Audio driver
  - Award Flashing Utility



# 2 FEATURES

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AK21 mainboard is carefully designed for the demanding PC user who wants high performance and maximum intelligent features in a compact package.

## 2.1 Specifications

### \* CPU Support

AMD Athlon processor with 100/133 MHz FSB.

AMD Duron processor with 100 MHz FSB.

### \* Chipset

Features VIA KT266, VT8366/VT8233 Chipset.

VT8366, Integrated high performance DDR DRAM controller.

### \* Jumperless CPU Configuration

Soft-configuration FSB (The FSB speed is software configurable from 100MHz to 133MHz in the Frequency/Voltage Control of BIOS setup program.)

### \* AC'97 Link for Audio and Telephony CODEC

AC'97 2.1 compliant

Spread independent PCI functions for Audio and Modem

### \* Versatile Memory Support

Three **184-pin DIMM** slots to support up to 3GB of PC1600 or PC2100 compliant **DDR SDRAM** module.

### \* PCI Expansion Slots

Provides five 32-bit PCI slots.

### \* CNR Expansion Slot

Provides one CNR (Communication and Network Riser) slot.

The CNR Slot supports the audio, modem, Lan, Home PNA of VIA VT8233 chipset.

### \* AGP Expansion Slot

Provides one 32-bit AGP slot which supports up to 4X AGP device.

---

## \* I/O Interface

Provides a variety of I/O interfaces:

- 1 × Floppy interface for 3.5-inch FDD with 720KB, 1.44MB, or 2.88MB format or for 5.25-inch FDD with 360K or 1.2MB format.
- 1 × PS/2 mouse connector.
- 1 × PS/2 Keyboard connector.
- 2 × DB9 Serial connectors 16550 UART compatible.
- 1 × Infrared communication port.  
(Serial port COM2 can also be redirected to an external IrDA Adapter for wireless connection.)
- 1 × DB25 Parallel port supporting Standard Parallel Port (SPP), Enhanced Parallel Port (EPP), and Extended Capabilities Port (ECP) data transmission schemes.
- 1 × Line-Out port.
- 1 × Line-In port.
- 1 × Microphone port.
- 1 × MIDI/GAME port.

## \* 6 USB Supported Onboard

- 2 × USB connectors on back-panel and two sets of dual USB ports headers on mid-board.

## \* PCI Bus Master IDE Controller Onboard

Two UltraDMA **100/66/33** Bus Master Dual-channel IDE ports provide support to a maximum of four IDE devices (one Master and one Slave per channel). The IDE Bus implements the data transfer speed up to **100/66/33** MB/sec and also supports Enhanced PIO Modes 0~4.

80-pin Cable Backward Compatible Legacy ATAPI Devices, ATAPI IDE CD-ROM, CD-R, CD-RW, and LS-120 Supports.

## \* ATX Power Supply Connector

ATX power supply unit can be connected to the onboard 20-pin ATX power connector, supporting Suspend and Soft-On/Off by dual-function power button.

---

## \* **Advanced Configuration and Power Interface**

Features four power saving modes: Snoop, Suspend to RAM, Suspend to Disk, and Soft-Off. ACPI provides more efficient Energy Savings Features controlled by your operating system that supports OS Direct Power Management (OSPM) functionality.

## \* **System BIOS**

Provides licensed Award BIOS V6.0 PG on 2Mb Flash EEPROM and supports Green PC, Desktop Management Interface (DMI).

## \* **ATX Form Factor**

System board conforms to the ATX specification.

Board dimension: 304mm × 220mm.

## \* **Advanced Features**

- **Dual Function Power Button** - The system can be in one of two states; one is Suspend mode and the other is Soft-Off mode. Pushing the power button for less than 4 seconds places the system into Suspend mode. When the power button is pressed for longer than 4 seconds, the system enters the Soft-Off mode.
- **Wake-on-LAN (WOL1)** - The onboard WOL1 connector can be attached to a network card that supports this function to wake up the system via LAN.
- **Modem Ring Power-On** - The system can be powered on automatically by the activation of modem ring.

## \* **Intelligent Features**

- **Voltage Monitoring** - Monitors various voltages of key elements, such as the CPU, and other critical system voltage levels to ensure stable current passing through mainboard components. System voltages include Vcore on CPU, and +2.5V, +3.3V, VccIN, +12V, -12V, 3.3V Battery on system etc.
- **Fan Status Monitoring** - To prevent CPU from overheating, the CPU fan is monitored for RPM and failure. (CPU Cooling FAN with RPM sensor is required.)
- **Temperature Monitoring** - This item allows users to make sure whether the CPU or system runs in a suitable temperature.

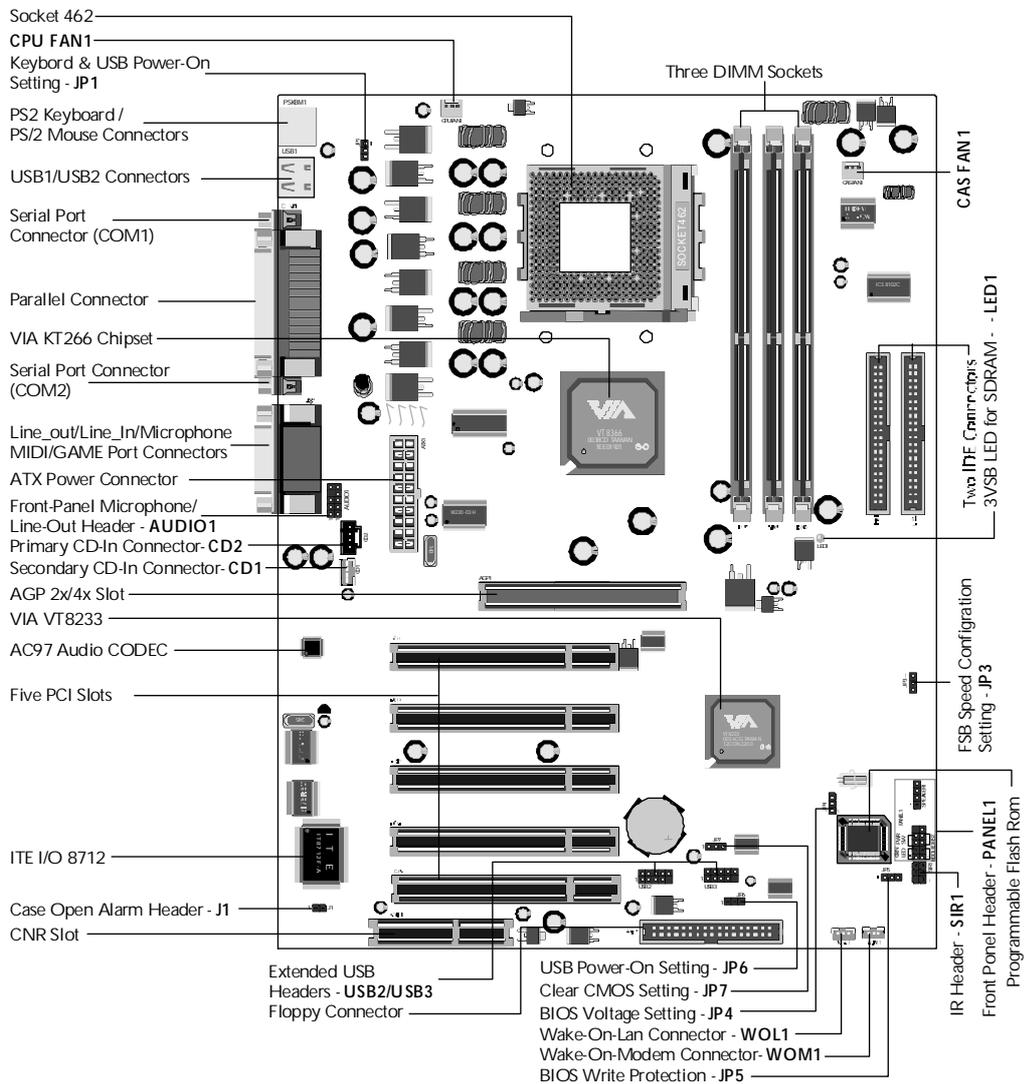
# 3 HARDWARE INSTALLATION

Before removing or installing any of these devices including CPU, DIMMs, Add-On Cards, Cables, please make sure to unplug the onboard power connector.

This section outlines how to install and configure your AK21 mainboard. Refer to the following mainboard layout to help you identify various jumpers, connectors, slots, and ports. Then follow these steps to guide you through a quick and correct installation of your system.

## 3.1 Step-by-Step Installation

### Accessories Of AK21

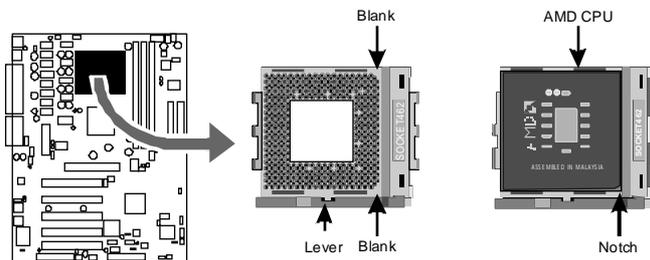


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## Step 1

### Install the CPU:

1. Locate the CPU ZIF (Zero Insertion Force) socket on the upper-right sector of your mainboard (between the back-panel connectors and the DIMM memory slots).
2. Pull the CPU ZIF socket lever slightly sideways away from the socket to unlock the lever, and then bring it to an upwardly vertical position.
3. Place your AMD 462 Athlon/Duron processor in the socket A. Note that the CPU's edges have been purposely designed non-symmetrically to prevent from inserting the processor in the wrong direction. The following diagram demonstrates the correct placement of the CPU in the ZIF socket. You can see that the two blunt-edged corners should face towards the socket-lever.



4. Slightly push the AMD 462 Athlon/Duron processor into the socket without applying excessive force while making sure there is no gap between CPU and socket. Then lower the socket-lever all the way down to its horizontal position and lock it to secure the CPU in place.
5. The AMD 462 Athlon/Duron processor requires a set of heatsink/fan to ensure proper cooling of the processor. If heatsink/fan have not been already mounted on your CPU, you must purchase the heatsink/fan separately and have it installed. Plug the cable through the heatsink/fan in the CPU fan power connector located nearby. Note that there are several types of CPU fan connectors. Normally, if your mainboard supports the hardware monitoring function, a 3-pin fan power connector should allow your system to detect the CPU fan's speed. The CPU fan can also run with a 2-pin fan power connector, however, detection of CPU fan's speed is not supported. Another type of CPU fan may feature a large 4-pin fan power connector, which does not support CPU fan's speed detection and must be directly connected to the system's power supply unit. Please refer to the following diagram.

---

## Step 2.

### Set Jumpers

This mainboard is jumperless! The default jumper settings have been set for the common usage standard of this mainboard. Therefore, you do not need to reset the jumpers unless you require special adjustments as in any of the following cases:

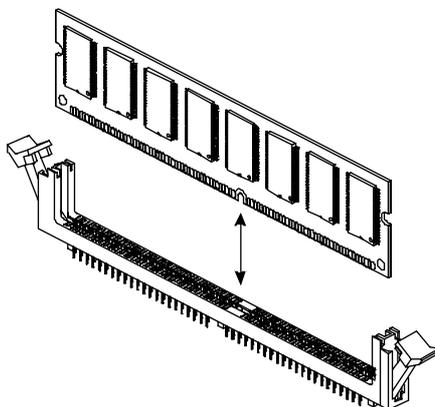
1. CPU FSB Speed
2. Set BIOS Write Protection
3. Set Keyboard and USB Power-On
4. Clear CMOS

For first-time DIY system builders, we recommend that you do not change the default jumper settings if you are not totally familiar with mainboard configuration procedures. The factory-set default settings are tuned for optimum system performance. For the advanced users who wish to customize their system, section **3.2 Jumper Settings** will provide detailed information on how to configure your mainboard manually.

## Step 3.

### Install DDR SDRAM System Memory

To install memory, insert DDR SDRAM memory module(s) in DIMM slot(s). Note that DDR SDRAM modules are directional and will not go in the DIMM slots unless properly oriented. After the module is fully inserted into the DIMM slots, lift the clips of both sides of the DIMM slot to lock the module in place.



---

## **Step 4**

### **Install Internal Peripherals in System Case**

Before you install and connect the mainboard into your system case, we recommend that you first assemble all the internal peripheral devices into the computer housing, including but not limited to the hard disk drive (IDE /HDD), floppy disk drive (FDD), CD-ROM drive, and ATX power supply unit. This will greatly facilitate in making the connections to the mainboard described below.

To install IDE & FDD drives, follow this procedure:

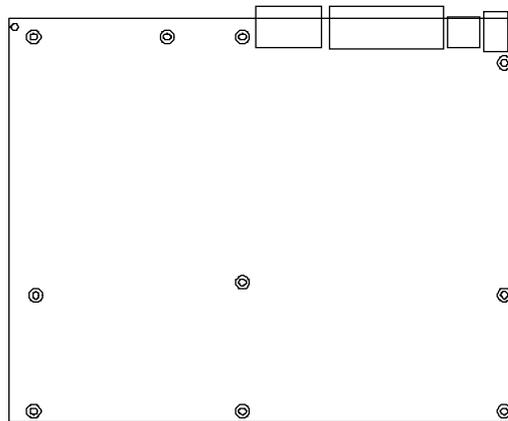
1. Set the required jumpers on board each device according to the instructions provided by the manufacturer. (IDE devices, HDD, and CD-ROM have to set jumpers on Master or Slave mode depending on your willing to install more than one device for each kind.)
2. Connect IDE cable and FDD cable on the back-panel of the internal peripheral devices to the corresponding headers on board. Note that the cable should be oriented with its colored stripe (usually in red or magenta) connected to pin#1 both on the mainboard IDE or FDD connector and on the device as well.
3. Connect an available power cable through your system power supply unit to the back-panel of each peripheral device. Note that the power cable is directional and cannot fit in if not properly positioned.

