T6V693
ATX Form Factor
Main Board
User's   Manual
Ver.1.0

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Chapter 1   Introduction

1-1   Main Board Overview

The main board is a new-generation PentiumÆ II and PentiumÆ III main board based on VIA VT82C693/693A chipset. The main board has integrated the latest advances in processor, memory, I/O technologies into an ATX form factor.

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

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

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

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

In conclusion, 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 todayís and futureís desktop application.

1-2   Reference For PentiumÆ II CPUs

The main board supports Intel Æ PentiumÆ II and PentiumÆ III microprocessors. The PentiumÆ II and Pentiumô III processors deliver more performances than previous generation processors (such as PentiumÆ, PentiumÆ MMXô, 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 futureís emerging applications as well.

Below is the reference for PentiumÆ II CPUs accomodating this main board.

IntelÆ Processors for Slot 1				
Pentiumô III	PentiumÆ II			
100 MHz F.S.B	100 MHz F.S.B	66MHz F.S.B		
Katmaiô W/512K	Deschutesô w/512K	Klamathô w/512K	Celeronô w/128K & CPU code A	Celeronô w/o L2 cache
450-500 MHz	350- 450 MHz	233-333 MHz	300 & 333 MHz	266- 300 MHz

Note1: CPU is not enclosed in the package

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

Note3: When chip is VT82C693A, CPU clock speed setting 133MHz Bus Frequency.

1-3   Specifications

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

- **PCB layer:** 4 layers

- **Slot 1 socket**
  Support IntelÆ PentiumÆ II CPU at 66 MHz &100 MHz & 133MHz F.S.B and PentiumÆIII 100MHz F.S.B.

  CPU is not enclosed in the package

- **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, 1x A.G.P. slot and 1 x AMR

- **Chipset**
  ! VIA VT82C693/693A
  ! VIA VT82C686A

- **BIOS:** flash EEPROM for BIOS
  AwardÆ full **PnP** (Plug & Play) 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/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 todayís 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 ì5VSBîto support WOL function.

- **Special features**

  ! Wake up on LAN (ATX power supply is required)

  ! Modem ring on

  ! Windows 95/98 power off (ATX power supply is required)

  ! AMR

  ! Audio on board

1-4   Notice of Hardware Installation

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

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

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

B. Make sure power is off.
During hardware installation, be sure 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 **ìIndexî**　before installing required drivers.　ìIndexî file is HTML format.
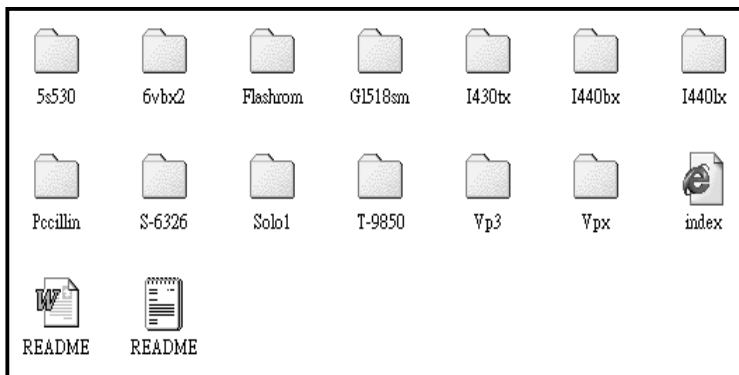
 CD driver is always updated with the latest version, so the actual CD content may have some difference with the above picture.

1. **Main boards:** i440ZX, i440BX, i440EX, i440LX, i430TX, VIAÆ　VPX, VP3, 691BX, 692BX Pro and 693-based main boards
   Please go to ì5MVP4î directory to install drivers.
2. **A.G.P cards:** S- 6326 and T985
3. **Solo-1:** ESS-solo-1 sound driver

4. **Pccillin:** anti- virus protection software
5. **XStore Pro IDE Driver:** IDE Bus Master Driver for Ultra DMA 33

1-6 **XStore Pro IDE Driver**

Our corporation has integrated High Pointís new-invented software technology, **ìXStore Pro,î** to our valued customers as a free service. Developing the technique of ìread ahead caching after seeking,î **XStore Pro** increases hard disk performance. More concretely, it effectively enhances hard disk performance up to 50%, and system performance up to 10%.

System requirement
Under the below environments, the driver will perform its best in your system. No extra computer components are required.

■　　Windows 95 or Windows 98 environment
■　　Recommended system memory: 32 MB or above

Chapter 2 Installation

2-1 Layout Reference
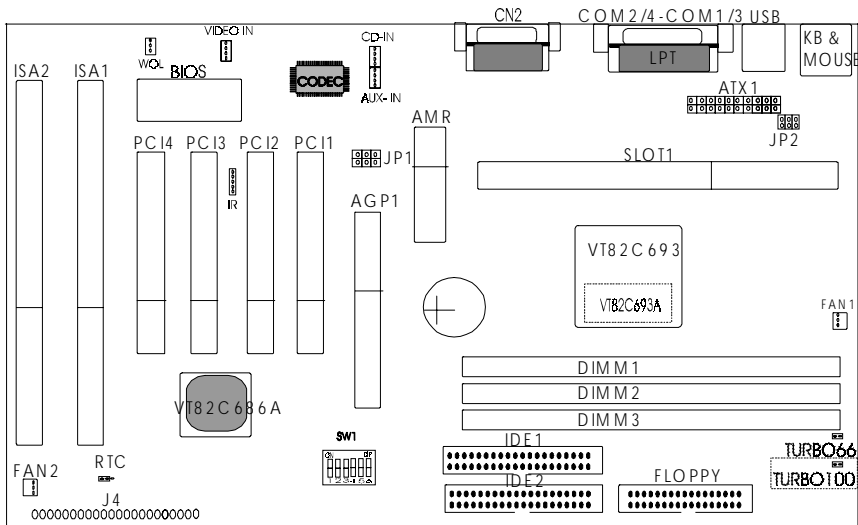
☞ **TURBO-66** is an over-clocking jumper which enables 66 MHz CPU to run at 100 MHz. TURBO66 is only reserved for internal test only. No guarantee is provided for over-clocking setup.

