6VA693T
ATX Form Factor
Main Board
User's   Manual

Copyright

Warning and disclaimer

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Trademarks

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Chapter 1 Introduction

1-1   Main Board Overview

The main board utilizes VIA 693 chipset designed for Pentium® II and Pentium® III CPUs 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 either 384 MB (SDRAM) or 384 MB (EDO RAM). The main board using the Slot-1 socket, accepts Intel® Pentium® II (66/100 MHz) & Pentium® III (100MHz) processors, also supports to 66/100 MHz socket-370 type Celeron CPUs too. Built-in second level (L2) cache in CPU, there is no cache necessary in this system board.

The main board has implemented VIA VT82C596A high performance I/O Controller utilizes with fully Plug and Play device which supports 2.88 MB Floppy, Dual 16550 Compatible (with 16 bytes FIFO, up to 460K baud rate) Serial Port, ECP (Enhanced Capabilities Port), EPP (Enhanced Parallel Port) parallel port, Infrared IrDA (HPSIR), Amplitude Shift Keyed IR. (ASKIR) port and Audio.

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

Ultra DMA/66 is an optional function which is specified VT82C596B chipset.

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

In conclusion, 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.

1-2 Reference For 100MHz Front Side Bus(FSB) Pentium® II/III CPUs

The main board supports 100MHz Slot-1 type PII/III Intel® and Socket370 type Celeron PII CPUs too. The Pentium® II and Pentium™ III processors deliver more performances than previous generation processors (such as Pentium®, Pentium® MMX™, etc…) through an innovation called Dynamic Execution Architecture. It is improved by 3D visualization and interactive capabilities required by present high-end commercial and technical applications and future's emerging applications as well.

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

Intel® Processors 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
450-600 MHz	350- 450 MHz	233-333 MHz	300 & 333 MHz	266- 300 MHz

Note1: CPU is not enclosed in the package

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

1-3 Specifications

- **PCB board size:** 30.5 cm x 18.00 cm

- **PCB layer:** 4 layers

- **Slot-1 socket**
  Support Intel® Pentium® II CPU at 66 MHz/100 MHz F.S.B and
  Pentium®III 100MHz F.S.B.

    CPU is not enclosed in the package

- **Socket 370 :** Support 66MHz/100MHz FSB Celeron^{TM} PPGA processors..

- **Memory DIMM:** 3 of 168-pin 3.3V DIMM
    - **Professional PC**
    *100 MHz freq. : PC-100 DIMM
    * 66 MHz freq. : SDRAM up to 384MB

    PC-100 DIMM is required for 100 MHz F.S.B. CPUs.

    - **Basic PC: 66 MHz freq.**
    * SDRAM up to 384MB

- **Expansion Slot :** 2x ISA, 4 x PCI slots, and 1x A.G.P. slot

- **Chipset**
    - VIA VT82C693
    - VIA VT82C596A or VT82C596B(supports to Ultra DMA-66)

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

    This main board can't take both Slot-1 & Socket-370 CPUs simultaneously.

- **I/O function**
  - 2 x PCI IDE devices
  - 1 x FDC, 2 x serial ports(16550 fast com)
  - 1x parallel port device /EPP/ECP/SPP
  - 2x USB connector
  - IrDA (infrared) connector
  - Audio function

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

- **ATX form factor**
  The ATX form factor has been defined to address four major areas of improvement required of today's predominant form factors.
  - Enhance PC ease-of-use with all built-in I/O connector
  - Better support for current and future I/O
  - Reduce total system cost
  - Better support for future processor technology

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

- **Power supply regulation**
  Onboard switching voltage that supports appropriate power to the CPU and future upgraded CPUs.

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

- **Electrical--- Typical power supply**
  Below is reference for ATX case requirement on power supply.

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

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

- **Special features**
  - Wake up on LAN
  - Modem ring on
  - Windows 95/98 power off

1-4 Notice of Hardware Installation

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

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

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

B. Make sure power is off.
During hardware installation, be sure there is no power connected at this period.

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

1-5 Notice of CD Driver Installation

This CD contains drivers as below. Read **"Index"** before installing required drivers. "Index" file is HTML format.

📁 5gxm	📁 Banshee	📁 Cm2	📁 Dx61	📁 Flashrom	📁 G1518sm
📁 I440lx	📁 I810	📁 Pccillin	📁 S-6326	📁 Sis530	📁 Sis620
📁 T-9850	📁 Via691	📁 Via692-3	📁 Via693a	📁 Viamvp4	📁 Viavpx
📁 Vp3-mvp3	📁 xstore	📁 Ymf744	📄 index	📄 README	📄 README
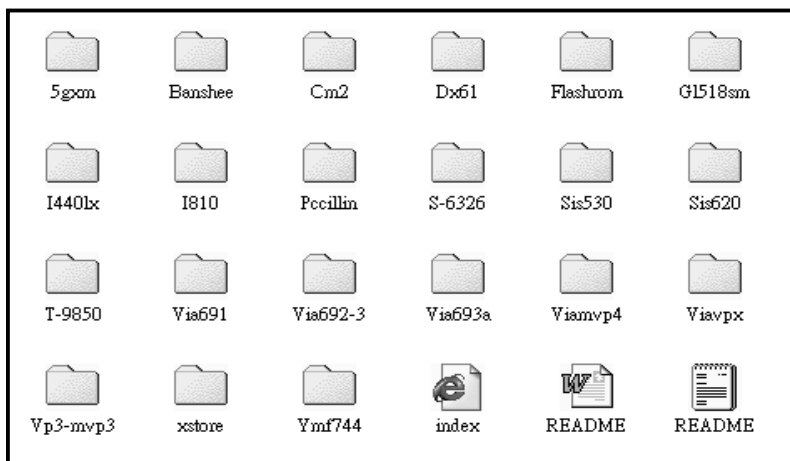
CD driver is always updated with the latest version, so the actual CD content may have some difference with the above picture.

1. **Main boards:** i440LX, i810, VIA® VPX, VP3, VIA®691, VIA692-3 and VIA®693A main boards
2. **A.G.P cards:** S- 6326 and T985
3. **Solo-1:** ESS-solo-1 sound driver
4. **Pccillin:** anti- virus protection software

For this main board. Please take directory "VIA692-3".

