

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 architectures 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 upgraded 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™ W/512K	Deschutes™ W/512K	Klamath™ W/512K	Celeron™ W/128K & CPU code A	Celeron™ w/o 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.

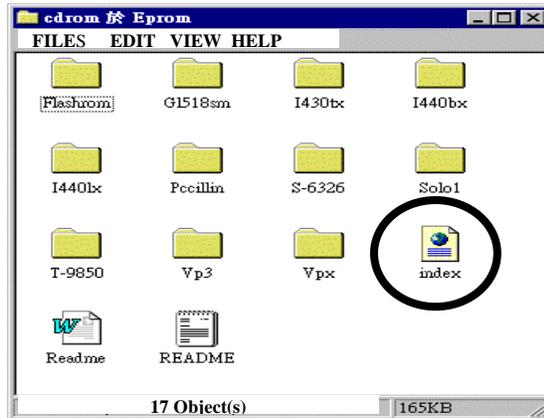
### B. Make sure power is off during hardware installation

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:



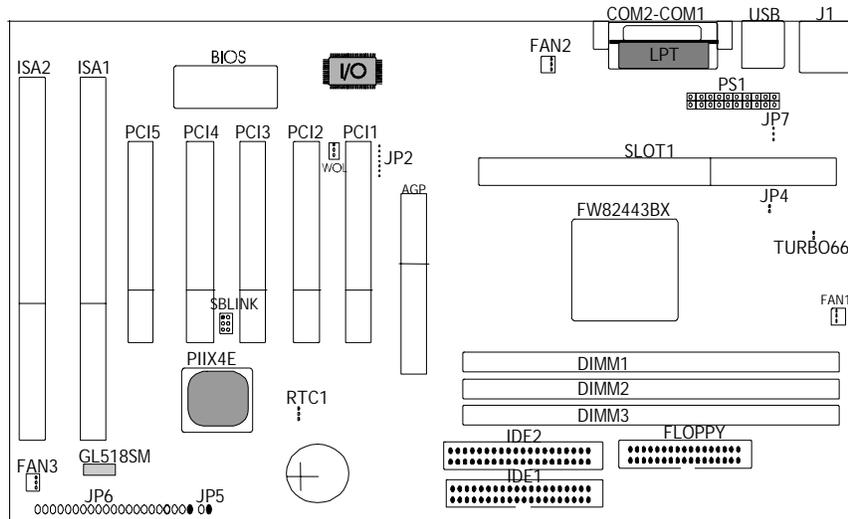
1. **Main boards:** i440BX/ZX®, i440EX®, i440LX®, i430TX®, VIA® VPX, VP3 main boards
2. **A.G.P cards:** S- 6326 and Trident 9850
3. **Solo-1:** ESS-solo-1 sound driver
4. **G1518SM:** CPU voltage/temperature and fan speed detection software
5. **Pccillin:** anti- virus protection software



**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 (2A69KL1N)  
CPU FEATURES SETUP  
AWARD SOFTWARE, INC.

CPU Speed	: <b>Manual</b>	
CPU Ratio	: X 2	
CPU Frequency	: 66 MHz	

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

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

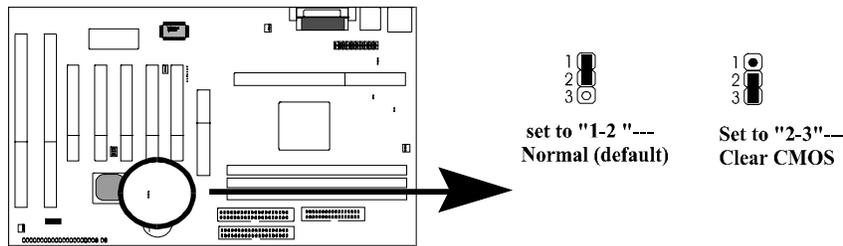
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## 2-3 Jumper setting

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.

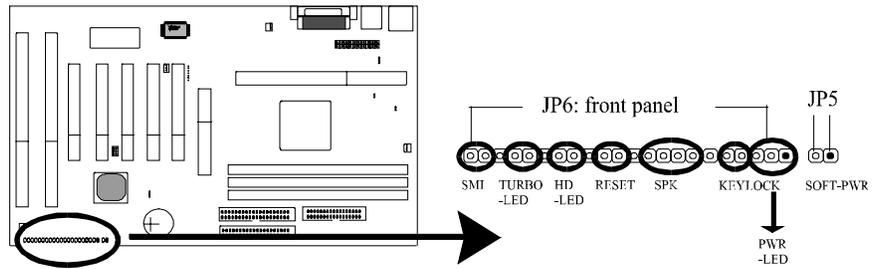
Step 6: Turn on system power.

