

6ABX2V/6AZX2V

ATX form factor

Main board

User's manual

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# Chapter 1: Introduction

## 1-1 The Main board overview

The main board is a new generation Pentium® II, III Main board which integrates the latest advances in processor, memory, I/O technologies into an ATX form factor. The main board utilizes Intel® 82440BX/ZX AGPset designed for Pentium II,III CPU, and supports new architects such as high-speed AGP graphic Port, SDRAM, Ultra DMA/33, 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 512Mbyte SDRAM of non-buffered 3.3V using standard 168-pin DIMM sockets.

The main board, using the slot 1 socket, accepts Intel® Pentium® II, III (66/100 MHz) processors at speeds from 266MHz to 550 MHz and is able to support faster CPUs upgrated in the future. Built-in second level (L2) cache in CPU, there is no cache necessary in this system board.

The main board has implemented “**System Hardware Monitor (SHM)**” to detect variations of CPU voltage, speeds, temperature and fan speed. Furthermore, it is able to control those detected items when the numeric value is in alarm. The Winbond 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), and Amplitude Shift Keyed IR. (ASKIR) port.



- Note :**
- 1. i82440ZX only supports up to 256Mbyte SDRAM by using 2 pieces of 168-pin DIMM.**
  - 2. i82440ZX just supports to 4 pieces of PCI slots in “master” mode.**

---

The main board supports 5\*PCI & 2\*ISA, (four PCI Bus Mastering slots & 1 PCI Bus Slave slot) for highest performance I/O add-on adapter cards. The system board supports four Matrix Independent and one Matrix Dependent PCI Interrupt Routing for complete multiple PCI adapters operation up to 133MB/s data transfer rate on PCI bus compared to 33MB/s on EISA bus, synchronized operation CPU to PCI Interface for best graphical performance, 120MB/s PCI to system DRAM together with utilizing Snoop Ahead Features, and support back to back sequential CPU to PCI Memory writes to PCI Burst Write for full PCI through put.

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

In addition to the above hardware features, this system board is jumperless design, which allows user to set CPU frequency through BIOS. No jumper or hardware DIP switch is needed. With this design, the disadvantages of setting hardware CPU jumpers are improved to a better and easier procedure through BIOS.

In conclusion, the 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.

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## 1-2 Reference For Pentium® II, III CPUs

The main board supports Intel ® Pentium II, III microprocessors. The Pentium® II, III delivers 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 reference for Pentium® II, III CPUs suitable for this main board.

| Intel® Processor for Slot 1 |                      |                    |                                    |                          |
|-----------------------------|----------------------|--------------------|------------------------------------|--------------------------|
| Pentium™ III                | Pentium® II          |                    |                                    |                          |
| 100 MHz F.S.B               | 100 MHz F.S.B        | 66MHz F.S..B       |                                    |                          |
| Katmai™<br>W/512K           | Deschutes™<br>W/512K | Klamath™<br>W/512K | Celeron™<br>W/128K &<br>CPU code A | Celeron™ w/o<br>L2 cache |
| 450 – 550MHz                | 350 –450 MHz         | 233 –333MHz        | 300A & 333MHz                      | 266 – 400MHz             |



**Note 1:** CPU is not enclosed in the package



**Note 2:** Celeron™ has 2 models. One is with internal cache and one without internal cache. The one with cache has a CPU code “A.”

---

## 1-3 Specifications

- **PCB Board size:** 30.5 cm x 18.00 cm
- **PCB layer:** 4 layers
- **Slot 1 socket**  
Support Intel® Pentium® II,III CPU (66 MHz & 100 MHz freq.)  
*\*\*\*CPU is not enclosed in the package*
- **Memory DIMM:** 3 of 168-pin 3.3V DIMM (**2 DIMM for i82440ZX only**)
- **Professional PC**
  - A. 100 MHz freq.: PC 100- DIMM
  - B. 66 MHz freq. : SDRAM up to 384MB(440BX)  
SDRAM up to 256MB (440ZX)
- **Basic PC: 66 MHz freq.**
  - A. SDRAM up to 384MB
  - B. SDRAM up to 256MB (440ZX)
- **Expansion Slot :** 2x ISA, 5 x PCI slots (4\* BUS Master & 1 Slave slots ⇒ i82440ZX only) and 1x A.G.P. Slot
- **Chipset :** Intel® **i440 BX/ZX** chipset---
- Intel® 82443BX/ZX CPI and A.G.P controller.
- Intel® 82371EB I/O bridge
- **BIOS:** licenced Award® full **PnP** (plug & play) BIOS, flash EPROM for BIOS
- **I/O function**
  - 2 x PCI IDE devices
  - 1 x FDC, 2 x serial ports(16550 fast com)
  - 1x parallel port device /EPP/ECP
  - 2x USB connector
  - IrDA (infrared) connector



**i82440ZX, MAX. memory is 256MB**



**This main board doesn't support Ultra-ATA/66 Mode Hard Disk Drives.**

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

- **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.

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

Below is reference for ATX case requirement on power supply.

| Voltage | Tolerance | Current    |
|---------|-----------|------------|
| +5V     | ±5%       | 22 Amperes |
| +3.3V   | ±5%       | 3 Amperes  |
| +12V    | ± 10%     | 800 mA     |
| -5V     | ±5%       | 150 mA     |
| -12V    | ±5%       | 100 mA     |

**\*\*\*5V Trickle MIN. Voltage 750mA (to support WOL)**

- **Power supply regulation**

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

---

- **Over-current protection Circuit**

With AIC 1569CS AH13 (protect CPU from accident short circuit), and a set poly-fuses (protect Keyboard and USB devices from accident short circuit), if system current is over-loaded, the system will break down to protect direct damage of the main board.

- **Special features**

- Jumperless design
- Wake on lan (WOL)
- Modem ring on
- Auto detection of CPU voltage, fan & temperature
- Creative PCI sound Blaster AWE64D header ( Support PC/PCI spec.)
- Windows 95/98 power off
- Keyboard wake up
- PS/2 mouse wake up



---

## **1-4 Notice of Hardware Installation**

A. Check the package before hardware installation

In the package, there are:

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

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.

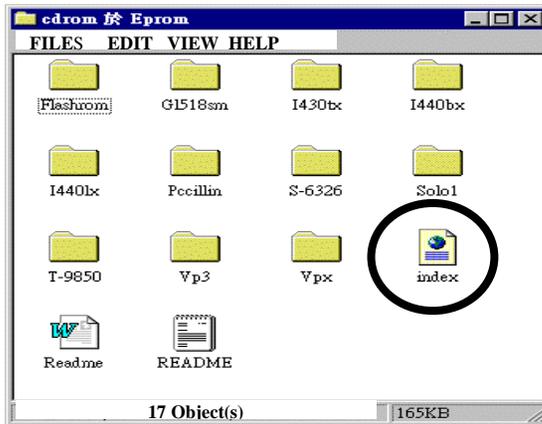
B. Make sure power is off during hardware installation

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

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## 1-5 Notice for CD driver installation

This CD contains drivers as below:



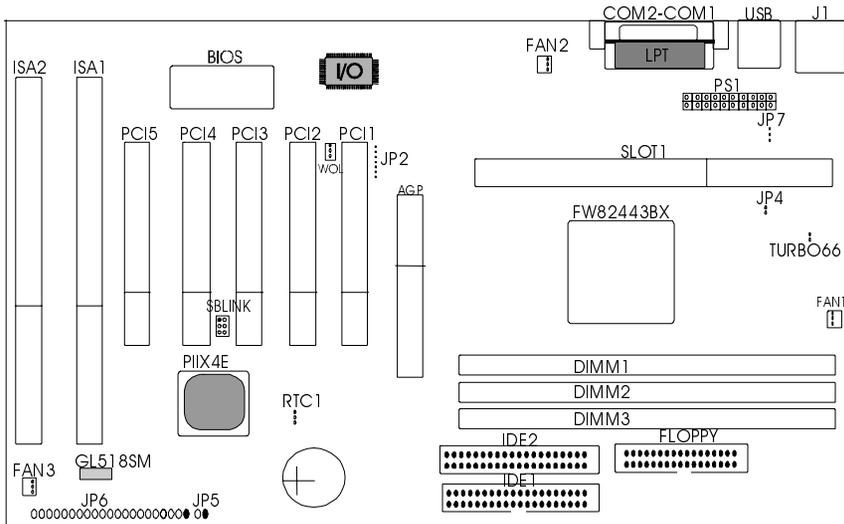
1. **Main boards:** i440BX/ZX®, i440EX®, i440LX®, i430TX®, VIA® VPX, VP3 main boards
2. **A.G.P cards:** S- 6326 and Trident 9850
3. **Solo-1:** ESS-solo-1 sound driver
4. **G1518SM:** CPU voltage/temperature and fan speed detection software
5. **Pccillin:** anti- virus protection software



**Note:** Read “**index**” before installing required drivers.  
“Index” file is HTML format.

# Chapter 2. Installation

## 2-1 Layout reference



If use i82440ZX(6AZX2V) chipset, **DIMM1** will be removed & doesn't install PCI5 PCI slot with master mode cards like SCSI, Sound.....



