# AM39L

# MAINBOARD MANUAL

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## Handling Precautions

**Warning:**

1. Static electricity may cause damage to the integrated circuits on the motherboard. Before handling any motherboard outside of its protective packaging, ensure that there is no static electric charge in your body.
2. There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or an equivalent type recommended by the manufacturer.
3. Discard used batteries according to the manufacturer's instructions.
4. Never run the processor without the heatsink properly and firmly attached. PERMANENT DAMAGE WILL RESULT!

Observe the following basic precautions when handling the motherboard or other computer components:

- Wear a static wrist strap which fits around your wrist and is connected to a natural earth ground.
- Touch a grounded or anti-static surface or a metal fixture such as a water pipe.
- Avoid contacting the components on add-on cards, motherboards, and modules with the *golden fingers* connectors plugged into the expansion slot. It is best to handle system components by their mounting brackets.

The above methods prevent static build-up and cause it to be discharged properly.

## Trademark

***All trademarks mentioned in this manual are registered properly of the respective owners.***

## Handling Precautions

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# Overview



The new board is an MicroATX sized motherboard supporting the latest generation of AMD® processors at industry leading speeds. By utilizing DDR ( Double Data Rate ) transfer rate the 100/133/166 MHz system bus effectively reaches Front Side Bus speeds of 200/266/333 MHz. The board provides users with an ATA133 data transaction for hard drives and allows up to 2 GB memory totally by 2 DDR 200/266/333 SDRAM DIMM sockets.

The mainboard is based around the high performance KM400™ core chip with VIA VT8235CE™ as a South Bridge. The video functions supported by KM400 provides you with a photo-realistic 3D experience suitable for the most robust 3D games and software environments. AC97 Codec that embedded in VT8235CE, ensures high quality video and audio effect. The mainboard features onboard audio with 5.1-channel, 1 SPDIF_OUT for digital audio output.

The mainboard also comes equipped with the new NOVUS® range of innovative features that assist in the installation and maintenance. The features include *Easy Key,* which provides instant keyboard access to the BIOS for adjustments to default settings; and the *BIOS Guardian* is an Anti Virus utility that prevents viruses from damaging your system BIOS and rendering your system inoperative.

Expansion is provided by 1 AGP 8X and 3 PCI slots. In addition, the board is equipped standard I/O connections include 1 serial port , 1 parallel port, 1 CRT port, 1 PS/2 mouse and 1 PS/2 keyboard connector, 6 USB 2.0 ports (2 ports by onboard pinheaders), 2 IR ports, and 1 media connector (Line-In, Line-Out, Mic-In, 1 front audio).

## Package Checklist

If you discover any item below was damaged or lost, please contact your vendor.

- ☑ The mainboard
- ☑ This user manual
- ☑ One FDD cable
- ☑ CD software
- ☑ One ATA100 cable
- ☑ I/O shielding

**IMPORTANT: AMD CPU HEAT SINK INSTALLATION**

*Be ware finish heat sink install. Before you boot system, please check the heat sink is complete contact with die of CPU.*

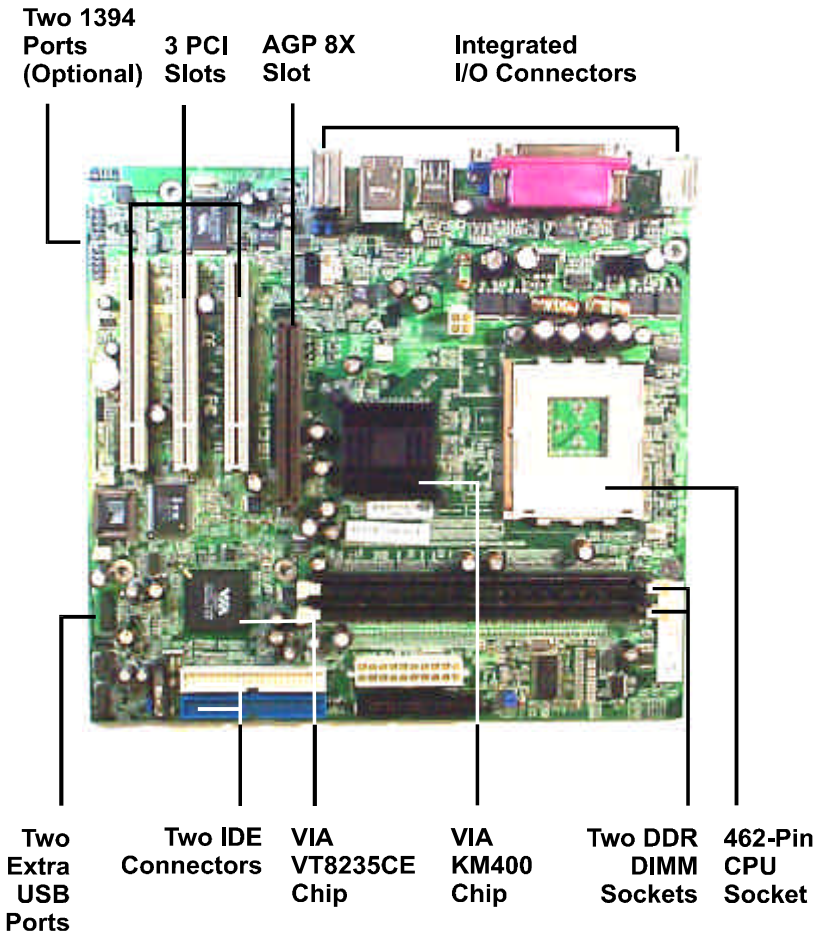
The poor contact will bring about over heat, it may damage your processor.