---

## Step 5

### Mount the Mainboard on the Computer Chassis

1. You may find that there are a lot of different mounting hole positions both on your computer chassis and on the mainboard. To choose a correct mounting hole, the key point is to keep the back-panel of the mainboard in a close fit with your system case, as shown below.



2. After deciding on the proper mounting holes, position the studs between the frame of chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical short between the board and the metal frame of chassis. (If your computer case is already equipped with mounting studs, you will need to tighten screws to attach the mainboard.)

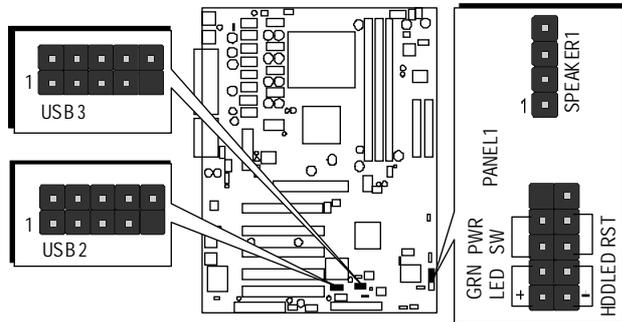
**Note:** In most computer housings, you will be able to find 4 or more attachment points to install mounting studs and fix the mainboard. If there aren't enough matching holes, then make sure to install at least 4 mounting studs to ensure proper attachment of the mainboard.

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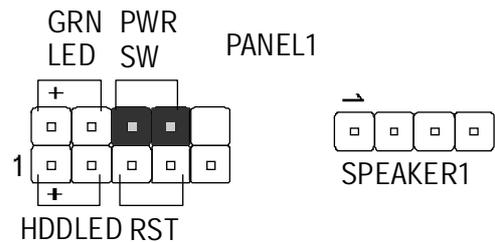
## Step 6

### Connect Front-Panel Switches/LEDs/Speaker/USB connectors

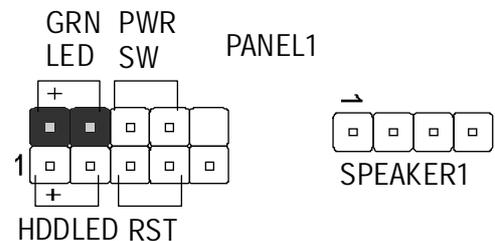
You can find there are several different cables already existing in the system case and originating from the computer's front-panel devices (HDD LED, Green LED, Reset Switch, PC Speaker, or USB devices etc.) These cables serve to connect the front-panel switches, LEDs, and USB connectors to the mainboard's front-panel connectors group (PANEL1, USB2, and USB3), as shown below.



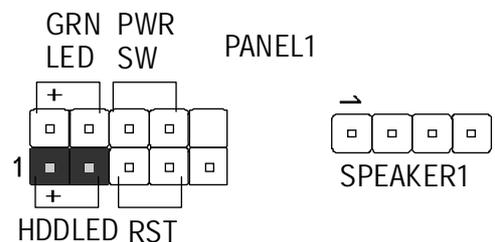
#### 1. ATX Soft Power On/Off (PWR SW)



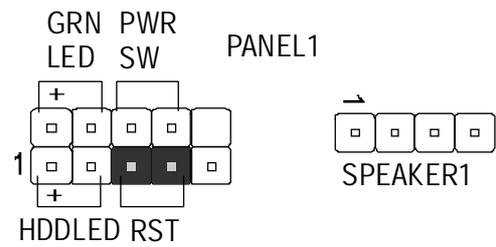
#### 2. Green\_LED (GRN LED)



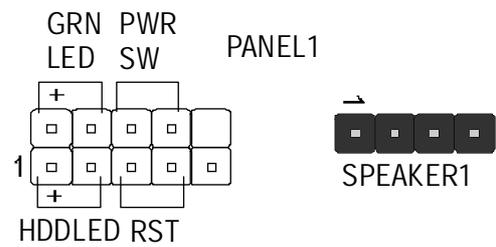
#### 3. HDD\_LED (HDD LED)



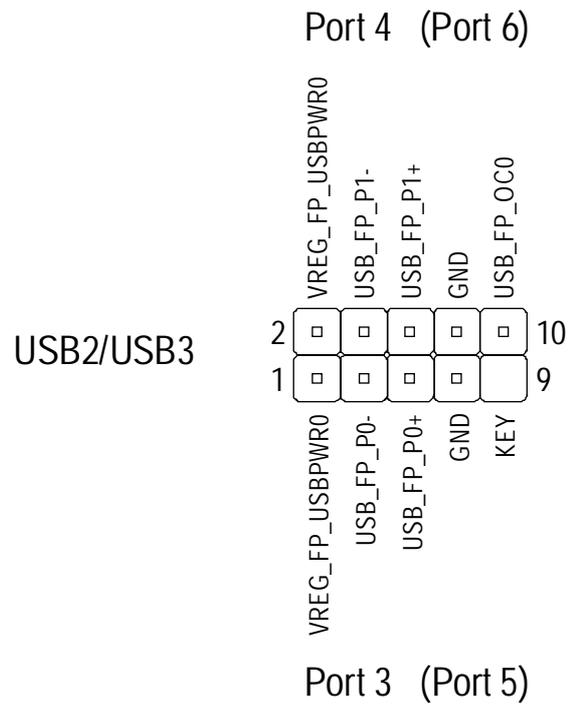
4. Hardware Reset Switch (RST)



5. PC Speaker (SPEAKER1)



6. Extended four USB Connector Header

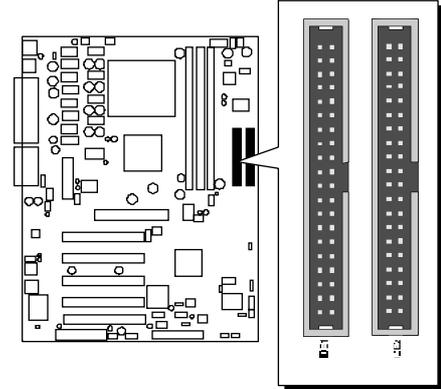


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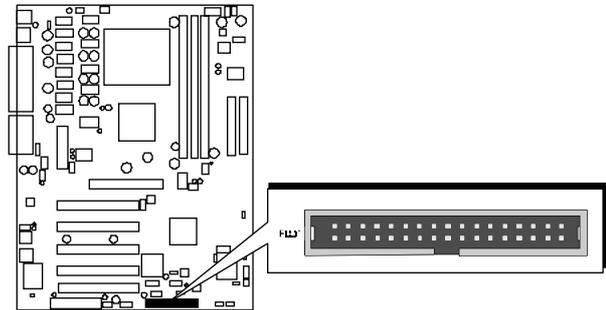
## Step 7

### Connect IDE & Floppy Disk Drives

1. IDE cable connector



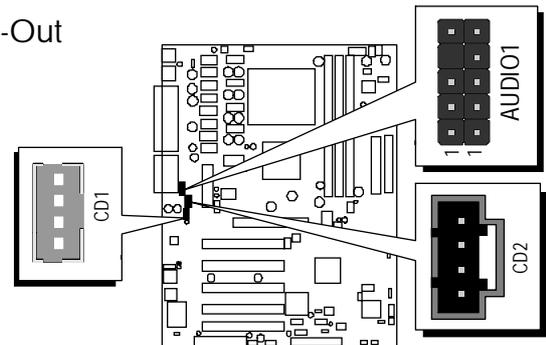
2. FDD cable connector



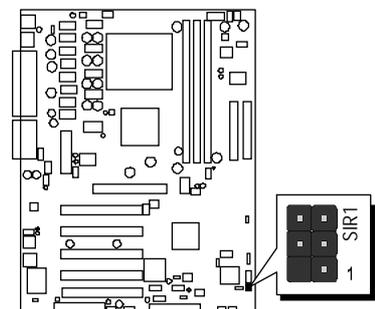
## Step 8

### Connect Other Internal Peripherals

1. Primary and Secondary CD\_IN,  
Front-Panel Microphone, and Line-Out  
connectors



2. IR connector

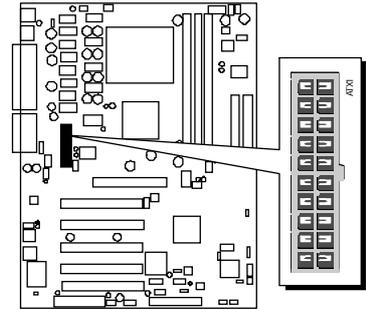


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## Step 9

### Connect Power Supply

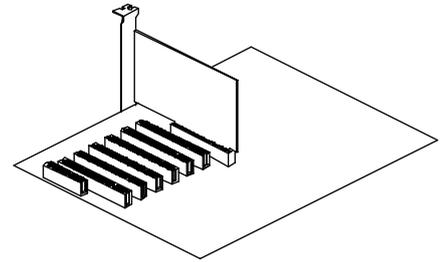
1. System power connector



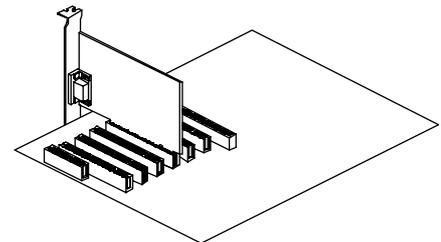
## Step 10

### Install Add-on Cards in Expansion Slots

1. Accelerated Graphics Port (AGP) Card

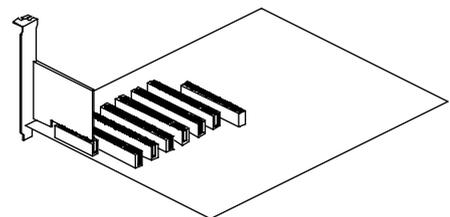


2. PCI Card



3. Communication and Network (CNR) Card

The CNR Slot supports the audio, modem, lan, Home PNA of VIA VT8233 chipset.

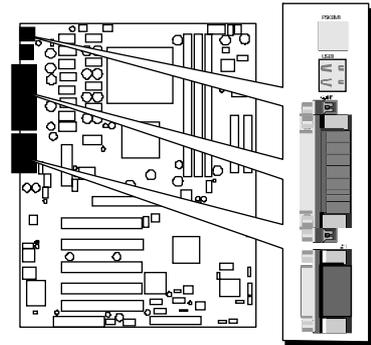


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## Step 11

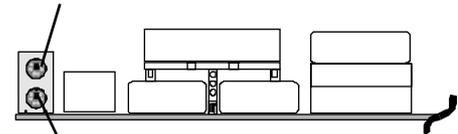
### Connect External Peripherals to Back-Panel

You are now ready to put the computer case back together and get on to the external peripherals connections to your system's back-panel.



#### 1. PS/2 Mouse and Keyboard

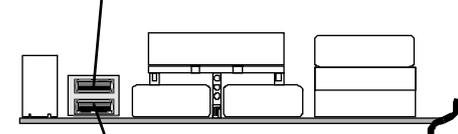
PS/2 Mouse



PS/2 keyboard

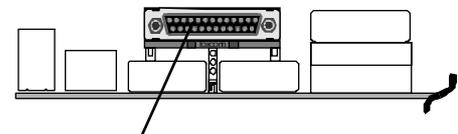
#### 2. USB Ports

USB Port 2



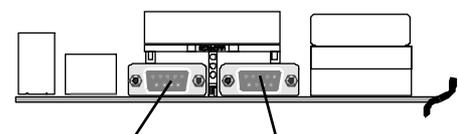
USB Port 1

#### 3. Parallel Port



Parallel Port

#### 4. COM1/2 Ports

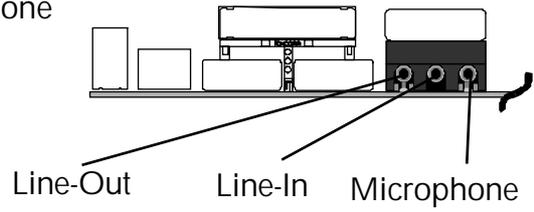


COM1

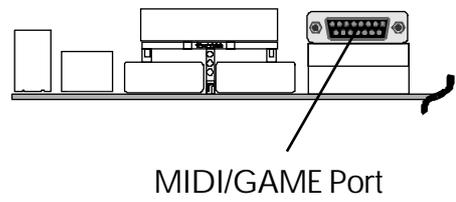
COM2

---

5. Audio Line\_out / Line\_in / Microphone



6. MIDI/Game Port



---

## Step 12

### First Time System Boot Up

To assure the completeness and correctness of your system installation, you may check the above installation steps once again before you boot up your system for the first time.

1. Insert a bootable system floppy disk (DOS 6.2x, Windows 95/98/NT, or others) which contains FDISK and FORMAT utilities into the FDD.
2. Turn on the system power.
3. First, you must use the FDISK utility to create a primary partition of the hard disk. You can also add an extended partition if your primary partition does not use all of the available hard disk space. If you choose to add an extended partition, you will have to create one or more logical partition(s) to occupy all the space available in the extended partition. The FDISK utility will assign a drive letter (i.e., C:, D:, E:,...) to each partition which will be shown in the FDISK program. After FDISK procedure, reboot your system by using the same system floppy disk.

**Note:** DOS 6.2x and Windows 95A can only support up to 2.1GB of HDD partition. If you use the FDISK utility with one of the operating systems mentioned above, you can only divide your HDD into partitions no larger than 2.1GB each.

4. Now, use the FORMAT utility to format all the partitions you've created. When formatting the primary partition (C:), make sure to use the FORMAT C: /S command.

**Note:** FORMAT C: /S can transfer all the necessary system files into the primary partition of your hard disk. Then, your HDD will become a bootable drive.

5. Install all the necessary drivers for CD-ROM, Mouse, etc.
6. Setup the complete operating system according to your OS installation guide.