*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

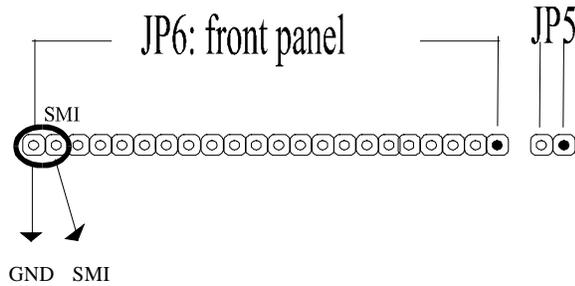
### 2-4-1 Front panel



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

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### Suspend mode interrupt (SMI)



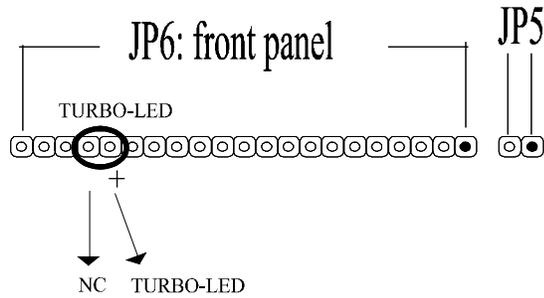
**SMI connector** is a 2-pin Berg strip, which is also called “green” or “sleep” connector. When SMI is turned from open to close and back to open, the system will enter sleep mode immediately. This function is to make sure power saving is working well. In PC system, it is used to connect to the push 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

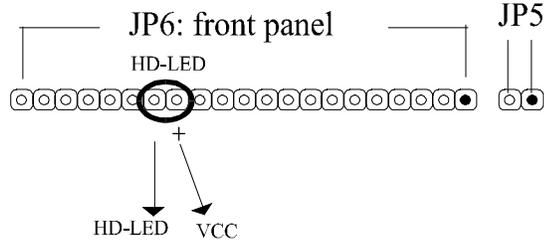


**Turbo LED** with a 2-pin Berg strip on front panel indicates the current speed status of system. It is used to connect to the Turbo Led on the front panel of the case (if there is).

Pin assignment	Signal
Pin with "+" signal	Anode (+)
Pin 2	Cathode (-)

---

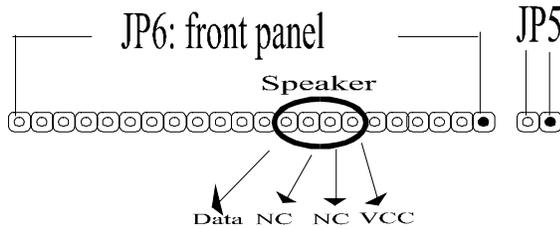
## HD-LED



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

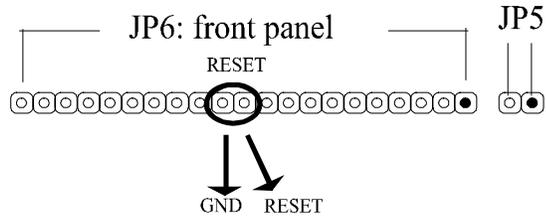


**Speaker (SPK) connector** is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the system board for sound purpose.

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

---

## Reset



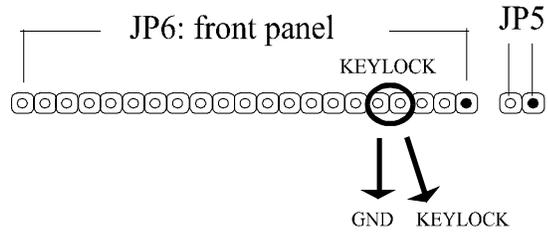
**Reset connector** is a 2-pin keyed Berg strip, connected to the push button reset switch on the case's front panel. Shorting both pin 1 & pin 2 can effect system reset function, which is similar to the power and then on again.

Pin assignment	Signal
Pin 1	Reset input
Pin 2	GND

Reset	Operation
Open	Normal
Close	Hardware reset

---

## Keylock



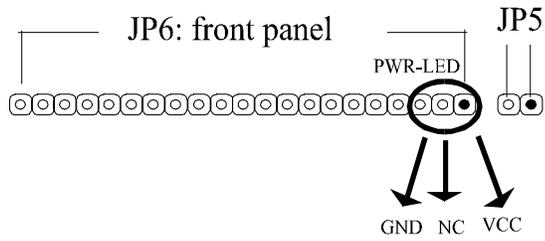
**Keylock** is a 2-pin connector. It is used to connect the key lock on the case front panel (if there is). Keyboard may be disconnected with the system through this function.

