

**AmazePc<sup>®</sup> Inc.,**

**AM-693VS  
ATX Form Factor  
Main Board  
User's Manual  
Ver. 3.0**

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# Chapter 1 Introduction

## 1-1 Overview

### AmazePC<sup>®</sup> VIA693 series

The AmazePC<sup>®</sup> AM693VS and AM693V3 is a new-generation Pentium<sup>®</sup> II/III main board designed based on VIA VT82C693/693A chipset. The main board has integrated the latest advances in processor, memory, I/O technologies into an ATX form factor.

The AmazePC<sup>®</sup> main board utilizes VIA 693/693A chipset designed for Pentium<sup>®</sup> II and Pentium<sup>®</sup> III CPUs and supports new architects such as high-speed AGP graphic port, SDRAM, Ultra DMA/66, bus master IDE and USB port. It has three Dual In-line Memory Modules (DIMM) which can be installed with SDRAM memory. The memory subsystem supports up to either 384 MB (SDRAM) or 384 MB (EDO RAM). The main board using the Slot 1 socket, accepts Intel<sup>®</sup> Pentium<sup>®</sup> II (66/100 MHz) & Pentium<sup>®</sup> III(100/133 MHz) processors. Built-in second level (L2) cache in CPU, there is no cache necessary in this system board.

The AmazePC<sup>®</sup> main board has implemented VIA VT82C686A high performance I/O Controller utilizes with fully Plug and Play device which supports 2.88 MB Floppy, Dual 16550 Compatible (with 16 bytes FIFO, up to 460K baud rate) Serial Port, ECP (Enhanced Capabilities Port), EPP (Enhanced Parallel Port) parallel port, Infrared IrDA (HPSIR), Amplitude Shift Keyed IR. (ASKIR) port and Audio.

The AmazePC<sup>®</sup> main board supports 4\*PCI, 2\*ISA, 1\*A.G.P and 1\*AMR. (three PCI Bus Mastering slots & 1 PCI Bus Slave slot) for highest performance I/O add-on adapter cards.

---

The AmazePC<sup>®</sup> main board is also strengthened with Power Management Wake up Event such as **“WOL (Wake up on LAN),” “Modem ring on”** which are the new inventions to enable PCs to be turned on over the network. These are also key benefits in PC operation, asset management, new system setup and power conservation.

In conclusion, AmazePC<sup>®</sup> main board is a combination of the highest in performance, flexibility, efficiency, and ease of use that meets a variety of price/performance levels. The main board is an ideal platform for the increasing requirements of today's and future's desktop application.

## **1-2 Reference For Pentium<sup>®</sup> II/III CPUs**

The main board supports Intel® Pentium® II/III microprocessors. The Pentium® II/III processors deliver more performances than previous generation processors (such as Pentium®, Pentium® MMX™, etc...) through an innovation called Dynamic Execution Architecture. It is improved by 3D visualization and interactive capabilities required by present high-end commercial and technical applications and future's emerging applications as well.

Below is the reference for Pentium® II/III CPUs accommodating this main board.

| <b>Intel® Processors for Slot 1</b> |                   |                      |                    |                                    |                          |
|-------------------------------------|-------------------|----------------------|--------------------|------------------------------------|--------------------------|
| Pentium™ III                        |                   | Pentium® II          |                    |                                    |                          |
| 133MHz<br>F.S.B                     | 100MHz<br>F.S.B   | 100 MHz<br>F.S.B     | 66MHz F.S.B        |                                    |                          |
| Coppermine™<br>W/256K               | Katmai™<br>W/512K | Deschutes™<br>W/512K | Klamath™<br>W/512K | Celeron™<br>W/128K & CPU<br>code A | Celeron™<br>w/o L2 cache |
| 533 – 667<br>MHz                    | 450 - 500<br>MHz  | 350 - 450<br>MHz     | 233 - 333<br>MHz   | 300 & 400<br>MHz                   | 266 - 300<br>MHz         |



**Note1:** CPU is not enclosed in the package.



**Note2:** Celeron™ has 2 models. One is with internal cache and one without. The one with cache has a CPU code "A," such as Celeron 300A.



**Note3:** Chipset VT82C693 or date code "CD" is 100MHz FSB version, chipset VT82C693A or date code "DD" version is PCI33.

### 1-3 Specifications

- PCB board size: 30.5 cm x 18.00 cm

- 
- **PCB layer:** 4 layers

- **Slot 1 socket**

Support Intel® Pentium® II CPU at 66 MHz & 100 MHz or Pentium® III 100MHz F.S.B.(chipset VT82C693) or Pentium® III 133MHz F.S.B (chipset VT82C693A)



*CPU is not enclosed in the package*

- **Memory DIMM:** 3 of 168-pin 3.3V DIMM

- **Expansion Slot :** 2x ISA, 4 x PCI slots, 1x A.G.P. slot and 1 x AMR( allows MR card only)

- **Sound :** on-board AC-97 sound already

- **Chipset**

- VIA VT82C693A
- VIA VT82C686A

- **BIOS:** flash EEPROM for BIOS  
Award® full **PnP** (Plug & Play) BIOS



*Note : This main board has sound on board function, user still can install one M.R.(Modem Riser) card into AMR slot. MR card must be set as "secondary" on MR card.*

- **I/O function**

- 2 x PCI IDE devices
- 1 x FDC, 2 x serial ports(16550 fast com)
- 1 x parallel port device /EPP/ECP/SPP
- 2 x USB connector (4 port, 2 port optional)
- IrDA (infrared) connector

- 
- Audio function

- **Green function:** Complied with APM (Advanced Power Management)

- **ATX form factor**

The ATX form factor has been defined to address four major areas of improvement required of today's predominant form factors.

- Enhance PC ease-of-use with all built-in I/O connector
- Better support for current and future I/O
- Reduce total system cost
- Better support for future processor technology

ATX is an evolution of the popular Baby-AT form factor. By mounting the power supply on its side, the processor is relocated away from the expansion slots, and the longer side of the board is used to host more on-board I/O connector; this placing of I/O on the board reduces cabling inside the box, lower costs, and improves reliability and ease-of use. A flexible I/O panel allows ATX to support all current and future I/O requirements. The ATX power supply will directly suck the air out of chassis that will save the cost of a secondary fan in the system. System cost is further reduced by the higher integration of PC components onto the system board itself, saving materials, inventory holding, and assembly cost.

- **Power supply regulation**

Onboard switching voltage that supports appropriate power to the CPU and future upgraded CPUs.

- **Over-current protection circuit**

With AIC 1569CS AH10 (protect CPU from accident short circuit), if system current is over-loaded, the system will break down to protect direct damage of the main board.

- **Electrical--- Typical power supply**

Below is reference for ATX case requirement on power supply.

---

| Voltage | Tolerance | Current |      |      |
|---------|-----------|---------|------|------|
|         |           | 230W    | 250W | 300W |
| +5V     | ± 5%      | 23A     | 25A  | 30A  |
| +3.3V   | ± 5%      | 14A     | 14A  | 14A  |
| +12V    | ±10%      | 9A      | 10A  | 12A  |
| -5V     | ± 5%      | 0.5A    | 0.5A | 0.5A |
| -12V    | ± 5%      | 0.8A    | 0.8A | 0.8A |
| +5VSB   | ± 5%      | 1A      | 1A   | 1A   |



*WOL (Wake up on LAN) function requirement:  
Power supply should offer at least 750mA to the signal "5VSB" to support WOL function.*

● **Special features**

- Wake up on LAN (ATX power supply is required)
- Modem ring on
- Windows 95/98 power off (ATX power supply is required)
- AMR
- Audio on board

## 1-4 Notice of Hardware Installation

Before hardware installation, make sure you have checked the following things.

**A. Check the package**

---

If any of these items is missing or damaged, contact the dealer from whom you purchase. Leave this main board in its original package until you are ready to install it. In the package, there are:

- the main board
- manual
- cables
- driver & utility / CD
- retention mechanism

**B. Make sure power is off.**

During hardware installation, be sure that there is no power connected at this period.

**C. Avoid ESD (Electrical Static Discharge)**

While working with the main board, wear a grounded wristband or ankle strap to avoid ESD (Electrical Static Discharge).

## 1-5 Notice of CD Driver Installation

This CD contains drivers as below.



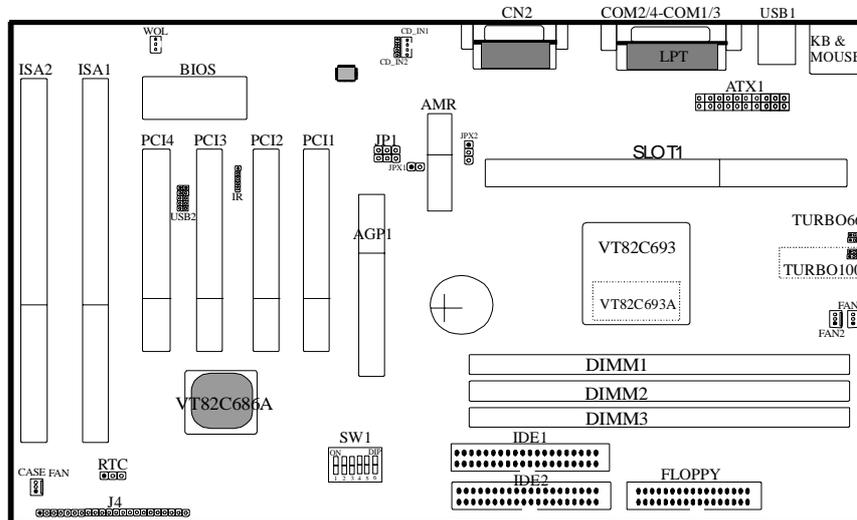


*CD driver is always updated with the latest version, so the actual CD content may have some differences with the above picture.*

1. **Main boards:** i810, BX440, VIA®693A main boards
2. **CM2:** Chromatic Mpack-2 driver
3. **Pccillin:** anti- virus protection software
4. **Zmak:** Zmak-Linux 6.0

## Chapter 2 Installation

## 2-1 Layout Reference



**TURBO-66** is an over-clocking jumper which enables 66 MHz CPU to run at 100 MHz. **TURBO66** is only reserved for internal test only. No guarantee is provided for over-clocking setup.

| TURBO-66 | Operation  |
|----------|------------|
| Close    | Normal     |
| Open     | Over-clock |



**TURBO-100** is a 2-pin connector which sets CPU clock speed, this connector is available on main board built in VT82C693A ("DD") chipset version.

