694X PRO
(VIA VT82C694X、4 x AGP、PC-133)
ATX Form Factor
Main Board
User's Manual
(Ver.:1.0)

Copyright

Manual version: 1.0
Ref. No. 3053321
Published in 2001

Warning and Disclaimer

This manual is designed to provide information about the Pentium® II/III system board. Every effort has been made to make this manual as accurate as possible, but no warranty or fitness is implied. All the information is provided on an 'as is' basis. The author and his corresponding publishing company shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising from the information contained in this manual or from the use of the system board that accompanies it.

Information contained in this manual is subject to change without notice. The manufacturer of the main board will not be held responsible for technical or editorial omissions made herein, nor for the incidental or consequential damages resulting from its furnishing, performance, functionality or use. Subsequent changes to this manual will be incorporated into the next edition. We welcome any suggestion regarding this manual or our computer products.

Trademarks

- Intel® and Pentium® are registered trademarks of Intel® Corporation.
- IBM® is a registered trademark of International Business Machines Corporation.
- Microsoft® is a registered trademark of Microsoft® Corporation.
- PCI® is a registered trademark of PCI Special Interest Groups.
- AWARD® is a registered trademark of Award Software Inc.

All other trademarks are the property of their respective owners.

Table of Contents

Chapter 1 Introduction……..…..……1

1-1 Main Board Overview……1
1-2 Specifications……..……3
1-3 Notice of Hardware Installation……..……...……6
1-4 Notice of CD Driver Installation……..……7

Chapter 2 Installation…….……..…8

2-1 Layout Reference……..……..……..8
2-2 Jumper Setting……..…….……..…9
2-2-1 RTC1 : CMOS Status…….……...……9
2-2-2 JP1 : CPU Type Selector…….……10
2-2-3 VID0-VID4 : CPU Vcore Selector……11
2-2-4 JP4-JP7 : AMR Function Selector…..……13
2-2-5 JP8，JP3 : Over-clocking Setup……14

2-3 Connectors ……..……15
2-3-1 Front Panel…….……15
2-3-2 Back Panel…….……17
Keyboard &Mouse..…… ……18
USB1/USB2(Universal Serial Bus)……..18
COM1/COM2……..…18
LPT1 (Parallel Port)……18
2-3-3 ATX Power Supply Connector…...…….……19
2-3-4 CPU Fan Connectors…….……..……...…20
2-3-5 I.R. : IrDA Connector……...……..……21
2-3-6 Floppy Disk Connector……..……..……...……...22
2-3-7 IDE1 & IDE2..…….…....……..……...……23

2-4 DIMM Memory Installation…….…….……24

Chapter 3 PhoenixNet™ BIOS Porting Guide……26

3-1 Product Overview……26
3-2 Graphical Launch Screen (GLS) ……27

Chapter 4 BIOS Setup……28

4-1 Award BIOS CMOS Setup……28
4-1-1 Standard CMOS Setup……29
4-1-2 Advanced BIOS Features……32
4-1-3 Advanced Chipset Features……37
4-1-4 Integrated Peripherals……41
4-1-5 Power Management Setup……46
4-1-6 PNP/PCI Configuration Setup……52
4-1-7 PC Health Status……54
4-1-8 Frequency/Voltage Control……55
4-1-9 Load Optimized Defaults……56
4-1-10 Supervisor/User Password……57
4-1-11 Save and Exit Setup……60
4-1-12 Quit Without Saving……61

Chapter 5 Appendix……62

5-1 Memory Map……62
5-2 I/O Map……63
5-3 Time & DMA Channels Map……64
5-4 Interrupt Map……65
5-5 RTC & CMOS RAM Map……66
5-6 Award BIOS Hard Disk Type……67
5-7 ISA I/O Address Map……69

Chapter 6 Q & A……71

6-1 Error Messages During Power On Self Test……71

Chapter 1 Introduction

1-1 Main Board Overview

The main board is a new-generation INTEL Celeron/FC-PGA Pentium®III；Cyrix MIII main board designed based on VIA VT82C694X 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 694X chipset designed for INTEL Celeron/FC-PGA Pentium®III；Cyrix MIII CPUs and supports new architects such as high-speed 2X/4X mode 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). The main board using the Socket370, accepts Intel® Pentium® II/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 also 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 5*PCI, 1*A.G.P and 1*AMR. (four 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 **"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 application.

✆ This main board supports to 4X mode AGP card specially.

1-2 Specifications

- **PCB board size :** 30.5 cm x 19.00 cm
- **PCB layer :** 4 layers
- **Socket 370**
  Support Intel® Celeron CPU at 66/100 MHz F.S.B and FC-PGA Pentium III CPU at 100 MHz/133 MHz F.S.B. , Cyrix III CPU

   ***CPU is not enclosed in the package.***
- **Memory DIMM :** 3 of 168-pin 3.3V DIMM
- **Expansion Slot :**, 5 x PCI slots, 1x A.G.P. slot and 1 x AMR(allows primary card only)

   ***Supports 1X/2X/4X AGP mode.***
- **Chipset**
  - VIA VT82C694X
  - VIA VT82C686A
- **BIOS:** flash ROM for BIOS
  Award® full **PnP** (Plug & Play) BIOS
- **I/O function**
  - 2 x PCI IDE devices
  - 1 x FDC, 2 x serial ports(16550 fast com)
  - 1 x parallel port device /EPP/ECP/SPP
  - 2 x USB connector (4 port, 2 port optional)
  - IrDA (infrared) connector

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

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

● **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 1A to the signal "5VSB"to support WOL function.

● **Special features**
- Wake up on LAN (ATX power supply is required)
- Modem ring on
- Windows 95/98/2000 power off (ATX power supply is required)
- AMR

1-3 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:

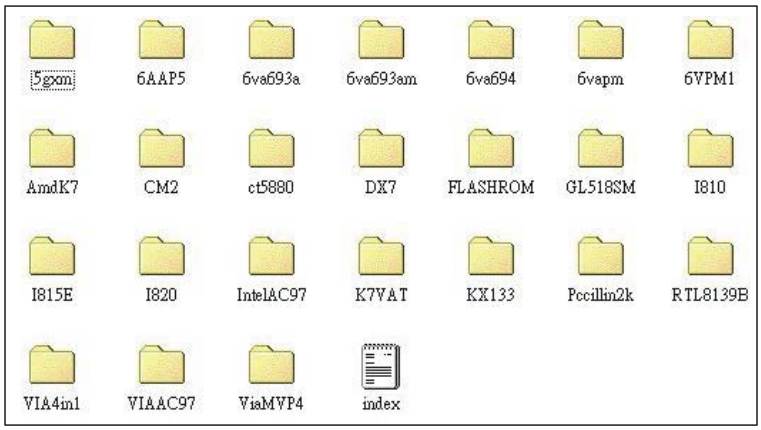
- the main board
- manual
- cables
- driver & utility / CD

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).

1-4 Notice of CD Driver Installation

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



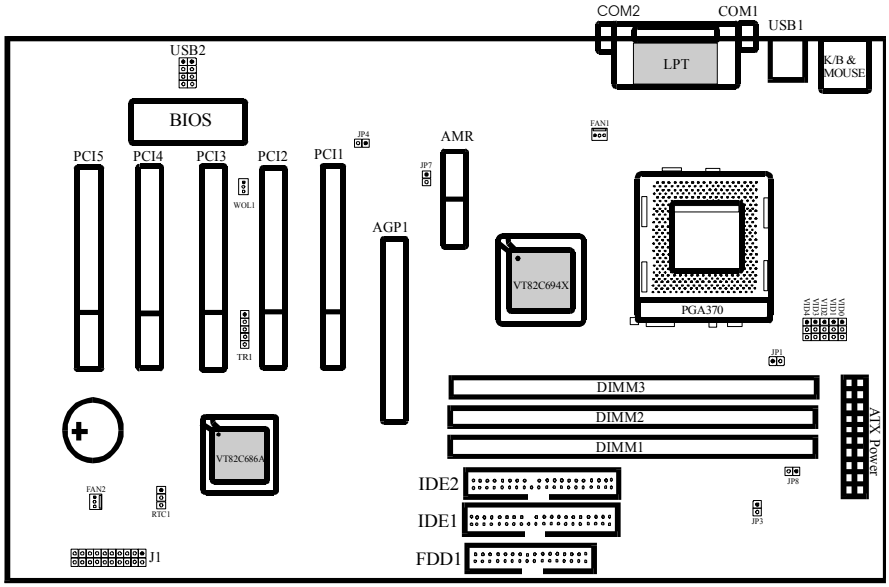
CD driver is always updated with the latest version, so the actual CD content may have some differences with the above picture.

