AmazePc® Inc.,

AM-BX2V
ATX Form Factor
Main Board
User's Manual
Ver. 3.0

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Chapter 1: Introduction

1-1 Overview

AmazePC® BX series

The AmazePC® BX2V/V3 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 AGP set 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 AmazePC® main board using the slot 1 socket, accepts Intel® Pentium® II (66/100 MHz), Pentium® III(100MHz) processors at speeds from 266MHz to 800 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 AmazePC® main board has used 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.

The AmazePC® main board supports 1*AGP & 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 AmazePC® 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 AmazePC® main board is a combination of the highest in performance, flexibility, efficiency, and ease of use that meets a variety of price/performance levels. The main board is an ideal platform for the increasing requirements of today's and future's desktop application.

1-2 Specifications

● **PCB Board size:** 30.5 cm x 18.00 cm

● **PCB layer:** 4 layers

● **Slot 1 socket**
Support Intel® Pentium® II CPU (66 MHz &100 MHz freq.) or Pentium® III CPU(100 MHz)
*** *CPU is not enclosed in the package*

● **Memory** DIMM: 3 of 168-pin 3.3V DIMM
! Professional PC
A. 100 MHz freq.: PC 100- DIMM
B. 66 MHz freq. : SDRAM up to 384MB
                 EDO RAM up to 768MB (3.3v only)
! Basic PC: 66 MHz freq.
A. SDRAM up to 384MB
B. EDO RAM up to 768MB(3.3v only)

● **Expansion Slot :** 2x ISA, 5 x PCI slots (4* BUS Master & 1 Slave slots) and 1x A.G.P. Slot

● **Chipset :** Intel® **i440 BX** chipset---
! Intel® 82443BX CPI and A.G.P controller.
! Intel® 82371EB I/O bridge

● **BIOS: licenced A**ward® full **PnP** (plug & play) BIOS, flash EEPROM 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

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

● ATX form factor

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

- ! Enhance PC ease-of-use with all built-in I/O connector
- ! Better support for current and future I/O
- ! Redude 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 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 power off
! Keyboard wake up
! PS/2 mouse wake up

1-3 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, wears a grounded wristband or ankle strap to avoid ESD (Electrical Static Discharge).

1-4 Notice for CD driver installation

This CD contains drivers as below:
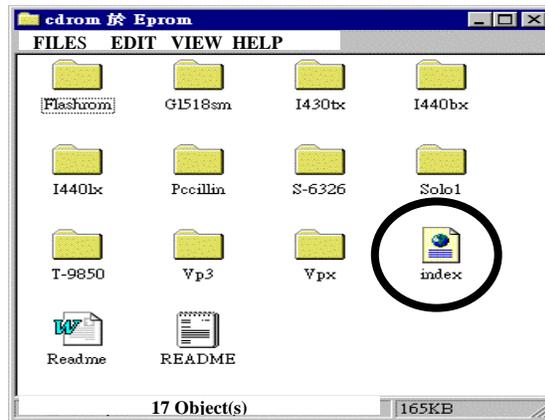
1. **Main boards:** i440BX®, VIA® , i810 main boards
2. **Solo-1:** ESS-solo-1 sound driver
3. **Gl518SM:** CPU voltage/temperature and fan speed detection software
4. **Pccillin:** anti- virus protection software

Note: Read "index" before installing required drivers. "Index" file is HTML format.

Chapter 2. Installation

2-1 Layout reference
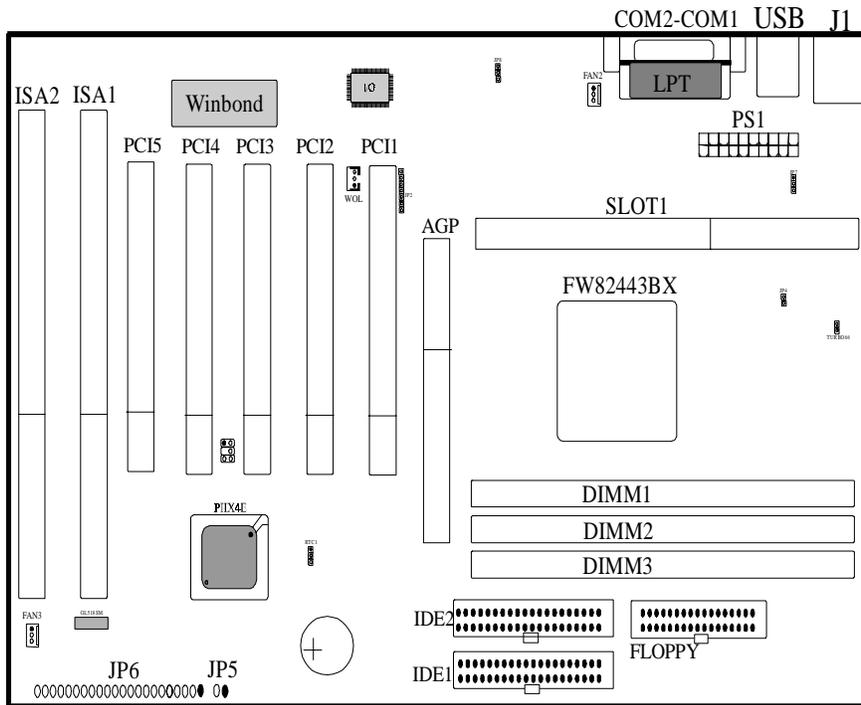
```
                    ROM PCI/ISA BIOS (2A69KL1A)
                         CPU FEATURES SETUP
                        AWARD SOFTWARE, INC.

 CPU Speed          : 233Mhz(66x3.5)




 ESC : Quit                    ↑↓→← : Select Item
 F1  : Help                    PU/PD/+/- : Modify
 F5  : Old Values              (Shift)F2 : Color
 F?  : Load Setup Defaults
```

"CPU speed" press **"+"** or **"-"** to choose **"CPU speed"** according to your CPU

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.