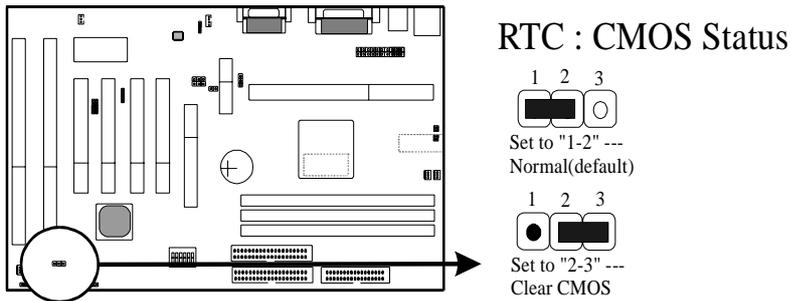
| TURBO-100 | Operation       |
|-----------|-----------------|
| Close     | Normal          |
| Open      | 133 clock speed |

## 2-2 Jumper Setting

---

## 2-2-1 RTC - CMOS Status

**RTC** is a 3-pin connector. Clear CMOS if system password is forgotten. Below is details to show how to clear CMOS.



### Procedure to clear CMOS:

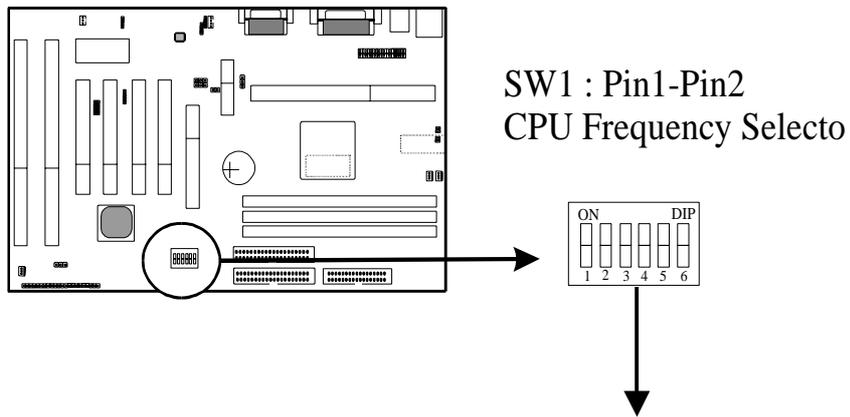
- Step 1: Shut down the system and disconnect the power supply from AC power.
- Step 2: Pull out the ATX cable from ATX connector "ATX1".
- Step 3: Short the CMOS jumper by putting jumper cap on Pin 2-3 for a few seconds.
- Step 4: Return to pin 1-2 for normal setup.
- Step 5: Link ATX power cable to ATX connector & connect AC power to power supply.
- Step 6: Turn on system power.



*If you'd like to set password, press "Del" Key during system bootup to enter CMOS setup and establish a new password.*

## 2-2-2 SW1 Pin1 – Pin2 : CPU Frequency Selector

SW1 is a 6-pin DIP switch and Pin1 - Pin2 is the CPU Frequency selector. Select the right frequency according to your CPU, and see details as below.



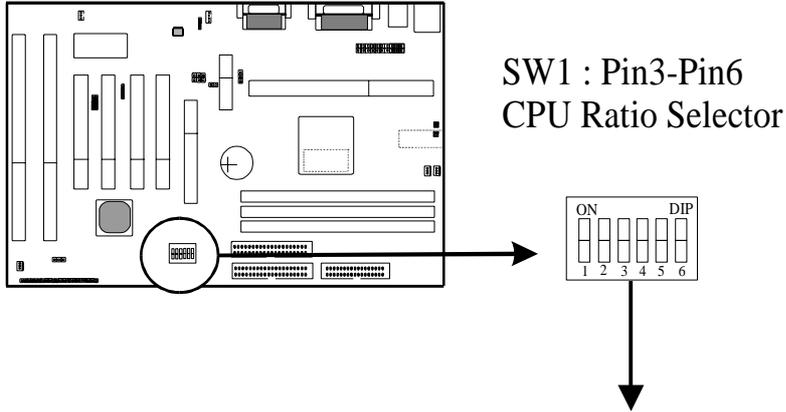
| SW1      |          | CPU BUS FREQUENCY |           |            |
|----------|----------|-------------------|-----------|------------|
| <b>1</b> | <b>2</b> | 100 MHz CPU       | 66MHz CPU | 133MHz CPU |
| OFF      | OFF      | 100 MHz           | 66MHz     | 133MHz     |
| ON       | ON       | 103 MHz           | 50MHz     | 140MHz     |
| ON       | OFF      | 112 MHz           | 75MHz     | 150MHz     |
| OFF      | ON       | 133 MHz           | 83MHz     | 124MHz     |

 The above 133MHz, 140MHz, 150MHz, 124MHz effective when chip is VT82C693A("DD") version.

 Users can select the right frequency by BIOS (please refer to 3-4 Chipset Features Setup - CPU Host Clock) directly.

### 2-2-3 SW1 Pin3 – Pin6 : CPU Ratio Selector

SW1 is a 6-pin DIP switch, and Pin3-Pin6 is the CPU ratio selector. Please select the right ratio according to your CPU and set details as below.

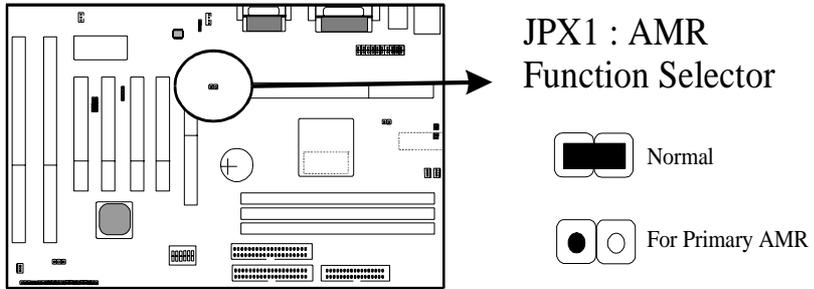


| SW1 |     |     |     | CPU Ratio |
|-----|-----|-----|-----|-----------|
| 3   | 4   | 5   | 6   |           |
| ON  | OFF | ON  | ON  | 3x        |
| OFF | OFF | ON  | ON  | 3.5x      |
| ON  | ON  | OFF | ON  | 4x        |
| OFF | ON  | OFF | ON  | 4.5x      |
| ON  | OFF | OFF | ON  | 5x        |
| OFF | OFF | OFF | ON  | 5.5x      |
| ON  | ON  | ON  | OFF | 6x        |
| OFF | ON  | ON  | OFF | 6.5x      |
| ON  | OFF | ON  | OFF | 7x        |
| OFF | OFF | ON  | OFF | 7.5x      |
| ON  | ON  | OFF | OFF | 8x        |

#### 2-2-4 JPX1 : AMR Function Selector

---

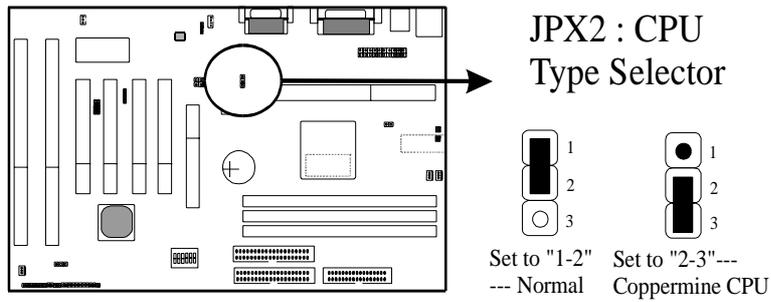
**JPX1** is a 2-pin connector. Set “ON” for normal setup and “OFF” for Primary AMR.



### 2-2-5 JPX2 : CPU Type Selector

---

JPX2 is a 3-pin connector. Set "1-2" for normal (Slot-1 CPU) and "2-3" for Coppermine CPU.



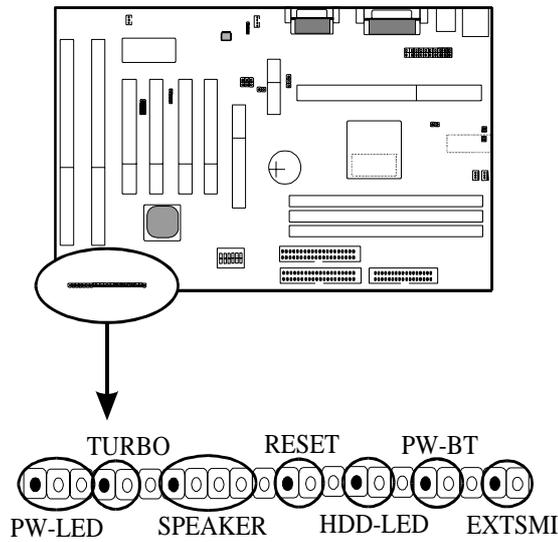
## 2-3 Connectors

There are many connectors on this main board. Refer to the following pages for details.

---

### 2-3-1 Front Panel

*Front panel* has connectors as “EXTSMI,” “PW-BT,” “HDD-LED,” “RESET,” “SPEAKER,” “TURBO,” and “PW-LED”. Please refer to details as below.

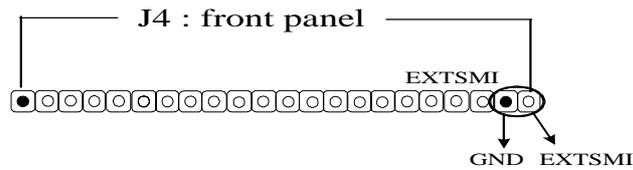


### SYSTEM MANAGEMENT INTERRUPT

*SMI connector* is a 2-pin Berg strip which is also called “green” or “sleep” connector. When EXTSMI is turned from open to close and back to open, the

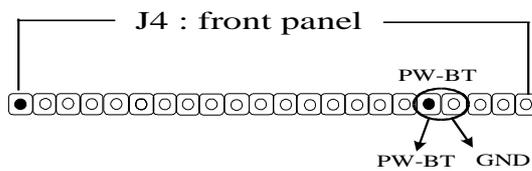
---

system will enter sleep mode immediately. This function is to make sure power saving is working well. In PC system, it is used to connect to the push button EXTSMI switch located on the case front panel (if there is). The system can be forced to power saving mode by pressing the EXTSMI switch.



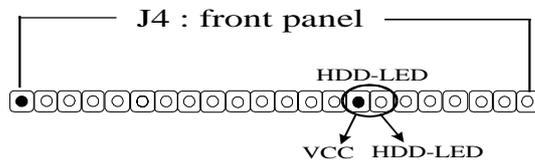
## POWER BUTTON

**Power Button** with a 2-pin Berg strip on case front panel indicates the current power status of system. It is used to connect to the Power Button on the front panel of the case (if there is).



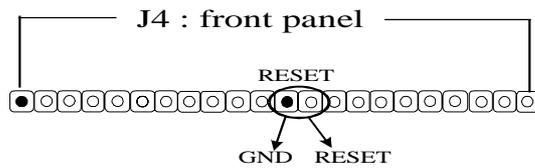
## HDD-LED

**Marked as "HDD-LED,"** Hard Disk activity LED connector is a 2-pin keyed Berg strip. It is used to connect to Hard Disk LED of the front panel.



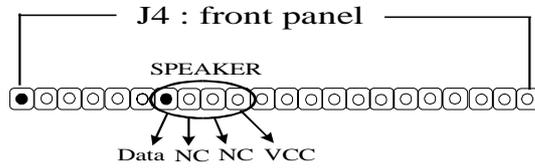
## RESET

**RESET connector** is a 2-pin keyed Berg strip, connected to the push button reset switch on the case front panel. Shorting both pin 1 & pin 2 can reset the system, which is similar to the power off and then on again.



