AV40S

Socket 478

Pentium 4 Processor

Based MAIN BOARD

User's Manual

Shuttle® Spacewalker™ AV40S

Pentium 4 , 478-pin processor based AGPset Mainboard
Manual Version 1.0

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WHAT'S IN THE 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 **3.1 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 AV40S mainboard.

Experienced DIY User

Congratulate on your purchase of the Shuttle AV40S mainboard. You will find that installing your new Shuttle AV40S mainboard is just easy. Bundled with an array of onboard functions, the highly-integrated AV40S 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 Drivers/Software Utilities** 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 AV40S to construct your system. Shuttle AV40S incorporates all the state-of-the-art technology of the P4X266/A chipset from VIA. It integrates the most advanced functions you can find to date in a compact ATX board.

1.2 Item Checklist:

Check all items with you AV40S mainboard to make sure nothing is missing. The complete package should include:

✳ One piece of Shuttle AV40S Mainboard
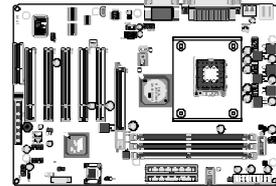
✳ One piece of ATA **100/66/33** Ribbon Cable

✳ One piece of Floppy Ribbon Cable

✳ One piece of twin ports USB Cable **(optional)**
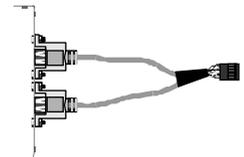
✳ AV40S User's Manual
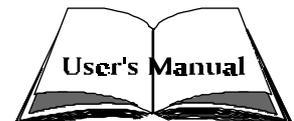
✳ One piece of Bundled CD-ROM with containing:
  ➢ AV40S user's manual saved in PDF format
  ➢ VIA 4-IN-1 driver
  ➢ VIA Audio driver
  ➢ Award Flashing Utility

2 FEATURES

AV40S 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

Intel Pentium 4, 478-pin processors with 100/133 MHz FSB.

✽ Chipset

Features VIA P4X266/A N.B. and VIA VT8233 S.B..

✽ Jumperless CPU Configuration

Soft-configuration FSB (The FSB speed is software configurable at 100MHz and 133MHz.)

✽ 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 1.5GB of PC1600 or PC2100 compliant **DDR** SDRAM module.

✽ PCI Expansion Slots

Provides five 32-bit PCI slots.

✽ AGP Expansion Slots

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

✽ CNR Expansion Slots

➢ Provides one CNR (Communication Network Riser) slot.

✽ 6 USB Interface Onboard

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

✸ 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 supports Standard Parallel Port and Bi-directional (SPP), Enhanced Parallel Port (EPP), and Extended Capabilities Port (ECP) data transmission schemes.

➢ 1*Line-Out port.

➢ 1*Line-In port.

➢ 1*Mic-In port.

➢ 1*MIDI/GAME port.

✸ PCI Bus Master IDE Controller Onboard

Two Ultra DMA **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 data transfer speeds of up to **100/66/33** MB/sec and also supports Enhanced PIO Modes.

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 connected to the onboard 20-pin Pentium 4 standard ATX power connectors, supporting Suspend and Soft-On/Off by dual-function power button.

✸ System BIOS

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

✸ ATX Form Factor

System board conforms to ATX specification.
Board dimension: 305mm*190mm.

✳ Advanced Features

➢ **Low EMI -** Built in spread spectrum and automatic clock shut-off of unused PCI/SDRAMS slots to reduce EMI.

➢ **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 Soft-Off mode.

➢ **CPU Clock Setting** - This item allows users to adjust CPU Host Clock in BIOS.

➢ **CPU Multiplier Setting** - This item allows users to adjust CPU Multiplier in BIOS.

✳ 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.

➢ **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 mainboard. Refer to the following mainboard layout to help you to 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 AV40S

Step 1

CPU Installation:

This mainboard supports Intel Pentium 4 Socket 478 series CPU. Please follow the step as below to finish CPU installation.

Be careful of CPU orientation when you plug it into CPU socket.

1. Pull up the CPU socket level and up to 90-degree angle.

CPU socket level up to 90 degree
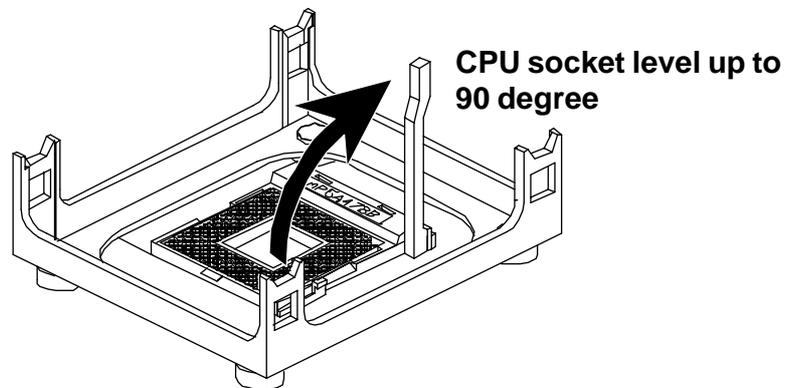
2. Locate Pin 1 in the socket and look for a black dot or cut edge on the CPU upper interface. Match Pin 1 and cut edge, then insert the CPU into the socket.

CPU pin 1 and cut edge
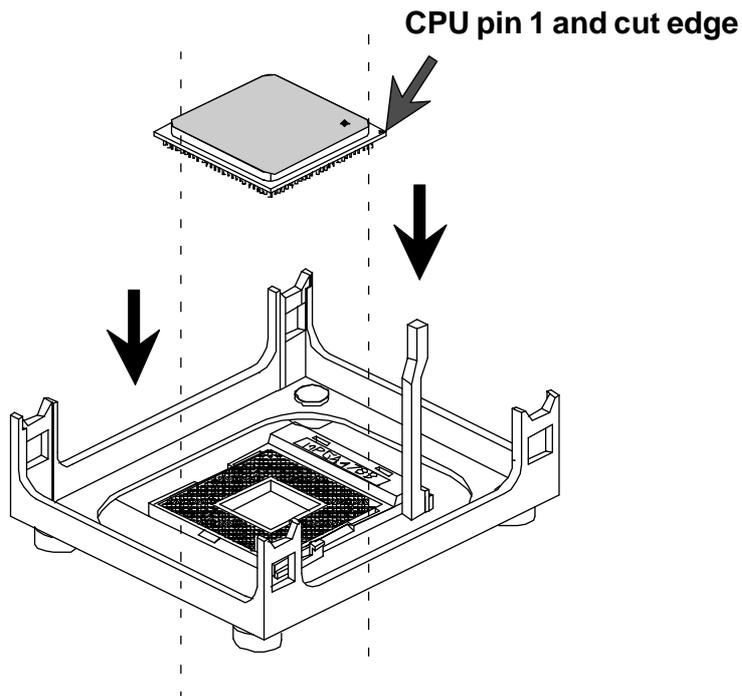
3. Press down the CPU socket level and finish CPU installation.
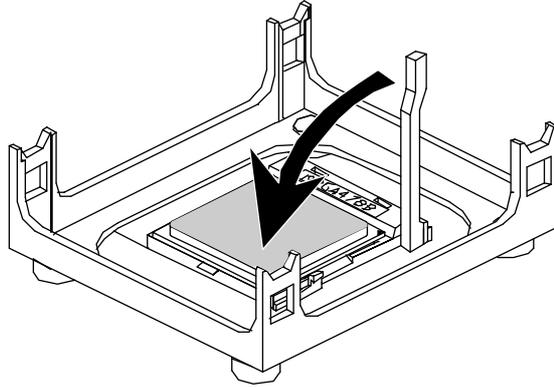
> **Note:** If you do not match the CPU socket Pin 1 and CPU cut edge well, it may damage the CPU.

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. BIOS Protect

For first-time DIY system builders, we recommend that you do not change the default jumper settings if you are not totally familiar with the 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 SDRAM memory module(s) in any one or two or three DIMM banks. Note that SDRAM modules are directional and will not go in the DIMM banks if they are not properly oriented. After the module is fully inserted into the DIMM bank, lift the clips of both sides of the DIMM bank to lock the module in place.
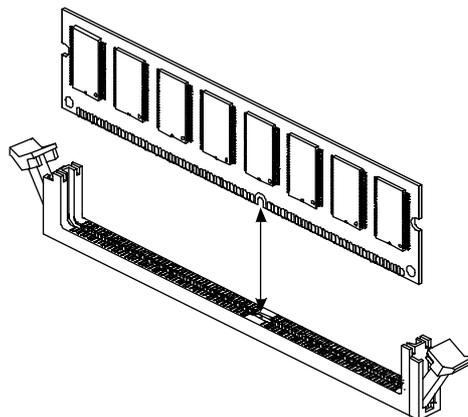
Step 4

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 connections 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, have to set jumpers to Master or Slave mode depending on whether you install more than one device of 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 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 from 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 correct mounting holes, the key point is to keep the back-panel of the mainboard in a close fit with your system case, as shown below.
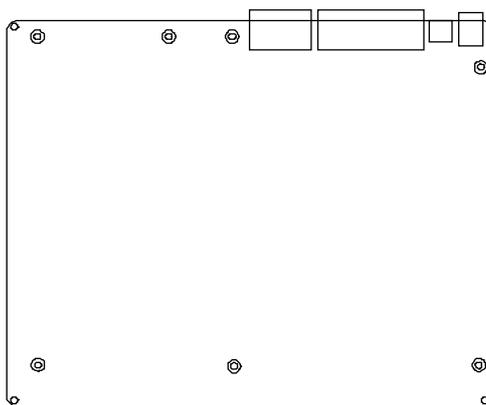
2. After deciding on the proper mounting holes, position the studs be tween the frame of the chassis and the mainboard. The studs are used to fix the mainboard and to keep a certain distance between the system chassis and the mainboard, in order to avoid any electrical shorts between the board and the metal frame of the chassis. (If your com puter 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 then fix the mainboard. If there arent enough matching holes, then make sure to install at least 4 mounting studs to ensure proper attachment of the mainboard.