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



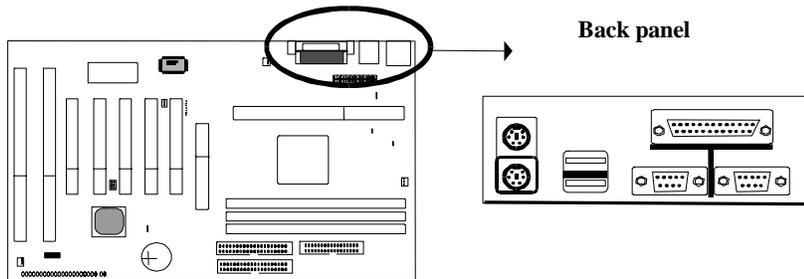
**Power LED** is 3-pin connector. It is used to connect to the LED on the case front panel. The LED shows the status of the power.

Pin	Signal
Pin 1	VCC
Pin 2	NC
Pin 3	GND

---

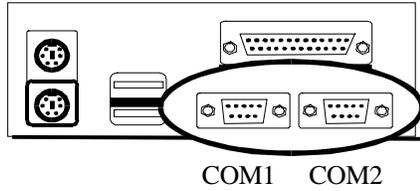
### 2-4-2 Back panel

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



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## COM1/COM2



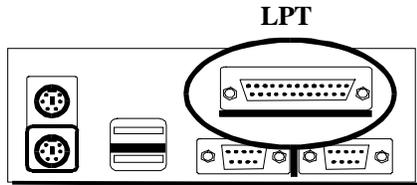
*The onboard serial port 1 and port 2* are the 9-pin D-subminiature male connector COM1 and COM2. COM1 and COM2 can be disabled in BIOS setup. Please refer to Chapter 3 “Integrated Peripherals” for more information.

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		

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## LPT

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

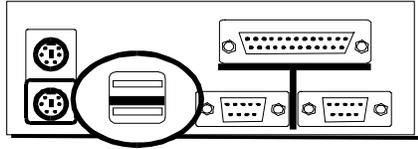


Pin	Signal	Pin	Signal
Pin 1	Strobe	Pin 14	Auto feed
Pin 2	Data bit 0	Pin 15	Error
Pin 3	Data bit 0	Pin 16	Init
Pin 4	Data bit 0	Pin 17	SLCT in
Pin 5	Data bit 0	Pin 18	Ground
Pin 6	Data bit 0	Pin 19	Ground
Pin 7	Data bit 0	Pin 20	Ground
Pin 8	Data bit 0	Pin 21	Ground
Pin 9	Data bit 0	Pin 22	Ground
Pin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

---

## USB

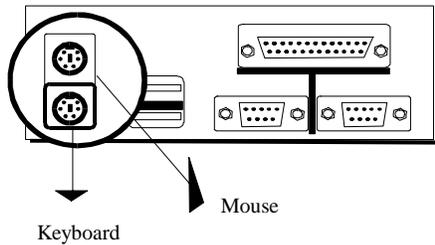
### USB



*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

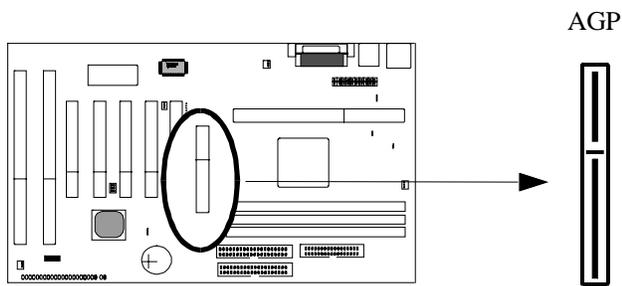
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### 2-4-3 Expansion slots

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

#### AGP slot

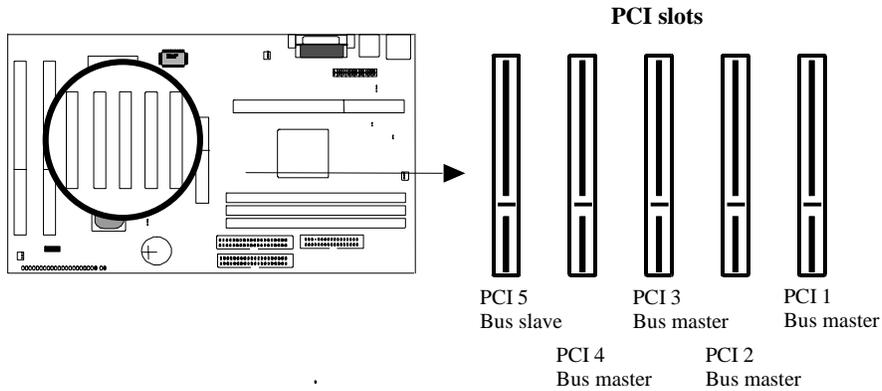
*AGP (Accelerated Graphic Port)* is the new bus standard that allows the bus speed to run at 66 MHz with up to 133 MHz data transfer capabilities, which is four times as fast as that of the PCI bus. At this speed, the AGP graphic cards can transfer data up to 523MB/second. This high transfer capabilities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