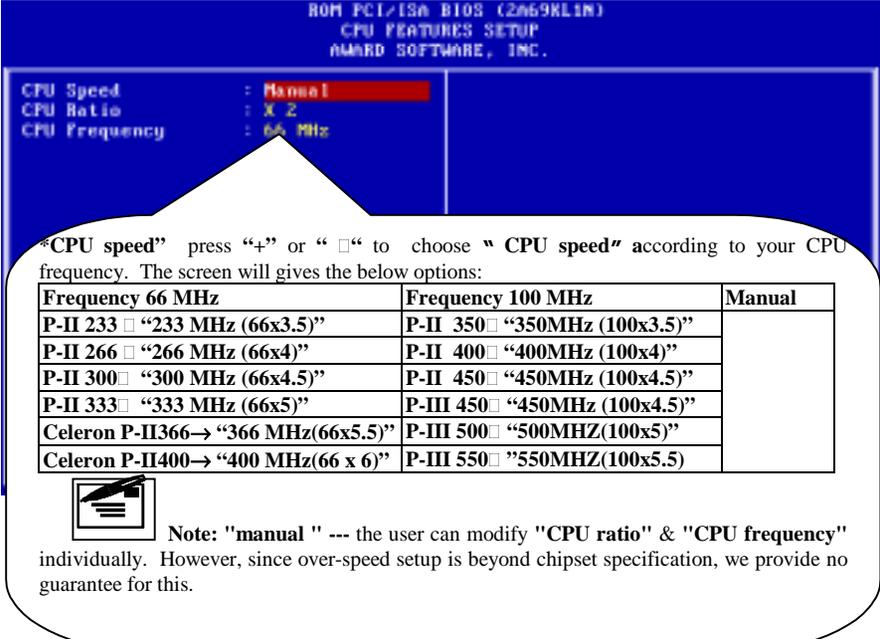
If use i82440ZX(6AZX2V) chipset, GL518SM will be removed & not support hardware monitor function.



TURBO66 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-clock setup.

| TURBO66 | Operation  |
|---------|------------|
| close   | Normal     |
| open    | Over-clock |

## 2-2 CPU speed setup



ROM PCI/ISA BIOS (2A69KLIH)  
CPU FEATURES SETUP  
AWARD SOFTWARE, INC.

CPU Speed : **Manual**  
CPU Ratio : X 2  
CPU Frequency : 6x MHz

\*CPU speed" press "+" or "-" to choose " CPU speed" according to your CPU frequency. The screen will gives the below options:

| Frequency 66 MHz                                     | Frequency 100 MHz                                     | Manual |
|--|---|--------|
| P-II 233 <input type="checkbox"/> "233 MHz (66x3.5)" | P-II 350 <input type="checkbox"/> "350MHz (100x3.5)"  |        |
| P-II 266 <input type="checkbox"/> "266 MHz (66x4)"   | P-II 400 <input type="checkbox"/> "400MHz (100x4)"    |        |
| P-II 300 <input type="checkbox"/> "300 MHz (66x4.5)" | P-II 450 <input type="checkbox"/> "450MHz (100x4.5)"  |        |
| P-II 333 <input type="checkbox"/> "333 MHz (66x5)"   | P-III 450 <input type="checkbox"/> "450MHz (100x4.5)" |        |
| Celeron P-II366 → "366 MHz(66x5.5)"                  | P-III 500 <input type="checkbox"/> "500MHz(100x5)"    |        |
| Celeron P-II400 → "400 MHz(66 x 6)"                  | P-III 550 <input type="checkbox"/> "550MHz(100x5.5)"  |        |

 **Note:** "manual " --- the user can modify "CPU ratio" & "CPU frequency" individually. However, since over-speed setup is beyond chipset specification, we provide no guarantee for this.

Since this is jumperless designed, there is no jumper setting to adjust CPU speed. The user only needs to set speed in BIOS. Please enter BIOS & find "CPU speed" item under "Chipset features setup" and set as above.

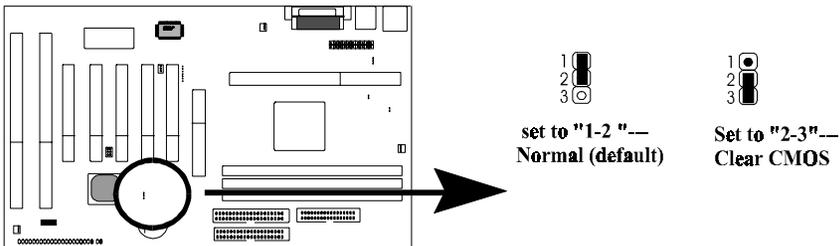
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## 2-3 Jumper setting

Benefited from jumperless design of this system board, only jumper “RTC” is required of hardware handling, which especially makes hardware installation an easier thing to achieve.

### RTC1- Clearing content of CMOS

*RTC1* is a 2-pin connector. Clear CMOS if system password is forgotten. Below is details to show how to clear CMOS.



| Pin assignment | Operation              |
|----------------|------------------------|
| 1-2            | Normal setup (default) |
| 2-3            | 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 “PS1”

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 PS1 connector.

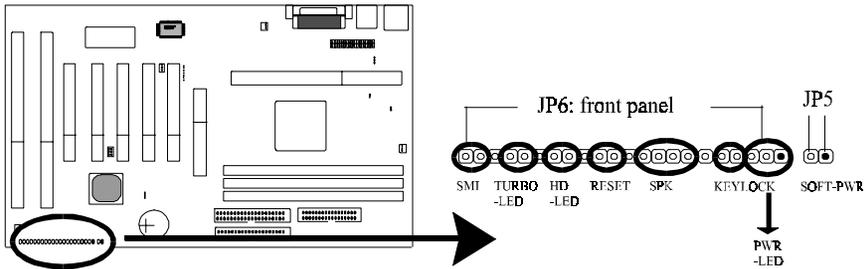
Step 6: Turn on system power.

*Note: If you'd like to set password, press “DEL” Key during system bootup to enter CMOS Setup to establish a new password.*

---

## 2-4 Connector

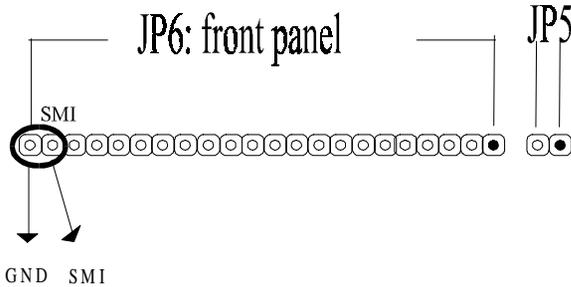
### 2-4-1 Front panel



*Front panel* has connectors such as “SMI,” “Turbo-LED,” “HD-LED,” “reset,” “speaker,” “keylock,” and “power-LED.” Please refer to details as below.

---

## Suspend mode interrupt (SMI)



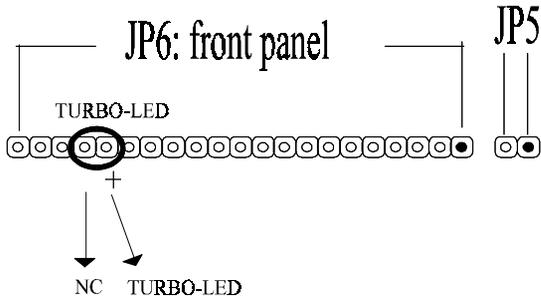
**SMI connector** is a 2-pin Berg strip, which is also called “**green**” or “**sleep**” connector. When SMI is turned from open to close and back to open, the system will enter sleep mode immediately. This function is to make sure power saving is working well. In PC system, it is used to connect to the push button SMI switch located on the case’s front panel (if there is). The system can be forced to power saving mode by pressing the SMI switch.

| Pin assignment | Sleep/green connector |
|----------------|-----------------------|
| Pin 1          | Sleep                 |
| Pin 2          | Ground (GND)          |

| SMI   | Operation                    |
|-------|------------------------------|
| Open  | Normal                       |
| Close | System will enter sleep mode |

