

**6VA693AM**  
**(S-370、FC-PGA)**  
**ATX Form Factor**  
**Main Board**  
User's Manual

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# Chapter 1 Introduction

## 1-1 Main Board Overview

The main board is a new-generation Pentium® II/III and Cyrix III main board designed based on VIA VT82C693A & VT82C686A chipsets. The main board has integrated the latest advances in processor, memory, I/O technologies into an ATX form factor.

The main board utilizes VIA 693A chipset designed for Pentium®II/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 two Dual In-line Memory Modules (DIMM) which can be installed with SDRAM memory. The memory subsystem supports up to either 256 MB (SDRAM). The main board using the Socket370, accepts Intel® Pentium® II(66MHz) Celeron & Pentium® III(100/133 MHz) (Celeron/Coppermine) and Cyrix III CPU processors. Built-in second level (L2) cache in CPU, there is no cache necessary in this system board.

The main board has also 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 5\*PCI, 1\*ISA, 1\*A.G.P for highest performance I/O add-on adapter cards.



*Cyrix III function is reserved for internal test only.*

---

The main board is also strengthened with Power Management Wake up Event such as **“WOL (Wake up on LAN),” “Modem ring on”** 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 today's and future's desktop applications.



- ① *On-board AC-97 sound & AMR slot are optional functions.*
- ② *This main board doesn't support to 4X mode AGP cards.*

---

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

The main board supports Intel® Pentium® II/III microprocessors. The Pentium® II/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 accommodating this main board.

<b>Intel® Processors for Socket370</b>		
Celeron	Pentium®III	Pentium®III
66MHz F.S.B	100MHz F.S.B	133MHz F.S.B
Celeron™ W/128K L2	FC-PGA W/256K L2	FC-PGA W/256K L2
300A – 533 MHz	500E – 600E MHz	667E MHz



*Note1: CPU is not enclosed in the package.*



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## 1-3 Specifications

**PCB board size :** 24.5 cm x 20 cm

**PCB layer :** 4 layers

### Socket370

Support Intel® Socket370 Celeron Pentium®II CPU at 66MHz F.S.B and Pentium®III 100MHz/133MHz F.S.B., Cyrix III CPU.



*CPU is not enclosed in the package.*

**Memory DIMM :** 3 of 168-pin 3.3V DIMM(not support EDO RAM), supports to PC-133 specification.

**Expansion Slot :** 1 x ISA, 5 x PCI slots, 1x A.G.P. slot (AGP supports to 1X/2X modes, not 4X mode)

### Chipset

- VIA VT82C693A
- VIA VT82C686A

**BIOS:** flash EPROM for BIOS

Award®full **PnP** (Plug & Play) BIOS

### I/O function

- 2 x PCI IDE devices(support Ultra DMA 33/66 bus master IDE)
- 1 x FDC, 2 x serial ports(16550 fast com)
- 1 x parallel port device /EPP/ECP/SPP
- 4 x USB
- IrDA (infrared) connector

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

---

### Audio/Sound Function (Optional)

Hardware controller → AC97-link-compatible sound system  
· Microsoft®PC97/PC98 compliant

### Power supply regulation

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

### 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 least 1A to the signal “5VSB” to support WOL  
function.*

### Special features

- Wake up on LAN
- Modem ring on
- Windows 95/98 power off
- Auto detection of CPU voltage, temperature and fan speed
- Optional on-board AC-97 sound & AMR slot

---

## 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

### **B. Make sure power is off.**

During hardware installation, be sure that there is no power connected at this period.

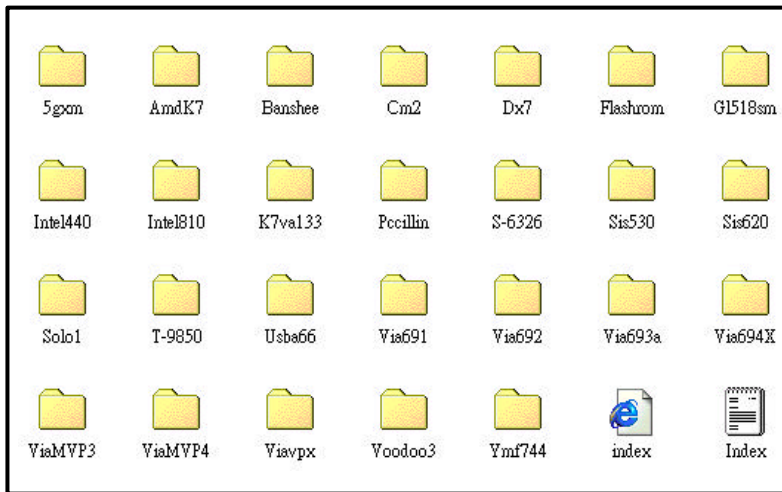
### **C. Avoid ESD (Electrical Static Discharge)**

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

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## 1-5 Notice of CD Driver Installation

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



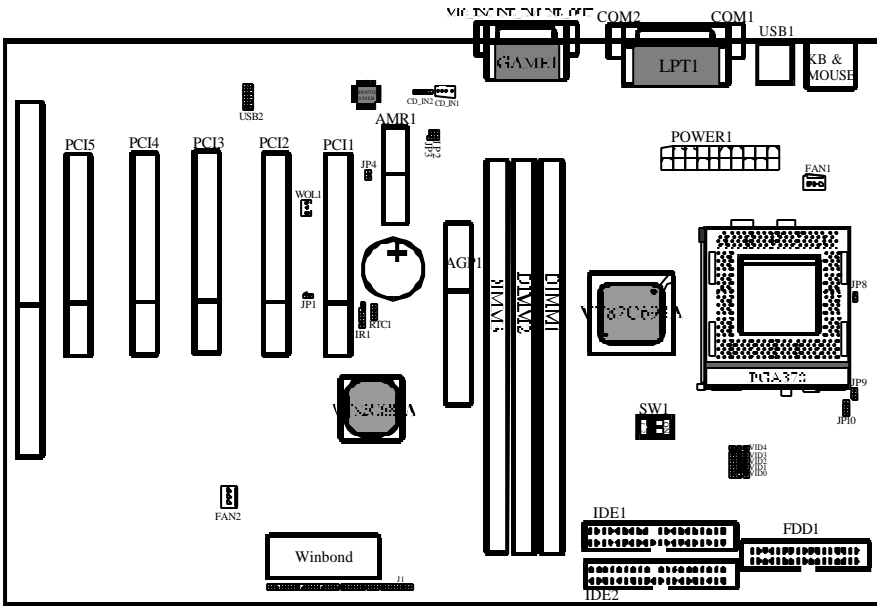
*CD driver is always updated with the latest version, so actual CD content may have some differences with the above picture.*

1. **Main boards:** Intel440, Intel810, VIA® VPX, VP3, VIA® 691, VIA® 692-3 and VIA® 693A main boards (**please choose 693A or 693 directory for this main board**).
2. **A.G.P cards:** S- 6326 and T-9850
3. **Solo-1:** ESS-solo-1 sound driver
4. **Pccillin:** anti- virus protection software

---

# Chapter 2 Installation

## 2-1 Layout Reference

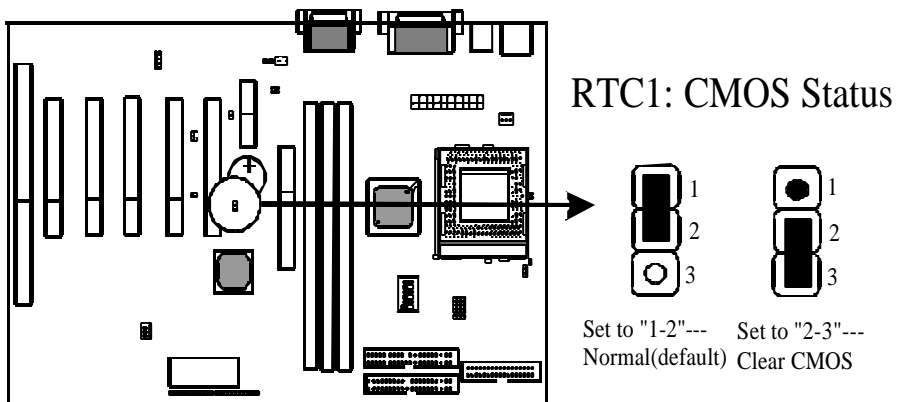


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## 2-2 Jumper Setting


### 2-2-1 RTC1 - CMOS Status

*RTC1* is a 3-pin connector. Clear CMOS if system password is forgotten. Below are details to show how to clear CMOS.