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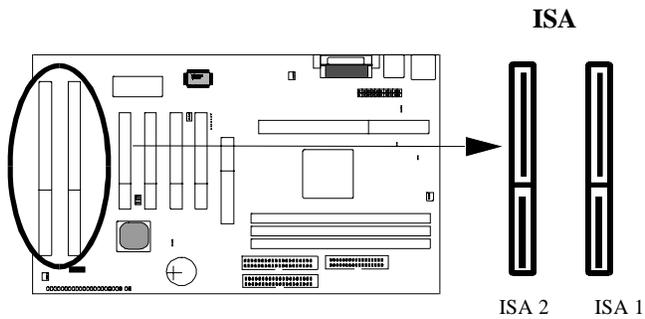
### PCI slots

*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

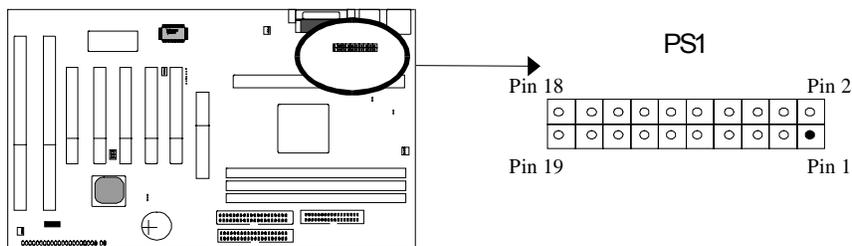
*There are* 2 standard 32-bit ISA slots on board. All of them are bus mastering.



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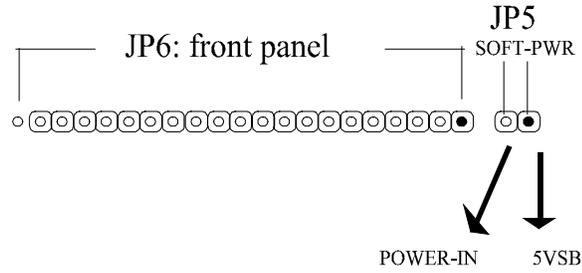
#### 2-4-4 ATX power