When Socket370(CPU Speed 300-500MHz) converts into Slot1, S9 Daughter Card is needed.

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.

2-3-1 RTC1-CMOS Status

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

Set to "1-2"--- Normal(default)   Set to "2-3"--- Clear CMOS

AM-BX2V

9
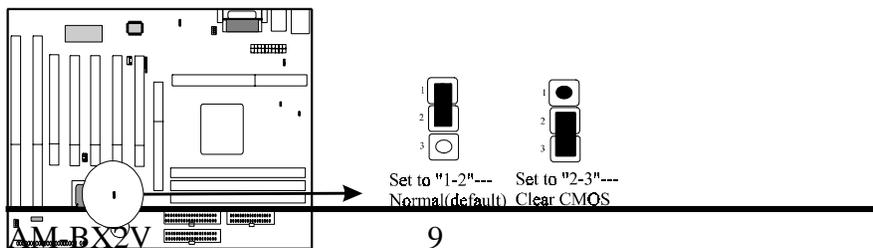
Pin assignment	Operation
1-2	Normal setup (default)
2-3	Clear CMOS

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.

2-3-2 JP8 - Keyboard Wake up Selector

JP8 is a 3-pin jumper which providing keyboard wake up function.

Set to "1-2"--- off (default)   Set to "2-3"--- on
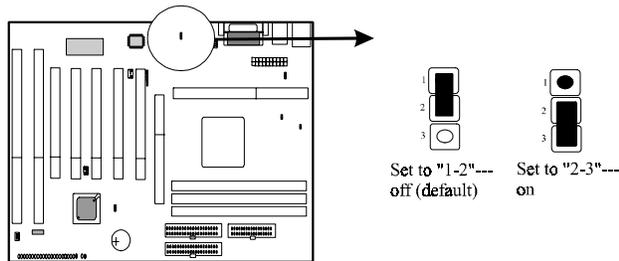
2-4   Connector

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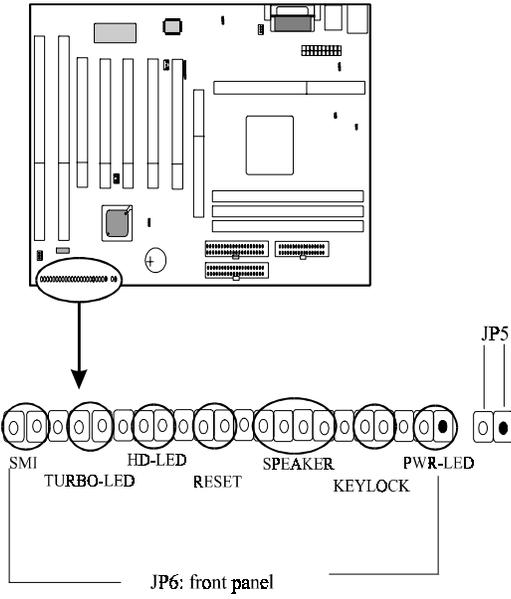
Suspend mode interrupt (SMI)
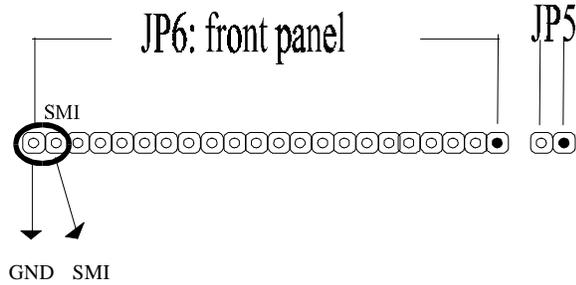
SMI connector is a 2-pin Berg strip, which is also called **"green"** or **"sleep"** connector. When SMI is turned from open to close and back to open, the system will enter sleep mode immediately. This function is to make sure power saving is working well. In PC system, it is used to connect to the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

JP6: front panel   JP5

TURBO-LED

+
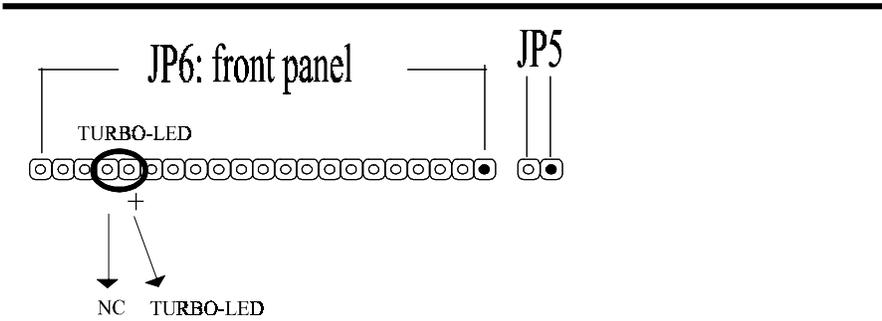
NC   TURBO-LED

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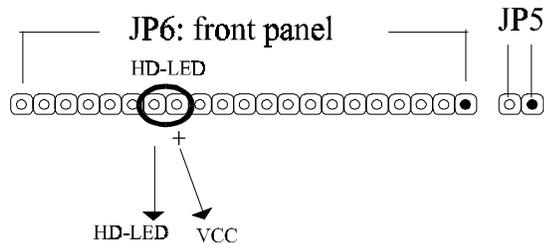
Marked as "HD-LED," Hard Disk activity LED connector is a 2-pin keyed Berg strip. It is used to connect to front panel Hard Disk LED.