Step 6

Connect Front Panel Switches/LEDs/USB

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, 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 (Panel and USB2/3), as shown below.
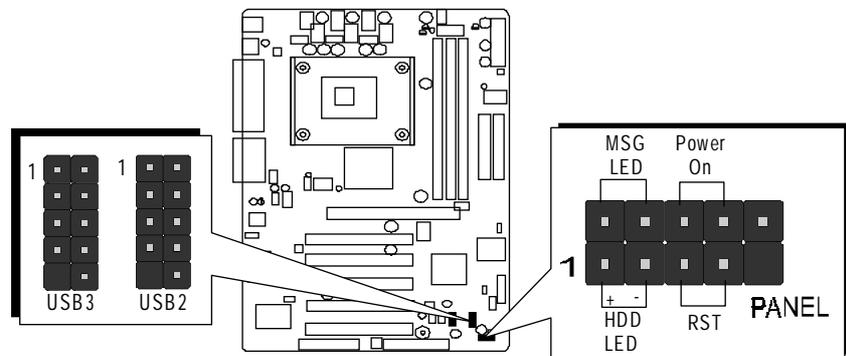
1. Green LED(Green LED)
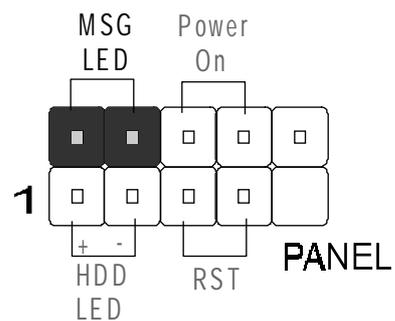
2. HDD-LED (HDD LED)
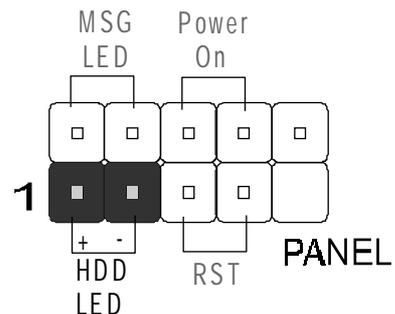
3. Power On(Power On)

MSG   Power
LED   On

PANEL

4. Hardware Reset Switch
   (RST)

MSG   Power
LED   On

+ -
HDD   RST
LED

PANEL

4. MIC/Speaker-out (AUDIO)

AUDIO

XSPKOUTL	•	•	SPKOUTL
		•	KEY
XSPKOUTR	•	•	SPKOUTR
5V	•	•	MICBIAS
AGND	•	■	MICIN

5. Extended USB Header

VCC(+5V)	■	•	VCC(+5V)
USBP2-N(port2-)	•	•	USBP3-N(port3+)
USBP2-P(port2+)	•	•	USBP3-P(port3-)
GND	•	•	GND
		•	OC#

USB2/3
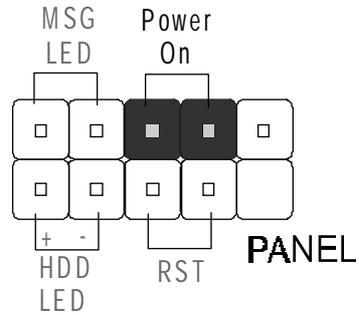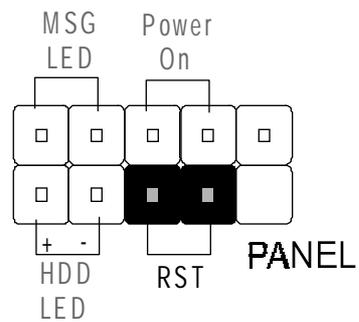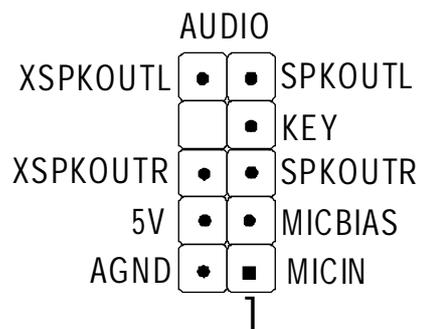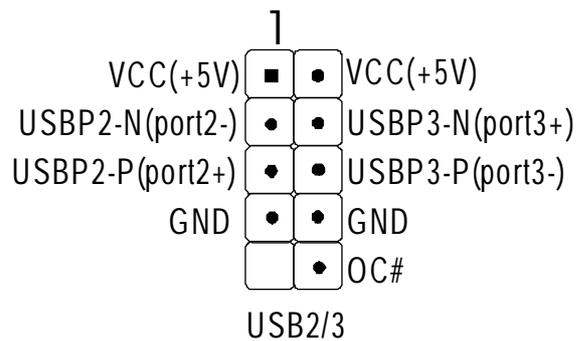
Step 7