1. **Main boards:** 5gxm, 6AAP5, 6va693a, 6va693am, 6va694, 6vapm, 6VPM1, Amdk7, I810, I815e, I820, K7vat, Kx133, ViaMVP4 **(please choose 6va694 directory for this main board).**
2. **DX7:**Windows DirectX7 driver.
3. **Flashrom:**Bios flashupgrade utility.
4. **Pccillin2K:** anti- virus protection software.View the on-line help for more information.
5. **VIA 4 in 1:**Intall VIA 4 in 1 drivers V4.24 that automatically detect and install the Bus Master PCI IDE driver. VIA AGP Driver, VIA INF Driver & IRQ Routing Driver.

Due to "CIH" virus will damage BIOS completely, user needs to load Pc-cillin anti-virus software when sets up system.

Chapter 2 Installation

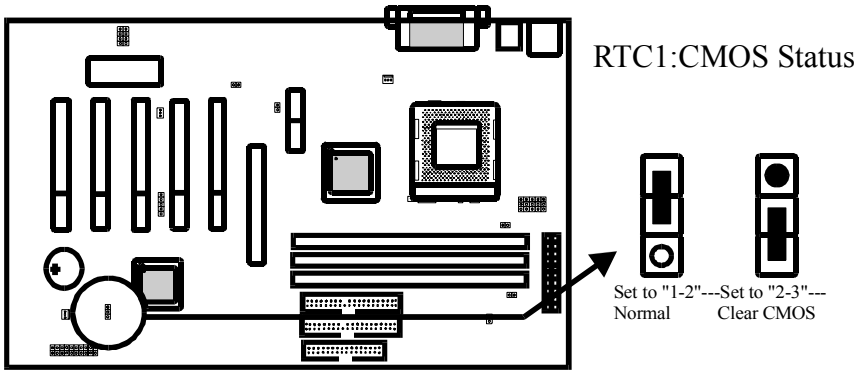
2-1 Layout Reference



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.



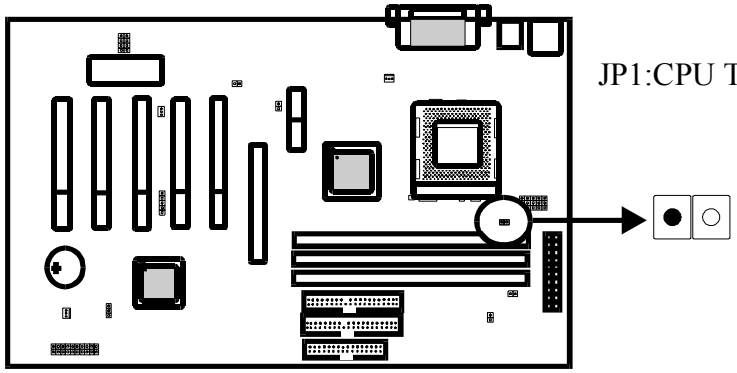
Procedure to clear CMOS:

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 JP1 : CPU Type Selector

JP1 is 2-pin connector, which provides to select CPU type.

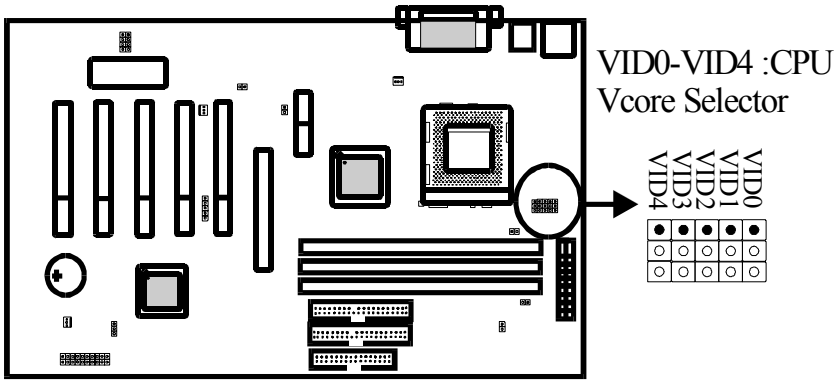


CPU Type	JP1
INTEL FC-PGA PIII CPU	CLOSE
Cyrix III CPU	OPEN
INTEL PII Celeron CPU	OPEN

Remarks : JP1 : FC-PGA Coppermine/Celeron/Cyrix selector.

2-2-3 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.



VID0-VID3	VID4
Default(1-2)	Default(2-3) : for Socket370 Intel PII/PIII CPU, Cyrix III CPU

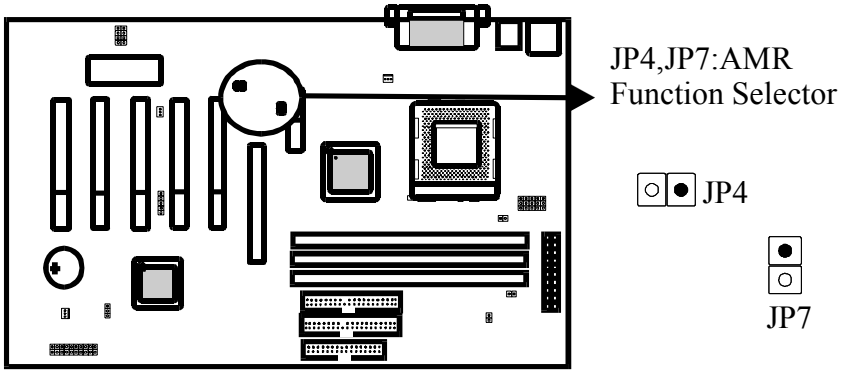
VID0	VID1	VID2	VID3	VID4	CPU_Volt.
2-3	1-2	1-2	2-3	1-2	**2.9V**
1-2	1-2	1-2	2-3	1-2	**2.8V**

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

2-2-4 JP4-JP7 : AMR Function Selector(Optional)

JP4-JP7 are 2-pin connectors which provide AMR function. Please see details as below.



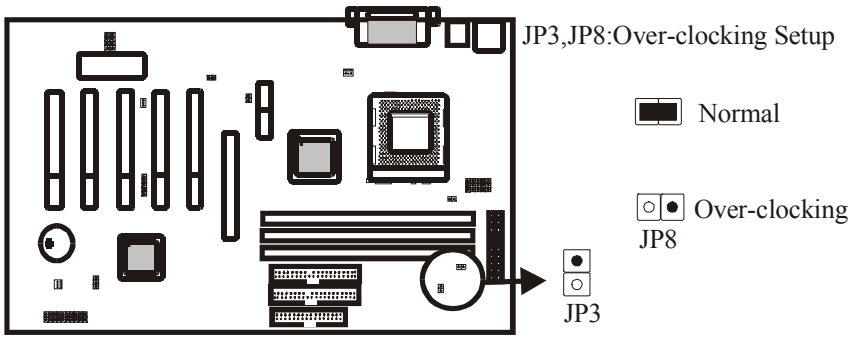
JP7	OFF	Primary CODEC for AMR（default）
JP4	ON	Use AMR Slot（default）

Only Support Primary Card For AMR Slot

2-2-5 JP8、JP3：Over-clocking Setup

JP8 is a 2-pin over-clocking jumper which allows 66MHz F.S.B. CPUs to over-clock to 100MHz. This jumper is for internal test only. No guarantee is provided for over-clocking setup since the chipset does not support.

JP3： is a 2-pin over- clocking jumper which allows 100MHz F.S.B. CPUs to over-clock to 133MHz



	Normal	Over-clocking 66MHz to 100MHz	Over-clocking 100MHz to 133MHz
JP8	ON	OFF	ON
JP3	ON	ON	OFF

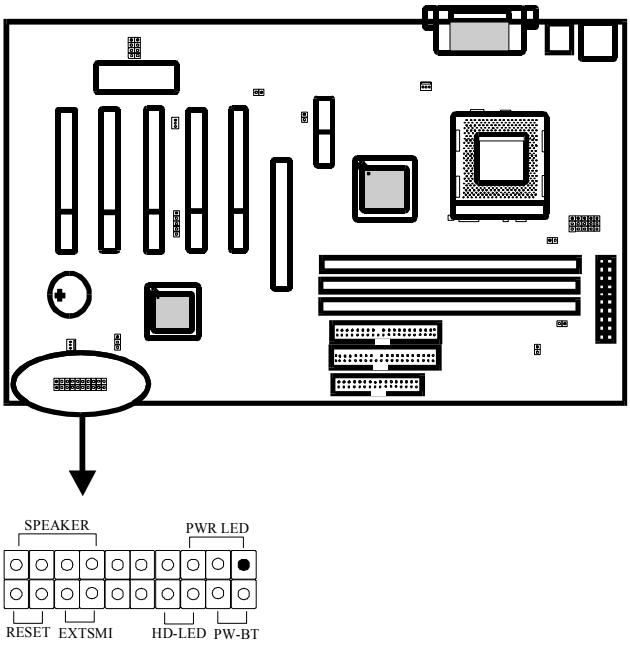
The manufacturer shall have neither liability nor responsibility to any person or entity with respect to any loss or damages arising by users' over-clocking or over-voltage.