Chapter 2   Installation

2-1   Layout Reference

COM2/4-COM1/3 USB

KB & MOUSE

IR1

ISA2 ISA1

LPT

PW1

PCI4 PCI3 PCI2 PCI1

AGP1

SLOT1

BIOS

VT82C693

J5

VT82C596A

PGA370

FAN1

JP10

DIMM1

DIMM2

J7

FAN2

FDC

IDE1

IDE2
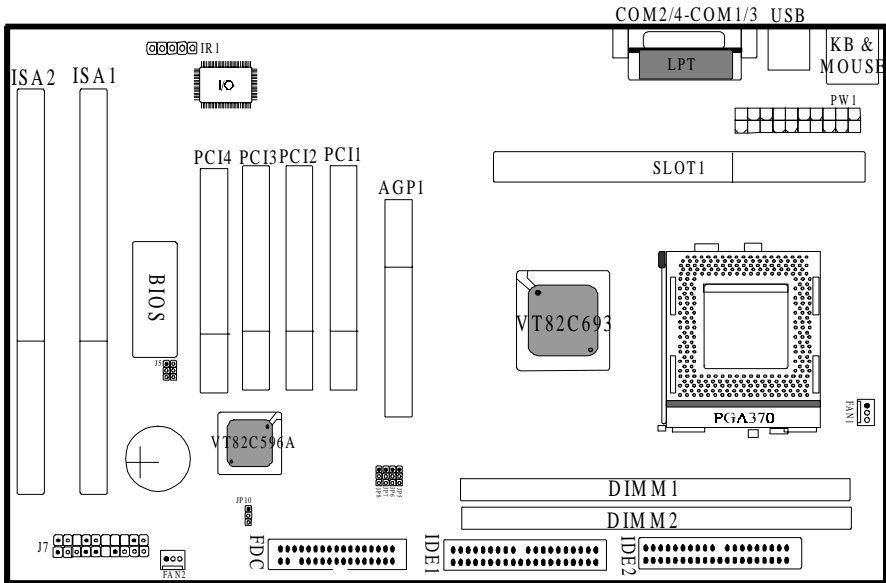
2-2 Jumper Setting

User only needs to set **"CPU Working Frequency"** by setting JP5, JP6, JP8 and sets CPU Ratio in Bios, CPU Vcore is auto-detected by Bios. Please refer it as below.

2-2-1 JP5 – JP8 : CPU Working Frequency

According to CPU specification, user can set different working frequencies as below. This setting is available for both Slot-1 & S-370 type CPUs.
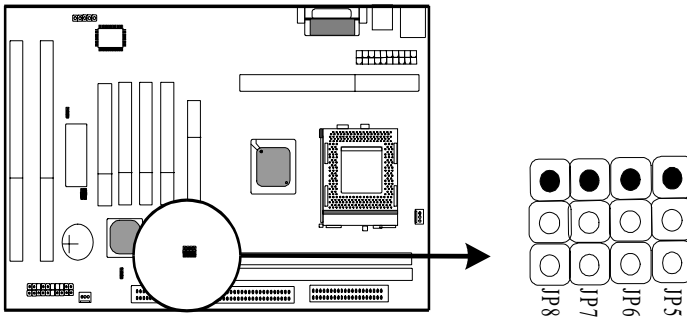
	JP5	JP6	JP8
100 MHz	1-2	1-2	1-2
83 MHz	1-2	2-3	2-3
66 MHz	1-2	1-2	2-3

JP7
2-3 (default)
Set 1-2 for 133MHz (when chipset is VT82C693A)

2-2-2 JP10 - CMOS Status

JP10 is a 3-pin connector. Clear CMOS if system password is forgotten. Below is details to show how to clear CMOS.

CMOS Status

1-2:normal   2-3:clear CMOS
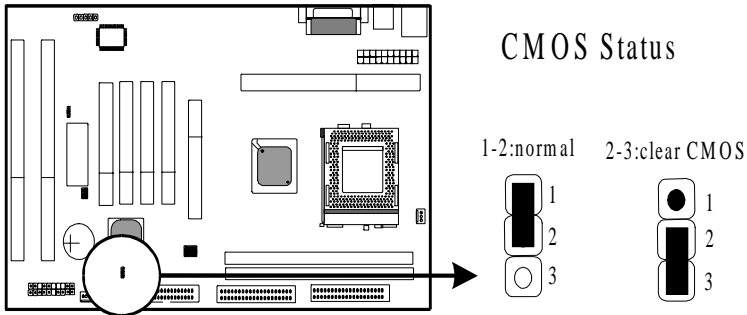
Procedure to clear CMOS:
Step 1: Shut down the system and disconnect the power supply from AC power.
Step 2: Pull out the ATX cable from ATX connector "PW1"
Step 3: Short the CMOS jumper by putting jumper cap on Pin 2-3 for a few seconds.
Step 4: Return to pin 1-2 for normal setup.
Step 5: Link ATX power cable to ATX connector & connect AC power to power supply.
Step 6: Turn on system power.

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

2-3　Connectors

2-3-1　Front Panel

Front panel has connectors as "PW-LED," "KEYLOCK," "SPEAKER," "PWR SW.," "HDD-LED," and "RESET". Please refer to details as below.

PWR SW. HDD-LED   RESET

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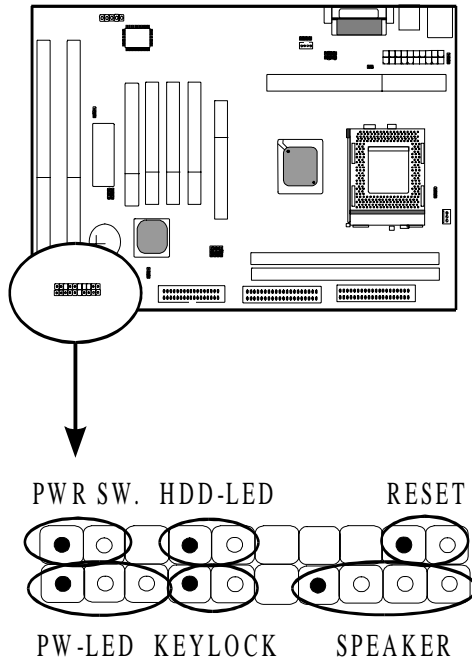
PW-LED is a 3-pin connector. It is used to connect the LED on the case front panel. The LED shows the status of the power.