It is strongly recommended that at least a 250-watt ATX power pupply be used for this motherboard. Make sure that your ATX power supply can supply at least 20 amperes on teh +5-Volt lead and 10mA on the +5-Volt standby lead (+5VSB). Your system may become unstable / unreliable and may experience difficulty in powering up if your power supply is inadequate.

**NOTE:** Software driver/utility CD that contains patch files, onboard video/audio chip drivers, related online help and other useful information can be found in your mainboard package.

*Please install it right after your Windows operating system installation is done.* Place the CD in the drive, an operating menu will appears in your monitor. Please select *Auto Installation*. It will automatically detect which software tools (patch files, drivers) that the mainboard needs. Press **OK** button to go through the whole installation procedure in a very straight forward and easy way. It also provides you with a custom way to select wanted patch files and software drivers that for onboard chips use. **The top menu of the CD lists all the functions that allowed by this board.**

## The AM39L Mainboard



# Main Features

- Easy Installation

  BIOS with support for Plug and Play, auto detection of IDE hard drives, LS-120 drives, IDE ZIP drives, Windows 98SE, Windows ME, Windows NT, Windows 2000, Windows XP, and OS/2.

- Leading Edge Chipset

  VIA KM400 is a single-chip North Bridge for AMD CPUs with 200/266/333 MHz Front Side Bus with AGP and PCI plus advanced memory controller that supports DDR 200/266/333 SDRAM. VIA VT8235CE is a V-Link client highly integrated controller that supports PC99-compliant system.

- Advanced High Performance Memory Controller

  Accepts up to 2GB DRAM using two DIMMs of 128, 256, 512MB with support for lightenning-fast DDR 200/266/333 SDRAM.

- AMD Processors Support

  | | |
  |---|---|
  | Duron: | 900 - 1.3 GHz at FSB 200 MHz |
  | Athlon : | 900 - 1.4 GHz at FSB 200/266 MHz |
  | Athlon XP: | |
  | Polomino Core: | 1500+ - 2100+ at FSB 266 MHz |
  | Thorughtbred Core: | 1700+ - 2600+ at FSB 266 MHz |
  | Barton Core: | 2500+ - 3000+ at FSB 333 MHz |

- Enhanced PCI Bus Master IDE Controller with UltraDMA/33/66/100/133 Support

  Integrated Enhanced PCI Bus Master IDE controller features two dual-channel connectors that up to four Enhanced IDE devices, including CD-ROM and Tape Backup Drives, as well as Hard Disk Drives supporting the new UltraDMA/133 Mode 6 protocol, standard PIO Mode 3, PIO Mode 4, DMA Mode 2, DMA Mode 4, UltraDMA/100 Mode 5 devices are also supported.

- AGP and PCI Expansion Slots
  One AGP Bus and three PCI Bus expansion slots provided the room to install a full range of add-on cards.

- Compact Onboard Audio Subsystem
  Embeded in VIA VT8235CE, an integrated high bandwidth V-Link client controller, direct sound AC97 audio subsystem. UltraDMA master mode EIDE controller, USB controller, ACPI enhanced power management, and PC99 compliant. The onboard AC97 Codec chip supports 5.1-channel audio feature. If the latter one onbaord, the Microphone/Line_In/Line_Out can be used as audio output.

- Super Multi Input/Output (I/O) Support
  Integrated Plug and Play multi-I/O chipset features one high-speed UART 16550 compatible serial port, one EPP/ECP capable parallel port, two IR ports, and one FDD connector.