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 ""RESET," "EXTSMI," "HD-LED," "PW-BT," "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.

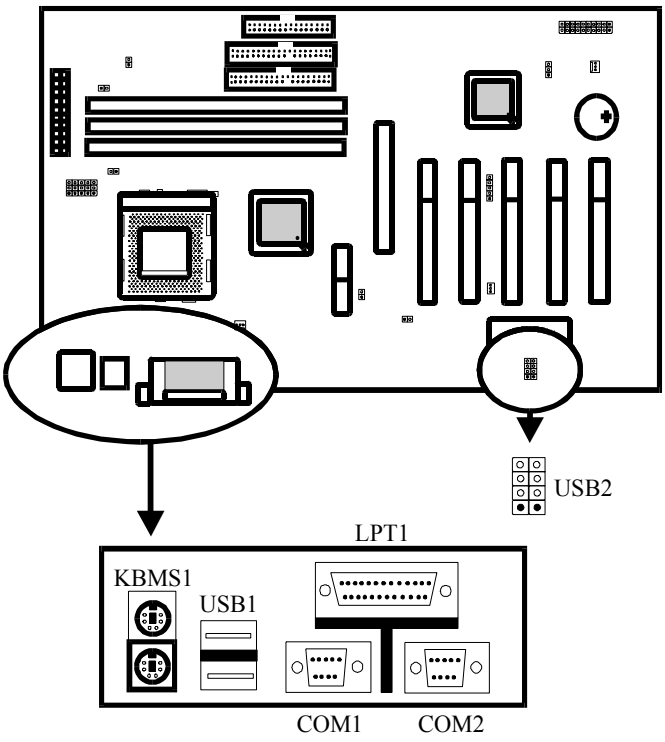
RESET connector is a 2 -pin keyed Berg strip, connected to the push button reset switch on the case front panel. Shorting both pin 1 & pin 2 can reset the system, which is similar to the power off and then on again.

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, port on the case back panel. Please refer to more details as below.



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

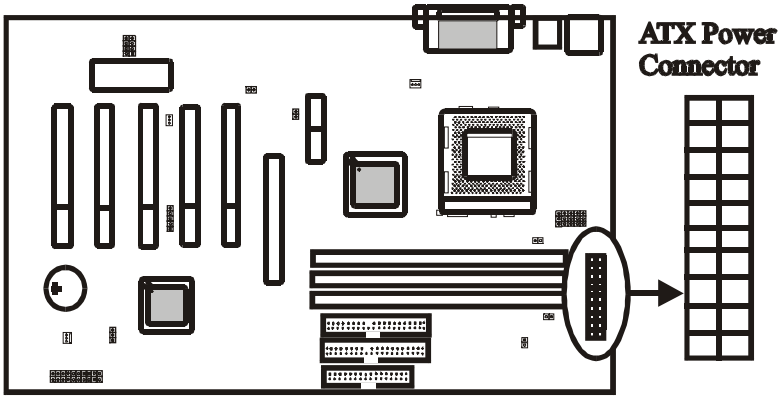
The onboard serial port 1 and port 2 are the 9-pin D-subminiature male connector COM1/2. COM1/2 can be disabled in BIOS setup. Please refer to Chapter 3 "Integrated Peripherals" for more information.

LPT1(Parallel Port)

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

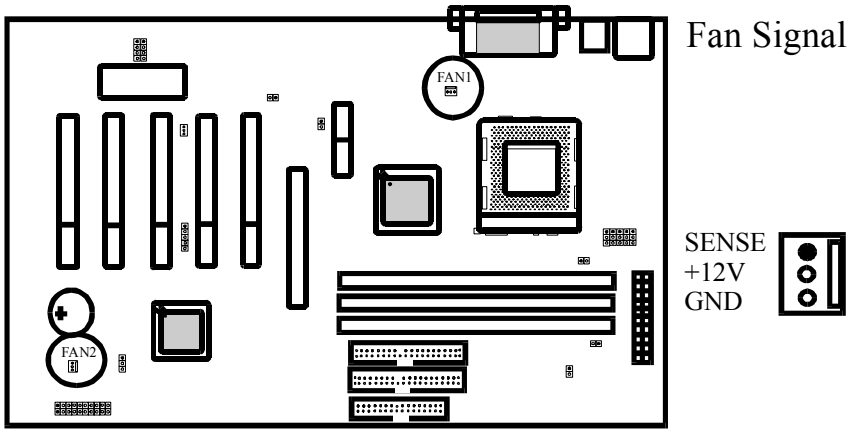
2-3-3 ATX Power Supply Connector

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.



2-3-4 CPU Fan Connectors

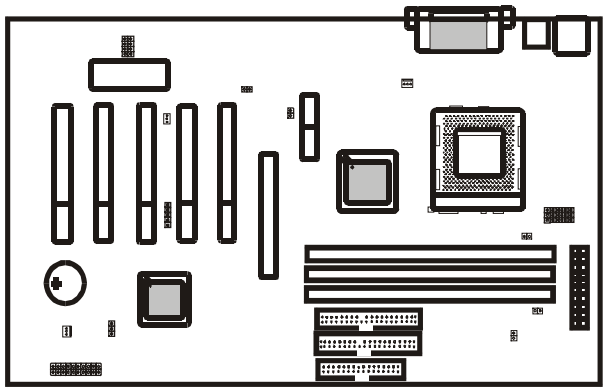
There are 2 fan connectors on this main board, and it is marked as **"FAN1", "FAN2".** Each fan connector has three pins.



2-3-5 I.R. : 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.