Pin assignment	Signal
Pin 1 with "+" signal	Anode "+"
Pin 2	Cathode

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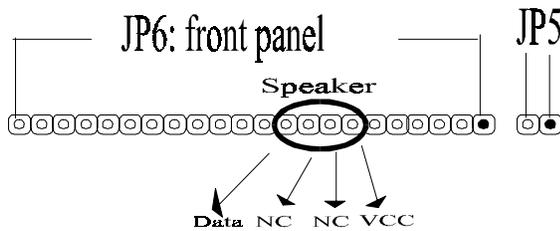
Speaker (SPK) connector is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the system board for sound purpose.

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

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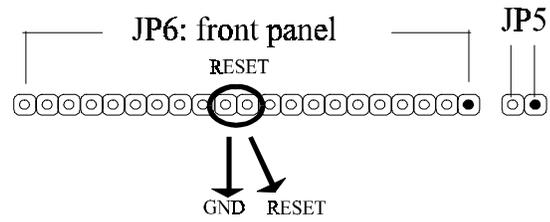
Reset connector is a 2 –pin keyed Berg strip, connected to the push button reset switch on the case's front panel. Shorting both pin 1& pin 2 can effect system reset function, which is similar to the power and then on again.

Pin assignment	Signal
Pin 1	Reset input
Pin 2	GND

Reset	Operation
Open	Normal
Close	Hardware reset

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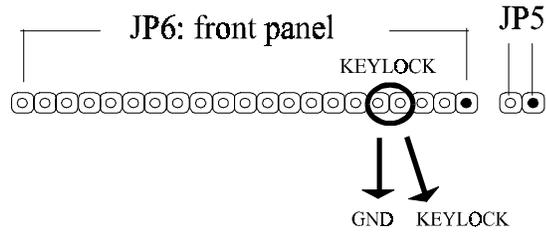
Keylock is a 2-pin connector. It is used to connect the key lock on the case front panel (if there is). Keyboard may be disconnected with the system through this function.

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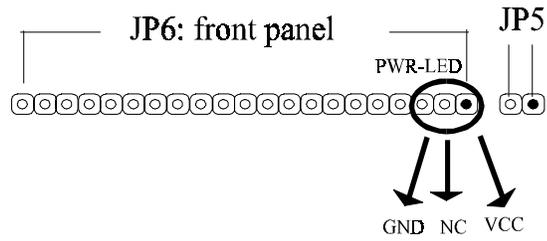
Power LED is 3-pin connector. It is used to connect to the LED on the case front panel. The LED shows the status of the power.

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.

Back panel
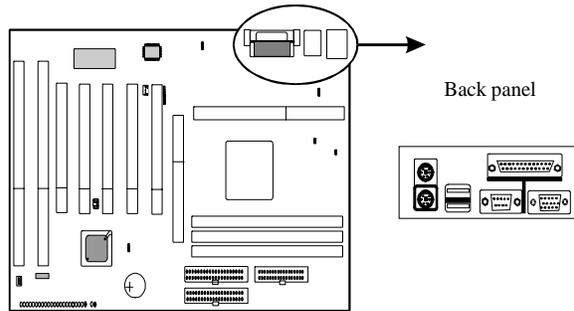
COM1/COM2

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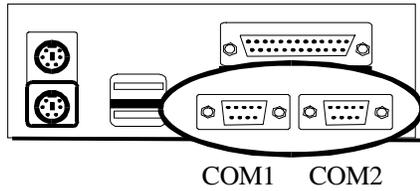
The onboard serial port 1 and port 2 are the 9-pin D-subminiature male connector COM1 and COM2. COM1 and COM2 can be disabled in BIOS setup. Please refer to Chapter 3 "Integrated Peripherals" for more information.

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 therminal 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"**

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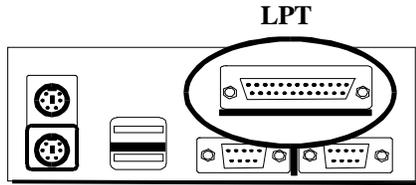
Pin	Signal	Pin	Signal
Pin 1	Strobe	Pin 14	Auto feed
Pin 2	Data bit 0	Pin 15	Error
Pin 3	Data bit 0	Pin 16	Init
Pin 4	Data bit 0	Pin 17	SLCT in
Pin 5	Data bit 0	Pin 18	Ground
Pin 6	Data bit 0	Pin 19	Ground
Pin 7	Data bit 0	Pin 20	Ground
Pin 8	Data bit 0	Pin 21	Ground
Pin 9	Data bit 0	Pin 22	Ground
Pin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

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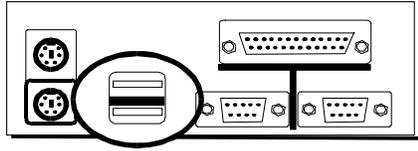
Universal Serial Bus connector, marked as **"USB,"** is used to connect USB devices. There are 2 USB connectors on this system board.

