AK10

AMD Socket-A Based
MAIN BOARD

User's Manual

Shuttle AK10

AMD Socket-A based Mainboard
Manual Version 1.0

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M386

TABLE OF CONTENTS

WHAT'S IN THE MANUAL

Quick Reference

About This Manual

1 INTRODUCTION

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 **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 AK10 mainboard.

Experienced DIY User

Congratulate on your purchase of the Shuttle AK10 mainboard. You will find that installing your new Shuttle AK10 mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated AK10 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 per-formance.

System Integrator

You have wisely chosen Shuttle AK10 to construct your system. Shuttle AK10 incorporates all the state-of-the-art technology of the VT8363 chipset from VIA. It integrates the most advanced functions you can find to date in a compact ATX board. Refer to sections **3.2 Jumper Settings** and **Chapter 4 Software Utility** for an in-depth view of system construction.

1.2 Item Checklist

Check all items with your AK10 mainboard to make sure nothing is missing. The complete package should include:

✶ One Shuttle AK10 Mainboard
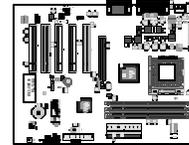
✶ One ATA/66 Ribbon Cable
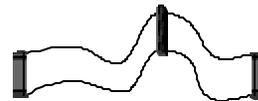
✶ One Floppy Ribbon Cable

✶ One 9-pin COM2 Cable
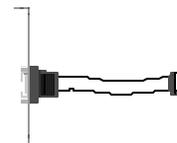
✶ AK10 User's Manual
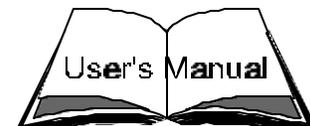
✶ One CD-ROM containing:
  ➢ AK10 user's manual on PDF format
  ➢ VIA 4 IN 1 Drivers
  ➢ Audio Device Software
  ➢ VIA Hardware Monitor
  ➢ Award Flashing Utility

2 FEATURES

AK10 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

Supports AMD Athlon Processor 600 ~ 1000+ MHz
and AMD Duron Processor 600 ~ 750+ MHz

✲ Chipset

Features VIA Apollo KT133 Chipset VT8363 with super south I/O bridge VT82C686A, and 200MHz EV6 Bus.

✲ Jumperless CPU Configuration

Soft-configure CPU Speed (The CPU operating speed is software configurable from Frequency/Voltage Control of BIOS Setup program.

✲ Versatile Memory Support

Equipped with three DIMM banks of PC66/100/133 compliant SDRAM and VCM SDRAM to provide up to 1.5GB of system memory.
Configurable support to EC (Error Checking) and ECC (Error Checking and Correcting).

✲ AGP Slot

A component level of device interconnected to AGP cards which supports up to 4x Accelerated Graphics Port cards for high performance and is directed to the 3D graphical display application.

✲ PCI Expansion Slots

Provides five 32-bit PCI slots.

✲ Super I/O Interface:

Provides a variety of I/O interfaces:
- ➢ 1 × Floppy interface for 3.5-inch FDD with 720KB, 1.44MB, 2.88MB format or for 5.25-inch FDD with 360KB or 1.2MB format.

- ➢ 1 × PS/2 mouse connector
- ➢ 1 × PS/2 Keyboard connector
- ➢ 2 ports of USB connectors on back panel
- ➢ One set of 2-port USB headers on front panel
- ➢ 2 × DB9 Serial connectors 16550 UART compatible
- ➢ 1 × Infrared communication port ASKIR and HPSIR compatible. (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 x DB15 MIDI/GAME port , and another 3 ports which are Speaker, Line-In and Mic.

✳ PCI Bus Master IDE Controller Onboard

Two Ultra DMA 33/66 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 33/66 MB/sec and also supports Enhanced PIO Modes 0 ～ 4.

✳ 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 Saving Features controlled by your operating system that supports OS Direct Power Management (OSPM) functionality.

✳ System BIOS

Provides licensed Award BIOS on 2Mb Flash EEPROM.

Supports Green PC and Desktop Management Interface (DMI) and bundled with NCR SCSI BIOS.

✱ ATX Form Factor

System board conforms to the ATX specification.

Board dimension: 304mm × 244mm

✱ 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 (WOL) -** The onboard WOL 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.

✱ Other Features

- ➢ **Hardware Monitoring -** This motherboard implements a hardware monitoring system. As you turn on your system, this smart design will continue to monitor your system's working voltage, fan status and CPU temperature. If any of these systems's status goes wrong, there will be an alarm through the <u>VIA Hardware Monitoring Utility</u> to warn the user.

- ➢ **PC-Doctor Debug LED (Optional) -** In conjunction with PC Doctor (Optional). The **DR. LED** can easily show what kind of problem you may incur on your system during assembly. It can clearly indicate whether there is a component issue or an installed issue by the 8 LEDs on front panel of PC-Doctor. This helps you quickly self diagnostic your system status.

- ➢ **Thermal Sensor (Optional) -** With the increasing performance, the components nowadays always generate enormous heat inside the system, such as CPU, VGA card, HDD, and so on. In the meanwhile, they're the most important components while we concern about the stability of the system. The thermal sensor provides a convenient and flexible way of an extensible sensor for users to detect the temperature of any component.

- ➢ **RAM Power LED -** This LED indicates there is power which applies to memory. It is useful to check RAM power during Suspend to RAM. Don not unplug memory module when this LED is On.

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 AK10 mainboard. Refer to the following mainboard layout to help you identify various jumpers, connectors, slots, and ports. Then follow these steps designed to guide you through a quick and correct installation of your system.

3.1 Step-by-Step Installation

Accessories Of AK10

ATX Power Connector

PS2 Keyboard/
PS/2 Mouse Connectors

USB1/USB2Connectors

CPU FAN Connector

Socket 462

Serial Port Connector
(COM1)

Parallel Connector

VIA KT133 Chipset
200MHz EV6 Bus

Speaker/Line_In/Mic
MIDI/GAME Port Connectors

AGP 2x/4x Slot

PC133 DIMM

CD_IN Connector-CN11

Onboard Sound Setting -JP12

AUX_IN Connector-CN20

H/W Monitor-JP13

AC97 Audio CODEC

Five PCI Slots

Serial Port Connector-
(COM2)- CN17

USB3/USB4 header- CN15

Wake On Lan Connector- CN16

RAM POWER LED2
(Optional)

CPU Thermal Sense
- JP26 (Optional)

Two IDE Connectors

Floppy Connector

IrDA Connector-JP9

Front Panel Connectors- CN18

AK10 MB
00113 - SB
48 36K01 OSB

2Mb Flash ROM

Clear CMOS- JP14

DR. LED-CN19

Housing Fan- FAN2

System Thermal
Sense- JP27(Optional)

Step 1

Install the CPU:

1. Locate the CPU socket on the upper-right sector of your mainboard (between the back panel connectors and the DIMM memory banks).

2. Pull the CPU 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. And the CPU will only fit in the orientation as shown. The following diagram demonstrates the correct placement of the CPU in socket A. You can see that the two blunt-edged corners should be oriented toward the blank space on the socket.
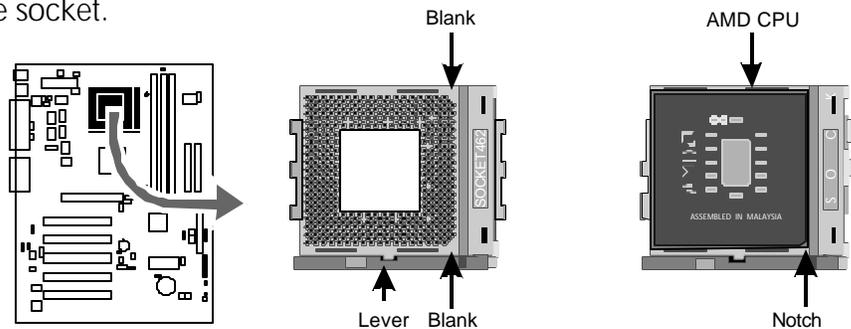
4. Slightly push the AMD 462 Athlon/Duron processor into the socket without applying excessive force while making sure there is no gap between CPU and socket. Then lower the socket-lever all the way down to the horizontal position and lock it to secure the CPU in place.

5. The AMD 462 Athlon/Duron processor requires a set of heatsink/fan to ensure proper cooling of the processor. If the heatsink/fan have not been 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.

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 any of the following cases:

1. Clear CMOS
2. Disable the onboard audio before installing an add-on sound card

For first-time DIY system builders, we recommend that you should 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 the detailed information on how to configure your mainboard manually.

Step 3

Install SDRAM System Memory

To install memory, insert SDRAM or VCM SDRAM memory module(s) in any one, two or three DIMM banks. Note that SDRAM modules are directional and will not go in the DIMM slots unless they are properly oriented. After the module is fully inserted into the DIMM socket, lift the clips of both sides of the DIMM bank to lock the module in place.
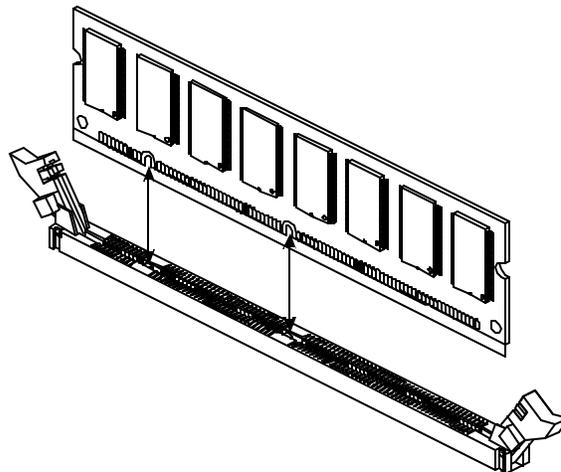
Step 4

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 connection to the mainboard described below.

To install IDE & FDD drives, follow this procedure:

1. Set the required jumpers on each device according to the instructions provided by the manufacturer. (IDE devices, HDD and CD-ROM, must have 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 to the back panel of the internal peripheral devices. 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.
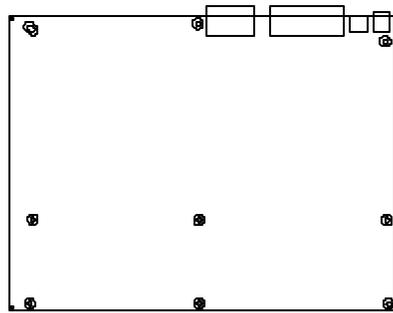
2. After deciding the proper mounting holes, position the studs between the frame of chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical short between the board and the metal frame 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 3 mounting studs to ensure proper attachment of the mainboard.