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. Set to "on" to disconnect the connector with the system and "off" for normal status.

SPEAKER is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the main board for sound purpose.

POWER SW. is a 2-pin connector, which connects to the case-mounted.

HDD-LED (Hard Disk activity LED connector) is a 2-pin keyed Berg strip. It is used to connect to Hard Disk LED of the front panel.

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

2-3-2 Back Panel

There are COM1, COM2, LPT, USB and keyboard/ mouse and CN2 on the case back panel.   Please refer to more details as below.
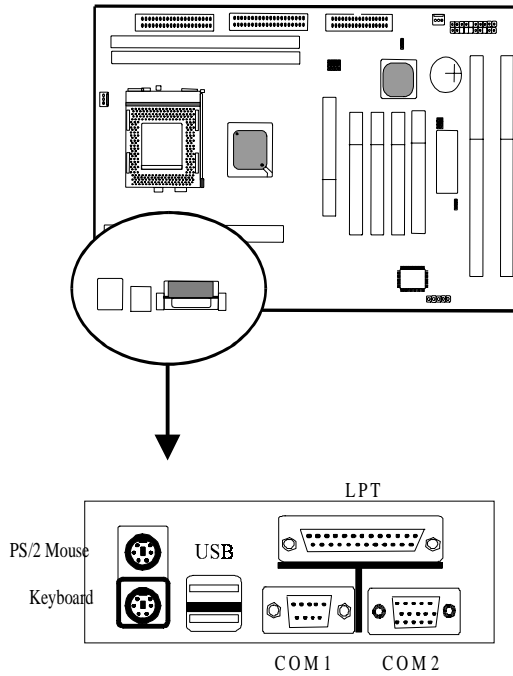
KBD/PS2 Mouse

The onboard PS/2 keyboard and mouse are 6-pin Mini-Din connectors.

USB(Universal Serial Bus)

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

COM1, COM2

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

LPT(Parallel Port)

The onboard parallel port is a 25-pin female connector. It supports standard printer port, Enhanced Parallel Port(EPP), Extended Capabilities Port(ECP), Standard Parallel Port(SPP).

2-3-3 Expansion Slots

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

AGP1 Slot

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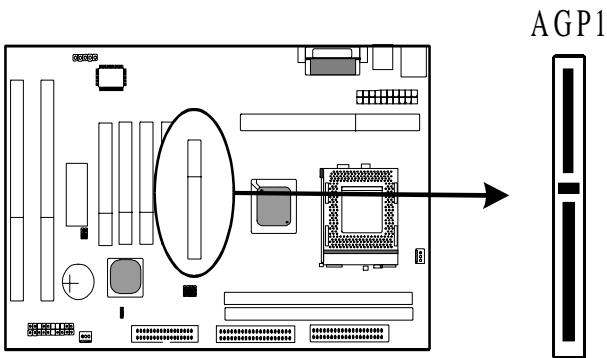
PCI Slots

There are four PCI slots on board; 3 are "master" bus and one is "slave." 133MB/s data transfer rate on PCI bus can be compared to 33MB/s on EISA bus or 8MB/s on ISA bus. PCI interface has synchronous data transfer rate from CPU to PCI with good graphic performance.

PCI Slots

PCI 3
Bus master

PCI 1
Bus master

PCI 4
Bus slave

PCI 2
Bus master
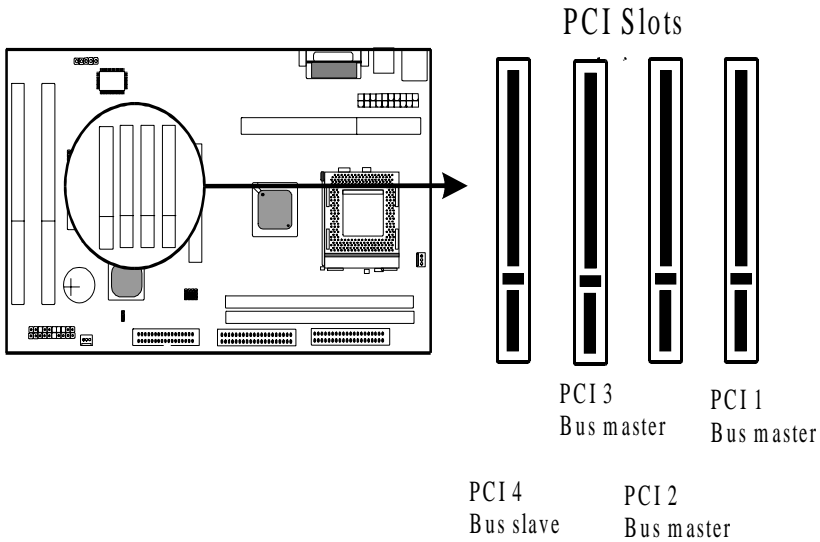
While plugging into 4 PCI add-on cards, PCI 1- PCI 3 are master bus and PCI4 is slave bus. If there are 3 PCI add-on cards (or below 4 cards), all of them are master bus.

ISA Slots

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

ISA

ISA2   ISA1
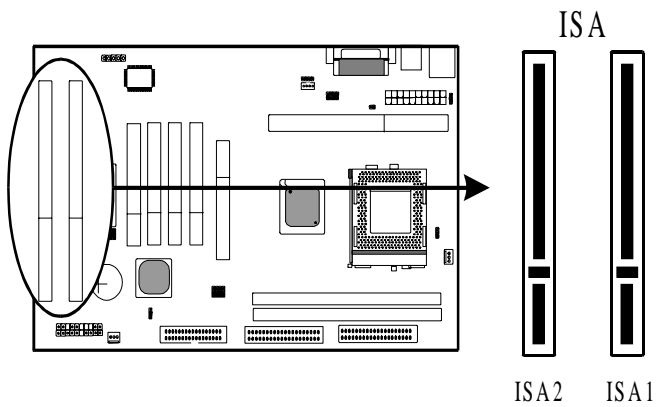
2-3-4 ATX Power Supply Connector

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

ATX POWER
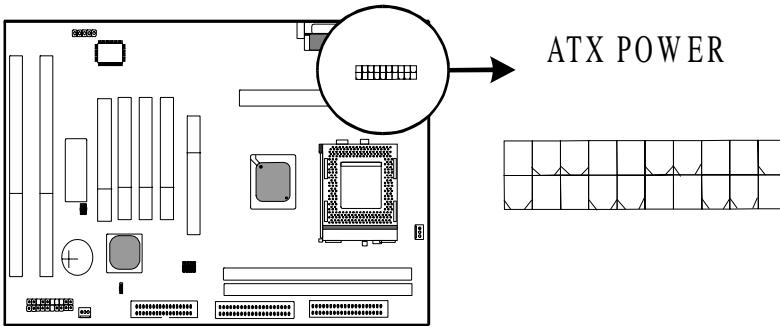
2-3-5 CPU Fan Connectors

There are 2 fan connectors on this system board, and they are marked **"FAN 1," and "FAN2".** Each fan connector has three pins.