---

## **Step 13**

### **Install Driver & Software Components**

Please note that all the system utilities and drivers are designed for Win 9x / 2000/ME/NT operating systems only. Make sure your operating system is already installed before running the drivers installation CD-ROM programs.

1. Insert the AK21 bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.
2. Select the Mainboard related program.
3. Install VIA 4-in-1 drivers.
4. Return to the main installation window and select the Audio Device related program.
5. Install VIA Audio driver.
6. Return to the main installation window and exit from the auto-run drivers installation program.

---

## 3.2 Jumper Settings

Several hardware settings are made through the use of jumper caps to connect jumper pins to the mainboard. Pin #1 could be located at any corner of each jumper; you just find a location marked with a white right angle, which stands for pin1#. There are several types of pin 1# shown as below:

3-pin and multi-pin (> 3) jumpers show as follows:

Pin #1 to the left:



Pin #1 on the top:



Pin #1 to the right:



Pin #1 on the bottom:



Jumpers with two pins are shown as  for Close [On] or  for Open [Off]. To Short jumper pins, simply place a plastic jumper cap over the desired pair of pins.

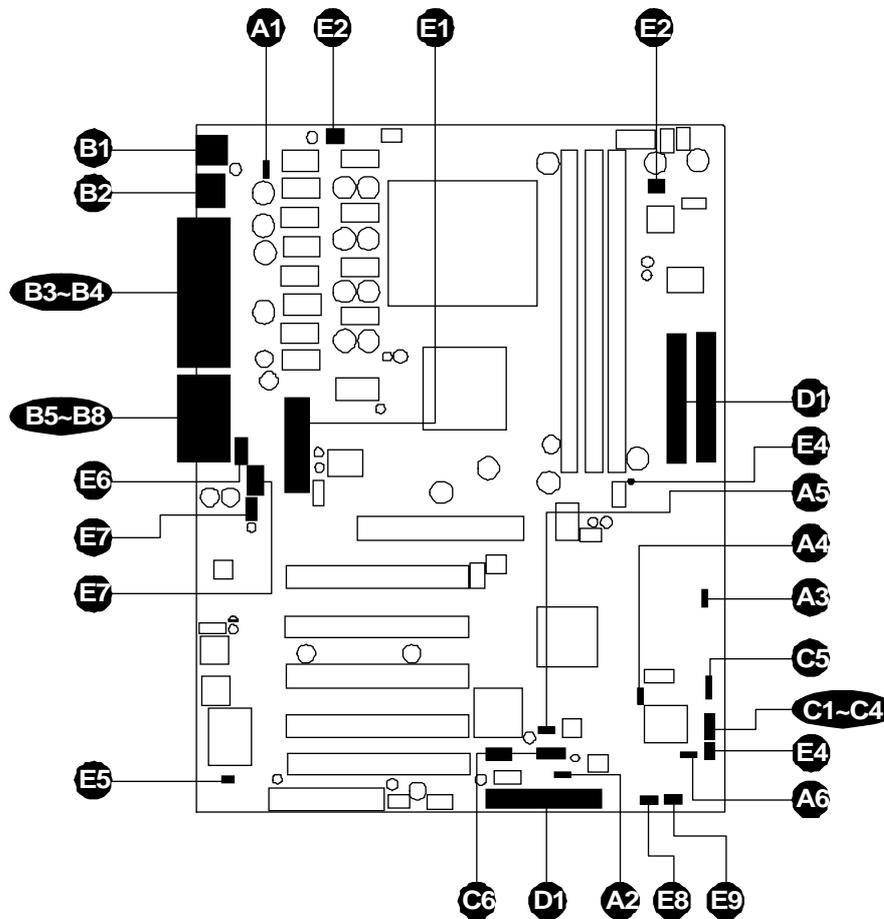
### **Caution!**

1. Do not remove the mainboard from its antistatic protective packaging until you are ready to install it.
2. Carefully hold the mainboard by its edges and avoid touching its components. When putting the mainboard down, place it on the top of its original packaging film and on an even surface, and components side up.
3. Wear an antistatic wrist strap or take other suitable measures to prevent electrostatic discharge (ESD) whenever handling this equipment.

---

## Jumper & Connector Guide

Use the mainboard layout on page 11 to locate CPU socket, memory slots, expansion slots, jumpers and connectors on the mainboard during installation. The following list will help you identify jumpers, slots, and connectors along with their assigned functions:



### **CPU/Memory/Expansion Slots**

- Socket 462 : CPU Socket for AMD Athlon and Duron processors.
- DIMM1/2/3 : Three DIMM Slots for 64, 128, 256, 512 MB, and 1GB of 2.5V DDR SDRAM
- AGP : One AGP (Accelerated Graphics Port) Slot
- CNR : One CNR Expansion Slot for Communication and Network Riser Cards
- PCI : Five 32-bit PCI Expansion Slots

---

### ***Jumpers***

<b>A1</b>	JP1	: Keyboard and USB Power-On Setting
<b>A2</b>	JP6	: USB2/3 Power-On Setting
<b>A3</b>	JP3	: FSB Speed Configuration Setting
<b>A4</b>	JP4	: BIOS Voltage Setting
<b>A5</b>	JP7	: Clear CMOS
<b>A6</b>	JP5	: BIOS Write Protection

### ***Back-Panel Connectors***

<b>B1</b>	KB	: PS/2 Keyboard
<b>B1</b>	MS	: PS/2 Mouse
<b>B2</b>	USB	: 2 × USB (Universal Serial Bus)
<b>B3</b>	COM1	: Serial Port 1 (DB9 male)
<b>B3</b>	COM2	: Serial Port 2 (DB9 male)
<b>B4</b>	PRINTER	: Parallel Port (DB25 female)
<b>B5</b>	LINE-OUT	: Line-Out Port
<b>B6</b>	LINE-IN	: Line-In Port
<b>B7</b>	MICROPHONE	: Microphone
<b>B8</b>	GAME/MIDI	: MIDI/Game Port

### ***Front-Panel Connectors (JP11, USB2 and USB3)***

<b>C1</b>	PWR SW	: ATX Power On/Off Momentary Type Switch
<b>C2</b>	GRN LED	: Green LED (ON when system stays in power saving mode)
<b>C3</b>	HDD LED	: IDE Drive Active LED
<b>C4</b>	RST	: Hardware Reset Switch
<b>C5</b>	SPEAKER	: Housing Internal Speaker
<b>C6</b>	USB2/3	: Extended USB Header (USB Port 3 ~ USB Port 6)

### ***Internal Peripherals Connectors***

<b>D1</b>	FDD	: Floppy Disk Drive Interface
<b>D1</b>	IDE1	: IDE Primary Interface (Dual-channel)
<b>D1</b>	IDE2	: IDE Secondary Interface (Dual-channel)

### ***Other Connectors:***

<b>E1</b>	ATX1	: ATX Power (20-pin header)
<b>E2</b>	CPU FAN1	: CPU Fan Power
<b>E2</b>	CAS FAN1	: Auxiliary case cooling Fan Power

---

<b>E3</b>	LED1	: Green 3VSB LED for SDRAM
<b>E4</b>	SIR1	: IR Connector
<b>E5</b>	J1	: Case Open Connector
<b>E6</b>	AUDIO1	: Front-Panel Microphone and Line_Out Connector
<b>E7</b>	CD2	: Audio Primary CD-In Connector
<b>E7</b>	CD1	: Audio Secondary CD-In Connector
<b>E8</b>	WOL1	: Wake-On-LAN Connector
<b>E9</b>	WOM1	: Wake-On-Modem Connector

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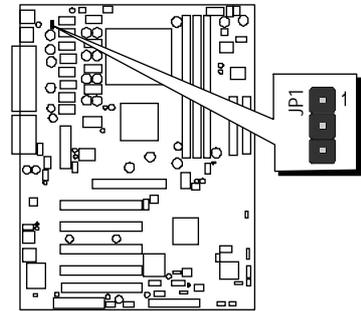
## Jumpers

### A1 Keyboard and USB Power-On Setting (JP1)

AK21 provides one jumper to set Keyboard and USB devices which connect to back-panel to power-on system from ACPI S3 to S5 stage.

Place jumper cap on JP1 pin 2-3 for enabling Keyboard and USB device (USB port 1 and USB port 2) power-on function on back-panel.

-  1 Disabled  
(KB/USB power-on function)
-  1 Enabled (Default)  
(KB/USB power-on function)

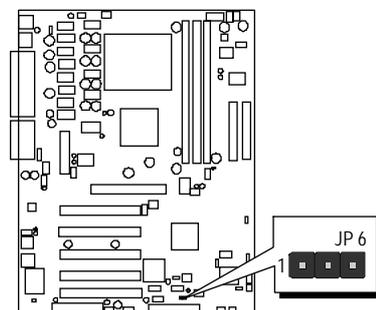


### A2 USB2/3 Power-On Setting (JP6)

AK21 provides one jumper to set USB devices which connect to USB port 3 ~ 6 to power-on system from ACPI S3 to S5 stage.

Place jumper cap on JP6 pin 2-3 for enabling or disabling USB device (USB port 3 ~ USB port 6) power-on function.

-  1 Disabled (Default)  
(USB2/3 power-on function)
-  1 Enabled  
(USB2/3 power-on function)

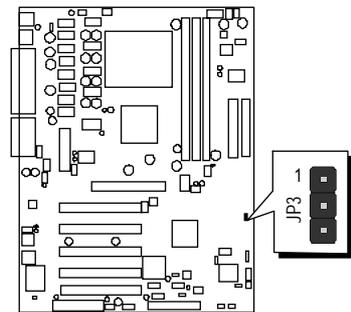


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### **A3 FSB Speed Configuration Setting (JP3)**

AK21 provides jumper JP3 to set front side bus at 100MHz and 133MHz. Insert mini-jumper caps on JP3 pin1-2 to set FSB to 100MHz. Insert mini-jumper caps on JP3 pin2-3 to set FSB to 133MHz.

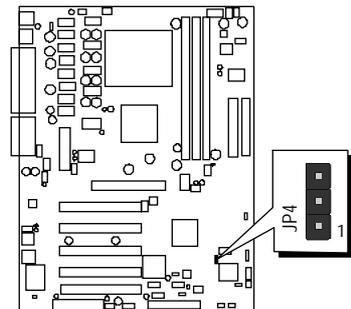
-  1 Set FSB hardware jumper to 100MHz. (Default)
-  1 Set FSB hardware jumper to 133MHz.



### **A4 BIOS Voltage Setting (JP4)**

AK21 provides jumper JP4 to set BIOS Voltage at 3.3V or 5V.

-  1 Set BIOS Voltage to 3.3V.
-  1 Set BIOS Voltage to 5V.



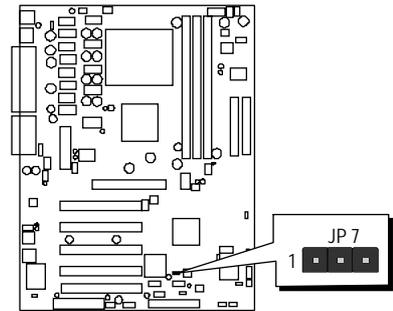
**Note:** This jumper's setup depends on type of Flash EEPROM.  
Please remain factory setup, do not change it by yourself.

---

## A5 Clear CMOS (JP7)

JP7 is used to clear CMOS data. Clearing CMOS will result in the permanent erasing of previous system configuration settings and the restoration of original (factory-default) system settings.

- 1  Pin 1-2 (Default)
- 1  Pin 2-3 (Clear CMOS)



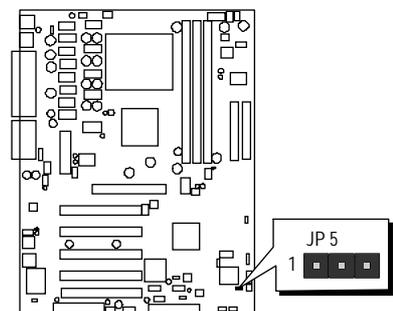
- Step 1.** Turn off the system power (PC-> Off).
- Step 2.** Remove ATX Power cable from ATX Power connector.
- Step 3.** Remove jumper cap from JP7 pins 1-2.
- Step 4.** Place the jumper cap on JP7 pin 2-3 for a few seconds.
- Step 5.** Return the jumper cap to pin 1-2.
- Step 6.** Plug ATX Power cable into ATX Power connector.
- Step 7.** Turn on the system power (PC-> On).

## A6 BIOS Write Protection (JP5)

JP5 is used to protect BIOS from abnormal writing.

You may choose to place jumper cap on pins 2-3 for BIOS write protection; however, please place jumper cap on pins 1-2 if you need to reflash BIOS.

- 1  To enable reflashing the BIOS  
Pin 1-2 (Default)
- 1  BIOS write protection  
Pin 2-3



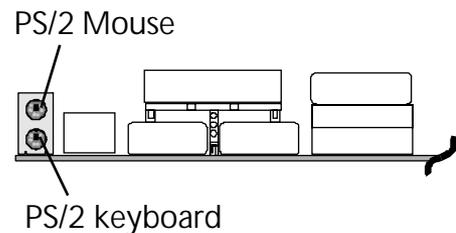
- Reflash the BIOS, follow these steps:**
- Step 1.** Turn off the system power (PC-> Off).
- Step 2.** Make sure of place jumper cap on JP5 pin 1-2.
- Step 3.** Insert a bootable system floppy disk with AK21 BIOS and flashutility and then turn on your system to execute flash utility.

---

## ☛ **Back-Panel Connectors**

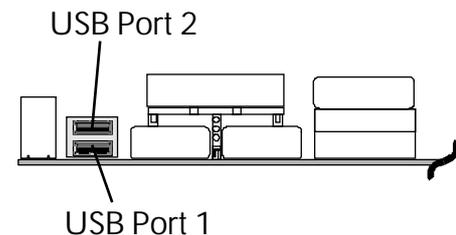
### **B1 PS/2 Keyboard & PS/2 Mouse Connectors**

Two 6-pin female PS/2 keyboard & Mouse connectors are located at the rear panel of mainboard. Depending on the computer housing you use (desktop or tower), the PS/2 Mouse connector is situated at the top of the PS/2 Keyboard connector when the mainboard is laid into a desktop, as opposed to a tower where the PS/2 Mouse connector is located at the right of the PS/2 Keyboard. Plug the PS/2 keyboard and mouse jacks into their corresponding connectors.