---

## TURBO LED

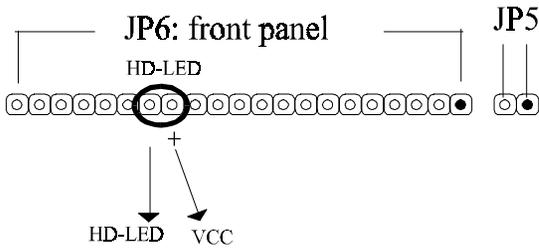


**Turbo LED** with a 2-pin Berg strip on front panel indicates the current speed status of system. It is used to connect to the Turbo Led on the front panel of the case (if there is).

| Pin assignment      | Signal      |
|---------------------|-------------|
| Pin with “+” signal | Anode (+)   |
| Pin 2               | Cathode (-) |

---

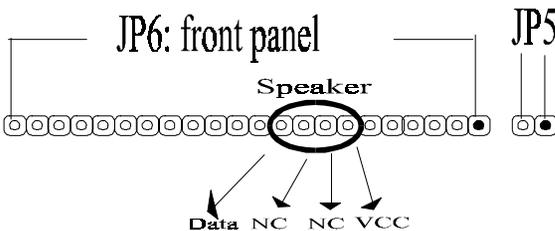
## HD-LED



Marked as “*HD-LED*,” Hard Disk activity LED connector is a 2-pin keyed Berg strip. It is used to connect to front panel Hard Disk LED.

| Pin assignment        | Signal    |
|-----------------------|-----------|
| Pin 1 with “+” signal | Anode “+” |
| Pin 2                 | Cathode   |

## Speaker

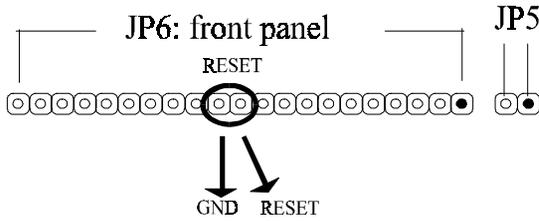


*Speaker (SPK) connector* is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the system board for sound purpose.

| Pin assignment | Signal | Pin assignment | Signal           |
|----------------|--------|----------------|------------------|
| Pin 1          | VCC    | Pin 3          | NC               |
| Pin 2          | NC     | Pin 4          | speaker data out |

---

## Reset



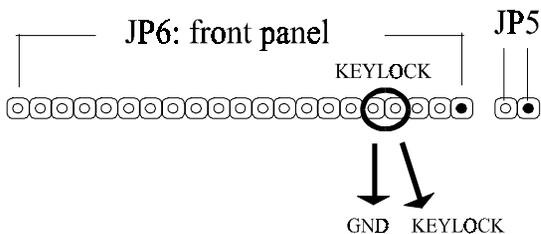
**Reset connector** is a 2-pin keyed Berg strip, connected to the push button reset switch on the case's front panel. Shorting both pin 1 & pin 2 can effect system reset function, which is similar to the power and then on again.

| Pin assignment | Signal      |
|----------------|-------------|
| Pin 1          | Reset input |
| Pin 2          | GND         |

| Reset | Operation      |
|-------|----------------|
| Open  | Normal         |
| Close | Hardware reset |

---

## Keylock



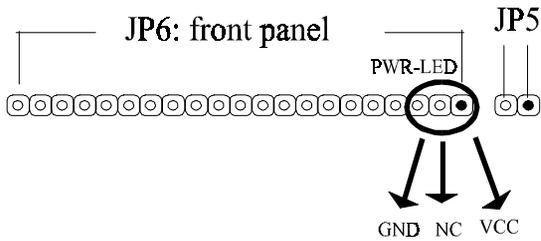
**Keylock** is a 2-pin connector. It is used to connect the key lock on the case front panel (if there is). Keyboard may be disconnected with the system through this function.

| Pin assignment | Signal  |
|----------------|---------|
| Pin 1          | GND     |
| Pin 2          | Keylock |

| Keylock | Operation  |
|---------|--|
| Open    | Keyboard works normal                                  |
| Close   | Short the connector to be disconnected with the system |

---

## Power-LED



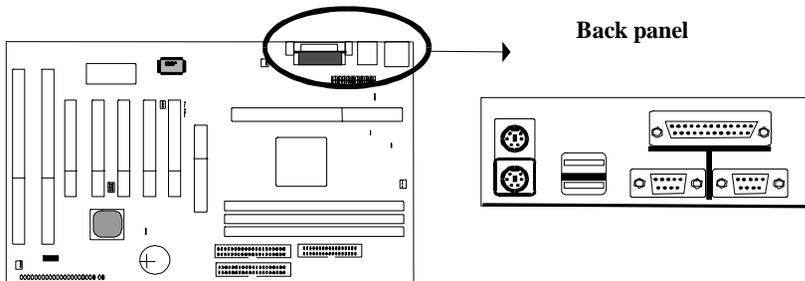
**Power LED** is 3-pin connector. It is used to connect to the LED on the case front panel. The LED shows the status of the power.

| Pin   | Signal |
|-------|--------|
| Pin 1 | VCC    |
| Pin 2 | NC     |
| Pin 3 | GND    |

---

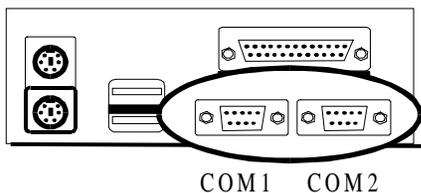
## 2-4-2 Back panel

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



---

## COM1/COM2



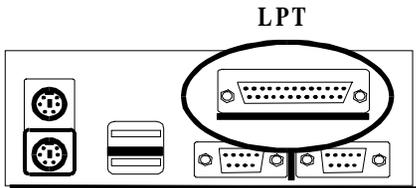
*The onboard serial port 1 and port 2* are the 9-pin D-subminiature male connector COM1 and COM2. COM1 and COM2 can be disabled in BIOS setup. Please refer to Chapter 3 “Integrated Peripherals” for more information.

| Pin   | Pin signal                | Pin   | Pin signal            |
|-------|---------------------------|-------|-----------------------|
| Pin 1 | Carrier detect (CD)       | Pin 5 | Signal ground         |
| Pin 2 | Receive data (RXD)        | Pin 6 | Data set ready        |
| Pin 3 | Transmit data (TXD)       | Pin 7 | Request to send (RTS) |
| Pin 4 | Data terminal ready (DTR) | Pin 8 | Clear to send (CTS)   |
| Pin 9 | Ring indicator            |       |                       |

---

## LPT

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

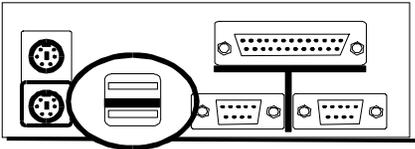


| Pin    | Signal     | Pin    | Signal    |
|--------|------------|--------|-----------|
| Pin 1  | Strobe     | Pin 14 | Auto feed |
| Pin 2  | Data bit 0 | Pin 15 | Error     |
| Pin 3  | Data bit 0 | Pin 16 | Init      |
| Pin 4  | Data bit 0 | Pin 17 | SLCT in   |
| Pin 5  | Data bit 0 | Pin 18 | Ground    |
| Pin 6  | Data bit 0 | Pin 19 | Ground    |
| Pin 7  | Data bit 0 | Pin 20 | Ground    |
| Pin 8  | Data bit 0 | Pin 21 | Ground    |
| Pin 9  | Data bit 0 | Pin 22 | Ground    |
| Pin 10 | ACK        | Pin 23 | Ground    |
| Pin 11 | Busy       | Pin 24 | Ground    |
| Pin 12 | PE         | Pin 25 |           |
| Pin 13 | SLCT       |        |           |

---

## USB

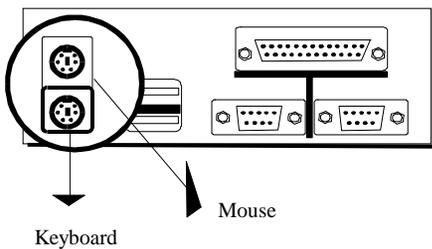
### USB



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

### Keyboard & Mouse (J1)

#### J1: Keyboard & Mouse connector



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

| Pin   | Description  |
|-------|--------------|
| Pin 1 | Data signal  |
| Pin 2 | NC           |
| Pin 3 | Ground       |
| Pin 4 | +5V DC       |
| Pin 5 | Clock signal |
| Pin 6 | NC           |

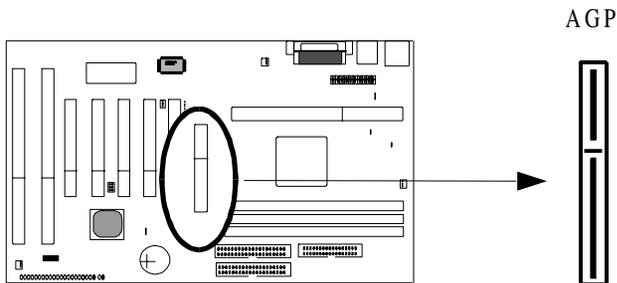
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### 2-4-3 Expansion slots