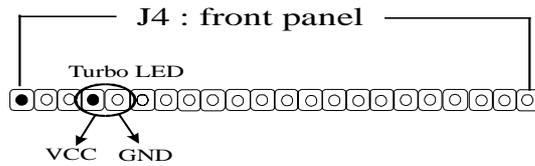
## SPEAKER

**Speaker (SPK) connector** is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the main board for sound purpose.



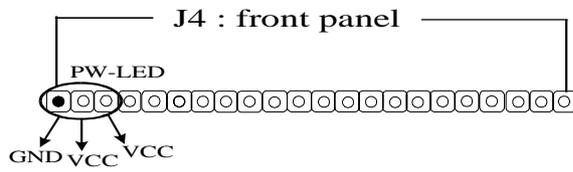
### TURBO-LED

**TURBO-LED** with a 2-pin Berg strip on case front panel indicated the current speed status of system. It is used to connect to the Turbo LED on the front panel of the case(if there is).



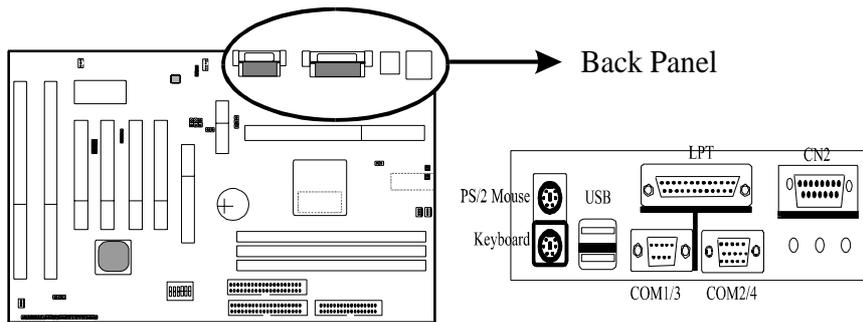
### PW-LED

**PW- LED** is a 3-pin connector. It is used to connect to the LED on the case front panel. The LED shows the status of the power.



### 2-3-2 Back Panel

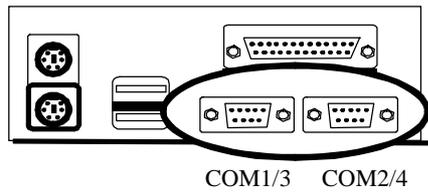
There are COM1/3, COM2/4, LPT, USB and keyboard/ mouse and CN2 on the case back panel. Please refer to more details as below.



### COM1/3, COM2/4

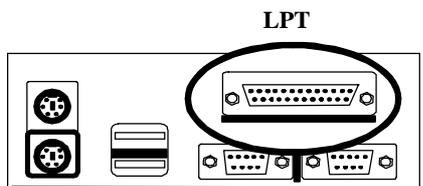
---

*The onboard serial port 1 and port 2* are the 9-pin D-subminiature male connector COM1/3 and COM2/4. COM1/3 and COM2/4 can be disabled in BIOS setup. Please refer to Chapter 3 “Integrated Peripherals” for more information.



### **LPT(Parallel Port)**

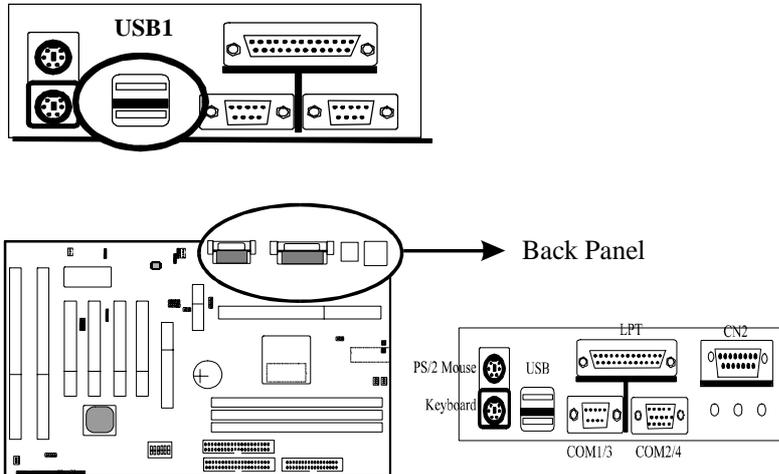
*The onboard parallel port* is a 25-pin female connector, marked as “**LPT.**”



### **USB1(Universal Serial Bus)**

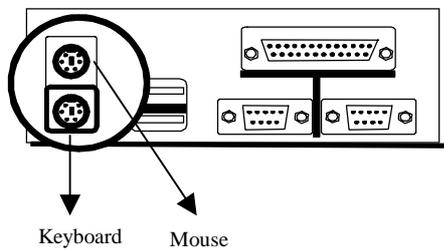
---

**Universal Serial Bus connector**, marked as “**USB,**” is used to connect USB devices. There are 2 USB connectors on this main board.



## Keyboard & Mouse

*The onboard PS/2 keyboard and mouse connector is 6-pin Mini-Din connectors, marked as “**KEYBOARD**” and “**MOUSE.**”*



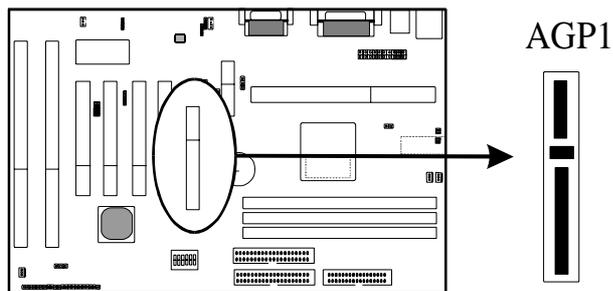
### 2-3-3 Expansion Slots

---

**Expansion slots** contain one A.G.P slot, four PCI slots, two ISA slots and one AMR slot on this main board. Below are details.

### **AGP1 Slot**

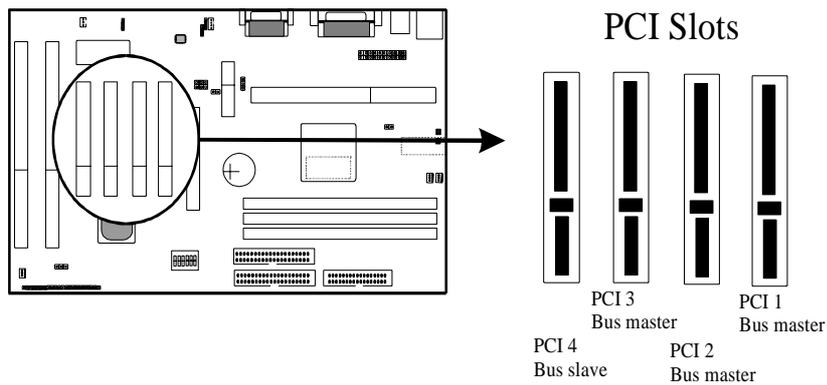
**AGP1 (Accelerated Graphic Port)** is the new bus standard that allows the bus speed to run at 66 MHz with up to 133 MHz data transfer capabilities, which is four times as fast as that of the PCI bus. At this speed, the AGP graphic cards can transfer data up to 528MB/second. This high transfer capabilities enables 3D graphic applications, multiple media applications, uncompressed to run smoothly and display in broadcasting quality.



### **PCI Slots**

---

**There are** four PCI slots on board; three are “master” bus and one is “slave.” 133MB/s data transfer rate on PCI bus can be compared to 33MB/s on EISA bus or 8MB/s on ISA bus. PCI interface has synchronous data transfer rate from CPU to PCI with good graphic performance.

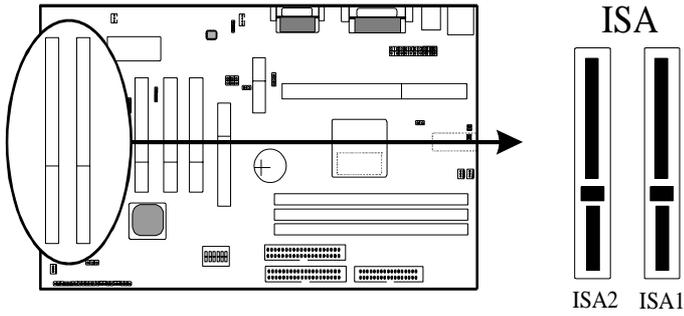


 While plugging into 4 PCI add-on cards, PCI 1- PCI 3 are master bus and PCI4 is slave bus. If there are 3 PCI add-on cards (or below 4 cards), all of them are master bus.

## ISA Slots

---

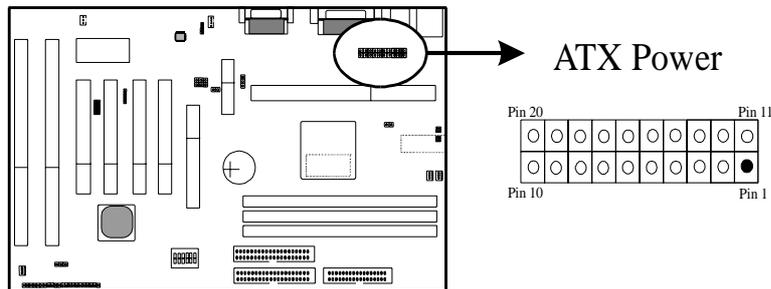
*There are* two standard 16-bit ISA slots on board. All of them are bus mastering.



### 2-3-4 ATX Power Supply Connector

---

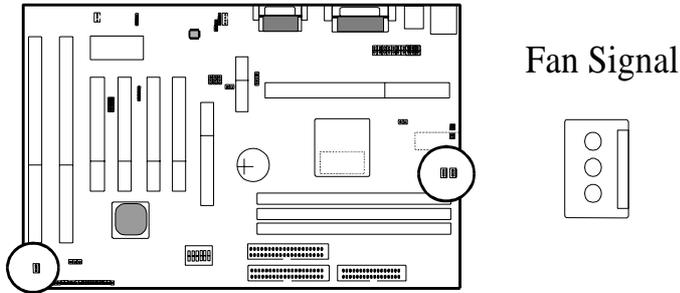
*ATX power supply connector* has 20 pins, which is designed for ATX case especially. The ATX power supply supports the function of the “**Soft Power On Momentary switch**” which connects on the front panel switch to the 2-pin **PW-BT** on the system board. While the power switch on the back of ATX power is turned on, the full power will not go into the system board until the front panel switch is momentarily pressed. Push the switch again to turn off the power to the system board.



### 2-3-5 CPU and Optimax Cooling Fan Connectors

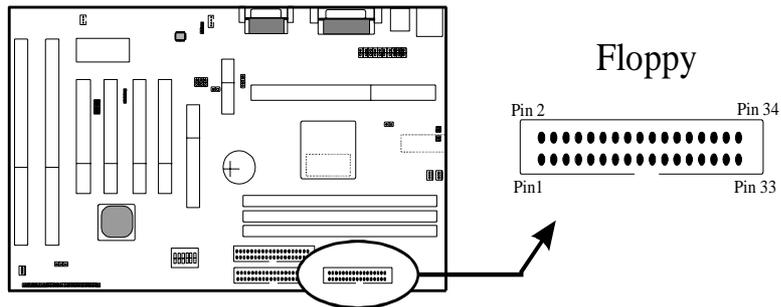
---

*There are 3 fan connectors* on this system board, and they are marked “FAN 1,” “FAN2” and “FAN3”. Each fan connector has three pins.