TURBO-66	Operation
Close	Normal
Open	Over-clock

☞

TURBO-100 is a 2-pin connector which setting CPU clock speed. Below function effective when chip is VT82C693A.

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

2-2 Jumper Setting

2-2-1 RTC- CMOS status

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

RTC

1
2
3

Set to ì1-2î---
Normal default)

1
2
3
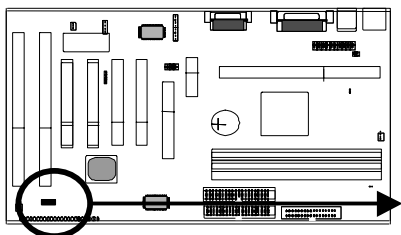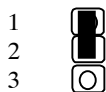
Set to ì2-3î---
Clear CMOS

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 ìATX1î
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 youíd like to set password, press ìDelî Key during system   bootup to enter CMOS setup and establish a new password.

2-2-2 SW1 Pin1 ñ Pin2 : CPU Frequency Selector

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

SW1: Pin1 - Pin2
CPU Frequency
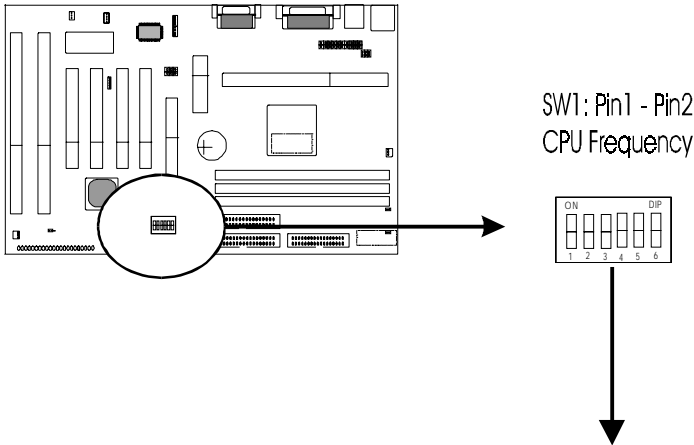
| SW1		CPU BUS	CPU FREQ.
1	2	100 MHz	66 MHz
OFF	OFF	100 MHz	66 MHz
ON	ON	103 MHz	50 MHz
ON	OFF	112 MHz	75 MHz
OFF	ON	133 MHz	83 MHz

2-2-3 SW1 Pin3 ñ Pin6 : CPU Ratio Selector

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

SW1: Pin3 - Pin6
CPU Ratio
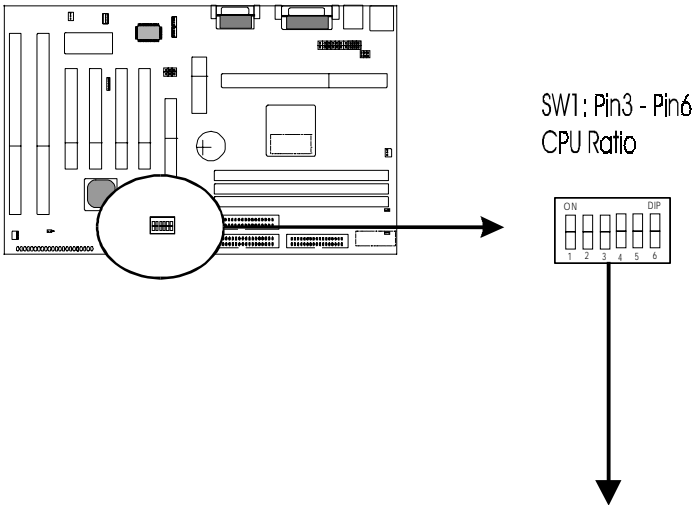
SW1				CPU Ratio
3	4	5	6	
ON	OFF	ON	ON	3x
OFF	OFF	ON	ON	3.5x
ON	ON	OFF	ON	4x

|				
OFF	ON	OFF	ON	4.5x
ON	OFF	OFF	ON	5x
OFF	OFF	OFF	ON	5.5x

2-3   Connectors

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

2-3-1   Front Panel

Front panel has connectors as ìEXTSMI,î ìPW-BT,î ìHDD-LED,î ìRESET,î ìSPEAKER,î ìTURBO,î and ìPW-LEDî. Please refer to details as below.
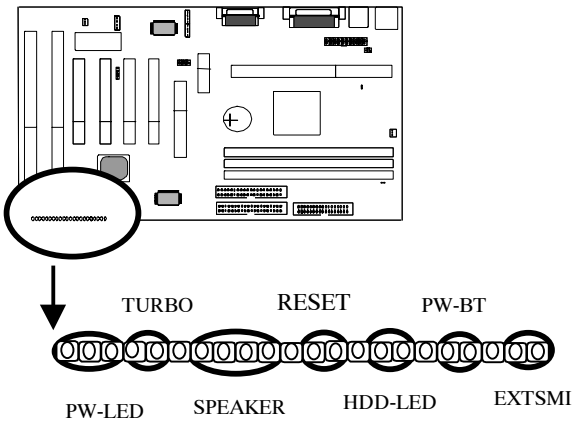
SYSTEM MANAGEMENT INTERRUPT

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

J4 : front panel

EXTSMI

GND   EXTSMI
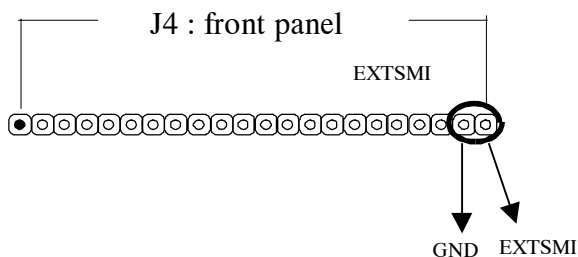
POWER BUTTON

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

J4 : front panel

PW-BT

PW-BT   GND
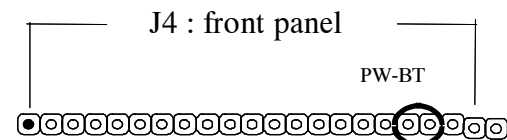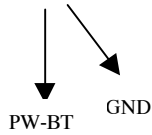
HDD-LED

Marked as ìHDD-LED,î 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.