- Convenient Rear Panel USB Connection Support
  Four USB 2.0 ports integrated in the rear I/O panel and two extra USB 2.0 ports for either front or rear panel connection allow convenient and high-speed Plug and Play connections to the growing number of USB 2.0 compliant peripheral devices on the market.

- Onboard Accelerated Graphics Port (AGP)
  The motherboard is installed one 32-bit AGP 8X bus with a dedicated 66MHz/133MHz path from the graphics card to the system memory offering much greater bandwidth than the 32-bit PCI bus does. AGP enabled 3D graphics cards can directly access main memory across this fast path instead of using local memory.

- LAN Support
  Onboard LAN controller with one RJ45 LAN jack integrated with other rear panel I/O connectors pvovides users with a convenient connection with network environment.

# FIC Unique Innovation for Users (NOVUS) -
## Enhanced Mainboard Features and System Support



- LogoGenie

  A user friendly GUI supporting Windows 95/98/98SE (not Windows 2000/ NT/ME/XP), LogoGenie allows you to customize, create or select a Logo which will be displayed when the system is booting.

**NOTE:**
1. LogoGenie supports Award BIOS only.
2. If you create a Logo file (.bmp) by LogoGenie, the file size must be 640 x 464 x 256 colors.

To enable this utility, please proceed as follows:

1. Insert CD Pro. Select LogoGenie from the Menu and follow the installation instructions.
2. After LogoGenie has been installed, go to Windows Start Box. In Programs Menu, select LogoGenie, then select LogoGenie.
3. Press F1 to read Help file to understand how to use this software if it is new to you.

- BIOS Guardian

  BIOS Guardian effectively acts as a fire-wall against viruses that can attack the BIOS while the system is running and by default is enabled. Please read Page 3-7 for more detail information. **BIOS Guardian must be disabled before reflash BIOS.**

- Easy Key

  Instead of completing the multi-layered BIOS setup process these 3 Easy Key functions provide direct access to Sub-Menu when completing BIOS settings adjustments.

  Easy-Keys are as follows:
  **Ctrl + c:** To enter clock settings menu.
  **Ctrl + p:** To load Performance Default settings and restart.
  **Ctrl + f:** To load Fail-Safe Default settings and restart.

# Installation Procedures

The mainboard has several user-adjustable jumpers on the board that allow you to configure your system to suit your requirements. This chapter contains information on the various jumper settings on your mainboard.

To set up your computer, you must complete the following steps:



- Step 1 - **Set system jumpers**
- Step 2 - **Install memory modules**
- Step 3 - **Install the Central Processing Unit (CPU)**
- Step 4 - **Install expansion cards**
- Step 5 - **Connect ribbon cables, cabinet wires, and power supply**
- Step 6 - **Set up BIOS software**
- Step 7 - **Install supporting software tools**

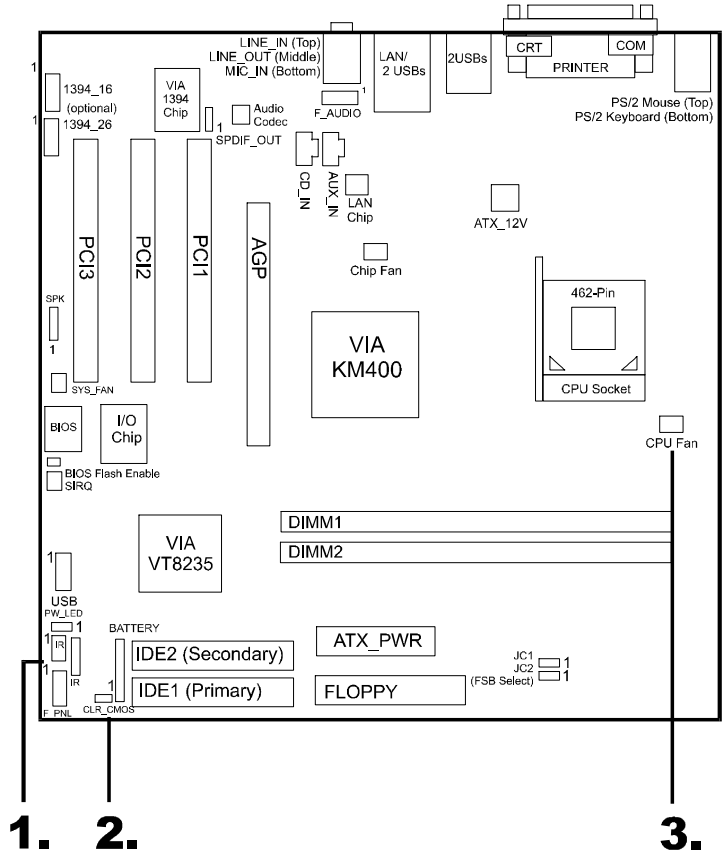
**WARNING:** Excessive torque may damage the mainboard. When using an electric screwdriver on the mainboard, make sure that the torque is set to the allowable range of 5.0 ~ 8.0kg/cm.