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

#### AGP slot

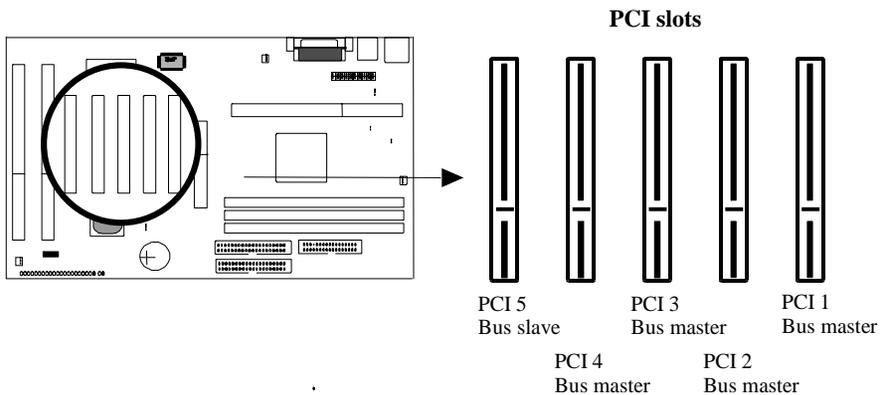
*AGP (Accelerated Graphic Port)* is the new bus standard that allows the bus speed to run at 66 MHz with up to 133 MHz data transfer capabilities, which is four times as fast as that of the PCI bus. At this speed, the AGP graphic cards can transfer data up to 523MB/second. This high transfer capabilities enables 3D graphic applications, multiple media applications, uncompressed to run smoothly and display in broadcasting quality.



---

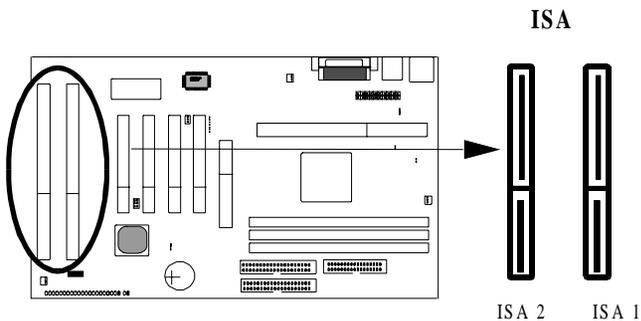
## PCI slots

*There are* Five PCI slots on board; 4 are “master” bus and one “slave” bus slave. 133MB/s data transfer rate on PCI bus can be compared to 33MB/s on EISA bus or 8MB/s on ISA bus. Synchronize Operation CPU to PCI interface for good graphic performance.



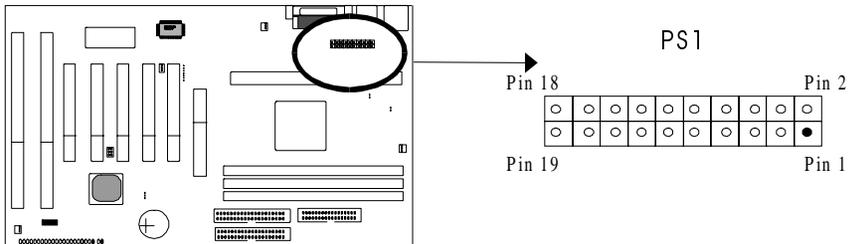
## ISA slots

*There are* 2 standard 32-bit ISA slots on board. All of them are bus mastering.



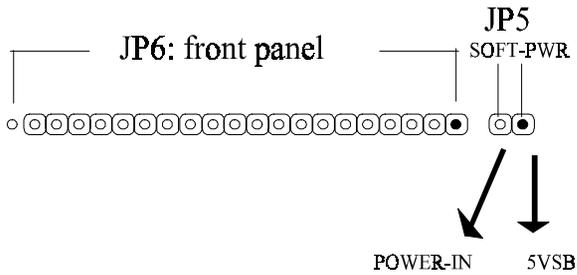
### 2-4-4 ATX power

**ATX power 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 **SOFT-PWR** 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.



| Pin    | Signal   | Pin    | Signal      |
|--------|----------|--------|-------------|
| Pin 1  | 3.3V     | Pin 2  | 3.3V        |
| Pin 3  | 3.3V     | Pin 4  | -12V        |
| Pin 5  | GND      | Pin 6  | GND         |
| Pin 7  | 5V       | Pin 8  | SOFT-PWR ON |
| Pin 9  | GND      | Pin 10 | GND         |
| Pin 11 | 5V       | Pin 12 | GND         |
| Pin 13 | GND      | Pin 14 | GND         |
| Pin 15 | RAWPOWER | Pin 16 | -5V         |
| Pin 17 | 5V       | Pin 18 | 5V          |
| Pin 19 | +12V     | Pin 20 | 5V          |

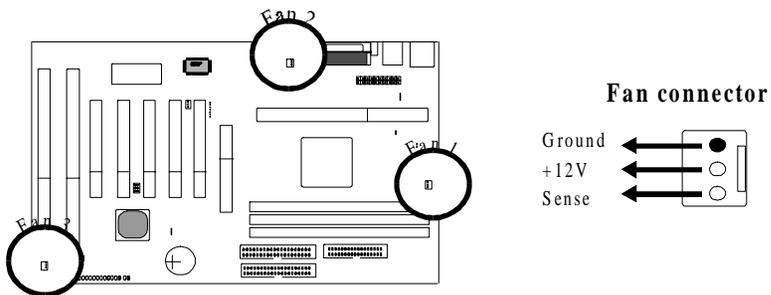
### 2-4-5 Soft-PWR (JP5)



*ATX soft-PWR switch connector* is Soft-PWR with 2 pins.

| Pin   | Signal |
|-------|--------|
| Pin 1 | 5VSB   |
| Pin 2 | PWR in |

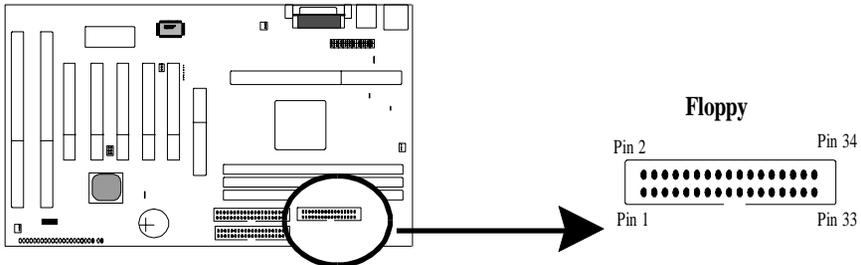
### 2-4-6 CPU fan connectors



*There are 3 fan connectors* on this system board, and they are marked as “**Fan 1,**” “**Fan2,**” and “**Fan3.**” Each fan connector has three pins.

| Pin   | Signal |
|-------|--------|
| Pin 1 | Ground |
| Pin 2 | +12V   |
| Pin 3 | Sense  |

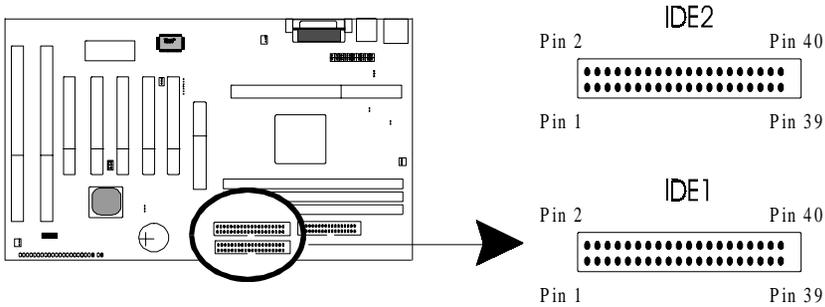
## 2-4-7 Floppy interface



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

| Pin    | Signal | Pin | Signal  |
|--------|--------|-----|---|
| Pin 1  | GND    | 2   | Data rate selection   |
| Pin 3  | GND    | 4   | NC  |
| Pin 5  | GND    | 6   | NC  |
| Pin 7  | GND    | 8   | FDC index   |
| Pin 9  | GND    | 10  | FDD Motor A enable  |
| Pin 11 | GND    | 12  | FDD Drive B enable  |
| Pin 13 | GND    | 14  | FDD drive A enable  |
| Pin 15 | GND    | 16  | FDD Motor enable  |
| Pin 17 | GND    | 18  | FDC head direction  |
| Pin 19 | GND    | 20  | FDC step pulse output to the drive during a SEEK operation  |
| Pin 21 | GND    | 22  | FDC write enable serial data to the Drive   |
| Pin 23 | GND    | 24  | FDC write enable identify   |
| Pin 25 | GND    | 26  | Floppy disk track 0. Indicates that the head of the selected drive is on track zero.  |
| Pin 27 | GND    | 28  | FDD write protect. Indicates that the disk of the selected drive is write-protected.  |
| Pin 29 | GND    | 30  | Read disk data, serial data input input from the FDD  |
| Pin 31 | GND    | 32  | Floppy disk side 1 select   |
| Pin 33 | GND    | 34  | Floppy disk change. This is an input pin that senses whether the drive door has been opened or a diskette has been changed. |