J4 : front panel

VCC   HDD-LED
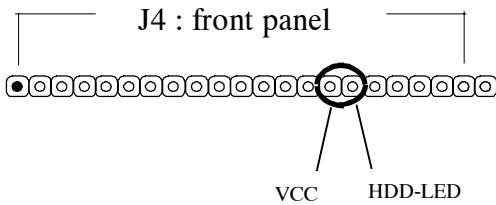
RESET

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

J4 : front panel
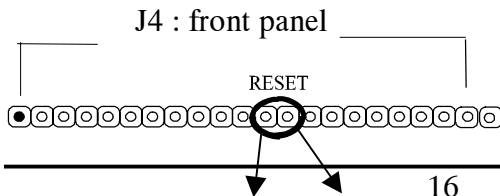
RESET

GND   RESET

SPEAKER

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

J4 : front panel

Speaker

Data NC   NC VCC
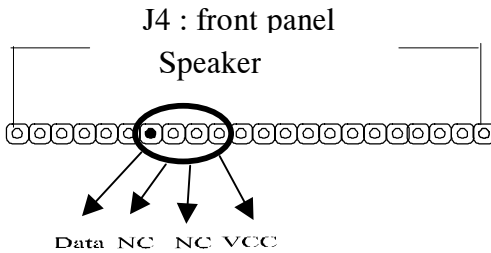
TURBO

TURBO with a 2-pin Berg strip on case front panel indicated the current speed status of system. It is used to connect to the Turbo LED on the front panel of the case(if there is).
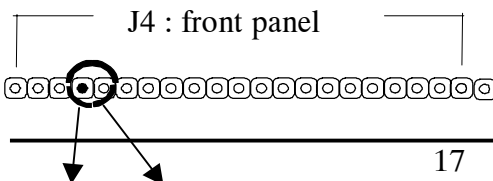
J4 : front panel

VCC   GND

PW-LED

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

J4 : frontal panel

GND

VCC   VCC
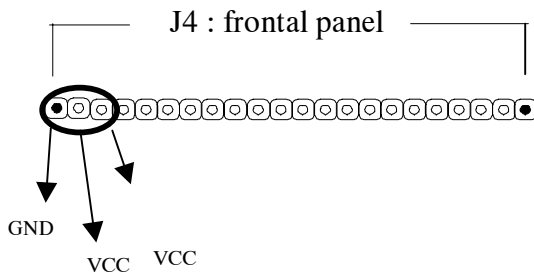
2-3-2   Back Panel

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

Back panel   CN2

LPT

Mouse   USB

K/B

COM COM
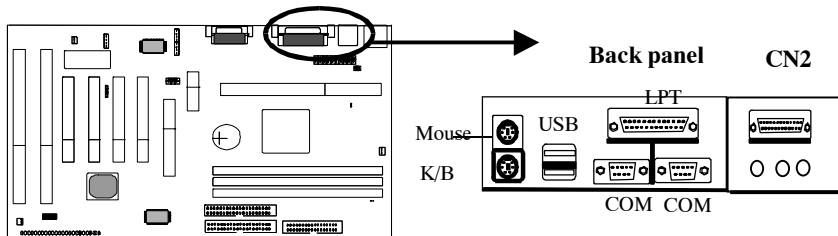
COM1/3, COM2/4

The onboard serial port 1 and port 2 are the 9-pin D-subminature male connector COM1/3 and COM2/4. COM1/3 and COM2/4 can be disabled in BIOS setup. Please refer to Chapter 3 ìIntegrated Peripheralsî for more information.

COM1/3   COM2/4
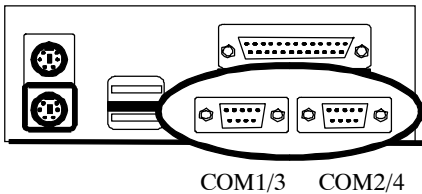
LPT(Parallel Port)

The onboard parallel port is a 25-pin female connector, marked as **ìLPT.î**

LPT
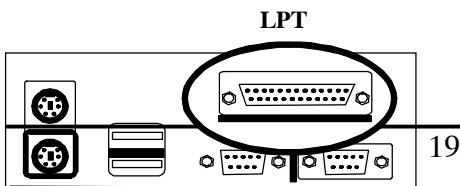
USB(Universal Serial Bus)

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

USB
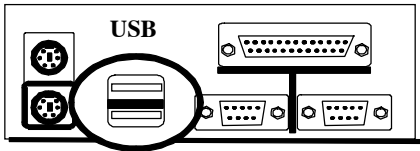
Keyboard & Mouse

The onboard PS/2 keyboard and mouse connector is 6-pin Mini-Din connectors, marked as **ìKEYBOARDî** and **ìMOUSE.î**

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Keyboard   Mouse
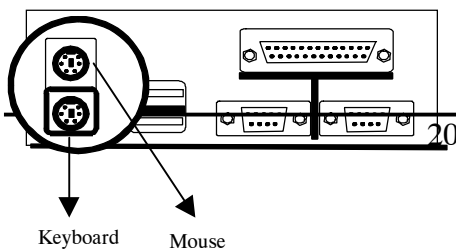
2-3-3   Expansion Slots