#### **Procedure to clear CMOS:**

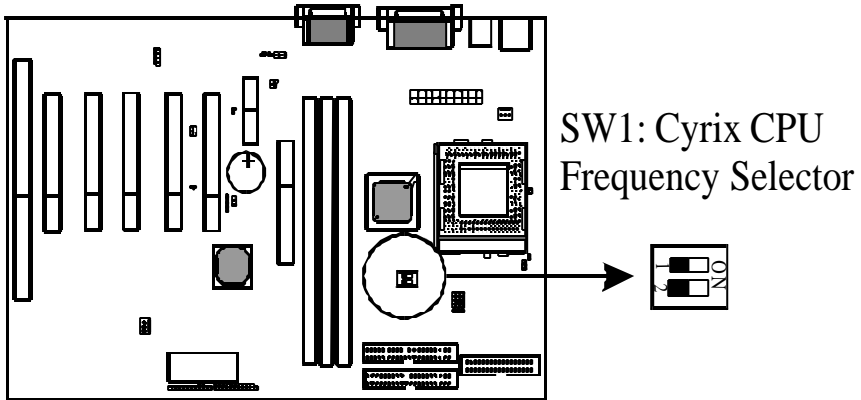
- Step 1: Shut down the system and disconnect the power supply from AC power.
- Step 2: Pull out the ATX cable from ATX connector "POWER1".
- Step 3: Short the CMOS jumper by putting jumper cap on Pin 2-3 for a few seconds.
- Step 4: Return to pin 1-2 for normal setup.
- Step 5: Link ATX power cable 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.*

---

## 2-2-2 SW1 : Cyrix Joshua CPU Frequency Selector

*SW1* is a 2-pin DIP switch which provides Cyrix CPU Frequency selection. Please select the right ratio according to your CPU and set details as below.



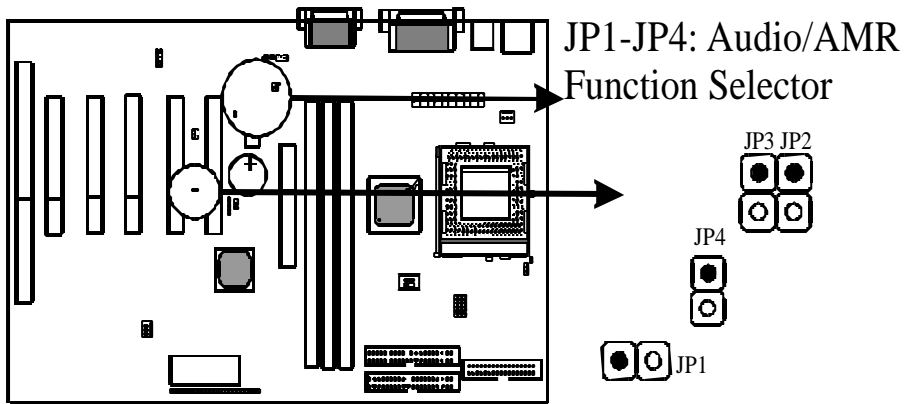
Cyrix Frequency	SW1	
	1	2
66 MHz	ON	ON
100 MHz	OFF	ON
133 MHz	OFF	OFF

 *Don't change default setting if use Intel CPU.*

---

### 2-2-3 JP1-JP4 : Audio/AMR Function Selector (Optional)

*JP1-JP4* are 2-pin selectors which provides Audio/AMR function.



	JP1	JP2	JP3	
AC97	ON	OFF	ON	On board Audio only
AC97 + MC97	ON	ON	ON	On board Audio and AMR only MC97 (MR only) (default)
AMR	OFF	ON	OFF	On board Audio disable Use AMR slot

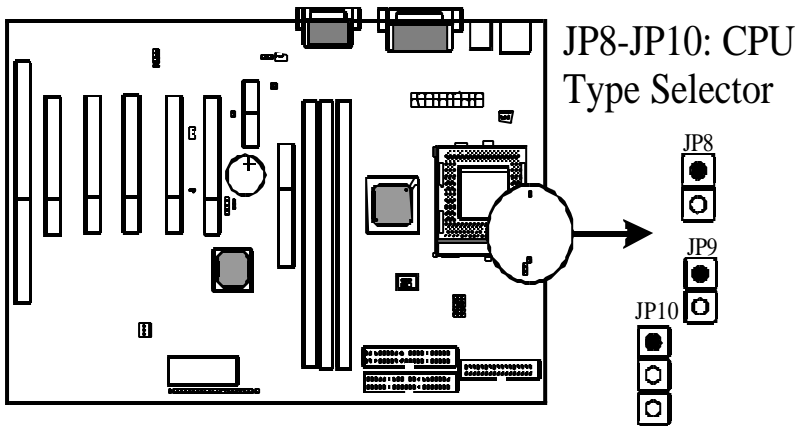
JP4	ON	Secondary CODEC for AMR (default)
	OFF	Primary CODEC for AMR



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## 2-2-4 JP8/JP9/JP10 : CPU Type Selector

*JP8/JP9/JP10* are 2-pin connectors which provide to select CPU type.



CPU Type	JP8	JP9	JP10
INTEL CELERON CPU	OPEN	OPEN	1-2
INTEL FC-PGA PIII CPU	CLOSE	OPEN	1-2
Cyrix Joshua CPU	OPEN	CLOSE	2-3
Cyrix III CPU	OPEN	OPEN	1-2

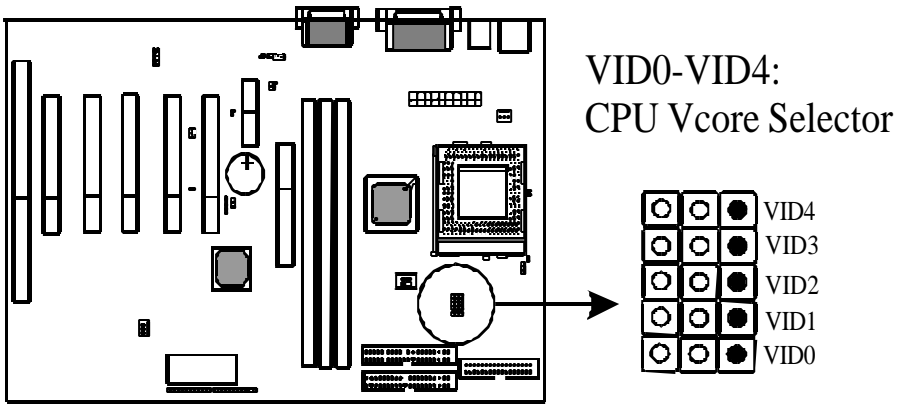


① *User needs to check CPU type carefully in order to set correct jumper setting.*

② *Cyrix III function is reserved for internal test only.*

## 2-2-5 VID0 – VID4 : CPU Vcore Selector

**VID0-VID4** are 3-pin connectors which provides CPU Vcore selection. Please select the right Vcore according to your CPU and set details as below.