Connect IDE, IDE RAID, and Floppy Disk Drives

1. IDE cable connector

IDE 1   IDE 2
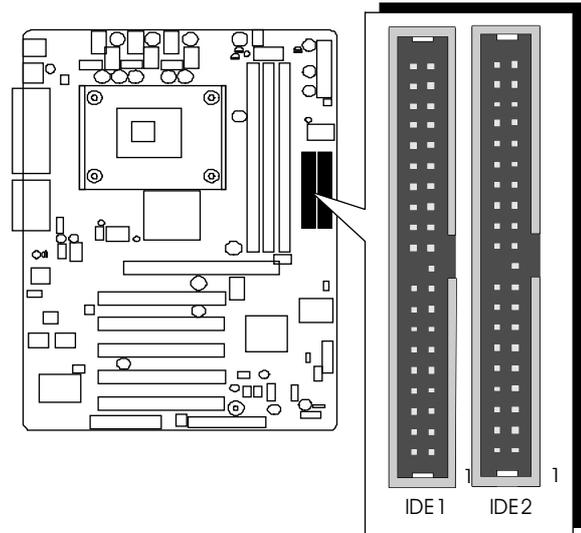
2. Floppy cable connector

FDD1
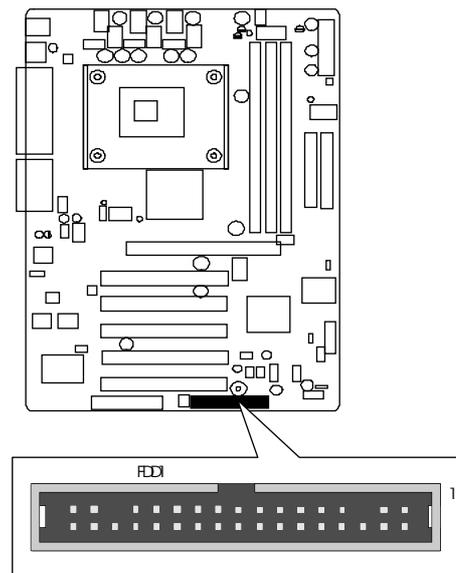
Step 8

Connect Other Internal Peripherals

1. CD1/CD2 connectors
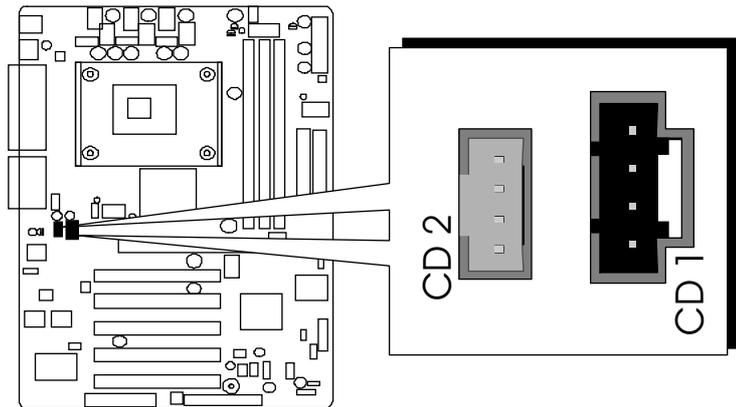
Step 9

Connect the Power Supply

1. System power connector
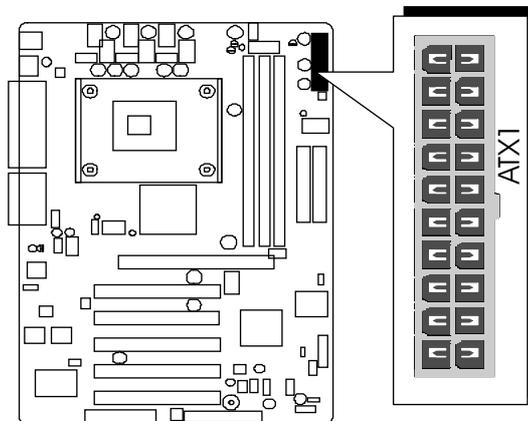
Step 10

Install Add-on Cards in Expansion Slots

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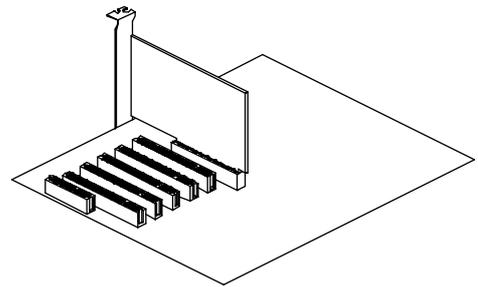
2. PCI Card
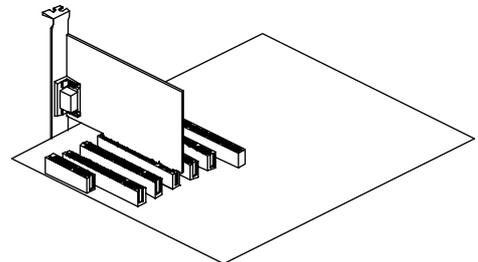
3. CNR Slot
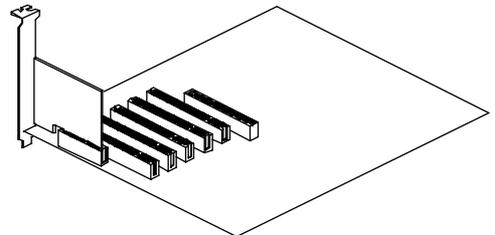
Step 11

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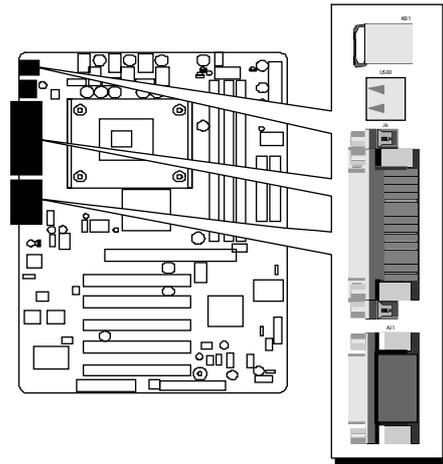
1. PS/2 Mouse and PS/2 Keyboard

PS/2 Mouse

PS/2 keyboard

2. USB Ports

USB Port 2

USB Port 1

3. COM Ports

COM1 Port   COM2 Port
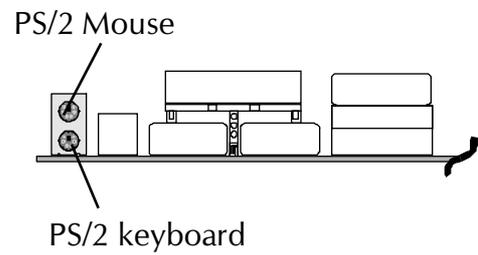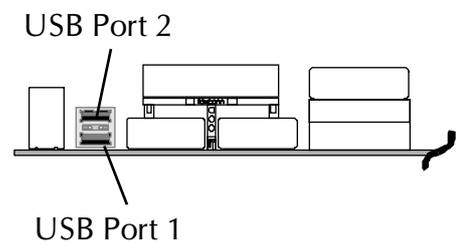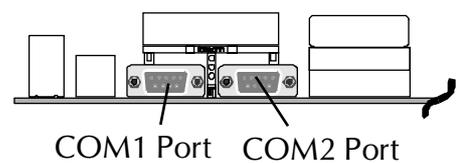
4. Parallel Port

Parallel Port
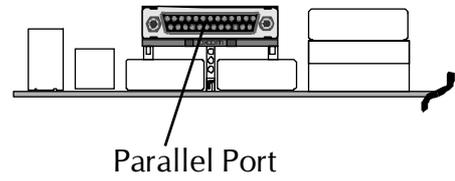
5. GAME Port

GAME Port
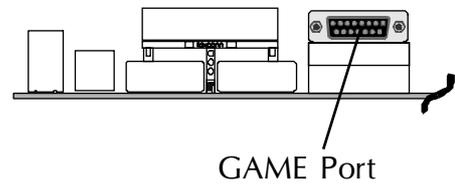
6. Audio Line-Out /Line-In / Mic-In Ports

Line-Out Port   Line-In Port   Mic-In Port
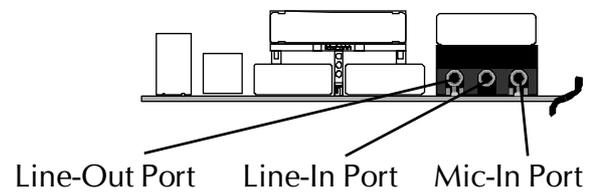
Step 12

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 parti- tion 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 to the ex tended 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 cre ated. When formatting the primary partition (C:), make sure to use the FORM-AT 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 be come 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 Drivers & Software Components

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

1. Insert the AV40S bundled CD-ROM into your CD-ROM drive. The auto-run program will display the drivers main installation window on screen.
2. Select the "Install Mainboard Software" bar to run into sub-menu.
3. Choose "Install VIA Driver" and complete it.
4. Choose "Install AC97 Sound Driver" and complete it.
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 mini jumpers to connect jumper pins on the mainboard. Pin #1 could be located at any corner of each jumper, you just find the location with a white right angle which stands for pin 1#. There are several types of pin 1# shown as below:

3-pin and multi (> 3) pin jumpers shown as following:

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 mini jumpers 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 top of its original packaging film, 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

Use the mainboard layout on page 11 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:
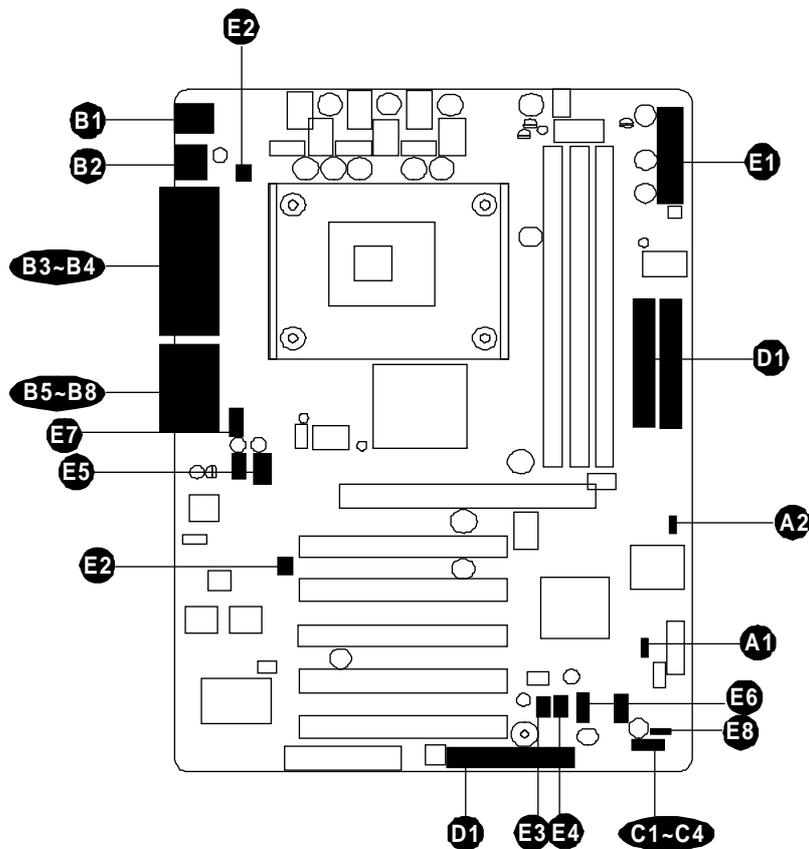
CPU/Memory/Expansion Slots

Socket478	: CPU Socket for Pentium 4 processors
DIMM1/2/3	: Three DIMM Slots for 64, 128, 256, 256, 512MB, of 2.5V DDR SDRAM .
AGP	: One AGP (Accelerated Graphics Port) Slot
PCI	: Five 32-bit PCI Expansion Slots
CNR	: Communication Network Riser Card

Jumpers

(A1) JP1   : Clear CMOS setting

(A2) JP3   : BIOS protect

Back Panel Connectors

(B1) KB   : PS/2 keyboard port

(B1) MS   : PS/2 mouse port

(B2) USB   : 2 USB (Universal Serial Bus) ports

(B3) COM1/2   : Serial ports 1/2 (DB9 male)

(B4) PRINTER   : Parallel port (DB25 female)

(B5) LINE_OUT   : Line-Out port

(B6) LINE_IN   : Line-In port

(B7) MIC_IN   : Mic-In port

(B8) GAME   : GAME port

Front Panel Connectors

(C1) Green LED   : Green LED

(C2) HDD LED   : IDE drive active LED

(C3) Power ON   : ATX power on/off momentary type switch

(C4) RST   : Hardware reset switch

Internal Peripherals Connectors

(D1) FDD1   : Floppy disk drive interface

(D1) IDE1   : IDE primary interface (Dual-channel)

(D1) IDE2   : IDE secondary interface (Dual-channel)

Other Connectors

(E1) ATX1   : ATX power connector

(E2) FAN1   : CPU fan connector

(E2) FAN2   : System fan connector

(E3) WOM1   : Wake-On-Modem connector

(E4) WOL1   : Wake-On-LAN connector

(E5) CD1/2   : CD_IN connectors

(E6) USB2/3   : Extended USB headers

(E7) AUDIO   : Audio headers

(E8)   SJ1   : Single color LED header
                             (Reserved for future use)

☞ *Jumpers*

Ⓐ❶ Clear CMOS Setting (JP1)

JP1 is used to clear CMOS data. Clearing CMOS will result in the perma-
nently erasing previous system configuration settings and the restoring origi-
nal (factory-set) system settings.