Step 6

Connect Front Panel Switches/LEDs/Speaker

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, Power LED, Reset Switch, PC Speaker, etc.) These cables serve to connect the front-panel switches and LEDs to the mainboard's front-panel connectors group, as shown below :
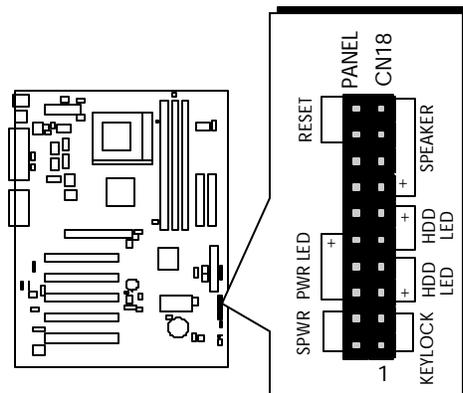
1. KEYLOCK (KEYLOCK)
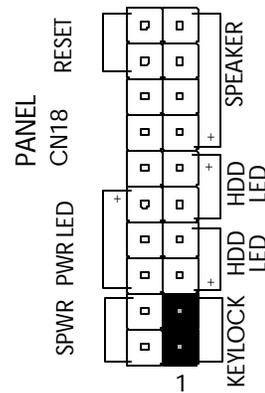
2. HDD LED (HDD LED)
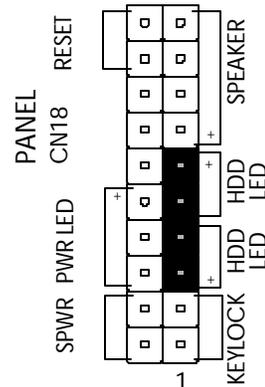
3. SPEAKER (SPEAKER)
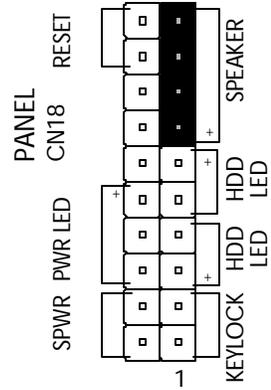
4. Power Switch (SPWR) -
   ATX Soft Power On/Off
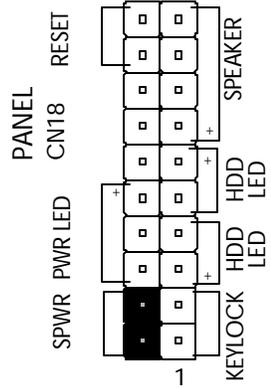
5. POWER LED (PWRLED)
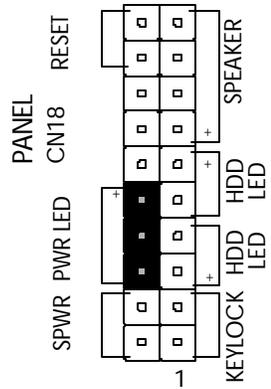
6. RESET (RESET)
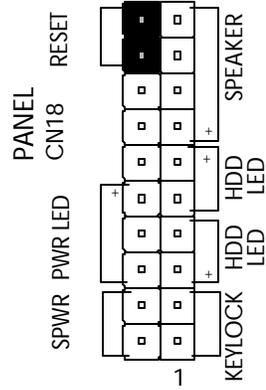
Step 7

Connect IDE & Floppy Disk Drives

1. IDE cable connector
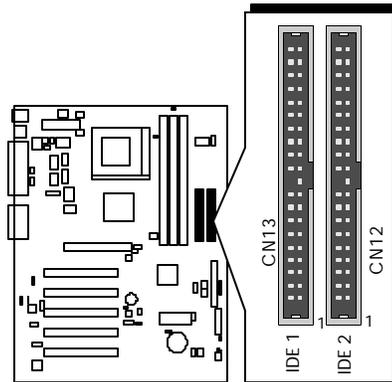
2. Floppy cable connector
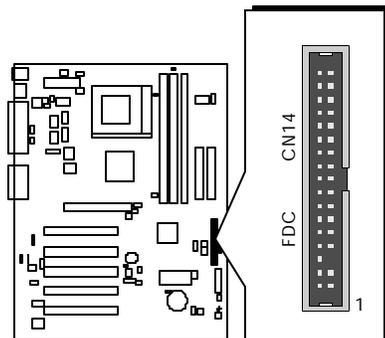
Step 8

Connect Other Internal Peripherals

1. IR connector

```
JP9
    1
IRDA
```
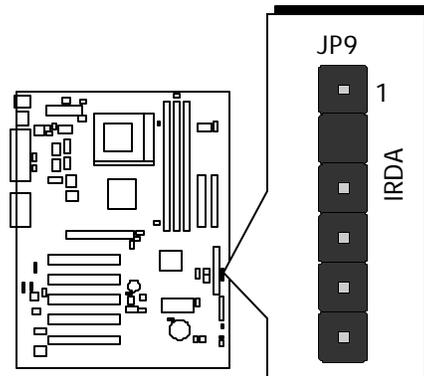
Step 9

Connect the Power Supply

1. System power connector
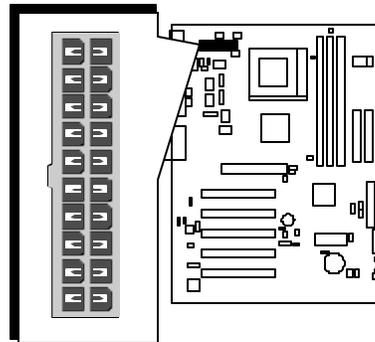
Step 10

Install Add-on Cards in Expansion Slots

1. Accelerated Graphics Port (AGP) Card
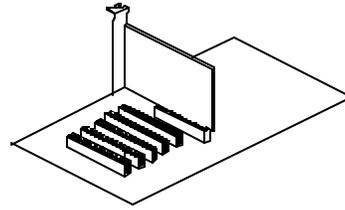
2. PCI Card
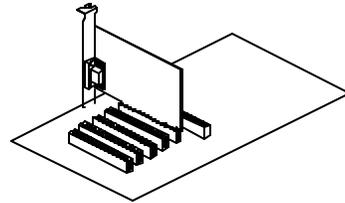
Step 11

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.
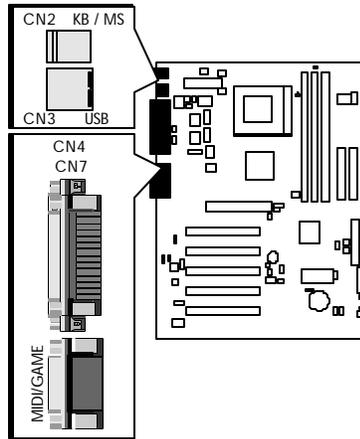
1. PS/2 Mouse and PS/2 Keyboard
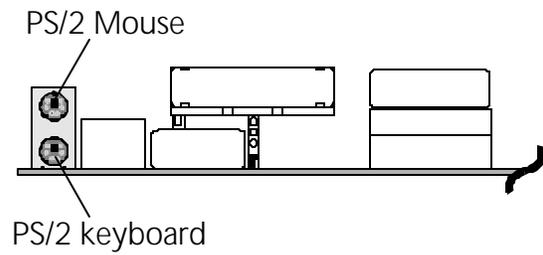
2. USB Devices
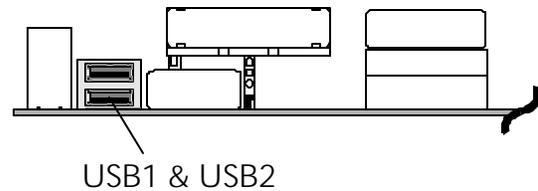
3. COM Port
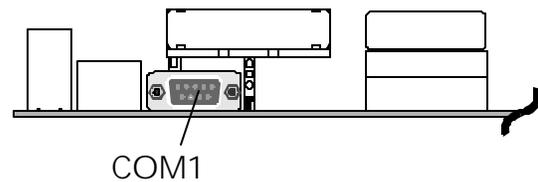
4. Parallel Port

Parallel Port
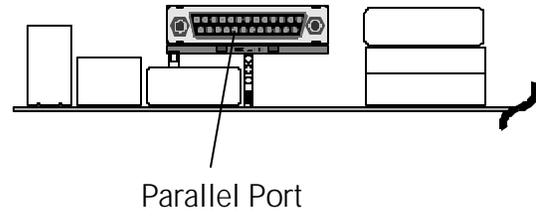
5. Audio Speaker/Line_In/Mic

Speaker   Line_In   Mic
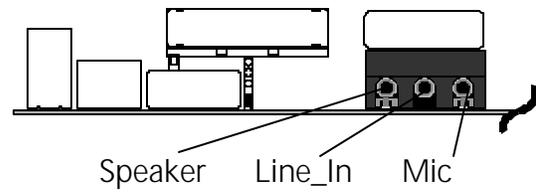
6. MIDI/Game Port

MIDI/GAME Port
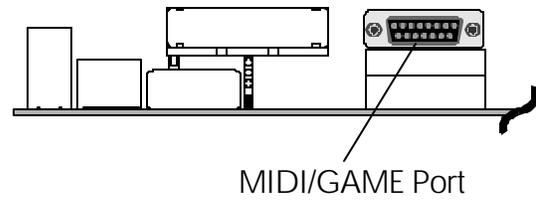
Step 12

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 partitions 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 install 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. Set up the complete operating system according to your OS installation guide.

Step 13

Install Drivers & Software Components

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

1. Insert the AK10 bundled CD-ROM into your CD-ROM drive. The auto-run program will display the driver main installation window on screen .

2. Choose " Install Mainboard Software" and complete it.

3. Return to the SHUTTLE MAINBOARD SOFTWARE SETUP screen.

4. Choose "Install Audio Device Software" and complete it.

5. Return to the SHUTTLE MAINBOARD SOFTWARE SETUP screen.

6. Choose "Install VIA Hardware Monitor" and complete it.

7. 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 is located at any corner of each jumper; you just find a location with white right angle, which stands for pin 1#. There are several types of pin1# shown as below:

3-pin and multi-pin (> 3) jumpers are shown 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.

Jumpers & Connectors Guide

Use the mainboard layout on page 10 to locate CPU socket, memory banks, expansion slots, jumpers and connectors on the mainboard during the installation. The following list will help you to identify jumpers, slots, and connectors along with their assigned functions:
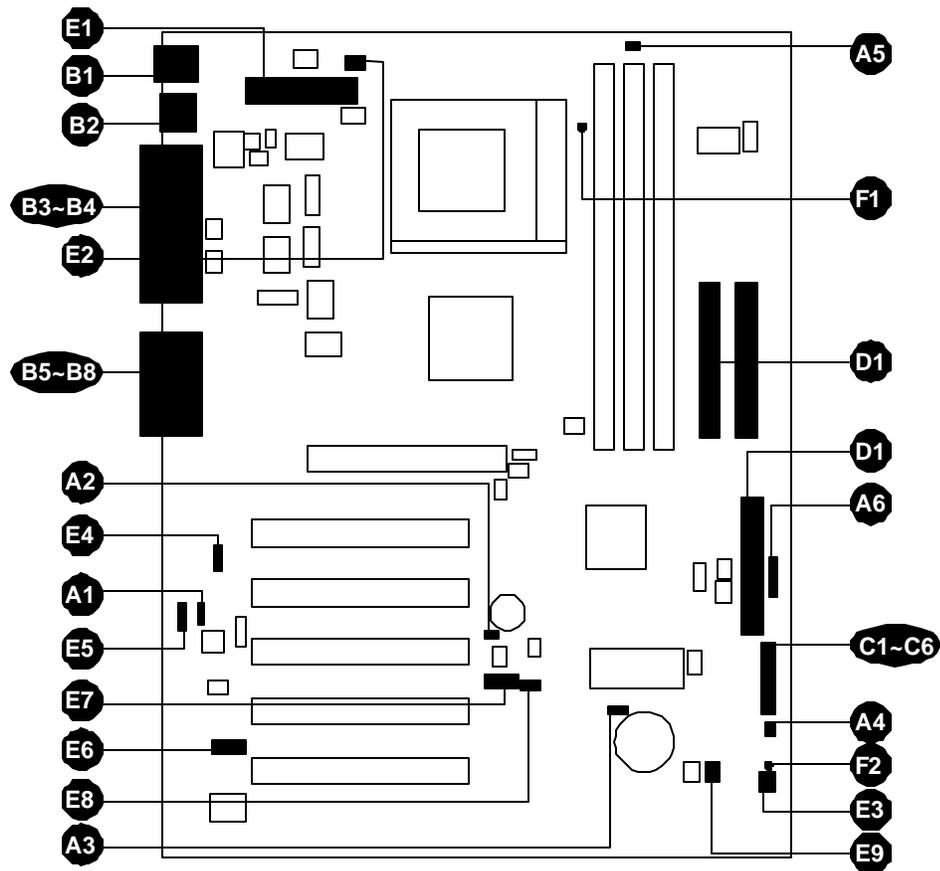
CPU/Memory/Expansion Slots

Socket 462 : CPU Socket for socket 462 AMD Athlon and Duron processors.