Mainboard components contain very delicate Integrated Circuit (IC) chips. To prevent static electricity from harming any of the sensitive components, you should follow the following precautions whenever working on the computer:

1. Unplug the computer when working on the inside.
2. Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
3. Wear an anti-static wrist strap which fits around the wrist.
4. Place components on a grounded anti-static pad or on the bag that came with the component whenever the components are separated from the system.

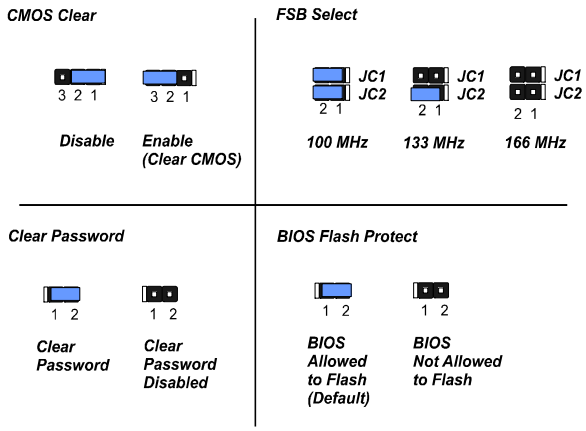
# Quick Reference (from Page 2-2 to 2-4)

## Mainboard Layout

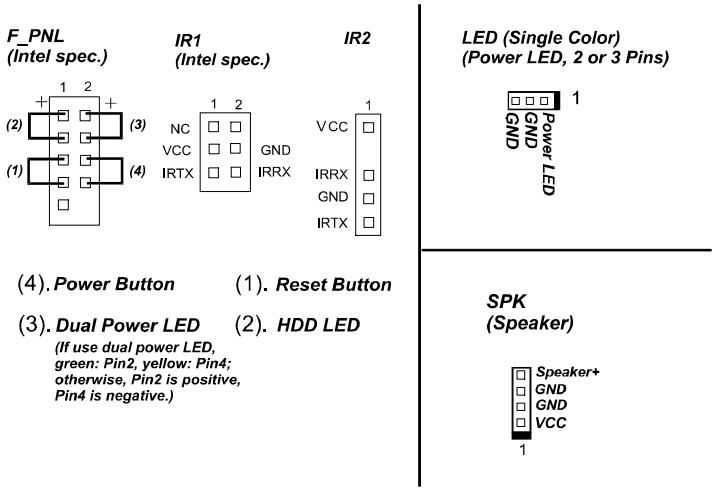



*** When link to Line_Out jack, please use a speaker that with amplifier.**

## 1). Clear CMOS, FSB Speed Select, BIOS Flash Protect , Clear Password




## 2). Front Panel Block Cable Connection




(4). ***Power Button*** (1). ***Reset Button***

(3). ***Dual Power LED*** (2). ***HDD LED***

***(If use dual power LED, green: Pin2, yellow: Pin4; otherwise, Pin2 is positive, Pin4 is negative.)***

## 3). CPU Fan Installation

**CAUTION:**

**1.**The heatsink and fan you installed must be approved by AMD.
**2.** The mainboard must be placed on a solid place to avoid shaking while install the heatsink and fan on the board.
**3.** The heatsink must be contact with the CPU top tightly.
**4.** Never run the processor without the heatsink properly and firmly attached. PERMANENT DAMAGE WILL RESULT!

Without sufficient air circulation, the CPU may overheat resulting in damage to both the CPU and the mainboard.
***Damage may occur to the mainboard and/or the CPU fan if these pins are used incorrectly. These are not jumpers, do not place jumper caps over these pins.***

# 1). Set System Jumpers

## *Clear CMOS*

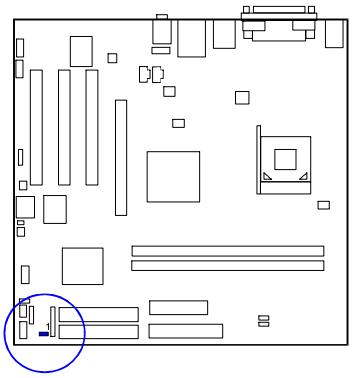
(1) Turn off your computer
(2) Place the jumper cap onto the pinpair 2-3 at least 6 seconds to clear CMOS
(3) Place the jumper cap onto the pinpair 1-2 to Normal
(4) Turn on your computer until CMOS checksum error appears
(5) Hold down the **Delete** key when boots
(6) Enter the BIOS Setup to re-enter user preferences, save it and exit.