## 2-4-8 IDE 1 and IDE2

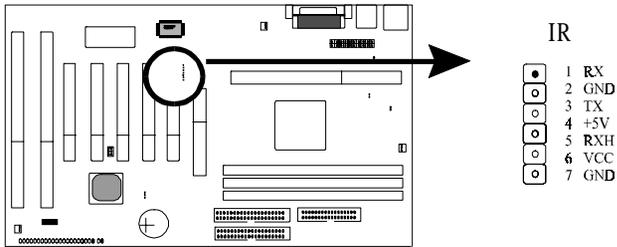


**IDE 1/ IDE 2** both have 40 pins. There are 2 IDE connectors supported on this system board. IDE1 is primary channel, and IDE2 is secondary channel. Each channel supports 2 IDE devices, and 4 channels in total for this system board.

| Pin    | Signal            | Pin    | Signal            |
|--------|-------------------|--------|-------------------|
| Pin 1  | IDE reset         | Pin 2  | Ground            |
| Pin 3  | Data 7            | Pin 4  | Data 8            |
| Pin 5  | Data 6            | Pin 6  | Data 9            |
| Pin 7  | Data 5            | Pin 8  | Data 10           |
| Pin 9  | Data 4            | Pin 10 | Data 11           |
| Pin 11 | Data 3            | Pin 12 | Data 12           |
| Pin 13 | Data 2            | Pin 14 | Data 13           |
| Pin 15 | Data 1            | Pin 16 | Data 14           |
| Pin 17 | Data 0            | Pin 18 | Data 15           |
| Pin 19 | Ground            | Pin 20 | Key (NC)          |
| Pin 21 | PDREQ             | Pin 22 | Ground            |
| Pin 23 | I/O write         | Pin 24 | Ground            |
| Pin 25 | I/O read          | Pin 26 | Ground            |
| Pin 27 | NC                | Pin 28 | ALE               |
| Pin 29 | NC                | Pin 30 | Ground            |
| Pin 31 | IDE IRQ 14        | Pin 32 | IOSC15            |
| Pin 33 | Address A1        | Pin 34 | NC                |
| Pin 35 | Address A0        | Pin 36 | Address A2        |
| Pin 37 | IDE chip select 0 | Pin 38 | IDE chip select 1 |
| Pin 39 | IDE active        | Pin 40 | Ground            |

---

### 2-4-9 IR (Infrared) connector



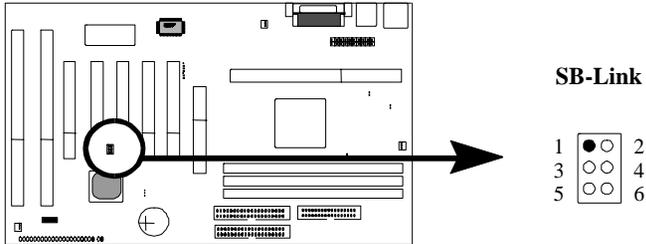
**IR connector** supports wireless infrared module. With this module and application software like LAPlink, or WIN95 Direct Cable Connection, user can transfer data to or from laptops, notebooks, PDA and printers. This connector supports **HPSIR**, **ASKIR**, and **Fast IR**.

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

| Pin   | Signal |
|-------|--------|
| Pin 1 | RX     |
| Pin 2 | GND    |
| Pin 3 | TX     |
| Pin 4 | +5V    |
| Pin 5 | RXH    |
| Pin 6 | VCC    |
| Pin 7 | GND    |

---

## 2-4-10 SB-Link

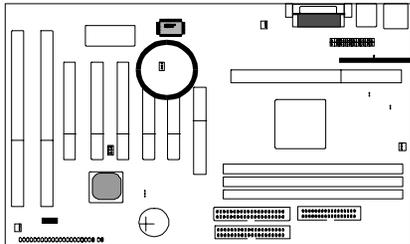


*SB-LINK* is used to attach any “PC/PCI” standard sound card like Creative AWE64D or Yamaha XG...for compatibility under DOS mode.

| Pin   | Signal |
|-------|--------|
| Pin 1 | GNT#   |
| Pin 2 | GND    |
| Pin 3 | NC     |
| Pin 4 | REQ#   |
| Pin 5 | GND    |
| Pin 6 | SIRQ#  |

---

## 2-4-11 Wake on LAN



### Wake on LAN

- 
- 1 5V trickle voltage
  - 2 GND
  - 3 PME signal

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

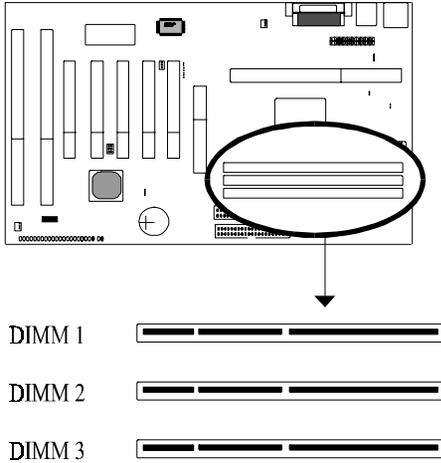
| Pin   | Signal             |
|-------|--------------------|
| Pin 1 | 5V trickle voltage |
| Pin 2 | Ground             |
| Pin 3 | PME signal         |



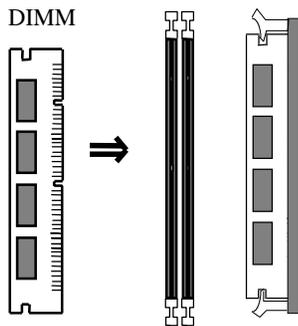
**Wake on LAN requires 5V Trickle Voltage 750mA to support.**

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## 2-5 DIMM memory installation



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.





**Note 1:** Chipset only allows synchronuos operation for DIMM and CPU. Therefore, to have a stable system, the user must adopt 100 MHz **“PC-100 SDRAM memory DIMM” (3.3V)** for 100 MHz Deschutes and Katmai) CPUs. For 66 MHz CPUs **Klamath™ and Celeron™ (Covington™ & Mendocino™)**, the user may use either 3.3V EDO RAM or SDRAM.



**Note 2:** Either DIMM 1, DIMM2, or DIMM3 supports 8 MB, 16 MB, 32 MB, 64 MB, and 128MB. Maximum memory for **SDRAM is up to 384MB; EDO RAM is up to 768 MB. (For i82440ZX, MAX is 256MB)**

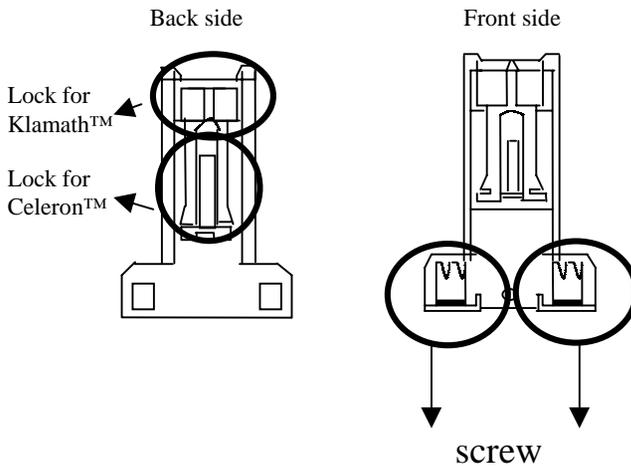
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## 2-6 CPU RM kit assembling procedure

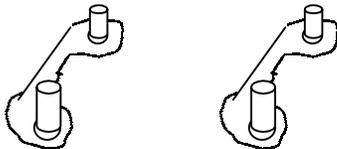
The enclosed RM kit is the latest model suitable for both Klamath and Celeron. It is not necessary to change different CPU RM kits for different CPU models.

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



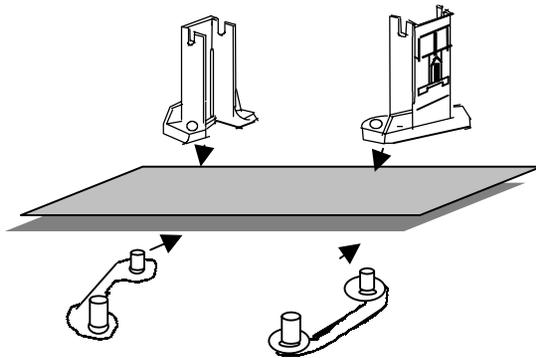
RM. Attach Mount (RMAM): 2 pcs



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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.