Keyboard & Mouse (J1)

J1: Keyboard & Mouse connector
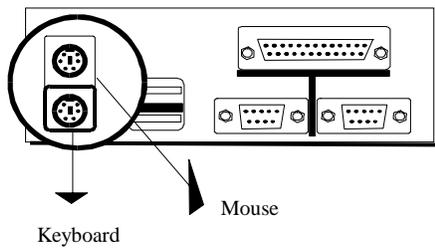
Mouse

Keyboard

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

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.
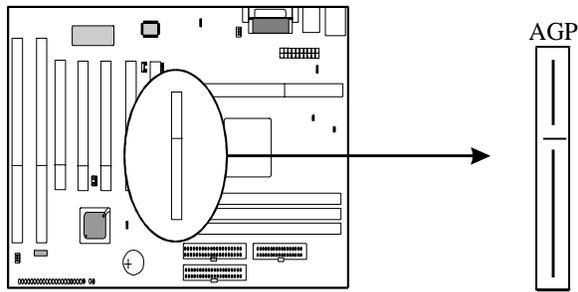
PCI slots

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.

PCI5
Bus slave

PCI3
Bus master

PCI1
Bus master

PCI4
Bus master

PCI2
Bus master
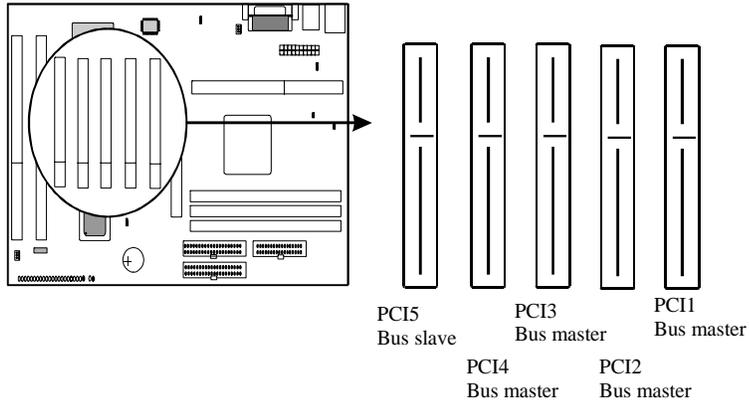
ISA slots

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

ISA2   ISA1
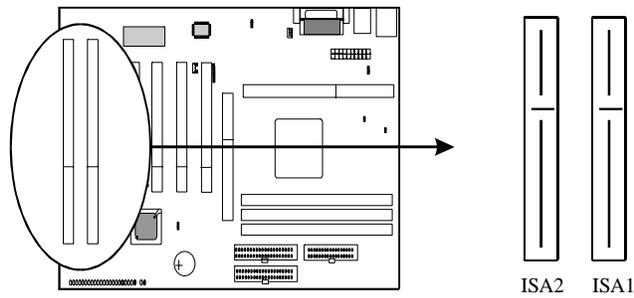
2-4-4 ATX power

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.

PS1

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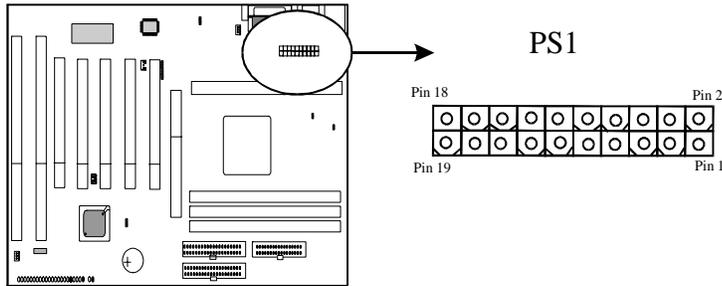
Pin	Signal	Pin	Signal
Pin 1	3.3V	Pin 2	3.3V
Pin 3	3.3V	Pin 4	-12V
Pin 5	GND	Pin 6	GND
Pin 7	5V	Pin 8	SOFT-PWR ON
Pin 9	GND	Pin 10	GND
Pin 11	5V	Pin 12	GND
Pin 13	GND	Pin 14	GND
Pin 15	RAWPOWER	Pin 16	-5V
Pin 17	5V	Pin 18	5V
Pin 19	+12V	Pin 20	5V

2-4-5 Soft-PWR (JP5)
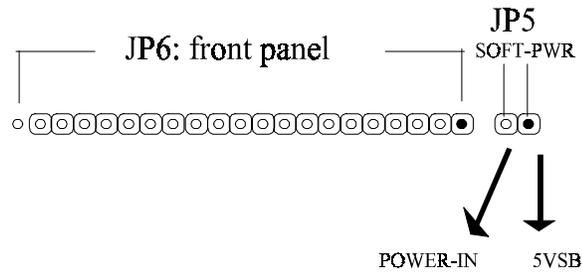
ATX soft-PWR switch connector is Soft-PWR with 2 pins.