Pin 1-2 (Default)

Pin 2-3 (Clear CMOS)
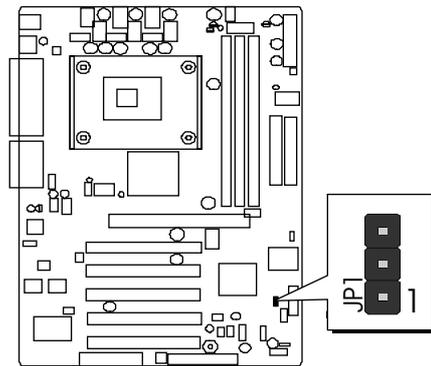
Step 1. Turn off the system power (PC-> Off).

Step 2. Remove ATX Power cable from ATX Power connector.

Step 3. Remove jumper cap from JP1 pins 1-2.

Step 4. Place the jumper cap on JP1 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).

Ⓐ❷ BIOS flash protection Setting (JP3)

JP3 is used to protect the BIOS from being unintentionally flashed. Enable
this jumper for protection and disable this jumper when you want to flash
the BIOS.

Pin 1-2 (Unprotected)

Pin 2-3 (Protected)
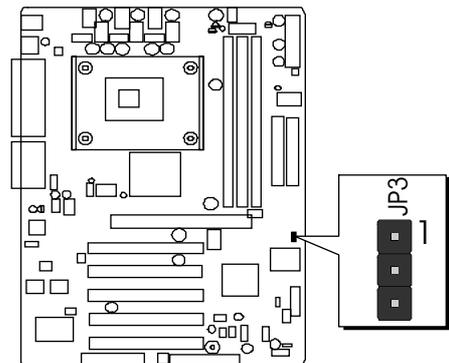
☞ *Back-Panel Connectors*

Ⓑ❶ 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 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's. Plug the PS/2 keyboard and mouse jacks into their corresponding connectors.

PS/2 Mouse

PS/2 keyboard
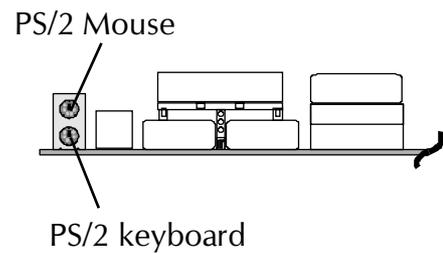
Ⓑ❷ USB1/USB2 Port Connectors

This mainboard offers 2 USB ports on front panel. Plug each USB device jack into an available USB1/USB2 connector.

USB Port 2

USB Port 1
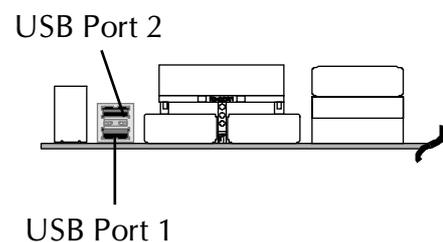
Ⓑ❸ COM1/2 Port Connectors

This mainboard can accommodate two serial device on COM1/2. Attach a serial device cable to the DB9 serial port COM1/2 at the back panel of your computer.

COM1 Port   COM2 Port
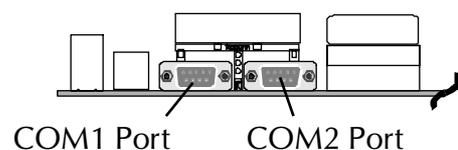
Ⓑ❹ Parallel Port Connector

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
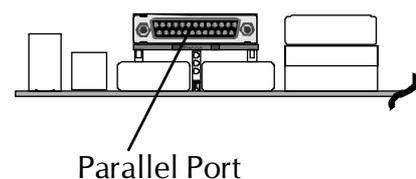
B5 Line-Out Port Connector

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
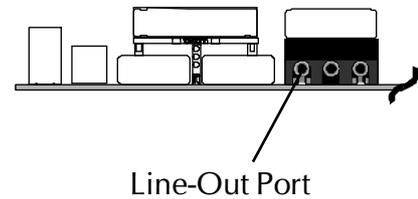
Line-Out Port

B6 Line-In Port Connector

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 Port
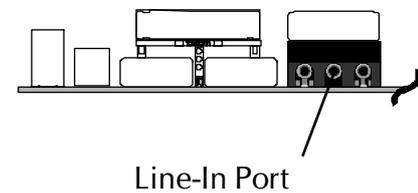
B7 Mic-In Port Connector

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-in Port
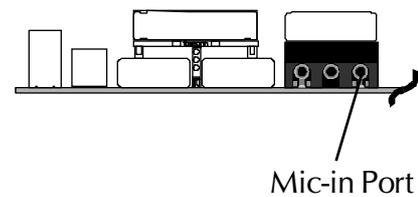
B8 GAME Port Connector

The 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.

GAME Port
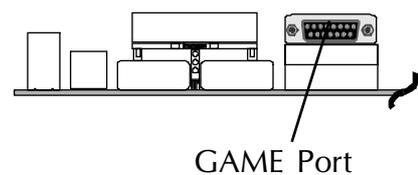
☞ *Front-Panel Connectors*

◐ **MSG LED Connector**

The MSG LED indicates that the system is currently in poweron and the power saving mode (Doze/Standby/Suspend). When the system resumes to normal operation mode, the MSG LED will go off. Attach a 2-pin MSG LED cable to Green LED header.
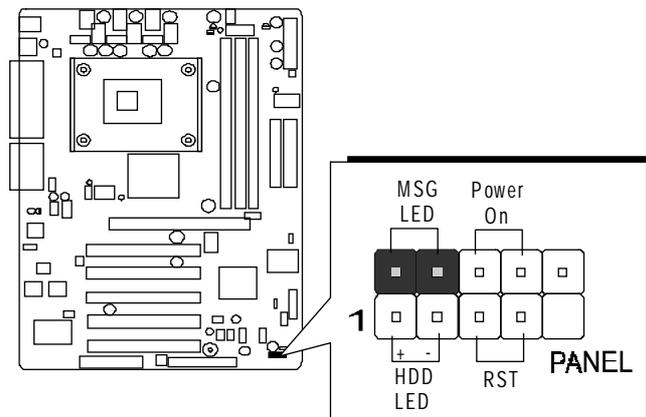
Note : Please notice all the LED connectors are directional. If your chassis's LED does not light up during running, please simply change to the opposite direction.

❷ **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.
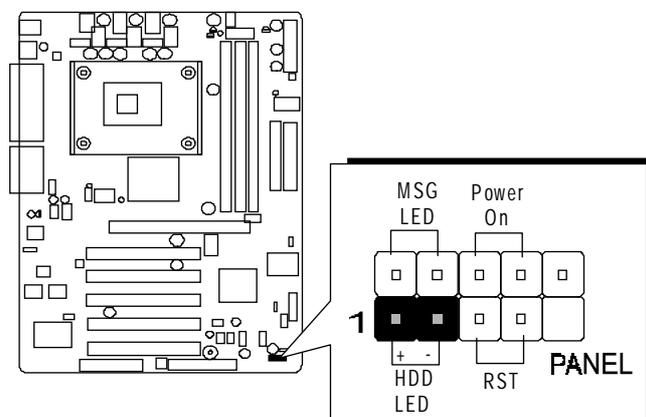
� ATX Power On/Off Switch Connector (Power ON)

The Power On/Off Switch is a momentary type switch used for turning on or off the system ATX power supply. Attach the connector cable from the Power Switch to the 2-pin Power ON header on the mainboard.
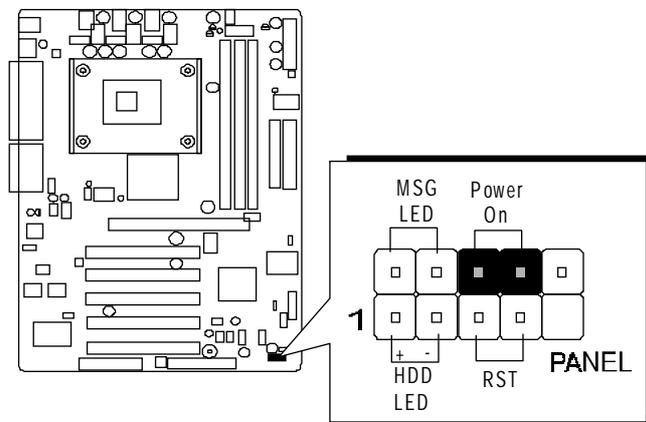
� Hardware Reset Connector (RST)

