6A815E
(INTEL i815E Chipset, S-370)
ATX Form Factor
Main Board
User's Manual

Copyright

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Chapter 1 Introduction

1-1 Overview

The main board utilizes Intel's latest i815E chipset integrated with new architects such as AGP interface multiplexed with Internal Graphics, UDMA66/100, CNR(communication Networking Riser) SDRAM, USB port are designed to fit INTEL® PPGA and FC-PGA Celeron CPUs or FC-PGA PIII® Coppermine™ CPUs.

The Intel®815E Chipset is a high-flexibility chipset designed to extend from the basic graphics/multimedia PC platform up to the mainstream performance desktop platform. The chipset consists of a Graphics and Memory Controller Hub(Intel® 815 GMCH), an I/O Controller Hub(ICH2) for the I/O subsystem, and a Firmware Hub(FWH). The Intel®815E GMCH integrates a system memory SDRAM controller that supports a 64-bit 100/133 MHz SDRAM array.

The Intel®815E GMCH has a Display Cache SDRAM controller that supports a 32-bit 133 MHz SDRAM array for enhanced integrated 2D and 3D graphics performance. Multiplexed with the display cache interface is an AGP controller interface to enable graphics configuration and upgrade flexibility with the Intel®815E chipset. The AGP interface and the internal graphics device are mutually exclusive. When the AGP port is populated with an AGP graphics card the integrated graphics is disabled and thus the display cache interface is not needed.

The main board also employs ITE I/O LPC controller utilizing with fully Plug and Play device and keyboard password setup. It 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, SPP(Standard Parallel Port), Infrared IrDA (HPSIR), and Amplitude Shift Keyed IR. (ASKIR) port and hardware monitor functions too.

The main board contains 5*PCI for highest performance I/O add-on adapter cards. The system board supports three Bus Mastering Slots for high-performance I/O add-on cards. It supports Matrix Independent PCI routing for optimal multiple PCI adapter operations and is PCI2.2 specification compliant. The 133MB/s data transfer rate can be compared to 33MB/s on EISA bus or 8MB/s on ISA bus. It supports back to back sequential CPU to PCI Memory writes to PCI Burst Write for full PCI throughput. The new CNR Slot is designed to fit low cost C(Communication) N(Networking) R(Riser) or MR card.

The main board has 3 dual in-line memory modules (DIMM) which can be installed with PC-100/PC-133 SDRAM memory. The memory subsystem supports up to 512 MB SDRAM of non-buffered 3.3V using standard 168-pin DIMM sockets.

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

In conclusion, the system chipset and design make the main board a high performance, cost-effective, and energy efficient main board which 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.

TV-OUT, AC-97, CNR are optional functions.

1-2 Specifications

- **PCB Board size :** 30.5cm(L) x 21.0cm(W), ATX form factor, 4 layers PCB.

- **CPU :** Socket370 for Intel® Celeron™/Coppermine™ PIII® CPU up to 1GHz or faster processor.

  CPU is not enclosed in the package.

- **Memory : Supports up to 3 double sided DIMMs at 100MHz system memory bus.**
  Supports up to 2 double sided or 3 single sided DIMMs at 133MHz system memory bus.

- **AGP :** integrated 2D & 3D graphics engines.
  support 1X/2X/4X AGP VGA cards.

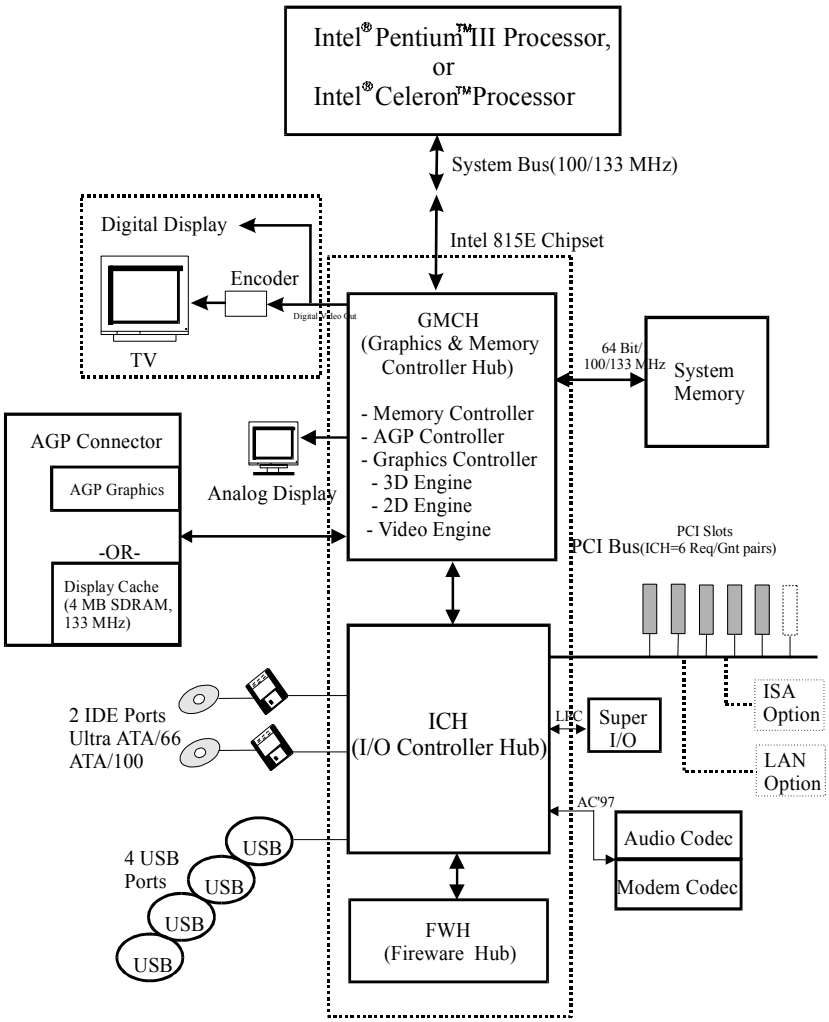
- **Expansion Slot :** 5 x PCI slots, 1 x AGP, 1 x CNR

- **Other features**
  - Modem ring on
  - Windows 95/98 power off
  - Keyboard wake-up
  - Mouse wake-up
  - DMI, ACPI supported BIOS
  - Suspend to memory (S3) function

INTEL 815E chipset only supports up to 2 double sided DIMMs at 133MHz CPU Bus.

According to chipset specification. When using integrated VGA(not AGP VGA card), please set "System memory frequency" as "Auto" or "100MHz".(please refer to page.40)

1-3 System Block Diagram



1-4 Notice of Hardware Installation

Before installing the main board hardware, please note the following things.

A. Check the package
If any of the below 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:

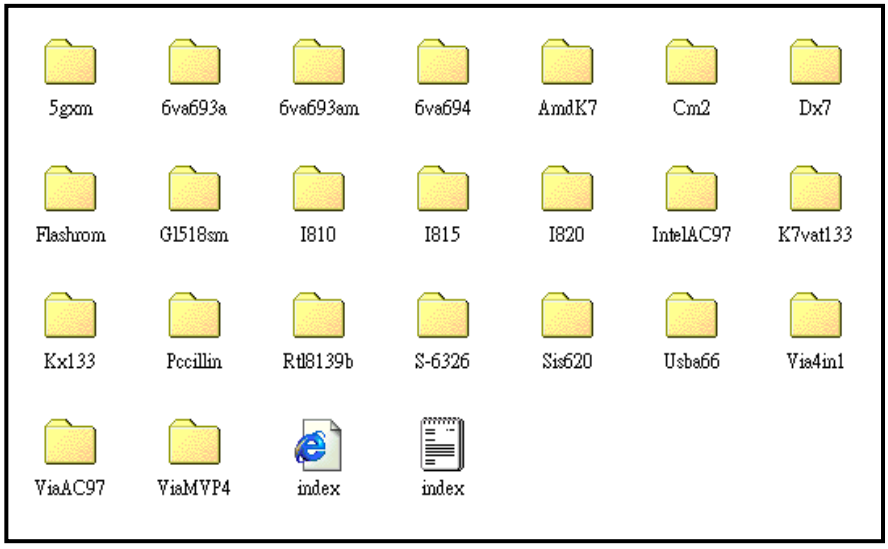
- the main board
- manual
- cables
- driver & utility / CD

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

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

1-5 Notice of CD Driver Installation

This CD contains the following drivers. The user must read "Index" (HTML format) before installing required drivers. Index offers all the information on all the drivers.



CD driver is always updated with the latest version, and thus the actual CD content may be different from the above picture.