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

AGP1 Slot

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

AGP1

21
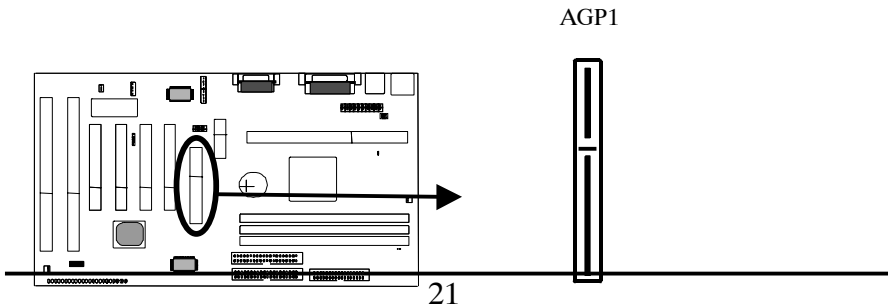
PCI Slots

There are four PCI slots on board; 3 are ìmasterî bus and one is ìslave.î 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
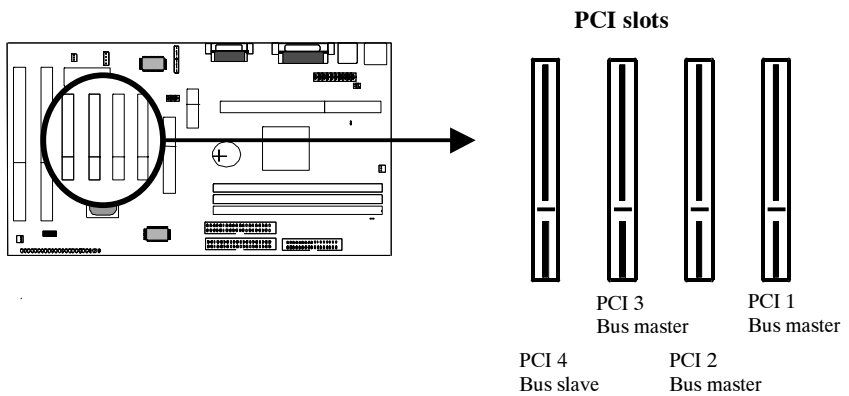
While plugging into 4 PCI add-on cards, PCI 1- PCI 3 are master bus and PCI4 is slave bus. If there are 3 PCI add-on cards (or below 4 cards), all of them are master bus.

ISA Slots

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

ISA

ISA 2   ISA 1
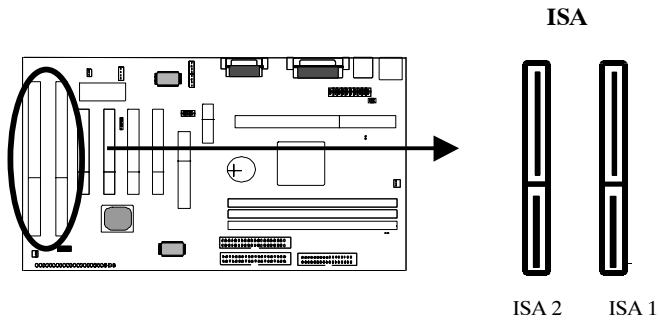
2-3-4 ATX Power Supply Connector

ATX power supply connector has 20 pins, which is designed for ATX case especially. The ATX power supply supports the function of the ì**Soft Power On Momentary switch**î which connects on the front panel switch to the 2-pin **PW-BT** on the system board. While the power switch on the back of ATX power is turned on, the full power will not go into the system board until the front panel switch is momentarily pressed. Push the switch again to turn off the power to the system board.
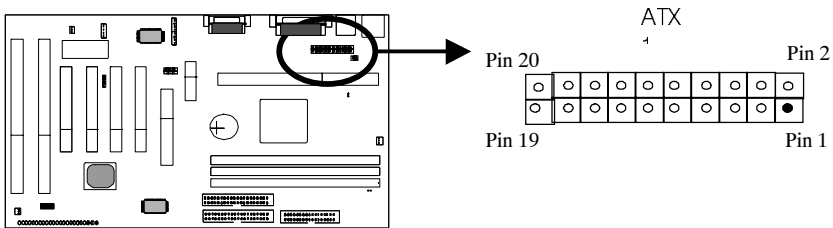
2-3-5 Soft-PWR (JP5)

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

J4 : front panel

PW-BT   GND
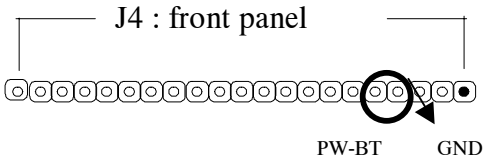
2-3-6   CPU Fan Connectors

There are 2 fan connectors on this system board, and they are marked **ìFAN 1,î and ìFAN2î.**   Each fan connector has three pins.

Fan 1

FAN Signal

SENSE
+12V
GROUND

Fan 2
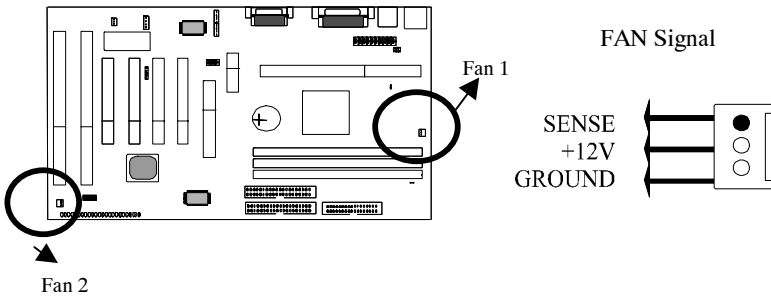
2-3-7   Floppy Interface

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

Floppy

Pin 2   Pin 34

Pin 1   Pin 33

2-3-8   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.

IDE1

IDE2

2-3-9 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 ìInfrared function.î Be sure to put in the right orientation during attachment.
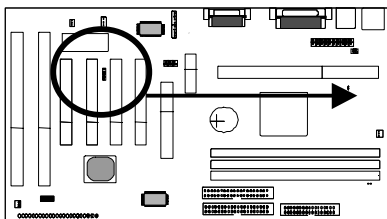
1 VCC
2 NC
3 IRRX
4 GND
5 IRTX

2-3-10 Wake up on LAN

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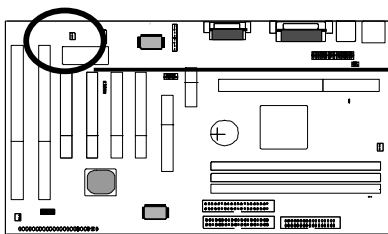
Wake up on LAN

1	5VSB
2	GND
3	PME

WOL (Wake up on LAN) function requirement::
Power supply should offer at lest 750mA to the signal ì5VSBîto support WOL function.