**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

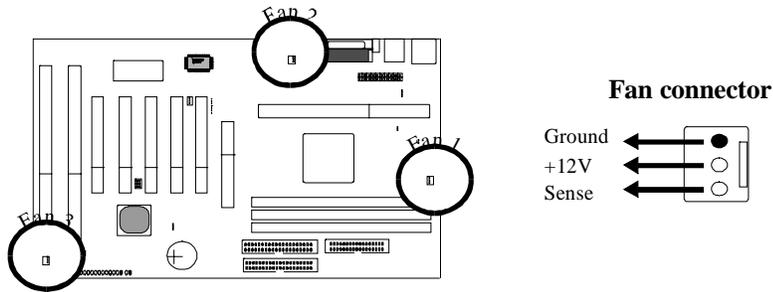
**2-4-5 Soft-PWR (JP5)**



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

Pin	Signal
Pin 1	5VSB
Pin 2	PWR in

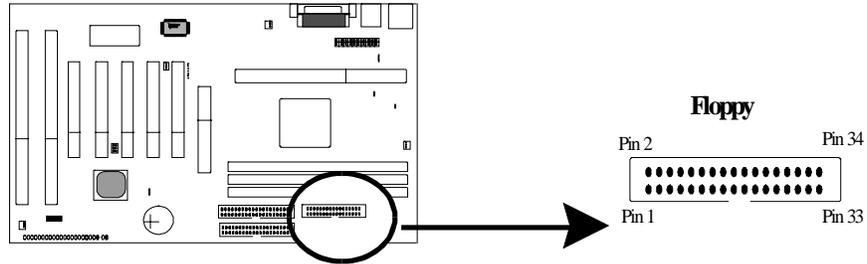
**2-4-6 CPU fan connectors**



*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

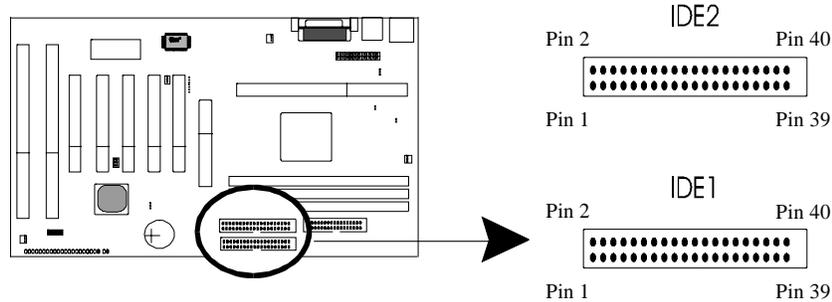
## 2-4-7 Floppy interface



*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

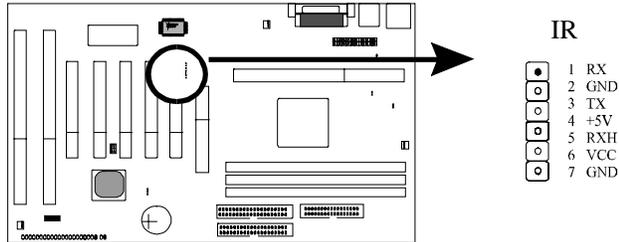


**IDE 1/ IDE 2** both have 40 pins. There are 2 IDE connectors supported on this system board. IDE1 is primary channel, and IDE2 is secondary channel. Each channel supports 2 IDE devices, and 4 channels in total for this system board.

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



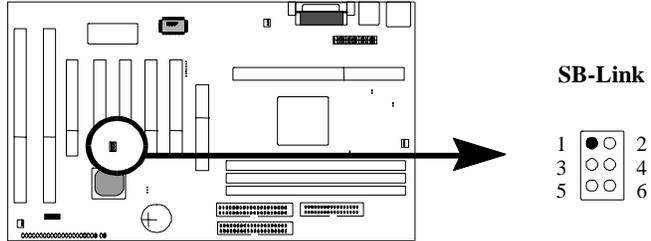
**IR connector** supports wireless infrared module. With this module and application software like LAPlink, or WIN95 Direct Cable Connection, user can transfer data to or from laptops, notebooks, PDA and printers. This connector supports **HPSIR, ASKIR, and Fast IR.**

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

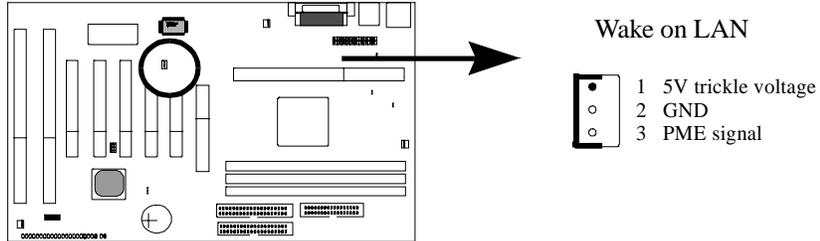


*SB-LINK* is used to attach any "PC/PCI" standard sound card like Creative AWE64D or Yamaha XG...for compatibility under DOS mode.

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*, 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.

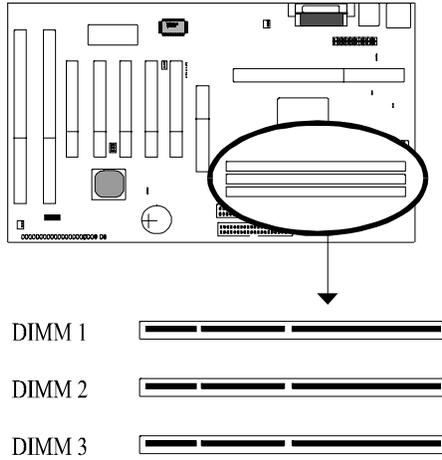
Pin	Signal
Pin 1	5V trickle voltage
Pin 2	Ground
Pin 3	PME signal



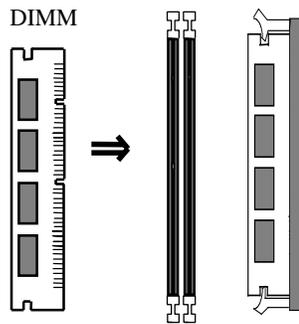
Wake on LAN requires 5V Trickle Voltage 750mA to support.

---

## 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)**

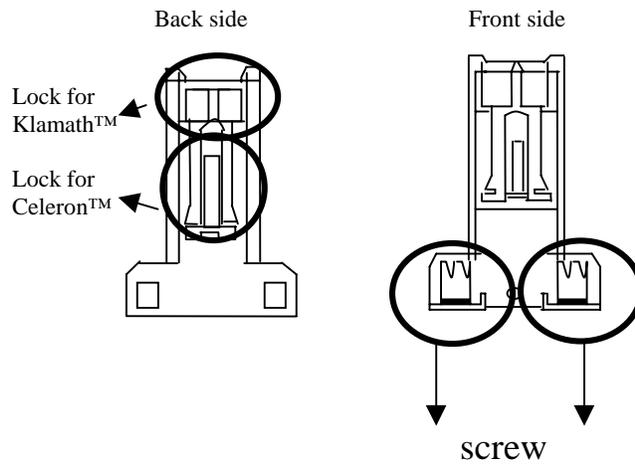
---

## 2-6 CPU RM kit assembling procedure

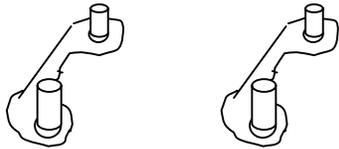
The enclosed RM kit is the latest model suitable for both Klamath and Celeron. It is not necessary to change different CPU RM kits for different CPU models.