Attach the 2-pin hardware reset switch cable to the RST header. Pressing the reset switch causes the system to restart.
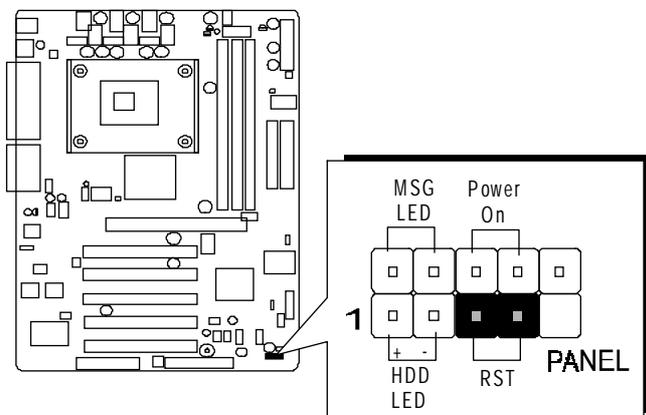
☞ *Internal Peripherals Connectors*

🅓❶ **Enhanced IDE, and Floppy Connectors**

The mainboard features two 40-pin dual-channel IDE device connectors (IDE1/IDE2) providing support for 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 (FDD).
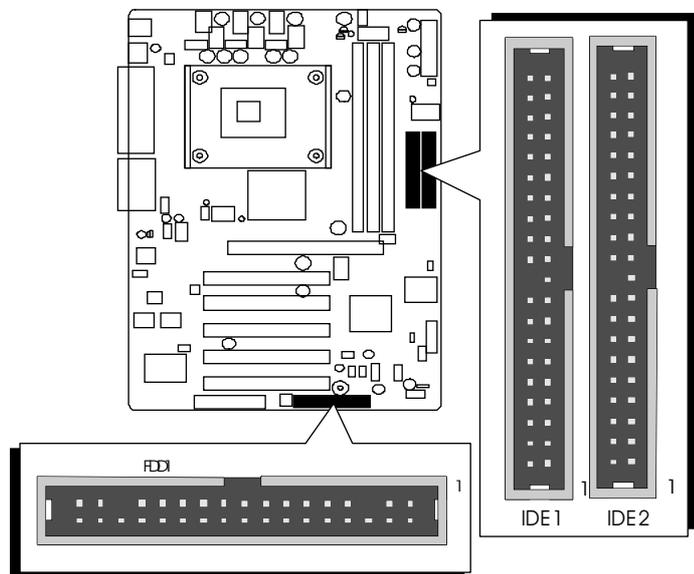
Important: Ribbon cables are directional, therefore, make sure to always connect with the red cable.

☞ *Other Connectors*

❿ ATX Power Supply Connector (ATX1)

This motherboard uses 20-pin Pentium 4 standard ATX power header, ATX1 and comes with another two headers.

Please make sure you plug in the right direction.

ATX1
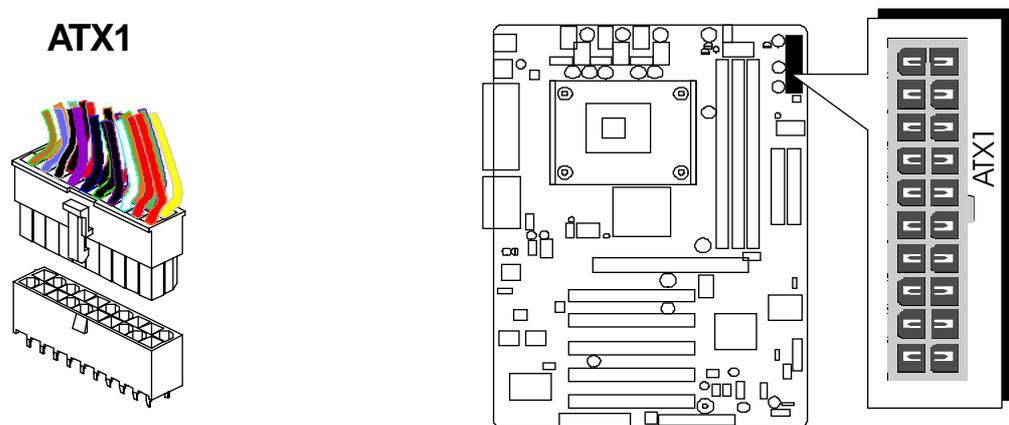
A traditional ATX system should remain at power off stage when AC power resumes from power failure. In such case, if there is no an UPS to keep power-on, the kind of design is inconvenient for a network server or workstation. However, this motherboard implements an AC Power Auto Recovery function to solve this problem. You may enable the function PWRON After PWR-Fail that is under sub-menu of Power Mangement Setup" through BIOS setup program.

> **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.

☯ CPU, Chipset and Chassis Fan connectors - FAN1/2

The mainboard provides three onboard 12V cooling fan power connectors to support CPU (FAN1), and System (FAN2) cooling fans.

Note:

Both cable wiring and type of plug may vary , which depends 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.

GND   +12V   SENSE

1
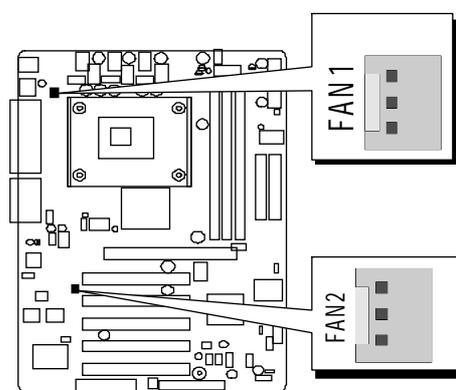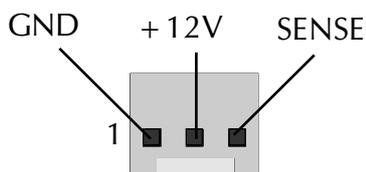
☯ Wake-On-Modem Connector (WOM1)

If you have installed a modem, use the cable provided with the modem to plug into the mainboard WOM1 connector. This enables the Wake On Modem(WOM) feature. When your system is in a power-saving mode, any modem signal automatically resumes the system. You must enable this item using the Power Management page of the Setup Utility. See Chapter 3 for more information.

WOM1
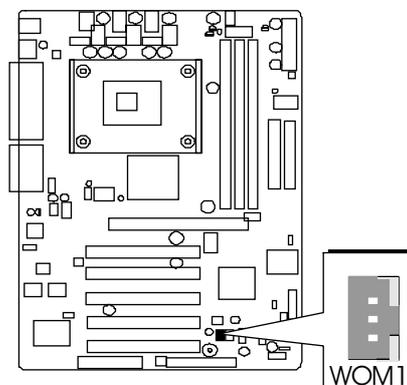
ⓔ④ **Wake-On-LAN Connector (WOL1)**

Attach a 3-pin connector through the LAN card which supports the Wake-On-LAN (WOL1) function. This function lets users wake up the connected system through the LAN card.

●	3
●	2
■	1
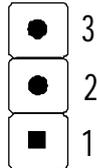
Pins Assignment:

    1 = 5VSB   2 = Ground
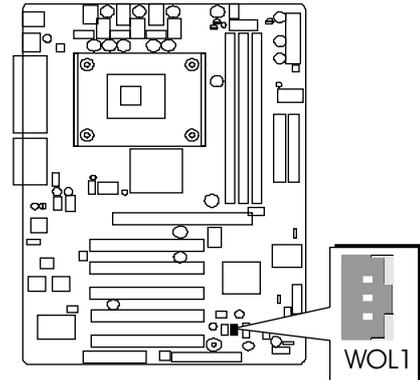
    3 = SENSE

ⓔ⑤ **CD_IN Connector (CD1/2)**

Port CD1/2 is used to attach an audio connector cable from the CD-ROM drive.
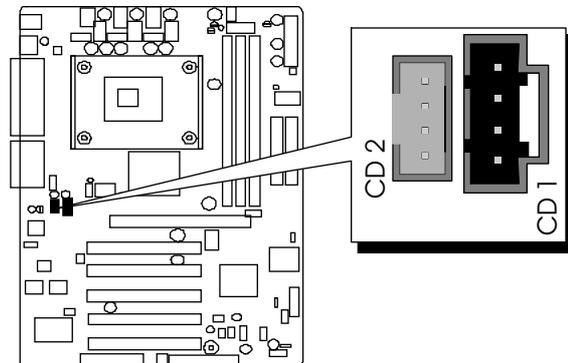
ⓔ⑥ **Extended USB Headers (USB2/USB3)**

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.