<b>VID0-VID3</b>	<b>VID4</b>
Default(1-2)	Default(2-3) : for Intel PII/PIII Celeron CPU/Cyrix III CPU 1-2 : for Cyrix Joshua CPU

<b>VID4</b>	<b>VID3</b>	<b>VID2</b>	<b>VID1</b>	<b>VID0</b>	<b>CPU_Volt.</b>
1-2	2-3	2-3	2-3	2-3	3.5V
1-2	2-3	2-3	2-3	1-2	3.4V
1-2	2-3	2-3	1-2	2-3	3.3V
1-2	2-3	2-3	1-2	1-2	3.2V
1-2	2-3	1-2	2-3	2-3	3.1V
1-2	2-3	1-2	2-3	1-2	3.0V
1-2	2-3	1-2	1-2	2-3	2.9V
1-2	2-3	1-2	1-2	1-2	2.8V

---

1-2	1-2	2-3	2-3	2-3	2.7V
1-2	1-2	2-3	2-3	1-2	2.6V
1-2	1-2	2-3	1-2	2-3	2.5V
1-2	1-2	2-3	1-2	1-2	2.4V
1-2	1-2	1-2	2-3	2-3	2.3V
1-2	1-2	1-2	2-3	1-2	2.2V
1-2	1-2	1-2	1-2	2-3	2.1V
1-2	1-2	1-2	1-2	1-2	2.0V
2-3	2-3	2-3	2-3	2-3	2.05V
2-3	2-3	2-3	2-3	1-2	2.00V
2-3	2-3	2-3	1-2	2-3	1.95V
2-3	2-3	2-3	1-2	1-2	1.90V
2-3	2-3	1-2	2-3	2-3	1.85V
2-3	2-3	1-2	2-3	1-2	1.80V
2-3	2-3	1-2	1-2	2-3	1.75V
2-3	2-3	1-2	1-2	1-2	1.70V
2-3	1-2	2-3	2-3	2-3	1.65V
2-3	1-2	2-3	2-3	1-2	1.60V
2-3	1-2	2-3	1-2	2-3	1.55V
2-3	1-2	2-3	1-2	1-2	1.50V
2-3	1-2	1-2	2-3	2-3	1.45V
2-3	1-2	1-2	2-3	1-2	1.40V
2-3	1-2	1-2	1-2	2-3	1.35V
2-3	1-2	1-2	1-2	1-2	1.30V



*Please don't change default setting. The manufacturer shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising by users' over-clocking or over-voltage.*

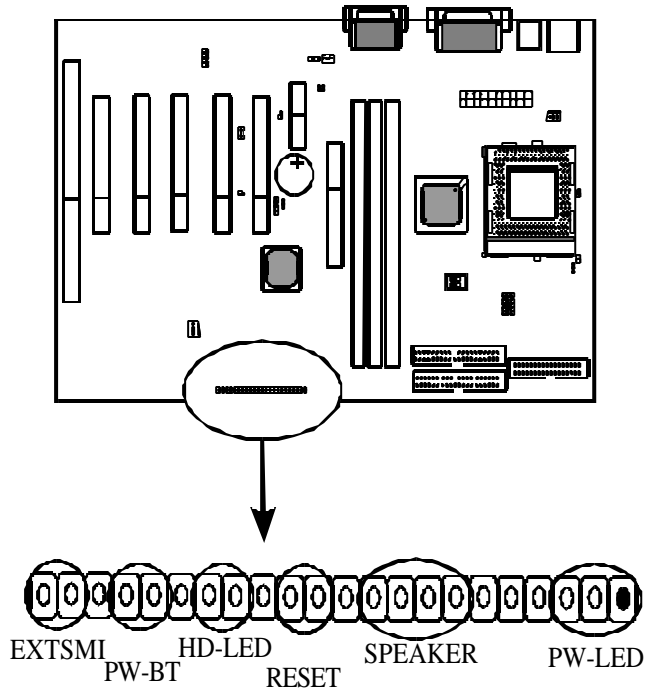
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## 2-3 Connectors

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 “EXTSMI,” “PW-BT,” “HD-LED,” “RESET,” “SPEAKER,” and “PW-LED”. Please refer to details as below.



---

**EXTSMI connector** is a 2-pin Berg strip which is also called “green” or “sleep” 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.

**PW-BT** 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).

**Marked as “HD-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 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.

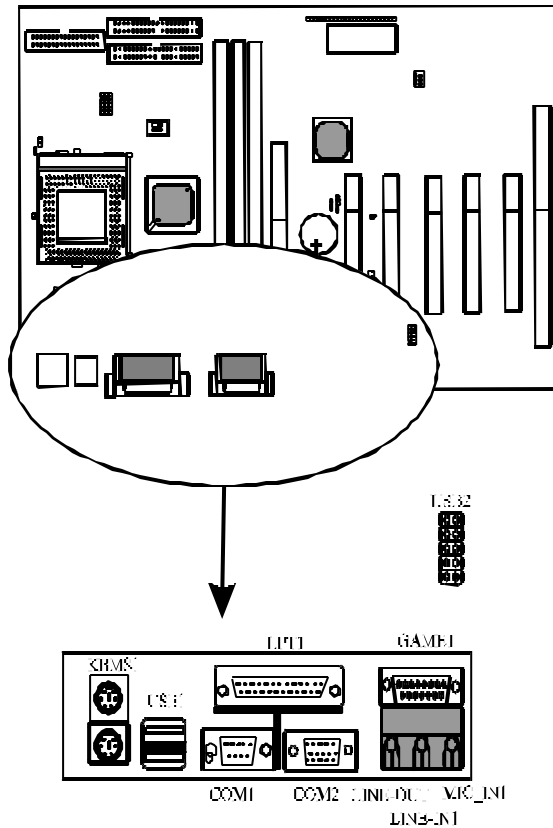
**Speaker (SPK) connector** is a 4-pin keyed Berg strip. It is used to connect to the case speaker to the main board for sound purpose.

**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.

---

## 2-3-2 Back Panel

There are keyboard/mouse, USB1/USB2, COM1/2, LPT1 on the case back panel. Please refer to more details as below.



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## Keyboard & Mouse

*The onboard PS/2 keyboard and mouse connectors* are 6-pin Mini-Din connectors, marked as “**KEYBOARD**” and “**MOUSE.**”

## USB1/USB2(Universal Serial Bus)

*Universal Serial Bus connector*, marked as “**USB,**” is used to connect USB devices. There are 4 USB connectors on this main board.



*In Dos mode, USB2 doesn't support “USB K/B support” function.*

## COM1/COM2

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

## LPT1(Parallel Port)

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

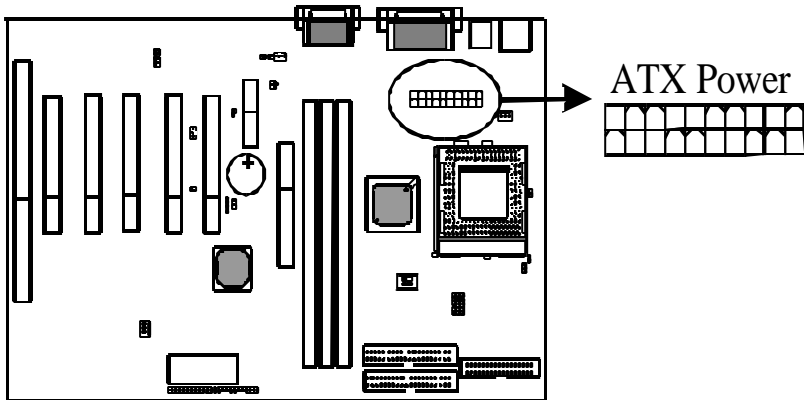
## Midi/Game Port & External Audio Connectors

*Midi/Game port* has 15 pins connecting to the game joystick. External Audio connectors are “**LINE-OUT, LINE-IN, MIC-IN**” for audio functions.