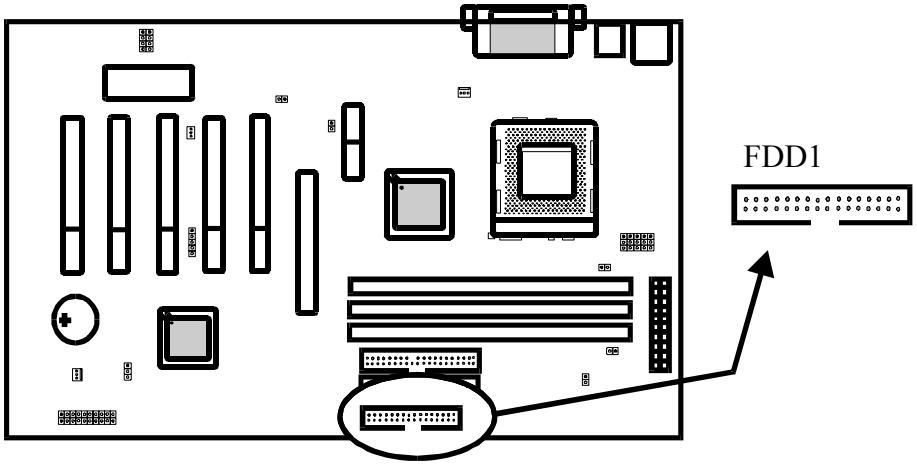


I.R.:IrDA Cinnector

	IR1
1	VCC
2	NONE
3	IRRX
4	GND
5	IRTX

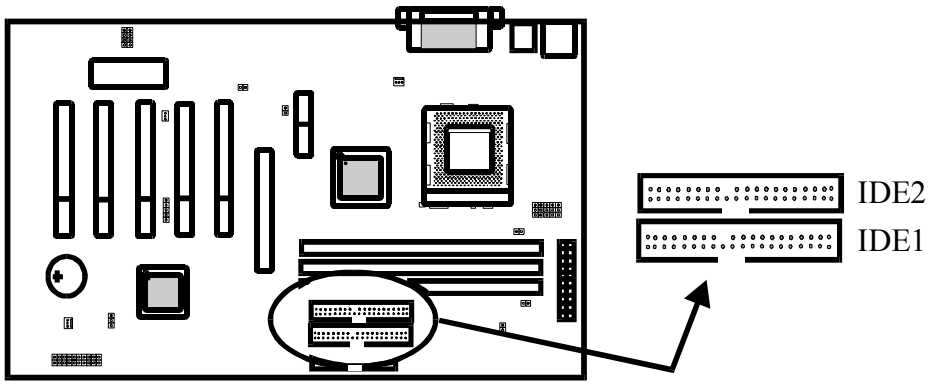
2-3-6 Floppy Disk Connector

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



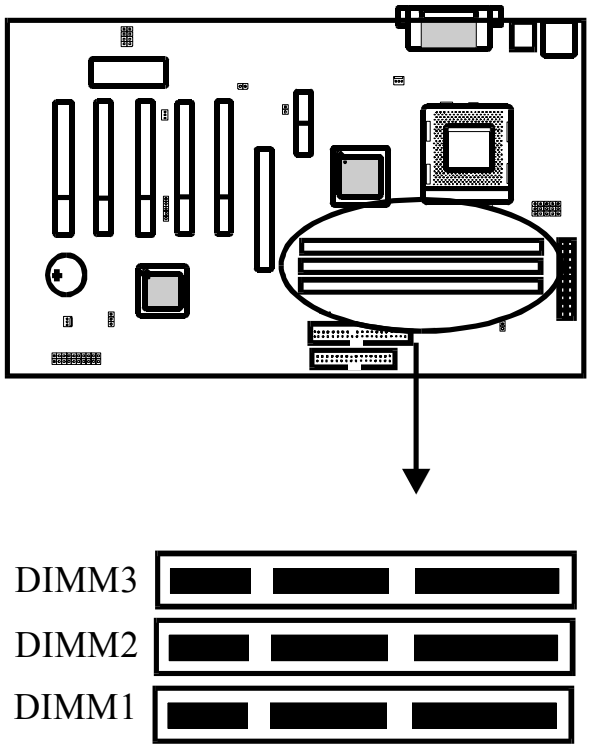
2-3-7 IDE1 & IDE2

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.

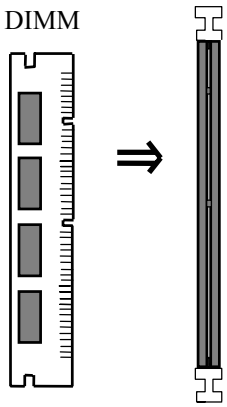


2-4 DIMM Memory Installation

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.



This main board supports both synchronous and asynchronous mode DIMMs. User can use either PC-100 or PC-133 DIMMs.

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.

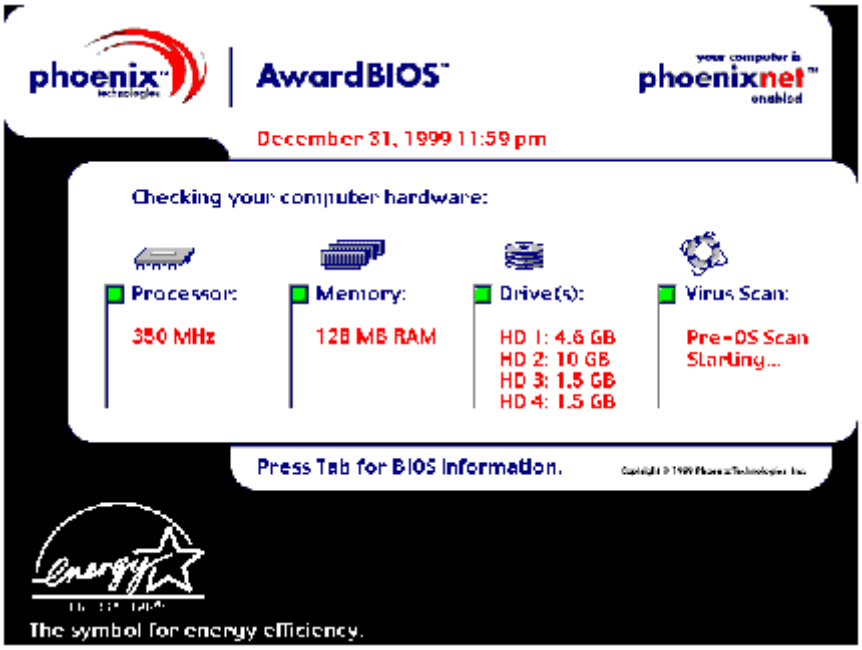
PhonixNet delivers 1) one-click, easy access to the Internet, 2) offers from leading Internet companies, and 3) anti-virus protection(Trend ChipAway Virus™) as well as other free offers.

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)

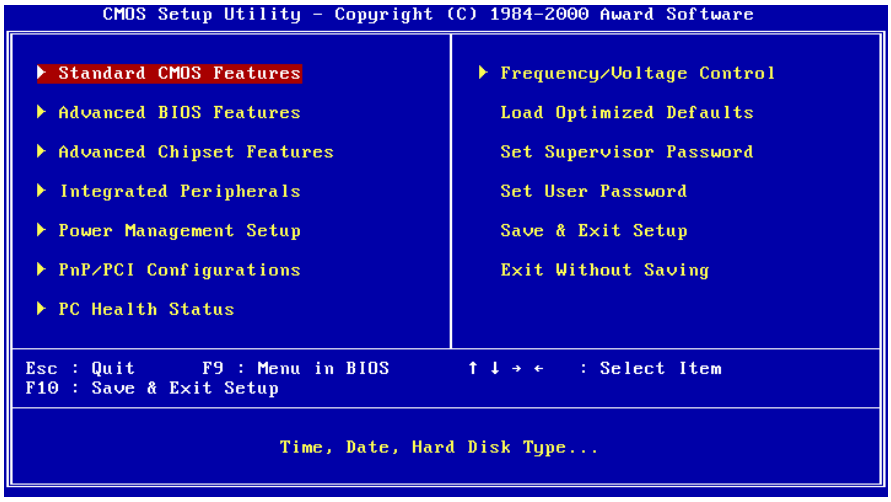
The first ROMSmarts component, GLS, displays a graphical screen to the user early in the boot process, as the first image displayed on the screen. This display remains on the screen throughout the normal BIOS initialization phase called POST.

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.



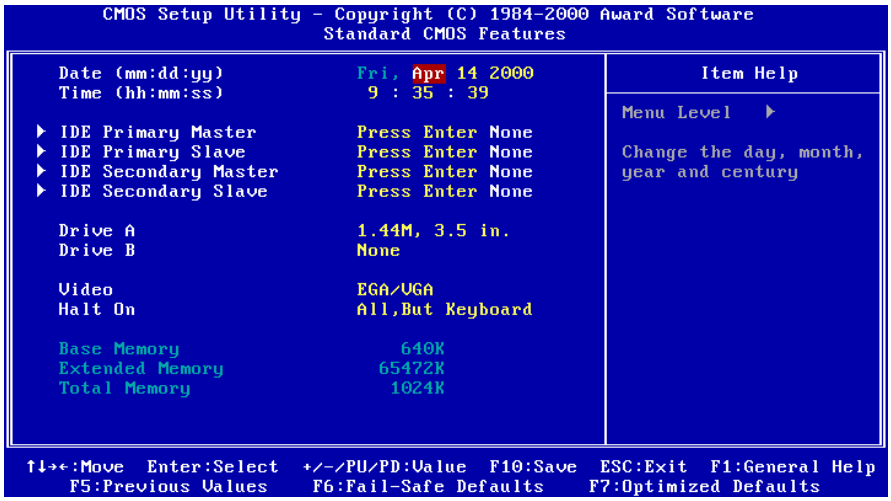
Chapter 4 BIOS Setup

4-1 Award BIOS CMOS Setup

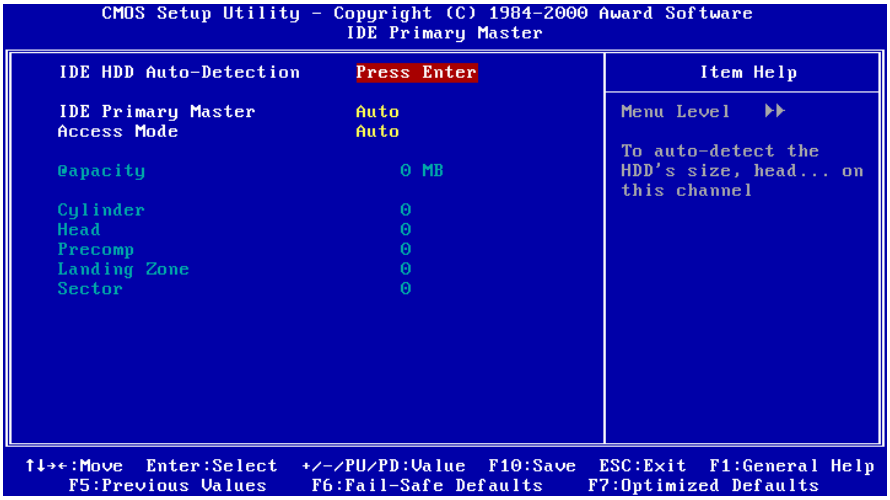


The menu displays all the major selection items and allow user to select any of shown item. The selection is made by moving cursor (press any direction key) to the item and press **<Enter>** key. An on-line help message is displayed at the bottom of the screen as cursor is moving to various items which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


CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
IDE Primary Master
IDE HDD Auto-Detection
Press Enter
IDE Primary Master
Auto
Access Mode
Auto
@apacity
0 MB
Cylinder
0
Head
0
Precomp
0
Landing Zone
0
Sector
0
Item Help
Menu Level
To auto-detect the HDD's size, head... on this channel
↑↓→←:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Hard Disk Configurations

1.IDE HDD Auto-Detection : press this item to Auto Detect the HDD type.