2-4 DIMM Memory Installation

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

DIMM 1

DIMM2

DIMM 3
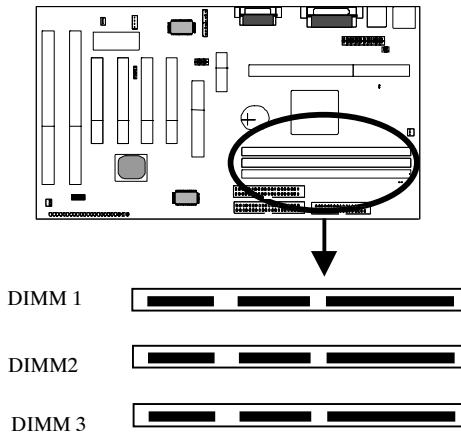
Insert the module as shown.   Due to different number of pins on either side of the breaks, the module will only fit in the orientation as shown.   There is no jumper setting for memory configuration.

DIMM

⇒
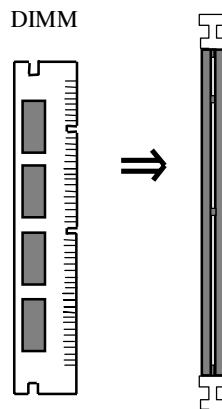
Chipset only allows synchronuos operation for DIMM and CPU. Therefore, to have a stable system, the system must use 100 MHz ìPC-100 SDRAM memory DIMMí (3.3V)

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*for 100 MHz Deschutes CPUs. For 66 MHz CPUs **Klamathô and Celeronô (Covingtonô & Mendocinoô),** the user may use either 3.3V EDO RAM or SDRAM.*

2-5   CPU RM Kit Assembling Procedure

The enclosed RM Kit accomodates PentiumÆ III & PentiumÆ 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
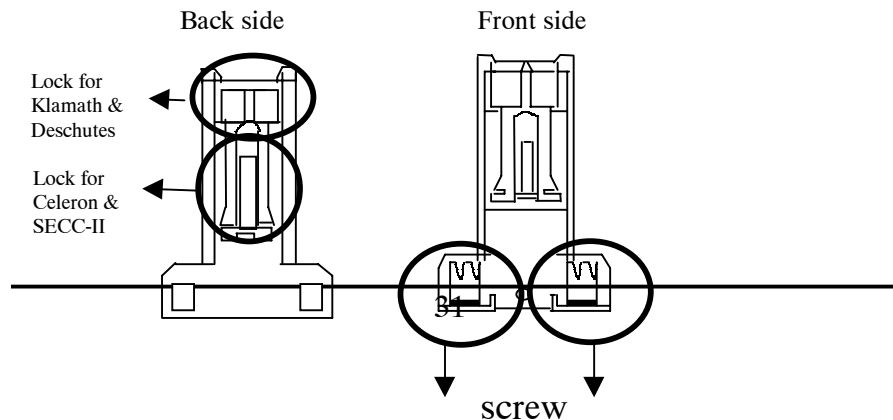
screw

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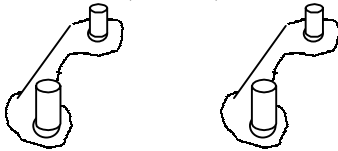
2. Make sure power is off during assembly.

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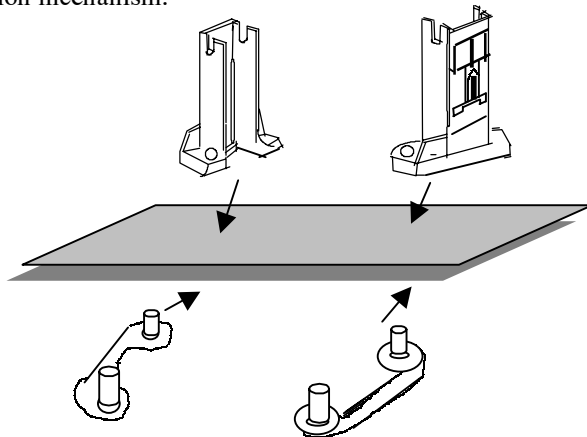
4. Fasten up the screws on the retention mechanism to tighten up retenion mechanism and RMAM. Check if all the piece parts are fastened tightly.

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

Due to different packages of ìKatmaiô, Celeronô, SECC-II, Klamathô and Deschutesô, there are 2 positions to lock them in the RM kit.   Below is ntoice to unlock those CPUs.

Lock for Klamath & Katmai

***Klamathô &   Katmaiô: push the switch on the CPU, and CPU will be loosen from the lock of RM kit.

Lock for Celeron & SECC-II

***Celeronô & 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.
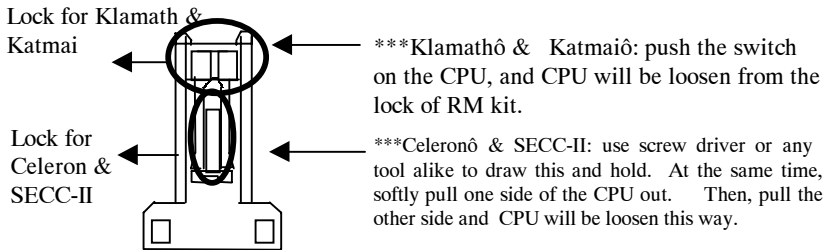
Chapter 3   BIOS Setup

3-1   Award BIOS CMOS Setup

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

```
            ROM PCI/ISA BIOS (2A6LG11C)
                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 **îStandard CMOS Setupî** 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 (2A6LG11C)
                       STANDARD CMOS SETUP
                       AWARD SOFTWARE, INC.

   Date (mm:dd:yy) : Thu, Apr 15 1999
   Time (hh:mm:ss) : 17 : 48 : 18

   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 ìNONE,î the system will not detect hard dsk type.

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

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

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

5. PRECOMP : the cylinder number at which the disk drive changes the write timing.

35

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.î** Select **"NORMAL"** if your hard disk supporting cylinder is below 1024.

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

Note2: "halt on" is to determine when to halt the system by the BIOS if error occurs during POST.
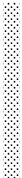
3-3   BIOS Features Setup

Menu below shows all of the manufacturer's default values of this main board.

```
                    ROM PCI/ISA BIOS (2A6LG11C)
                         BIOS FEATURES SETUP
                        AWARD SOFTWARE, INC.