1. **Main boards:** I810, I815, I820, IntelAC97, K7vat133, Kx133, Sis620, Usba66, Via4in1, ViaAC97, ViaMVP4 based main boards (**please select I815 directory for this main board)**
2. **Pccillin :** anti-virus protection software

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

1-6 Software Driver Installation

Unlike i440BX, i815E chipset is not supported by the drivers within Windows operating system, **USERS NEED TO INSTALL DRIVERS VERY CAREFULLY OR SYSTEM WILL HANG UP UNEXPECTEDLY!**

Load drivers from attached CD & find sub-directories under i815 directory as:

Inf……..(Setup driver for i815 chipset)
Vga…….(VGA Driver)

Load drivers from attached CD & find sub-directories under i810 directory as:

AD1881……..(Drivers for sound function)

User needs to install drivers
Inf → Vga → AD1881 as below:

FOR WINDOWS OPERATNG SYSTEM :

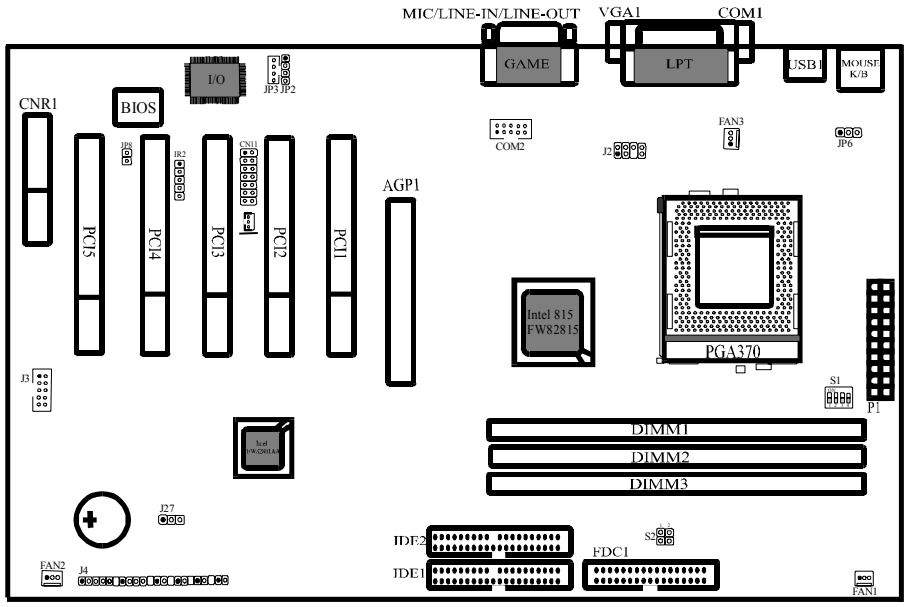
(1) Install Inf :
Load attached CD & find "Inf" directory. Then execute "Setup" file.
(Window versions are Win98 or higher version).

(2) Vga Driver Installation :
Find directory Vga and Win9X sub-directory then find "Graphics" sub-directory then execute SETUP and RESTART system.

(3) Audio Driver Installation
Find "AD1881" sub-directory, then find Win-98 sub-directory, then find "Win98" execute "SETUP" & restart system; or

Chapter 2 Installation

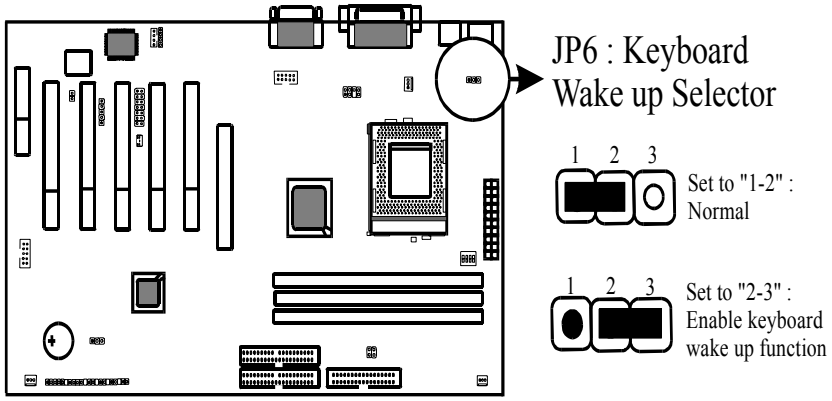
2-1 Layout Reference



2-2 Jumper Setting

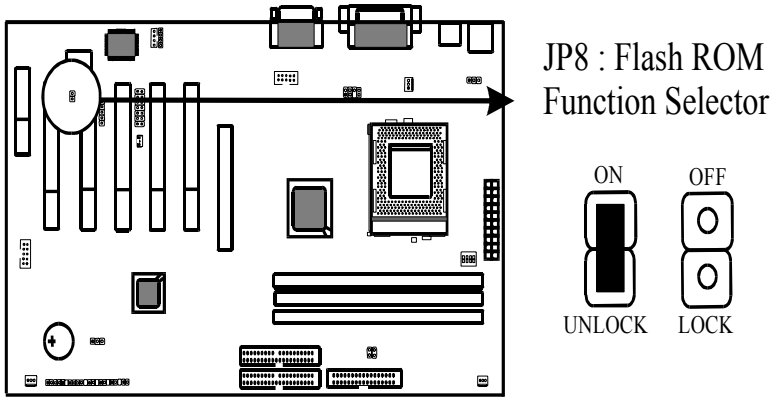
2-2-1 JP6 : Keyboard Wake up Selector

JP6 is a 3-pin selector which provides keyboard wake up function. Set “1-2” to disable and set “2-3” to enable keyboard wake up function.



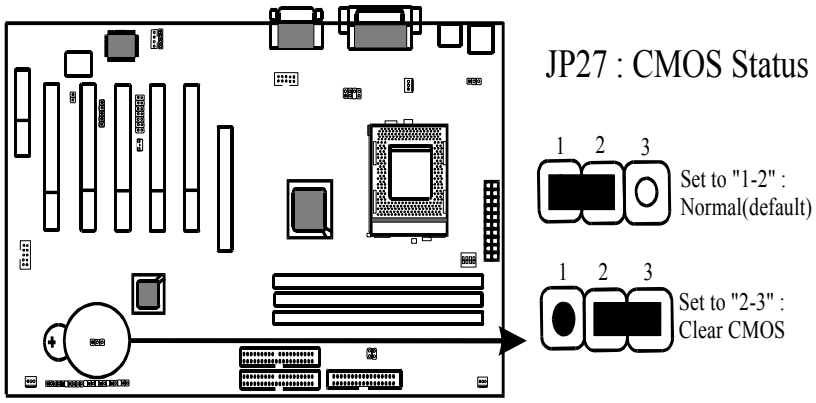
2-2-2 JP8 : Flash ROM Function Selector

JP8 is a 2-pin connector which provides Flash ROM function **"enabled/disabled"** as below.



2-2-3 JP27 : CMOS Status

Please clear CMOS if password is forgotten. Below is the detail to clear CMOS.



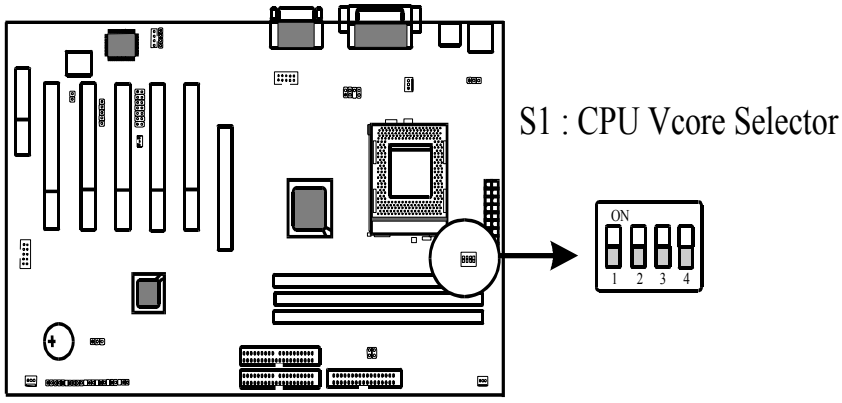
Procedure to clear CMOS:
Step 1: Shut down the system and disconnect the power supply from AC power.
Step 2: Pull out the power supply cable from the power connector.
Step 3: Short the CMOS jumper by putting jumper cap on Pin 2-3 for a few seconds.
Step 4: Return the cap to pin 1-2 at normal setup.
Step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

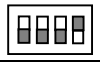
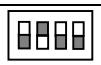
: : .

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

2-2-4 S1 : CPU Vcore Selector

S1 is a 4-pin DIP switch which provides CPU Vcore selection. Please select the right Vcore according to your CPU and set details as below.