2.IDE Primary Master : select "AUTO" to detect the mode type automatically. Select "None/Auto/Manual" users have to redefine the following 4-8 items according to HDD.
"NONE" means this item disabled.

3. ACCESS 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.

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

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

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

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

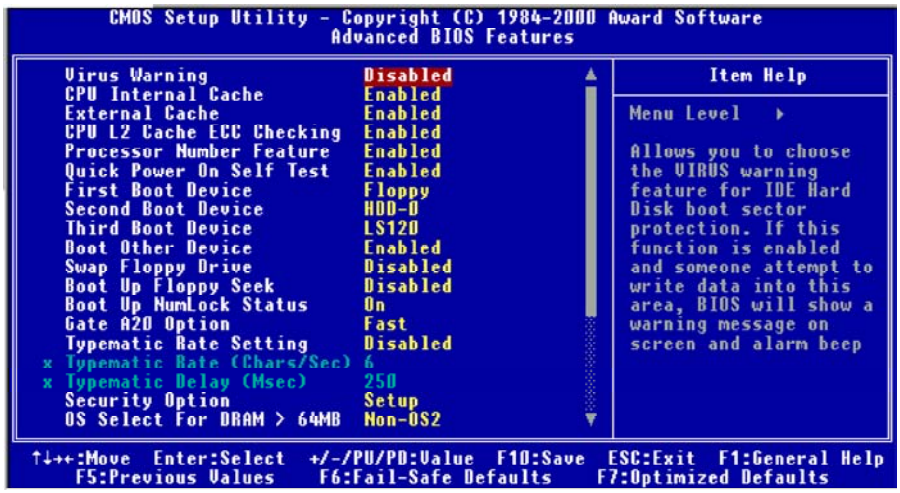
8.SECTOR : the sector number of each track defined on the hard disk. The range is from **"1"** to **"64".**

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 occurred during POST.*

4-1-2 Advanced BIOS Features

Menu below shows all of the manufacturer's default values of this main board. Move the cursor by pressing **<PageDown>/-** or **<PageUp>/+** key to modify the parameters, press **[F1]** key to display help message of the selected item. This setup program also provide 2 convenient ways to load the default parameter data from BIOS **[F6]** and **[F7]** area if shown data is corrupted. This provides the system a capability to recover from any possible error.



Virus Warning
:Enabled
:Disabled (default)

CPU Internal Cache
Enabled : enable L1 cache(default)
Disabled: disable L1 cache

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

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

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

First Boot Device
This category determines which drive the system searches first. System will search in turn for floppy disk drive; then hard disk drive, and finally Floppy drive. Default value is **"FLOPPY".** Options are as below:
FLOPPY; LS120; HDD-0; SCSI; CDROM; HDD-1; HDD-2; HDD-3; ZIP100; LAN; Disabled

Second Boot Device
This category determines which drive the system searches first. System will search in turn for floppy disk drive; then hard disk drive, and finally Floppy drive. Default value is **"HDD-0".** Options are as below:
FLOPPY; LS120; HDD-0; SCSI; CDROM; HDD-1; HDD-2; HDD-3; ZIP100; LAN; Disabled

Third Boot Device
This category determines which drive the system searches first. System will search in turn for floppy disk drive; then hard disk drive, and finally Floppy drive. Default value is **"LS120".** Options are as below:
FLOPPY; LS120; HDD-0; SCSI; CDROM; HDD-1; HDD-2; HDD-3; ZIP100; LAN; Disable

Boot other Device
:Enabled (default)
:Disabled

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

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

Boot Up Numlock Status
:On(default)
:Off

Gate A20 Speed
:Normal
:Fast(default)

Typematic Rate Setting
This determines the typematic rate.
Enabled: enable typematic rate and typematic delay programming.
Disabled (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

Item	**Function**	**Note**
Setup (default)	Security protection in CMOS setup menu	After setting password in BIOS CMOS **"Supervisor Password" or User Password,**" it protects BIOS CMOS setup.
System	Security protection in system boot-up & BIOS setup	This function secures the system under system boot-up and BIOS setup after setting password.

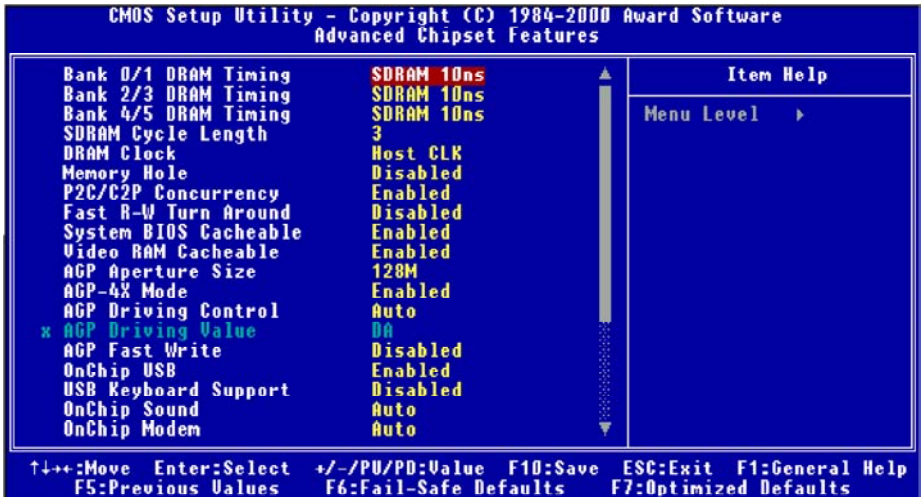
OS Select For DRAM> 64MB
This option is especially set for OS2 operating system. Set **"OS2"** for RAM memory over 64MB and set **"Non-OS2"** for other operating systems like Windows® 95/98 or NT.
:Non-OS2(default)
:OS2

HDD S.M.A.R.T. Capability
：Disabled（default）
：Enabled

Video BIOS Shadow
To determine whether video BIOS will be copied to RAM for faster execution.
:Enabled(default)--- Video Shadow is enabled.
:Disabled --- Video Shadow is disabled.

C8000-CBFFF 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 Advanced Chipset Features



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)**—10 nano second**
: SDRAM 8ns, normal, medium, fast, turbo

SDRAM Cycle Length: control the DRAM page missing and row miss leadoff timing.
:2
:3 (default)
DRAM Clock
:Host CLK (default)
System shows the actual DRAM speed the system uses.
:HCLK+33M
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

P2C/C2P Concurrency
:Enabled (default)
:Disabled

Fast R-W Turn Around
: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-4X Mode
:Enabled (default)
:Disabled

AGP Driving Control
:Auto (default)
:Manual

AGP Driving Value
：Min：0000
：Max：00FF
Key in a Hex mumber：_____

AGP Fast Write
:Enabled
:Disabled(default)

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)

On Chip Sound：Auto
On Chip Modem：Auto

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

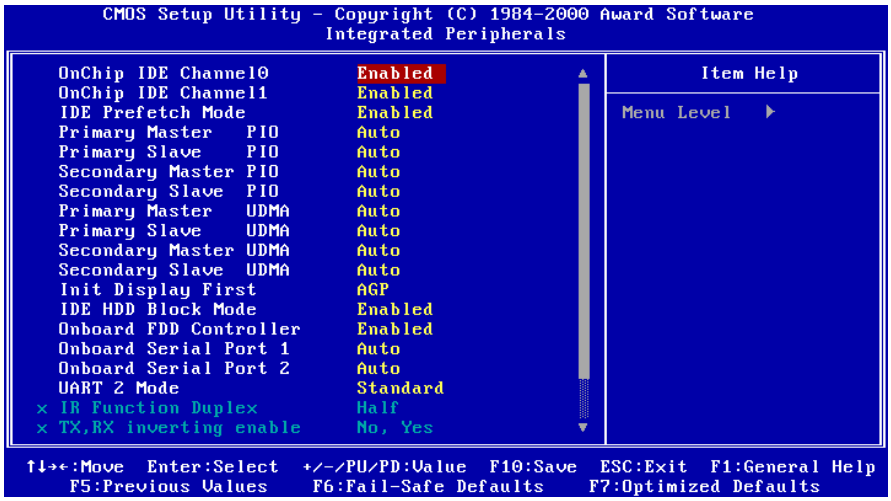
PCI#2 Access #1 Retry
:Enabled (default)
:Disabled

AGP Master 1 WS Write
:Enabled
:Disabled (default)

AGP Master 1 WS Read
:Enabled
:Disabled (default)

Memory Parity/ECC Check
:Enabled --- enabled adds a parity check to the boot-up memory tests. Select enabled only if the system DRAM contains parity.
:Disabled (default)

4-1-4 Integrated Peripherals



OnChip IDE Channel0/1
:Enabled (default)
:Disabled

IDE Prefetch Mode
: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

IDE HDD Block Mode
:Enabled (default)
:Disabled

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."