Pin	Signal
Pin 1	5VSB
Pin 2	PWR in

2-4-6 CPU fan connectors
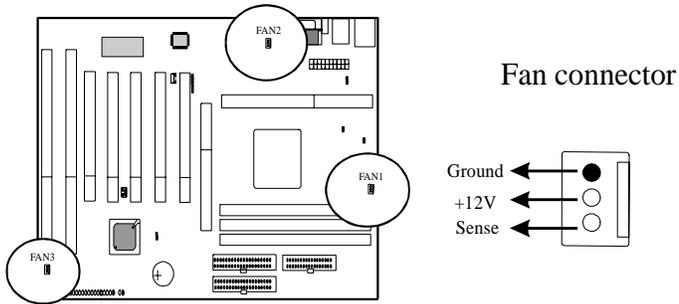
Fan connector

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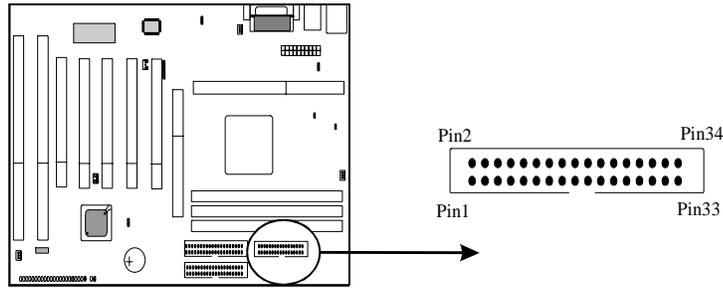
Floppy interface connector with 34 pins is used to attach the floppy drive cable.

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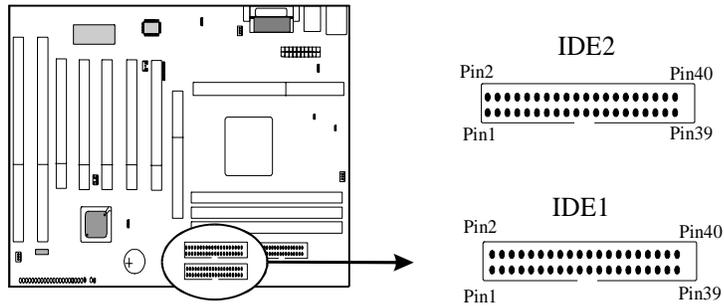
IDE 1/ IDE 2 both have 40 pins. There are 2 IDE connectors supported on this system board. IDE1 is primary channel, and IDE2 is secondary channel. Each channel supports 2 IDE devices, and 4 channels in total for this system board.

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

1 RX
2 GND
3 TX
4 +5V
5 RXH
6 VCC
7 GND
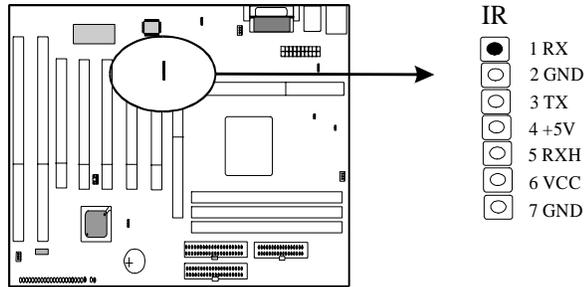
IR connector supports wireless infrared module. With this module and application software like LAPlink, or WIN95 Direct Cable Connection, user can transfer data to or from laptops, notebooks, PDA and printers. This connector supports **HPSIR**, **ASKIR,** and **Fast IR**.

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
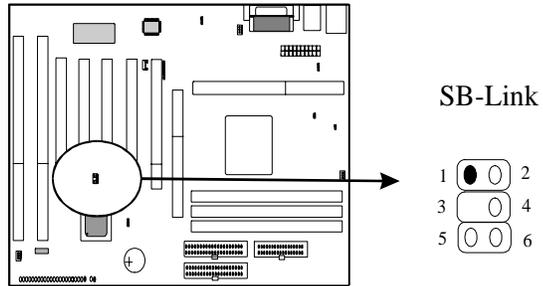
SB-Link

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#

Wake on LAN

1 5V trickle voltage
2 GND
3 PME signal
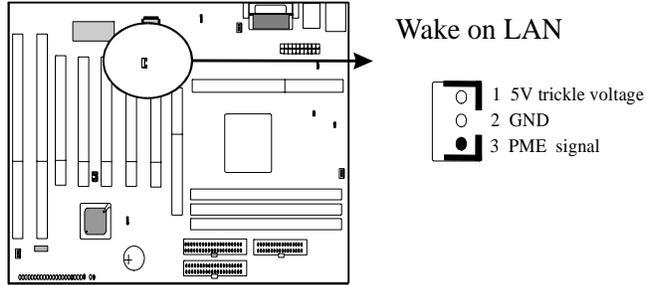
Wake on LAN, marked as **"WOL,"** is a 3-pin connector. To support this feature, a network card is required for the system. More than that, a network management software must be installed too.

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

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

2-5 DIMM memory installation
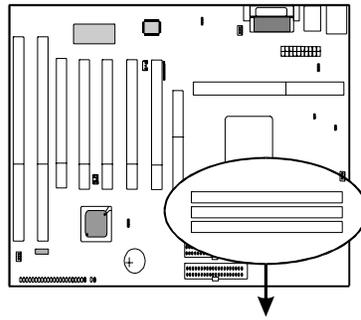
DIMM1

DIMM2

DIMM3

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.
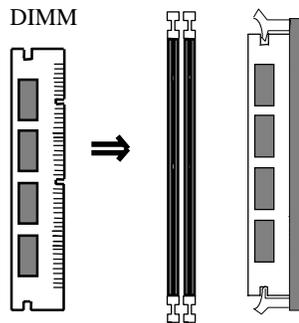
DIMM

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 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.**

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 seperate piece parts in total.**