Fan Signal

SENSE
+12V
GND

Fan 1

Fan 2
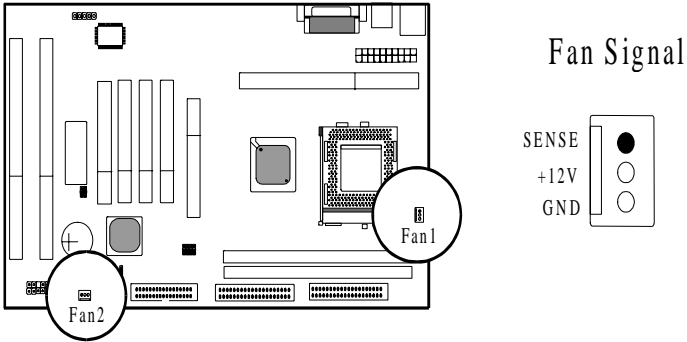
2-3-6   Floppy Disk Connector

Floppy Disk Connector with 34 pins is used to attach the floppy drive cable.

FDC
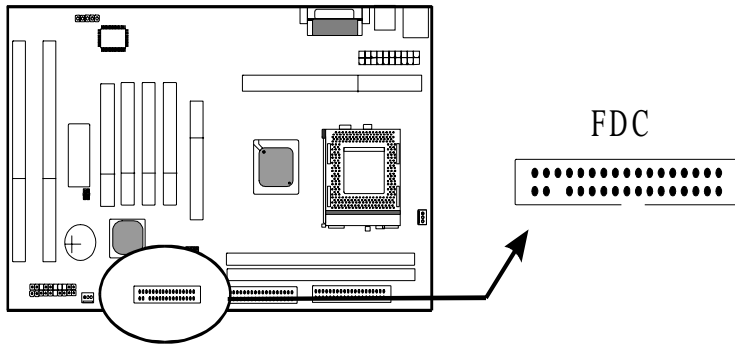
2-3-7 IDE1 and IDE2

IDE 1/ IDE 2 both have 40 pins. There are 2 IDE connectors supported on this system board. IDE1 is primary channel, and IDE2 is secondary channel. Each channel supports 2 IDE devices, and 4 devices in total for this main board.
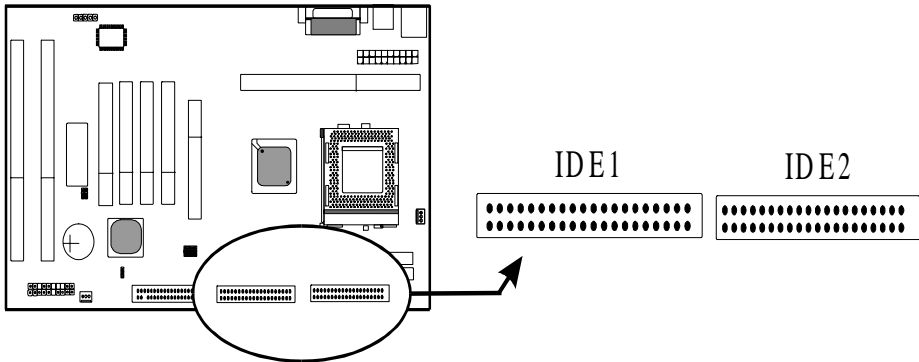
2-3-8   IR Connector

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

Attach Infrared module to IR connector and enable BIOS "Infrared function." Be sure to put in the right orientation during attachment.
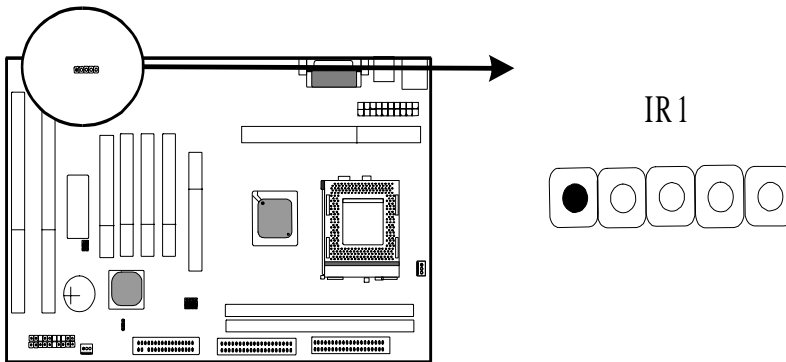
2-4 DIMM Memory Installation

Please make sure DIMM is 3.3V DIMM. Both DIMM1 and DIMM2 support 8 MB, 16 MB, 32 MB, 64 MB, and 128MB. Maximum memory for **SDRAM is up to 512 MB.** The user may insert DIMM modules in either DIMM1, or DIMM2.

Insert the module as shown. Due to different number of pins on either side of the breaks, the module will only fit in the direction as shown. SDRAM DIMM modules have different pin contacts on each side and therefore have a higher pin density.
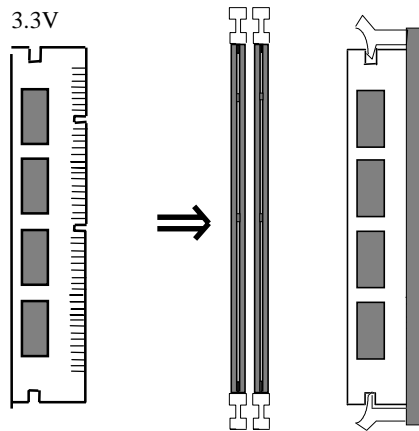
SDRAM memory supports PC-100 DIMM or above.