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

Onboard Parallel Mode
:Normal (default)
:ECP, EPP, ECP/EPP

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 (default)
:EPP1.7

Onboard Legacy Audio
：Disabled
：Enabled
Sound Blaster
：Disabled
：Enabled

SB I/O Base Address
：220H
：240H
：260H
：280H

SB IRQ Select
：IRQ5
：IRQ7
：IRQ9
：IRQ10

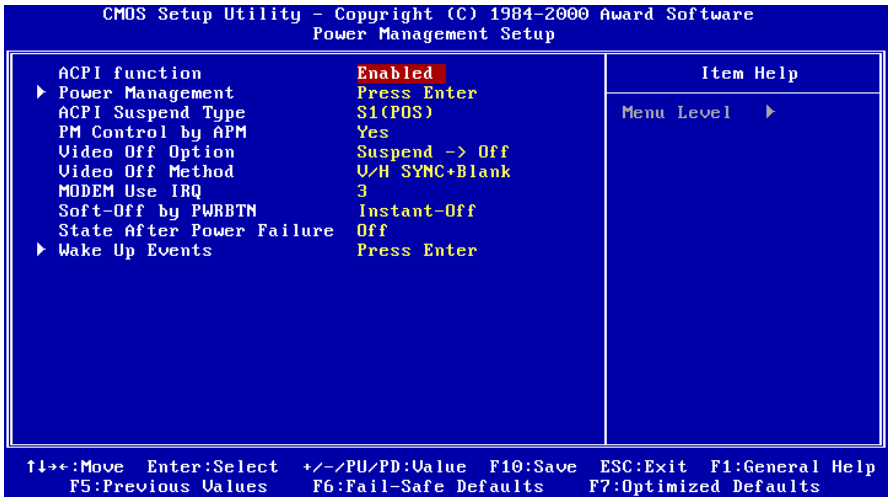
SB DMA Select
：DMA0
：DMA1
：DMA2
：DMA3

MPU401
：Disabled
：Enabled

MPU401 I/O ADDRESS
：300-303H
：310-313H
：320-323H
：330-333H（Default）

Game Part（200-207h）
：enabled

4-1-5 Power Management Setup



ACPI function
This function allows you to enable/disable the Advanced Configuration and Power Management(ACPI).
:Enabled (default)
:Disabled

ACPI Suspend Type
:S1(POS) (default)

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, eg. 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.*

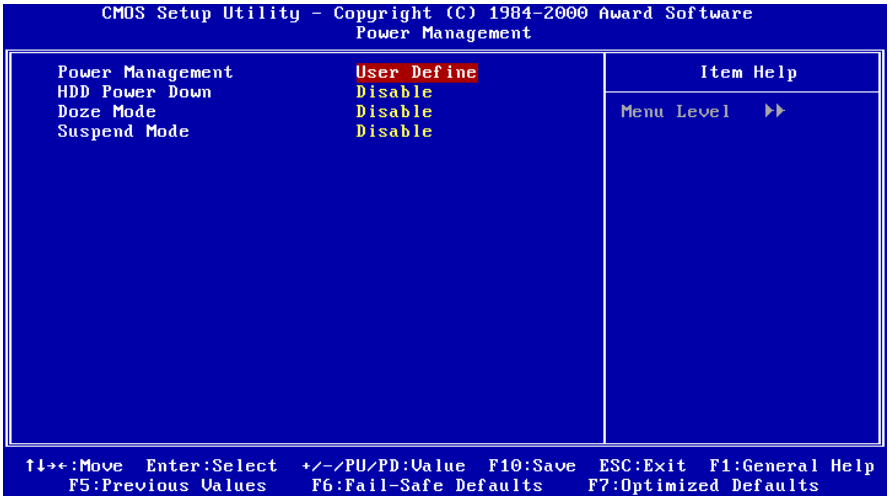
Video Off Option
:Suspend --> Off(default)
:All Modes --> Off
:Always On

Video Off Method
This item determines the manner in which the monitor is blanked.
:V/H SYNC+Blank(default) --- this selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
:Blank Screen --- this option only writes blanks to the video buffer.
:DPMS Support --- Initial display power management signaling.

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.

State After Power Failure
This field lets you determine the state that your PC returns to after a power failure.
:Auto
:On --- the PC will restart after a power failure.
:Off(default) --- the PC will not boot after a power failure.

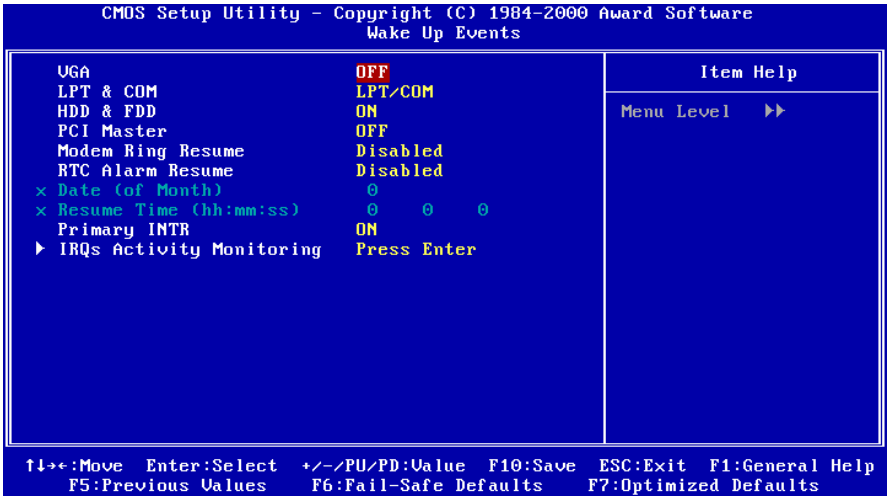


Power Management
:User Define(default)--users can configure their own power management
:Min Saving
:Max Saving

HDD Power Down
When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
:Disabled(default)
:1 Min ~ 15 Min

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

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



VGA
:ON
:OFF(default)

LPT & COM
:LPT/COM (default)
:NONE
:LPT
:COM

HDD & FDD
:ON(default)
:OFF

PCI Master
:ON
:OFF(default)

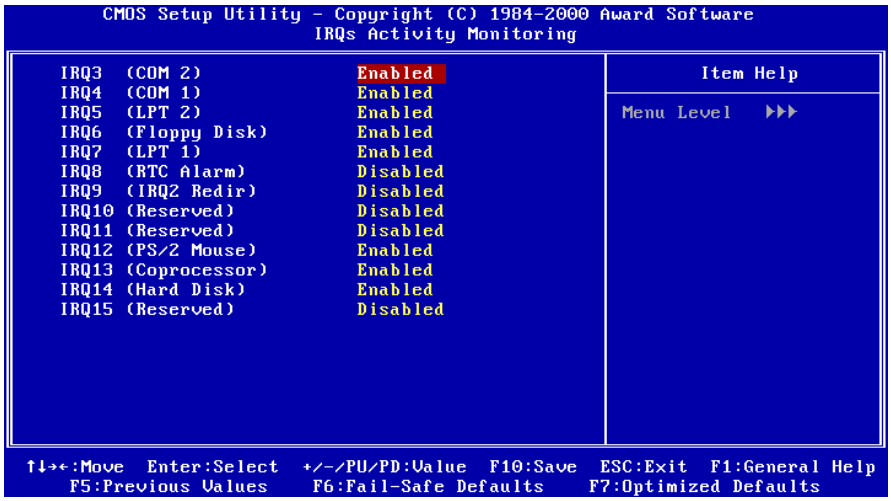
Modem Ring Resume
Enabled: modem ring on function --- system can be turned on through modem.
Disabled(default): disble this function.


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.