Retention mechanism (R.M.): 2 pcs

Back side   Front side

Lock for
Klamath™

Lock for
Celeron™
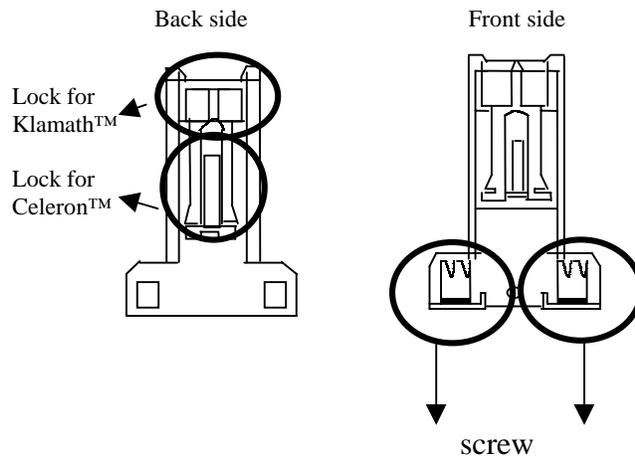
screw

RM. Attach Mount (RMAM): 2 pcs
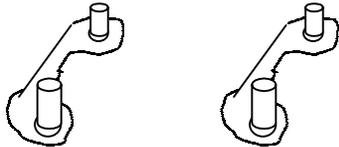
2. Make sure power is off during assembly.

3. Insert the RMAMs through the bottom of the motherboard and attach them to the retention mechanism.
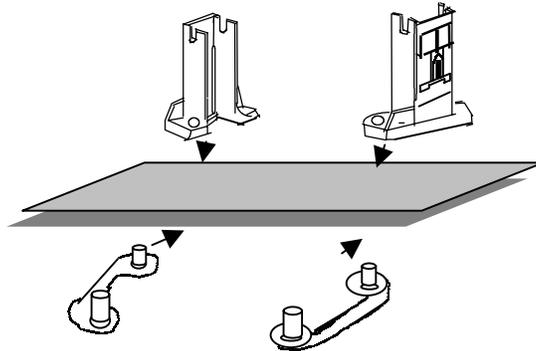
4. Fasten up the screws on the retention mechanism to tighten up retenion mechanism and RMAM. Check if all the piece parts are fastened tightly.

5. 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.

Lock for Klamath

Lock for Celeron

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

***Celeron™: use screwdriver 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 CPU will be loosen this way.
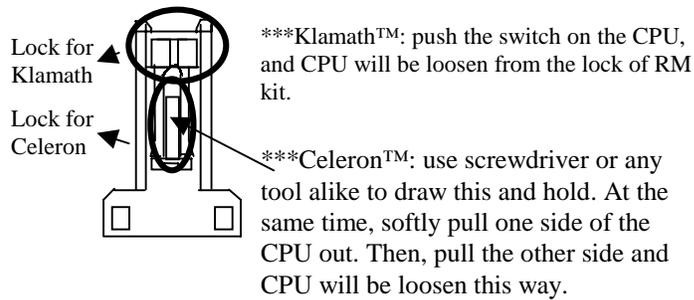
2-7 Keyboard password setup

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

Chapter 3. BIOS setup

3-1. Award BIOS CMOS setup

```
                    ROM PCI/ISA BIOS (2A69KL1A)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

    STANDARD CMOS SETUP             CPU SPEED SETTING

    BIOS FEATURES SETUP             INTEGRATED PERIPHERALS

    CHIPSET FEATURES SETUP          SUPERVISOR PASSWORD

    POWER MANAGEMENT SETUP          USER PASSWORD

    PNP/PCI CONFIGURATION           IDE HDD AUTO DETECTION

    LOAD SETUP DEFAULTS             SAVE & EXIT SETUP

                                    EXIT WITHOUT SAVING

    Esc : Quit                  ↑ ↓ → ←   : Select Item
    F10 : Save & Exit Setup     (Shift)F2 : Change Color
```

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 (2A69KL1A)
                         STANDARD CMOS SETUP
                        AWARD SOFTWARE, INC.

   Date (mm:dd:yy) : Thu, Dec 23 1999
   Time (hh:mm:ss) :  9 :  1 :  3

   HARD DISKS          TYPE    SIZE    CYLS HEAD PRECOMP LANDZ SECTOR   MODE

   Primary Master  :    0       0       0    0     0      0      0  NORMAL
   Primary Slave   :    0       0       0    0     0      0      0  NORMAL
   Secondary Master :   0       0       0    0     0      0      0  NORMAL
   Secondary Slave  :   0       0       0    0     0      0      0  NORMAL

   Drive A : None
   Drive B : None

   Video   : EGA/VGA
   Halt On : All Errors


   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 cyclinder 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 2: "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
 Processor Number Feature : Enabled    D4000-D7FFF Shadow   : Disabled
 Quick Power On Self Test : Enabled    D8000-DBFFF Shadow   : Disabled
 Boot Sequence            : A,C,SCSI   DC000-DFFFF Shadow   : Disabled
 Swap Floppy Drive        : Disabled
 Boot Up Floppy Seek      : Disabled
 Boot Up NumLock Status   : On
 Gate A20 Option          : Fast
 Typematic Rate Setting   : Disabled
 Typematic Rate (Chars/Sec) : 6
 Typematic Delay (Msec)   : 250
 Security Option          : Setup
 PCI/VGA Palette Snoop    : Disabled   ESC : Quit        ↑↓→← : Select Item
 OS Select For DRAM > 64MB : Non-OS2   F1  : Help        PU/PD/+/- : Modify
                                       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,SCCI, 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 **disabled.**

Boot Up Numlock Status
:On(default)
:Off

Gate A20 Speed
:Normal
:Fast (default)

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.