***Disable***




***Enable (Clear CMOS)***

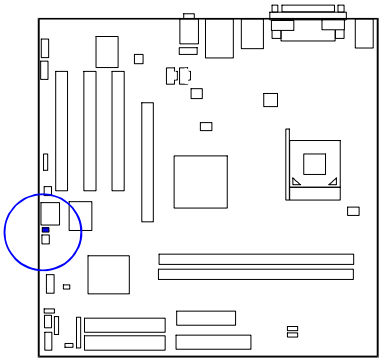


## *BIOS Flash Enable*

The jumper allows users to reflash BIOS EPROM or protect the BIOS not be overwritten by mistake.

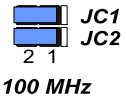

***BIOS Allowed to Flash (Default)***


***BIOS Not Allowed to Flash***



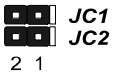
## *Front Side Bus Frequency*

The jumpers together decide the setting of FSB frequency of the mainboard.

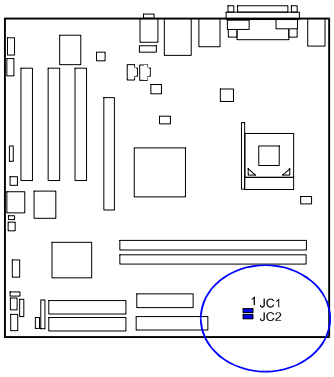



*100 MHz*


*133 MHz*

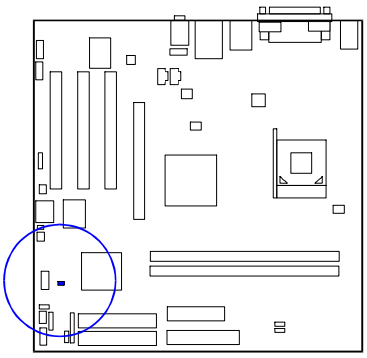



*166 MHz*




## *Clear Password*

(1). Turn off your computer
(2). Short this jumper by placing a jumper cap on it
(3). Turn on your computer
(4). Hold down the Delete key during boot and enter BIOS Setup to clear password
(5). Save the password setting and exit
(5). Turn off your computer
(6). Remove the jumper cap
(7). Turn on your computer for the new password to take effect.

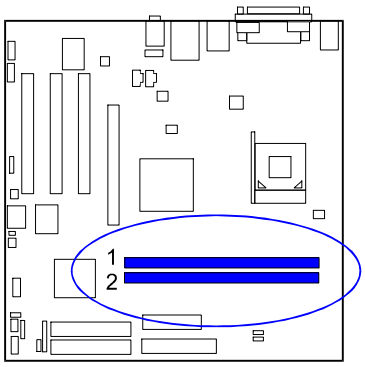



***Clear Password***


***Clear Password Prohibited***

## 2). Install Memory Modules

1. Locate the DIMM slots on the mainboard.
2. Install the DIMM straight down into the DIMM slot using both hands.
3. The clip on both ends of the DIMM slot will close up to hold the DIMM in place when the DIMM reaches the slot bottom.

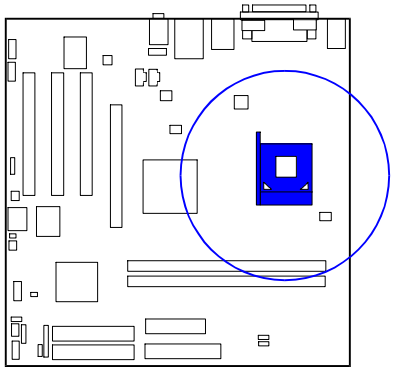



Press the clips with both hands to remove the DIMM.



## 3). Install the CPU

The mainboard has built-in Switching Voltage Regulator to support CPU Vcore autodetection. That is, it has the ability to detect and recognize the CPU voltage, clock and ratio.



When you install your CPU on this mainboard, please use a power supply that designed and manufactured only for CPU use. Your CPU fansink combined with its retention module must be completely closed and firmly attached on the top of the processor.

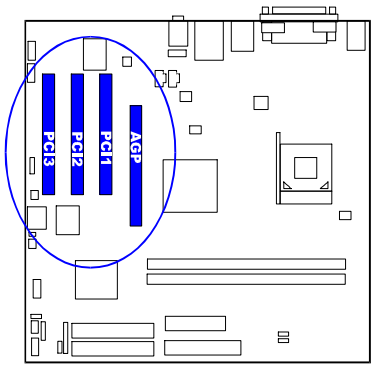
To install the CPU, do the following:

1. Lift the lever on the side of the CPU socket.
2. Handle the chip by its edges and try not to touch any of the pins.
3. Place the CPU in the socket. Do not force the chip. The CPU should slide easily into the socket.
4. Swing the lever to the down position to lock the CPU in place.
5. Place the cooling fan with heatsink on top of the installed CPU.