USB2/3

1	■	●	2
3	●	●	4
5	●	●	6
7	●	●	8
9		●	10
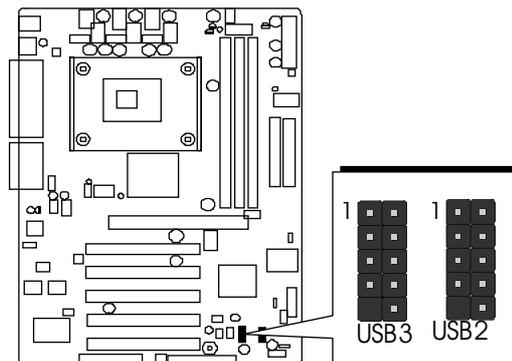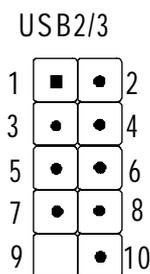
Pins Assignment:

1 = +5V

3 = USBP2-N

5 = USBP2-P

7 = GND

9 = Empty

2 = +5V

4 = USBP3-N

6 = USBP3-P

8 = GND

10 = OC#

㊲ MIC/speaker-out header(AUDIO)

The headers allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pins Assignment:

1 = MICIN

3 = MICBIAS

5 = SPKOUTR

7 = Key

9 = SPKOUTL

2 = AGND

4 = 5V

6 = XSPKOUTR

8 = Empty

10 = XSPKOUTL
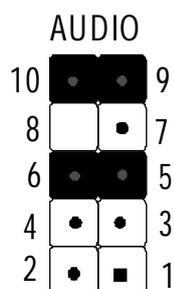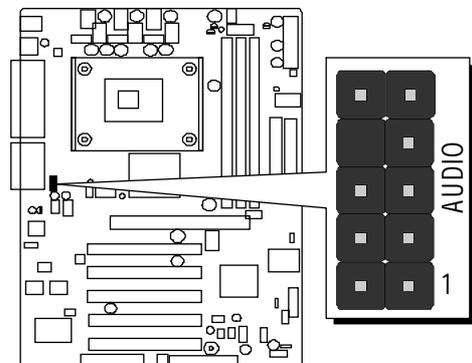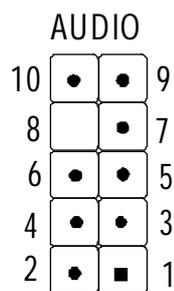
Two mini jumper must be setted on pin9-10 and pin5-6, when this header is not used.

E8 Single color MSG LED (SJ1)

The headers is reserved for future use.
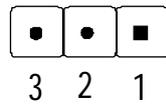
Pins Assignment:
1 = SUSLED-Y
2 = SUSLED-Y
3 = PWLED+
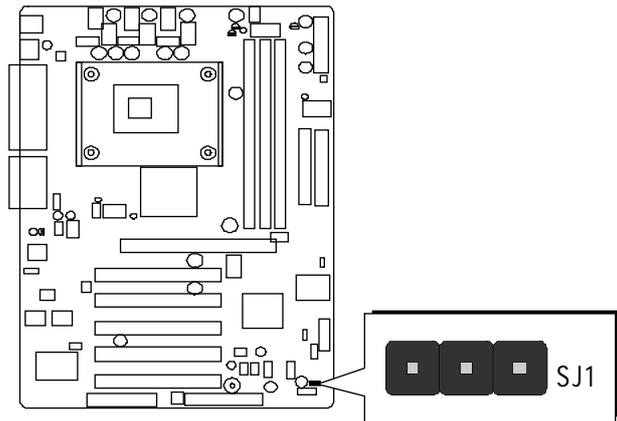
3.3 System Memory Configuration

The AV40S mainboard has three 184-pin DIMM banks that allow you to install from 64MB up to 1.5GB of unbuffered DDR memory .

Each **184-pin** DIMM (Dual In-line Memory Module) bank can accommodate 64MB, 128MB, 256MB, 512MB, PC1600/PC2100 compliant 2.5V single or double side 64-bit wide data path DDR SDRAM modules. DIMM slots are arranged in three banks, each memory bank made of one bank and providing a 64-bit wide data path.

1. Install Memory:

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

DIMM Slot	Memory Modules	Module Quantity
DIMM * 1	64MB,128MB,256MB, and 512MB , 184-pin 3.3V DDR SDRAM DI	
DIMM * 2	64MB,128MB,256MB, and 512MB , 184-pin 3.3V DDR SDRAM DI	
DIMM * 3	64MB,128MB,256MB, and 512MB , 184-pin 3.3V DDR SDRAM DI	

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.

2. Upgrade Memory:

You can easily upgrade the system memory by inserting additional 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 in the field "Standard CMOS Setup" of BIOS setup program.

4 SOFTWARE UTILITY

4.1 Mainboard CD Overview

Note: The CD contents attached in AV40S 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 VIA Driver** - Installing VIA driver.
☞ **Install Audio Device Software** - Installing Audio driver.
☞ **Manual** - AV40S Series mainboard user's manual in PDF format.
☞ **Link to Shuttle Homepage** - Link to shuttle website homepage.
☞ **Browse this CD** - Allows you to see contents of this CD.
☞ **Quit** - Close this CD.
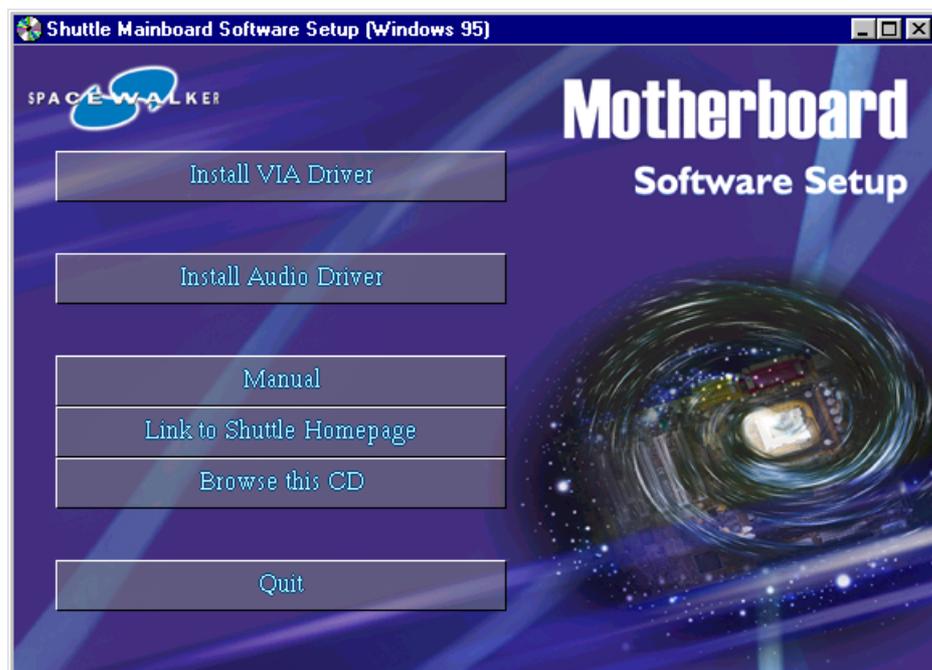
4.2. Install Mainboard Software

Insert the attached CD into you 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 "**Install VIA Driver**" bar.
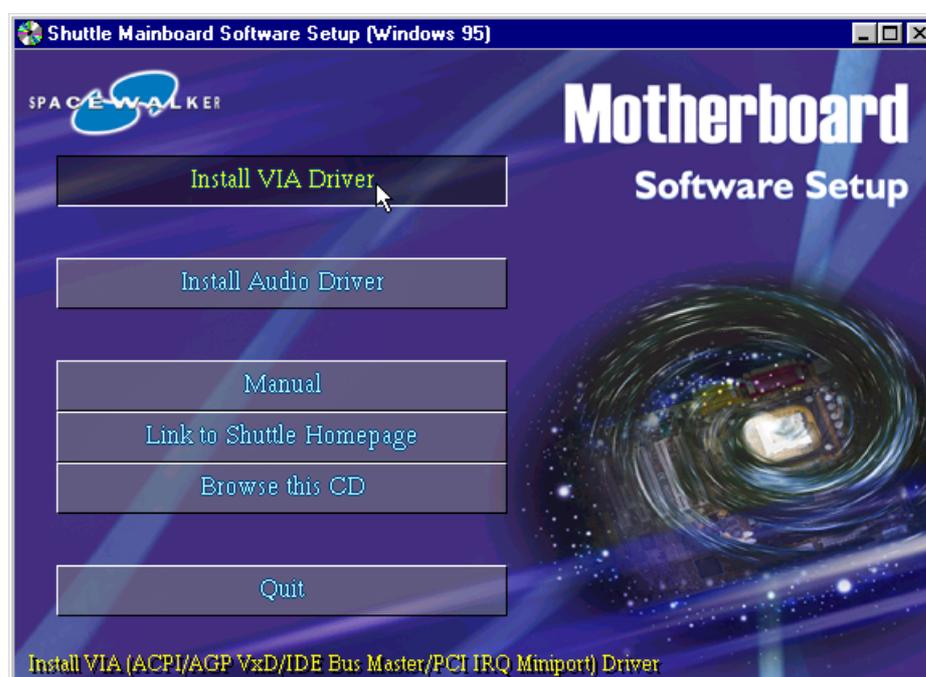
Once you made your selection, a Setup window run the installation automatically.

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

4.3. Install Audio Driver

Use your pointing device (e.g. mouse) to "**Install Audio Driver"** bar to install audio driver.

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

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

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

The Online Information windows will appear on your screen. Click on the "Install Acrobe Reader" bar if it is necessary.

Then click on "AV40S Manual" bar to view user's manual.

5 BIOS SETUP

AV40S 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 meationed 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.

```
      CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
  ┌─────────────────────────────────────────────────────────────────┐
  │  ▶ Standard CMOS Features        ▶ Frequency/Voltage Control      │
  │                                                                   │
  │  ▶ Advanced BIOS Features          Load Fail-Safe Defaults        │
  │                                                                   │
  │  ▶ Advanced Chipset Features       Load Optimized 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      F9 : Menu in BIOS     ↑ ↓ → ←   : 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.

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.