 Virus Warning              : Enabled     Video  BIOS Shadow  : Disabled
 CPU Internal Cache         : Disabled    C8000-CBFFF Shadow  : Disabled
 External Cache             : Disabled    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        : Disabled
 Boot Up NumLock Status     : Off
 Gate A20 Option            : Normal
 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 (default): enable L1 cache
Disabled: disable L1 cache

External Cache
Enabled (default): enable L2 cache
Disabled: disable L2 cache

CPU L2 Cache ECC Checking
Enabled (default): enable L2 cache ECC checking
Disabled: disable L2 cache ECC checking

Quick Power On Self Test
This category speeds up power on self test.
Enabled (default) : BIOS will shorten or skip some check items.
Disabled: normal speed

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

Swap Floppy Drive
Enabled: floppy A&B will be swapped.
Disabled(default): floppy A&B will be not swapped.

Boot Up Floppy Seek
BIOS will determine if the floppy disk drive is 40 or 80 tracks. 360k type is 40
tracks while 720K/ 1.2M and 1.44M are all 80 tracks.
:Enabled
:Disabled (default)

Boot Up Numlock Status
:On(default)
:Off

Gate A20 Option
:Normal (default)
:Fast

Typematic Rate Setting
This determines the typematic rate.
Enabled: enable typematic rate and typematic delay programming.
Disabled (default): disable typematic rate and typematic delay programming. The system bios will use default value of this 2 items and the default is controlled by keyboard.

Typematic Rate(Chars/Sec)
6   :   6 Characters Per Second(default)
8   :   8 Characters Per Second
10 : 10 Characters Per Second
12 : 12 Characters Per Second
15 : 15 Characters Per Second
20 : 20 Characters Per Second
24 : 24 Characters Per Second
30 : 30 Characters Per Second

Typematic Delay (Msec)
This is the interval between the first and second character displayed.
250   : 250 msec (default)
500   : 500 msec

750   : 750 msec
1000 : 1000 msec
Security Option
:Setup (default)--- security protection in CMOS setup menu
Setting password in BIOS CMOS **ìSupervisor Passwordî or User Password, î** 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 Pallette Snoop
Enabled: it allows you to install an enhanced graphics adapter card.
Disabled (default): If your graphics adapter card does not support the pallette 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 ì**Non-OS2**î for RAM memory over 64MB and set ì**Non-OS2**î for other operating systems like WindowsÆ 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 (2A6LG11C)
               CHIPSET FEATURES SETUP
               AWARD SOFTWARE, INC.

Bank 0/1 DRAM Timing  : SDRAM 10ns   Auto Detect DIMM/PCI Clk : Enabled
Bank 2/3 DRAM Timing  : SDRAM 10ns   Spread Spectrum          : Disabled
Bank 4/5 DRAM Timing  : SDRAM 10ns   Current CPU Temp.        :
SDRAM  Cycle Length   : 3            Current System Temp.     :
DRAM Clock            : Host CLK     Current CPUFAN1 Speed    :
Memory Hole           : Disabled     Current CPUFAN2 Speed    :
Read Around write     : Disabled     Vcore :            2.5V  :
Concurrent PCI/Host   : Disabled      3.3V :              5V  :
System BIOS Cacheable : Disabled      12V :
Video RAM Cacheable   : Disabled
AGP Aperture Size     : 128M
AGP-2X Mode           : Disabled
MA[2:13]/WE# Drive    : Auto
OnChip USB            : Enabled
USB Keyboard Support  : Disabled
OnChip Sound          : Enabled     ESC : Quit        ↑↓→← : Select Item
OnChip Modem          : Enabled     F1  : Help        PU/PD/+/- : Modify
                                    F5  : Old Values  (Shift)F2 : Color
                                    F7  : Load Setup Defaults
```

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

: SDRAM 10ns (default)**ó10** ^{ñ9} **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.
:66 MHz
System DRAM clock is fixed at 66 MHz.

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

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
OnCHip USB
:Enabled (default)
Enabling this function adds the function of **ìUSB Keyboard Support.î**

:Disabled

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

3-5   Power Management Setup

```
              ROM PCI/ISA BIOS (2A6LG11C)
                 POWER MANAGEMENT SETUP
                  AWARD SOFTWARE, INC.

 Power Management   : User Define      Primary INTR      : OFF
 PM Control by APM  : No
 Video Off After    : NA
 Video Off Method   : Blank Screen
 MODEM Use IRQ      : NA
 Soft-Off by PWRBTN : Delay 4 Sec
 HDD Power Down     : Disable
 Doze Mode          : Disable
 Suspend Mode       : Disable
       ** PM Events **
 VGA                : OFF
 LPT & COM          : NONE
 HDD & FDD          : OFF
 DMA/master         : OFF
 Modem Ring Resume  : Disabled
 RTC Alarm Resume   : Disabled       ESC : Quit          ↑↓→← : Select Item
                                     F1  : Help          PU/PD/+/- : Modify
                                     F5  : Old Values  (Shift)F2 : Color
                                     F7  : Load Setup Defaults
```

Power Management

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

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

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

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

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

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

Soft-Off by PWRBTN
:Instant-off (default)
: Delay 4 sec
This allows the user to set the soft-off power button to turn off the system or set to ì4 secondsî holding the power and system will shut down in 4 seconds.

HDD Mode
:Disabled(default)

:10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 15 Min, 20 Min, 30 Min, 40 Min, 1 hour.

Doze Mode
:Disabled(default)
:10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 15 Min, 20 Min, 30 Min, 40 Min, 1 hour.

Suspend mode
:Disabled(default)
:10 Sec, 20 Sec, 30 Sec, 40 Sec, 1 Min, 2 Min, 4 Min, 6 Min, 8 Min, 10 Min, 15 Min, 20 Min, 30 Min, 40 Min, 1 hour.

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

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

RTC Alarm Resume: auto power on at the appointed date and time.
Enabled: key in the date of current month and time of the day. System will turn on then.
Disabled (default): disable this function.
Note: this function only works when the system is turned off in Windows mode, and Doze mode will not function.

Primary INTR
:on (default)
Select ìon,î it adds the following functions, **ìIRQ3 (COM2)- IRQ15 (Reserved).î**
:off
Select ìoff,î **ìIRQ3 (COM2)- IRQ15 (Reserved)î** will not show.

3-6   PNP / PCI Configuration Setup

```
                    ROM PCI/ISA BIOS (2A6LGI1C)
                       PNP/PCI CONFIGURATION
                        AWARD SOFTWARE, INC.