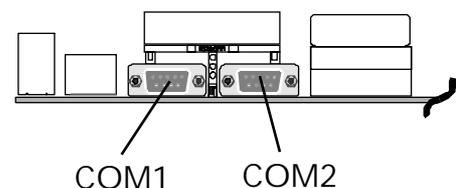
### **B2 USB Port Connectors**

This mainboard offers 2 USB ports on back-panel. Plug each USB device jack into an available USB Port 1/2 connector.



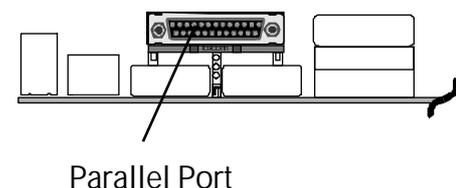
### **B3 COM1/COM2 Connectors**

This mainboard can accommodate two serial device on COM1/COM2. Attach a serial device cable to the DB9 serial port COM1/COM2 at the back-panel of your computer.



### **B4 Parallel Port Connector**

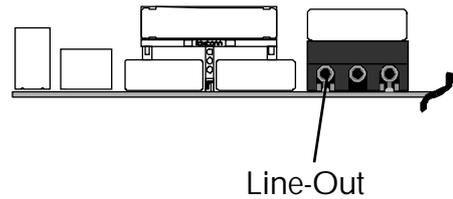
One DB25 female parallel connector is located at the rear panel of the mainboard. Plug the connection cable from your parallel device (printer, scanner, etc.) into this connector.



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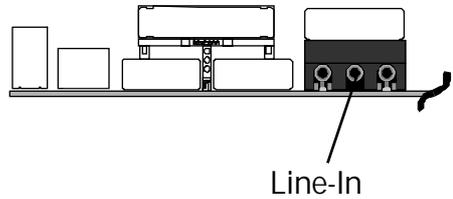
**B5 Line-Out**

Line-Out is a stereo output port through which the combined signal of all internal and external audio sources on the board is output. It can be connected to 1/8-inch TRS stereo headphones or to amplified speakers.



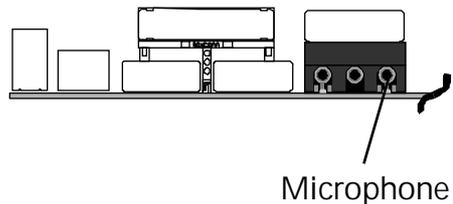
**B6 Line-In**

Line-In is a stereo line-level input port that accepts a 1/8-inch TRS stereo plug. It can be used as a source for digital sound recording, a source to be mixed with the output, or both.



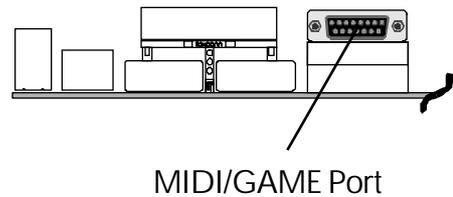
**B7 Microphone**

Microphone is a 1/8-inch jack that provides a mono input. It can use a dynamic mono or stereo microphone with a resistance of not more than 600 Ohms.



**B8 MIDI/GAME Port**

The MIDI/GAME port is a 15-pin female connector. This port can be connected to any IBM PC compatible game with a 15-pin D-sub connector.



**MIDI Instrument Connection**

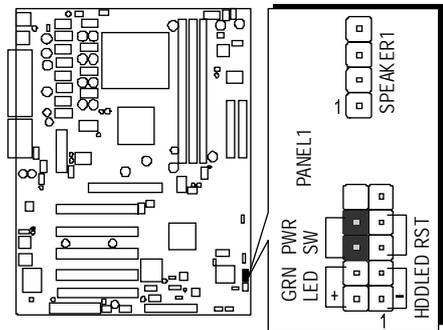
You will need a MIDI adapter to connect a MIDI compatible instrument to the sound card. The MIDI adapter can in turn be connected to the Joystick/MIDE port. You will also need the MIDI sequencing software to run MIDI instruments with your computer.

---

## ☛ Front-Panel Connectors

### ① ATX Power On/Off Switch Connector (PWR SW)

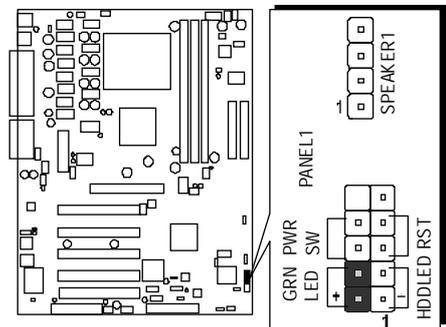
The Power On/Off Switch is a momentary- type switch used for turning on or off the system's ATX power supply. Attach the connector cable from the Power Switch to the 2-pin PWR SW header on the mainboard.



**Note :** Please note the Speaker and all the LED connectors are directional. If your chassis's LED does not light up during running, please simply change to the opposite direction.

### ② Green LED Connector (GRN LED)

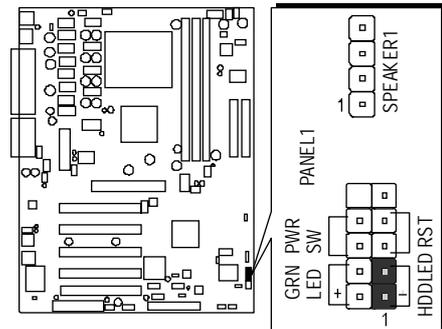
The Green LED (GRN LED) indicates that the system is currently in one of the power saving mode (Doze/Standby/Suspend). When the system resumes to normal operation mode, the Green LED will go off. Attach a 2-pin Green LED cable to GRN LED header.



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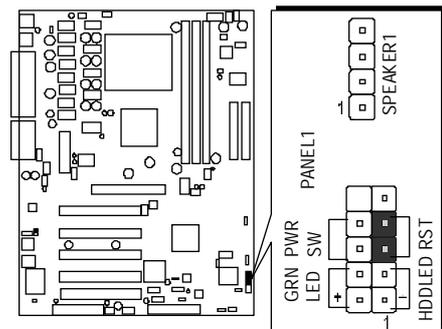
### ③ HDD LED Connector (HDD LED)

Attach the connector cable from the IDE device LED to the 2-pin HDD LED header. The HDD LED lights up whenever an IDE device is active.



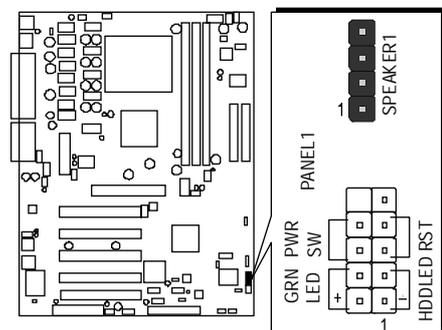
### ④ Hardware Reset Connector (RST)

Attach the 2-pin hardware reset switch cable to the RST header. Pressing the reset switch causes the system to restart.



### ⑤ Speaker Connector (SPEAKER1)

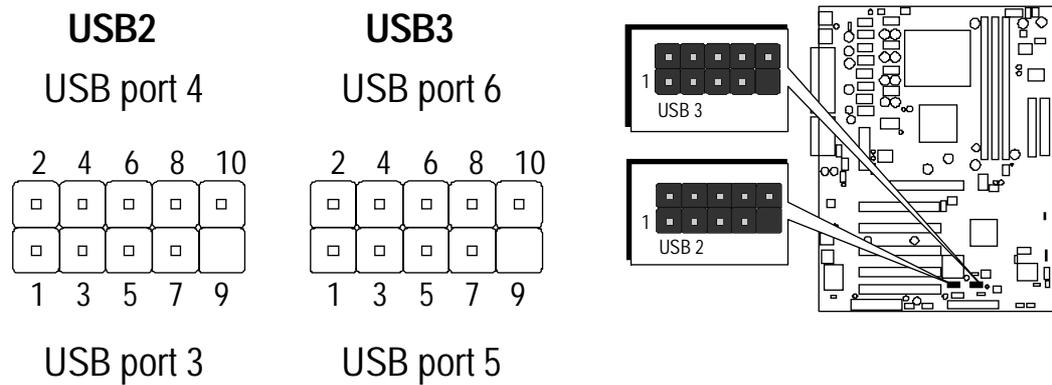
Attach the PC speaker cable from the case to the 4-pin speaker connector (SPEAKER1).



---

## Ⓒ Extended USB Header (USB2/USB3)

The headers are used to connect the cable attached to USB connectors which are mounted on front-panel or back-panel. But the USB cable is optional at the time of purchase.



### Pins Assignment:

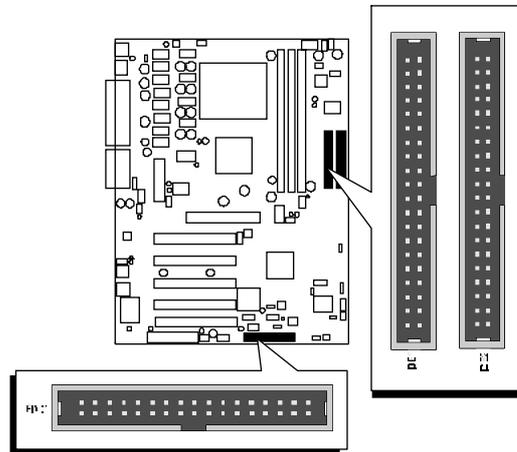
1 = VREG_FP_USBPWR0	3 = USB_FP_P0-
5 = USB_FP_P0+	7 = GROUND
9 = KEY	
2 = VREG_FP_USBPWR0	4 = USB_FP_P1-
6 = USB_FP_P1+	8 = GROUND
10 = USB_FP_OC0	

---

## ☛ Internal Peripherals Connectors

### ④ Enhanced IDE Ports and Floppy Connector

The AK21 mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing support to up to four IDE devices, such as CD-ROM and Hard Disk Drives (H.D.D.). This mainboard also includes one 34-pin floppy disk controller (FDD1) to accommodate the Floppy Disk Drive (F.D.D.). Moreover, this mainboard comes with one 80pin ATA100/66/33 ribbon cable to connect to IDE H.D.D. and one 34-pin ribbon cable for F.D.D. connection.



**Note:** Please connect system H.D.D. to IDE 1

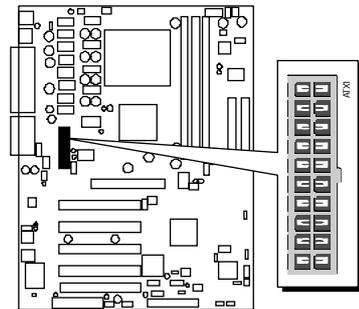
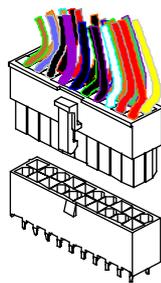
**Important:** Ribbon cables are directional, therefore, make sure to always connect with the red cable stripe on the same side as pin #1 of the IDE1/IDE2 or FDD1 connector on the mainboard.

---

## Other Connectors

### E1 ATX Power Supply Connector (ATX1)

Locate the 20-pin male header ATX power connector (ATX1) on your mainboard. Plug the power cable from the ATX power supply unit directly into (ATX1) ATX power supply connector.



**Note 1:** The ATX power connector is directional and will not go in unless the guides match perfectly making sure that pin#1 is properly positioned.

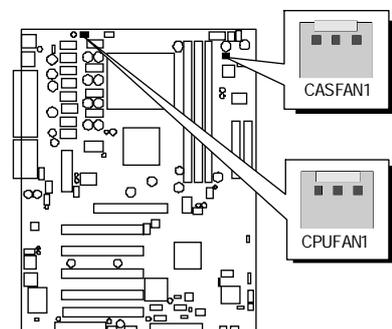
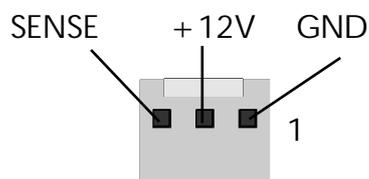
**Note 2:** Make sure the latch of the ATX power connector clicks into place to ensure a solid attachment.

**Note 3:** Your ATX power supply must be supplied to ACPI +5V standby power and at least 720mA compatible.

**Note 4:** Make sure your power supply have enough power for higher speed processor installed.

### E2 Cooling Fan Connectors for CPU (CPUFAN1) and Case (CASFAN1) Fan

The mainboard provides two onboard 12V cooling fan power connectors to support CPU (CPUFAN1) and Case (CASFAN1) cooling fans.

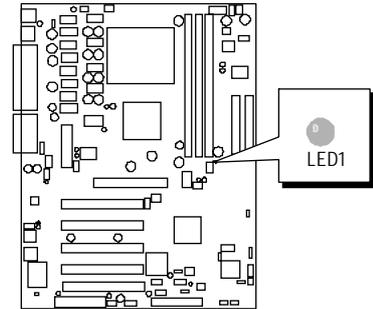


**Note:** Both cable wiring and type of plug may vary depending on the fan maker. Keep in mind that the red wire should always be connected to the +12V header, and the black wire, to the ground (GND) header.

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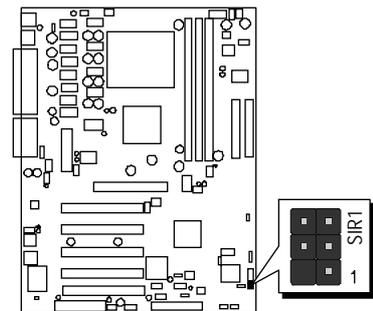
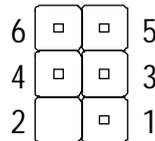
### E3 Green 3VSB LED for SDRAM (LED1)

The green LED turns on if your power cord is still plugged in, which means 3V standby voltage is supplied to mainboard. You can not install or uninstall memory modules while LED1 is on.