---

### 2-3-3 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 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.

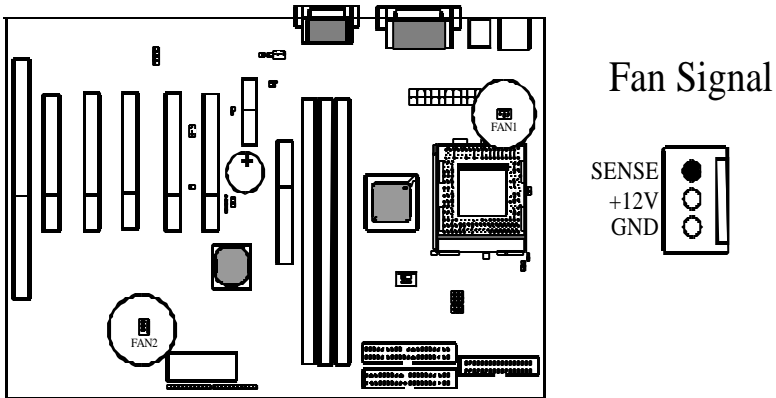




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## 2-3-4 CPU Fan Connectors

*There are 2 fan connectors* on this main board, and it is marked as “FAN1”, “FAN2”. Each fan connector has three pins.

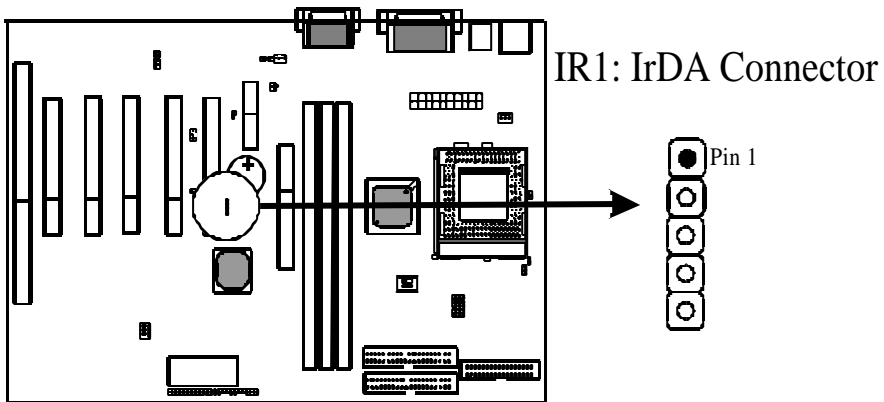


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## 2-3-5 IR1 : IrDA Connector

**IR1 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. Be sure to put in the right direction during installation.

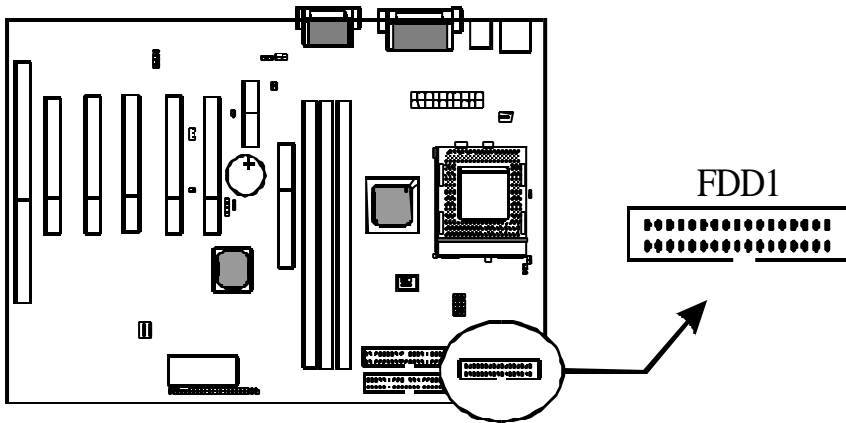


	IR1
1	VCC
2	NONE
3	IRRX
4	GND
5	IRTX

---

## 2-3-6 Floppy Disk Connector

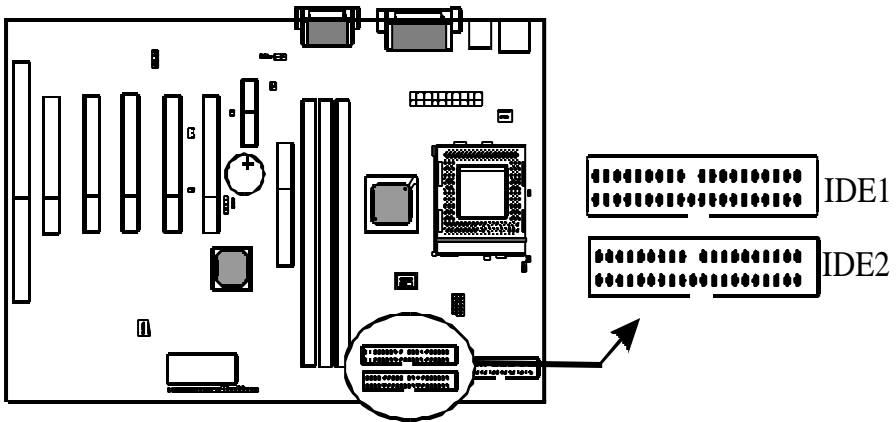
*Floppy Disk Connector* has 34 pins and is used to attach the floppy drive cable.



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### 2-3-7 IDE1 & IDE2

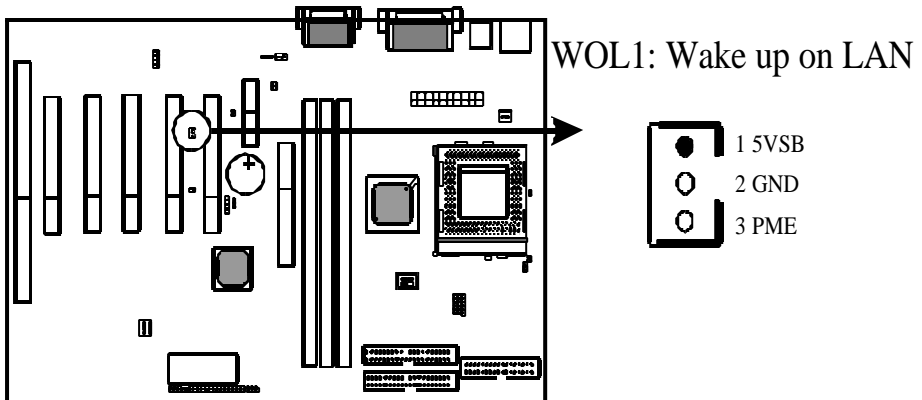
*IDE1 and IDE2* are 40-pin IDE connectors. There are 2 IDE connectors supported on this system board. **IDE1** is primary channel, and **IDE2** is secondary channel. Each channel supports 2 IDE devices, and 4 devices in total for this main board. It also supports Ultra DMA33/66 function.



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## 2-3-8 WOL1 : Wake up on LAN

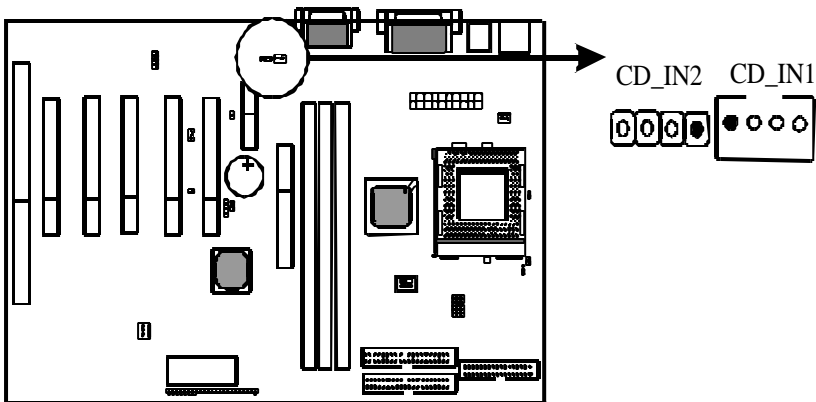
*Wake up on LAN* marked as “WOL,” is a 3-pin connector. To support this feature, a network card is required for the system and network management software must be installed too.