**NOTE:** Users The CPU installing procedures should be:
.. Insert the CPU (with its fansink and retention module) on the
t.
2. Connect the 4-pin plug of the power supply.
3. Connect the 20-pin plug of the power supply
To remove the processor, please do it in reverse order.

## 4). Install Expansion Cards

This section describes how to connect an expansion card to one of your system expansion slots. Expansion cards are printed circuit boards that, when connected to the mainboard, increase the capabilities of your system. For example, expansion cards can provide video and sound capabilities. The mainboard features one AGP slot and three PCI bus expansion slots.



**CAUTION:** Make sure to unplug the power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both the mainboard and expansioncards.
Always observe static electricity precautions.
Please read Handling Precautions at the start of this manual.

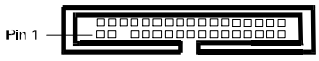
To install an expansion card, follow the steps below:

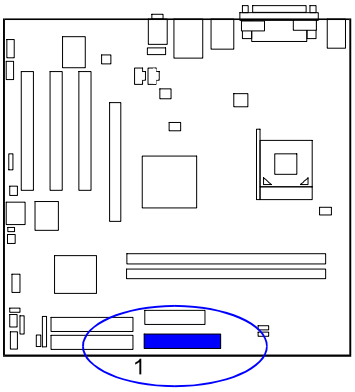
1. Remove the computer chassis cover and select an empty expansion slot.
2. Remove the corresponding slot cover from the computer chassis. Unscrew the mounting screw that secures the slot cover and pull the slot cover out from the computer chassis. Keep the slot cover mounting screw nearby.
3. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot.
4. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this rocking" motion until the add on card is firmly seated inside the expansion slot.
5. Secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely into the expansion slot.
6. Replace the computer system cover.
7. Setup the BIOS if necessary.
8. Install the necessary software drivers for the expansion card.

# 5). Connect Devices

## *Floppy Diskette Drive Connector*

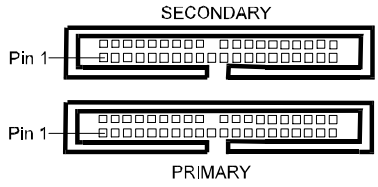
This connector provides the connection with your floppy disk drive.
The red stripe of the ribbon cable must be the same side with the Pin 1.

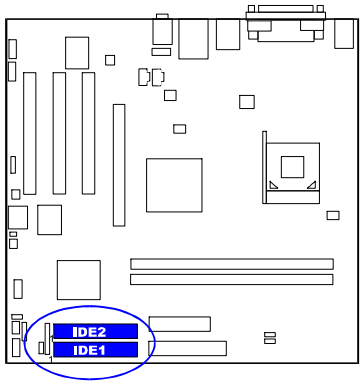



## *IDE Device Connectors*

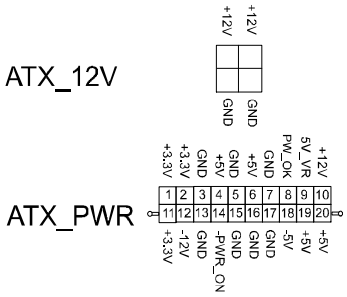
These two connectors are used for your IDE hard disk drives, CD drives, LS-120 drives, or IDE ZIP drives. The red stripe of the ribbon cable must be the same side with the Pin 1.

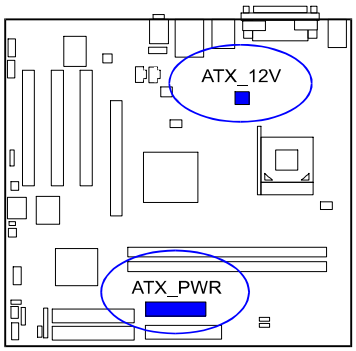


## *Power Connectors*

The 20-pin male block connector is connected to the ATX power supply. The 4-pin male block connector is for the 12V power use. The connectors are linked with your ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned.