DIM1/2/3 : Three DIMM Sockets for 16,32,64,128,256,512MB 3.3V SDRAM and VCM SDRAM.

AGP : One AGP (Accelerated Graphics Port) Slot

PCI : Five 32-bit PCI Expansion Slots

Jumpers

(A1) JP12 : On board sound setting.
(A2) JP13 : Hardware monitor.
(A3) JP14 : Clear CMOS.
(A4) JP27 : System thermal sense.
(A5) JP26 : CPU thermal sense.
(A6) JP9 : IrDA.

Back Panel Connectors

(B1) KB : PS/2 Keyboard.
(B1) MS : PS/2 Mouse.
(B2) USB : 2 × USB (Universal Serial Bus).
(B3) COM1 : Serial Port 1 (DB9 male).
(B4) PRINTER : Parallel Port (DB25 female).
(B5) SPEAKER : Speaker port.
(B6) LINE_IN : Line_in port.
(B7) MIC : Mic_in port.
(B8) GAME/MIDI : GAME/MIDI port.

Front Panel Connectors

(C1) KEYLOCK : Enable or disable keyboard.
(C2) HDD LED : IDE Drive Active LED.
(C3) SPEAKER : Speaker in housing.
(C4) SPWR : ATX Power On/Off Momentary Type Switch.
(C5) PWR LED : System Power LED.
(C6) RESET : Hardware Reset Switch.

Internal Peripherals Connectors

(D1) FDC : Floppy Disk Drive Interface
(D1) IDE1 : IDE Primary Interface (Dual-channel)
(D1) IDE2 : IDE Secondary Interface (Dual-channel)

Other Connectors:

E1 Power   : ATX power connector (20-pin header).

E2 CPU FAN   : CPU fan connector.

E3 FAN2   : Housing fan connector.

E4 CD_IN   : Audio CD_IN connector.

E5 AUX_IN   : Audio AUX_IN connector.

E6 COM2   : COM2 connector.

E7 USB2   : USB3 and USB4 ports header

E8 WOL   : Wake on lan connector.

E9 DR. LED   : PC-Doctor debug LED connector.

Ⓐ1 Enable On Board Sound Chip (JP12)

This motherboard has AC97 sound onboard. JP12 is used to enable or dis-able onboard AD1885 CODEC chip. If you do not want to enable the Onboard Audio, you should set this jumper to 2-3, and disable the "OnChip Sound" from BIOS setting > Advanced Chipset Features, before you install your preferred PCI Sound Card.

Pin 1-2

(Default- enable on board sound chip)

Pin 2-3

(Disable on board sound chip)
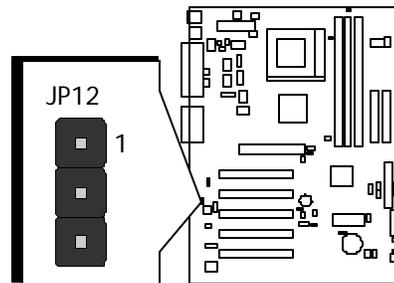
Ⓐ2 Hardware Monitor (JP13)

This motherboard implements a hardware monitoring system. As you turn on your system, this smart design will continue to monitor your system's working voltage, fan status and CPU temperature. If any of these systems's status goes wrong, there will be an alarm through the VIA Hardware Monitor Utility to warn the user.

(Enable hardware monitor function)

(Disable hardware monitor function)
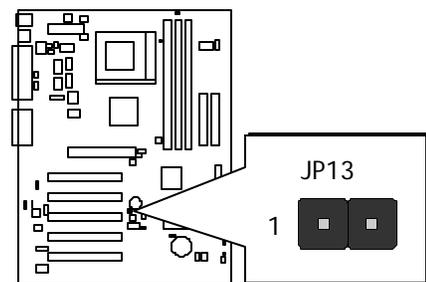
Ⓐ Clear CMOS (JP14)

JP14 is used to clear CMOS data. Clearing CMOS will result in permanently erasion of previous system configuration settings and restoration of the original (factory-set) system settings.

Pin 1-2 (Default, Normal)

Pin 2-3 (Clear CMOS)

JP14

1
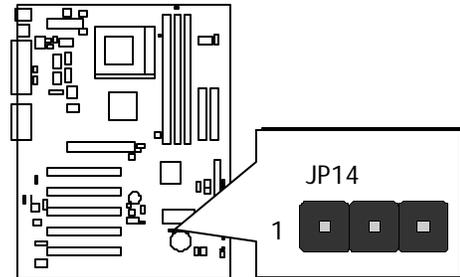
Step 1. Turn off the system power (PC-> Off)
Step 2. Remove mini jumpers from JP2 pins 1-2
Step 3. Place the mini jumpers on JP2 pin 2-3
for a few seconds
Step 4. Return the mini jumpers to pin 1-2
Step 5. Turn on the system power (PC-> On)

A4~A5 Thermal Sense (JP26, JP27) (Optional)

With the increasing performance, the components nowadays always generate enormous heat inside the system, such as CPU, VGA card, HDD, and so on. In the meanwhile, they are the most important components while we concern about the stability of the system. The thermal sensor provides a convenient and flexible way of an extensible sensor for users to detect the temperature of any component.

For example, you can just plug the sliced sensor into the narrow opening between CPU and heatsink to monitor accurate temperature.

CPU Thermal Sense
1   JP26

System Thermal Sense
JP27
1
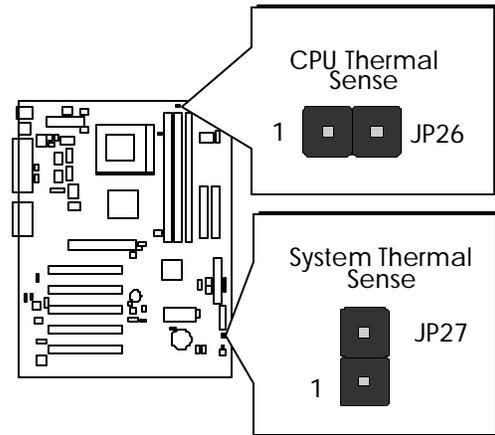
A6 IR Connector (JP9)

The IrDA connector can be configured to support wireless infrared module, with this module and application software such as Laplink or Windows 95 Direct Cable Connection, the user can transfer files to or from laptops, notebooks, PDA devices and printers. This connector supports HPSIR (115.2Kbps, 2 meters) and ASK-IR (56Kbps).

Install the infrared module onto the IrDA connector and enable the infrared function from BIOS Setup, Integrated Peripherals > UART 2 Mode, make sure to have the correct orientation when you plug in the IrDA connector.

Pin assignment :

1   +5V
NC
IRRX
GND
IRTX
+5V

1
IRDA
JP9
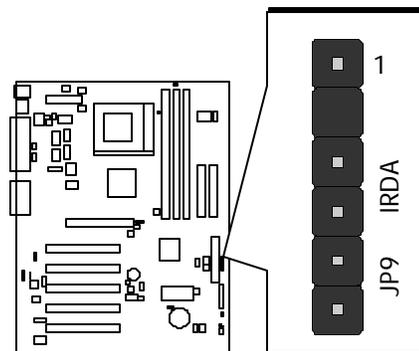
ⓑ₁ **PS/2 Keyboard & PS/2 Mouse Connectors**

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

PS/2 Mouse

PS/2 keyboard
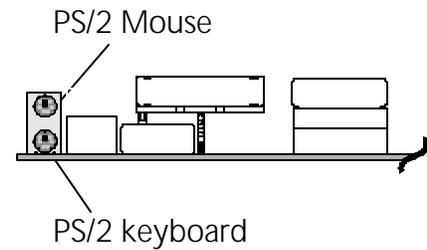
ⓑ₂ **USB1/USB2 Port Connectors**

Two female connectors USB1/USB2 share the same USB (Universal Serial Bus) bracket at the rear panel of your mainboard. Plug each USB device jack into an available USB1/USB2 connector.

USB1 & USB2
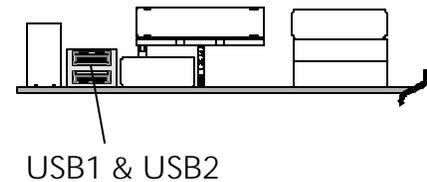
ⓑ₃ **COM1 Connector**

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

COM1
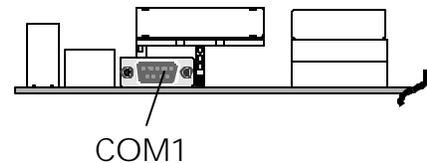
ⓑ₄ **Parallel Port Connector**

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.

Parallel Port
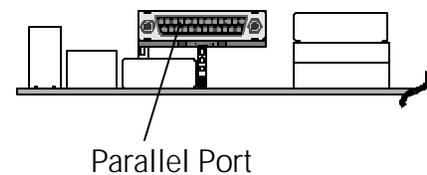
B5 Speaker

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.

Speaker
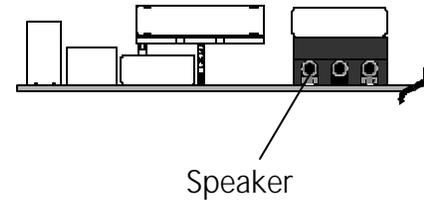
B6 Line_In

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.

Line_In
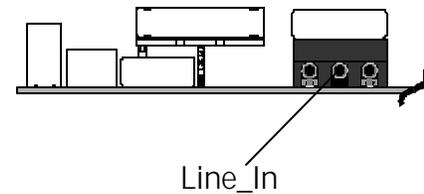
B7 Mic

MIC_IN 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.

Mic
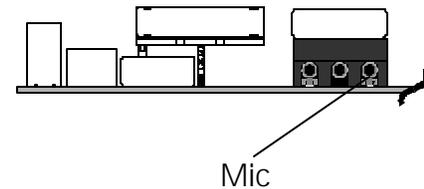
B8 MIDI/GAME Port

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/MIDI port. You will also need the MIDI sequencing software to run MIDI instruments with your computer.