### 2-3-6 Floppy Interface

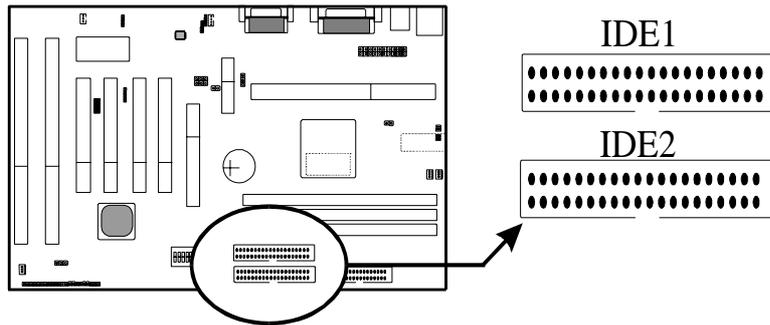
*Floppy interface connector* with 34 pins is used to attach the floppy drive cable.



### 2-3-7 IDE1 and IDE2

---

**IDE 1/ IDE 2** both have 40 pins. There are 2 IDE connectors supported on this system board. IDE1 is primary channel, and IDE2 is secondary channel. Each channel supports 2 IDE devices, and 4 devices in total for this main board.

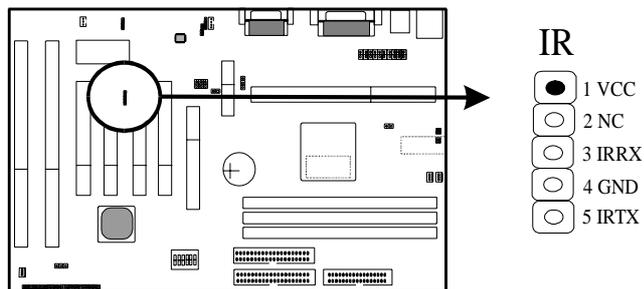


### 2-3-8 IR Connector

---

**IR connector** supports wireless infrared module. With this module and application software like LAPlink, or WIN95 Direct Cable Connection, user can transfer data to or from laptops, notebooks, PDA and printers. This connector supports **HPSIR**, **ASKIR**, and **Fast IR**.

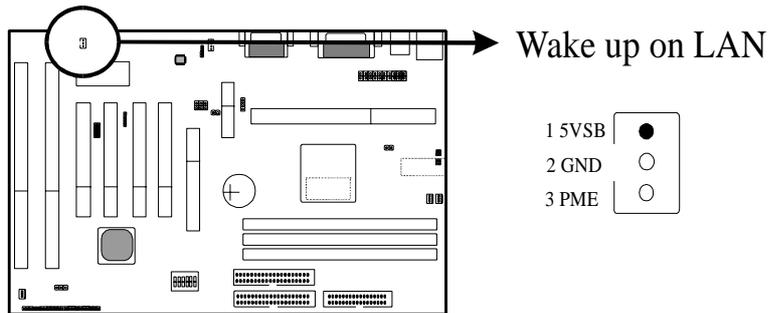
Attach Infrared module to IR connector and enable BIOS "Infrared function." Be sure to put in the right orientation during attachment.



### 2-3-9 Wake up on LAN

---

*Wake up on LAN*, marked as “WOL,” is a 3-pin connector. To support this feature, a network card is required for the system and in addition, a network management software must be installed too.

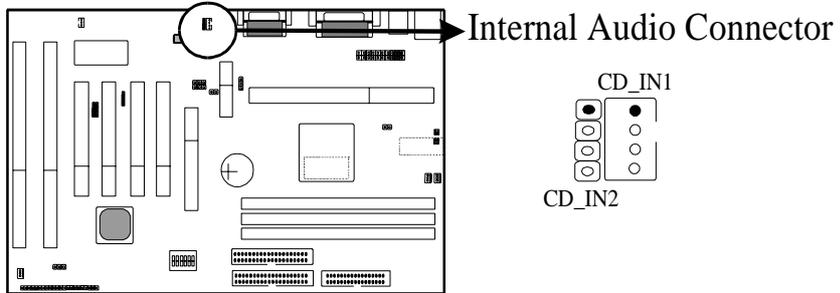


 **WOL (Wake up on LAN) function requirement:**  
*Power supply should offer at least 750mA to the signal “5VSB” to support WOL function.*

 **WOL (Wake up on LAN) function requirement:**  
*To find “Modem Ring Resume” under “Power Management” and set “Enabled”.*

## 2-3-10 Internal Audio Connectors

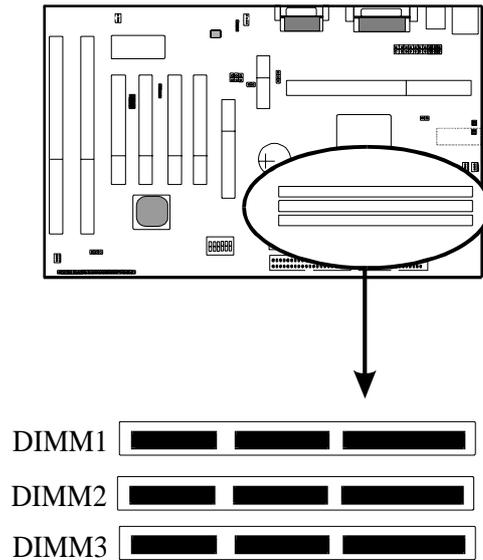
Internal Audio Connectors are “CD\_IN 1” and “CD\_IN 2”.



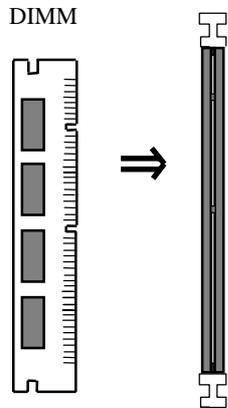
## 2-4 DIMM Memory Installation

---

The main board has 3 DIMMs on board. Either DIMM1, DIMM2, or DIMM3 supports 8 MB, 16 MB, 32 MB, 64 MB, and 128MB. Maximum memory for **SDRAM is up to 384MB.**



Insert the module as shown. Due to different number of pins on either side of the breaks, the module will only fit in the orientation as shown. There is no jumper setting for memory configuration.



Chipset only allows synchronous operation for DIMM and CPU. Therefore, to have a stable system, the system must use 100 MHz "PC-100 SDRAM memory DIMM" (3.3V) for 100 MHz Deschutes CPUs. For 66 MHz CPUs Klamath™ and Celeron™ (Covington™ & Mendocino™), the user may use either 3.3V EDO RAM or SDRAM.

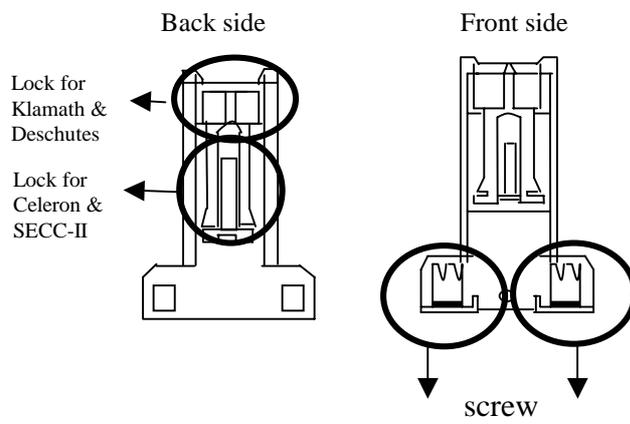
## 2-5 CPU RM Kit Assembling Procedure

---

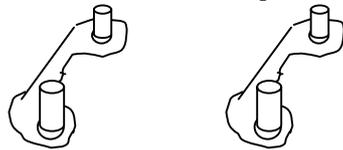
The enclosed RM Kit accommodates Pentium® III & Pentium® II processors. User may refer to the attached page enclosed with the RM kit to install the processors.

1. Check if the following set of piece parts are included in your package.  
4 separate piece parts in total.

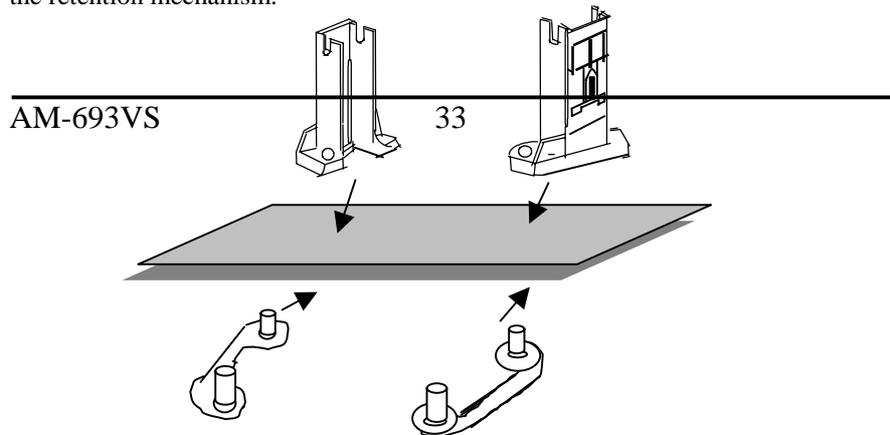
Retention Mechanism (R.M.): 2 pcs



RM. Attach Mount (RMAM): 2 pcs

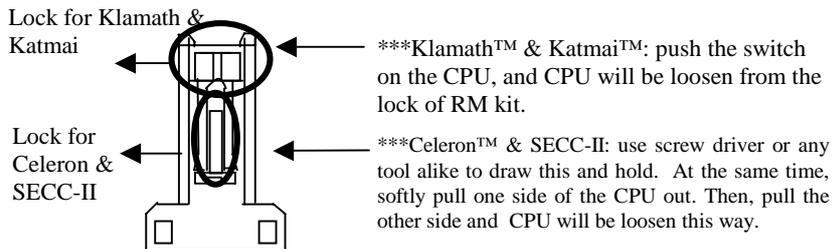


2. Make sure power is off during assembly.
3. Insert the RMAMs through the bottom of the motherboard and attach them to the retention mechanism.



- 
4. Fasten up the screws on the retention mechanism to tighten up retention mechanism and RMAM. Check if all the piece parts are fastened tightly.
  5. Put the CPU in the RM kit. (Push the CPU horizontally into the RM kit.)

 Due to different packages of "Katmai™, Celeron™, SECC-II, Klamath™ and Deschutes™, there are 2 positions to lock them in the RM kit. Below is notice to unlock those CPUs.

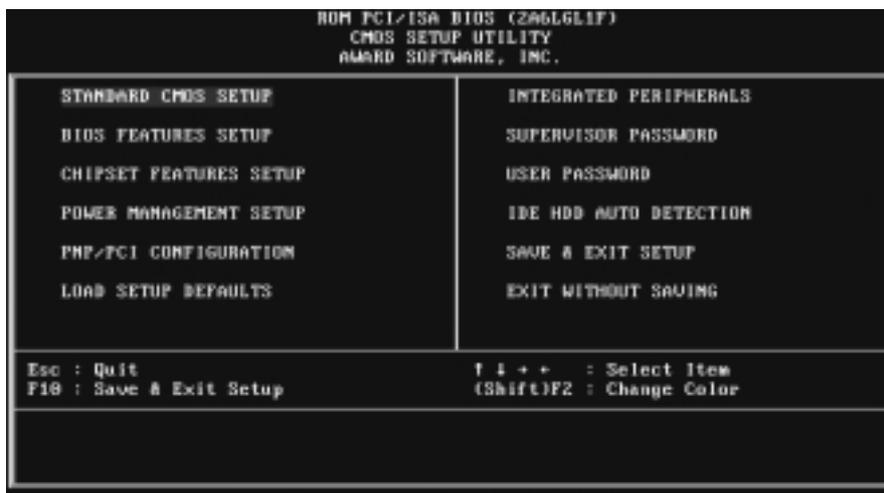


## Chapter 3 BIOS Setup

### 3-1 Award BIOS CMOS Setup

---

The menu displays all the major selection items and allow user to select any of shown item. The selection is made by moving cursor (press any direction key ) to the item and press <Enter> key. An on-line help message is displayed at the bottom of the screen as cursor is moving to various items which provides user better understanding of each function. When a selection is made, the menu of selected item will appear. So the user can modify associated configuration parameters.