 PNP OS Installed     : No          CPU to PCI Write Buffer: Disabled
 Resources Controlled By : Auto     PCI Dynamic Bursting    : Disabled
 Reset Configuration Data : Disabled PCI Master 0 WS Write  : Enabled
                                     PCI Delay Transaction  : Disabled
                                     PCI#2 Access #1 Retry  : Disabled
                                     AGP Master 1 WS Write  : Disabled
                                     AGP Master 1 WS Read   : Disabled

                                     PCI IRQ Actived By  : Edge
                                     Assign IRQ For USB  : Disabled
                                     Assign IRQ For VGA  : Disabled


                                     ESC : Quit        ↑↓→← : Select Item
                                     F1  : Help        PU/PD/+/- : Modify
                                     F5  : Old Values  (Shift)F2 : Color
                                     F7  : Load Setup Defaults
```

PNP OS Installed
:No(default)
OS will not recognize PnP devices.

:Yes
OS will arrange the setup of PnP devices.

Resources Controlled By
:Manual(default)
The table will show the below items: **ìReset Configuration Data, IRQ-3 assigned to, DMA-0 assigned to.î** 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 **ìExtended 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
:Level (default)

Assign IRQ for USB
:Enable (default)
:Disable

Assign IRQ for VGA
:Enable (default)
:Disable

3-7 Integrated Peripherals

```
                    ROM PCI/ISA BIOS (2A6LG11C)
                      INTEGRATED PERIPHERALS
                       AWARD SOFTWARE, INC.

 OnChip IDE Channel0 : Enabled    Onboard Parallel Port : 378/IRQ7
 OnChip IDE Channel1 : Enabled    Onboard Parallel Mode : Normal
 IDE Prefetch Mode   : Enabled
 IDE HDD Block Mode  : Enabled
 Primary Master   PIO: Auto       Onboard Legacy Audio  : Enabled
 Primary Slave    PIO: Auto       Sound Blaster         : Enabled
 Secondary Master PIO: Auto       SB I/O Base Address   : 220H
 Secondary Slave  PIO: Auto       SB IRQ Select         : IRQ 9
 Primary Master  UDMA: Auto       SB DMA Select         : DMA 1
 Primary Slave   UDMA: Auto       MPU-401               : Enabled
 Secondary MasterUDMA: Auto       MPU-401 I/O Address   : 330-333H
 Secondary Slave UDMA: Auto       FM Port (388-38BH)    : Enabled
 Init Display First  : PCI Slot   Game Port (200-207H)  : Enabled

 Onboard FDD Controller: Enabled
 Onboard Serial Port 1 : Auto     ESC : Quit        ↑↓→← : Select Item
 Onboard Serial Port 2 : Auto     F1  : Help        PU/PD/+/- : Modify
 UART 2 Mode           : Standard  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

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 (default)
: Disabled
Onboard Parallel Port

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

3-8   Supervisor/User Password

The "Supervisor/User Password setting" utility sets the security protection. There are two kinds of password functions in the setup menu : one is ìSupervisor Password,î and the other is ìUser Password.î 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 ìUSER PASSWORD,î ìSAVE & EXIT SETUP,î and ìEXIT WITHOUT SAVING.î

1. How to set ì Supervisor Passwordî & ìUser Password î
The setup of ì Supervisor Passwordî and ìUser Password î have the same steps.

Step 1: Enter Password
Press <Enter> after appointing the password.
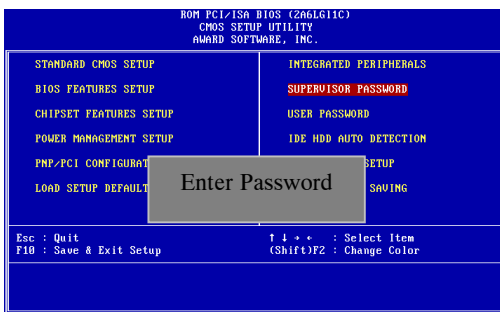
Step 2: Confirm Password
Typing the password again and pressing <Enter> .
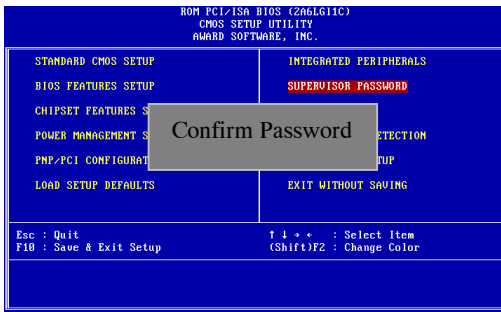
Note: If you forget password, please clear CMOS.
(refer to RTC1)

Step 3: Set ìSecurity Optionî in ìBIOS Features Setupî

After setting password, enter ìSecurity Optionî in ìBIOS Features Setup.î There
are 2 options ìSetupî & ìSystem.î   ìS etupî secures CMOS setup. ìSystemî
secures PC sytem and password is required during system boot- up and CMOS
setup..

2. How to Disable ìSupervisor Passwordî & ìUser Password î

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

Step 2: Enter ìSupervisor Passwordî or ìUser Passwordî

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

3-9   IDE HDD Auto Detection

```
                      ROM PCI/ISA BIOS
                     CMOS SETUP UTILITY
                     AWARD SOFTWARE, INC.


HARD DISK  TYPE   SIZE  CYLS  HEAD  PRECOMP   LANDZ SECTOR MODE
Primary Master:
Primary Slave:
Secondary Master:
Secondary Slave:

    Select Primary Master Option (N: Skip): N
    OPTIONS  SIZE    CYLS  HEAD  PRECOMP   LANDZ   SECTOR   MODE
     2 (Y)   4302    523   255       0     8893      63     LBA
      1      4303    8894   15    65535    8893      63     NORMAL
      3       429    6555  2405   65535    8893      63     LARGE

Note: Some Oses (like SCO-UNIX) must use ìNORMALî 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 AwardÆ 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 AwardÆ software. Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not want LBA). The AwardÆ 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 AwardÆ HDD service routine (int 13h). It may be failed to access a HDD with LBA (large) mode selected if you are running under an operating system which replaces the whole int 13h. Unix operating systems do not support either LBA or large and must utility the standard mode. Unix can support drives larger than 528MB.

3-10 Load Setup Defaults