MIDI/GAME Port
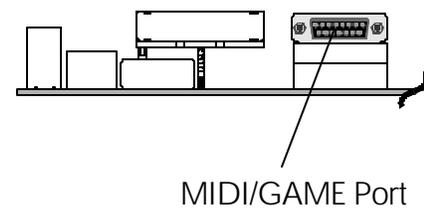
C1 KEYLOCK Connector (KEYLOCK)

Keylock connector is a 2-pin connector for a lock that may be installed on the system case for enabling or disabling keyboard.
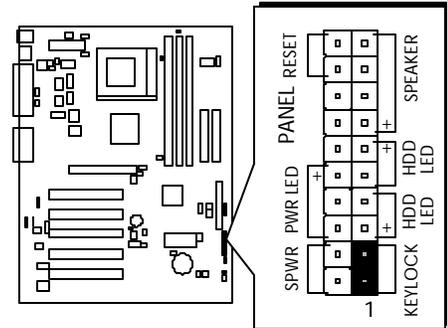
C2 HDD LED Connector (HDDLED)

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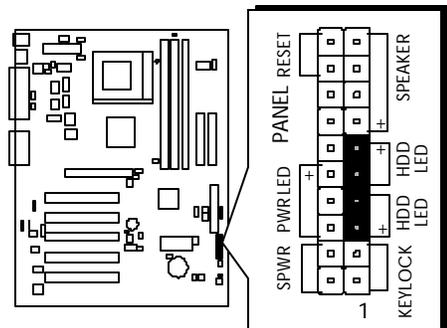
Note : Please notice all the LED connectors are directional. If your chassis's LED does not light up during running, please simply change to the opposite direction.

C3 Speaker Connector (SPEAKER)

Attach the PC speaker cable from the case to the 4-pin speaker connector (SPEAKER).
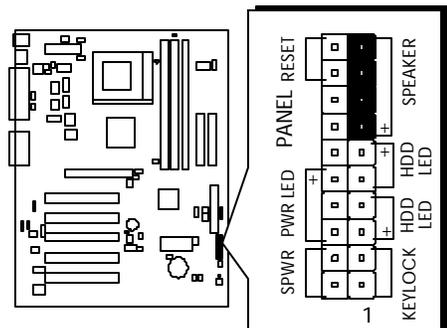
ⓒ4 ATX Power On/Off Switch Connector (SPWR)

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 PWON header on the mainboard.
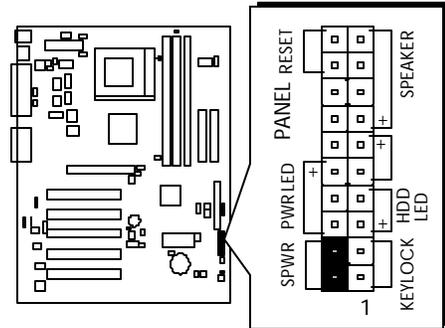
ⓒ5 POWER LED (PWRLED)

Attach the 2-pin Power-LED connector cable from the housing's front panel to the PWR LED header on the mainboard. The power LED stays light while the system is running.
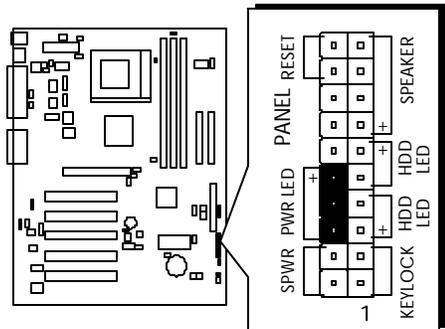
ⓒ6 Hardware Reset Connector (RESET)

Attach the 2-pin hardware reset switch cable to the RST header. Pressing the reset switch causes the system to restart.
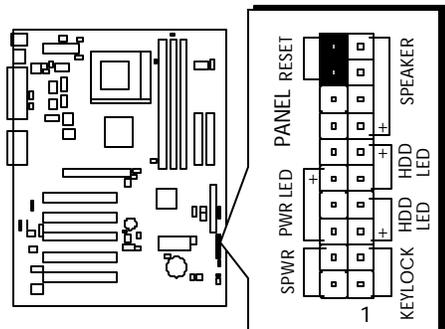
ⓜ Enhanced IDE and Floppy Connectors

The AK10 mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing the 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 (FDD) to accommodate the Floppy Disk Drive (F.D.D.). Moreover, this mainboard comes with one 40pin ribbon cable to connect to IDE H.D.D. and one 34-pin ribbon cable for F.D.D. connection.

> **Note :** Please connect your 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 FDC connector on the mainboard.
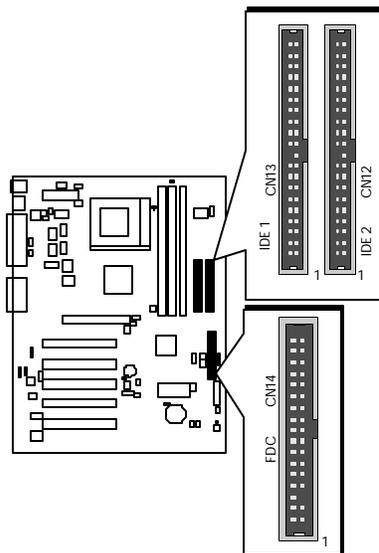
🔢 ATX Power Connector

Locate the 20-pin male header ATX power connector (ATX PWR) on your mainboard. Plug the power cable from the ATX power supply unit directly into ATX PWR ATX power supply connector.
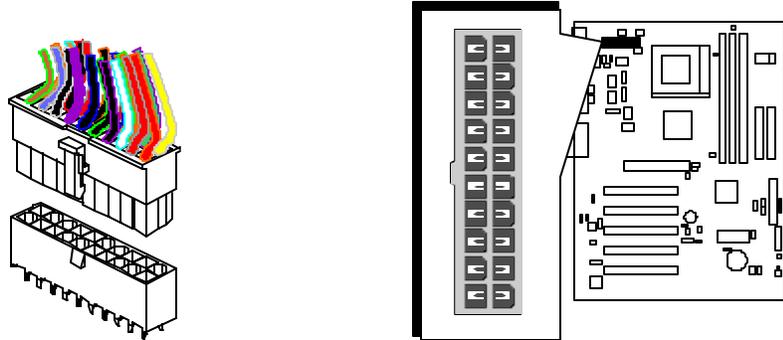
Note 1 : The ATX power connector is directional and will not go in unless the guides match perfectly. Make sure that pin#1 is properly positioned.

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~E3 CPU Fan and Housing Fan Connector (CPU FAN, FAN2)

This mainboard provides two onboard 12V cooling fan power connectors to support CPU (CPU FAN), Housing Fan (FAN2) 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.

SENSE   +12   GND

CPU FAN

FAN2
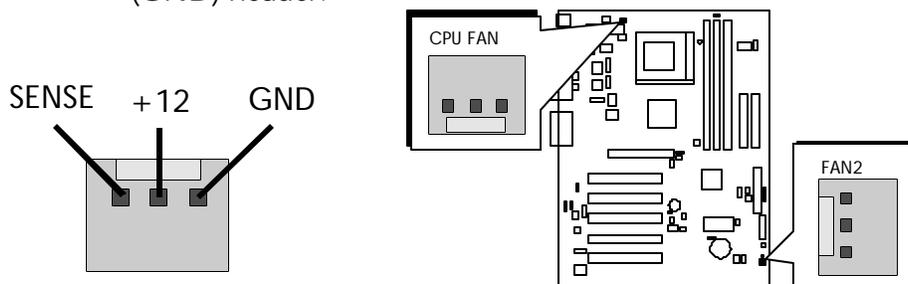
Audio CD_IN Connector (CD_IN)

This connector is used to connect CD Audio cable from CDROM or DVD drive to onboard sound.

Pin assignment :

```
1 ■  L
  ●  GND
  ●  GND
  ●  R
```

```
CD_IN
1   □
    □    CN11
    □
    □
```
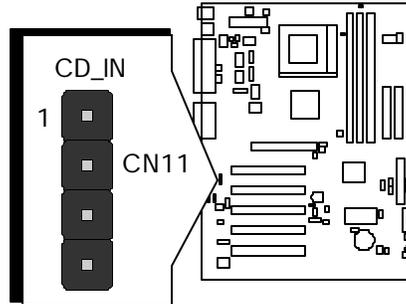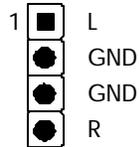
AUX_IN Connector (AUX_IN)

This connector is used to connect MPEG Audio cable from MPEG card to onboard sound.

Pin assignment :

```
1 ■  L
  ●  GND
  ●  GND
  ●  R
```

```
AUX_IN
1   □
    □    CN20
    □
    □
```
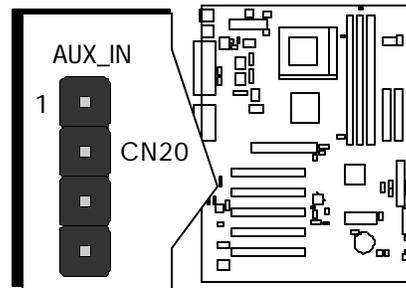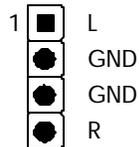
COM2 Connector (COM2)

This motherboard comes with one 10-pin ribbon cable for COM2.

Pin assignment :

```
           1
DCD2   ■ ●   RX2
 TX2   ● ●   DTR2
 GND   ● ●   DSR2
RTS2   ● ●   CTS2
 R12   ●     NC
          10
```

```
COM2        CN17
□ □ □ □ □
1 □ □ □ □ □
```
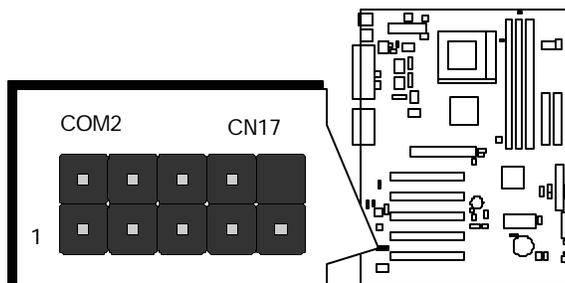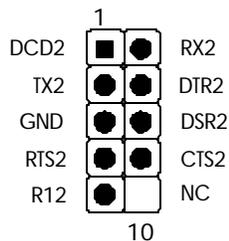
❼ Dual USB3/USB4 Ports Header (USB2)

This header is used to connect the cable attached to USB connectors mounted front panel.