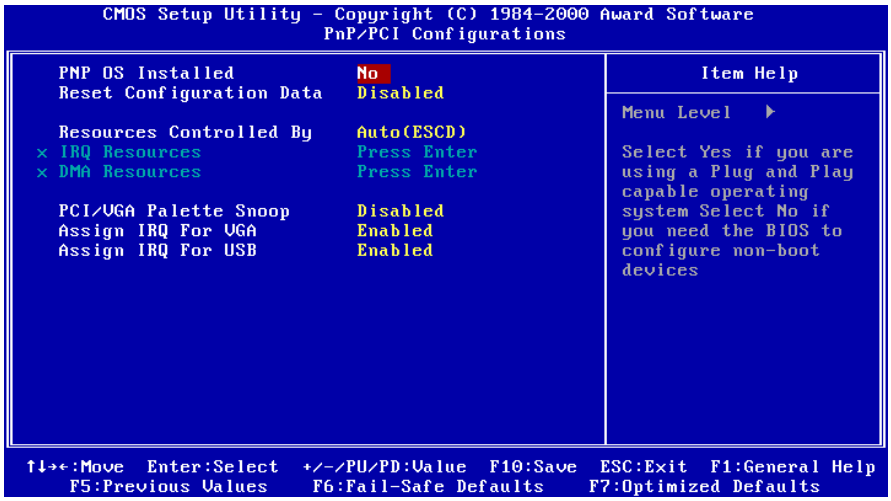

Note: this function only works when the system is turned off.

Primary INIR
IRQ Activity Monitoring



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.

4-1-6 PnP/PCI Configuration Setup



PNP OS Installed
:No(default)
OS will not recognize PnP devices.
:Yes
OS will arrange the setup of PnP devices.

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.

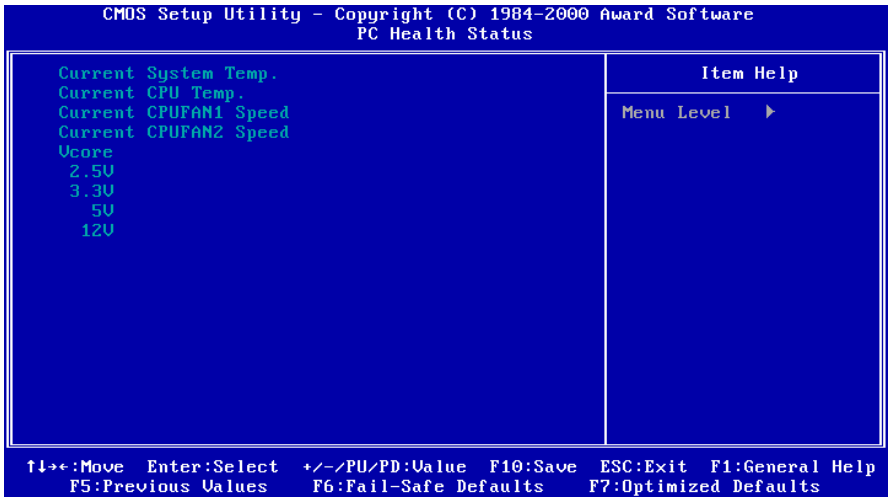
Resources Controlled By
:Manual
The table will show the below items: **"IRQ Resources, DMA Resources."** The user can adjust the shown items as required.
:Auto(ESCD) (default)
The table will not show the above items, and the system will automatically assign the above setup.

PCI/VGA Palette Snoop
:Enabled
:Disabled (default)

Assign IRQ For VGA
:Enabled (default)
:Disabled

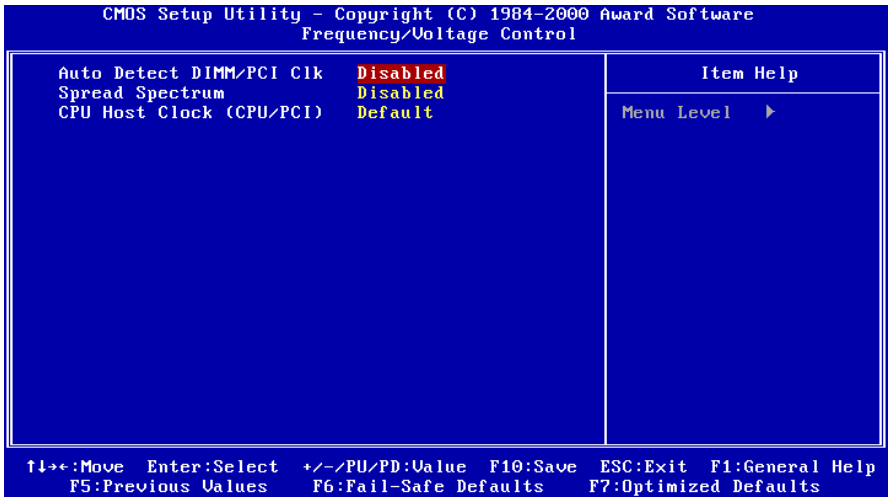
Assign IRQ For USB
:Enabled (default)
:Disabled

4-1-7 PC Health Status



Current CPU Temperature, Current CPU Fan1 speed/CPU Fan2 speed/Current Vin3(V)/Vin1(V)/VIN(2)/Vdd(V):
System will automatically detect the above items and show the status.

4-1-8 Frequency/Voltage Control



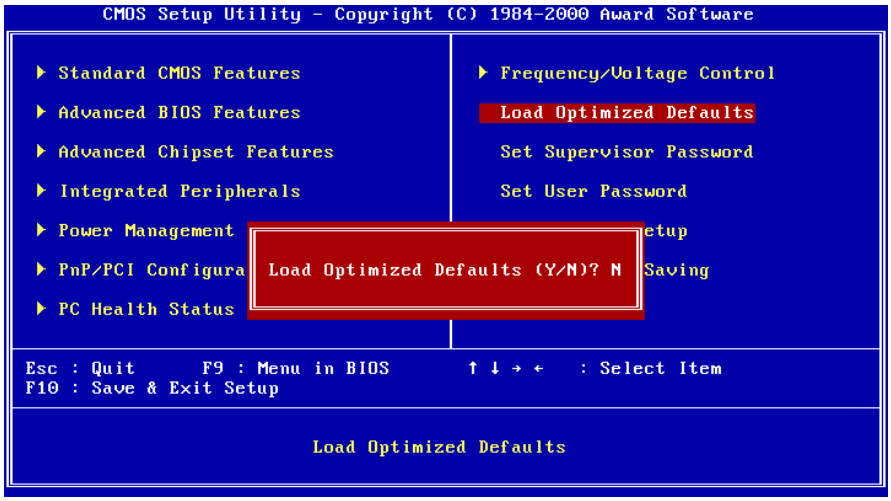
Auto Detect DIMM/PCI CIK
:Enabled
:Disabled (default)

Spread Spectrum
:0.25%
:0.50%
:Disabled(default)

This selection is reserved for manufacturers to pass CE test only not available for users.

CPU Host Clock (CPU/PCI)
: 66/33 MHz, 75/37 MHz, 83/41 MHz, 100/33 MHz, 103/34 MHz, 112/37 MHz, 124/41 MHz, 133/44 MHz, 124/31 MHz, 133/33 MHz, 140/35 MHz

4-1-9 Load Optimized Defaults



"Load Optimized 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, enter **<N>**.

4-1-10 Supervisor/User Password

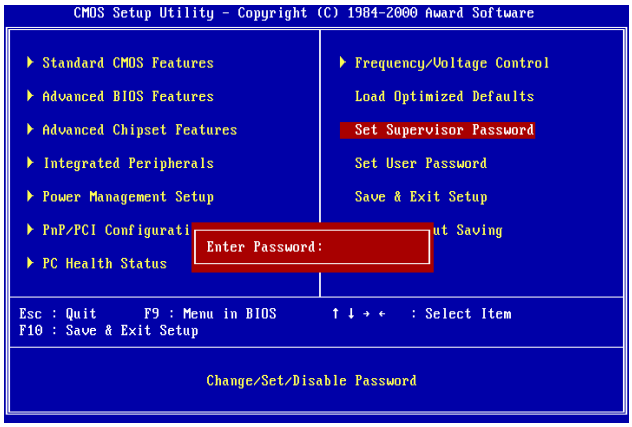
The "Supervisor/User Password setting" utility sets the security protection. There are two kinds of password functions in the setup menu : one is “Supervisor Password,” and the other is “User Password.” Their difference is:

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

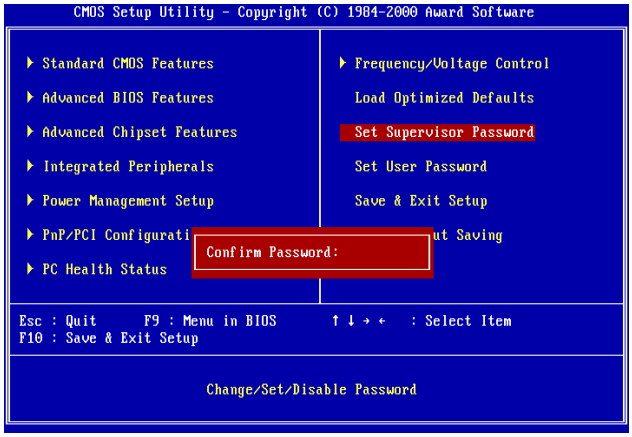
User Password: this function only allows you to enter the setup menu but not to change the options of the setup menu except “USER PASSWORD,” “SAVE & EXIT SETUP,” and “EXIT WITHOUT SAVING.”