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



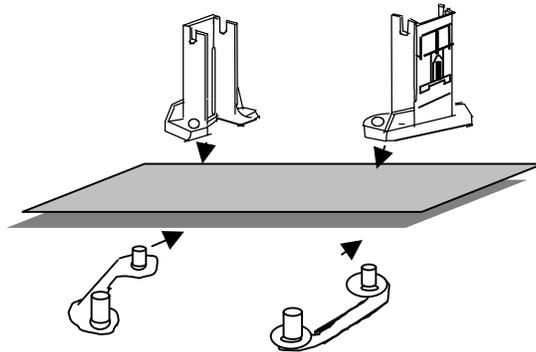
RM. Attach Mount (RMAM): 2 pcs



---

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.

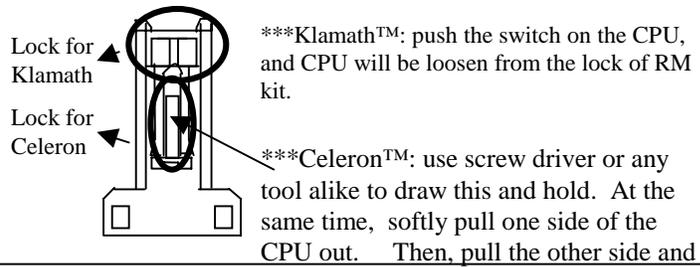


5. Fasten up the screws on the retention mechanism to tighten up retention mechanism and RMAM. Check if all the piece parts are fastened tightly.

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.



---

Page CPU will be loosened this way.

---

## 2-7 Keyboard password setup

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

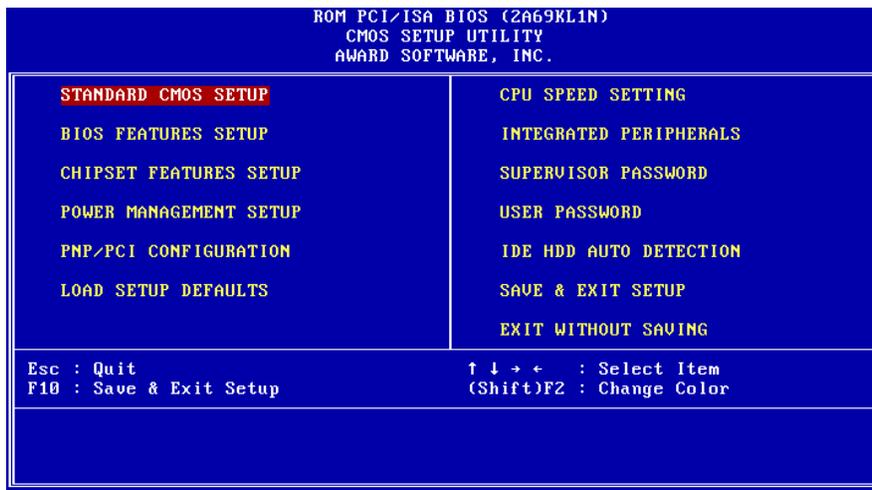
Go to BIOS "**Integrated Peripherals,**" and find the item, "**power on function,**" in which there are "**KB power on password, hot key power on, mouse left, mouse right, and button only.**"

Item	Procedure	Special note
<b>KB power on password</b>	<b>1. enter password:</b> 5 spaces allowed. <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> " the user may choose either 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 (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 (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 (2A69XL1A)
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   AUTO
Primary Slave  : Auto   0     0   0     0     0     0   AUTO
Secondary Master : Auto   0     0   0     0     0     0   AUTO
Secondary Slave : Auto   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:  0K
Extended Memory:  0K
Other Memory: 512K
-----
Total Memory: 512K