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 (2A69KL1A)
                      CHIPSET FEATURES SETUP
                       AWARD SOFTWARE, INC.

 Auto Configuration      : Enabled    Auto Detect DIMM/PCI Clk : Disabled
 EDO DRAM Speed Selection : 60ns      Spread Spectrum          : Disabled
 EDO CASx# MA Wait State  : 2         CPU Warning Temperature  : Disabled
 EDO RASx# Wait State     : 1         Shutdown Temperature     : 60°C/140°F
 SDRAM RAS-to-CAS Delay   : 3         Current CPU Temperature  :
 SDRAM RAS Precharge Time : 3         Current CPUFAN2 Speed    :
 SDRAM CAS latency Time   : 3         Current CPUFAN1 Speed    :
 SDRAM Precharge Control  : Disabled  Current Vin3(V)          :
 DRAM Data Integrity Mode : Non-ECC   Current Vin1(V)          :
 System BIOS Cacheable    : Enabled   Current Vin2(V)          :
 Video  BIOS Cacheable    : Enabled   Current Vdd(V)           :
 Video RAM Cacheable      : Disabled
 8 Bit I/O Recovery Time  : 1
 16 Bit I/O Recovery Time : 2
 Memory Hole At 15M-16M   : Disabled
 Passive Release          : Enabled   ESC : Quit       ↑↓→← : Select Item
 Delayed Transaction      : Disabled  F1  : Help        PU/PD/+/- : Modify
 AGP Aperture Size (MB)   : 256       F5  : Old Values  (Shift)F2 : Color
                                      F7  : Load Setup Defaults
```

Auto configuration
BIOS will automatically detect the CPU speed and will auto-configurate 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)

CDS 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.
:128M(default)
: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.
:60^0 C/140^{0}F (default)
:65^0 C/149^{0}F, 70^0 C/158^{0}F, 75^0 C/167^{0}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/ CPU FAN3 , Current
Vin3(V)/ Vin2(V)/VIN(1)/Vdd(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      ** Reload Global Timer Events **
Power Management      : User Define  IRQ[3-7,9-15],NMI   : Disabled
PM Control by APM     : Yes          Primary IDE 0       : Disabled
Video Off Method      : V/H SYNC+Blank Primary IDE 1     : Disabled
Video Off After       : Standby      Secondary IDE 0     : Disabled
MODEM Use IRQ         : 3            Secondary IDE 1     : Disabled
Doze Mode            : Disable       Floppy Disk         : Disabled
Standby Mode         : Disable       Serial Port         : Enabled
Suspend Mode         : Disable       Parallel Port       : Disabled
HDD Power Down       : Disable
Throttle Duty Cycle  : 62.5%
PCI/VGA Act-Monitor  : Disabled
Soft-Off by PWR-BTTN : Instant-Off
CPUFAN Off In Suspend: Disabled
PowerOn by Ring      : Disabled
Resume by Alarm      : Disabled      ESC : Quit         ↑↓→← : Select Item
                                     F1  : Help         PU/PD/+/- : Modify
Wake Up On LAN       : Disabled      F5  : Old Values   (Shift)F2 : Color
IRQ 8 Break Suspend  : Disabled      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.

> **Note1:** 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 (default)**, Blank Screen, V/H Sync+Blank**

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: disble 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 (2A69KL1A)
                      PNP/PCI CONFIGURATION
                      AWARD SOFTWARE, INC.

 PNP OS Installed        : No
 Resources Controlled By : Manual
 Reset Configuration Data : Disabled    Used MEM base addr  : N/A

 IRQ-3  assigned to : PCI/ISA PnP       Assign IRQ For USB  : Enabled
 IRQ-4  assigned to : PCI/ISA PnP       Assign IRQ For VGA  : Enabled
 IRQ-5  assigned to : PCI/ISA PnP
 IRQ-7  assigned to : PCI/ISA PnP
 IRQ-9  assigned to : PCI/ISA PnP
 IRQ-10 assigned to : PCI/ISA PnP
 IRQ-11 assigned to : PCI/ISA PnP
 IRQ-12 assigned to : PCI/ISA PnP
 IRQ-14 assigned to : PCI/ISA PnP
 IRQ-15 assigned to : PCI/ISA PnP
 DMA-0  assigned to : PCI/ISA PnP
 DMA-1  assigned to : PCI/ISA PnP       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

AM-BX2V   50

: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)
: Legancy 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

```
                    ROM PCI/ISA BIOS (2A69KL1A)
                       INTEGRATED PERIPHERALS
                        AWARD SOFTWARE, INC.

  IDE HDD Block Mode      : Enabled    KBC input clock          : 8 MHz
  IDE Primary Master PIO  : Auto       Onboard FDC Controller   : Enabled
  IDE Primary Slave  PIO  : Auto       Onboard Serial Port 1    : Auto
  IDE Secondary Master PIO : Auto      Onboard Serial Port 2    :
  IDE Secondary Slave  PIO : Auto      UART Mode Select         :
  IDE Primary Master UDMA  : Auto      UART2 Duplex Mode        : Half
  IDE Primary Slave  UDMA  : Auto      RxD , TxD Active         : Hi,Lo
  IDE Secondary Master UDMA: Auto      IR Transmission delay    : Enabled
  IDE Secondary Slave  UDMA: Auto      Onboard Parallel Port    :
  On-Chip Primary  PCI IDE: Enabled    Parallel Port Mode       :
  On-Chip Secondary PCI IDE: Enabled   ECP Mode Use DMA         : 3
  USB Keyboard Support     : Disabled  EPP Mode Select          : EPP1.7
  Init Display First       : AGP