---

## 2-3-9 Internal Audio Connectors

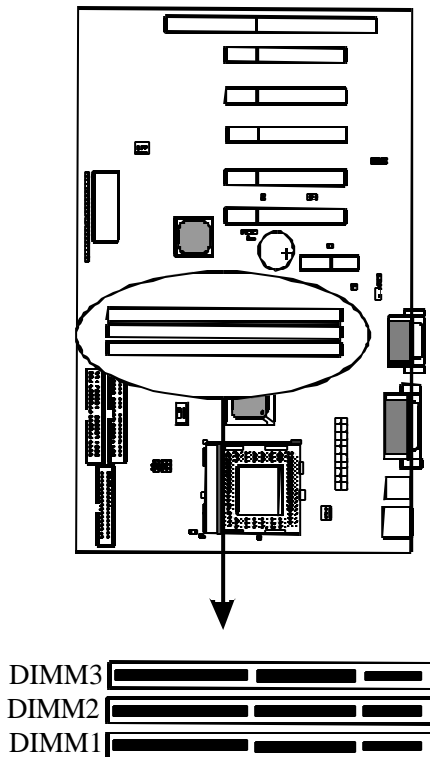
Internal Audio Connectors are “CD\_IN1” and “CD\_IN2”.



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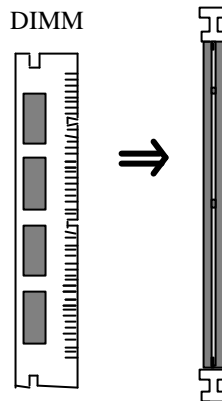
## 2-4 DIMM Memory Installation

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 256MB.



---

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.



*Chipset only allows synchronuos operation for DIMM and CPU. Therefore, to have a stable system, the system must use 100 MHz “PC-100/PC-133 SDRAM memory DIMM” (3.3V). For 66 MHz CPUs Celeron™, the user may use either 3.3V or SDRAM.*



---

## **Chapter 3 PhoenixNet™ BIOS Porting Guide**

### **3-1 Product Overview**

PhoenixNet™ is an end-user content service that displays system configuration during the power on of a Personal Computer, and delivers promotional icons to the desktop.

PhonixNet delivers 1) one-click, easy access to the Internet, 2) offers from leading Internet companies, and 3) anti-virus protection(Trend ChipAway Virus™) as well as other free offers.

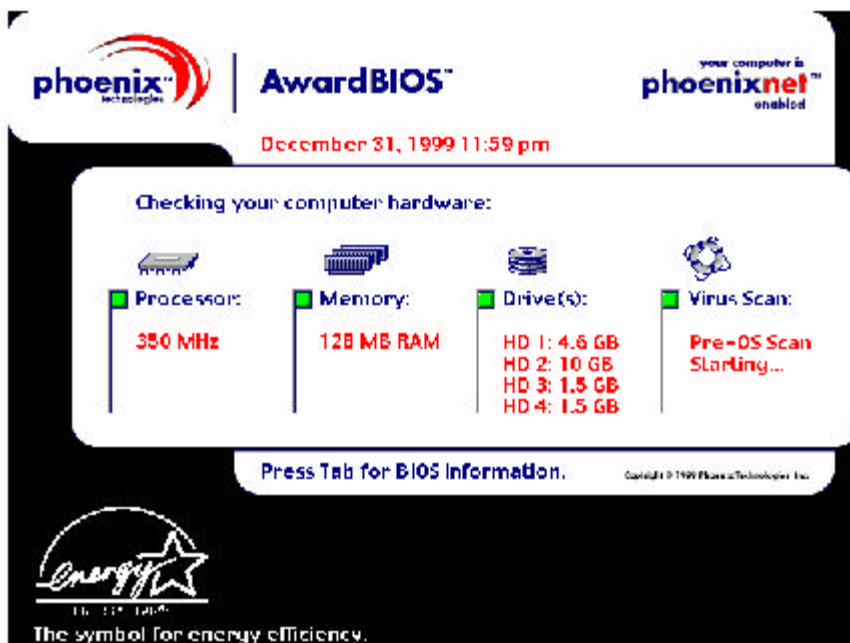
Each of the components has specific functionality and the interactions between the components and the effects that each has upon the other will be examined in this document.

---

## 3-2 Graphical Launch Screen (GLS)

The first ROMSmarts component, GLS, displays a graphical screen to the user early in the boot process, as the first image displayed on the screen. This display remains on the screen throughout the normal BIOS initialization phase called POST.

The GLS component will replace the old text-based POST with a full graphical screen. The screen will display PC metrics such as CPU vendor, model and speed, memory and hard disk size.

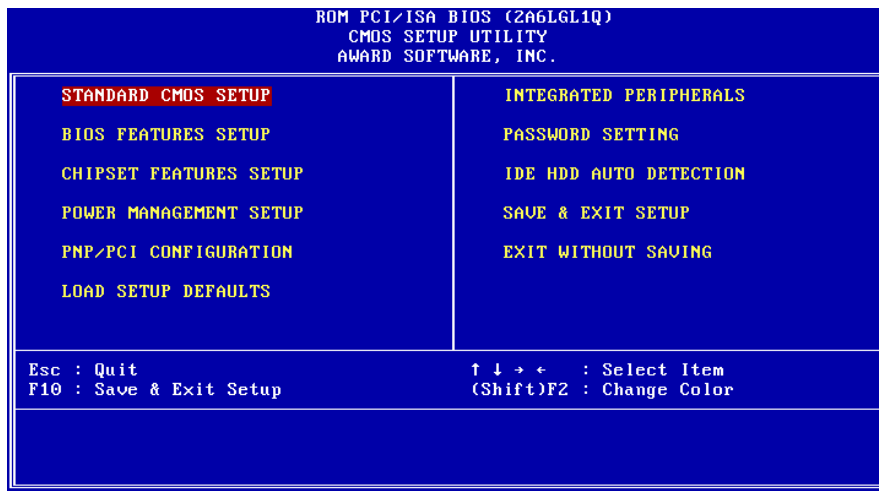


---

## Chapter 4 BIOS Setup

### 4-1 Award BIOS CMOS Setup

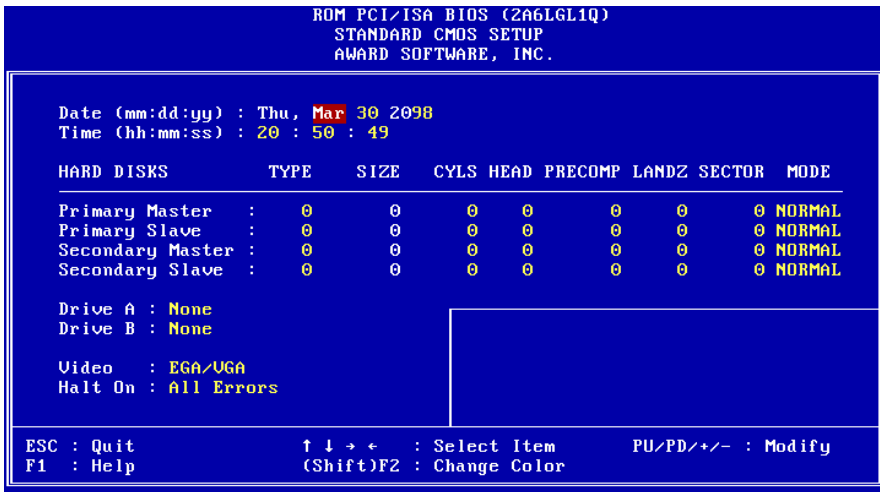
The menu displays all the major selection items and allow user to select any of shown item. The selection is made by moving cursor (press any direction key ) to the item and press <Enter> key. An on-line help message is displayed at the bottom of the screen as cursor is moving to various items which 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.