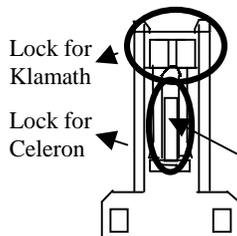


5. Fasten up the screws on the retention mechanism to tighten up retention mechanism and RMAM. Check if all the piece parts are fastened tightly.

6. Put the CPU in the RM kit. (you must push the CPU horizontally into the RM kit.)



**Note:** Due to different packages of Celeron and Klamath, there are 2 locations to get them locked in the RM kit. Below is notice to unlock the 2 CPUs.



\*\*\*Klamath™: push the switch on the CPU, and CPU will be loosen from the lock of RM kit.

\*\*\*Celeron™: use screw driver or any tool alike to draw this and hold. At the same time, softly pull one side of the CPU out. Then, pull the other side and

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Page CPU will be loosened this way. 35

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## 2-7 Keyboard password setup

To give the user more choices on power on setup, the main board adds especially the following options .

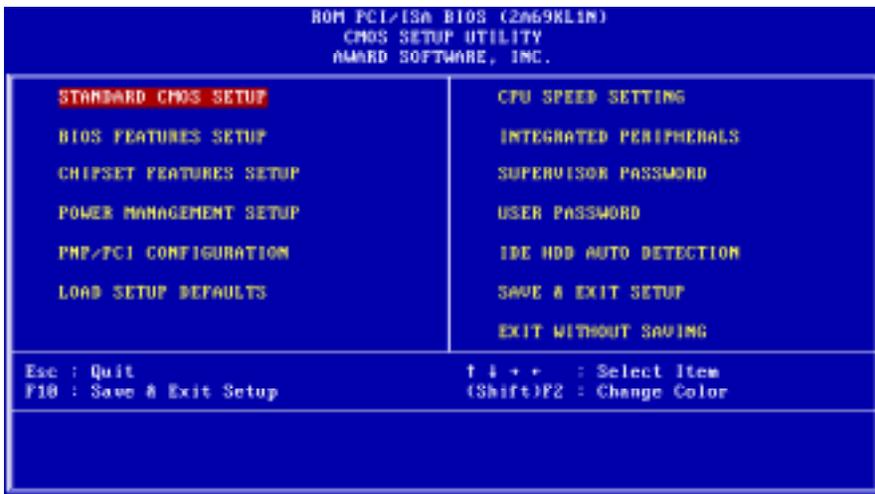
Go to BIOS "**Integrated Peripherals,**" and find the item, "**power on function,**" in which there are "**KB power on password, hot key power on, mouse left, mouse right, and button only.**"

| Item                        | Procedure  | Special note  |
|-----------------------------|--|---|
| <b>KB power on password</b> | <b>1. enter password:</b><br>5 spaces allowed.<br><b>2. Confirm password:</b> key in the password to confirm again.                | The system can <b>only be turned on through KB password.</b> Case button can not work. If password is forgotten, please clear CMOS and reset again. |
| <b>Hot key power on</b>     | 12 options: " <b>ctrl+f1...ctrl+f12.</b> "<br>the user may choose either<br>Of them by " <b>page up</b> " or " <b>page down.</b> " | The system can be turned on either by <b>hot key or pushing case power on button.</b>   |
| <b>Mouse left</b>           | Mouse left<br>(PS/2 mouse only)  | The system can be turned on either by PS/2 <b>mouse or pushing case power on button.</b>  |
| <b>Mouse right</b>          | Mouse right<br>(PS/2 mouse only)   | The system can be turned on either by PS/2 <b>mouse or pushing case power on button.</b>  |
| <b>Button only</b>          | Case button  | The system can be turned on by case button.   |

---

## 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

```

ROM PCI/ISA BIOS (2a69811a)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Tue, Oct 27 1998
Time (hh:mm:ss) : 11 : 37 : 22

  HARD DISKS          TYPE  SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE
-----
Primary Master      : Auto   0     0     0     0     0     0     0  AUTO
Primary Slave       : Auto   0     0     0     0     0     0     0  AUTO
Secondary Master    : Auto   0     0     0     0     0     0     0  AUTO
Secondary Slave     : Auto   0     0     0     0     0     0     0  AUTO

Drive A : None
Drive B : None
Floppy 3 Mode Support : Disabled

Video : EGA/UGA
Halt On : All Errors

  Base Memory:  64K
  Extended Memory:  64K
  Other Memory:  512K
-----
  Total Memory:  576K

ESC : Quit          f j + * : Select Item      PU/PD/+/- : Modify
F1  : Help          (Shift)F2 : Change Color
  
```

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

- TYPE** : select from "1" to "45" to fill remaining fields with redefined values of disk drives. Select "USER" to fill the remaining fields. Select "AUTO" to detect the HDD type automatically.
- SIZE** : the hard disk size. The unit is mega byte(MB).
- CYLS** : the cylinder number of the hard disk.
- HEAD** : the read/write head number of hard disk. The range is from "1" to "16".
- PRECOMP** : the cylinder number at which the disk drive changes the write timing.
- LANDZ** : the cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.
- SECTOR** : the sector number of each track defined on the hard disk. The range is from "1" to "64".
- 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.



**Note 1:** 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.



**Note:** "halt on" is to determine when to halt the system by the BIOS if error occurred 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 provide 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 (2A69B1A)  |   |          |                          |   |                    |
|-----------------------------|---|----------|--------------------------|---|--------------------|
| BIOS FEATURES SETUP         |   |          |                          |   |                    |
| AWARD SOFTWARE, INC.        |   |          |                          |   |                    |
| Virus Warning               | : | Disabled | Video BIOS Shadow        | : | Enabled            |
| CPU Internal Cache          | : | Enabled  | C8000-C8FFF Shadow       | : | Disabled           |
| External Cache              | : | Enabled  | CC000-CFFFF Shadow       | : | Disabled           |
| CPU L2 Cache ECC Checking   | : | Enabled  | D0000-D0FFF Shadow       | : | Disabled           |
| Quick Power On Self Test    | : | Enabled  | D4000-D4FFF Shadow       | : | Disabled           |
| Boot Sequence               | : | A,C,SCSI | D8000-D8FFF Shadow       | : | Disabled           |
| Swap Floppy Drive           | : | Disabled | DC000-DCFFF Shadow       | : | Disabled           |
| Boot Up Floppy Seek         | : | Enabled  |                          |   |                    |
| Boot Up NumLock Status      | : | On       |                          |   |                    |
| Gate A20 Option             | : | Normal   |                          |   |                    |
| Typeomatic Rate Setting     | : | Disabled |                          |   |                    |
| Typeomatic Rate (Chars/Sec) | : | 6        |                          |   |                    |
| Typeomatic Delay (Msec)     | : | 250      |                          |   |                    |
| Security Option             | : | Setup    |                          |   |                    |
| PS/2 mouse function control | : | Enabled  |                          |   |                    |
| PCI/VGA Palette Snoop       | : | Disabled | ESC : Quit               |   | F1-> : Select Item |
| OS Select For DRAM > 64MB   | : | Non-OS2  | F1 : Help                |   | F0/PD/</> : Modify |
| Report No FDD For WIN 95    | : | No       | F5 : Old Version         |   | (Shift)F2 : Color  |
|                             |   |          | F7 : Load Setup Defaults |   |                    |

#### Virus Warning

:Enabled

:Disabled (default)

#### CPU Internal Cache

Enabled : 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 :** 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. Default value is **enabled**.

### ***Boot Up Numlock Status***

**:On**(default)

**:Off**

---

**Gate A20 Speed**

**:Normal** (default)

**:Fast**

**Typematic Rate Setting**

This determines the typematic rate.

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

**Disabled:** 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 (refer to page 54)**

**: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.

---

***PS/2 mouse function control:***

**Enabled:** enable the function when using PS/2 mouse

**Disabled:** disable the function of PS/2 mouse

***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)**

.....

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---

### 3-4. Chipset features setup



#### *Auto configuration*

BIOS will automatically detect the CPU speed and will auto-configure the bus frequency, DRAM speed, cache and read/write cycle.

*Enabled: (default)*

*Disabled:*

#### *SDRAM RAS# precharge time*

SDRAM precharge time by RAS.

: 4

: 3 (default)

#### *RAS to CAS delay*

This controls the DRAM page miss and row miss leadoff timing.

: 2

: 3 (default)



### ***System BIOS cacheable***

define whether system bios area cacheable or not.