```
          ROM PCI/ISA BIOS (2A6LG11C)
              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 CONFIGURA │ Load SETUP Defaults (Y/N)? N │ ETUP    │
  │                    │                          │            │
  │  LOAD SETUP DEFAUL └──────────────────────────┘ SAVING    │
  │                               │                              │
  ├───────────────────────────────┴──────────────────────────────┤
  │  Esc : Quit                    ↑ ↓ → ←  : Select Item         │
  │  F10 : Save & Exit Setup       (Shift)F2 : Change Color       │
  └────────────────────────────────────────────────────────────┘
```

"**Load Setup Defaults**" loads optimized settings which are stored in the BIOS ROM.   The auto-configured settings only affect ì**BIOS Features Setup**î and ì**Chipset Features Setup**î 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

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.
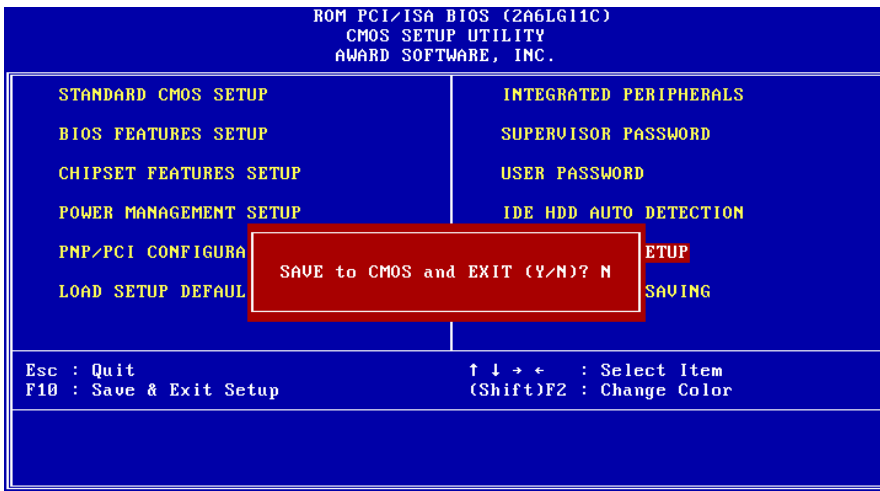
3-12   Quit Without Saving

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.

```
                    ROM PCI/ISA BIOS (2A6LG11C)
                         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 CONFIGURA                               ETUP
                        Quit Without Saving (Y/N)? N
     LOAD SETUP DEFAUL                               SAVING


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

Chapter 4   Appendix

4-1   Memory Map

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

4-2 I/O Map

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

　Non-Maskable Interrupt

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

4-5 RTC & CMOS RAM Map

00	Seconds
01	Seconds Alarm
02	Minutes
03	Minutes Alarm
04	Hours
05	Hours Alarm
06	Day of Week
07	Day of Month
08	Month
09	Year
0A	Status Register A
0B	Status Register B
0C	Status Register C
0D	Status Register D
0E	Diagnostic Status Byte
0F	Shutdown Byte
10	Floppy Disk Type Drive Type Byte
12	Hard Disk Type Byte
13	Reserved
14	Equipment Type
15	Base Memory Low Byte
16	Base Memory High Byte
17	Extension Memory Low Byte
18	Extension Memory High Byte
19-2D	
2E-2F	
30	Reserved for Extension Memory Low Byte

31	Reserved for Extension Memory High Byte
33	Information Flag
34-3F	Reserved
40-7F	Reserved for Chipset Setting Data

4-6 ISA I/O Address Map

I/O Address (HEX)	I/O device
000 - 01F	DMA Controller 1, 8237A-5
020 - 03F	Interrupt Controller 1, 8259A
040 - 05F	System Timer, 8254-2
060 - 06F	8042 Keyboard Controller
070 - 07F	real-time Clock/CMOS and NMI Mask
080 - 09F	DMA Page Register, 74LS612
0A0 - 0BF	Interrupt Controller 2, 8259A
0C0 - 0DF	DMA Controller 2, 8237A-5
0F0 - 0FF	i486 Math Coprocessor
1F0 - 1F8	Fixed Disk Drive Adapter
200 - 207	Game I/O
20C - 20D	Reserved
21F	Reserved
278 - 27F	Parallel Printer Port 2
2B0 - 2DF	Alternate Enhanced Graphic Adapter
2E1	GPIB Adapter 0
2E2 - 2E3	Data Acquisition Adapter 0
2F8 - 2FF	Serial Port 2 (RS-232-C)
300 - 31F	Prototype Card
360 - 363	PC Network (Low Address)
364 - 367	Reserved
368 - 36B	PC Network (High Address)
36C - 36F	Reserved
378 - 37F	Parallel Printer Port 1

I/O Address (HEX)	I/O device
380 - 38F	SDLC, Bisynchronous 2
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3B0 - 3BF	Monochrome Display and Printer Adapter

I/O Address (HEX)	I/O device
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 questions that users may always meet.   The user may press **ìEscî** 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 battery.

4. CMOS checksum error

It indicates the CMOS checksum is incorrect. Load the default values in BIOS to solve this problem. This error may result from 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, **ìHard drive selectionî** must be set to **ìnone.î**

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

8. *Keyboard is lock out- Unlock the key*
   Normally when this message comes out, check if there is anything misplaced on the keyboard. Be sure nothing touches the keys.

9. *Memory test fails*
   There will be more information to specify the type and location of the memory error.

10. *Primary master hard disk fail*
    The BIOS find an error in the primary master hard disk drive.

11. *Primary slave hard disk fail*
    The BIOS finds an error in the primary slave hard disk drive.

12. *Secondary master hard disk fail*
    The BIOS finds an error in the secondary slave master hard disk drive.

13. Secondary slave hard disk fail

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

5-2   Frequently Asked Questions

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

Q: Why canít my AGP card work under Win 95?
A: Windows 95 OSR2.0 does not support AGP function.   You must install ìUSB supportî file to enable this function. After installing, choose ìenable for **ìASSIGN IRQ FOR USBî in BIOS PNP/PCI configuration setup.**

Q: Why canít 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 ìspeed setup,î 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.