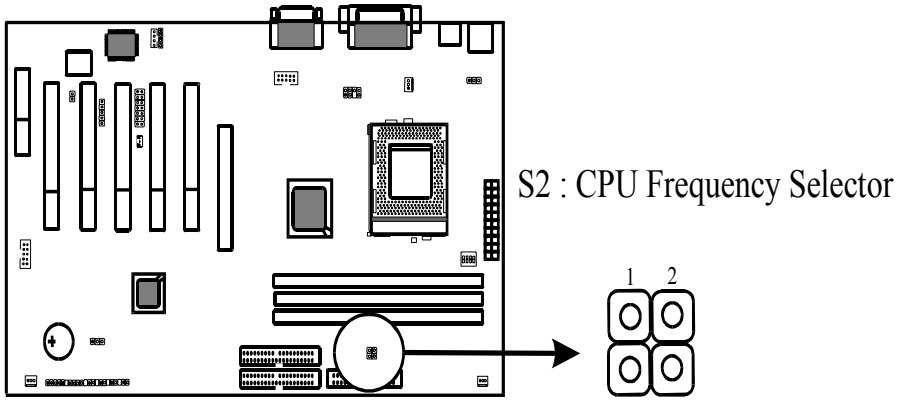
CPU Volt.	S1				
		1	2	3	4
1.35V		OFF	OFF	OFF	ON
1.40V		OFF	OFF	ON	OFF
1.45V		OFF	OFF	ON	ON
1.50V		OFF	ON	OFF	OFF
1.55V		OFF	ON	OFF	ON

1.60V		OFF	ON	ON	OFF
1.65V		OFF	ON	ON	ON
1.70V		ON	OFF	OFF	OFF
1.75V		ON	OFF	OFF	ON
1.80V		ON	OFF	ON	OFF
1.85V		ON	OFF	ON	ON
1.90V		ON	ON	OFF	OFF
1.95V		ON	ON	OFF	ON
2.00V		ON	ON	ON	OFF
2.05V		ON	ON	ON	ON

CPU will auto-detect Vcore, please don't change default setting.

2-2-5 S2 : CPU Frequency Selector

S2 is a 5-pin connector which provides CPU Frequency selection. Please select the right ratio according to your CPU and set details as below.

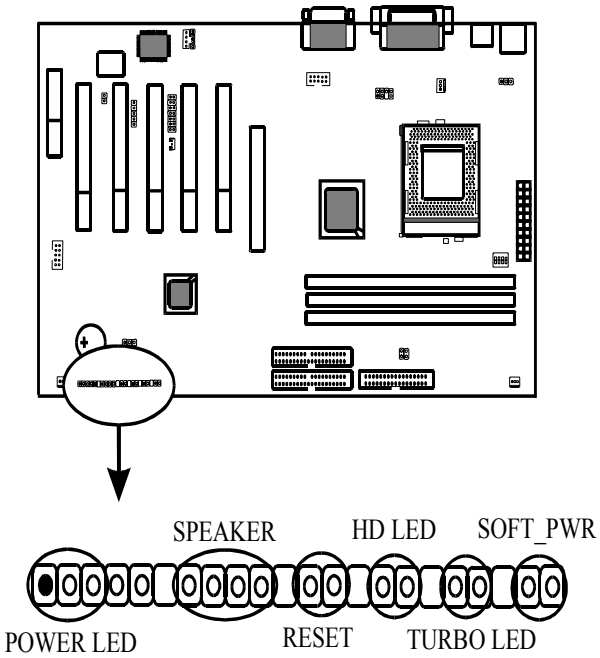


S2 Clock Selector			
CPU	**SDRAM**	**1**	**2**
66 MHz	100MHz		
100MHz	100MHz		
133MHz	133MHz		
133MHz	100MHz		

2-3 Connectors

2-3-1 Front Panel

Front panel has connectors such as **"POWER LED" "SPEAKER," "RESET," "HD LED," "TURBO LED," "SOFT_PWR."** Please refer to the following further information.



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

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

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

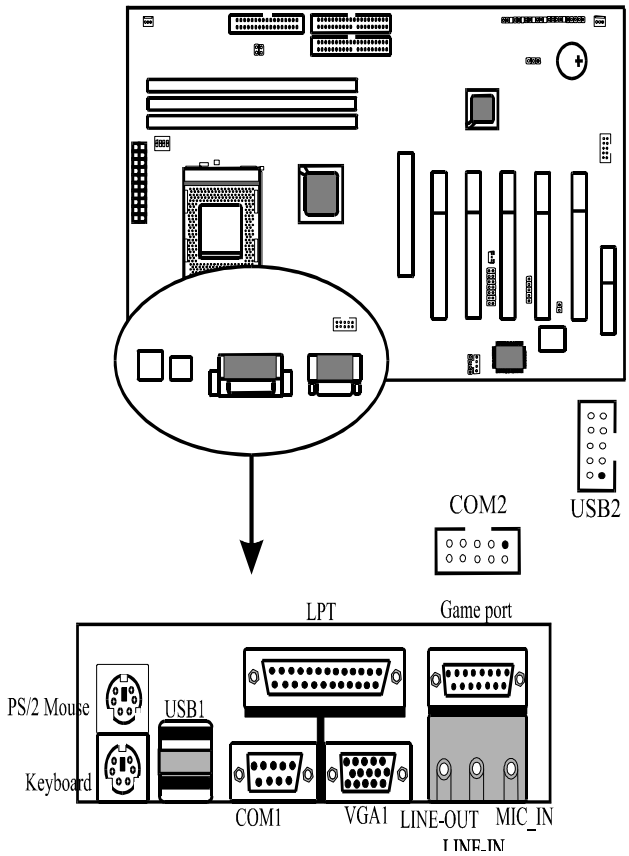
HD LED **(**Hard Disk activity LED connector) is a 2-pin keyed Berg strip. It is used to connect to front panel Hard Disk LED.

TURBO LED is a 2-pin Berg strip on case front panel indicates the current speed status of system.

SOFT_PWR is ATX Soft-PWR with 2 pins. SOFT-PWR is for ATX power supply only.

2-3-2 Back Panel

Back Panel Connectors are GAME Port, MIC, LINE-IN, LINE-OUT, COM1/ COM2, VGA, LPT, USB1/USB2, PS/2 keyboard, and PS/2 mouse on case back panel.



KBD/PS2 MOUSE

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

USB1/USB2 : USB (Universal Serial Bus) Connector

Universal Serial Bus connector, marked as **"USB1,"** is used to connect USB devices. There are 2 USB connectors on this main board.

COM1/COM2

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

LPT

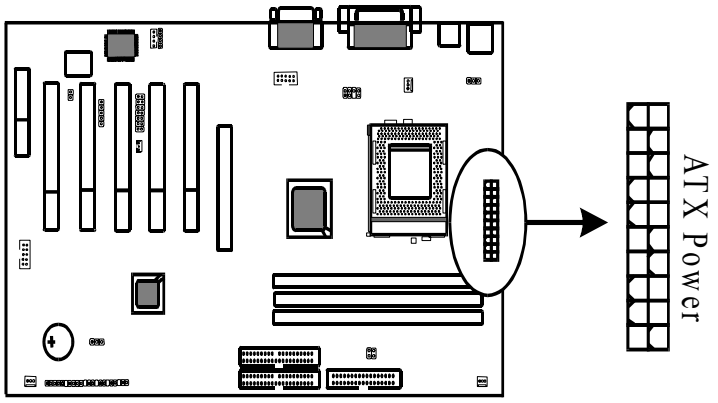
The onboard parallel port is a 25-pin female connector. It supports standard Printer port, Enhanced Parallel Port (EPP), Extended Capabilities Port (ECP), Standard Parallel Port (SPP).

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

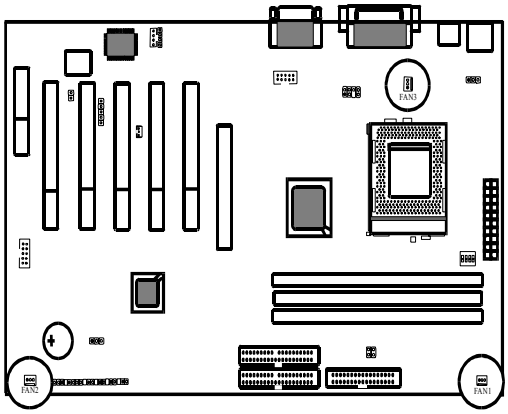
ATX power connector has 20 pins, which is especially designed for ATX case. The ATX power supply supports the function of the **"Soft Power On Momentary Switch"** which connects the front panel switch to the 2-pin **SOFT-PWR** on the system board**.** While the power switch on the back of ATX power is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



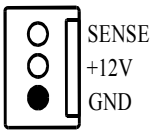
To support i815 chipset, we suggest that Pin 17 signal 5VSB on ATX Power supply should be able to offer at least 1A driving ability.

2-3-4 CPU Fan Connectors

There are 3 fan connectors on this system board, and it is marked as **"FAN1", "FAN2", "FAN3".** Each fan connector has three pins.