---

## 4-1-1 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.



---

## 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 write timing.
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 cylinder is more than 1024 and does not support the LBA function, you have to set at "**LARGE**." Select "**NORMAL**" if your hard disk supporting cylinder is below 1024.



*Note1: 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.*



*Note2: "**halt on**" is to determine when to halt the system by the BIOS if error occurs during POST.*

---

## 4-1-2 BIOS Feature 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 provides 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 (2A6LGL1Q)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning           : Disabled
CPU Internal Cache     : Enabled
External Cache         : Enabled
CPU L2 Cache ECC Checking : Enabled
Processor Number Feature : Enabled
Quick Power On Self Test : Enabled
Boot Sequence          : A,C,SCSI
Swap Floppy Drive      : Disabled
Boot Up Floppy Seek    : Disabled
Boot Up NumLock Status : On
Gate A20 Option        : Fast
Memory Parity/ECC Check : Disabled
Typematic Rate Setting : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec) : 250
Security Option        : Setup
PCI/UGA Palette Snoop  : Disabled
OS Select For DRAM > 64MB : Non-OS2

Video BIOS Shadow      : Enabled
C8000-CBFFF Shadow    : Disabled
CC000-CFFFF Shadow    : Disabled
D0000-D3FFF Shadow    : Disabled
D4000-D7FFF Shadow    : Disabled
D8000-DBFFF Shadow    : Disabled
DC000-DFFFF Shadow    : Disabled

ESC : Quit           ↑↓+ : Select Item
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

***Processor Number Feature***

**:Enabled** (default)

**:Disabled**

***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 “**A,C,SCSI**” for example. System will search in turn for floppy disk drive; second is hard disk drive, and finally SCSI drive. Default value is “**A,C,SCSI.**”. Options are as below:

**A,C,SCSI; C,A,SCSI; C,CDROM,A; CDROM,C,A; D,A,SCSI; E,A,SCSI; F,A,SCSI; SCSI,A,C; SCSI,C,A; C Only; LS/ZIP,C.**

---

***Swap Floppy Drive***

**Enabled:** floppy A&B will be swapped.

**Disabled**(default): floppy A&B will be not swapped.

***Boot Up Floppy Seek***

BIOS will determine if the floppy disk drive is 40 or 80 tracks. 360k type is 40 tracks while 720K/ 1.2M and 1.44M are all 80 tracks.

**:Enabled**

**:Disabled** (default)

***Boot Up Numlock Status***

**:On**(default)

**:Off**

***Gate A20 Option***

**:Normal**

**:Fast** (default)

***Memory Parity/ECC Check***

**:Enabled**

**:Disabled** (default)

***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 “**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-DFFFF Shadow*

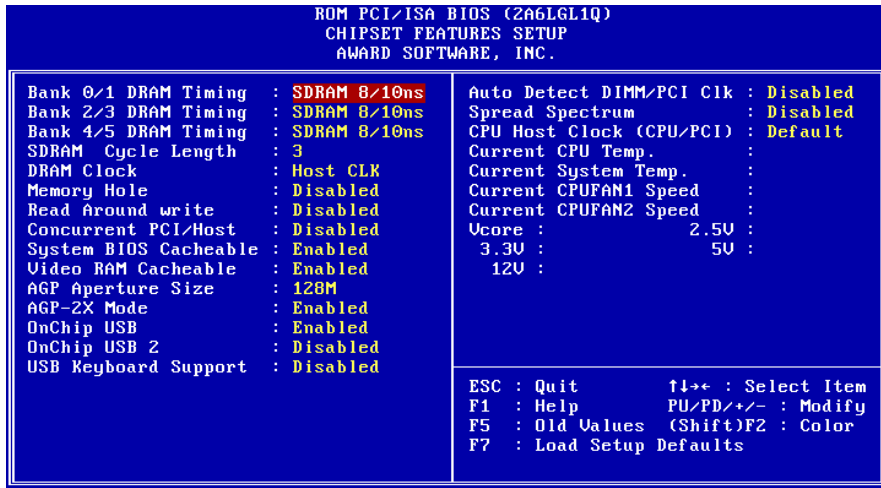
These are categories determining whether optional ROM will be copied to RAM by 16KB or 32KB per unit and the size depends on chipset.

**:Enabled**

**:Disabled**(default)

---

### 4-1-3 Chipset Feature 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 8/10ns** (default)

: **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 optimizes 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***

**:Enabled**

**:Disabled** (default)

***Concurrent PCI/Host***

**:Enabled**

**:Disabled** (default)

***System BIOS Cacheable***

**:Enabled** (default)

**:Disabled**

***Video RAM Cacheable***

**:Enabled**(default) --- 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**

---

### *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**

### *OnChip USB2*

**:Enabled**

**:Disabled** (default)

### *USB Keyboard Support*

**:Enabled---** enable this function when using USB keyboard in DOS mode.

**:Disabled** (default)

### *Auto Detect DIMM/PCI Clk*

**:Enabled**

**:Disabled** (default)

### *Spread Spectrum*

**:Disabled** (default)

**:0.25%,0.50%**

---

## 4-1-4 Power Management Setup

ROM PCI/ISA BIOS (2A6LGL1Q)	
POWER MANAGEMENT SETUP	
AWARD SOFTWARE, INC.	
ACPI function	: Enabled
Power Management	: User Define
PM Control by APM	: Yes
Video Off After	: Suspend
Video Off Method	: U/H SYNC+Blank
MODEM Use IRQ	: 3
Soft-Off by PWRBTN	: Instant-Off
HDD Power Down	: Disable
Doze Mode	: Disable
Suspend Mode	: Disable
** PM Events **	
UGA	: OFF
LPT & COM	: LPT/COM
HDD & FDD	: ON
PCI Master	: OFF
Modem Ring Resume	: Disabled
RTC Alarm Resume	: Disabled
Primary INTR	: ON
IRQ3 (COM 2)	: Primary
IRQ4 (COM 1)	: Primary
IRQ5 (LPT 2)	: Primary
IRQ6 (Floppy Disk)	: Primary
IRQ7 (LPT 1)	: Primary
IRQ8 (RTC Alarm)	: Disabled
IRQ9 (IRQ2 Redir)	: Secondary
IRQ10 (Reserved)	: Secondary
IRQ11 (Reserved)	: Secondary
IRQ12 (PS/2 Mouse)	: Primary
IRQ13 (Coprocessor)	: Primary
IRQ14 (Hard Disk)	: Primary
IRQ15 (Reserved)	: Disabled
ESC	: Quit
F1	: Help
F5	: Old Values (Shift)F2 : Color
F7	: Load Setup Defaults
F4++	: Select Item
PU/PD/+/-	: Modify

### *ACPI function*

:Enabled (default)

:Disabled

### *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.



**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***

**:Suspend** (default)

**:Doze**

**:NA**

### ***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 “4 seconds” holding the power and system will shut down in 4 seconds.

### ***HDD Power Down***

**:Disable** (default)

**:1 Min ~ 15 Min**

---

### *Doze Mode*

**:Disable** (default)

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

### *Suspend mode*

**:Disable** (default)

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

### *Modem Ring Resume*

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

**Disabled**(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 “on,” it adds the following functions, “**IRQ3(COM2) - IRQ15 (Reserved).**”

**:OFF**

Select “off,” “**IRQ3 (COM2) - IRQ15 (Reserved)**” will not show.