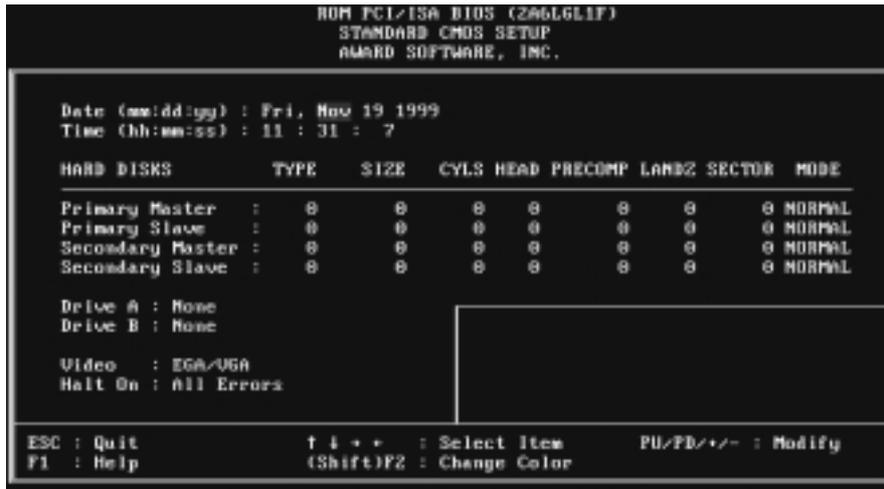


### 3-2 Standard CMOS Setup

The "Standard CMOS Setup" allows user to configure system setting such as **current date** and **time, type of hard disk drive** installed in the system, **floppy**

---

**drive type**, and the type of **display monitor**. Memory size is auto detected by the BIOS and displayed for your reference. When a field is highlighted (direction keys to move cursor and <Enter> key to select). The entries in the field will be changed by pressing <PageDown> or <PageUp> key or user can enter new data directly from the keyboard.



### Hard Disk Configurations

- 
1. **TYPE** : Select "**USER**" to fill the remaining fields. Select "**AUTO**" to detect the HDD type automatically. Selecting "**NONE**," the system will not detect hard disk type.
  2. **SIZE** : the hard disk size. The unit is mega byte(MB).
  3. **CYLS** : the cylinder number of the hard disk.
  4. **HEAD** : the read/write head number of hard disk. The range is from "**1**" to "**16**".
  5. **PRECOMP** : the cylinder number at which the disk drive changes the write timing.
  6. **LANDZ** : the cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.
  7. **SECTOR** : the sector number of each track defined on the hard disk. The range is from "**1**" to "**64**".
  8. **MODE** :select "**AUTO**" to detect the mode type automatically. If your hard disk supports the **LBA** mode, select "**LBA**" or "**LARGE**". However, if your hard disk cylinder is more than 1024 and does not support the lba function, you have to set at "**LARGE**." Select "**NORMAL**" if your hard disk supporting cylinder is below 1024.



*Note1: if hard disk primary master/slave and secondary master/slave were set to "auto," the hard disk size and model will be auto detected on display during POST.*



*Note2: "halt on" is to determine when to halt the system by the BIOS if error occurs during POST.*

### 3-3 BIOS Features Setup

Menu below shows all of the manufacturer's default values of this main board. Move the cursor by pressing direction keys and <PageDown> or <PageUp> key to modify the parameters, pressing [F1] key to display help message of the selected item. This setup program also provides 2 convenient ways to load the default parameter data from BIOS [F6] or CMOS [F7] area if shown data is corrupted. This provides the system a capability to recover from any possible error.

```

ROM PCI/ISA BIOS (2A6L6L1F)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning           : Disabled
CPU Internal Cache     : Enabled
External Cache        : Enabled
CPU L2 Cache ECC Checking : Enabled
Processor Number Feature : Enabled
Quick Power On Self Test : Enabled
Boot Sequence         : A,C,SCSI
Swap Floppy Drive     : Disabled
Boot Up Floppy Seek   : Disabled
Boot Up NumLock Status : On
Gate A20 Option       : Fast
Memory Parity/ECC Check : Disabled
Typematic Rate Setting : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec) : 250
Security Option       : Setup
PCI/UGA Palette Snoop : Disabled
OS Select For DRAM > 64MB : Non-OS2

Video BIOS Shadow     : Enabled
C8000-CBFFF Shadow   : Disabled
CC000-CFFFF Shadow   : Disabled
D8000-D3FFF Shadow   : Disabled
D4000-D7FFF Shadow   : Disabled
DB000-DBFFF Shadow   : Disabled
DC000-DFFFF Shadow   : Disabled

ESC : Quit           F10+ : Select Item
F1  : Help           F6/PD+/- : Modify
F5  : Old Values    (Shift)F2 : Color
F7  : Load Setup Defaults

```

**Virus Warning**  
**:Enabled**  
**:Disabled (default)**

---

***CPU Internal Cache***

**Enabled** (default): enable L1 cache

**Disabled:** disable L1 cache

***External Cache***

**Enabled** (default): enable L2 cache

**Disabled:** disable L2 cache

***CPU L2 Cache ECC Checking***

**Enabled** (default): enable L2 cache ECC checking

**Disabled:** disable L2 cache ECC checking

***Quick Power On Self Test***

This category speeds up power on self test.

**Enabled** (default) : BIOS will shorten or skip some check items.

**Disabled :** normal speed

***Boot sequence***

This category determines which drive the system searches first. Take “**A,C,SCSI**” for example. System will search in turn for floppy disk drive; second is hard disk drive, and finally SCSI drive. Default value is “**A,C,SCSI**”. Options are as below: **A,C,SCSI; C,A,SCSI; C,CDROM,A; CDROM,C,A; D,A,SCSI; E,A,SCSI; F,A,SCSI; SCSI,A,C; SCSI,C,A; C Only; LS/ZIP,C.**

***Swap Floppy Drive***

**Enabled:** floppy A&B will be swapped.

**Disabled**(default): floppy A&B will be not swapped.

***Boot Up Floppy Seek***

BIOS will determine if the floppy disk drive is 40 or 80 tracks. 360k type is 40 tracks while 720K/ 1.2M and 1.44M are all 80 tracks.

**:Enabled**

---

**:Disabled** (default)

***Boot Up Numlock Status***

**:On**(default)

**:Off**

***Gate A20 Option***

**:Normal**

**:Fast** (default)

***Typematic Rate Setting***

This determines the typematic rate.

**Enabled:** enable typematic rate and typematic delay programming.

**Disabled** (default): disable typematic rate and typematic delay programming. The system bios will use default value of this 2 items and the default is controlled by keyboard.

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

6 : 6 Characters Per Second(default)

8 : 8 Characters Per Second

10 : 10 Characters Per Second

12 : 12 Characters Per Second

15 : 15 Characters Per Second

20 : 20 Characters Per Second

24 : 24 Characters Per Second

30 : 30 Characters Per Second

***Typematic Delay (Msec)***

This is the interval between the first and second character displayed.

**250** : 250 msec (default)

**500** : 500 msec

**750** : 750 msec

**1000** : 1000 msec

***Security Option***

---

AM-693VS

---

**:Setup** (default)--- security protection in CMOS setup menu  
Setting password in BIOS CMOS “**Supervisor Password**” or **User Password**,”  
the user needs to key in password if entering BIOS CMOS setup.  
**:System**---security protection in system boot-up & BIOS setup  
This function secures the system under system boot-up and BIOS setup.

***PCI/VGA Palette Snoop***

**Enabled:** it allows you to install an enhanced graphics adapter card.  
**Disabled** (default): If your graphics adapter card does not support the palette snoop function, please set at **Disabled** to avoid system malfunction.

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

This option is especially set for OS2 operating system. Set “**Non-OS2**” for RAM memory over 64MB and set “**Non-OS2**” for other operating systems like Windows® 95/98 or NT.

**:Non-OS2** (default)

**:OS2**

***Video BIOS Shadow***

It determines whether video BIOS will be copied to RAM. However, it is optional from chipset design. Video shadow will increase the video speed.

**Enabled :** Video Shadow is enabled (default)

**Disabled:** Video Shadow is disabled

***C8000-CBFFF Shadow, CC000-CFFF Shadow, D0000-D3FFF Shadow:  
D4000-D7FFF Shadow, D8000-DBFFF Shadow, DC000-DFFF Shadow***

These are categories determining whether optional ROM will be copied to RAM by 16KB or 32KB per unit and the size depends on chipset.

**:Enabled**

**:Disabled**(default)

### **3-4 Chipset Features Setup**

```

ROM PCI/ISA BIOS (2A6L6L1F)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Bank 0/1 DRAM Timing : SDRAM 10ns
Bank 2/3 DRAM Timing : SDRAM 10ns
Bank 4/5 DRAM Timing : SDRAM 10ns
SDRAM Cycle Length : 3
DRAM Clock : Host CLK
Memory Hole : Disabled
Read Around write : Disabled
Concurrent PCI/Host : Disabled
System BIOS Cacheable : Disabled
Video RAM Cacheable : Disabled
AGP Aperture Size : 128M
AGP-2X Mode : Enabled
OnChip USB : Enabled
OnChip USB 2 : Disabled
USB Keyboard Support : Disabled
OnChip Sound : Enabled
OnChip Modem : Disabled

Auto Detect DIMM/PCI Clk : Disabled
Spread Spectrum : Disabled
CPU Host Clock (CPU/PCI) : Default
Current CPU Temp. :
Current System Temp. :
Current CPUFAN1 Speed :
Current CPUFAN2 Speed :
Vcore : 2.50 :
3.3V : 5V :
12V :

ESC : Quit          F10 : Select Item
F1 : Help          F11/PB/+/- : Modify
F5 : Old Values (Shift) F2 : Color
F7 : Load Setup Defaults

```

***Bank 0/1(2/3, 4/5) DRAM Timing***

This will determine the timing of SDRAM. The user can separately adjust the timing of bank 0/1, 2/3, 4/5.

: **SDRAM 10ns** (default)— $10^{-9}$  nano second

---

**: SDRAM 8ns, normal, medium, fast, turbo**

***SDRAM Cycle Length:*** control the DRAM page missing and row miss leadoff timing.

**:2**

**:3 (default)**

***DRAM Clock***

**:Host CLK (default)**

System shows the actual DRAM speed the system uses.

**:HCLK-33M**

**:HCLK+33M**

Please check DRAM clock for optimize selection.

***Memory Hole :*** this field enable a memory hole in main memory space. CPU cycles matching an enabled hold are passed on to PCI note that a selected can not be changed while the L2 cache is enabled.