Pin assignment:

```
            10
  NC   [ ● ● ]   NC
  GND  [ ● ● ]   GND
  +3D  [ ● ● ]   +2D
  -3D  [ ● ● ]   -2D
  +5V  [ ● ■ ]   +5V
             1
```

USB2   CN15
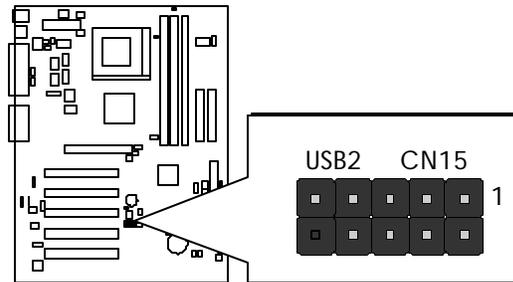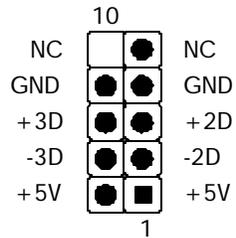
❽ Wake-on LAN Connector (WOL)

Attach a 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function. This function lets users wake up the connected system through LAN card.
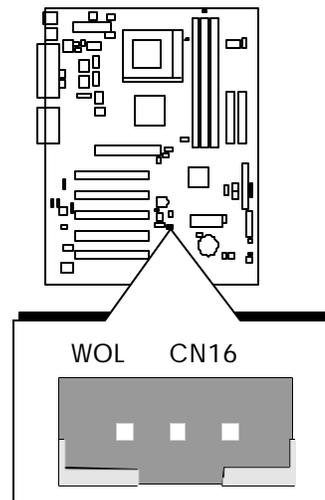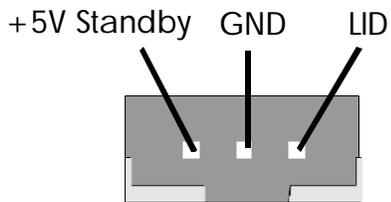
+5V Standby   GND   LID

WOL   CN16

☺ PC-Doctor Debug LED (Optional)

In conjunction with PC Doctor (Optional). The DR. LED can easily show what kind of problem you may incur on your system during assembly. It can clearly indicate whether there is a component issue or an installed issue by the 8 LEDs on the front panel of PC-Doctor. This helps you quickly self diagnostic your system status.
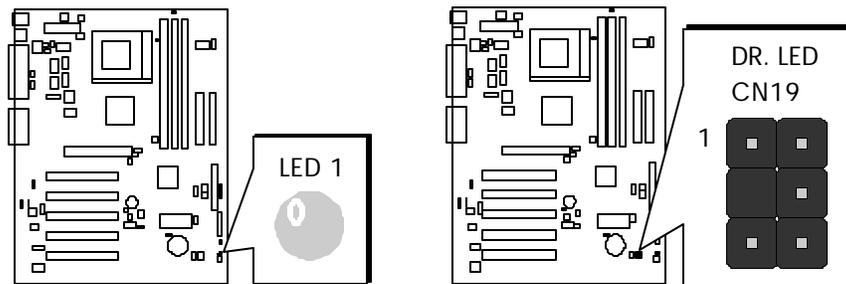
PC-Doctor is a CD disc storage box with 8 LEDs on its front panel, the size of PC-Doctor is exactly the same as 5.25 in floppy drive, so that it can be mounted into normal 5.25 in drive bay of any housing.
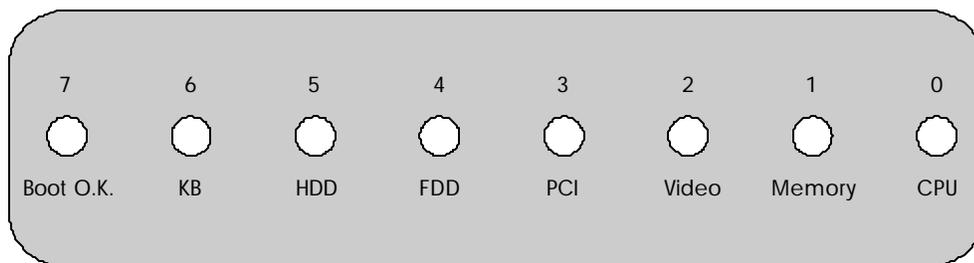
The total 8 LEDs light-up alternatively if the system fails in one of eight stages. Once the LED 7 (latest LED) is lit, this indicates that the system has completed its boot-up procedure.

The 8 LEDs indicate the following messages when lit:

LED 0 - Indicate that the CPU may have been installed incorrectly or is damaged.

LED 1 - Indicate that the memory may have been installed incorrectly or is damaged.

LED 2 - Indicate that the AGP may have been installed incorrectly or is damaged.

LED 3 - Indicate that the PCI card may have been installed incorrectly or is damaged.

LED 4 - Indicate that the floppy disk drive may have been installed incorrectly or is damaged.

LED 5 - Indicate that the HDD may have been installed incorrectly or is damaged.

LED 6 - Indicate that the keyboard may have been installed incorrectly or is damaged.

LED 7 - Indicate that the system is OK.

Note: During POST (power on self test) procedure, the Debug LED will light on sequentially from LED 0 to LED 7 until the system boot up successfully.

3.3 System Memory Configuration

The AK10 mainboard has three 168-pin DIMM sockets that allow you to install from 16MB up to 1.5GB of system memory with PC66/100/133 SDRAM (Synchronous DRAM) and VCM (Virtual Channel Memory) SDRAM. Each DIMM (Dual In-line Memory Module) socket can accommodate 16MB, 32MB, 64MB, 128MB, 256MB and 512MB 3.3V single or double side 64 or 72-bit wide data path SDRAM and VCM SDRAM modules.

The AK10 mainboard supports data integrity algorithms including EC (Error Checking) and ECC (Error Checking and Correction) in the memory array. In EC mode, single and multiple bit error detection is provided. In ECC mode, when the memory is being read from DRAM, the AK10 provides both the error checking and the correction of the data.

Install Memory:

Install memory in any or all of the banks and in any combination, shown as follows :

DIMM Socket	Memory Modules	Module Quantity
DIMM 1	16MB, 32MB, 64MB, 128MB, 256MB and 512MB 168-pin 3.3V SDRAM and VCM SDRAM DIMM	x 1
DIMM 2	16MB, 32MB, 64MB, 128MB, 256MB and 512MB 168-pin 3.3V SDRAM and VCM SDRAM DIMM	x 1
DIMM 3	16MB, 32MB, 64MB, 128MB, 256MB and 512MB 168-pin 3.3V SDRAM and VCM 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 and VCM SDRAM modules in available DIMM banks. The total system memory is calculated by simply adding up the memory in all DIMM banks. After upgrade, the new system memory value will automatically be computed and displayed by the BIOS Standard CMOS Setup menu.

4 SOFTWARE UTILITY

4.1 AK10 Mainboard CD Overview

Note: The cd contents attached in the AK10 mainboard are subject to change without notice.

To start your mainboard CD, 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 Mainboard Drivers for Windows

☞ **Install Audio Device Software** - Installing Audio Driver

☞ **Install VIA Hardware Monitor** - Installing VIA Hardware Monitor Driver

☞ **Manual** - AK10 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.

4.2 Install Mainboard 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.

Use your pointing device (e.g. mouse) to select the "**Install Mainboard Software**" bar.

Once you made your selection, a Setup window runs the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

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.

Use your pointing device (e.g. mouse) to select the "**Install Audio Device Software**" bar.

Once you made your selection, a Setup window runs the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

4.4 Install VIA Hardware Monitor

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.

Use your pointing device (e.g. mouse) to select the "**Install VIA Hardware Monitor** " bar.

Once you made your selection, a Setup window runs the installation automatically.

When the copying files is done, make sure you **reboot** the system to take the installation effect.

4.5 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.

Use your pointing device (e.g. mouse) to select the "**Manual**" bar.

Then **the Online Information** windows will appear on your screen. Click on the "**Install Acrobe Reader 4.05**" bar if you need to install acrobe reader.

Then click on "**AK10 Manual**" bar to view AK10 user's manual.

5 BIOS SETUP

AK10 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 step 2 (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.

```
          CMOS Setup Utility - Copyright (c) 1984-2000 Award Software
   ┌────────────────────────────────────┬────────────────────────────────────┐
   │  ► Standard CMOS Features           │  ► Frequency/Voltage Control        │
   │                                     │                                     │
   │  ► Advanced BIOS Features           │    Load Setup Defaults              │
   │                                     │                                     │
   │  ► Advanced Chipset Features         │    Load Turbo Defaults              │
   │                                     │                                     │
   │  ► Integrated Peripherals           │    Set Supervisor Password          │
   │                                     │                                     │
   │  ► Power Management Setup            │    Set User Password                │
   │                                     │                                     │
   │  ► PnP/PCI Configurations            │    Save & Exit Setup                │
   │                                     │                                     │
   │  ► PC Health Status                 │    Exit Without Saving              │
   ├────────────────────────────────────┴────────────────────────────────────┤
   │ Esc : Quit                            ↑ ↓ → ←   : Select Item             │
   │ F10 : Save & Exit Setup                                                   │
   ├──────────────────────────────────────────────────────────────────────────┤
   │                  Time, Date, Hard Disk Type...                            │
   └──────────────────────────────────────────────────────────────────────────┘
```

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

Standard CMOS Features

This setup page includes all items in a standard BIOS compatible.

Advanced BIOS Features

This setup page includes all items of Award special enhanced features.

Advanced Chipset Features

This setup page includes all items of chipset features.

Integrated Peripherals

This setup page includes all items of peripherals features.

Power Management Setup

This setup page includes all items of Power Management features.

PnP/PCI Configurations

This item specifies the value (in units of PCI bus blocks) of the latency timer for the PCI bus master and the IRQ level for PCI device. Power-on the system with BIOS defaults.

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 Setup Defaults

Setup defaults load the optimized settings for optimum system performance. However, you can change the parameter through each Setup Menu.

Load Turbo Defaults

To load the Turbo defaults is required by the power users who want to push the limitation of system performance by overclocking. **Before you use this function, make sure you fully understand the itmes in Chipset Setup menu and the components (CPU, DRAM, HDD, etc.) of your system are good enough for turbo setting.**

Set Supervisor Password

Change, set, or disable supervisor password. It allows you to limit access to the system and Setup, or only to Setup.

Set User Password

Change, set, or disable user password. It allows you to limit access to the system and Setup, or only to Setup.