ESC : Quit      ↑ ↓ → ← : 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 (2A69KL1A) BIOS FEATURES SETUP AWARD SOFTWARE, INC.					
Virus Warning	:	Disabled	Video BIOS Shadow	:	Enabled
CPU Internal Cache	:	Enabled	C8000-CBFFF Shadow	:	Disabled
External Cache	:	Enabled	CC000-CFFFF Shadow	:	Disabled
CPU L2 Cache ECC Checking	:	Enabled	D0000-D3FFF Shadow	:	Disabled
Quick Power On Self Test	:	Enabled	D4000-D7FFF Shadow	:	Disabled
Boot Sequence	:	A,C,SCSI	D8000-DBFFF Shadow	:	Disabled
Swap Floppy Drive	:	Disabled	DC000-DFFFF Shadow	:	Disabled
Boot Up Floppy Seek	:	Enabled			
Boot Up NumLock Status	:	On			
Gate A20 Option	:	Normal			
Typematic Rate Setting	:	Disabled			
Typematic Rate (Chars/Sec)	:	6			
Typematic Delay (Msec)	:	250			
Security Option	:	Setup			
PS/2 mouse function control	:	Enabled			
PCI/UGA Palette Snoop	:	Disabled	ESC : Quit		fl+* : Select Item
OS Select For DRAM > 64MB	:	Non-OS2	F1 : Help		PU/PD/+/- : Modify
Report No FDD For WIN 95	:	No	F5 : Old Values (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)**

---

### 3-4. Chipset features setup

ROM PCI/ISA BIOS (2A69KL1N) CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.			
Auto Configuration	: Enabled	CPU Warning Temperature	: Disabled
EDO DRAM Speed Selection	: 60ns	Shutdown Temperature	: 70°C/158°F
EDO CAS# MA Wait State	: 2	Current CPU Temperature	:
EDO RAS# Wait State	: 1	Current CPUFAN1 Speed	:
SDRAM RAS-to-CAS Delay	: 3	Current CPUFAN2 Speed	:
SDRAM RAS Precharge Time	: 3	Current Vin3(V)	:
SDRAM CAS latency Time	: 2	Current Vin1(V)	:
SDRAM Precharge Control	: Disabled	Current Vin2(V)	:
DRAM Data Integrity Mode	: Non-ECC	Current Vdd(V)	:
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Disabled		
Video RAM Cacheable	: Disabled		
8 Bit I/O Recovery Time	: NA		
16 Bit I/O Recovery Time	: NA		
Memory Hole At 15M-16M	: Disabled		
Passive Release	: Disabled	ESC : Quit	↑↓←→ : Select Item
Delayed Transaction	: Disabled	F1 : Help	PU/PD/+/- : Modify
AGP Aperture Size (MB)	: 4	F5 : Old Values (Shift)	F2 : Color
		F7 : Load Setup Defaults	

#### *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 C/122 F, 53 C/127 F, 56 C/133 F, 60 C/140 F, 63 C/145 F,

66 C/151 F, 70 C/158 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

ROM PCI/ISA BIOS (2A69KL1A)	
POWER MANAGEMENT SETUP	
AWARD SOFTWARE, INC.	
ACPI function	: Enabled
Power Management	: Min Saving
PM Control by APM	: Yes
Video Off Method	: DPMS
Video Off After	: Standby
MODEM Use IRQ	: 3
Bios Mode	: Disable
Standby Mode	: Disable
Suspend Mode	: Disable
HDD Power Down	: Disable
Throttle Duty Cycle	: 62.5%
UGA Active Monitor	: Disabled
Soft-Off by PWR-BTTM	: Instant-Off
CPUFAN Off In Suspend	: Disabled
Resume by Ring	: Disabled
Resume by Alarm	: Disabled
Wake Up On LAN	: Disabled
IRQ 8 Break Suspend	: Disabled
Reload Global Timer Events	: **
IRQ13-7,9-15,1.NMI	: Disabled
Primary IDE 0	: Disabled
Primary IDE 1	: Disabled
Secondary IDE 0	: Disabled
Secondary IDE 1	: Disabled
Floppy Disk	: Disabled
Serial Port	: Enabled
Parallel Port	: Disabled
ESC	: Quit
F1	: Help
F5	: Old Values
F7	: Load Setup Defaults
TJ++	: Select Item
FU/PD/+/-	: Modify
(Shift)F2	: Color

#### *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

ROM PCI/ISA BIOS (2A69RL1A) PNP/PCI CONFIGURATION AWARD SOFTWARE, INC.	
PNP OS Installed : <b>No</b>	Slot 1 Use IRQ No. : Auto
Resources Controlled By : Manual	Slot 2 Use IRQ No. : Auto
Reset Configuration Data : Disabled	Slot 3 Use IRQ No. : Auto
	Slot 4 Use IRQ No. : Auto
IRQ-3 assigned to : PCI/ISA PnP	Used MEM base addr : N/A
IRQ-4 assigned to : PCI/ISA PnP	Assign IRQ For USB : Enabled
IRQ-5 assigned to : PCI/ISA PnP	Assign IRQ For UGA : Enabled
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	ESC : Quit           ↑↓←→ : Select Item
DMA-3 assigned to : PCI/ISA PnP	F1 : Help            PU/PD/+/− : Modify
DMA-5 assigned to : PCI/ISA PnP	F5 : Old Values (Shift)F2 : Color
DMA-6 assigned to : PCI/ISA PnP	F7 : Load Setup Defaults
DMA-7 assigned to : PCI/ISA PnP	