### E4 SIR Connector (SIR1)

If you have an Infrared device, this mainboard can implement SIR (Standard IR) transfer function. To enable the IR transfer function, follow these steps:



Pins Assignment:

1 = Not assigned

2 = (No Pin)

3 = +5V

4 = GND

5 = IRTX

6 = IRRX

**Note:** Before connect your IR device, please be sure each IR on board pin allocation is matchable with the pin of the IR device. Otherwise, incorrect IR connection may do damage to your IR device.

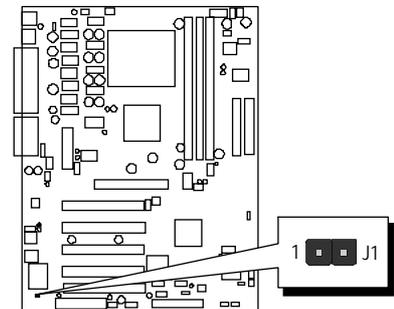
**Step 1.** Attach the 6-pin infrared device cable to SIR1 connector.  
(Refer to the above diagram for IR pin assignment.)

**Step 2.** Configure the Infrared transfer mode in field "UART Mode Select" of "Super IO Device" of "Integrated Peripheral" sub-menu in BIOS setup program. This mainboard supports IrDA, ASKIR, Normal, or SCR transfer modes.

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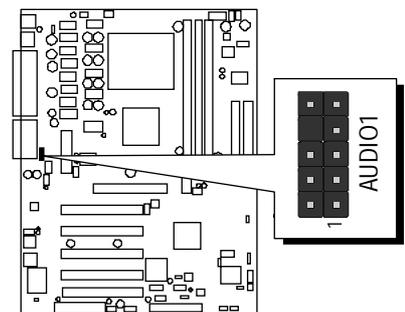
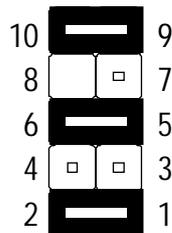
## E5 Case Open (J1)

The Case open prevents unauthorized access to your computer by enabling an alarm that alerts you when your computer case has been opened.



## E6 Front-Panel Microphone and Line\_out Header (AUDIO1)

This header allows users to install auxiliary front-oriented microphone and line-out ports for easier access. Either the Mic and Line\_out connector on back-panel or AUDIO1 header are available at the same time. If you would like to use this AUDIO1 header on front-panel, please remove all jumpers from AUDIO1 and install your special Extra Mic / Line\_out cable instead.



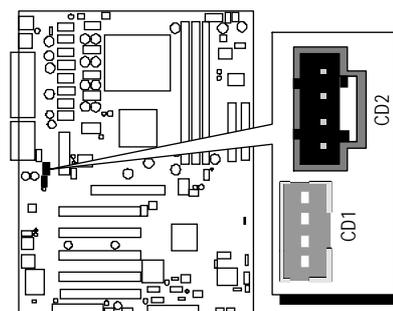
Pins Assignment:

1= AUD_MIC	2= AUD_GND
3= AUD_MIC_BIAS	4= AUD_VCC
5= AUD_FPOUT_R	6= AUD_RET_R
7= HP_ON	8= KEY
9= AUD_FPOUT_L	10= AUD_RET_L

---

### **E7 Audio Primary/Secondary CD-In header (CD2 and CD1)**

Use the audio cable provided with CD-ROM/DVD drive to join audio connector on rear edge of CD-ROM/DVD drive with one of the two audio-in connectors CD1 and CD2 on the mainboard.



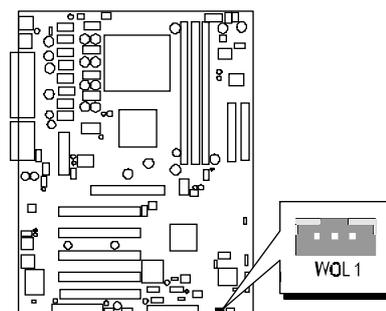
### **E8 Wake-On-LAN Connector (WOL1)**

If a lan card installed and the lan card supports Wake-on-Lan function. Please connect the cable into WOL1 header on mainboard. While your system is in power-saving mode, any lan signal resumes system automatically. And you also need to enable the item through "Power Management" of BIOS setup program.

Pins Assignment:

1 = 5VSB      2 = GND

3 = SENSE



---

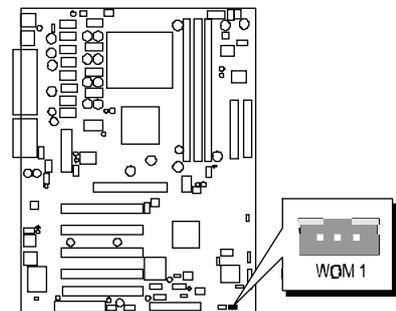
## **ⓔ Wake-On-Modem Connector (WOM1)**

If you have a PCI modem card installed that supports wake-on-modem function, please connect the cable into the WOM1 header on the mainboard. When your system is in power-saving mode, any modem signal resumes system automatically. And you also need to enable the item through "Power Management / IRQ/Event Activity Detect" of BIOS setup program.

Pins Assignment:

1 = 5VSB      2 = GND

3 = SENSE



---

### 3.3 System Memory Configuration

The AK21 mainboard has three 184-pin DIMM slots that allow you to install from 64MB up to 3GB of system memory.

Each 184-pin DIMM (Dual In-line Memory Module) Slot can accommodate 64MB, 128MB, 256MB, 512MB, and 1GB of PC1600/PC2100 compliant 2.5V single or double side 64-bit wide data path DDR SDRAM modules.

#### Install Memory:

Install memory in any or all of the slots. The combination shown as follows.

#### *DDR SDRAM*

DIMM Slot	Memory Modules	Module Quantity
DIM 1	64MB, 128MB, 256MB, 512MB, and 1GB 184-pin 2.5V DDR SDRAM DIMM	x 1
DIM 2	64MB, 128MB, 256MB, 512MB, and 1GB 184-pin 2.5V DDR SDRAM DIMM	x 1
DIM 3	64MB, 128MB, 256MB, 512MB, and 1GB 184-pin 2.5V DDR SDRAM DIMM	x 1

**Note:** You do not need to set any jumper to configure memory since the BIOS utility can detect the system memory automatically. You can check the total system memory value in the BIOS Standard CMOS Setup menu.

#### Upgrade Memory:

You can easily upgrade the system memory by inserting additional SDRAM modules in available DIMM slots. The total system memory is calculated by simply adding up the memory in all DIMM slots. After upgrade, the new system memory value will automatically be computed and displayed in the field " Standard CMOS Setup" of BIOS setup program.

# 4 SOFTWARE UTILITY

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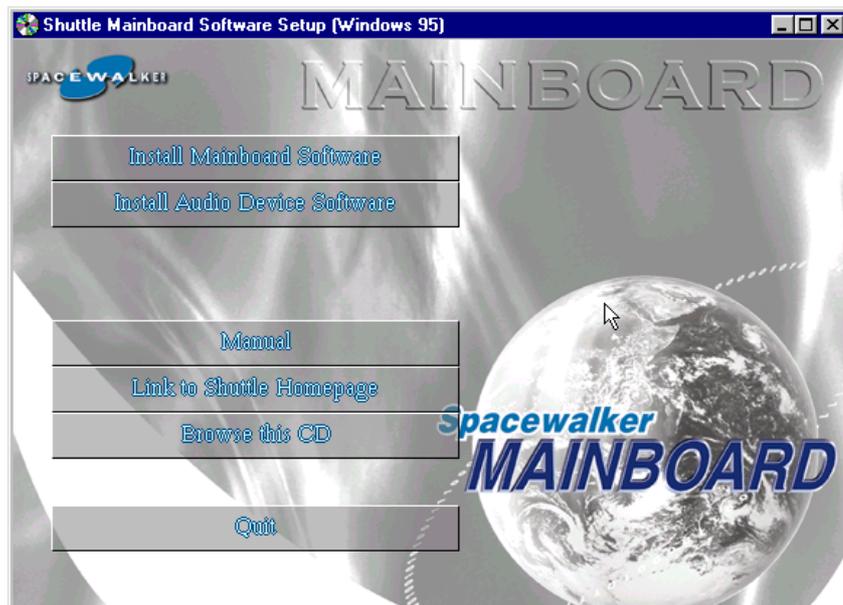
## 4.1 Mainboard CD Overview

**Note:** The CD contents attached in the AK21 mainboard are subject to change without notice.

To start your mainboard CD disc, just insert it into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click or run D:\Autorun.exe (assuming that your CD-ROM drive is drive D:)

### Navigation Bar Description:

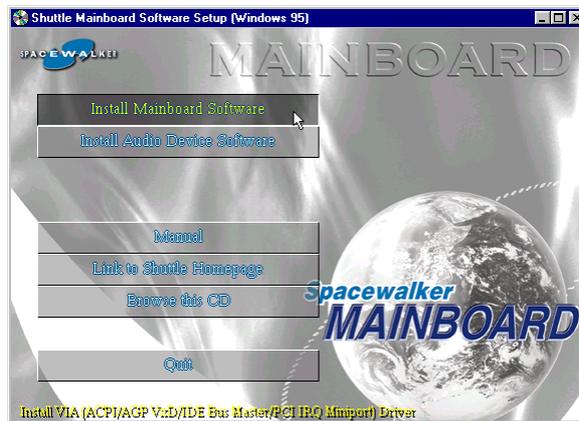
- ☞ **Install Mainboard Software** - Installing 4 in 1 drivers.
- ☞ **Install Audio Device Software** - Installing Audio driver.
- ☞ **Manual** - AK21 series mainboard user's manual in PDF format.
- ☞ **Link to Shuttle Homepage** - Link to shuttle website homepage.
- ☞ **Browse this CD** - Allows you to see the contents of this CD.
- ☞ **Quit** - Close this CD.



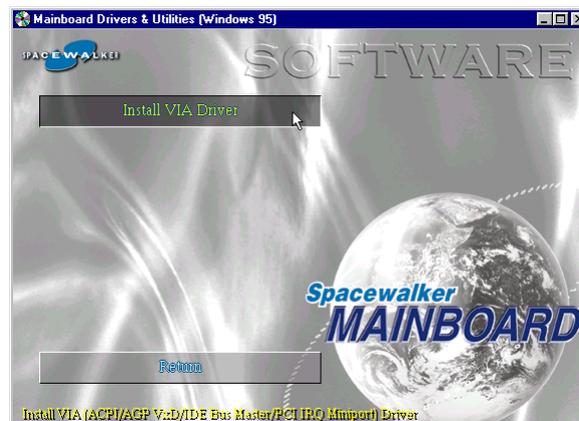
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## 4.2 Install VIA 4 in 1 Driver

Insert the attached CD into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen. Select the item using your pointing device (e.g. mouse) on the “**Install Mainboard Software**” bar.



Then **Mainboard Drivers & Utilities** windows will appear on your screen. Click on the “**Install VIA Driver**” bar to install VIA 4 in 1 driver.



Once you make your selection, a Setup window will automatically run the installation.

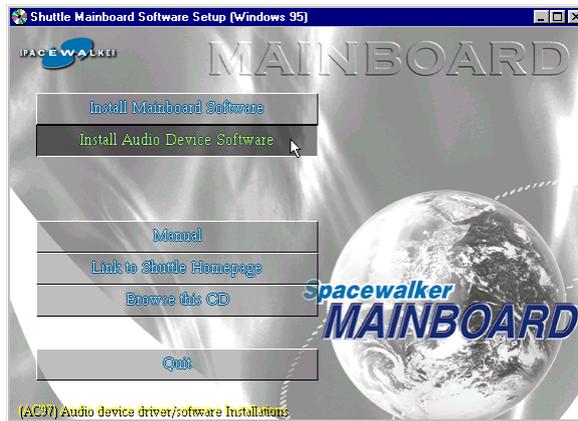
When the files are done copying, make sure you **reboot** the system to insure that the files are installed correctly.

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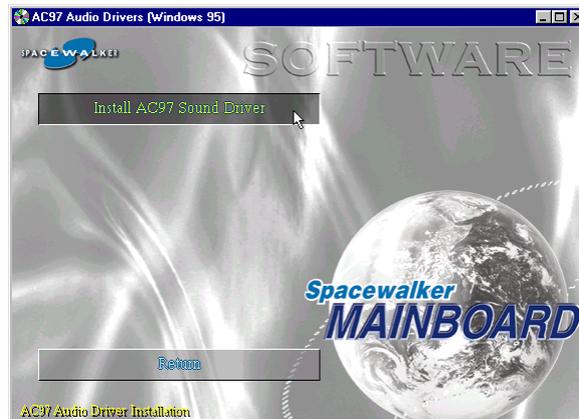
### 4.3 Install Audio Device Software

Insert the attached CD into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen.

Select the item using your pointing device (e.g. mouse) on the “**Install Audio Device Software**” bar.



Then **AC97 Audio Drivers** windows will appear on your screen. Click on the “**Install AC97 Sound Driver**” bar to install Audio driver.



Once you make your selection, a Setup window will automatically run the installation.

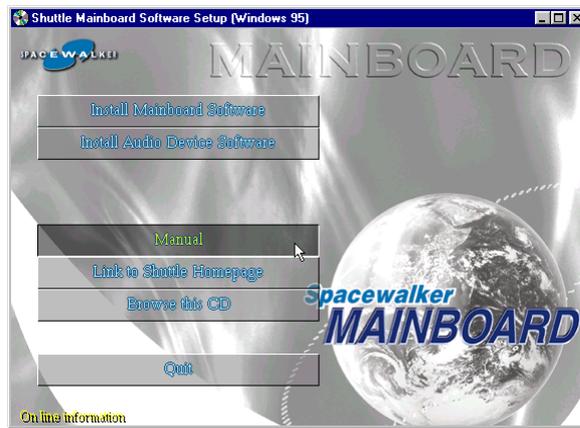
When the files are done copying, make sure you **reboot** the system to insure that the files are installed correctly.