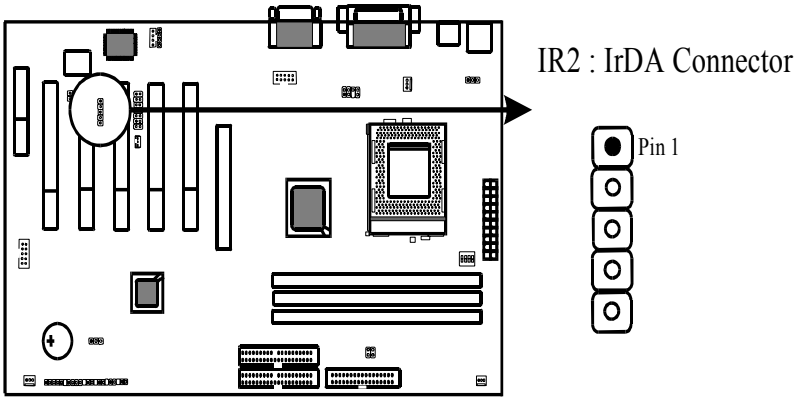
Fan Signal



2-3-5 I.R2 : IrDA Connector

IR connector supports wireless infrared module. With this module and application software like Laplink, or Win95 Direct Cable Connection, user can transfer data to or from laptops, notebooks, PDA and printers. This connector supports **HPSIR**, **ASKIR,** and **Fast IR**.

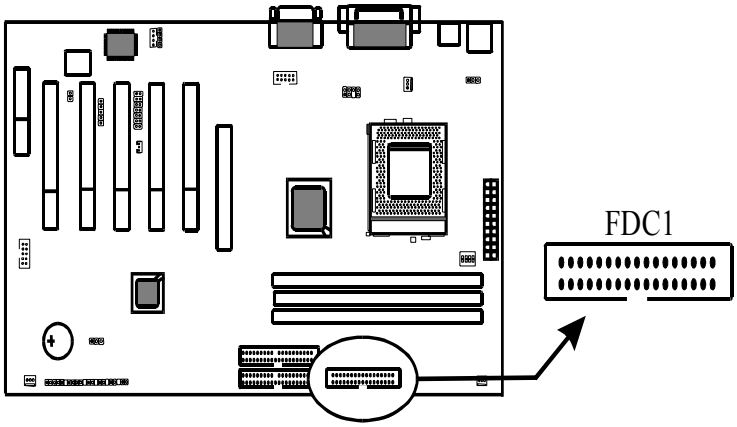
Attach Infrared module to IR connector. Be sure to put in the right direction during installation.



	IR2
1	VCC
2	NONE
3	IRRX
4	GND
5	IRTX

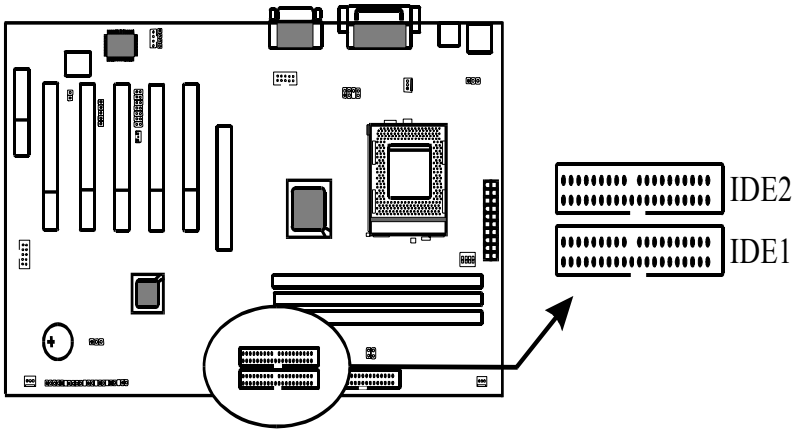
2-3-6 Floppy Disk Connector

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



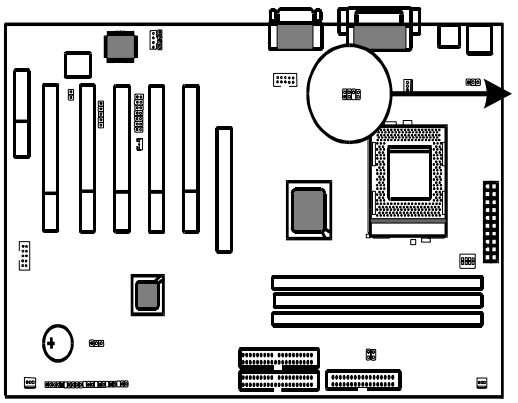
2-3-7 IDE1 & IDE2

IDE1 and IDE2 are 39-pin IDE connectors (Ultra 66/Ultra 100). **IDE1** is primary channel, and **IDE2** is secondary channel. Each channel supports 2 IDE devices, and 4 devices in total for this main board.

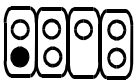


2-3-8 J2 : TV-OUT Function Connector(Optional)

J2, a 7-pin connector provides TV-OUT function.

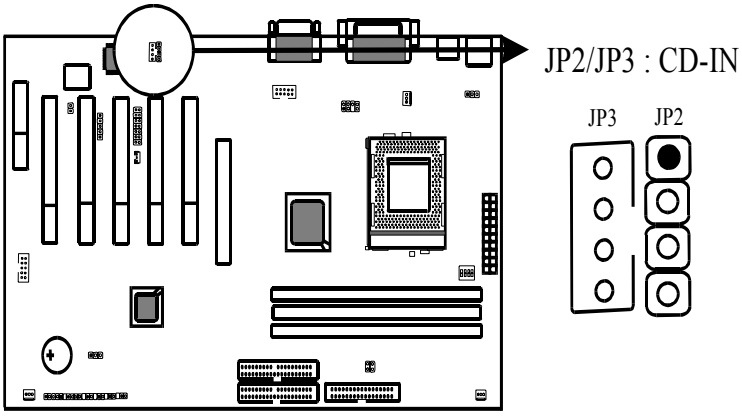


J2: TV-OUT
Function Connector



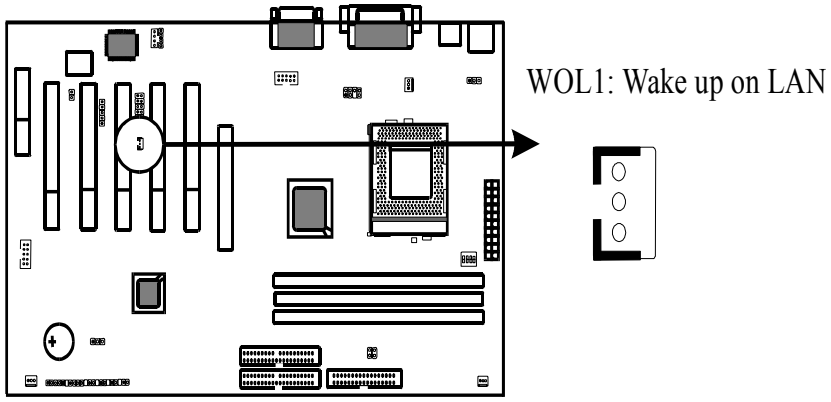
2-3-9 JP2/JP3 : CD-IN

CD-IN is a CD ROM external audio input signal to line-out(speaker) of the main board.



2-3-10 WOL1 : Wake up on LAN

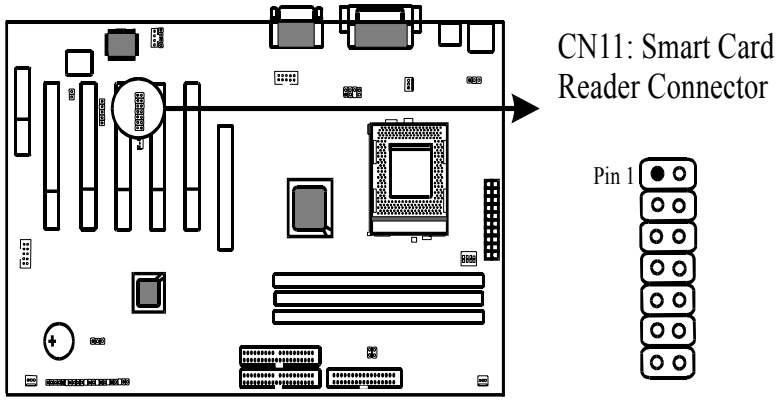
Wake up on LAN, marked as "WOL1," is a 3-pin connector. To support this feature, a network card is required for the system and network management software must be installed too.



WOL(Wake up on LAN) function requirement:
Power supply should be able to offer at least 750 mA driving ability to the signal "5V trickle voltage."