**:enabled**

**:disabled** (default)

***Video BIOS cacheable:*** to define whether video bios area cacheable or not.

**:enabled**

**:disabled** (default)

### ***8 Bit I/O Recovery Time:***

This field defines the recovery time from 1 to 8 for 8-bit I/O.

### ***16 Bit I/O Recovery Time:***

To define the recovery time from 1 to 4 for 16-bit I/O.

***Memory Hole At 15M-16M:*** 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.

**:Enabled**

**:Disabled** (default)

### ***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.

**:256M**(default)

**:128M, 64M, 32M, 16M, 8M, 4M**

---

***CPU speed & CPU ratio***

Please refer to page 10 “2-2 CPU speed setup” for details.

***Shutdown Temperature***

System will shut down automatically when CPU temperature is over-heated. Below is the boundary which system gives alarm .

**:60<sup>0</sup> C/140<sup>0</sup> F (default)**

**:65<sup>0</sup> C/149<sup>0</sup> F, 70<sup>0</sup> C/158<sup>0</sup> F, 75<sup>0</sup> C/167<sup>0</sup> F**

***CPU Warning Temperature***

This function is CPU over-heat alarm. Select either of the below temperature will give an alarm when CPU temperature is over-heated.

**:Disabled**

**:50<sup>0</sup> C/122<sup>0</sup> F, 53<sup>0</sup> C/127<sup>0</sup> F, 56<sup>0</sup> C/133<sup>0</sup> F, 60<sup>0</sup> C/140<sup>0</sup> F, 63<sup>0</sup> C/145<sup>0</sup> F,**

**66<sup>0</sup> C/151<sup>0</sup> F, 70<sup>0</sup> C/158<sup>0</sup> F**

***Current CPU Temperature, Current CPUFan1/CPUFan2, Current Vin3(V)/***

System will automatically detect the above items and show the status.

### 3-5. Power management setup

| NON PCI/ISA BIOS (AWARD/INTEL)<br>POWER MANAGEMENT SETUP<br>AWARD SOFTWARE, INC. |                |                                   |
|--|----------------|-----------------------------------|
| ACPI function  | : Disabled     | on Board Serial Timer Events ---  |
| Power Management   | : Min Saving   | IRQ13-F,9-2FI,MMI : Disabled      |
| PM Control by APN  | : Yes          | Primary IDE 0 : Disabled          |
| Video Off Method   | : DPM          | Primary IDE 1 : Disabled          |
| Video Off Method   | : Standby      | Secondary IDE 0 : Disabled        |
| HDSPM Use IRQ  | : 3            | Secondary IDE 1 : Disabled        |
| Power Mode   | : Disable      | Yicopy Disk : Disabled            |
| Standby Mode   | : Disable      | Serial Port : Enabled             |
| Suspend Mode   | : Disable      | Parallel Port : Disabled          |
| HDD Power Down   | : Disable      |                                   |
| Throttle Duty Cycle  | : 65.6%        |                                   |
| UMA Restore Function   | : Disabled     |                                   |
| Safe-Off by F10-Dram   | : Inherent-Off |                                   |
| CPUPM Off In Suspend   | : Disabled     |                                   |
| Resume by Ring   | : Disabled     |                                   |
| Resume by Alarm  | : Disabled     |                                   |
| Wake Up On LAN   | : Disabled     |                                   |
| IRQ 8 Break Suspend  | : Disabled     |                                   |
|  |                | ESC : Quit F10 : Select Item      |
|  |                | F1 : Help F4/F5/F6 : Modify       |
|  |                | F8 : Old Values (Shift)F2 : Color |
|  |                | F7 : Load Setup Defaults          |

#### ACPI function

:Disabled (default)

:Enabled

#### Power Management

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

:Min Saving

:Max Saving

:Disabled

---

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

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

**Yes** : 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 mode!



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

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

**:3(default), 4, 5, 7, 9,10,11,NA**

### ***Video Off After:***

**:Standby(default), Doze, NA, Suspend**

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

**:DPMS, Blank Screen, V/H Sync+Blank(default)**

### ***Doze mode***

**:disabled (default), 1 min --- 1 hour**

### ***Standby mode***

**:disabled(default) , 1 min --- 1 hour**

### ***Suspend mode***

**:disabled(default) , 1 min --- 1 hour**

### ***Soft-off by PWRBTN***

**:Instant-off**

**:4 seconds**

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

---

***Resume by ring***

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



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

***Resume by alarm:*** 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.

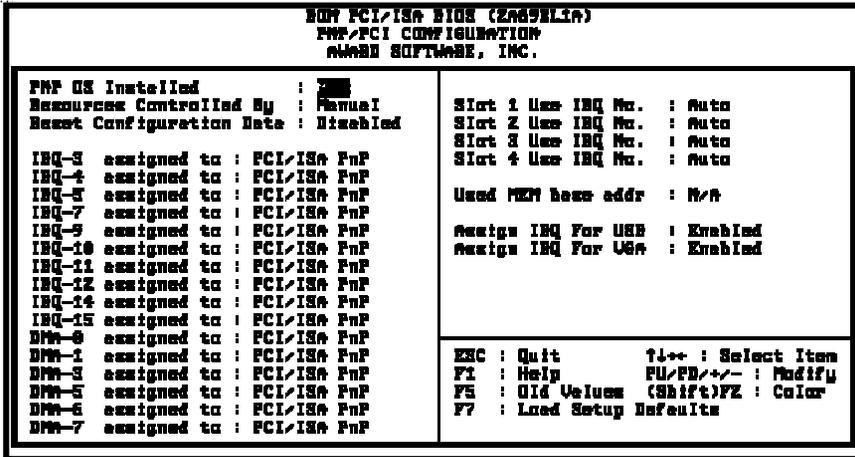
**Disable:** disable this function.



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



### 3-6. PNP / PCI configuration setup



#### *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**

***PCI IRQ Actived By***

There are 2 modes in activating PCI IRQ.

**:Edge** (default)

**:Level**

***Assign IRQ for USB***

**:Enable** (default)

**:Disable**

***Assign IRQ for VGA***

**:Enable** (default)

**:Disable**

### 3-7. Integrated peripherals

| NON PCI/ISA BIOS (2669EL1a) |                                |
|-----------------------------|--------------------------------|
| INTEGRATED PERIPHERALS      |                                |
| AWARD SOFTWARE, INC.        |                                |
| IDE HDD Block Mode          | : <b>Disabled</b>              |
| IDE Primary Master PIO      | : Auto                         |
| IDE Primary Slave PIO       | : Auto                         |
| IDE Secondary Master PIO    | : Auto                         |
| IDE Secondary Slave PIO     | : Auto                         |
| IDE Primary Master UDMA     | : Auto                         |
| IDE Primary Slave UDMA      | : Auto                         |
| IDE Secondary Master UDMA   | : Auto                         |
| IDE Secondary Slave UDMA    | : Auto                         |
| On-Chip Primary PCI IDE     | : Enabled                      |
| On-Chip Secondary PCI IDE   | : Enabled                      |
| USB Keyboard Support        | : Disabled                     |
| Init Display First          | : AGP                          |
| POWER ON Function           | :                              |
| EB Power ON Password        | : Enter                        |
| Hot Key Power ON            | : Ctrl-F1                      |
| RTC Input Clock             | : 6 Mhz                        |
| Onboard FDC Controller      | :                              |
| Onboard Serial Port 1       | : 3F8/IRQ4                     |
| Onboard Serial Port 2       | :                              |
| UART Mode Select            | :                              |
| Rx/D, Tx/D Active           | : Hi,Lo                        |
| IR Transmission delay       | : Enabled                      |
| Onboard Parallel Port       | :                              |
| Parallel Port Mode          | :                              |
| ECP Mode Use DMA            | : 3                            |
| EPP Mode Select             | : EPP1.7                       |
| ESC                         | : Quit      ↑↓←→ : Select Item |
| F1                          | : Help      F1/F2/←/→ : Modify |
| F5                          | : Old Values (Shift)F2 : Color |
| F7                          | : Load Setup Defaults          |

#### *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

---

***On-Chip Primary PCI IDE*** : select use chip support primary PCI IDE.  
: **enabled (default)**  
: **disabled**

***On-chip secondary PCI IDE***:select use chip support secondary PCI IDE.  
: **enabled (default)**  
: **disabled**

***USB Keyboard support***  
: **enabled**  
: **disabled (default)**

***Onboard FDC Controller***  
: **enabled (default)**  
: **disabled**

***Onboard Serial Port 1/ On-Board Serial Port 2***  
: **3F8/IRQ4 (default)**  
: **2F8/IRQ3**  
: **3E8/IRQ4**  
: **2E8/IRQ3**  
: **Auto**  
: **Disabled**

***Onboard Parallel Port***  
: **378/IRQ7 (default)**  
: **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.

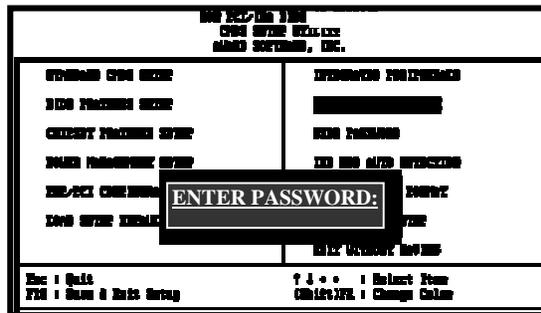
**User Password:** this function only allows you to enter the setup menu but not to change the options of the setup menu except "USER PASSWORD," "SAVE & EXIT SETUP," and "EXIT WITHOUT SAVING."