2-5　CPU RM Kit Assembling Procedure

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

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

Retention Mechanism (R.M.): 2 pcs

Back side　　　　　　　Front side

Lock for
Klamath &
Deschutes

Lock for
Celeron &
SECC-II
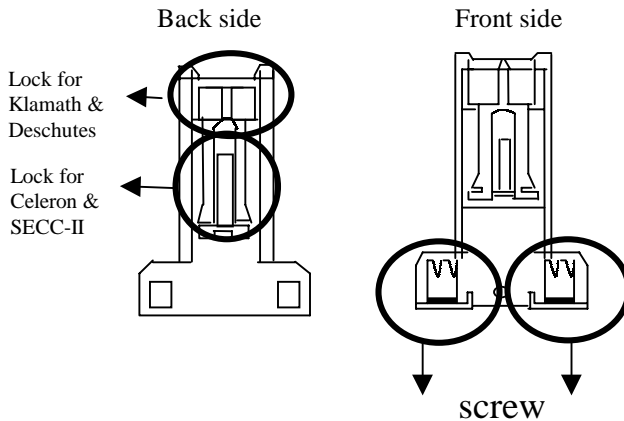
screw

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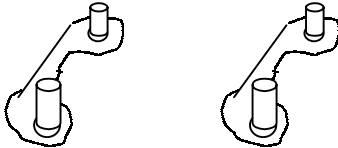
2. Make sure power is off during assembly.

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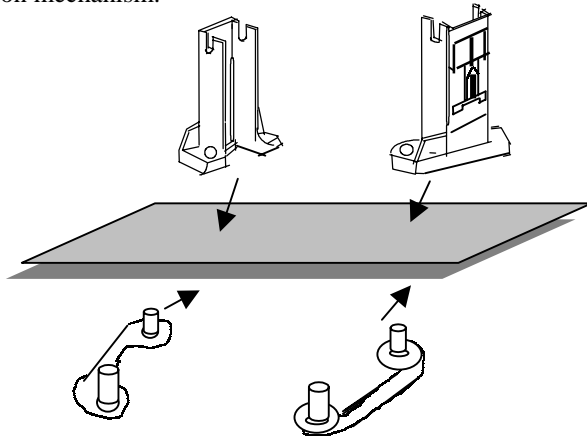
4. Fasten up the screws on the retention mechanism to tighten up retenion mechanism and RMAM. Check if all the piece parts are fastened tightly.

5. Put the CPU in the RM kit. (Push the CPU horizontally into the RM kit.)

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

Lock for Klamath & Katmai
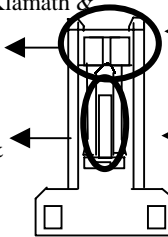
Lock for Celeron & SECC-II

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

***Celeron™ & SECC-II: use screw driver or any tool alike to draw this and hold. At the same time, softly pull one side of the CPU out. Then, pull the other side and CPU will be loosen this way.

Chapter 3   BIOS Setup

3-1   Award BIOS CMOS Setup

The menu displays all the major selection items and allow user to select any 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.

```
                    ROM PCI/ISA BIOS (2A6LG009)
                         CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP            INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP            SUPERVISOR PASSWORD

   CHIPSET FEATURES SETUP         USER PASSWORD

   POWER MANAGEMENT SETUP         IDE HDD AUTO DETECTION

   PNP/PCI CONFIGURATION          SAVE & EXIT SETUP

   LOAD SETUP DEFAULTS            EXIT WITHOUT SAVING


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

3-2 Standard CMOS Setup

The **"Standard CMOS Setup"** allows user to configure system setting such as **current date** and **time, type of hard disk drive** installed in the system, **floppy drive type,** and the type of **display monitor.** Memory size is auto detected by the BIOS and displayed for your reference. When a field is highlighted (direction keys to move cursor and **<Enter>** key to select). The entries in the field will be changed by pressing **<PageDown>** or **<PageUp>** key or user can enter new data directly from the keyboard.

```
                    ROM PCI/ISA BIOS (2A6LGB09)
                         STANDARD CMOS SETUP
                       AWARD SOFTWARE, INC.

   Date (mm:dd:yy) : Thu, Sep  2 1999
   Time (hh:mm:ss) : 16 : 53 : 2

   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
```

Hard Disk Configurations

1.TYPE   : Select **"USER"** to fill the remaining fields. Select **"AUTO"** to detect the HDD type automatically. Selecting **"NONE,"** the system will not detect hard disk type.

2.SIZE   : the hard disk size. The unit is mega byte(MB).

3.CYLS   : the cylinder number of the hard disk.

4.HEAD   : the read/write head number of hard disk. The range is from **"1" to "16".**

5.PRECOMP: the cylinder number at which the disk drive changes the writing time.

6.LANDZ   : the cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.

7.SECTOR : the sector number of each track defined on the hard disk. The range is from **"1"** to **"64".**

8.MODE   : select **"AUTO"** to detect the mode type automatically. If your hard disk supports the **LBA** mode, select **"LBA"** or **"LARGE".** However, if your hard disk 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 (2A6LG009)
                         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   : Disabled    D8000-DBFFF Shadow  : Disabled
Boot Sequence              : A,C,SCSI    DC000-DFFFF Shadow  : Disabled
Swap Floppy Drive          : Disabled
Boot Up Floppy Seek        : Enabled
Boot Up NumLock Status     : On
IDE HDD Block Mode         : Enabled
Gate A20 Option            : Normal
Memory Parity/ECC Check    : Disabled
Typematic Rate Setting     : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec)     : 250          ESC : Quit         ↑↓←→ : Select Item
Security Option            : Setup        F1  : Help         PU/PD/+/- : Modify
PCI/VGA Palette Snoop      : Disabled     F5  : Old Values   (Shift)F2 : Color
OS Select For DRAM > 64MB  : Non-OS2      F7  : Load Setup Defaults
```

Anti- Virus Protection
:Enabled
:Disabled (default)

CPU Internal Cache
:Enabled --- enable L1 cache (default)
: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 (default) **---** 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 **enabled.**

Boot Up Numlock Status
:On(default)
:Off

Gate A20 Option
: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.