2-3-11 CN11 : Smart Card Reader Connector(Optional)

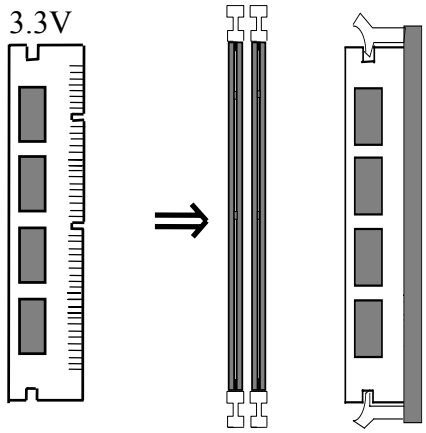
The Smart Card is capable of providing secured storage facilities for sensitive personal information (such as Private keys, Account numbers, Passwords, Medical information, etc…). The Smart Card Reader can be used for a broad range of application in GSM, ID, pay TV, banking, … and so forth.



2-4 DIMM Installation

Please make sure DIMM is 3.3V DIMM. Either DIMM1, DIMM2 or DIMM3 supports 8 MB, 16 MB, 32 MB, 64 MB, and 128MB. Maximum memory for **SDRAM is up to 512 MB.**

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



SDRAM memory supports PC-100/PC-133 DIMM.

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.

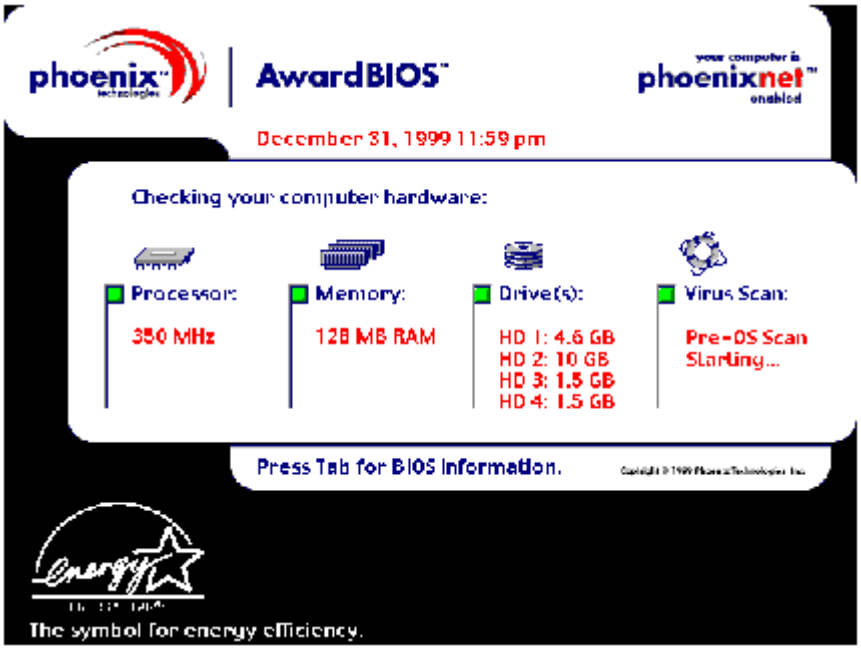
PhonixNet delivers 1) one-click, easy access to the Internet, 2) offers from leading Internet companies, and 3) anti-virus protection(Trend ChipAway Virus™) as well as other free offers.

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)

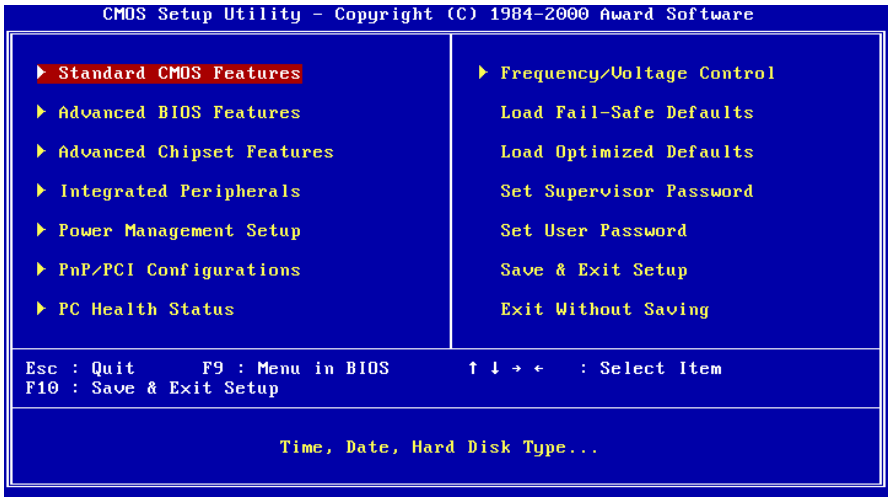
The first ROMSmarts component, GLS, displays a graphical screen to the user early in the boot process, as the first image displayed on the screen. This display remains on the screen throughout the normal BIOS initialization phase called POST.

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.



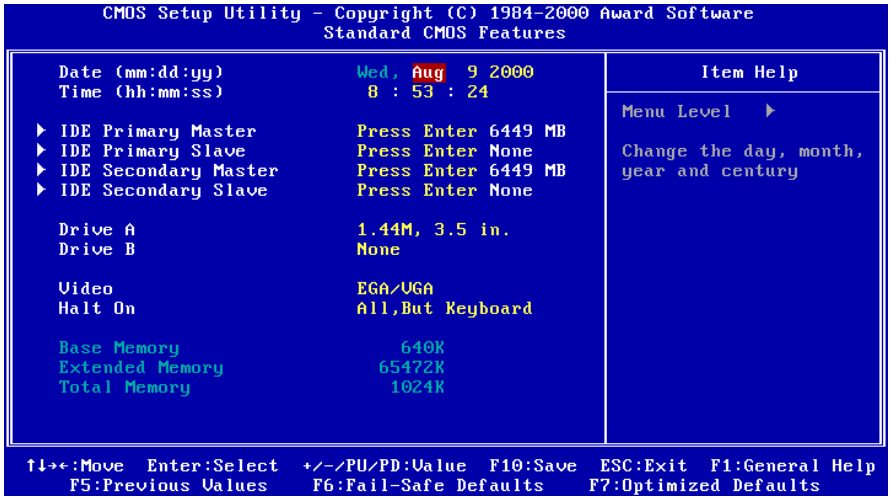
Chapter 4 BIOS Setup

4-1 Award® BIOS CMOS Setup

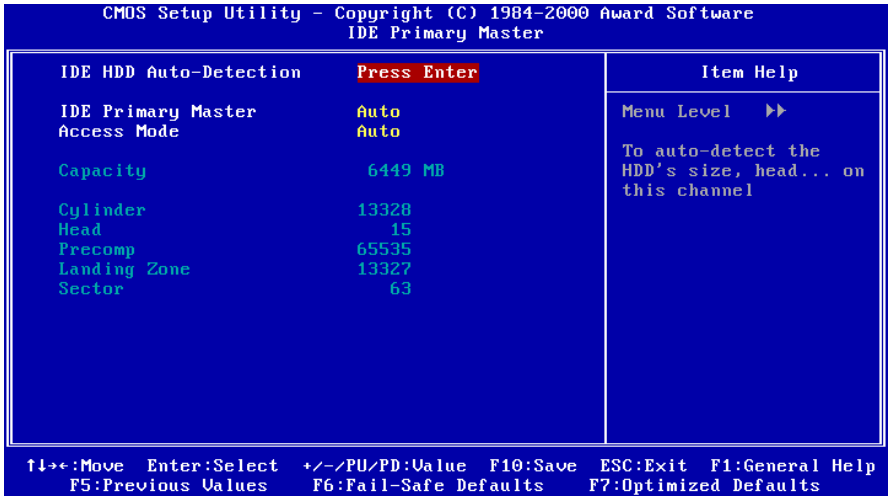


The menu displays all the major selection items and allows user to select any of the shown item. The selection is made by moving cursor (press any direction key) to the item and press **<Enter>** key. An on-line help message is displayed at the bottom of the screen as cursor is moved to various items which provide user better understanding of each function. When a selection is made, the menu of the selected item will appear. So the user can modify associated configuration parameters.

4-1-1 Standard CMOS Features



The **"Standard CMOS Features"** 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
Capacity
6449 MB
Cylinder
13328
Head
15
Precomp
65535
Landing Zone
13327
Sector
63
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 "NORMAL" 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 **"CHS"** for user type. **CHS (Cylinder Head Sector)** is for old type HDD.