1. How to set “Supervisor Password” & “User Password”
The setup of “Supervisor Password” and “User Password” has the same steps.

Step 1: Enter Password --Press <Enter> after appointing the password.



Step 2 : **Confirm Password**
Type the password again and press **<Enter>.**



If you forget password, please clear CMOS.
(refer to jumper JBAT)

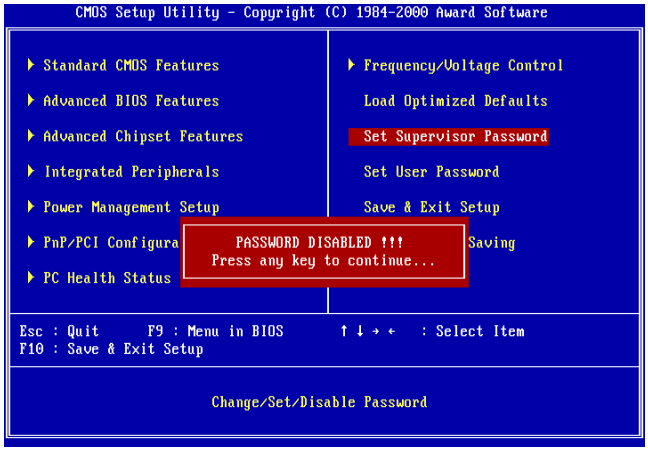
Step 3: Set “Security Option” in “BIOS Features Setup”

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

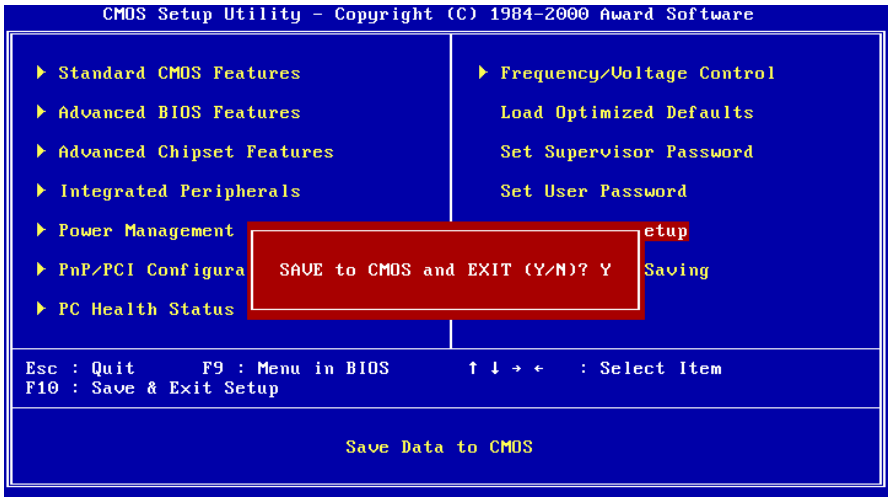
2. How to Disable “Supervisor Password” & “User Password”.

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

Step 2: Enter “Supervisor Password” or “User Password”
When it shows “Enter Password”, press the <Enter> key instead of entering a new password when "ENTER PASSWORD" appears. It will inform “PASSWORD DISABLED PRESS ANY KEY TO CONTINUNE.” Then, press any key as instructed to disable the password.

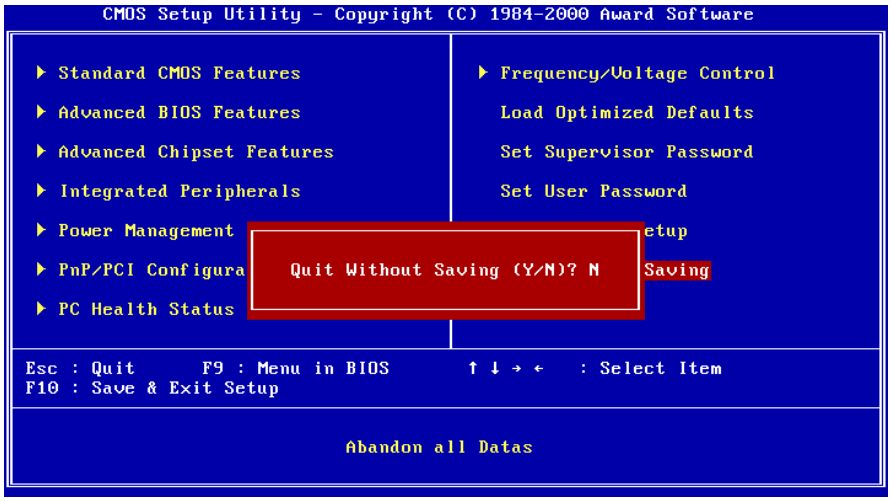


4-1-11 Save & Exit Setup



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.

4-1-12 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 changed.

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 (ITE 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

A. NMI: non-maskable interrupt

B. IRQ(H/W):

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

5-6 Award BIOS Hard Disk Type

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
1	306	4	128	305	17	10MB
2	615	4	300	615	17	21MB
3	615	6	300	615	17	32MB
4	940	8	512	940	17	65MB
5	940	6	512	940	17	49MB
6	615	4	65535	615	17	21MB
7	462	8	256	511	17	32MB
8	733	5	65535	733	17	31MB
9	900	15	65535	901	17	117MB
10	820	3	65535	820	17	21MB
11	855	5	65535	855	17	37MB
12	855	7	65535	855	17	52MB
13	306	8	128	319	17	21MB
14	733	7	65535	733	17	44MB
16	612	4	0	663	17	21MB
17	977	5	300	977	17	42MB
18	977	7	65535	977	17	59MB
19	1024	7	512	1023	17	62MB
20	733	5	300	732	17	31MB
21	733	7	300	732	17	44MB
22	733	5	300	733	17	31MB
23	306	4	0	336	17	10MB
24	977	5	0	925	17	42MB
25	1024	9	65535	925	17	80MB
26	1224	7	65535	754	17	74MB

Type	Cylinder	Heads	Write Pre-comp	Landing Zone	Sectors	Size
27	1224	11	65535	754	17	117MB
28	1224	15	65535	699	17	159MB
29	1024	8	65535	823	17	71MB
30	1024	11	65535	1023	17	98MB
31	918	11	65535	1023	17	87MB
32	925	9	65535	926	17	72MB
33	1024	10	65535	1023	17	89MB
34	1024	12	65535	1023	17	106MB
35	1024	13	65535	1023	17	115MB
36	1024	14	65535	1023	17	124MB
37	1024	2	65535	1023	17	17MB
38	1024	16	65535	1023	17	142MB
39	918	15	65535	1023	17	119MB
40	820	6	65535	820	17	42MB
41	1024	5	65535	1023	17	44MB
42	1024	8	65535	1023	17	68MB
43	809	6	65535	852	17	42MB
44	809	9	65535	852	17	64MB
45	776	8	65535	775	17	104MB
46	AUTO	0	0	0	0	
47	USER'S	TYPE				

5-7 ISA I/O Address Map

I/O Address (HEX)	I/O device
000 - 01F	DMA Controller 1, 8237A-5
020 - 03F	Interrupt Controller 1, 8259A
040 - 05F	System Timer, 8254-2
060 - 06F	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 A dress (HEX)	I/O device
380 - 38F	SDLC, Bisynchronous 2
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3B0 - 3BF	Monochrome Display and Printer Adapter
3C0 - 3CF	Enhanced Graphics Adapter
3D0 - 3DF	Color/Graphics Monitor Adapter
3F0 - 3F7	Diskette Drive Controller
3F8 - 3FF	Serial Port 1 (RS-232-C)
6E2 - 6E3	Data Acquisition Adapter 1
790 - 793	Cluster Adapter 1
AE2 - AE3	Data Acquisition Adapter 2
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 6 Q & A

6-1 Error 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 most often 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 device 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 replace a new BIOS if necessary.

5. Hard disk initialize

Please wait a moment…

Some hard drives require more time to initialize.

6. Hard disk install failure

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

7. Keyboard error or no keyboard present

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

8. Keyboard is lock out - Unlock the key

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.