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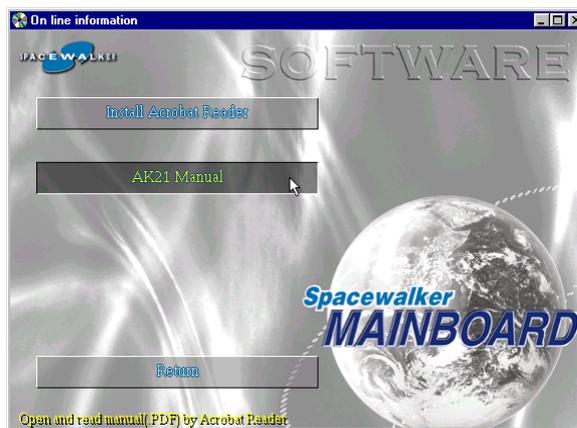
## 4.4 View the User's Manual

Insert the attached CD into your CD-ROM drive, and the CD AutoRun screen should appear. If the AutoRun screen does not appear, double click on Autorun icon in **My Computer** to bring up **Shuttle Mainboard Software Setup** screen.

Select the item using your pointing device (e.g. mouse) on the **"Manual"** bar.



Then **Online Information** windows will appear on the screen. Click on the **"Install Acrobat Reader"** bar if you need to install acrobe reader.



Then click on **"AK21 Manual"** bar to view AK21 user's manual.

# 5 BIOS SETUP

---

AK21 BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This information is stored in battery-backed RAM so that it retains the Setup information even if the system power is turned off.

The system BIOS is managing and executing a variety of hardware related functions in the system, including:

System date and time

Hardware execution sequence

Power management functions

Allocation of system resources

## 5.1 Enter the BIOS

To enter the BIOS (Basic Input / Output System) utility, follow these steps:

- Step 1.** Power on the computer, and the system will perform its POST (Power-On Self Test) routine checks.
- Step 2.** Press < Del > key immediately, or at the following message:  
"Press DEL to enter SETUP"  
,or simultaneously press < Ctrl > , < Alt > , < Esc > keys

**Note 1.** If you miss trains of words mentioned in step2 (the message disappears before you can respond) and you still wish to enter BIOS Setup, restart the system and try again by turning the computer OFF and ON again or by pressing the < RESET > switch located at the computer's front-panel. You may also reboot by simultaneously pressing the < Ctrl > , < Alt > , < Del > keys.

**Note 2.** If you do not press the keys in time and system does not boot, the screen will prompt an error message, and you will be given the following options:

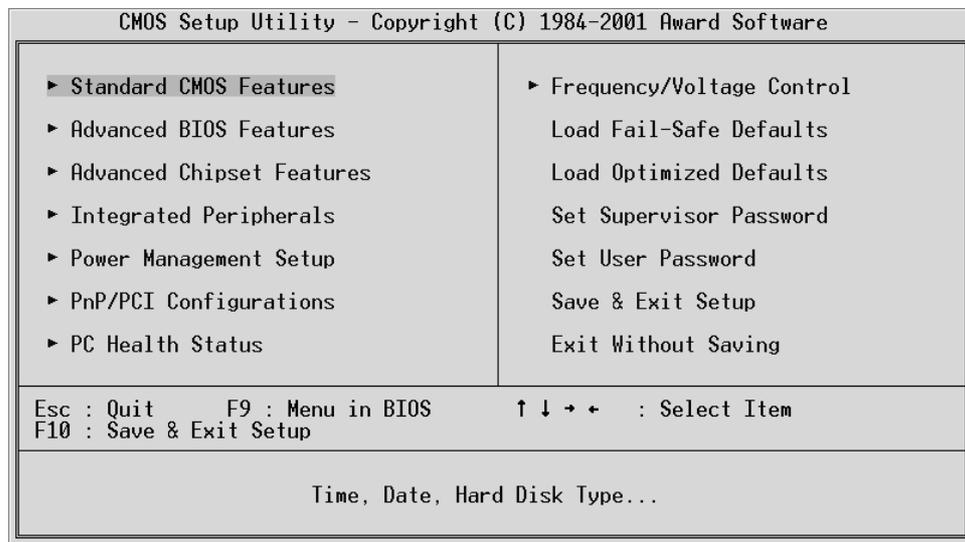
**"Press F1 to Continue, DEL to Enter Setup"**

- Step 3.** As you enter the BIOS program, the CMOS Setup Utility will prompt you the Main Menu, as shown in the next section.

---

## 5.2 The Main Menu

Once you enter the AwardBIOS(tm) CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press < Enter > to accept and enter the sub-menu.



Note that a brief description of each highlighted selection appears at the bottom of the screen.

### **Setup Items**

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

#### **Standard CMOS Features**

Use this menu for basic system configuration.

#### **Advanced BIOS Features**

Use this menu to set the Advanced Features available on your system.

#### **Advanced Chipset Features**

Use this menu to change the values in the chipset registers and optimize your system's performance.

---

### ***Integrated Peripherals***

Use this menu to specify your settings for integrated peripherals.

### ***Power Management Setup***

Use this menu to specify your settings for power management.

### ***PnP / PCI Configurations***

This entry appears if your system supports PnP / PCI.

### ***PC Health Status***

This entry shows the current system temperature, Voltage, and FAN speed.

### ***Frequency/Voltage Control***

Use this menu to specify your settings for frequency/voltage control.

### ***Load Fail-Safe Defaults***

Use this menu to load the BIOS default values for the minimal/stable performance of your system to operate.

### ***Load Optimized Defaults***

Use this menu to load the BIOS default values that are factory-set for optimal performance system operation. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet users' needs.

### ***Supervisor / User Password***

Use this menu to change, set, or disable supervisor/user password. It allows you to limit access to the system and Setup, or only to Setup.

### ***Save & Exit Setup***

Save CMOS value changes in CMOS and exit from setup.

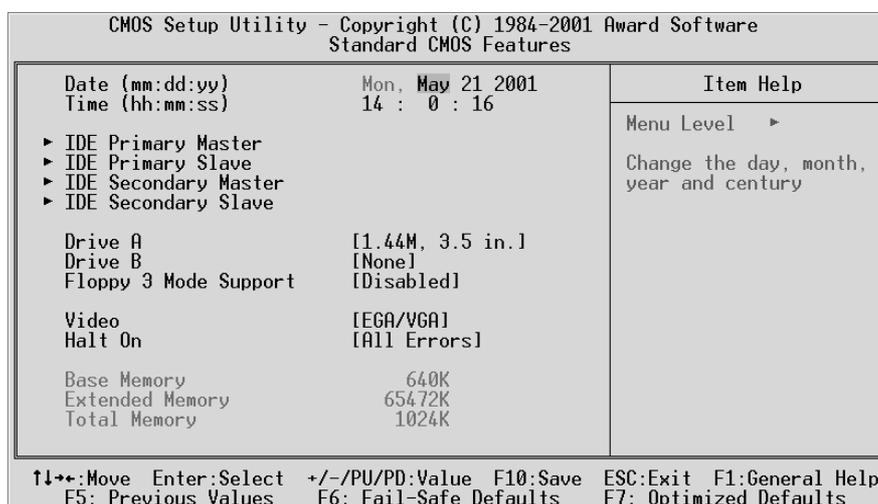
### ***Exit Without Saving***

Abandon all CMOS value changes and exit from setup.

---

## ☛ **Standard CMOS Features**

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the < PgUp > or < PgDn > keys to select the value you want in each item.



### **Date**

< Month > < DD > < YYYY >

Set the system date. Note that the 'Day' automatically changes when you set the date.

### **Time**

< HH : MM : SS >

The time is converted based on the 24-hour military-time clock. For example, 5 p.m. is 17:00:00.

### **IDE Primary Master**

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **IDE Primary Slave**

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **IDE Secondary Master**

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

---

### ***IDE Secondary Slave***

Options are in its sub menu.

Press < Enter > to enter the sub-menu of detailed options.

### ***Drive A/Drive B***

Select the type of floppy disk drive installed in your system.

- The choice: None, 360K, 5.25 in, 1.2M, 5.25 in, 720K, 3.5 in, 1.44M, 3.5 in, or 2.88M, 3.5 in

### ***Floppy 3 Mode Support***

Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2MB. Floppy 3 mode is sometimes used in Japan.

- The choice: Disabled, Drive A, Drive B, or Both.

### ***Video***

This item defines the video mode of the system. This mainboard has a built-in VGA graphics system; you must leave this item at the default value.

- The choice: EGA/VGA, CGA 40, CGA 80, or MONO

### ***Halt On***

Select the situation in which you want the BIOS to stop the POST process and notify you.

- The choice: All Errors, No Errors, All, But Keyboard, All, But Diskette, or All, But Disk/Key

### ***Base Memory***

Displays the amount of conventional memory detected during boot up.

- The choice: N/A

### ***Extended Memory***

Displays the amount of extended memory detected during boot up.

- The choice: N/A

### ***Total Memory***

Displays the total memory available in the system.

- The choice: N/A

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\*\*\*\*\*

## **IDE Adapters**

The IDE adapters control the hard disk drive. Use a separate sub-menu to configure each hard disk drive.

### **IDE HDD Auto-Detection**

Press < Enter > to auto-detect HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

- Press Enter

### **IDE Primary Master**

Selecting 'manual' lets you set the remaining fields on this screen and select the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc., Note: PRECOMP=65535 means NONE!

- The choice: None, Auto, or Manual.

### **Access Mode**

Choose the access mode for this hard disk.

- The choice: Normal, LBA, Large, or Auto.

### **Capacity**

Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.

- Auto-Display your disk drive size.

*The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'*

### **Cylinder**

Set the number of cylinders for this hard disk.

- Min = 0, Max = 65535

### **Head**

Set the number of read/write heads.

- Min = 0, Max = 255

---

**Precomp**

Warning: Setting a value of 65535 means no hard disk.

➤ Min = 0, Max = 65535

**Landing zone**

Set the Landing zone size.

➤ Min = 0, Max = 65535

**Sector**

Number of sector per track.

➤ Min = 0, Max = 255

\*\*\*\*\*

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## ➤ **Advanced BIOS Features**

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing, and security.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software	
Advanced BIOS Features	
Anti-Virus Protection	[Disabled]
Y2K Monitor	[Disabled]
CPU Internal Cache	[Enabled]
External Cache	[Enabled]
CPU L2 Cache ECC Checking	[Enabled]
Processor Number Feature	[Enabled]
Quick Power On Self Test	[Enabled]
First Boot Device	[Floppy]
Second Boot Device	[HDD-0]
Third Boot Device	[LS120]
Boot Other Device	[Enabled]
Swap Floppy Drive	[Disabled]
Boot Up Floppy Seek	[Enabled]
Boot Up NumLock Status	[On]
Gate A20 Option	[Fast]
Typematic Rate Setting	[Enabled]
Typematic Rate (Chars/Sec)	[6]
Typematic Delay (Msec)	[250]
Security Option	[Setup]
OS Select For DRAM > 64MB	[Non-OS2]
HDD S.M.A.R.T. Capability	[Disabled]
Report No FDD For WIN 95	[Yes]

Item Help
Menu Level ▶
Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area , BIOS will show a warning message on screen and alarm beep

↑↓←→:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help  
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

### **Anti-Virus Protection**

When enabled, this item provides protection against viruses that try to write to the boot sector and partition table of your hard disk drive. You need to disable this item when installing an operating system. We recommend that you enable anti-virus protection as soon as you have installed an operating system.

- The choice: Enabled or Disabled.

### **Y2K Monitor**

Enable this item to allow the system to monitor for errors generated by the year 2000 bug.

- The choice: Enabled or Disabled.

### **CPU Internal Cache**

All processors that can be installed in this mainboard use internal level 1 (L1) cache memory to improve performance. Leave this item at the default value for better performance.

- The choice: Enabled or Disabled.

---

### ***External Cache***

Most processors that can be installed in this system use external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

- The choice: Enabled or Disabled.

### ***CPU L2 Cache ECC Checking***

This item enables or disables ECC (Error Correction Code) error checking on the CPU cache memory. We recommend that you leave this item at the default value.

- The choice: Enabled or Disabled.

### ***Processor Number Feature***

Some new processors are installed with a unique processor number. This number may be used for verification in Internet transactions and e-commerce. If you prefer not to use or distribute the unique processor number, disable this item to suppress the processor number.

- The choice: Enabled or Disabled.

### ***Quick Power On Self Test***

This item speeds up Power-On Self Test (POST) after you power on the computer. If it is set to enabled, BIOS will shorten or skip some check items during POST.

- The choice: Enabled, or Disabled.

### ***First/Second/Third Boot Device***

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

- The Choice: Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB- HDD, LAN, or Disabled.

### ***Boot Other Device***

Select Your Boot Device Priority.

- The choice: Enabled or Disabled.

### ***Swap Floppy Drive***

If the system has two floppy drives, you can swap the logical drive name assignment.

- The choice: Enabled or Disabled.

---

### ***Boot Up Floppy Seek***

Seeks disk drives during boot-up. Disabling speed boots up.

- The choice: Enabled or Disabled.

### ***Boot Up NumLock Status***

This item defines if the keyboard Num Lock key is active when your system is started.

- The choice: Off or On.

### ***Gate A20 Option***

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used for above 1MByte of address memory. Initially, the gate A20 was handled via a pin on the keyboard. Today, while a keyboard still provides this support, it is more common and much faster in setting to Fast for the system chipset to provide support for gate A20.

- The choice: Normal, or Fast.

### ***Typematic Rate Setting***

Keystrokes repeat at a rate determined by the keyboard controller. When this controller enabled, the typematic rate and typematic delay can be selected.