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

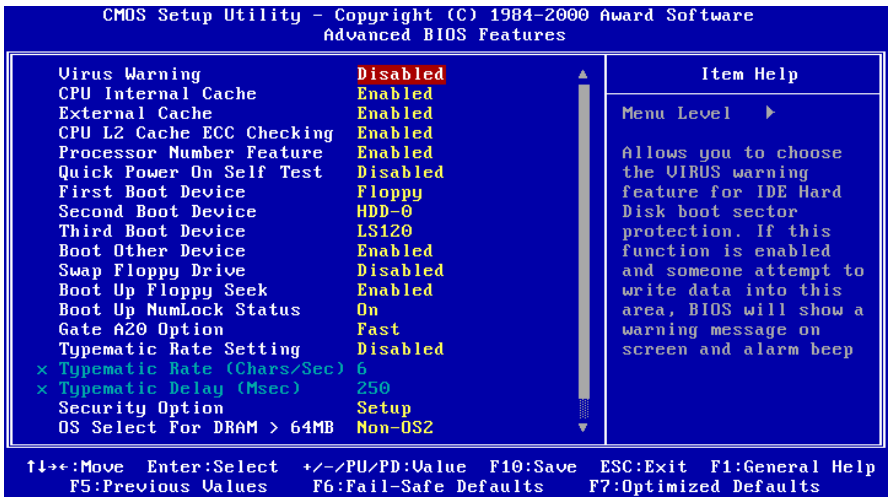
8.SECTOR : the sector number of each track defined on the hard disk. The range is from **"1"** to **"64".**

Note 1: *if hard disk's primary master/slave and secondary master/slave were set to* ***"auto",*** *the hard disk size and model will be auto detected on display during POST.*

Note 2: "halt on" *is to determine when to halt the system by the BIOS if error occurred during POST.*

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

Processor Number Feature
:Enabled (default)
:Disabled

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

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

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

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

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 **Enabled.**

Boot Up Numlock Status
:On (default)
:Off

Gate A20 Option
: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

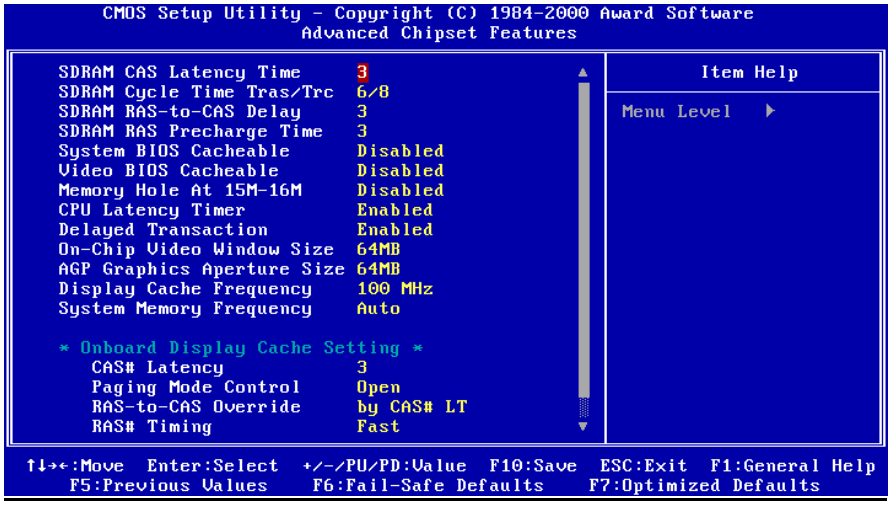
Security Option

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 **"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

Report No FDD For WIN 95
:No (default)
:Yes

4-1-3 Advanced Chipset Features



SDRAM CAS Latency Time
: 2
: 3 (default)

SDRAM Cycle Time Tras/Trc
: 6/8 (default)
: 5/7

SDRAM RAS-to-CAS Delay
:2
:3 (default)

SDRAM RAS Precharge Time
SDRAM precharge time by RAS
: 2
: 3 (default)

System BIOS Cacheable
It defines whether system BIOS area cacheable or not.
:Enabled
:Disabled (default)

Video BIOS Cacheable
It defines whether video BIOS area cacheable or not.
:Enabled
:Disabled (default)

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

CPU Latency Timer
:Enabled (default)
:Disabled

Delayed Transaction
:Enabled (default)
:Disabled

On-Chip Video Window Size
: 64MB (default)
: 32MB
: Disabled

AGP Graphics Aperture Size
: 64MB (default)
: 32MB

Display Cache Frequency
: 100MHz (default)
: 133MHz

System Memory Frequency
: Auto (default)
: 100MHz
: 133MHz

Onboard Display Cache Setting

CAS# Latency
:3 (default)
:2

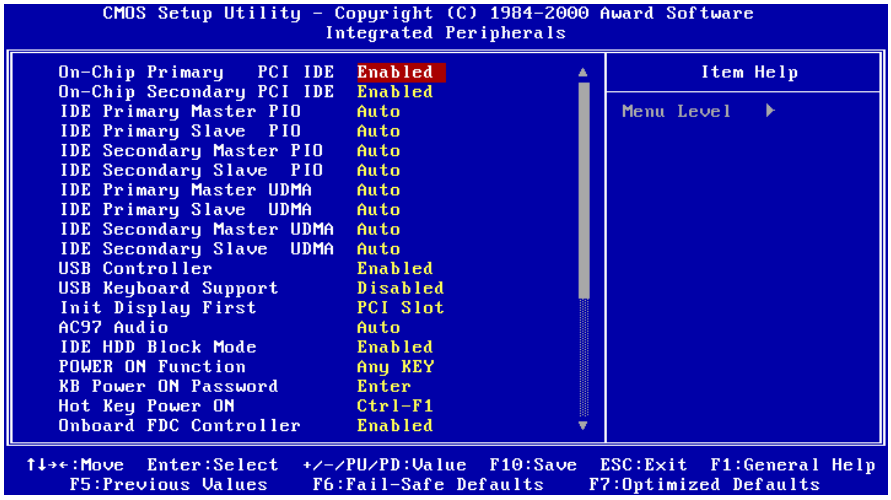
Paging Mode Control
:Open (default)
:Close

RAS-to-CAS Override
:by CAS # LT(default)
:Override(2)

RAS# Timing
:Fast (default)
:Slow

RAS# Precharge Timing
:Fast (default)
:Slow

4-1-4 Integrated Peripherals



OnChip Primary PCI IDE
:Enabled (default)
:Disabled

OnChip Secondary PCI IDE
:Enabled (default)
:Disabled

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

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

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

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

IDE Primary Master UDMA
:Auto(default)
:Disabled

IDE Primary Slave UDMA
:Auto(default)
:Disabled

IDE Secondary Master UDMA
:Auto(default)
:Disabled

IDE Secondary Slave UDMA
:Auto(default)
:Disabled

USB Controller
:Enabled(default)
:Disabled

USB Keyboard support
:Enabled
:Disabled(default)

Init Display First
:PCI Slot (default)
:Onboard/AGP

AC97 Audio
:Auto(default)
:Enabled

IDE HDD Block Mode
:Enabled(default)
:Disabled

POWER ON Function
:Any KEY (default)
:BUTTON ONLY
:Keyboard 98
:Password
:Hot KEY
:Mouse Move
:Mouse Click

Onboard FDC Controller
:Enabled (default)
:Disabled

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

:Disabled

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

UART Mode Select
:Normal (default)
:IrDA
:ASKIR
:SCR

UR2 Duplex Mode
:Full
:Half (default)

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

Parallel Port Mode
: SPP (default)
: EPP
: ECP
: ECP + EPP

ECP Mode Use DMA
: 3 (default)
: 1

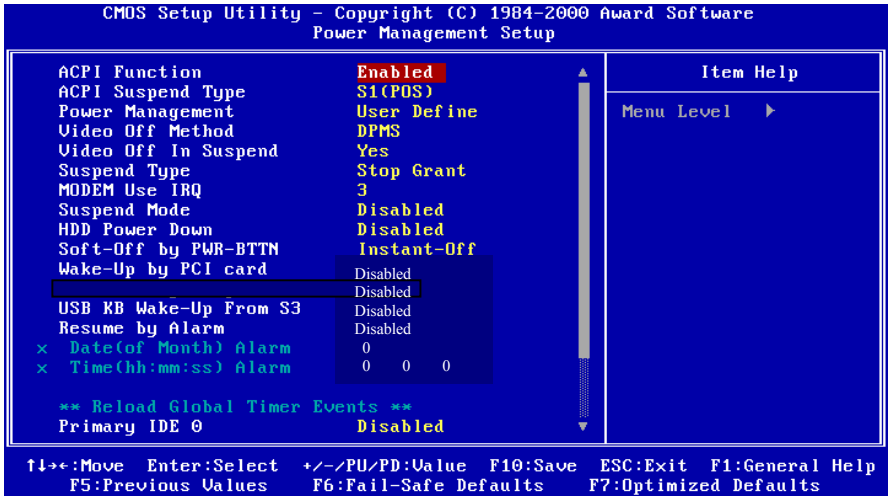
PWRON After PWR-Fail
:Off (default)
:On
:Former-Sts

Game Port Address
:201 (default)
:209
:Disabled

Midi Port Address
:300
:330
:Disabled (default)

Midi Port IRQ
:10 (default)
:5

4-1-5 Power Management Setup



When using the function of Suspend to RAM, please follow the below procedures.