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
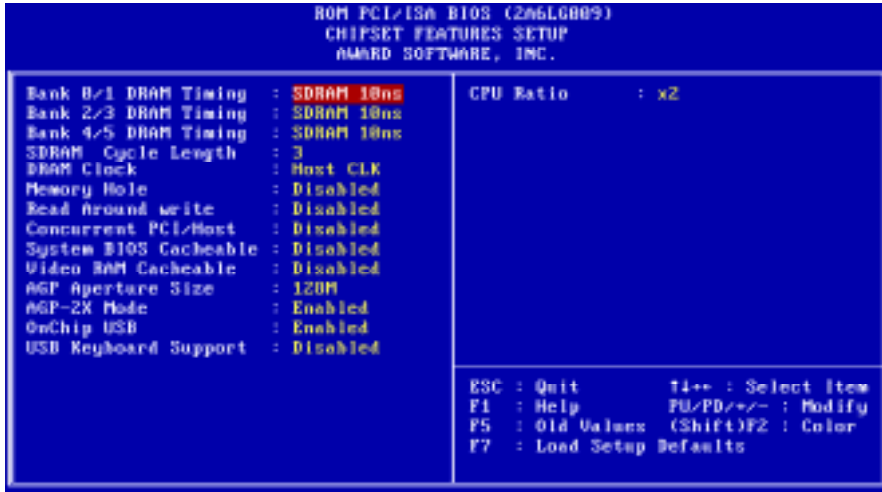
Bank 0/1(2/3, 4/5) DRAM Timing
This will determine the timing of SDRAM. The user can separately adjust the timing of bank 0/1, 2/3, 4/5.
: SDRAM 10ns (default)**—10^{-9} nano second**
: SDRAM 8ns, normal, medium, fast, turbo

SDRAM Cycle Length: control the DRAM page missing and row miss leadoff timing.
:2
:3 (default)

DRAM Clock
:Host CLK (default)
System shows the actual DRAM speed the system uses.
:HCLK-33M
:HCLK+33M
Please check DRAM clock for optimize selection.

Memory Hole : this field enable a memory hole in main memory space. CPU cycles matching an enabled hold are passed on to PCI note that a selected can not be changed while the L2 cache is enabled.
:Disabled (default)
:15M-16M

Read Around write
:Disabled (default)
:Enabled

Concurrent PCI/Host
:Disabled(default)
:Enabled

System BIOS cacheable
Define whether system BIOS area cacheable or not.
:Disabled (default)
:Enabled

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

AGP Aperture Size
To select the size of the Accelerated Graphics Port (AGP) aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.
:128M(default)
:64M, 32M, 16M, 8M, 4M

AGP-2X Mode
:Enabled (default)
:Disabled

OnChip USB
:Enabled (default)
Enabling this function adds the function of **"USB Keyboard Support."**
:Disabled

USB Keyboard Support
:Disabled (default)
:Enabled--- enable this function when using USB keyboard

3-5 Power Management Setup

```
                  ROM PCI/ISA BIOS (2A6LGO09)
                     POWER MANAGEMENT SETUP
                      AWARD SOFTWARE, INC.

 ACPI function      : Enabled      Primary INTR        : ON
 Power Management   : User Define  IRQ3  (COM 2)        : Primary
 PM Control by APM  : Yes          IRQ4  (COM 1)        : Primary
 Video Off After    : Suspend      IRQ5  (LPT 2)        : Primary
 Video Off Method   : V/H SYNC+Blank IRQ6 (Floppy Disk): Primary
 MODEM Use IRQ      : 3            IRQ7  (LPT 1)        : Primary
 Soft-Off by PWRBTN : Instant-Off  IRQ8  (RTC Alarm)   : Disabled
 HDD Power Down     : Disable      IRQ9  (IRQ2 Redir)  : Secondary
 Doze Mode          : Disable      IRQ10 (Reserved)    : Secondary
 Suspend Mode       : Disable      IRQ11 (Reserved)    : Secondary
       ** PM Events **             IRQ12 (PS/2 Mouse)  : Primary
 VGA                : OFF          IRQ13 (Coprocessor) : Primary
 LPT & COM          : LPT/COM      IRQ14 (Hard Disk)   : Primary
 HDD & FDD          : ON           IRQ15 (Reserved)    : Disabled
 DMA/master         : OFF
 Modem Ring Resume  : Disabled     ESC : Quit       ↑↓→← : Select Item
 RTC Alarm Resume   : Disabled     F1  : Help        PU/PD/+/- : Modify
                                   F5  : Old Values  (Shift)F2 : Color
                                   F7  : Load Setup Defaults
```

ACPI function
:Disabled
:Enabled (default)

Power Management
--users can configure their own power management
:User Define(default)
:Min Saving
:Max Saving
:Disabled

PM Control By APM
No : system BIOS will ignore APM.
Yes : (default) system BIOS will wait for APM's prompt before it enter any PM mode, e.g. Doze, standby or suspend.

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.

Video Off After
:Standby, Doze, NA, Suspend (default)

Video Off Method
:DPMS
:Blank Screen
:V/H SYNC+Blank (default)

MODEM Use IRQ
:3 (default)
:4, 5, 7, 9,10,11, NA

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

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

Modem Ring Resume
Enabled: modem ring on function--- system can be turned on through modem.
Disable(default): disable this function.

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

RTC Alarm Resume: auto power on at the appointed date and time.
Enabled: key in the date of current month and time of the day. System will turn on then.
Disabled (default): disable this function.

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

Primary INTR
:on (default)
Select "on," it adds the following functions, **"IRQ3 (COM2)- IRQ15 (Reserved)."**
:off
Select "off," **"IRQ3 (COM2)- IRQ15 (Reserved)"** will not show.