#### *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 Activated 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

ROM PCI/ISA BIOS (2A69KL1A)	
INTEGRATED PERIPHERALS	
AWARD SOFTWARE, INC.	
IDE HDD Block Mode	: Enabled
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	: ASP
POWER ON Function	:
KB Power ON Password	: Enter
Hot Key Power ON	: Ctrl-F1
KBC input clock	: 8 MHz
Onboard FDC Controller	:
Onboard Serial Port 1	: 3F8/IRQ4
Onboard Serial Port 2	:
UART Mode Select	:
RxD , TxD Active	: Hi,Lo
IR Transmittiion delay	: Enabled
Onboard Parallel Port	:
Parallel Port Mode	:
ECP Mode Use DMA	: 3
EPP Mode Select	: EPP1.7
ESC : Quit	F4+* : Select Item
F1 : Help	F5/PD/+/- : 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.**

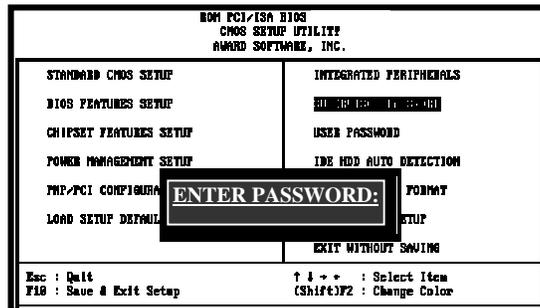
**User Password: this function only allows you to enter the setup menu but not to change the options of the setup menu except "USER PASSWORD," "SAVE & EXIT SETUP," and "EXIT WITHOUT SAVING."**

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

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

##### Step 1: Enter Password

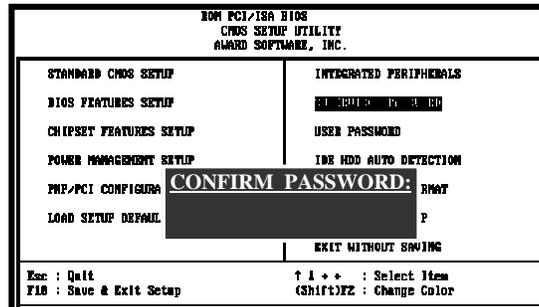
Press <Enter> after appointing the password.



---

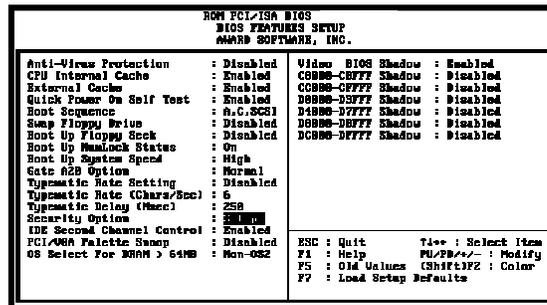
## Step 2: Confirm Password

Typing the password again and pressing <Enter> .



Step 3: Set “Security Option” in “BIOS Features Setup” (refer to page 40).

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



**Note:** If you forget password, please clear CMOS.  
(refer to page 11 for JBAT RTC )

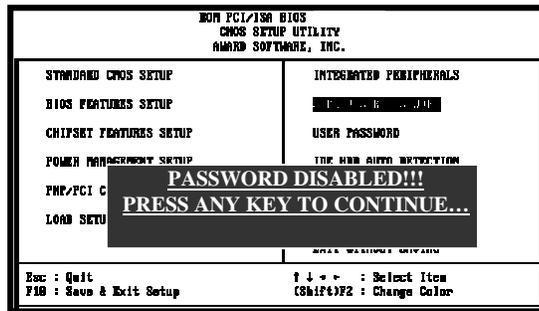
---

## 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. Passwordisable the password this way.



---

### 3-9. IDE HDD Auto Detection

ROM PCI/ISA BIOS CMOS SETUP UTILITY AWARD SOFTWARE, INC.							
HARD DISK TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
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:

---

Cyls.	Head	Sector	Mode
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	No. Bytes Per Sector	(512)
	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 perating 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-CDF	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(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 (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 Pre-comp	Landing 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 Pre-comp	Landing 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

---

## 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.

---

**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.

---

## 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.

---