```
          CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                            Standard CMOS Features

     Date (mm:dd:yy)           Thu, Dec  6 2001          Item Help
     Time (hh:mm:ss)           11 : 31 : 26
                                                      Menu Level    ▶
   ▶ IDE Primary Master
   ▶ IDE Primary Slave                                Change the day, month,
   ▶ IDE Secondary Master                             year and century
   ▶ IDE Secondary Slave

     Drive A                   [1.44M, 3.5 in.]
     Drive B                   [None]
     Floppy 3 Mode Support     [Disabled]

     Video                     [EGA/VGA]
     Halt On                   [All Errors]

     Base Memory                     640K
     Extended Memory               63488K
     Total Memory                  64512K


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

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/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 or Enabled.

Video

Select the default video device.

➢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.

* *

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: CHS, 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

****

❦ *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]        │     Item Help        │
   │ CPU L1 & L2 Cache          [Enabled]         │                      │
   │ CPU L2 Cache ECC Checking  [Enabled]         │ Menu Level    ▶      │
   │ Quick Power On Self Test   [Enabled]         │                      │
   │ First Boot Device          [Floppy]          │ Allows you to choose │
   │ Second Boot Device         [HDD-0]           │ the VIRUS warning    │
   │ Third Boot Device          [CDROM]           │ feature for IDE Hard │
   │ Boot Other Device          [Enabled]         │ Disk boot sector     │
   │ Swap Floppy Drive          [Disabled]        │ protection. If this  │
   │ Boot Up Floppy Seek        [Enabled]         │ function is enabled  │
   │ Boot Up NumLock Status     [Off]             │ and someone attempt to│
   │ Typematic Rate Setting     [Enabled]         │ write data into this │
   │ Typematic Rate (Chars/Sec) [6]               │ area ,  BIOS will show│
   │ Typematic Delay (Msec)     [250]             │ a warning message on │
   │ Security Option            [Setup]           │ screen and alarm beep│
   │ OS Select For DRAM > 64MB  [Non-OS2]         │                      │
   │ HDD S.M.A.R.T. Capability  [Disabled]        │                      │
   │ Report No FDD For WIN 95   [Yes]             │                      │
   │ Video BIOS Shadow          [Enabled]         │                      │
   │ Small Logo(EPA) Show       [Disabled]        │                      │
   ├─────────────────────────────────────────────┴──────────────────────┤
   │ ↑↓→←: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 Warning

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

Enabled   Activates automatically when the system boots up, causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Disabled No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

➢ The choice: Enabled or Disabled.

CPU L1 & L2 Cache

This item enables CPU L1 internal and L2 secondary cache to speed up memory access.

➢ The choice: Enabled or Disabled.

CPU L2 Cache ECC Checking

When you select Enabled, memory checking is enabled when the CPU internal L2 cache contains ECC SRAMs.

➢ 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, LAN, USB-FDD, USB-ZIP, USB-CDROM,USB-HDD, 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

Selects power-on state for NumLock.

➢ The choice: Off or On.

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 repented 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

If you have installed password protection, this item defines if the password is required at start up, or if it is only required when a user tries to enter the setup utility.

➢ 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

This item is required if you have installed more than 64MB of memory and you running the OS/2 operation system. Otherwise, leave the item at "Non-OS2" default.

➢ 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 WIN 95

If you are running a system without floppy drive installed and using the Windows 95 OS, select Yes to ensure compatibility with Windows 95 logo certification.

➢ The choice: Yes or No.

Video BIOS Shadow

Determines whether 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 or Disabled.

Small Logo(EPA) Show

This item allows you to enable/disable the EPA Logo.

➢ The choice: Enabled or Disabled.

✍ *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.

```
       CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                         Advanced Chipset Features

    ▶ DRAM Clock/Drive Control    [Press Enter]          Item Help
    ▶ AGP & P2P Bridge Control    [Press Enter]
    ▶ CPU & PCI Bus Control       [Press Enter]       Menu Level    ▶
      Memory Hole                 [Disabled]
      System BIOS Cacheable       [Disabled]
      Video RAM Cacheable         [Disabled]
      Memory Parity/ECC Check     [Disabled]

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

DRAM Clock/Drive Control

Options are in its sub-menu.

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

Current FSB Frequence

This item show Current CPU Front Side Bus frequency. This is displayed only item.

Current DRAM Frequence

This item show Current DRAM requency. This is displayed only item.

DRAM Clock

This item allows you to set the DRAM clock. We recommand that leave the item at default value.

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

DRAM Timing

This item lets you set Dram timing automatically if you select "By SPD". SPD (Serial Presence Detect) is an EEPRON chip on DIMM module that stores information about memory chips which contains size, speed, voltage, row and column addressed, and manufacturer. If you choose "Manual" following three items are available.

➢ The Choice: Manual or By SPD.

SDRAM CAS Latency

This item enables you to select CAS latency time in HCLKs of 2/2 or 3/3. It's set at factory and depends on the DRAM installed. Don't change the value unless you change specifications of the CPU or DRAM installed.

➢ The Choice: 3 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.

Precharge to Active (Trp)

This item allows you to Precharge Command to Active Command Period.

➢ The Choice: 2T or 3T.

Active to Precharge (Tras)

This item allows you to Active Command to Precharge Command Period.

➢ The Choice: 5T or 6T.

Active to CMD (Trcd)

This item allows you to Active to CMD.

➢ The Choice: 2T or 3T.

DRAM Burst Len

This item allows you to select Dram Burst Length.

➢ The Choice: 4 or 8.

DRAM Command Rate

This item allows you to select the DRAM executed rate.

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

APG & 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 enables an end user to manually select the AGP output buffer drive strength.

➢ 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.

CPU to PCI Write Buffer

When this field is Enabled, the writing from CPU to PCI bus is buffered, to compensate for the speed differences between the CPU and the PCI bus. When Disabled, the writing is are not buffered and the CPU must wait until the write is complete before starting another write cycle.

➢ The Choice: Enabled or Disabled.

PCI Master 0 WS Write

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

➢ 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.

Memory Partity/ECC Check

Enable this item to allow BIOS to perform a parity check to the POST memory tests. Select Enabled only if the system DRAM supports parity checking.

➢ The Choice: Enabled or Disabled.

✍ *Integrated Peripherals*

```
        CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                            Integrated Peripherals
 ┌─────────────────────────────────────────────────┬─────────────────────┐
 │ ▶ VIA OnChip IDE Device      [Press Enter]       │      Item Help      │
 │ ▶ VIA OnChip PCI Device      [Press Enter]       ├─────────────────────┤
 │ ▶ SuperIO Device             [Press Enter]       │ Menu Level    ▶     │
 │   Init Display First         [AGP]               │                     │
 │   OnChip USB Controller      [All Enabled]       │                     │
 │   USB Keyboard Support       [Disabled]          │                     │
 │   USB Mouse Support          [Disabled]          │                     │
 │   IDE HDD Block Mode         [Enabled]           │                     │
 │                                                  │                     │
 │                                                  │                     │
 │                                                  │                     │
 │                                                  │                     │
 │                                                  │                     │
 │                                                  │                     │
 │                                                  │                     │
 ├──────────────────────────────────────────────────┴────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
 │     F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults  │
 └─────────────────────────────────────────────────────────────────────────┘
```

VIA OnChip IDE Device

Options are in its sub-menu.

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

OnChip IDE Channel 0/1

Use these items to enable or disable the PCI IDE channels that are integrated on the mainboard.

➢ 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.

VIA OnChip PCI Device

Options are in its sub-menu.

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

VIA-3058 AC97 Audio

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

➢ The choice: Auto or Disabled.

VIA-3068 MC97 Audio

Enables and disables the onboard modem. Disable this item if you are going to install an external 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.

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: IrDA, ASKIR, SCR, or Normal.

UR2 Duplex Mode

This item allows you to selects 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 sets the I/O address for the game port.

➢ 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.

USB Mouse Support

Enable this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

➢ 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*

```
           CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                            Power Management Setup
┌──────────────────────────────────────────────────┬───────────────────────┐
│  ACPI function              [Enabled]             │      Item Help        │
│  Power Management Option    [User Define]          ├───────────────────────┤
│  HDD Power Down             [Disable]              │  Menu Level      ▶    │
│  Suspend Mode               [Disable]              │                       │
│  Video Off Option           [Suspend -> Off]       │                       │
│  Video Off Method           [DPMS Support]         │                       │
│  MODEM Use IRQ              [3]                    │                       │
│  Soft-Off by PWRBTN         [Instant-Off]          │                       │
│  PWRON After PWR-Fail       [Off]                  │                       │
│▶ IRQ/Event Activity Detect [Press Enter]          │                       │
│                                                    │                       │
│                                                    │                       │
│                                                    │                       │
│                                                    │                       │
│                                                    │                       │
├──────────────────────────────────────────────────┴───────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
│    F5: Previous Values     F6: Fail-Safe Defaults   F7: Optimized Defaults │
└───────────────────────────────────────────────────────────────────────────┘
```

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 mainboard supports ACPI (Advanced Configuration and Power management Interface). Use this item to enable or disable the ACPI feature.

➢ The choice: Enabled or Disabled.

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.

PWRON After PWR- Fail

This allows you to set whether you want your system to reboot after power has been interrupted.

➢ The choice: Off, On, or Former-Sts.

IRQ/Event Activity Detect

Options are in its sub-menu.

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

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

PowerOn by PCI Card

This item enables/disables the power on function of PCI Card.
➢ The choice: Disabled or Enabled.

WOL/WOM/ Ring Resume

When this item enabled LAN and modem activity to wake up 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 (Coprocessor)
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]       ├──────────────────────────┤
  │                                              │  Menu Level    ▶         │
  │  Resources Controlled By    [Manual]         │                          │
  │▶ IRQ Resources              [Press Enter]    │  Select Yes if you are   │
  │                                              │  using a Plug and Play   │
  │  PCI/VGA Palette Snoop       [Disabled]      │  capable operating       │
  │  Assign IRQ For VGA          [Enabled]       │  system Select No if     │
  │  Assign IRQ For USB          [Enabled]       │  you need the BIOS to    │
  │  INT Pin 1 Assignment        [Auto]          │  configure non-boot      │
  │  INT Pin 2 Assignment        [Auto]          │  devices                 │
  │  INT Pin 3 Assignment        [Auto]          │                          │
  │  INT Pin 4 Assignment        [Auto]          │                          │
  │                                              │                          │
  │                                              │                          │
  │                                              │                          │
  │                                              │                          │
  ├─────────────────────────────────────────────┴──────────────────────────┤
  │ ↑↓→←: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 proceeded 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.

INT Pin1/2/3/4 Assignment

Names the interrupt request (IRQ) line assigned to PCI 1 throught PCI 4 on system. Activity of selected PCI slot awakens system.

➢ The Choice: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14, 15.

PC Health Status