1. Choose “Power Management Setup” from the main menu, then press <Enter>.
2. Set the item of “ACPI Function” to “Enabled.”
3. Choose “S3(STR)” on “ACPI Suspend Type.”
4. Press <Esc> at anytime to return to the main menu.
5. Choose “Save & Exit Setup” then press <Enter>, type <Y> then press <Enter>.
6. Before installing Windows® 98, please key in below parameters:
   [drive]:>setup /p j

If you had installed Windows®98 already, you have to update your system to support ACPI. About updating information, please contact with Microsoft technical support.

7. Setup Windows® 98, click “start” on the Windows® 98 screen, please move cursor to “Settings”, then to click “Control Panel”.
8. On “Control Panel” screen, click “Power Management”.
9. Click “Advanced”, then choose “stand by” in “When I press the power button on my computer”.
10. After completing above procedures, if you want to shut down system, please ignore the procedure of shut down file, application software. To press power button shut down system immediately or choose “stand by” on Windows® 98 system.

Note : If you want to start system, please press power button then your preserve properties will appear within 8 second. But if you had set “keyboard password” on “KB Power On Password”, you have to start system by keying password.

ACPI Function
:Enabled (default)
:Disabled

ACPI Suspend Type
:S3(STR)
:S1(POS) (default)

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

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

Video Off In Suspend
:Yes (default)
:No

Suspend Type
:Stop Grant (default)
:PwrOn Suspend

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

Suspend mode
:Disabled(default), 1min, 2 min, 4 min, 8 min, 12 min, 20 min, 30 min, 40 min, 1 Hour

HDD Power Down
:Disabled(default), 1 min --- 15 min

Soft-Off by PWR-BTN
:Instant-Off (default)
:Delay 4 Sec.

Wake-Up by PCI card
:Enabled
:Disabled (default)

Please set "Wake-up by PCI card" function to "Enabled" mode whenever you use "Power On by Ring" or "Wake-up by PCI card" functions.

USB KB Wake-Up From S3
:Enabled
:Disabled (default)

Resume by Alarm
:Enabled
:Disabled (default)

Primary IDE 0
:Enabled
:Disabled (default)

Primary IDE 1
:Enabled
:Disabled (default)

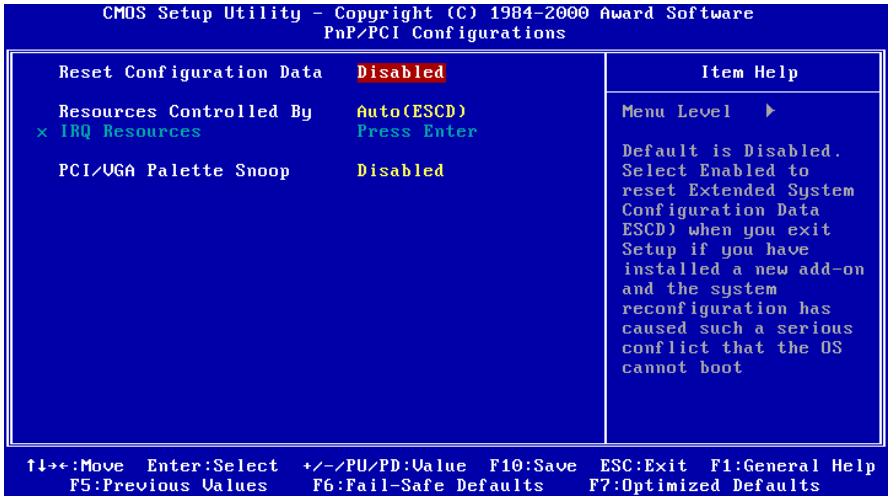
Secondary IDE 0
:Enabled
:Disabled (default)

Secondary IDE 1
:Enabled
:Disabled (default)

FDD, COM, LPT Port
:Enabled
:Disabled (default)

PCI PIRQ[A-D]#
:Enabled
:Disabled (default)

4-1-6 PnP / PCI Configuration Setup

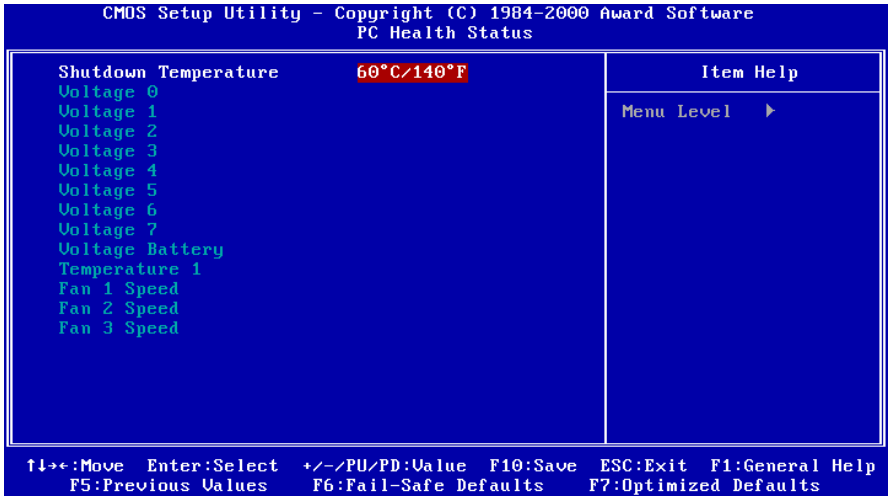


Reset Configuration Data
:Disabled(default)
:Enabled--- to reset **"Extended System Configuration Data(ESCD)** when you exit setup if you have installed a new add-on card and the system reconfiguration has caused such a serious conflict that the operating system can not boot up.

Resources Controlled By
:Manual
The table will show the below items: **"Reset Configuration Data, IRQ-3 assigned to."** 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
:Disabled (default)
:Enabled

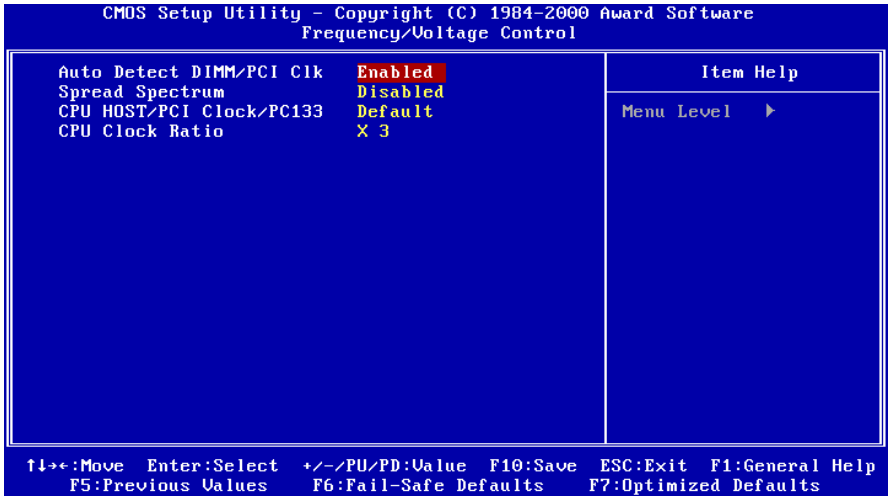
4-1-7 PC Health Status



Shutdown Temperature
: 60°C/140°F (default)
: 65°C/149°F ; 70°C/158°F ; 75°C/167°F

Current CPU Temperature, Current CPU Fan1 Speed/Fan2 Speed/Fan3 Speed /Current Voltage 0 - Voltage 7:
System will automatically detect the above items and show the status.

4-1-8 Frequency/Voltage Control

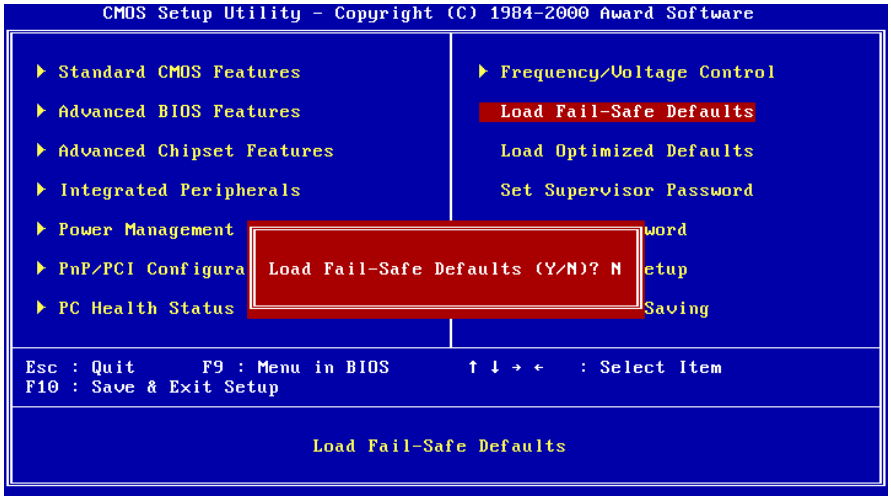


Auto Detect DIMM/PCI Clk
: Enabled (default)
: Disabled

Spread Spectrum
: Enabled
: Disabled (default)