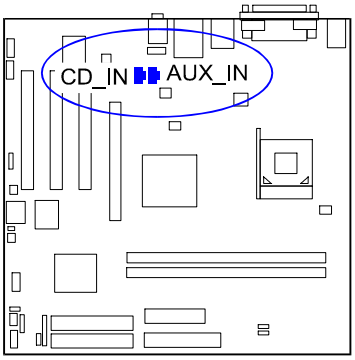




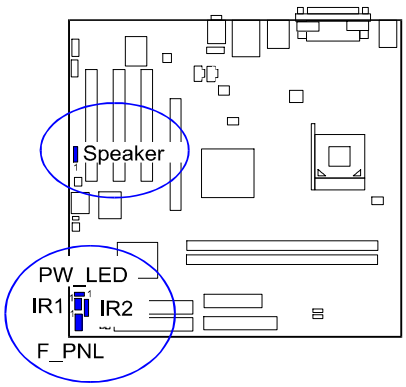

## *CD Audio-In Connectors*

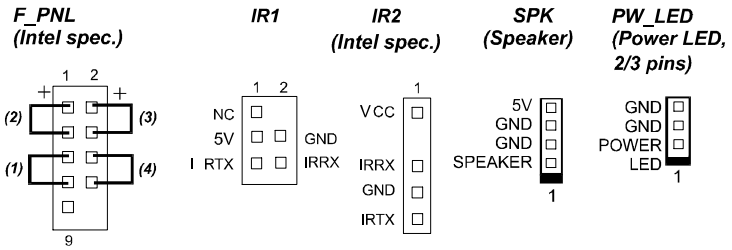
The connectors, CD_IN and AUX_IN, are for CD-ROM drive audio analog input use.

## *Front Panel Block Connector*

This block connector includes the connectors for linking with Power LED (3-pin), HDD LED, power button, power/sleep button, reset buttonon the front panel of the system case. Please identify polarities of plug wires for the case speaker and LEDs. Please ask vendor about this information when you buy them and install the system by yourself.




**NOTE:** Users that want to use IR port must set related BIOS features.

**(1) Reset Switch** is connected to the reset button. Push this switch to reboot the system instead of turning the power button off and on.

**(2) HDD LED** is connected to the IDE device indicator. This LED will blink when the hard disk drives are activated.

**(3) Power (Single and Dual) /Sleep LED**

Please refer to the tables below for the representations of LED states.
There is another 3-Pin Power LED connector on board for some cases that with a 3-pin plug.

**Single-Color (2, 3 Pins)**

| LED | Meaning | State |
|---|---|---|
| Off | Off | S4/S5 |
| On | Full On | S0 |
| Flash | Sleep | S1/S3 |

**Dual-Color**

| LED | Meaning | State |
|---|---|---|
| Off | Off | S4/S5 |
| Green | Full On | S0 |
| Other Colors | Sleep | S1/S3 |

**(4) Power Button** is connected with power button. Push this switch allows the system to be turned on and off rather than using the power supply button.

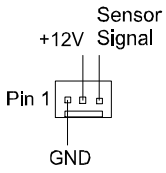
**IR** is a pinheader that is used for linking with your ID device to allow transmission of data to another system that also supports the IR feature.

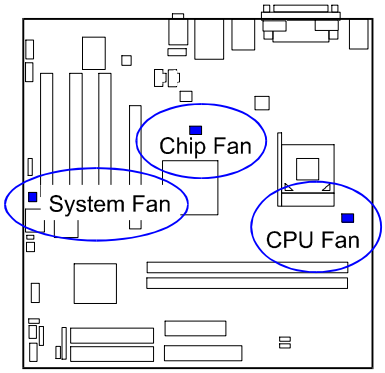
**Speaker** is connected with the case speaker.



## *Fan Connectors*

The two connectors, CPU_FAN, SYS_FAN are linked to the CPU fan, case fan, respectively. CHIP_FAN can be used with North Bridge chip fan.

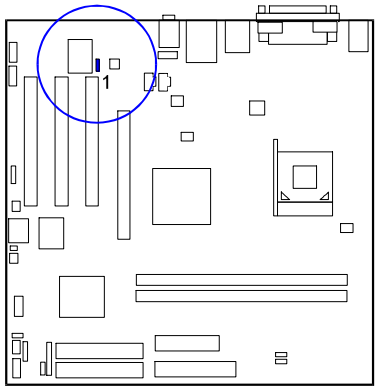


**CAUTION:** Improper orientation of SPDIF connection may cause damage of your device.

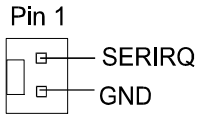
## *SPDIF Out Connector*

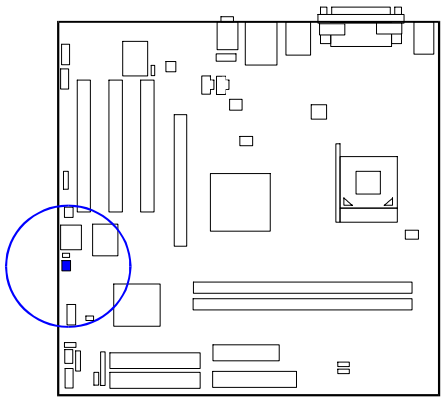
The mainboard equipped one 1x3 pinheader. It is used for SPDIF digital audio output. Pin 1 is VCC, Pin 2 is SPDIF, Pin3 is GND.