```
         CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                              PC Health Status
   ┌──────────────────────────────────────────┬──────────────────────┐
   │ Shutdown  Temperature     [Disabled]      │      Item Help       │
   │ CPU Vcore                                 ├──────────────────────┤
   │    2.50 V                                 │ Menu Level    ▶      │
   │    3.30 V                                 │                      │
   │    5.00 V                                 │                      │
   │   12.00 V                                 │                      │
   │ Voltage Battery                           │                      │
   │ Current System Temp                       │                      │
   │ Current CPU Temp                          │                      │
   │ CPU FAN Speed                             │                      │
   │ CASE FAN Speed                            │                      │
   │                                           │                      │
   │                                           │                      │
   │                                           │                      │
   │                                           │                      │
   │                                           │                      │
   ├──────────────────────────────────────────┴──────────────────────┤
   │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
   │      F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults  │
   └──────────────────────────────────────────────────────────────────┘
```

Shutdown Temperature

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

➢ The choice: Disabled, 60¢J / 140¢K, 65¢J/149¢K, 70¢J/158¢K.

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

CPU VCORE includes 2.50v, 3.30v, 5.00v, 12.00v.

Voltage Battery

Current System Temperature

Current CPU Temperature

CPU FAN Speed

Case FAN Speed

✎ *Frequency/Voltage Control*

```
        CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
                          Frequency/Voltage Control
┌──────────────────────────────────────────────────┬─────────────────────┐
│  CPU Clock Ratio          [ 8 X]                   │     Item Help       │
│  Auto Detect PCI/DIMM Clk [Enabled]                │                     │
│  Spread Spectrum          [Spectrum +/- 0.5%]      │  Menu Level    ▶    │
│  CPU Host/AGP/PCI Clock    [Default]               │                     │
│                                                    │                     │
│                                                    │                     │
│                                                    │                     │
│                                                    │                     │
│                                                    │                     │
│                                                    │                     │
│                                                    │                     │
│                                                    │                     │
├──────────────────────────────────────────────────┴─────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│       F5: Previous Values       F6: Fail-Safe Defaults   F7: Optimized Defaults │
└─────────────────────────────────────────────────────────────────────────┘
```
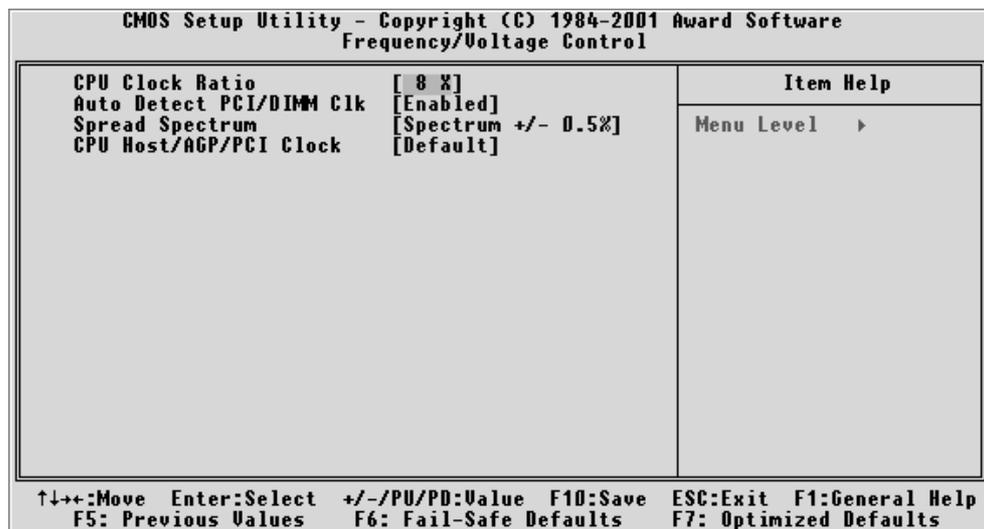
CPU Clock Ratio

Use this item to select a multiplier for the system frontside bus (FSB) frequency. The value of the multiplier must be set so that:

Multiplier * Frontside Bus Frequency = CPU Clock Speed
For example, if you have a processor that is rated to run at 450MHz and the system is running a frontside bus frequency of 100MHz, you should select a multiplier of 4.5 so that:
4.5(Multiplier) * 100MHz(frontside bus) = 450MHz (CPU clock)

Auto Detect PCI/DIMM Clk

When this item is enabled, BIOS disable the clock signal of free DIMM and PCI slots.

➢ The choice: Enabled, or Default.

Spread Spectrum

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

➢ The choice: Default, Spectrum+/-1.5%, Spectrum +/-0.3%.

CPU Host/AGP/PCI clock

Use the CPU host clock to set the front side bus frequency for the installed CPU.

➢ The choice: Default,100/66/33MHz,103/69/34MHz,107/71/36MHz,110/73/37MHz,133/66/33MHz,137/69/34MHz,140/70/35MHz,143/71/36MHz,145/73/36MHz,147/73/37MHz,153/77/38MHz,160/80/40MHz.

☒ *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 Fail-Safe Defaults*

When you press < Enter > on this item, you will get a confirmation dialog box with a message similar to:
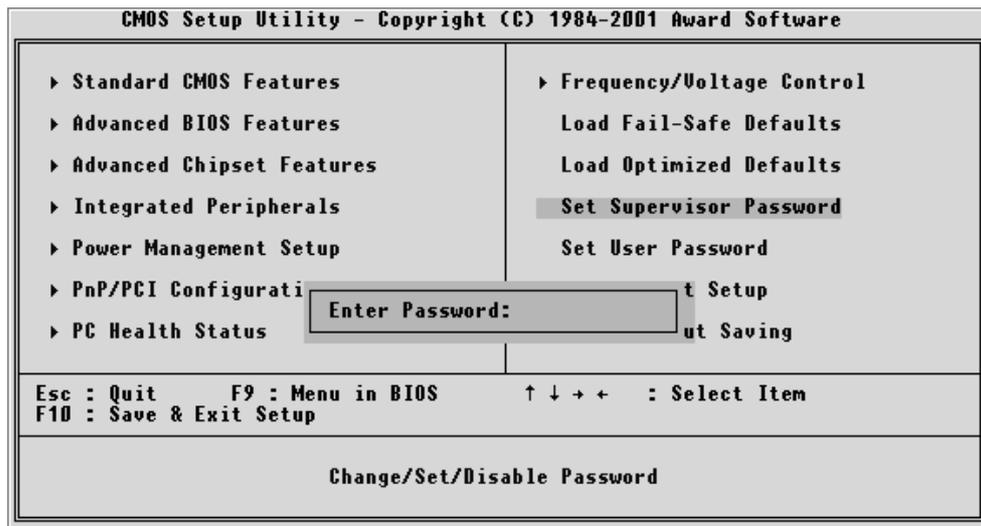
Load Optimized Defaults (Y/N) ? N

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:

```
       CMOS Setup Utility - Copyright (C) 1984-2001 Award Software
┌──────────────────────────────────────┬──────────────────────────────────┐
│                                       │                                  │
│   ▶ Standard CMOS Features            │  ▶ Frequency/Voltage Control     │
│                                       │                                  │
│   ▶ Advanced BIOS Features            │     Load Fail-Safe Defaults      │
│                                       │                                  │
│   ▶ Advanced Chipset Features         │     Load Optimized Defaults      │
│                                       │                                  │
│   ▶ Integrated Peripherals            │     Set Supervisor Password      │
│                                       │                                  │
│   ▶ Power Management Setup            │     Set User Password            │
│                                       │                                  │
│   ▶ PnP/PCI Configurati┌──────────────────────────┐ t Setup            │
│                        │  Enter Password:          │                     │
│   ▶ PC Health Status   └──────────────────────────┘ ut Saving           │
│                                       │                                  │
├──────────────────────────────────────┴──────────────────────────────────┤
│   Esc : Quit      F9 : Menu in BIOS      ↑ ↓ → ←   : Select Item         │
│   F10 : Save & Exit Setup                                                 │
├───────────────────────────────────────────────────────────────────────────┤
│                      Change/Set/Disable Password                          │
└───────────────────────────────────────────────────────────────────────────┘
```

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.