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

The setup of "Supervisor Password" and "User Password" has the same steps.

##### Step 1: Enter Password

Press <Enter> after appointing the password.





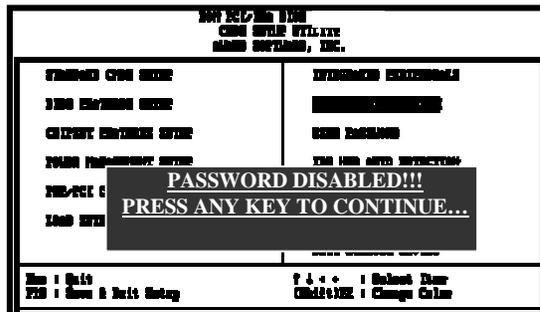
---

## 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. Passworddisable the password this way.



---

### 3-9. IDE HDD Auto Detection

| AWARD BIOS<br>CMOS SETUP UTILITY<br>AWARD SOFTWARE, INC. |      |      |      |         |       |            |        |
|--|------|------|------|---------|-------|------------|--------|
| HARD DISK TYPE   | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTORMODE |        |
| Primary Master:  |      |      |      |         |       |            |        |
| Primary Slave:   |      |      |      |         |       |            |        |
| Secondary Master:  |      |      |      |         |       |            |        |
| Secondary Slave:   |      |      |      |         |       |            |        |
| Select Primary Master Option (N: Skip): N                |      |      |      |         |       |            |        |
| OPTIONS  | SIZE | CYLS | HEAD | PRECOMP | LANDZ | SECTOR     | MODE   |
| 2 (Y)  | 4302 | 523  | 255  | 0       | 8893  | 63         | LBA    |
| 1  | 4303 | 8894 | 15   | 65535   | 8893  | 63         | NORMAL |
| 3  | 429  | 6555 | 2405 | 65535   | 8893  | 63         | LARGE  |

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 Aauto Detection" utility. The BIOS will auto-detect the hard disk size and model on display during post.



#### HDD modes :

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

#### 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)   |
| X | No. Per Sector | (512)  |
|   | 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!

#### **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)   |
| X | No. Bytes Per Sector | (512)  |
|   | 8.4 GB               |        |

#### **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!

#### **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.

**Note : i82440BX/ZX doesn't support Ultra-DMA-66 Mode HDDs.**

---

## 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 posts |
| 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 (smc 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(IAVE)**

- 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 (smc 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

RTC & CMOS :

00 seconds  
01 second 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 drive type byte  
12 hard disk type byte  
13 reserve  
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  
30Reserved for extension memory low byte  
31 reserved for extension memory high byte  
32 date century byte  
33 information flag  
34-3f reserve  
40-7f reserved for chipset setting data

---

## 4-6 Award BIOS hard disk type

| Type | Cylinder | Heads | Write<br>Pre-comp | Landing<br>Zone | Sectors | Size  |
|------|----------|-------|-------------------|-----------------|---------|-------|
| 1    | 306      | 4     | 128               | 305             | 17      | 10MB  |
| 2    | 615      | 4     | 300               | 615             | 17      | 21MB  |
| 3    | 615      | 6     | 300               | 615             | 17      | 32MB  |
| 4    | 940      | 8     | 512               | 940             | 17      | 65MB  |
| 5    | 940      | 6     | 512               | 940             | 17      | 49MB  |
| 6    | 615      | 4     | 65535             | 615             | 17      | 21MB  |
| 7    | 462      | 8     | 256               | 511             | 17      | 32MB  |
| 8    | 733      | 5     | 65535             | 733             | 17      | 31MB  |
| 9    | 900      | 15    | 65535             | 901             | 17      | 117MB |
| 10   | 820      | 3     | 65535             | 820             | 17      | 21MB  |
| 11   | 855      | 5     | 65535             | 855             | 17      | 37MB  |
| 12   | 855      | 7     | 65535             | 855             | 17      | 52MB  |
| 13   | 306      | 8     | 128               | 319             | 17      | 21MB  |
| 14   | 733      | 7     | 65535             | 733             | 17      | 44MB  |
| 16   | 612      | 4     | 0                 | 663             | 17      | 21MB  |
| 17   | 977      | 5     | 300               | 977             | 17      | 42MB  |
| 18   | 977      | 7     | 65535             | 977             | 17      | 59MB  |
| 19   | 1024     | 7     | 512               | 1023            | 17      | 62MB  |
| 20   | 733      | 5     | 300               | 732             | 17      | 31MB  |
| 21   | 733      | 7     | 300               | 732             | 17      | 44MB  |
| 22   | 733      | 5     | 300               | 733             | 17      | 31MB  |
| 23   | 306      | 4     | 0                 | 336             | 17      | 10MB  |
| 24   | 977      | 5     | 0                 | 925             | 17      | 42MB  |
| 25   | 1024     | 9     | 65535             | 925             | 17      | 80MB  |
| 26   | 1224     | 7     | 65535             | 754             | 17      | 74MB  |
| 27   | 1224     | 11    | 65535             | 754             | 17      | 117MB |
| 28   | 1224     | 15    | 65535             | 699             | 17      | 159MB |
| 29   | 1024     | 8     | 65535             | 823             | 17      | 71MB  |
| 30   | 1024     | 11    | 65535             | 1023            | 17      | 98MB  |
| 31   | 918      | 11    | 65535             | 1023            | 17      | 87MB  |
| 32   | 925      | 9     | 65535             | 926             | 17      | 72MB  |
| 33   | 1024     | 10    | 65535             | 1023            | 17      | 89MB  |

| Type | Cylinder | Heads | Write<br>Pre-comp | Landing<br>Zone | Sectors | Size  |
|------|----------|-------|-------------------|-----------------|---------|-------|
| 34   | 1024     | 12    | 65535             | 1023            | 17      | 106MB |
| 35   | 1024     | 13    | 65535             | 1023            | 17      | 115MB |
| 36   | 1024     | 14    | 65535             | 1023            | 17      | 124MB |
| 37   | 1024     | 2     | 65535             | 1023            | 17      | 17MB  |
| 38   | 1024     | 16    | 65535             | 1023            | 17      | 142MB |
| 39   | 918      | 15    | 65535             | 1023            | 17      | 119MB |
| 40   | 820      | 6     | 65535             | 820             | 17      | 42MB  |
| 41   | 1024     | 5     | 65535             | 1023            | 17      | 44MB  |
| 42   | 1024     | 8     | 65535             | 1023            | 17      | 68MB  |
| 43   | 809      | 6     | 65535             | 852             | 17      | 42MB  |
| 44   | 809      | 9     | 65535             | 852             | 17      | 64MB  |
| 45   | 776      | 8     | 65535             | 775             | 17      | 104MB |
| 46   | AUTO     | 0     | 0                 | 0               | 0       |       |
| 47   | USER'S   | TYPE  |                   |                 |         |       |

---

## 4-7 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                   |
| 060 - 06F         | 8742 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 |
| 3C0 - 3CF         | Enhanced Graphics Adapter              |
| 3D0 - 3DF         | Color/Graphics Monitor Adapter         |
| 3F0 - 3F7         | Diskette Drive Controller              |
| 3F8 - 3FF         | Serial Port 1 (RS-232-C)               |

| <b>I/O Address (HEX)</b> | <b>I/O device</b>          |
|--------------------------|----------------------------|
| 6E2 - 6E3                | Data Acquisition Adapter 1 |
| 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             |

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## Chapter 5. Q & A

### 5-1 Errors messages during power on self test ( POST)

During **power on self test (post)**, BIOS will automatically detect the system devices. Below is 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 a new BIOS.

#### *3. CMOS battery fails*

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

#### *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 a weak BIOS, so exchange a new BIOS if necessary.

#### *5. Hard disk initialize*

**Please wait a moment...**

Some hard drives require more time to initialize.

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**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 POST.

**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.

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## 5-2 Frequently asked questions

Below is questions 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.

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