3-6   PNP / PCI Configuration Setup
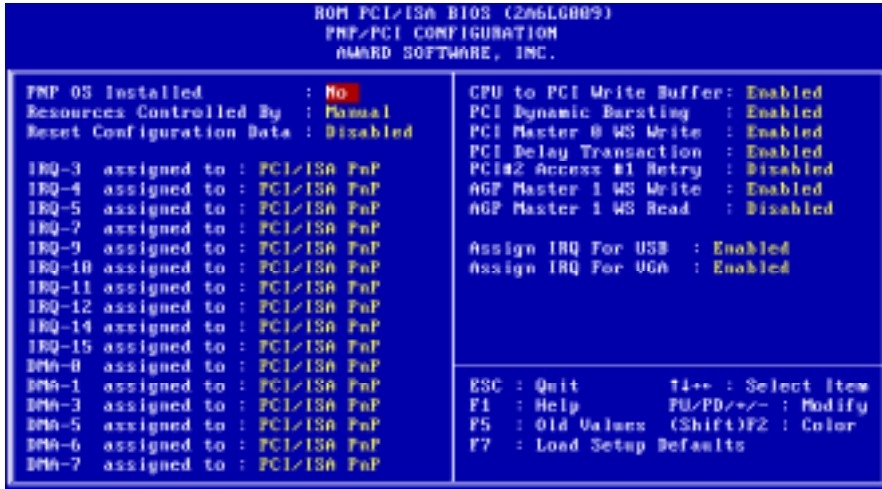
PNP OS Installed
:No(default)
OS will not recognize PnP devices.
:Yes
OS will arrange the setup of PnP devices.

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)
: Legancy ISA

Assign IRQ for USB
:Enabled (default)
:Disabled

Assign IRQ for VGA
:Enabled (default)
:Disabled

3-7 Integrated Peripherals

```
                  ROM PCI/ISA BIOS (2A6LG009)
                     INTEGRATED PERIPHERALS
                     AWARD SOFTWARE, INC.

  OnChip IDE Channel0 : Enabled      Parallel Port Mode    :
  OnChip IDE Channel1 : Enabled      ECP Mode Use DMA      : 3
  IDE Prefetch Mode   : Enabled
  Primary Master   PIO: Auto
  Primary Slave    PIO: Auto
  Secondary Master PIO: Auto
  Secondary Slave  PIO: Auto
  Primary Master   UDMA: Auto
  Primary Slave    UDMA: Auto
  Secondary MasterUDMA: Auto
  Secondary Slave UDMA: Auto
  Init Display First  : PCI Slot

  KBC input clock     : 8 MHz
  Onboard FDC Controller: Enabled
  Onboard Serial Port 1 : Auto     ESC : Quit       ↑↓←→ : Select Item
  Onboard Serial Port 2 :          F1  : Help       PU/PD/+/- : Modify
  UR2 Mode            :            F5  : Old Values  (Shift)F2 : Color
  UR2 Duplex Mode     : Half       F7  : Load Setup Defaults
  Onboard Parallel Port :
```

Primary Master PIO/ Primary Slave PIO
This feature detects your primary master hard disk device.
:Auto (default)
:Mode 0,1,2,3,4

Secondary Master PIO/ Secondary Slave PIO
This feature detects your secondary master hard disk device.
:**Auto** (default)
:Mode 0,1,2,3,4

Primary Master UltraDMA
: Auto (default)
: Disable

Primary Slave UltraDMA
: Auto (default)
: Disable

Secondary Master UltraDMA
: Auto (default)
: Disable

Secondary Slave UltraDMA
: Auto (default)
: Disable

Onboard FDC Controller
: Enabled (default)
: Disabled

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

On-Board Serial Port 2
: 3F8/IRQ4
: 2F8/IRQ3
: 3E8/IRQ4
: 2E8/IRQ3
: Auto
: Disabled

Onboard Parallel Port
: 378/IRQ7 (default)
: 3BC/IRQ7
: 278H/IRQ5
: Disabled

3-8. Supervisor/User Password

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

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

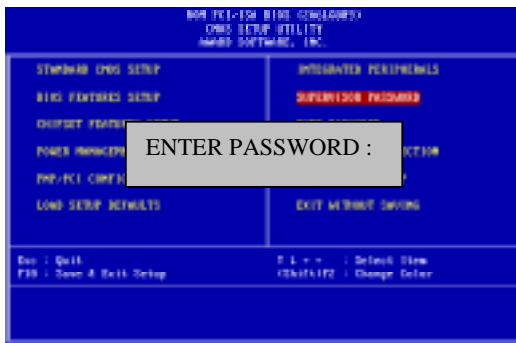User Password**: this function only allows you to enter the setup menu but not to change the options of the setup menu except "**USER PASSWORD," "SAVE & EXIT SETUP," **and** "EXIT WITHOUT SAVING."

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

The 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>**
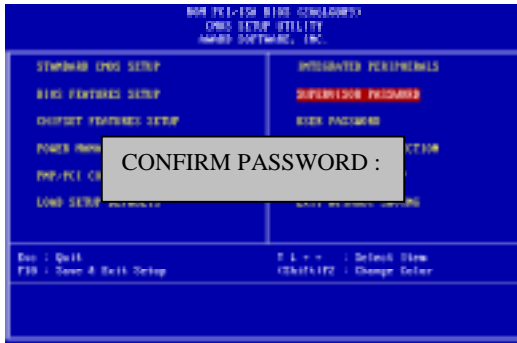
          Note: If you forget password, please clear CMOS.
          (Please refer to CMOS)

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..

2. How to Disable "Supervisor Password" & "User Password"

Step 1: **Go to CMOS Setup Menu** (need to key in password first)

Setp 2: **Enter "Supervisor Password" or "User Password"**
After enter, it shows "Enter Password." Press the **<Enter>** key instead of entering a new password. Then it informs **"PASSWORD DISABLED PRESS ANY KEY TO CONTINUE."** Press any key as instructed to disable the password.
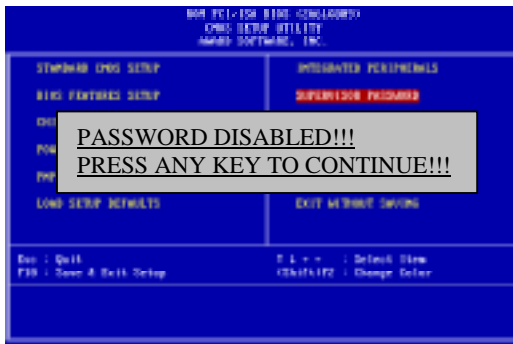
3-9　IDE HDD Auto Detection

```
                    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

Note: Some OSes (like SCO-UNIX) must use "NORMAL" for installation.

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

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

1. Normal mode:
Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing. The maximum number of cylinders, head & sectors for normal mode are **1024, 16 & 63.**

```
      No. Cylinder      (1024)
  X   No. Head           (16)
  X   No. Sector         (63)
  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!