Save & Exit Setup

Save CMOS value change to 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 catego-
ries. 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.

```
              CMOS Setup Utility – Copyright (C) 1984-2000 Award Software
                             Standard CMOS Features

   Date (mm:dd:yy)              Tue, Aug 15 2000          Item Help
   Time (hh:mm:ss)              16 : 58 : 40
                                                        Menu Level    ►
  ► IDE Primary Master          Press Enter None
  ► IDE Primary Slave           Press Enter None         Change the day, month,
  ► IDE Secondary Master        Press Enter None         year and century
  ► IDE Secondary Slave         Press Enter None

   Drive A                      1.44M, 3.5 in.

   Video                        EGA/VGA
   Halt On                      All Errors

   Base Memory                     640K
   Extended Memory              65488K
   Total Memory                 65512K


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

Date

The date format is < month > < date > < year > .
Press < F3 > to show the calendar.

Time

The time format is < hour > < minute > < second > . The time is
converted based on the 24-hour military-time clock. For example. 5
p.m. is 17:00:00.

Hard Disks Type

This item identify the types of hard disk drives that has been installed in
the computer. There are 46 predefined types ,a user definable type and
AUTO type.

Press PgUp or PgDn to select a numbered hard disk type, or type the
number and press < Enter > . Note that the specifications of your drive
must match with the drive table. The hard disk will not work properly if
you enter improper information for this item. If your hard disk drive
type is not matched or listed, you can use Type User to define your
own drive type manually.

If select Type User, you may find related information in the following items. Enter the information directly from the keyboard and press < Enter>. Those information should be provided in the documentation from your hard disk vendor or the system manufacturer.

The user may also set those items in AUTO to automatically configure the hard disk drives parameter when the system power on.

If a hard disk drive has not been installed, select NONE and press < Enter>.

Drive A type/Drive B type

This item specifies the types of floppy disk drive A or drive B that has been installed in the system.

Video

This item selects the type of adapter used for the primary system monitor that must matches your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

Halt On

This item determines if the system will stop when an error is detected during power-up.

Memory

This item is only for display. It is automatically detected by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the mainboard, or 640K for systems with 640K or more memory installed on the mainboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

✎ *Advanced BIOS Features*

```
          CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                            Advanced BIOS Features

  Virus Warning              Disabled            ┌──── Item Help ────
  CPU Internal Cache         Enabled             │
  External Cache             Enabled             │ Menu Level ►
  CPU L2 Cache ECC Checking  Enabled             │
  Quick Power On Self Test   Enabled             │ Allows you to choose
  First Boot Device          CDROM               │ the VIRUS warning
  Second Boot Device         A:                  │ feature for IDE Hard
  Third Boot Device          C:                  │ Disk boot sector
  Boot Other Device          Enabled             │ protection. If this
  Boot Up Floppy Seek        Disabled            │ function is enabled
  Boot Up NumLock Status     On                  │ and someone attempt to
  Gate A20 Option            Normal              │ write data into this
  Typematic Rate Setting     Disabled            │ area, BIOS will show a
x Typematic Rate (Chars/Sec) 6                   │ warning message on
x Typematic Delay (Msec)     250                 │ screen and alarm beep
  Security Option            Setup               │
  OS Select For DRAM > 64MB  Non-OS2             │
  Video BIOS Shadow          Enabled             │
  C8000-CBFFF Shadow         Disabled            │
  CC000-CFFFF Shadow         Disabled            │
  D0000-D3FFF Shadow         Disabled            │
  D4000-D7FFF Shadow         Disabled            │
  D8000-DBFFF Shadow         Disabled            │
  DC000-DFFFF Shadow         Disabled            │

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

Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt is made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

```
┌─────────────────────────────────────────────────┐
│                    !WARNING!                      │
│          Disk boot sector is to be modified       │
│   Type "Y" to accept write or "N" to abort write  │
│                Award Software, Inc.               │
└─────────────────────────────────────────────────┘
```

➢ The choice: Enabled, Disabled.

CPU Internal Cache

This item enables CPU internal cache to speed up memory access.

➢ The choice: Enabled, Disabled.

External Cache

This item enables CPU secondary cache to speed up memory access.

➢ The choice: Enabled, 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, Disabled.

First/Second/Third Boot Device

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

➢ The choice: A:, LS120, C:, SCSI, CDROM, D:, E:, F:, ZIP, LAN, Disabled.

Boot Other Device

Select Your Boot Device Priority.

➢ The choice: Enabled, Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks.

➢ The choice: Enabled, Disabled.

Boot Up NumLock Status

When this option is enabled, BIOS turns on *Num Lock* when system is powered on.

➢ The choice: On, Off.

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, Fast.

Typematic Rate Setting

This determines if the typematic rate is to be used. When this setting is disabled, only a press on keyboard will be sensored even if the continual presses on keyboard are generated. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly.
For example, you would use such a feature to accelerate cursor movements with the arrow keys.

➢ The choice: Enabled, Disabled.

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you to select the rate at which the keys are accelerated.

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

Typematic Delay (Msec)

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins

➢ The choice: 250, 500, 750, 1000.

Security Option

This item allows you to limit access to the System and Setup, or just to Setup. When *System* is selected, the System will not boot, and access to Setup will be denied if the correct password is not entered promptly. When *Setup* is selected, the System will boot, but access to Setup will be denied if the correct password is not entered promptly.

➢ The choice: Setup, System.

OS Select For DRAM > 64MB

This item allows you to access the memory that over 64 MB in OS/2.

➢ The choice: Non-OS2, OS2.

Video BIOS Shadow

Determines if video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

➢ The choice: Enabled, Disabled.

XX000-XXFFF Shadow

These categories are for shadowing ROM code on other expansion cards. Before you set these parameters, you need to know the specific address of that ROM code. If you do not know this information, enable all the ROM shadow setting.

➢ The choice: Enabled, Disabled.

✎ *Advanced Chipset Features*

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Advanced Chipset Features

Bank 0/1 DRAM Timing	SDRAM 8/10ns	Item Help
Bank 2/3 DRAM Timing	SDRAM 8/10ns	
Bank 4/5 DRAM Timing	SDRAM 8/10ns	Menu Level ▶
SDRAM Cycle Length	3	
DRAM Clock	Auto	
Memory Hole	Disabled	
PCI Master Pipeline Req	Enabled	
P2C/C2P Concurrency	Enabled	
Fast R-W Turn Around	Disabled	
System BIOS Cacheable	Disabled	
Video RAM Cacheable	Disabled	
AGP Aperture Size	64M	
AGP-4x Mode	Enabled	
AGP Driving Control	Auto	
x AGP Driving Value	DA	
K7 Clock Control Select	Optimal	
Onchip USB	Enabled	
USB Keyboard Support	Disabled	
USB Mouse Support	Disabled	
Onchip Sound	Enable	
CPU to PCI Write Buffer	Enabled	
PCI Dynamic Bursting	Enabled	
PCI Master 0 WS Write	Enabled	
PCI Delay Transaction	Enabled	
PCI#2 Access #1 Retry	Enabled	
AGP Master 1 WS Write	Disabled	
AGP Master 1 WS Read	Disabled	
Memory Parity/ECC Check	Disabled	

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

> Warning: Make sure you fully understand the items contained in this menu before you try to change anything. You may change the parameter settings to improve system performance. However, it may cause your system to be unstable if the setting is not correct for your system configuration.

Bank x/x DRAM Timing

This value in this field is set by the system board manufacturer, depending on whether the board has paged DRAMS or EDO DRAMS.

➢ The choice: SDRAM 8/10ns, Normal, Medium, Fast, Turbo.

SDRAM Cycle Length

This field allows you to set the SDRAM latency timer.

➢ The choice: 2, 3.

DRAM Clock

This item set the DRAM Read/Write timings that the system uses.

➢ The choice: PCI CLKx3, PCI CLKx4, Auto.

Memory Hole

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

➢ The choice: Disabled, 15M-16M.

PCI Master Pipeline Req

Enable this item to enhance PCI bus for better performance.

➢ The choice: Enabled, Disabled.

P2C/C2P Concurrency

This item allows you to enable/disable the PCI to CPU and CPU to PCI concurrent mode.

➢ The choice: Enabled, Disabled.

Fast R-W Turn Around

This item controls the DRAM Timing. It allows you to enabled/Disabled the fast read/write turn around.

➢ The choice: Enabled, Disabled.

System BIOS Cacheable

This item allows the user to set whether the system BIOS F000 ~ FFFF areas are cacheable or non-cacheable.

➢ The choice: Enabled, Disabled.

Video RAM Cacheable

This is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must leave this on the default setting of *Disabled* if your display card cannot support this feature or else your system may not boot.

➢ The choice: Enabled, Disabled.

AGP Aperture Size

This item allows the user to set memory-mapped and graphics data structures can reside in Graphics Aperture.

➢ The choice: 4M, 8M, 16M, 32M, 64M, 128M.

AGP-4X Mode

This item allows you to enable/disable AGP-4X function. See www.apgforum.org for AGP information.

➢ The choice: Enabled, Disabled.

AGP Driving Control

This item allows you to adjust the AGP driving force. Choose Manual to key in a AGP Driving Value in the next selection. This field is recommended to set in auto for avoiding any error in your system

➢ The choice: Auto, Manual

AGP Driving Value

This item allows you to adjust the AGP driving force

➢ The choice: Min:0000 ~ Max:00FF.

K7 Clock Control Select

This option is used to adjust clock control circuit within K7 CPU. If you set this item as "optimal", different CPU may have different clock control timing because CPUs' clock ratio are not the same. It is recommended to set it as "**Default**".

➢ The choice: Default, Optimal.

On Chip USB

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

➢ The choice: Enabled, Disabled.

USB Keyboard Support

This item lets you enable or disable the USB keyboard driver within the onboard BIOS. The keyboard driver simulates legacy keyboard command and let you use USB keyboard during POST or after boot if you do not have USB driver in the operating system.

➢ The choice: Enabled, Disabled.

Note:You cannot use both USB driver and USB legacy keyboard at the same time. Disable "USB Keyboard Support" if you have USB driver in the operating system.

USB Mouse Support

This item lets you enable or disable USB mouse driver within the onboard BIOS.

➢ The choice: Enabled, Disabled.

OnChip Sound

This item allows you to control the onboard AC97 audio.

➢ The choice: Enabled, Disabled.

CPU to PCI Write Buffer

When this item is enabled, up to four Dwords of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus is ready to receive the data.

➢ The choice: Enabled, Disabled.

PCI Dynamic Bursting

When Enabled, data transfers on the PCI bus, where possible, make use of the high performance PCI burst protocol, in which greater amounts of data are transferred at a single command.

➢ The choice: Enabled, Disabled.

PCI Master 0 WS Write

When Enabled, writes to the PCI bus is a command with zero wait tate.

➢ The choice: Enabled, Disabled.

PCI Delay Transaction

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

➢ The choice: Enabled, Disabled.

PCI #2 Access #1 Retry

This item allows you to enable/disable the PCI #2 Access #1 Retry.

➢ The choice: Enabled, Disabled.

AGP Master 1 WS Write

This implements a single delay when writing to the AGP Bus. By default, two wait states are used by the system for greater stability.

➢ The choice: Enabled, Disabled.

AGP Master 1 WS Read

This implements a single delay when reading to the AGP Bus. By default, two wait states are used by the system for greater stability.

➢ The choice: Enabled, Disabled.

Memory Parity/ECC Check

This lets you enable or disable memory ECC function. The ECC algorithm has the ability to detect double bit error and automatically correct single bit error.

➢ The choice: Enabled, Disabled.