  POWER ON Function     :
  KB Power ON Password     : Enter     ESC : Quit        ↑↓→← : Select Item
  Hot Key Power ON         : Ctrl-F1   F1  : Help        PU/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.
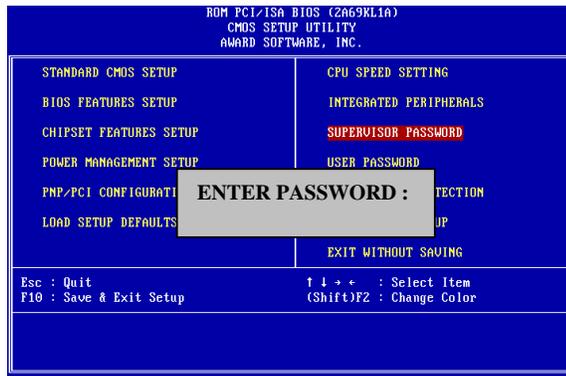
Step 2: **Confirm Password**

Typing the password again and pressing **<Enter>** .


```
          ROM PCI/ISA BIOS (2A69KL1A)
            CMOS SETUP UTILITY
            AWARD SOFTWARE, INC.

  STANDARD CMOS SETUP          CPU SPEED SETTING

  BIOS FEATURES SETUP          INTEGRATED PERIPHERALS

  CHIPSET FEATURES SETUP       SUPERVISOR PASSWORD

  POWER MANAGEMENT S
                        CONFIRM PASSWORD:
  PNP/PCI CONFIGURAT                          TION

  LOAD SETUP DEFAULT

                               EXIT WITHOUT SAVING

  Esc : Quit              ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup  (Shift)F2 : Change Color
```
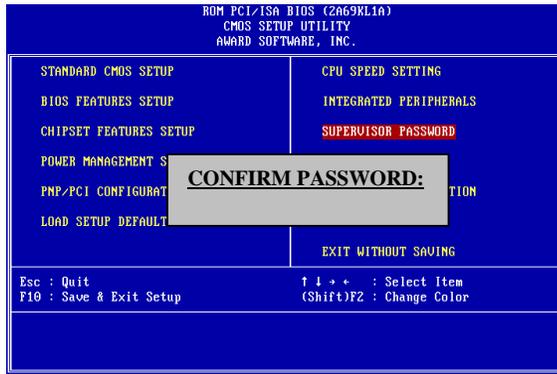
Step 3: Set **"Security Option"** in **"BIOS Features Setup"** (refer to page 40).

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 sytem and password is required during system boot- up in addition to CMOS setup.


```
             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
  Processor Number Feature : Enabled  D4000-D7FFF Shadow  : Disabled
  Quick Power On Self Test : Enabled  D8000-DBFFF Shadow  : Disabled
  Boot Sequence          : A,C,SCSI   DC000-DFFFF Shadow  : Disabled
  Swap Floppy Drive      : Disabled
  Boot Up Floppy Seek    : Disabled
  Boot Up NumLock Status : On
  Gate A20 Option        : Fast
  Typematic Rate Setting : Disabled
  Typematic Rate (Chars/Sec) : 6
  Typematic Delay (Msec) : 250
  Security Option        : Setup
  PCI/VGA Palette Snoop  : Disabled   ESC : Quit      ↑↓←→ : Select Item
  OS Select For DRAM > 64MB : Non-OS2  F1  : Help      PU/PD/+/- : Modify
                                        F5  : Old Values (Shift)F2 : Color
                                        F7  : Load Setup Defaults
```

Note: If you forget password, please clear CMOS.
(refer to page11 for **RTC1**)

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 CONTINUNE."** Thus, press any key as instructed. Password disable this way.


```
                    ROM PCI/ISA BIOS (2A69KL1A)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP           CPU SPEED SETTING

   BIOS FEATURES SETUP           INTEGRATED PERIPHERALS

   CHIPSET FEATURES SETUP        SUPERVISOR PASSWORD

   POWER MANAGEMENT SETUP        USER PASSWORD

   PNP/PCI        PASSWORD DISABLED!!!
                  PRESS ANY KEY TO CONTINUE...
   LOAD SE

                                 EXIT WITHOUT SAVING

   Esc : Quit                    ↑ ↓ → ←  : Select Item
   F10 : Save & Exit Setup       (Shift)F2 : Change Color
```

3-9. IDE HDD Auto Detection

```
                     ROM PCI/ISA BIOS
                    CMOS SETUP UTILITY
                   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:

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.*

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

Timer channel 0 system timer interrupt
Timer channel 1 DRAM refresh request
Timer channel 2 speaker tone generator

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

NIMI: 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	
30	Reserved 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
34	1024	12	65535	1023	17	106MB
35	1024	13	65535	1023	17	115MB

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
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)
6E2 - 6E3	Data Acquisition Adapter 1
790 - 793	Cluster Adapter 1
AE2 - AE3	Data Acquisition Adapter 2

I/O Address (HEX)	I/O device
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 question 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 the question user always come out with. **Q** is for question. **A** is for answer.

Q: Why can't my AGP card work under Win 95?
A: Windows 95 OSR2.0 does not support AGP function. You must install "USB support" file to enable this function. After installing, choose "enable for **"ASSIGN IRQ FOR USB" in BIOS PNP/PCI configuration setup.**

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

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

Version 2, June 1991

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Zmak Linux Version 6.0/Auto installation

January 10 2000

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