**:Disabled (default)**

**:15M-16M**

***Read Around write***

**:Disabled (default)**

**:Enabled**

***Concurrent PCI/Host***

**:Disabled (default)**

**:Enabled**

***System BIOS Cacheable***

**:Disabled (default)**

**:Enabled**

***Video RAM Cacheable***

**:Enabled** --- allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may occur.

---

**:Disabled** (default)

***AGP Aperture Size***

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

**:128M** (default)

**:64M, 32M, 16M, 8M, 4M**

***AGP-2X Mode***

**:Enabled** (default)

**:Disabled**

***OnChip USB***

**:Enabled** (default)

Enabling this function adds the function of “**USB Keyboard Support.**”

**:Disabled**

***OnChip USB2***

**:Disabled** (default)

**:Enabled**

***USB Keyboard Support***

**:Disabled** (default)

**:Enabled---** enable this function when using USB keyboard

***OnChip sound***

**:Enabled** (default)

**:Disabled**

***OnChip Modem***

**:Enabled**

**:Disabled** (default)

---

*Auto Detect DIMM/PCI Clk*

**:Enabled**

**:Disabled** (default)

*Spread Spectrum*

**:Disabled** (default)

**:0.25%,0.50%**

### **3-5 Power Management Setup**

```

ROM PCI/ISA BIOS (296L6L1F)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

ACPI function      : Enabled
Power Management  : User Define
PM Control by APM : Yes
Video Off After   : Suspend
Video Off Method  : U/H SYNC+Blank
MODEM Use IRQ     : 3
Soft-Off by PWRBTN : Instant-Off
HDD Power Down    : Disable
Doze Mode         : Disable
Suspend Mode      : Disable
** PM Events **
VGA               : OFF
LPT & COM         : LPT/COM
HDD & FDD         : ON
PCI Master        : OFF
Modem Ring Resume : Disabled
RTC Alarm Resume  : Disabled

Primary INTR      : ON
IRQ3 (COM 2)     : Primary
IRQ4 (COM 1)     : Primary
IRQ5 (LPT 2)     : Primary
IRQ6 (Floppy Disk) : Primary
IRQ7 (LPT 1)     : Primary
IRQ8 (RTC Alarm)  : Disabled
IRQ9 (IRQ2 Redir) : Secondary
IRQ10 (Reserved) : Secondary
IRQ11 (Reserved) : Secondary
IRQ12 (PS/2 Mouse) : Primary
IRQ13 (Coprocesor) : Primary
IRQ14 (Hard Disk) : Primary
IRQ15 (Reserved) : Disabled

ESC : Quit          F10 : Select Item
F1  : Help          F4/PB/+/- : Modify
F5  : Old Values (Shift) F2 : Color
F7  : Load Setup Defaults

```

**ACPI function**  
**:Disabled**  
**:Enabled (default)**

---

### ***Power Management***

**:User Define**(default)--users can configure their own power management

**:Min Saving**

**:Max Saving**

### ***PM Control By APM***

**No** : system BIOS will ignore APM.

**Yes** (default) : system BIOS will wait for APM's prompt before it enter any PM mode, e.g. Doze, standby or suspend.



*Note 1: If APM is installed, and there is a task running, even if the timer is time out, the APM will not prompt the BIOS to put the system into any power saving model*



*Note2: If APM is not installed, this option has no effect.*

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

**:DPMS Support**

**:Blank Screen**

**:V/H Sync+Blank** (default)

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

**:3**(default)

**:4, 5, 7, 9,10,11,NA**

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

**:Instant-off** (default)

**: Delay 4 sec**

This allows the user to set the soft-off power button to turn off the system or set to "4 seconds" holding the power and system will shut down in 4 seconds.

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

**:Disabled**(default)

**:1 Min ~ 15 Min**

---

### *Doze Mode*

**:Disabled**(default)

**:10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 1 hour.**

### *Suspend mode*

**:Disabled**(default)

**:10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 1 hour.**

### *Modem Ring Resume*

**Enabled:** modem ring on function --- system can be turned on through modem.

**Disable**(default): disble this function.



*Note: this function only works when the system is turned off from Windows mode, and Doze mode will not function.*

**RTC Alarm Resume:** auto power on at the appointed date and time.

**Enabled:** key in the date of current month and time of the day. System will turn on then.

**Disabled** (default): disable this function.



*Note: this function only works when the system is turned off in Windows mode, and Doze mode will not function.*

### *Primary INTR*

**:ON** (default)

Select “on,” it adds the following functions, “**IRQ3(COM2) - IRQ15 (Reserved).**”

**:OFF**

Select “off,” “**IRQ3 (COM2)- IRQ15 (Reserved)**” will not show.

## **3-6 PNP / PCI Configuration Setup**

```

ROM PCI/ISA BIOS (296L6L1F)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed      : No
Resources Controlled By : Manual
Reset Configuration Data : Disabled

IRQ-3 assigned to : PCI/ISA PnP
IRQ-4 assigned to : PCI/ISA PnP
IRQ-5 assigned to : PCI/ISA PnP
IRQ-7 assigned to : PCI/ISA PnP
IRQ-9 assigned to : PCI/ISA PnP
IRQ-10 assigned to : PCI/ISA PnP
IRQ-11 assigned to : PCI/ISA PnP
IRQ-12 assigned to : PCI/ISA PnP
IRQ-14 assigned to : PCI/ISA PnP
IRQ-15 assigned to : PCI/ISA PnP
DMA-0 assigned to : PCI/ISA PnP
DMA-1 assigned to : PCI/ISA PnP
DMA-3 assigned to : PCI/ISA PnP
DMA-5 assigned to : PCI/ISA PnP
DMA-6 assigned to : PCI/ISA PnP
DMA-7 assigned to : PCI/ISA PnP

CPU to PCI Write Buffer: Enabled
PCI Dynamic Bursting : Enabled
PCI Master 0 WS Write : Enabled
PCI Delay Transaction : Enabled
PCI#2 Access #1 Retry : Disabled
AGP Master 1 WS Write : Enabled
AGP Master 1 WS Read  : Disabled

Assign IRQ For USB : Enabled
Assign IRQ For UGA : Enabled
Slot 1 Use IRQ No. : Auto
Slot 2 Use IRQ No. : Auto
Slot 3 Use IRQ No. : Auto
Slot 4 Use IRQ No. : Auto

ESC : Quit      F10 : Select Item
F1  : Help     F8/PB/+/- : Modify
F5  : Old Values (Shift) F2 : Color
F7  : Load Setup Defaults

```

***PNP OS Installed***

**:No**(default)

OS will not recognize PnP devices.

---

**:Yes**

OS will arrange the setup of PnP devices.

***Resources Controlled By***

**:Manual**(default)

The table will show the below items: **“Reset Configuration Data, IRQ-3 assigned to, DMA-0 assigned to.”** The user can adjust the shown items as required.

**:Auto**

The table will not show the above items, and the system will automatically assign the above setup.

***Reset Configuration Data***

**:Disabled**(default)

**:Enabled ---** to reset **“Extended System Configuration Data(ESCD)** when you exit setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot up.

***IRQ-3 Assigned To---- IRQ-15 Assigned To***

**: PCI/ISA PnP**(default)

**: Legacy ISA**

***DMA-0 Assigned To--- DMA-7 Assigned To***

**: PCI/ISA PnP**(default)

**: Legacy ISA**

***CPU to PCI Write Buffer***

**:Enabled** (default)

**:Disabled**

***PCI Dynamic Bursting***

**:Enabled** (default)

**:Disabled**

***PCI Master 0 WS Write***

**:Enabled** (default)

**:Disabled**

---

***PCI Delay Transaction***

**:Enabled** (default)

**:Disabled**

***PCI#2 Access #1 Retry***

**:Enabled**

**:Disabled** (default)

***AGP Master 1 WS Write***

**:Enabled** (default)

**:Disabled**

***AGP Master 1 WS Read***

**:Enabled**

**:Disabled** (default)

***Assign IRQ for USB***

**:Enabled** (default)

**:Disabled**

***Assign IRQ for VGA***

**:Enabled** (default)

**:Disabled**

***Slot1 – 4 Use IRQ No.***

**:Auto** (default)

**:3-15**

## **3-7 Integrated Peripherals**

```

ROM PCI/ISA BIOS (296L6L1F)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

OnChip IDE Channel0 : Enabled
OnChip IDE Channel1 : Enabled
IDE Prefetch Mode : Enabled
IDE HDD Block Mode : Enabled
Primary Master P10: Auto
Primary Slave P10: Auto
Secondary Master P10: Auto
Secondary Slave P10: Auto
Primary Master UDMA: Auto
Primary Slave UDMA: Auto
Secondary MasterUDMA: Auto
Secondary Slave UDMA: Auto
Init Display First : AXP

Onboard FDD Controller: Enabled
Onboard Serial Port 1 : Auto
Onboard Serial Port 2 : Auto
UART 2 Mode : Standard

Onboard Parallel Port : 378/IRQ7
Onboard Parallel Mode : Normal

Onboard Legacy Audio : Enabled
Sound Blaster : Disabled
SB I/O Base Address : 2280H
SB IRQ Select : IRQ 5
SB DMA Select : DMA 1
MPU-401 : Disabled
MPU-401 I/O Address : 330-333H
Game Port (208-207H) : Enabled

ESC : Quit F1++ : Select Item
F1 : Help F2/PB/+/- : Modify
F5 : Old Values (Shift)F2 : Color
F7 : Load Setup Defaults

```

*OnChip IDE Channel 0/1*  
**:Enabled** (default)  
**:Disabled**

---

***IDE Prefetch Mode***

**:Enabled** (default)

**:Disabled**

***IDE HDD Block Mode***

This feature enhances hard disk performance by making multi sector transfer instead of one sector per transfer. Most of IDE drivers, except very early designs, can use this feature.

**:Enabled** (default)

**:Disabled**

***Primary Master PIO/ Primary Slave PIO***

This feature detects your primary master hard disk device.

**:Auto** (default)

**:Mode 0,1,2,3,4**

***Secondary Master PIO/Secondary Slave PIO***

This feature detects your secondary master hard disk device.

**:Auto** (default)

**:Mode 0,1,2,3,4**

***Primary Master UDMA/Primary Slave UDMA***

**:Auto** (default)

**:Disabled**

***Secondary Master UDMA/Secondary Slave UDMA***

**:Auto** (default)

**:Disabled**

***Init Display First***

**:AGP** (default)

**:PCI Slot**

***Onboard FDD Controller***

**: Enabled** (default)

**: Disabled**

---

*Onboard Serial Port 1*

: **3F8/IRQ4**  
: **2F8/IRQ3**  
: **3E8/IRQ4**  
: **2E8/IRQ3**  
: **Auto** (default)  
: **Disabled**

*On-Board Serial Port 2*

: **3F8/IRQ4**  
: **2F8/IRQ3**  
: **3E8/IRQ4**  
: **2E8/IRQ3**  
: **Auto** (default)  
: **Disabled**

*Onboard Parallel Port*

: **378/IRQ7** (default)  
: **3BC/IRQ7**  
: **278H/IRQ5**  
: **Disabled**

## **3-8 Supervisor/User Password**

---

The "Supervisor/User Password setting" utility sets the security protection. There are two kinds of password functions in the setup menu : one is "Supervisor Password," and the other is "User Password." Their difference is:

**Supervisor Password:** this function allows you the right to change the options of setup menu.

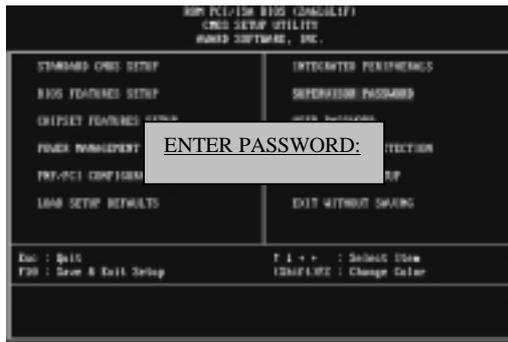
**User Password:** this function only allows you to enter the setup menu but not to change the options of the setup menu except "USER PASSWORD," "SAVE & EXIT SETUP," and "EXIT WITHOUT SAVING."