---

## 4-1-5 PNP/PCI Configuration Setup

ROM PCI/ISA BIOS (2A6LGL1Q) PNP/PCI CONFIGURATION AWARD SOFTWARE, INC.	
PNP OS Installed : <b>No</b>	CPU to PCI Write Buffer: <b>Enabled</b>
Resources Controlled By : <b>Manual</b>	PCI Dynamic Bursting : <b>Enabled</b>
Reset Configuration Data : <b>Disabled</b>	PCI Master 0 WS Write : <b>Enabled</b>
IRQ-3 assigned to : <b>PCI/ISA PnP</b>	PCI Delay Transaction : <b>Enabled</b>
IRQ-4 assigned to : <b>PCI/ISA PnP</b>	PCI#2 Access #1 Retry : <b>Disabled</b>
IRQ-5 assigned to : <b>PCI/ISA PnP</b>	AGP Master 1 WS Write : <b>Enabled</b>
IRQ-7 assigned to : <b>PCI/ISA PnP</b>	AGP Master 1 WS Read : <b>Disabled</b>
IRQ-9 assigned to : <b>PCI/ISA PnP</b>	
IRQ-10 assigned to : <b>PCI/ISA PnP</b>	
IRQ-11 assigned to : <b>PCI/ISA PnP</b>	
IRQ-12 assigned to : <b>PCI/ISA PnP</b>	
IRQ-14 assigned to : <b>PCI/ISA PnP</b>	
IRQ-15 assigned to : <b>PCI/ISA PnP</b>	
DMA-0 assigned to : <b>PCI/ISA PnP</b>	
DMA-1 assigned to : <b>PCI/ISA PnP</b>	ESC : Quit            F4+ : Select Item
DMA-3 assigned to : <b>PCI/ISA PnP</b>	F1 : Help            PU/PD/+/- : Modify
DMA-5 assigned to : <b>PCI/ISA PnP</b>	F5 : Old Values (Shift)F2 : Color
DMA-6 assigned to : <b>PCI/ISA PnP</b>	F7 : Load Setup Defaults
DMA-7 assigned to : <b>PCI/ISA PnP</b>	

---

***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: **“IRQ-3 assigned to, DMA-0 assigned to.”**

The user can adjust the shown items as required.

**:Auto**

The table will not show the above items, and the system will automatically assign the above setup.

***Reset Configuration Data***

**:Disabled**(default)

**:Enabled ---** to reset **“Extended System Configuration Data(ESCD)** when you exit setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot up.

***IRQ-3 Assigned To---- IRQ-15 Assigned To***

**:PCI/ISA PnP**(default)

**:Legacy ISA**

***DMA-0 Assigned To--- DMA-7 Assigned To***

**:PCI/ISA PnP**(default)

**:Legacy ISA**

***CPU to PCI Write Buffer***

**:Enabled** (default)

**:Disabled**

***PCI Dynamic Bursting***

**:Enabled** (default)

**:Disabled**

---

*PCI Master 0 WS Write*

**:Enabled** (default)

**:Disabled**

*PCI Delay Transaction*

**:Enabled** (default)

**:Disabled**

*PCI#2 Access #1 Retry*

**:Enabled**

**:Disabled** (default)

*AGP Master 1 WS Write*

**:Enabled** (default)

**:Disabled**

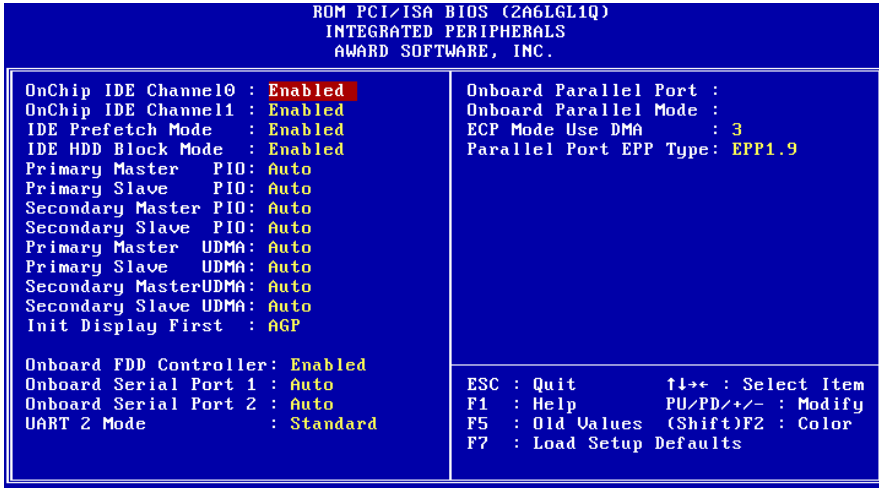
*AGP Master 1 WS Read*

**:Enabled**

**:Disabled** (default)

---

## 4-1-6 Integrated Peripherals



### *OnChip IDE Channel 0/1*

:**Enabled** (default)

:**Disabled**

### *IDE Prefetch Mode*

:**Enabled** (default)

:**Disabled**

---

### ***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**

### ***Primary Master UDMA/Primary Slave UDMA***

**:Auto** (default)

**:Disabled**

### ***Secondary Master UDMA/Secondary Slave UDMA***

**:Auto** (default)

**:Disabled**

### ***Init Display First***

**:AGP** (default)

**:PCI Slot**

### ***Onboard FDD Controller***

**:Enabled** (default)

**:Disabled**

---

***Onboard Serial Port 1/Port 2***

**:3F8/IRQ4**

**:2F8/IRQ3**

**:3E8/IRQ4**

**:2E8/IRQ3**

**:Auto** (default)

**:Disabled**

***UART 2 Mode***

**:Standard** (default) --- the user is not allowed to modify “IR Function Duplex,” and “TX, RX inverting enable.”

**:ASKIR** --- the user is allowed to modify “IR Function Duplex,” and “TX, RX inverting enable.”

**:HPSIR** --- the user is allowed to modify “IR Function Duplex,” and “TX, RX inverting enable.”

***ECP Mode Use DMA***

Select a DMA channel for the parallel port for use during ECP mode.

**:3** (default)

**:1**

***Parallel Port EPP Type***

This item allows you to determine the IR transfer mode of onboard I/O chip.

**:EPP1.9**

**:EPP1.7** (default)

---

## 4-1-7 Password Setting

The “Password setting” utility sets the security protection. 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 “Password Setting”

Step 1: Enter Password

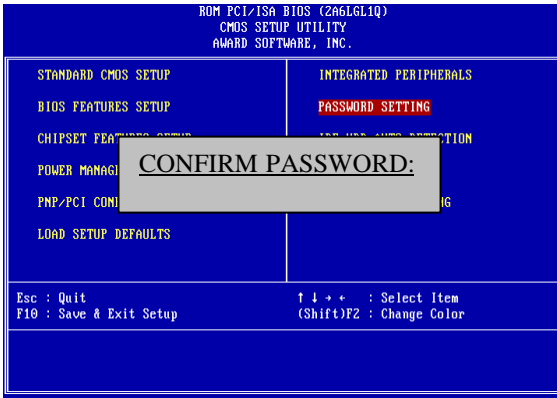
Press <Enter> after appointing the password.



---

## 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 “Security Option” in “BIOS Features Setup”

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



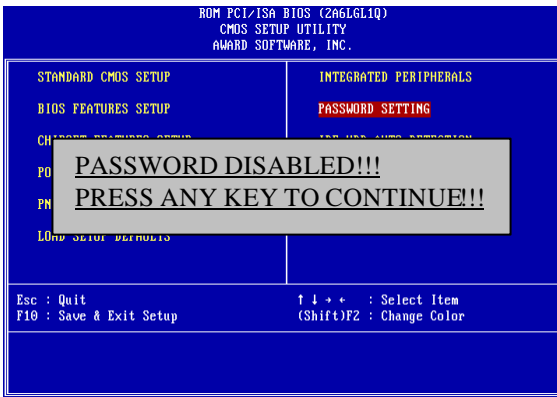
---

## 2. How to Disable “Password Setting”

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

Step 2: Enter “Password Setting”

After enter, it shows “PASSWORD DISABLED PRESS ANY KEY TO CONTINUE.” Thus, press any key as instructed. Password disable the password this way.