✎ *Integrated Peripherals*
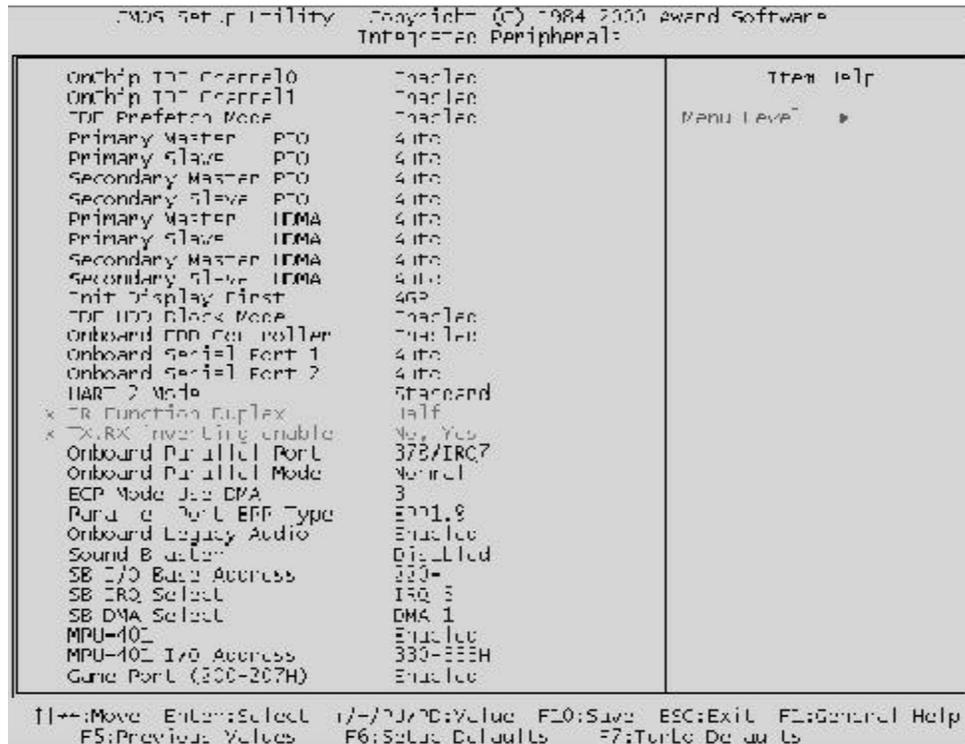
OnChip IDE Channel0

This item defined that on chip Primary PCI IDE controller is Enabled or Disabled setting.

➢ The choice: Enabled, Disabled.

OnChip IDE Channel1

This item defined that on chip Secondary PCI IDE controller is Enabled or Disabled setting.

➢ The choice: Enabled, Disabled.

IDE Prefetch Mode

Enabled prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI/IDE field, above is Disabled.

➢ The choice: Enabled, Disabled.

Primary Master / Slave PIO

In this item, there are five modes defined in manual mode and one automatic mode. There are *0, 1, 2, 3, 4,* and *AUTO* is the default setting for on board Primary Master / Slave PIO timing.

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

Secondary Master / Slave PIO

In this item, there are five modes defined in manual mode and one automatic mode. There are *0, 1, 2, 3, 4,* and *AUTO* is the default setting for on board Secondary Master / Slave PIO timing.

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

Primary Master / Slave UDMA

On this mainboard, AK10 PCIset improves IDE transfer rate using Bus Master UltraDMA 33/66 IDE which can handle data transfer up to 33/66MB/sec. *Auto* is the default setting for on board Primary Master / Slave UltraDMA 33/66.
Note : Your hard disk drive must also support UDMA for this feature to work.

➢ The choice: Auto, Disabled.

Secondary Master / Slave UDMA

On this mainboard, AK10 PCIset improves IDE transfer rate using Bus Master UltraDMA 33/66 IDE which can handle data transfer up to 33/66MB/sec. *Auto* is the default settings for on board Secondary Master / Slave *UltraDMA 33/66.*
Note : Your hard disk drive must also support UDMA for this feature to work.

➢ The choice: Auto, Disabled.

Init Display First

This item is used to determine initial device when system is powered on.

➢ The choice: AGP, PCI Slot.

IDE HDD Block Mode

This item is used to set IDE HDD Block Mode. If your IDE Hard Disk supports block mode, then you can enable this function to speed up the HDD access time. If not, please disable this function to avoid HDD access error.

➢ The choice: Enabled, Disabled.

Onboard FDD Controller

This item specifies onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector. Choose the "*Disabled*" settings if you have a separate control card.

➢ The choice: Enabled, Disabled.

Onboard Serial Port 1

This item is used to define onboard serial port 1.

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

Onboard Serial Port 2

This item is used to define onboard serial port 2.

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

UART 2 Mode

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

➢ The choice: Standard, HPSIR, ASKIR

IR Function Duplex

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

➢ The choice: Half, Full.

TX, RX inverting enable

This item allows you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system.

➢ The choice: No,No / No, Yes / Yes, No / Yes, Yes.

Onboard Parallel Port

This item specifies onboard parallel port address to 3BC/IRQ7, 378/IRQ7, 278/IRQ5 or Disabled.

Onboard Parallel Port Mode

This item specifies onboard parallel port mode. The options are *EPP (Enhanced* Parallel Port), *ECP* (Extended Capabilities Port), *EPP+ECP,* and *Normal.*

ECP Mode Use DMA

This item specifies *DMA* (Direct Memory Access) channel when ECP device is in use. The options are *DMA 1* and *DMA 3*. This item will not show up when SPP and EPP printer mode is selected.

➢ The choice: 1, 3

Parallel Port EPP Type

This item allows you to select EPP port type 1.7 or 1.9.

➢ The choice: EPP 1.7, 1.9.

These items from "Onboard Legacy Audio" to "Game Port" control the onboard legacy audio and are defined as follows:

Onboard Legacy Audio

This item controls the onboard legacy audio.

➢ The choice: Enable, Disable.

Sound Blaster

This item allows to emulate the sound as Sound Blaster.

➢ The choice: Enable, Disable.

SB I/O Base Address

This item allows to select Sound Blaster I/O address.

➢ The choice: 220H, 240H, 260H, 280H.

SB IRQ Select

This item allows to select Sound Blaster IRQ.

➢ The choice: IRQ 5,7,9,10.

SB DMA Select

This item allows to select Sound Blaster DMA.

➢ The choice: DMA 0,1,2,3.

MPU-401

This item allows to select I/O base address for the MIDI port.

➢ The choice: Enable, Disable.

MPU-401 I/O Address

This item allows to select I/O base address for the MIDI port.

➢ The choice: 300-303H, 310-313H, 320-323H, 330-333H.

Game Port (200-207H)

This item allows to assign an address for the Game Port.

➢ The choice: Enable, Disable.

✎ *Power Management Setup*

The Power Management Setup allows you to configure the motherboard green features.

ACPI Function

This item allows you to Enable/Disable the Advanced Configuration and Power Management (ACPI)

➢ The choice: Enabled, Disabled.

Select "Power Management" to press "enter" key ,and then you may run into the sub-menu. The sub-menu contains three items listed as follows:

Power Management

This function allows you to set the default parameters of power-saving modes. Set "User Define" to choose your own parameters or turn off the power management function.

➢ The choice: User Define, Min Saving, Max Saving.

HDD Power Down

This option lets you specify the IDE HDD idle time before the device enters power down state. This item is independent from the power states previously described in this section (Standby and Suspend).

➢ The choice: Disable, 1Min, ..., 15Min.

Doze Mode

This item lets you set the period of time after which the system enters into Doze mode.

➤ The choice: 1Min, 2Min, 4Min, 6

Min, 8Min, 10Min, 20Min, 30Min,
  40Min, 1Hour.

Press "Esc" key to go back to the previous sub-menu.

ACPI Suspend Type

This item allows you to select the ACPI suspend type. Select S3(STR) for suspend to RAM or Select S1(POS) for power-on suspend under Windows 98 ACPI mode.

➤ The choice: S1(POS), S3(STR)

PM Control by APM

If this item is set to *No*, system BIOS will be ignored and APM calls the power to manage the system.
If this item is set to *Yes*, system BIOS will wait for APM's prompt before it enters any PM mode e.g. *DOZE, STANDBY* or *SUSPEND.*

➤ The choice: Yes, No.

Video Off Option

This item defines when to activate the video off feature for monitor power management.

➤ The choice: Suspend, Doze, N/A.

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   Initial display power management signal.

➤ The choice: V/H SYNC + Blank, Blank Screen, DPMS Support.

Modem Use IRQ

This item determines the IRQ in which the MODEM can use.

➤ The choice: 3, 4, 5, 7, 9, 10, 11, N/A

Soft-Off by PWRBTN

This is a specification of ACPI and supported by hardware. When **Delay 4 sec.** is selected, the soft power switch on the front panel can be used to control power On, Suspend and Off. If the switch is pressed less than 4 sec during power On, the system will go into Suspend mode. If the switch is pressed longer than 4 sec, the system will be turned Off. The default setting is **Install-Off**, soft power switch is only used to control On and Off, there is no need to press 4 sec, and there is no Suspend.

➢ The choice: Instant-Off, Delay 4 Sec.

*** *Wake Up Events* ***

Wake Up Events can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as On or Enabled, even when the system is in a power down mode.

Wake Up Events

This item allows user to determine the wake up events.

➢ The choice: Press "Enter" key to run into the sub-menu.
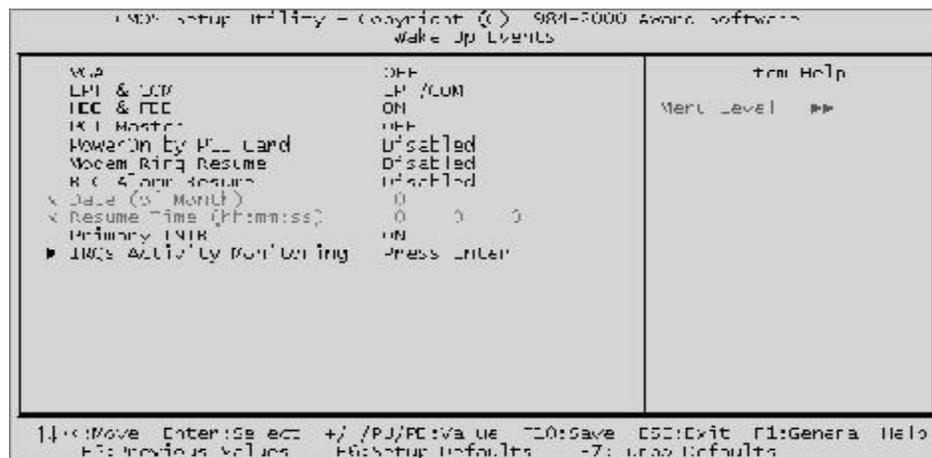
VGA

Set the item ON, while you wake up the system by LAN, and the VGA is waken, too.

➢ The choice: ON, OFF.

LPT & COM

Set the item Enabled; users can awaken the system by any device connected to LPT/COM ports.

➢ The choice: NON, LPT/COM, LPT, COM.

HDD & FDD

Set the item ON; users can awaken the system by Hard Disk/Floppy disk.

➢ The choice: ON, OFF.

PCI Master

Set the item ON; users can awaken the system by any PCI Card (Master mode).

➢ The choice: ON, OFF.

Power On by PCI Card

Set the item Enabled; users can awaken the system by PCI card.

➢ The choice: Enabled, Disabled.

Modem Ring Resume

This option lets you enable or disable Wake On Modem function.

➢ The choice: Enabled, Disabled.

RTC Alarm Resume

Set the item Enabled, and then select the alarm time in the next few items.

➢ The choice: Enabled, Disabled.

Date (of Month)

This is for specifying the alarm Date on which the system will awaken the system from Suspend mode.

➢ The choice: Key in a DEC number: Min＝0, Max＝31.

Resume Time (hh:mm:ss)

This is for specifying the alarm Hour/Minute/Second on which the system will awaken the system from Suspend mode.

➢ The choice: Key in a DEC number: Min＝0, Max＝23/59.