### 1. How to set "Supervisor Password" & "User Password"

The setups of "Supervisor Password" and "User Password" have the same steps.

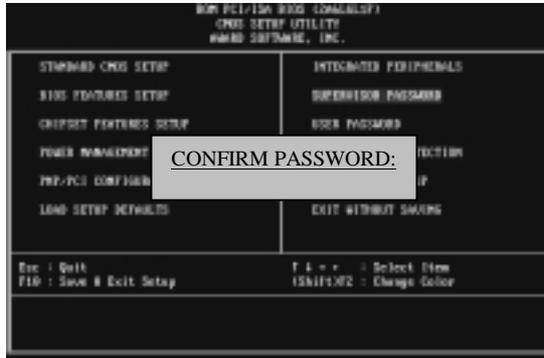
#### Step 1: Enter Password

Press <Enter> after appointing the password.



#### Step 2: Confirm Password

Typing the password again and pressing <Enter> .



Note: If you forget password, please clear CMOS.  
(refer to RTC)

### Step 3: Set “Security Option” in “BIOS Features Setup”

After setting password, enter “Security Option” in “BIOS Features Setup.” There are 2 options “Setup” & “System.” “Setup” secures CMOS setup. “System” secures PC system and password is required during system boot-up and CMOS setup.

2. How to Disable “Supervisor Password” & “User Password”  
Step 1: Go to CMOS Setup Menu (need to key in password first)

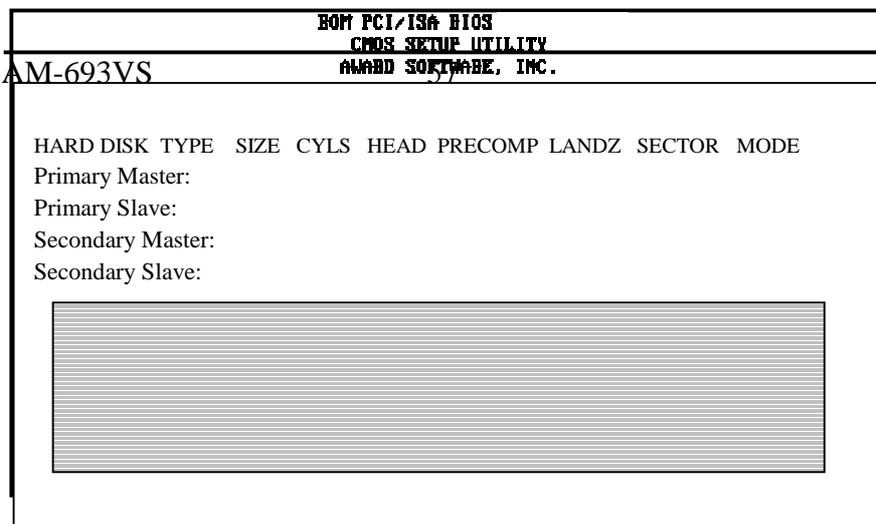
---

Step 2: Enter “Supervisor Password” or “User Password”

After enter, it shows “Enter Password.” Press the <Enter> key instead of entering a new password when "ENTER PASSWORD" appears. It will inform “PASSWORD DISABLED PRESS ANY KEY TO CONTINUE.” Thus, press any key as instructed. Password disable the password this way.



### 3-9 IDE HDD Auto Detection



---

The "**IDE HDD AUTO DETECTION**" utility is a very useful tool especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type installed in the system automatically or you can set hard disk type to auto in the standard CMOS setup. You don't need the "**IDE HDD Auto Detection**" utility. The BIOS will auto-detect the hard disk size and model on display during post.

The Award® BIOS supports 3 HDD modes: **NORMAL, LBA & LARGE.**

**1. Normal mode**

---

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for normal mode are **1024, 16 & 63**.

|                         |              |
|-------------------------|--------------|
| No. Cylinder            | (1024)       |
| X No. Head              | (16)         |
| X No. Sector            | (63)         |
| <u>X No. Per Sector</u> | <u>(512)</u> |
|                         | 528 MB       |

If user set this HDD to normal mode, the maximum accessible HDD size will be 528 MB even though its physical size may be greater than that!

## 2. LBA (Logical Block Addressing) Mode

A new HDD accessing method to overcome the 528 MB bottleneck. The number of cylinders, heads & sectors shown in setup may not be the number physically contained in the HDD. During HDD accessing, the ide controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 GB which is obtained by the following formula:

|                               |              |
|-------------------------------|--------------|
| No. Cylinder                  | (1024)       |
| X No. Head                    | (255)        |
| X No. Sector                  | (63)         |
| <u>X No. Bytes Per Sector</u> | <u>(512)</u> |
|                               | 8.4 GB       |

## 3. Large Mode

Extended HDD access mode supported by Award® software. Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not

---

want LBA). The Award® BIOS provides another alternative to support these kinds of large mode:

| <u>Cyls.</u> | <u>Head</u> | <u>Sector</u> | <u>Mode</u> |
|--------------|-------------|---------------|-------------|
| 1120         | 16          | 59            | NORMAL      |
| 560          | 32          | 59            | LARGE       |

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside int 12h in order to access the right HDD address the right HDD address!

#### 4. Maximum HDD Size:

|   |                             |              |
|---|-----------------------------|--------------|
|   | No. Cylinder                | (1024)       |
| X | No. Head                    | (32)         |
| X | No. Sector                  | (63)         |
| X | <u>No. Bytes Per Sector</u> | <u>(512)</u> |
|   |                             | 1 GB         |

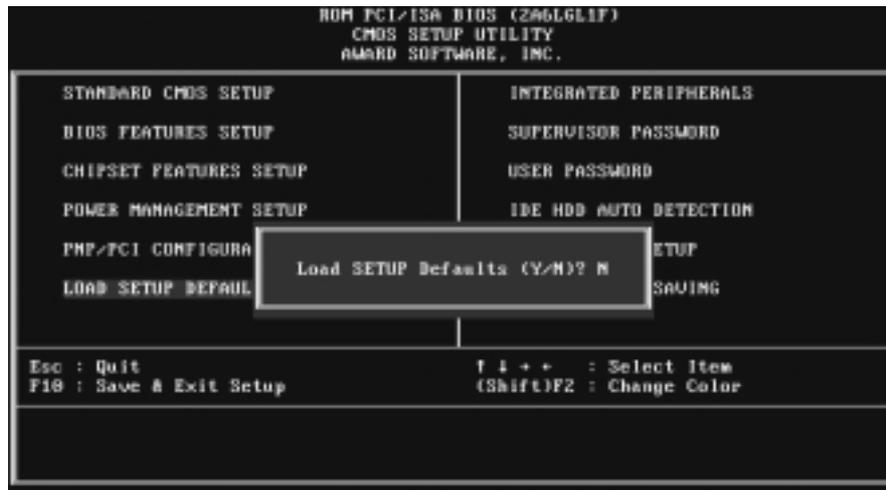


**To support LBA or large mode of HDDs**, there must be some softwares involved. All these softwares are located in the Award® HDD service routine (int 13h). It may be failed to access a HDD with LBA (large) mode selected if you are running under an operating system which replaces the whole int 13h. Unix operating systems do not support either LBA or large and must utility the standard mode. Unix can support drives larger than 528MB.

### 3-10 Load Setup Defaults

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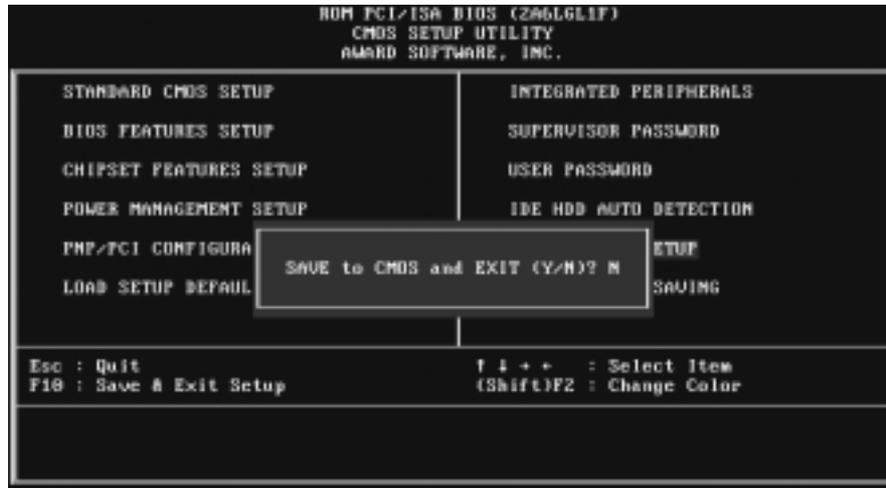
"Load Setup Defaults" loads optimized settings which are stored in the BIOS ROM. The auto-configured settings only affect "BIOS Features Setup" and "Chipset Features Setup" screens. There is no effect on the standard CMOS setup. To use this feature, highlight it on the main screen and press the <Enter> key. A line will appear on screen asking if you want to load the setup default values. Press the <Y> key and then press the <Enter> key. The setup defaults will then load. If not, press <N>.



### 3-11 Save & Exit Setup

---

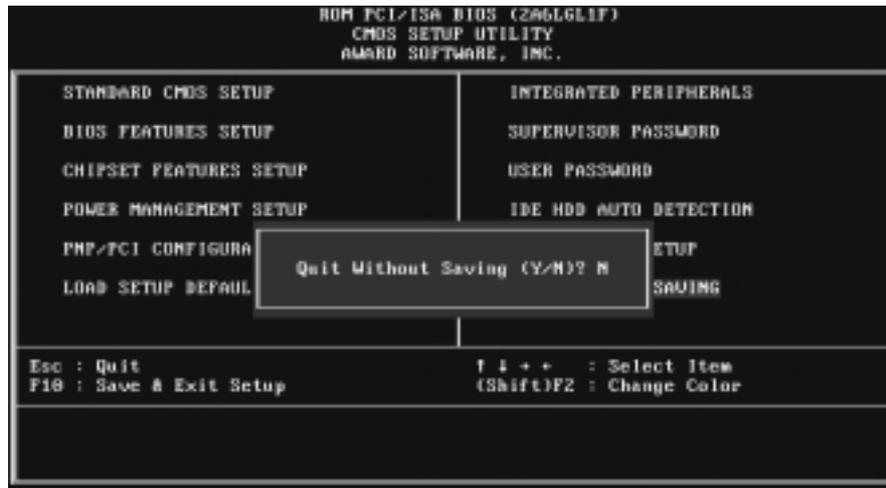
The "Save & Exit Setup" option will bring you back to boot up procedure with all the changes, you have made which are recorded in the CMOS RAM.