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

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

```
      No. Cylinder           (1024)
  X   No. Head                (255)
  X   No. Sector              (63)
  X   No. Bytes Per Sector   (512)
              8.4 GB
```

3. Large Mode:

Extended HDD access mode supported by Award® software. Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The Award® BIOS provides another alternative to support these kinds of large mode:

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!

4. 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.

3-10 Load Setup Defaults
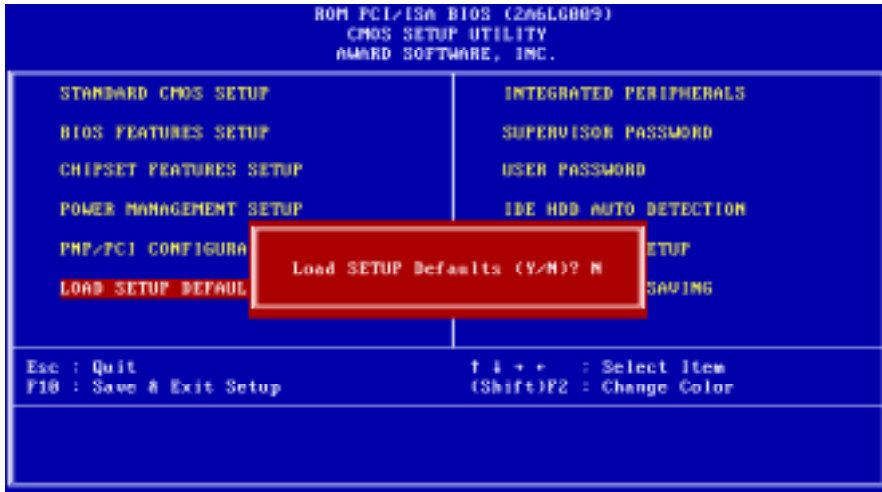
"Load Setup Defaults" loads optimized settings which are stored in the BIOS ROM. The auto-configured settings only affect "**BIOS Features Setup"** and **"Chipset Features Setup"** screens. There is no effect on the standard CMOS setup. To use this feature, highlight it on the main screen and press the **<Enter>** key. A line will appear on screen asking if you want to load the setup default values. Press the **<Y>** key and then press the **<Enter>** key. The setup defaults will then load. Press **<N>** if you don't want to load setup defaults.

3-11   Save & Exit Setup

The **"Save & Exit Setup"** option will bring you back to boot up procedure with all the changes you have made which are recorded in the CMOS RAM.
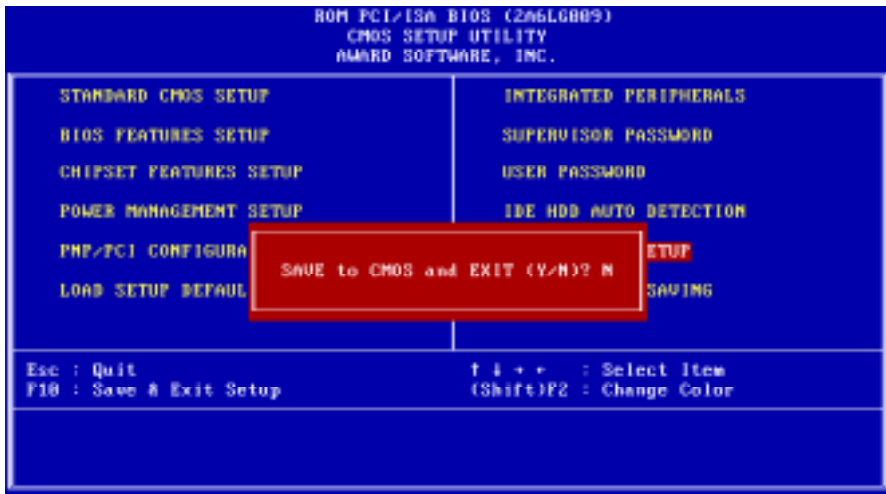
3-12   Quit Without Saving

The **"Quit Without Saving"** option will bring you back to normal boot up procedure without saving any data into CMOS RAM. All of the old data in the CMOS will not be destroyed.
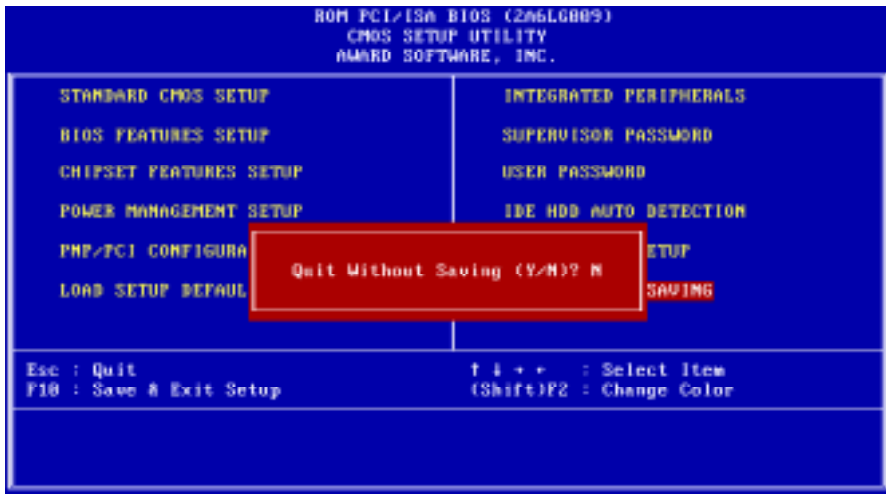
Chapter 4   Appendix

4-1   Memory Map

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

4-2   I/O Map

000-01F	DMA controller (master)
020-021	Interrupt controller (master)
022-023	Chipset control registers. I/o 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

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
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

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
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
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

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

Chapter 5   Q & A

5-1   Errors Messages During Power on Self Test

During **power on self test (post)**, BIOS will automatically detect the system devices. Below is the question that users may always ask. The user may press **"Esc"** key to skip the full memory test.

1.   *Beep sound*
On power on, the system makes 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 fail*
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 initiation*
Please wait a moment…
Some hard drives require more time to initiate.

6. *Hard disk install failure*
The system can not find or initiate 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 initiate 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 are questions users always come out with. **Q** is for the question. **A** is for the 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. The commonest one is 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.