- The choice: Enabled or Disabled.

### ***Typematic Rate (Chars/Sec)***

This item sets how many times the keystroke will be repeated in a second when you hold the key down.

- The choice: 6, 8, 10, 12, 15, 20, 24, or 30.

### ***Typematic Delay (Msec)***

Sets the delay time after the key is held down before it begins to repeat the keystroke.

- The choice: 250, 500, 750, or 1000.

### ***Security Option***

Select whether the password is required every time the system boots or only when you enter setup.

**System** The system will not boot and access to Setup will be denied if the correct password is not entered promptly.

**Setup** The system will boot, but access to Setup will be denied if the correct password is not entered promptly.

- The choice: System or Setup.

---

Note: To disabled security, select PASSWORD SETTING at Main Menu, and then you will be asked to enter password. Do not type anything and just press < Enter > ; it will disable security. Once the security is disabled, the system will boot, and you can enter Setup freely.

***OS Select For DRAM > 64MB***

Selects the operating system that is running with greater than 64MB of RAM in the system.

- The choice: Non-OS2 or OS2.

***HDD S.M.A.R.T Capability***

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. software resides on both the disk drive and the host computer.

The disk drive software monitors the internal performance of the motors, media, heads, and electronics of the drive. The host software monitors the overall reliability status of the drive. If a device failure is predicted, the host software, through the Client WORKS S.M.A.R.T applet, warns the user of the impending condition and advises appropriate action to protect the data.

- The choice: Enabled or Disabled.

***Report No FDD For WIN95***

If you are running a system with no floppy drive and using Windows 95, select Yes for this item to ensure compatibility with the Windows 95 logo certification. Otherwise, select No.

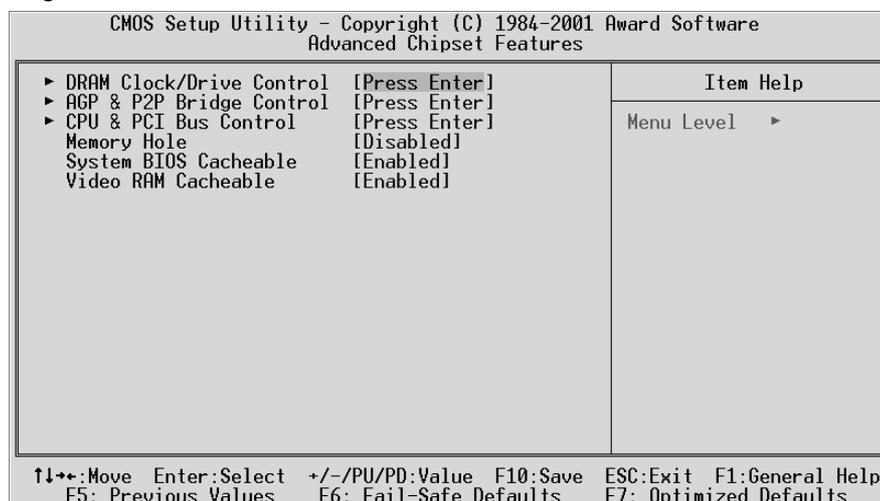
- The choice: Yes, or No.

---

## ➤ **Advanced Chipset Features**

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It states that these items should never need to be altered.

The default settings have been chosen because they provide the best operating conditions for your system. If you discovered that data was being lost while using your system, you might consider making any changes.



### **DRAM Clock/Drive Control**

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **Current FSB Frequency**

This item displays the frontside bus (FSB) frequency. This is a display-only item. You cannot make changes to this field.

### **Current DRAM Frequency**

This item displays the memory (DRAM) frequency. This is a display-only item. You cannot make changes to this field.

### **DRAM Clock**

This item enables you to manually set the DRAM Clock. We recommend that you leave this item at the default value.

➤ The Choice: 100MHz, 133MHz, or By SPD.

---

### **DRAM Timing**

Set this to the default value to enable the system to automatically set the SDRAM timing by SPD (Serial Presence Detect). SPD is an EEPROM chip on the DIMM module that stores information about the memory chips it contains, including size, speed, voltage, row and column addresses, and manufacturer. If you disable this item, you can use the following three items to manually set the timing parameters for the system memory

- The Choice: Manual or By SPD.

### **SDRAM Cycle Length**

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. We recommend that you leave this item at the default value.

- The Choice: 3, 2.5, or 2.

### **Bank Interleave**

The interleave number of internal banks, can be set to 2 way, 4 way interleave or disabled. For VCM and 16Mb type dram chips, the bank interleave is fixed at 2 way interleave.

When the dram timing is selected by SPD, it will be set by the value on SPD of the RAM module(SDR).

- The Choice: Disabled, 2 Bank, or 4 Bank.

### **DRAM Command Rate**

This item enables you to specify the waiting time for the CPU to issue the next command after issuing the command to the DDR memory. We recommend that you leave this item at the default value.

- The Choice: 2T Command or 1T Command.

### ***AGP & P2P Bridge Control***

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **AGP Aperture Size (MB)**

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

- The Choice: 4M, 8M, 16M, 32M, 64M, 128M, or 256M.

---

### **AGP Mode**

This item allows you to select the AGP Mode.

- The Choice: 1x, 2x, or 4x.

### **AGP Driving Control**

This item enables the system to automatically select its output buffer drive strength or make it manually selectable by an end user.

- The Choice: Auto or Manual.

### **AGP Driving Value**

This item enables an end user to manually select the AGP output buffer drive strength.

- Key in a HEX number: Min=0000, Max=00FF.

### **AGP Fast Write**

This item allows user to enable/disable AGP Fast Write function.

- The Choice: Enabled or Disabled.

### **AGP Master 1 WS Write**

When this item enabled, writing to the AGP(Accelerated Graphics Port) is executed with one wait state.

- The Choice: Enabled or Disabled.

### **AGP Master 1 WS Read**

When this item enabled, reading from the AGP (Accelerated Graphics Port) is executed with one wait state.

- The Choice: Enabled or Disabled.

### ***CPU & PCI Bus Control***

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **PCI1Master 0 WS Write**

When this item enabled, writing to the PCI bus is executed with zero wait state.

- The Choice: Enabled or Disabled.

### **PCI2 Master 0 WS Write**

When this item enabled, writing to the AGP bus is executed with zero wait state.

- The Choice: Enabled or Disabled.

---

### **PCI1 Post Write**

This Item enable/disable AGP post write function, which means when cpu accessing the AGP data, the chipset can queue the instruction when the AGP bus is busy, then write the data when AGP bus is available .

- The Choice: Enabled or Disabled.

### **PCI2 Post Write**

This Item enable/disable PCI post write function, which means when cpu accessing the PCI data, the chipset can queue the instruction when the PCI bus is busy, then write the data when AGP bus is available.

- The Choice: Enabled or Disabled.

### **PCI Delay Transaction**

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

- The Choice: Enabled or Disabled.

### ***Memory Hole***

In order to improve performance, some space in memory can be reserved for ISA cards.

- The Choice: Disabled or 15M-16M.

### ***System BIOS Cacheable***

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program is written to this memory area, a system error may result.

- The choice: Enabled or Disabled.

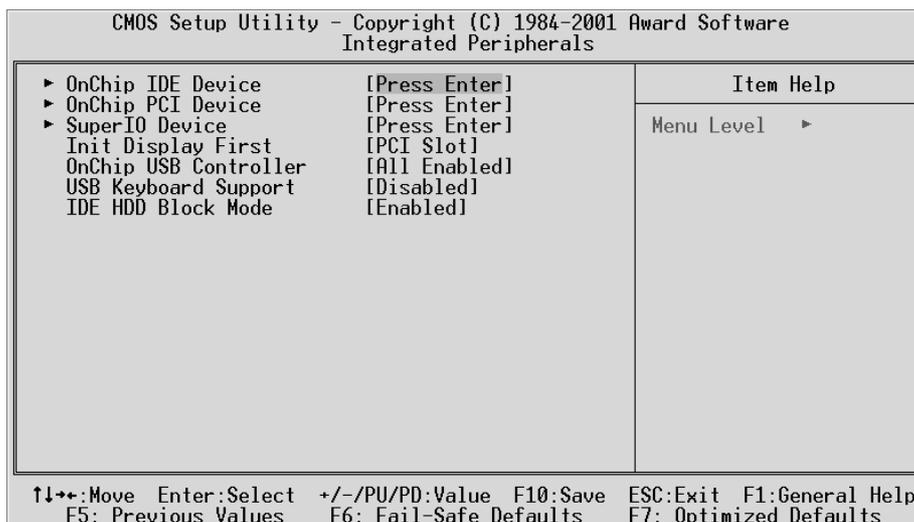
### ***Video RAM Cacheable***

Selecting Enabled allows caching of the video RAM , resulting in better system performance. However, if any program is written to this memory area, a system error may result.

- The Choice: Enabled or Disabled.

---

## ➤ **Integrated Peripherals**



### **OnChip IDE Device**

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

#### **OnChip IDE Channel0**

The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the primary IDE interface; select Disabled to deactivate this interface

➤ The choice: Enabled or Disabled.

#### **OnChip IDE Channel1**

The chipset contains a PCI IDE interface with support to two IDE channels. Select Enabled to activate the secondary IDE interface; select Disabled to deactivate this interface

➤ The choice: Enabled or Disabled.

#### **IDE Prefetch Mode**

The onboard IDE drive interfaces support IDE prefetching for faster drive access. If you install a primary and/or secondary add-on IDE interface, set this field to Disabled if the interface does not support prefetching.

➤ The choice: Enabled or Disabled.

---

### **Primary/Secondary Master/Slave PIO**

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

- The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, or Mode 4.

### **Primary/Secondary Master/Slave UDMA**

Ultra DMA/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If both of your hard drive and your system software support Ultra DMA/100, select Auto to enable BIOS support.

- The choice: Auto or Disabled.

### ***OnChip PCI Device***

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **OnChip AC97 Audio**

Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-in card.

- The Choice: Auto or Disabled.

### **VIA-3068 MC97 Modem**

This item allows you to control the onboard MC 97 Modem.

- The Choice: Auto or Disabled.

### ***Super IO Device***

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **POWER ON Function**

Enables computer power on by keyboard, mouse, or hotkey activity.

- The Choice: Password, Hot KEY, Mouse Move, Mouse Click, Any KEY, BUTTON ONLY, or Keyboard 98.

### **KB Power ON Password**

Enables you to set a password to be entered when using the keyboard to power on the computer.

---

### **Hot Key Power ON**

Enables you to select a hot key to turn on the computer.

- The Choice: Ctrl-F1 ~ Ctrl-F12.

### **Onboard FDC Controller**

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you want to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field.

- The choice: Enabled or Disabled.

### **Onboard Serial Port1/Port2**

Select an address and corresponding interrupt for the first and second serial ports.

- The choice: 3E8/IRQ4, 2E8/IRQ3, 3F8/IRQ4, 2F8/IRQ3, Auto, or Disabled.

### **UART Mode Select**

This item allows you to select which mode for the Onboard Serial Port 2.

- The choice: Normal, IrDA, ASKIR, or SCR.

### **UR2 Duplex Mode**

This item allows you to select the IR half/full duplex function.

- The choice: Full or Half.

### **Onboard Parallel Port**

This item allows you to determine onboard parallel port controller I/O address setting.

- The choice:: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, or Disabled.

### **Parallel Port Mode**

Select an operating mode for the onboard parallel (printer) port. Select Normal, Compatible, or SPP unless you are certain your hardware and software both support one of the other available modes.

- The choice: SPP, EPP, ECP, or ECP + EPP.

### **ECP Mode Use DMA**

Select a DMA channel for the parallel port for use during ECP mode.

- The choice: 1 or 3.

---

### **Game Port Address**

This item selects Game Port Address.

- The choice: Disabled, 201, or 209.

### **Midi Port Address**

This item selects Midi Port Address.

- The choice: Disabled, 330, or 300.

### **Midi Port IRQ**

This item selects Midi Port IRQ.

- The choice: 5 or 10.

### ***Init Display First***

This item allows you to decide to activate PCI Slot or on-chip VGA first.

- The choice: PCI Slot or AGP.

### ***OnChip USB Controller***

This should be enabled if your system has a USB installed on the system board and you want to use it. Even when on chip USB so equipped, if you add a higher performance controller, you will need to disable this feature.

- The Choice: All Disabled, All Enabled, 1&2 USB Port, 2&3 USB Port, 1&3 USB Port, 1 USB Port, 2 USB Port, or 3 USB Port.

### ***USB Keyboard Support***

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

- The Choice: Enabled or Disabled.

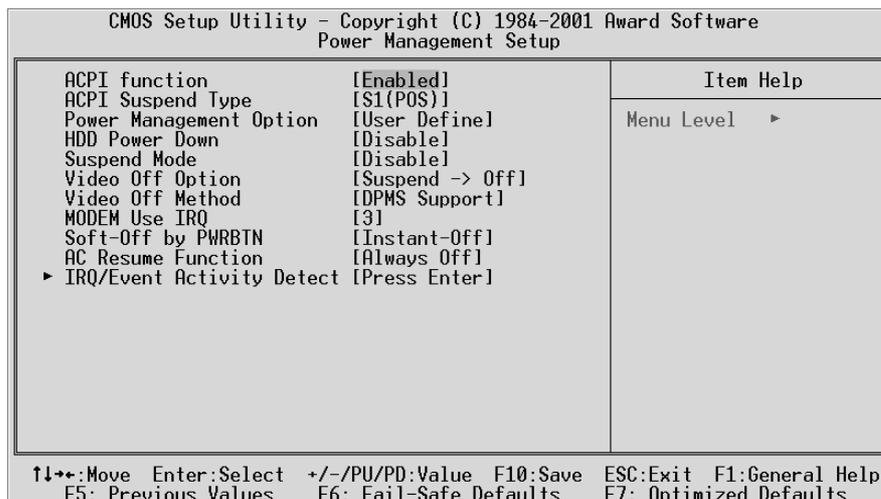
### ***IDE HDD Block Mode***

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

- The choice: Enabled or Disabled

---

## ➤ **Power Management Setup**



The Power Management Setup allows you to configure your system to most effectively saving energy while operating in a manner consistent with your own style of computer use.