### 3-12 Quit Without Saving

---

The **"Quit Without Saving"** option will bring you back to normal boot up procedure without saving any data into CMOS RAM. All of the old data in the CMOS will not be destroyed.



## Chapter 4 Appendix

---

## 4-1 Memory Map

| Address range | Size | Description  |
|---------------|------|--|
| 00000-7FFFF   | 512K | Conventional memory                                |
| 80000-9FBFF   | 127K | Extended conventional memory                       |
| 9FC00-9FFFF   | 1K   | Extended BIOS data area if PS/2 mouse is installed |
| A0000-C7FFF   | 160K | Available for hi DOS memory                        |
| C8000-DFFFF   | 96K  | Available for hi DOS memory and adapter ROMs       |
| E0000-EEFFF   | 60K  | Available for UMB                                  |
| EF000-EFFFF   | 4K   | Video service routine for monochrome & CGA adapter |
| F0000-F7FFF   | 32K  | BIOS CMOS setup utility                            |
| F8000-FCFFF   | 20K  | BIOS runtime service routine (2)                   |
| FD000-FDFFF   | 4K   | Plug and play escd data area                       |
| FE000-FFFFF   | 8K   | BIOS runtime service routine (1)                   |

## 4-2 I/O Map

---

|         |                                      |
|---------|--------------------------------------|
| 000-01F | DMA controller (master)              |
| 020-021 | Interrupt controller (master)        |
| 022-023 | Chipset control registers. I/O ports |
| 040-05F | Timer control registers              |
| 060-06F | Keyboard interface controller (8042) |
| 070-07F | RTC ports & CMOS I/O ports           |
| 080-09F | DMA register                         |
| 0A0-0BF | Interrupt controller (slave)         |
| 0C0-0DF | DMA controller (slave)               |
| 0F0-0FF | Math coprocessor                     |
| 1F0-1FB | Hard disk controller                 |
| 278-27F | Parallel port 2                      |
| 2B0-2DF | Graphics adapter controller          |
| 2F8-2FF | Serial port 2                        |
| 360-36F | Network ports                        |
| 378-37F | Parallel port 1                      |
| 3B0-3BF | Monochrome & parallel port adapter   |
| 3C0-3CF | EGA adapter                          |
| 3D0-3DF | CGA adapter                          |
| 3F0-3F7 | Floppy disk controller               |
| 3F8-3FF | Serial port-1                        |

### 4-3 Time & DMA Channels Map

**Time map:** Timer channel 0 system timer interrupt  
 Timer channel 1 DRAM refresh request

---

Timer channel 2 speaker tone generator

**DMA channels:**

DMA channel 0 available  
DMA channel 1 onboard ECP (option)  
DMA channel 2 floppy disk (Winboard chip)  
DMA channel 3 onboard ECP (default)  
DMA channel 4 cascade for DMA controller 1  
DMA channel 5 available  
DMA channel 6 available  
DMA channel 7 available

## 4-4 Interrupt Map

**NMI:** Non-Maskable Interrupt

---

**IRQ(H/W):**

- 0 system timer interrupt from timer 0
1. keyboard output buffer full
2. cascade for IRQ 8-15
3. serial port2
4. serial port1
5. parallel port 2
6. floppy disk (Winbond chip)
7. parallel port 1
8. RTC clock
9. available
10. available
11. available
12. PS/2 mouse
13. math coprocessor
14. onboard hard disk (IDE1) channel
15. onboard hard disk (IDE2) channel

#### **4-5 RTC & CMOS RAM Map**

|    |               |
|----|---------------|
| 00 | Seconds       |
| 01 | Seconds Alarm |
| 02 | Minutes       |
| 03 | Minutes Alarm |
| 04 | Hours         |

---

|       |   |
|-------|---|
| 05    | Hours Alarm                             |
| 06    | Day of Week                             |
| 07    | Day of Month                            |
| 08    | Month                                   |
| 09    | Year                                    |
| 0A    | Status Register A                       |
| 0B    | Status Register B                       |
| 0C    | Status Register C                       |
| 0D    | Status Register D                       |
| 0E    | Diagnostic Status Byte                  |
| 0F    | Shutdown Byte                           |
| 10    | Floppy Disk Type Drive Type Byte        |
| 12    | Hard Disk Type Byte                     |
| 13    | Reserved                                |
| 14    | Equipment Type                          |
| 15    | Base Memory Low Byte                    |
| 16    | Base Memory High Byte                   |
| 17    | Extension Memory Low Byte               |
| 18    | Extension Memory High Byte              |
| 19-2D |   |
| 2E-2F |   |
| 30    | Reserved for Extension Memory Low Byte  |
| 31    | Reserved for Extension Memory High Byte |
| 33    | Information Flag                        |
| 34-3F | Reserved                                |
| 40-7F | Reserved for Chipset Setting Data       |

#### 4-6 ISA I/O Address Map

| I/O Address (HEX) | I/O device                    |
|-------------------|-------------------------------|
| 000 - 01F         | DMA Controller 1, 8237A-5     |
| 020 - 03F         | Interrupt Controller 1, 8259A |
| 040 - 05F         | System Timer, 8254-2          |

---

| <b>I/O Address (HEX)</b> | <b>I/O device</b>                      |
|--------------------------|--|
| 060 - 06F                | 8042 Keyboard Controller               |
| 070 - 07F                | Real-time Clock/CMOS and NMI Mask      |
| 080 - 09F                | DMA Page Register, 74LS612             |
| 0A0 - 0BF                | Interrupt Controller 2, 8259A          |
| 0C0 - 0DF                | DMA Controller 2, 8237A-5              |
| 0F0 - 0FF                | i486 Math Coprocessor                  |
| 1F0 - 1F8                | Fixed Disk Drive Adapter               |
| 200 - 207                | Game I/O                               |
| 20C - 20D                | Reserved                               |
| 21F                      | Reserved                               |
| 278 - 27F                | Parallel Printer Port 2                |
| 2B0 - 2DF                | Alternate Enhanced Graphic Adapter     |
| 2E1                      | GPIB Adapter 0                         |
| 2E2 - 2E3                | Data Acquisition Adapter 0             |
| 2F8 - 2FF                | Serial Port 2 (RS-232-C)               |
| 300 - 31F                | Prototype Card                         |
| 360 - 363                | PC Network (Low Address)               |
| 364 - 367                | Reserved                               |
| 368 - 36B                | PC Network (High Address)              |
| 36C - 36F                | Reserved                               |
| 378 - 37F                | Parallel Printer Port 1                |
| 380 - 38F                | SDLC, Bisynchronous 2                  |
| 390 - 393                | Cluster                                |
| 3A0 - 3AF                | Bisynchronous 1                        |
| 3B0 - 3BF                | Monochrome Display and Printer Adapter |

| <b>I/O Address (HEX)</b> | <b>I/O device</b>              |
|--------------------------|--------------------------------|
| 3C0 - 3CF                | Enhanced Graphics Adapter      |
| 3D0 - 3DF                | Color/Graphics Monitor Adapter |
| 3F0 - 3F7                | Diskette Drive Controller      |
| 3F8 - 3FF                | Serial Port 1 (RS-232-C)       |
| 6E2 - 6E3                | Data Acquisition Adapter 1     |

---

| <b>I/O Address (HEX)</b> | <b>I/O device</b>          |
|--------------------------|----------------------------|
| 790 - 793                | Cluster Adapter 1          |
| AE2 - AE3                | Data Acquisition Adapter 2 |
| B90 - B93                | Cluster Adapter 2          |
| EE2 - EE3                | Data Acquisition Adapter 3 |
| 1390 - 1393              | Cluster Adapter 3          |
| 22E1                     | GPIB Adapter 1             |
| 2390 - 2393              | Cluster Adapter 4          |
| 42E1                     | GPIB Adapter 2             |
| 62E1                     | GPIB Adapter 3             |
| 82E1                     | GPIB Adapter 4             |
| A2E1                     | GPIB Adapter 5             |
| C2E1                     | GPIB Adapter 6             |
| E2E1                     | GPIB Adapter 7             |

## **Chapter 5 Q & A**

### **5-1 Errors Messages During Power On Self Test**

---

During **power on self test (post)**, BIOS will automatically detect the system devices. Below are the questions that users may always meet. The user may press “**Esc**” key to skip the full memory test.

**1. *Beep sound***

On power on, the system make beep sound to offer different messages. If the system is configured correctly, it prompts a short beep to show correct the devices configuration is done correctly. When VGA card and DIMM modules are not plugged well, the system makes longer and constant beep sounds.

**2. *BIOS ROM checksum error***

It indicates the checksum of the BIOS code is not right and system will always halt on power on screen. Contact the dealer to exchange new BIOS.

**3. *CMOS battery fails***

It indicates the CMOS battery does not work. Contact the dealer to exchange a new battery.

**4. *CMOS checksum error***

It indicates the CMOS checksum is incorrect. Load the default values in BIOS to solve this problem. This error may result from weak BIOS, so exchange new BIOS if necessary.

**5. *Hard disk initialize***

**Please wait a moment...**

Some hard drives require more time to initialize.

**6. *Hard disk install failure***

The system can not find or initialize the hard drive controller or the drive. Check if the controller is set correctly. If no hard disk is installed, “**Hard drive selection**” must be set to “**none.**”

**7. *Keyboard error or no keyboard present***

---

This means the system can not initialize the keyboard. Check if the keyboard is plugged well and be sure no keys are pressed during power on self test.

**8. *Keyboard is lock out- Unlock the key***

Normally when this message comes out, check if there is anything mis-placed on the keyboard. Be sure nothing touches the keys.

**9. *Memory test fails***

There will be more information to specify the type and location of the memory error.

**10. *Primary master hard disk fail***

The BIOS find an error in the primary master hard disk drive.

**11. *Primary slave hard disk fail***

The BIOS finds an error in the primary slave hard disk drive.

**12. *Secondary master hard disk fail***

The BIOS finds an error in the secondary slave master hard disk drive.

**13. *Secondary slave hard disk fail***

The BIOS finds an error in the secondary slave IDE hard disk drive.

## **5-2 Frequently Asked Questions**

Below are question users always come out with. **Q** is for question. **A** is for answer.

**Q: *Why can't my AGP card work under Win 95?***

---

**A:** Windows 95 OSR2.0 does not support AGP function. You must install “USB support” file to enable this function. After installing, choose “enable for “**ASSIGN IRQ FOR USB**” in BIOS PNP/PCI configuration setup.

***Q:*** *Why can't the CPU frequency be adjusted to 100 MHz ?*

**A:** The BIOS will automatically detect the CPU frequency (66MHz or 100 MHz). Therefore, if your CPU frequency cannot be adjusted to 100 MHz, then your CPU may be 66 MHz. In BIOS “speed setup,” there are other frequencies, like 75 MHz, 83 MHz, 103 MHz, 102 MHz, 112 MHz, 133MHz. These are for internal test only. No guarantee is provided since this is not included in chipset specification.

***Q:*** *Why is my system not stable with 100 MHz CPU?*

**A:** There are many reasons for this condition. One of the most common is that SDRAM does not match PC-100 specification. When system is operated under 100 MHz, in addition to 100 MHz CPU, SDRAM must be PC-100 DIMM too.

**Version 2, June 1991**

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### Zmak Linux vision 6.0/Auto installation

January 2000

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