Primary INTR

Set the item Enabled; users can awaken the system by any device with the IRQ designated by PCI Card.

➢ The choice: ON, OFF.

IRQs Activity Monitoring

Press "Enter" key to run into the sub-menu. You may enable any device with listed IRQ to awaken the system.

➢ The choice: IRQ 3 ~ IRQ15.

✎ *PnP/PCI Configurations*
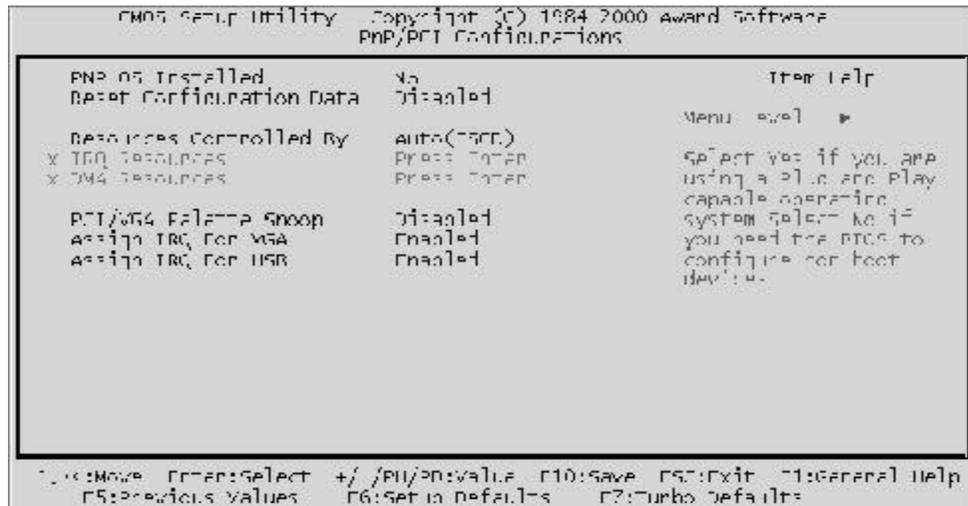
The PnP/PCI Configurations allows you to configure the ISA and PCI devices installed in your system.

PNP OS Installed

When this item is set to Yes, it will allow the PnP OS (Windows 95) to control the system resources except PCI devices and PnP boot devices. Default setting is *No*.

➢ The choice: Yes, No.

Reset Configuration Data

This item allows you to determine whether to reset the configuration data or not.

➢ The choice: Enabled, Disabled.

Resources Controlled By

The Award Plug and Play BIOS has the capability 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 as Windows 95.

➢ The choice: Auto, Manual.

IRQ/DMA 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 to

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 compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

➢ The choice: Reserved, PCI Device.

DMA 0/1/3/5/6/7 assigned to

These items allow you to determine the DMA assigned to the ISA bus and is not available for PCI slot.

➢ The choice: Legacy ISA, PCI/ISA PnP.

PCI/VGA Pallete 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: Disabled, Enabled.

Assign IRQ for VGA

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

➢ The choice: Enabled, Disabled.

Assign IRQ for USB

This item allows the user the option to assign an IRQ to onboard USB controller. The onboard controller is always enabled, if no IRQ is assigned to it, there will be a question mark report on the system device under Windows 95/98.

➢ The choice: Enabled, Disabled.

✎ PC Health Status

```
        CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                            PC Health Status

  Current CPU Temp              xx°C/xx°F              Item Help
  Current System Temp.          xx°C/xx°F
  Current CPUFAN1 Speed         xxxx RPM          Menu Level    ►
  Current CPUFAN2 Speed         xxxx RPM
  Vcore                         x.xx V
  3.3V                          x.xx V
  5 V                           x.xx V
  12 V                          x.xx V




  ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5:Previous Values   F6:Setup Defaults   F7:Turbo Defaults
```
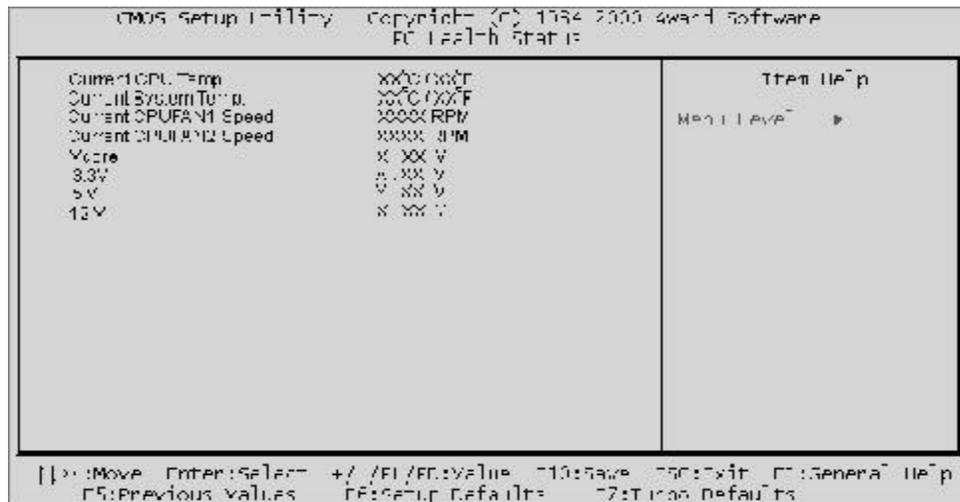
This submenu display hardware monitor status and provide some basic control function. You can install VIA Hardware Monitoring utility without using setup items in this submenu.

Current CPU Temperature

The mainboard supports CPU temperature monitoring and overheat alert. This item indicates the current Processor temperature.

Current System Temp

The mainboard supports System Temperature monitoring and overheat alert. This item indicate the current main board temperature.

Current CPUFAN1/2 Speed

The mainboard can detect two fans' rotation speed for CPU cooler.

Vcore

This mainboard supports CPU and mainboard voltages monitoring. The onboard hardware monitor is able to detect the CPU voltage (Vcore) and the voltage output from power supply.

3.3V, 5V, 12V

The mainboard supports CPU and mainboard voltages monitoring. The onboard hardware monitor is able to detect the voltages output of the voltage regulators and power supply.

✎ *Frequency/Voltage Control*

```
         CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
                          Frequency/Voltage Control

    Auto Detect DIMM/PCI Clk      Enabled                   Item Help
    CPU Host Clock (CPU/PCI)      Default
                                                       Menu Level    ►














    ↑↓→←:Move   Enter:Select   +/-/PU/PD:Value   F10:Save   ESC:Exit   F1:General Help
          F5:Previous Values       F6:Setup Defaults      F7:Turbo Defaults
```
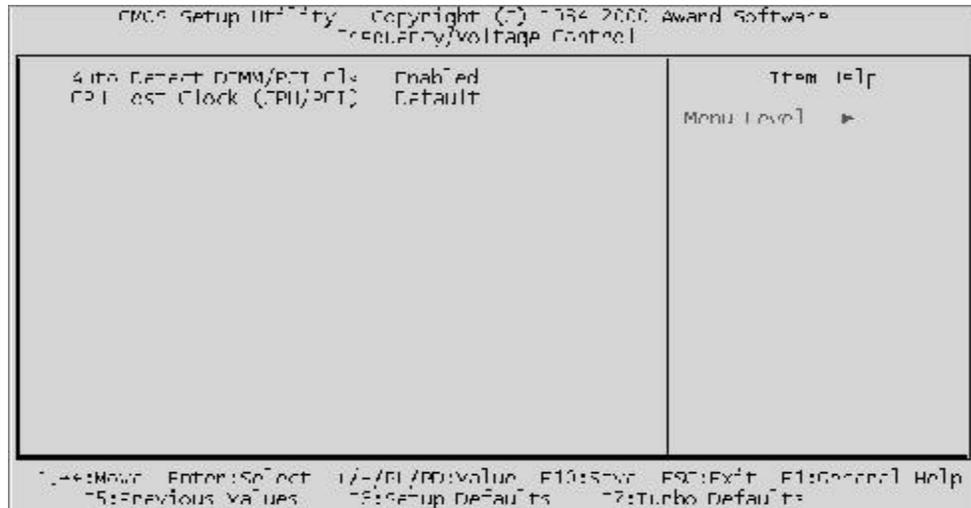
Auto Detect DIMM/PCI Clk
This item allows you to enable/disable auto detection DIMM/PCI Clock.

CPU Host Clock (CPU/PCI)
The user may adjust the Host Clock of AMD socket A CPU.

✎ Load Setup Defaults

The "Load Setup Defaults" option loads optimized settings for optimum system performance. Optimal settings are relatively safer than the Turbo settings. **All the product verification, compatibility/reliability test report and manufacture quality control are based on "Load Setup Defaults"**. We recommend users to use this settings for normal operation. "Load Setup Defaults" is not the slowest setting for this motherboard. If you need to verify an unstable problem, you may manually set the parameter in the "Advanced BIOS Features" and "Advanced Chipset Features" to get slowest and safer setting.

✎ Load Turbo Defaults

The "Load Turbo Defaults" option gives better performance than "Load Setup Defaults". It is provided for the convenience of power user who wants to push the motherboard to get better performance. Turbo setting does not go through all the detail reliability and compatibility test, it is tested only with limited configuration and loading (for example, a system that contains only a VGA card and two DIMMs). **Use Turbo setting only when you fully understand the items in Chipset Setup menu.** The performance improvement of Turbo setting is normally around 3% to 5%, depending on the chipset and the application.

✎ **User Password Setting**

You can set either supervisor or user password or both of them. The differences between them are:
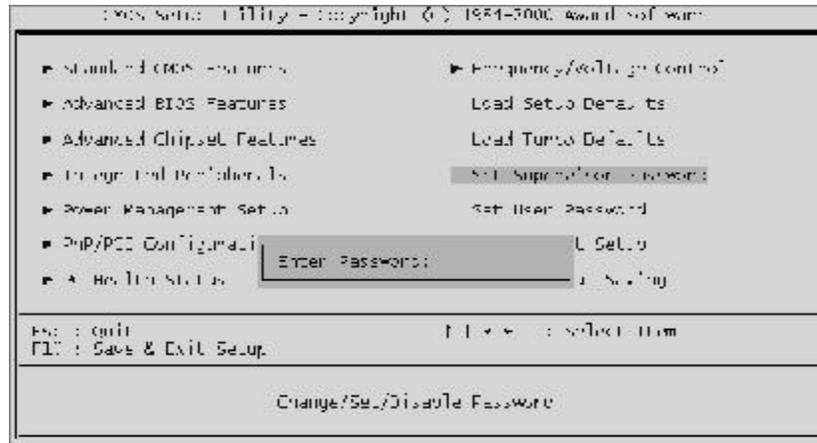
Supervisor Password and User Setting

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 option, whereas User mode has restricted access to the option. By setting separate Supervisor and User password, a system supervisor can limit who will 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 the password whenever the system is rebooted or whenever 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 memory, please refer to "Clear CMOS" on page 29.

✎ Save & Exit Setup

Press < Enter > on this item, and a similar dialog box shows up to ask you the following 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. When 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 restarts again.

✎ Exit Without Saving

Press < Enter > on this item and a similar dialog box shows up to ask you the following 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.