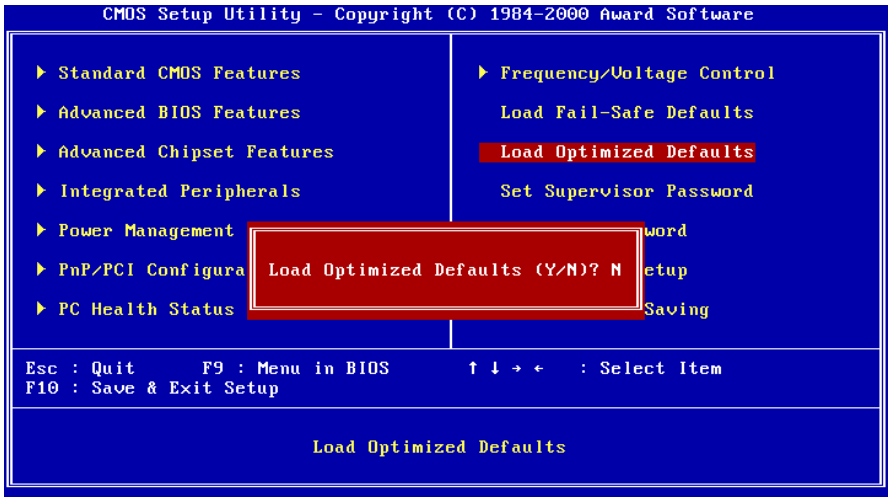
This selection is reserved for manufacturers to pass CE test only not available for users.

4-1-9 Load Fail-Safe Defaults



"Load Fail-Safe 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 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>**.

4-1-11 Supervisor/User Password

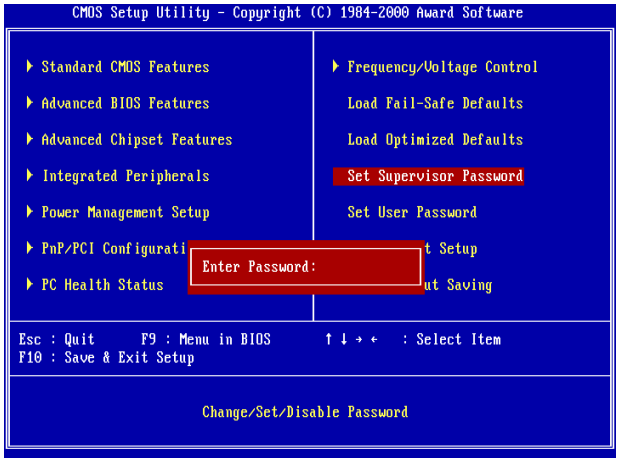
The "Supervisor/User Password setting" utility sets the security protection. There are two kinds of password functions in the setup menu : one is “Supervisor Password,” and the other is “User Password.” Their difference is:

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

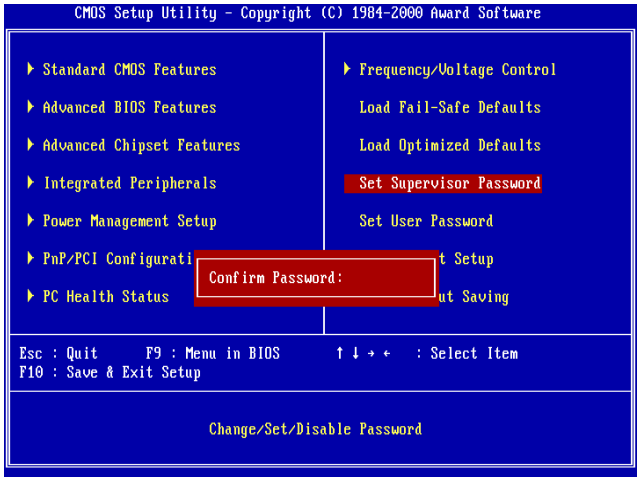
User Password: this function only allows you to enter the setup menu but not to change the options of the setup menu except “USER PASSWORD,” “SAVE & EXIT SETUP,” and “EXIT WITHOUT SAVING.”

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 RTC1)

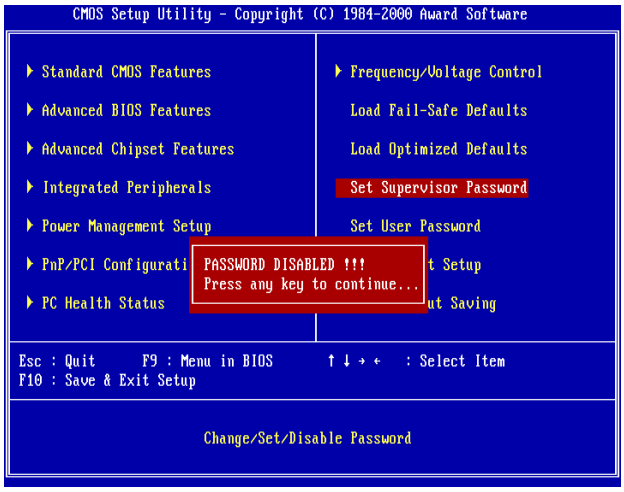
Step 3: Set “Security Option” in “BIOS Features Setup”

After setting password, enter “Security Option” in “BIOS Features Setup.” There are 2 options “Setup” & “System.” “Setup” 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.

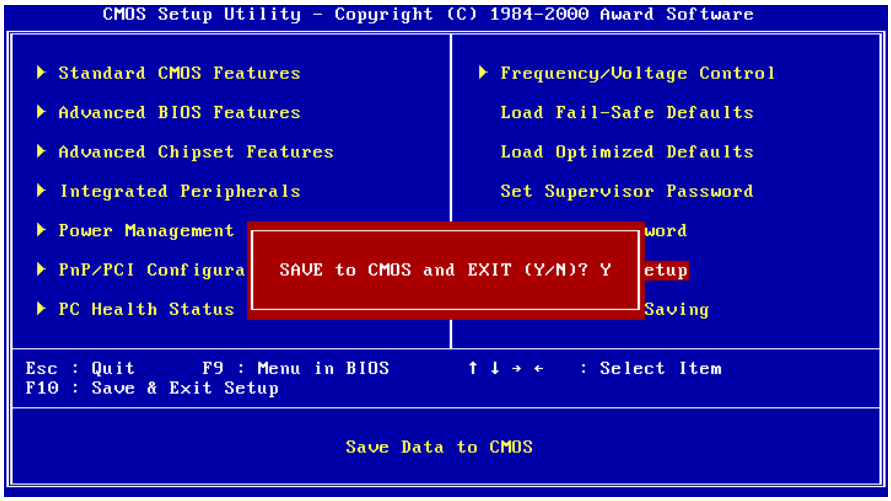
2. How to Disable “Supervisor Password” & “User Password”

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 CONTINUE.” Thus, press any key as instructed to disable the password.

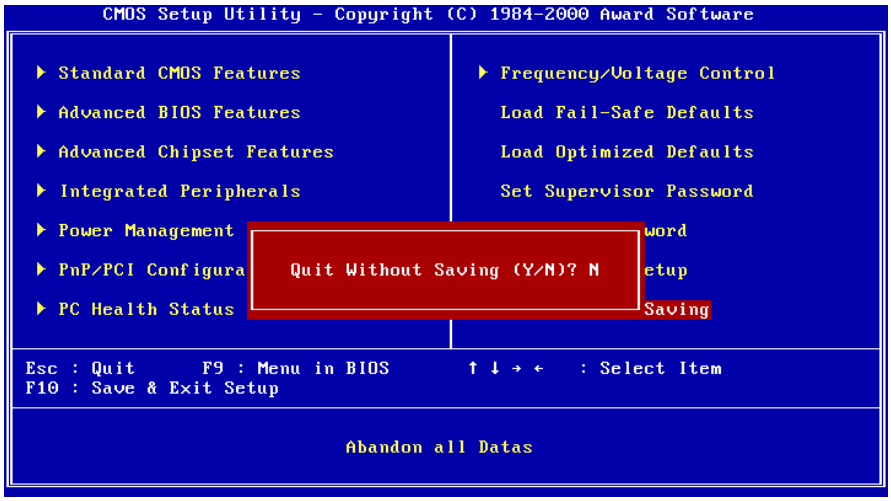


4-1-12 Save & Exit Setup



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.

4-1-13 Quit Without Saving



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

Chapter 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 Address (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 ask. The user may press **"Esc"** key to skip the full memory test.

1. Beep sound

While power on, the system makes 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 fail

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 replace new BIOS if necessary.

5. Hard disk initiation

Please wait a moment…

Some hard drives require more time to initiate.

6. Hard disk install failure

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

7. Keyboard error or no keyboard present

This means the system can not 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 finds 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.