---

## 4-1-8 IDE HDD Auto Detection

```
ROM PC/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:

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**

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)
<u>X No. Per Sector</u>	<u>(512)</u>
	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)
<u>X No. Bytes Per Sector</u>	<u>(512)</u>
	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:

<u>Cyls.</u>	<u>Head</u>	<u>Sector</u>	<u>Mode</u>
1120	16	59	NORMAL
560	32	59	LARGE

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside int 12h in order to access the right HDD address the right HDD address!

### 4. Maximum HDD Size:

	No. Cylinder	(1024)
X	No. Head	(32)
X	No. Sector	(63)
X	No. Bytes Per Sector	(512)
		<hr/>
		1 GB

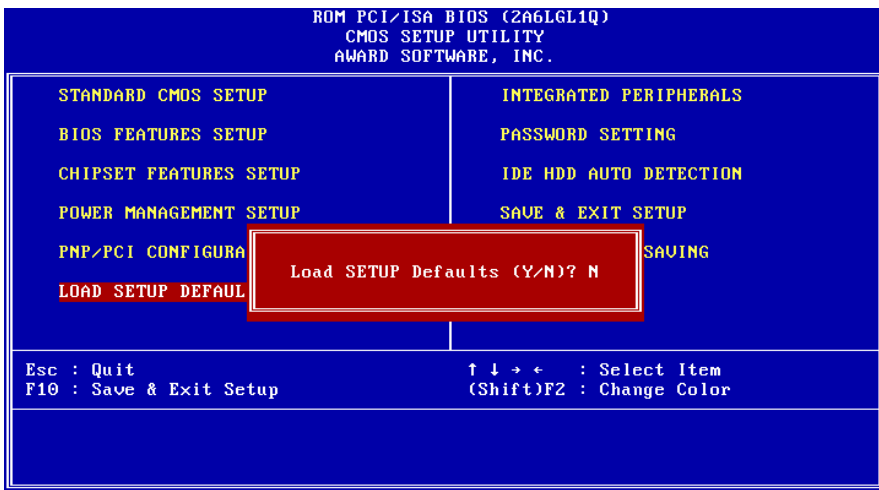


**To support LBA or large mode of HDDs**, there must be some softwares involved. All these softwares are located in the Award® HDD service routine (int 13h). It may be failed to access a HDD with LBA (large) mode selected if you are running under an operating system which replaces the whole int 13h. Unix operating systems do not support either LBA or large and must utility the standard mode. Unix can support drives larger than 528MB.

---

## 4-1-9 Load Setup Defaults

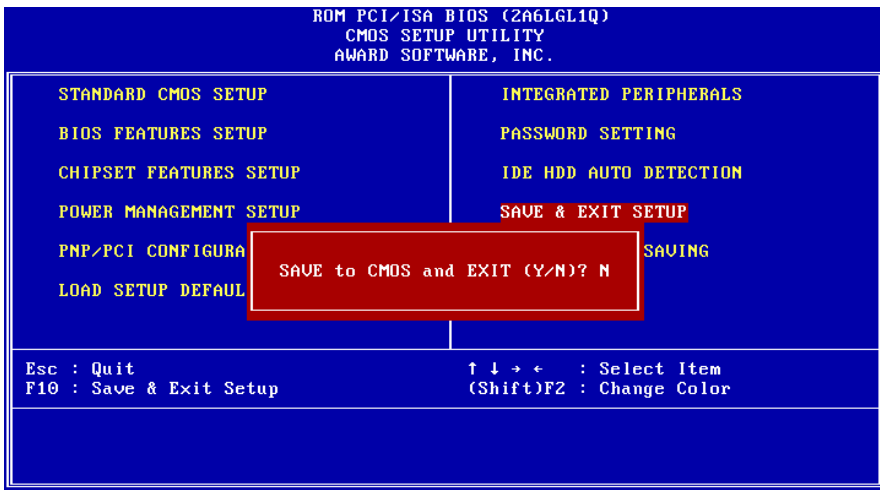
"Load Setup Defaults" loads optimized settings which are stored in the BIOS ROM. The auto-configured settings only affect "BIOS Features Setup" and "Chipset Features Setup" screens. There is no effect on the standard CMOS setup. To use this feature, highlight it on the main screen and press the <Enter> 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. If not, press <N>.



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## 4-1-10 Save & Exit Setup

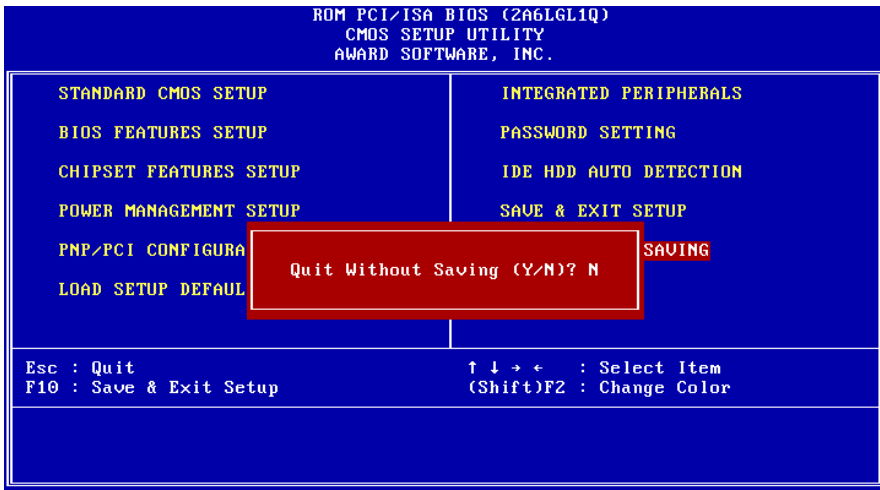
The "Save & Exit Setup" option will bring you back to boot up procedure with all the changes, you have made which are recorded in the CMOS RAM.



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## 4-1-11 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.



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## Chapter 5      Appendix

### 5-1 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)



---

## 5-2 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

---

## 5-3 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 (Winboard 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

---

## 5-4 Interrupt Map

**NMI:** Non-Maskable Interrupt

**IRQ(H/W):**

- 0 system timer interrupt from timer 0
1. keyboard output buffer full
2. cascade for IRQ 8-15
3. serial port2
4. serial port1
5. parallel port 2
6. floppy disk (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

---

## 5-5 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

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## 5-6 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
380 - 38F	SDLC, Bisynchronous 2
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3B0 - 3BF	Monochrome Display and Printer Adapter

---

<b>I/O Address (HEX)</b>	<b>I/O device</b>
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

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## Chapter 6      Q & A

### 6-1 Errors Messages During Power On Self Test

During **power on self test (post)**, BIOS will automatically detect the system devices. Below are the questions that users may always meet. The user may press “**Esc**” key to skip the full memory test.

1.     ***Beep sound***

On power on, the system make beep sound to offer different messages. If the system is configured correctly, it prompts a short beep to show correct the devices configuration is done correctly. When VGA card and DIMM modules are not plugged well, the system makes longer and constant beep sounds.

2.     ***BIOS ROM checksum error***

It indicates the checksum of the BIOS code is not right and system will always halt on power on screen. Contact the dealer to exchange 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 weak BIOS, so exchange new BIOS if necessary.

5.     ***Hard disk initialize***

**Please wait a moment...**

Some hard drives require more time to initialize.

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**6. *Hard disk install failure***

The system can not find or initialize the hard drive controller or the drive. Check if the controller is set correctly. If no hard disk is installed, “**Hard drive selection**” must be set to “**none.**”

**7. *Keyboard error or no keyboard present***

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

**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.