### ***ACPI Function***

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI)

- The choice: Enabled or Disabled.

### ***ACPI Suspend Type***

This item allows you to select sleep state when suspend.

- The choice: S1(POS), or S3(STR).

### ***Power Management Option***

This category allows you to select the type (or degree) of power saving mode settings.

#### **Min Saving**

Minimum power management.

HDD Power Down = Allows you to set each mode individually.

Suspend Mode = 1 hr.

#### **Max Saving**

Maximum power management.

HDD Power Down = Allows you to set each mode individually.

Suspend Mode = 1 min.

- 
- User Define** Allows you to set each mode individually.  
HDD Power Down= Disabled or 1min. ~ 15min.  
Suspend Mode= Disabled or 1 min ~ 1 hr.
- The choice: User Define, Min Saving, or Max Saving.

### ***HDD Power Down***

- When this item enabled and after the set up time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
- The choice: Disabled or 1 Min ~ 15 Min.

### ***Suspend Mode***

- When this item enabled and after the set up time of system inactivity, all devices except the CPU will be shut off.
- The choice: Disabled, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, or 1 Hour.

### ***Video Off Option***

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

- Always On** Monitor will remain on during power saving mode.
- Suspend --> Off** Monitor is blanked when the system enters the Suspend mode.
- The choice: Always On or Suspend -> off.

### ***Video Off Method***

This determines the manner in which the monitor is blanked.

- V/H SYNC + Blank** This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
- Blank Screen** This option only writes blanks to the video buffer.
- DPMS Support** Initial display power management signaling.
- The choice: V/H SYNC + Blank, Blank Screen, or DPMS Support.

### ***MODEM Use IRQ***

- This determines the IRQ which the MODEM can use.
- The choice: 3, 4, 5, 7, 9, 10, 11, or N/A.

---

### ***Soft-Off by PWRBTN***

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."

- The choice: Instant-Off or Delay 4 Sec.

### ***AC Resume Function***

This sets the power state after a shutdown due to an unexpected interrupt of AC power.

- The choice: Former-Sts, Always On, or Always Off.

### ***IRQ/Event Activity Detect***

Options are in its sub-menu.

Press < Enter > to enter the sub-menu of detailed options.

### **USB Resume from S3/S4/S5**

When enabled, the system power will resume the system from a power saving mode if there is any USB port activity.

- The choice: Disabled or Enabled.

### **VGA**

When this item enabled, you can set VGA to awaken the system.

- The choice: OFF or ON.

### **LPT & COM**

When LPT & COM stays On, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

- The choice: NONE, LPT, COM, or LPT/COM.

### **HDD & FDD**

When HDD & FDD stays On, any activity from one of the listed system peripheral devices wakes up the system.

- The choice: OFF or ON.

### **PCI Master**

When PCI Master stays On, any activity from one of the listed system peripheral devices wakes up the system.

- The choice: OFF, or ON.

### **Power-On by PCI Card**

This item enables/disables the power on function of PCI Card.

- The choice: Disabled or Enabled.

---

### **Wake Up On LAN/Ring**

Use this item to enable LAN or modem activity to wakeup the system from a power saving mode.

- The choice: Disabled or Enabled.

### **RTC Alarm Resume**

When this item enabled, your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

- The choice: Disabled or Enabled.

### **Data (of Month)**

This item selects the alarm date.

- Key in a DEC number:Min=0, Max=31.

### **Resume Time (hh:mm:ss)**

This item selects the alarm Time.

[hh]

- Key in a DEC number:Min=0, Max=23.

[mm/ss]

- Key in a DEC number:Min=0, Max=59.

### **IRQs Activity Monitoring**

#### **Primary INTR**

Press Enter to on/off the wake up ability of a specified IRQ.

- The choice: OFF, or ON.

In the following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

When On mode exist, activity will neither prevent the system from going into a power management mode nor awaken it.

**IRQ3 (COM 2)**

**IRQ4 (COM 1)**

**IRQ5 (LPT 2)**

**IRQ6 (Floppy Disk)**

**IRQ7 (LPT 1)**

**IRQ8 (RTC Alarm)**

**IRQ9 (IRQ2 Redir)**

---

IRQ10 (Reserved)  
IRQ11 (Reserved)  
IRQ12 ( PS / 2 Mouse )  
IRQ13 (Coprocesor)  
IRQ14 (Hard Disk)  
IRQ15 (Reserved)  
➤ The choice: Disabled or Enabled.

---

## ☛ PnP/PCI Configurations

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software		
PnP/PCI Configurations		
PNP OS Installed	[No]	Item Help
Reset Configuration Data	[Disabled]	
Resources Controlled By	[Manuall]	Menu Level ▶ Select Yes if you are using a Plug and Play capable operating system Select No if you need the BIOS to configure non-boot devices
▶ IRQ Resources	[Press Enter]	
PCI/VGA Palette Snoop	[Disabled]	
Assign IRQ For VGA	[Enabled]	
Assign IRQ For USB	[Enabled]	
↑↓←→:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults		

This section describes the configuration of PCI bus system. PCI or Personal Computer Interconnection is a system which allows I/O devices to operate at the speed CPU itself keeps when CPU communicating with its own special components.

This section covers some very technical items, and it is strongly recommended that only experienced users should make any changes to the default settings.

### ***PNP OS Installed***

This item allows you to determine PnP OS is installed or not.

- The choice: Yes or No.

### ***Reset Configuration Data***

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit from Setup if you have installed a new device or software and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

- The choice: Enabled or Disabled .

### ***Resource controlled By***

The Award Plug-and-Play BIOS has the capacity to automatically configure all of the boot and Plug-and-Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug-and-Play operating system such as Windows 95.

---

If you set this field to "manual" , choose specific resources by going into each of the sub-menu that follows this field (a sub-menu is preceded by a "> ").

- The choice: Auto(ESCD) or Manual.

### ***IRQ Resources***

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

#### **IRQ3/4/5/7/9/10/11/12/14/15 assigned**

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices is compliant with the original PC AT bus specification; PCI/ISA PnP for devices is compliant with the Plug-and-Play standard whether designed for PCI or ISA bus architecture.

- The choice: PCI Device or Reserved.

### ***PCI/VGA Palette Snoop***

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not. If you have MPEG ISA/VESA VGA Cards and PCI/VGA Card worked, Enable this field. Otherwise, please Disable it.

- The choice: Enabled or Disabled.

### ***Assign IRQ For VGA***

This item allows the user to set VGA IRQ Routing table Enabled or Disabled.

- The choice: Enabled or Disabled.

### ***Assign IRQ For USB***

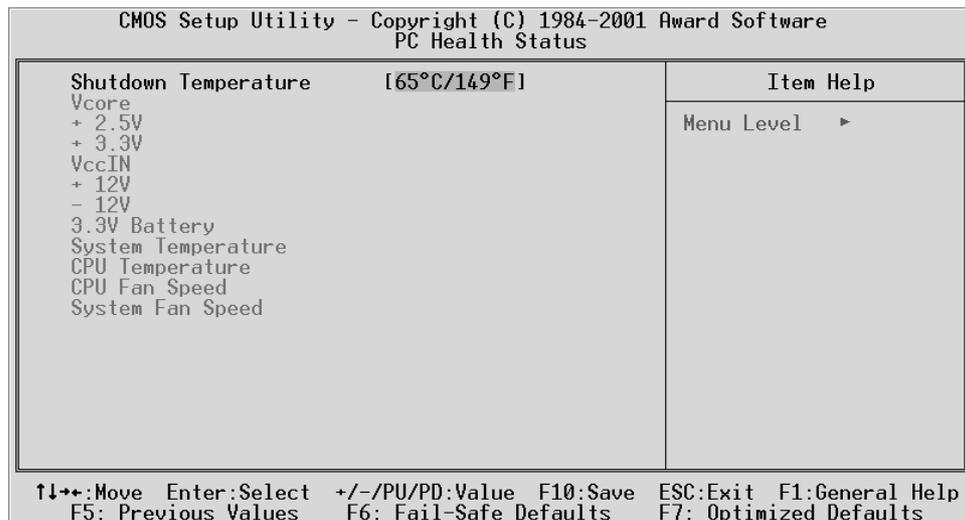
This item allows the user the option to assign an IRQ to on-board USB controller.

Since the on-board controller is always enabled, if no IRQ is assigned to it, there will be a question mark report on the sytem device under Windows95/98.

- The choice: Enabled or Disabled.

---

## ☛ **PC Health Status**



### ***Shutdown Temperature***

Enables you to set the maximum temperature the system can reach before powering down.

- The choice: Disabled, 60°C/140°F, 65°C/149°F, 70°C/158°F.

### ***System Component Characteristics***

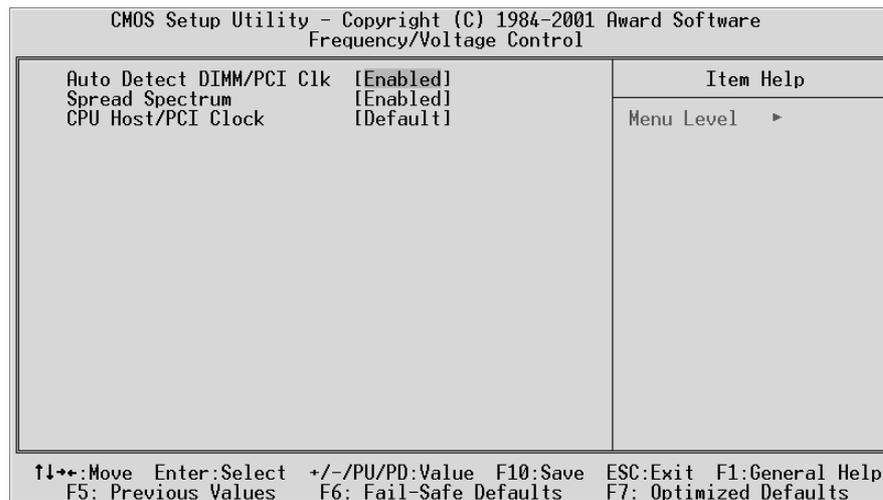
These fields provide you with information about the systems current operating status. You cannot make changes to these fields.

The fields include

- Vcore**
- +2.5V**
- +3.3V**
- VccIN**
- +12V**
- 12V**
- 3.3V Battery**
- System Temperature**
- CPU Temperature**
- CPU Fan speed**
- System Fan Speed**

---

☛ **Frequency/Voltage Control**



***Auto Detect DIMM/PCI Clk***

This item allows you to enable/disable auto detection DIMM/PCI Clock.

- The choice: Enabled or Disabled.

***Spread Spectrum***

This item allows you to enable/disable the spread spectrum modulation.

- The choice: Enabled or Disabled.

***CPU Host/PCI Clock***

Use the CPU Host Clock to set the frontside bus frequency for the installed processors.

- The choice: Default.

---

☛ **Load Fail-Safe Defaults**

When you press < Enter > on this item, you will get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? N

Pressing 'Y' loads the BIOS default values for the most stable, minimal performance system operations.

☛ **Load Optimized Defaults**

When you press < Enter > on this item, you will get a confirmation dialog box with a message similar to:

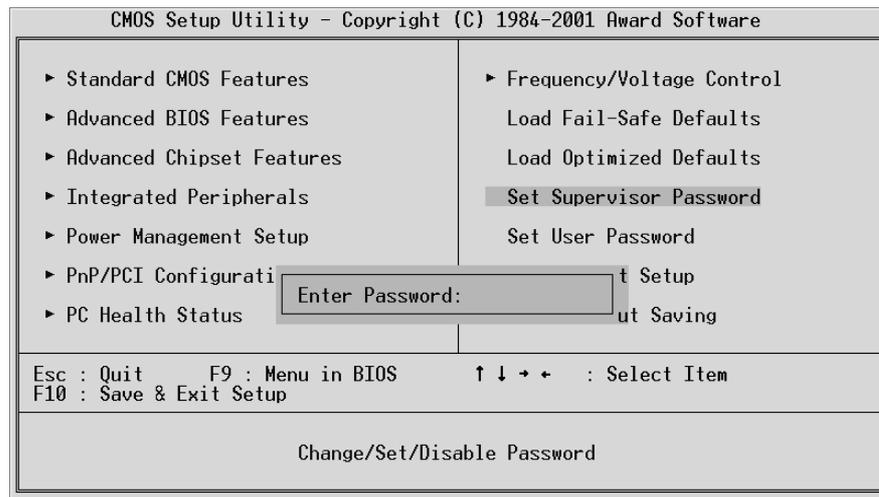
Load Optimized Defaults (Y/N) ? N

Pressing 'Y' loads the default values that are factory-set for optimal performance system operation.

---

## ➤ Supervisor/User Password Setting

You can set either supervisor or user password, or both of them. The differences between them are:



### Supervisor Password and User Password

The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.

In general, Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the options. By setting separate Supervisor and User password, a system supervisor can limit who can change critical Setup values.

### Enter Password

Type the password up to eight characters, and press < Enter > . The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press < Enter > . You may also press < Esc > to abort the selection and not enter a password.

To disable password, just press < Enter > when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

---

### Password Disable

If you select System at Security Option of BIOS Features Setup Menu, you will be prompted in entering the password whenever the system is rebooted or you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

**Warning:** Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear CMOS, please refer to "Clear CMOS" on page 30.

### ☛ Save & Exit Setup

Pressing < Enter > on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus of CMOS - a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

### ☛ Exit Without Saving

Pressing < Enter > on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit from Setup without storing in CMOS any change. The previous selections remain in effect. This exits from the Setup utility and restarts your computer.