## *Serial IRQ Connector*

This 2-pin connector is used for some system integration use.

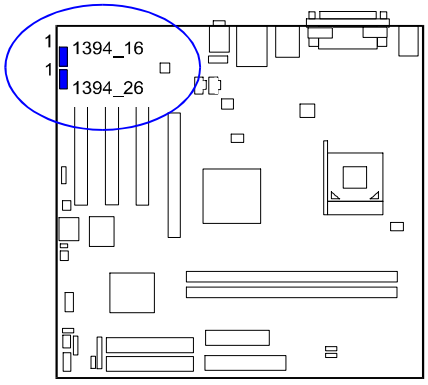


## *IEEE 1394 Connectors (mfg. optional)*

The 2 optional 1394 pinheaders on the board provides you with two connections with the peripherals which own 1394 connectors. The pin definitions of the 1394 pinheaders are listed below also.

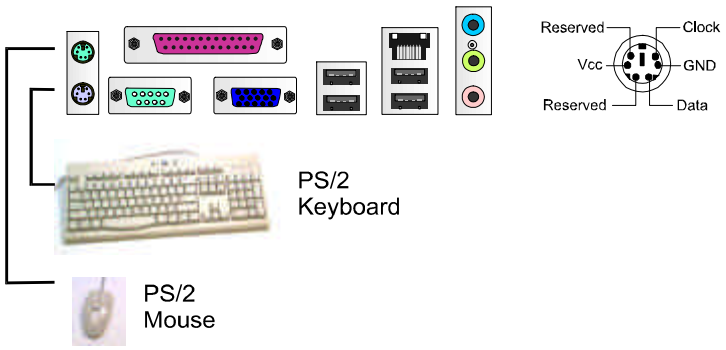
| PIN | DEFINITION |
|---|---|
| 1 | TA1+ |
| 2 | TA1- |
| 3 | GND |
| 4 | GND |
| 5 | TB1+ |
| 6 | TB1- |
| 7 | VCC |
| 8 | VCC |
| 9 | GND |
| 10 | NC |





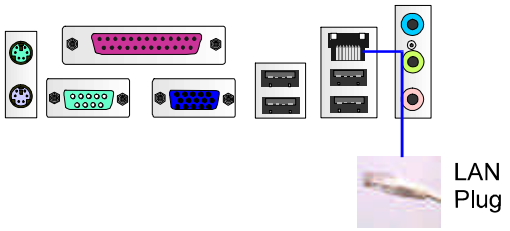

## *PS/2 Keyboard and Mouse Connector*

These two 6-pin female (PS/2 keyboard is purple color and PS/2 mouse is green color) connectors are used for your PS/2 keyboard and PS/2 mouse.



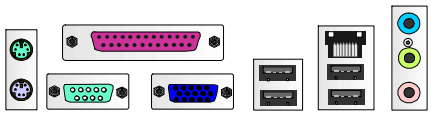
## *RJ45 LAN Connector*

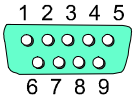
The RJ45 jack of LAN port is used for the LAN cable plug.




## *Serial Port Connector*

COM1 (9-pin D-sub male connector with teal color) allows you to connect with your devices that use serial ports, such as a serial mouse or an external modem.

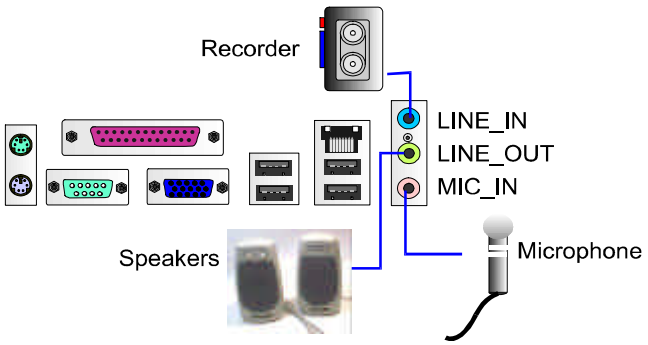



| PIN | DEFINITION |
|---|---|
| 1 | DCD |
| 2 | SIN |
| 3 | SOUT |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |
| 9 | RI |

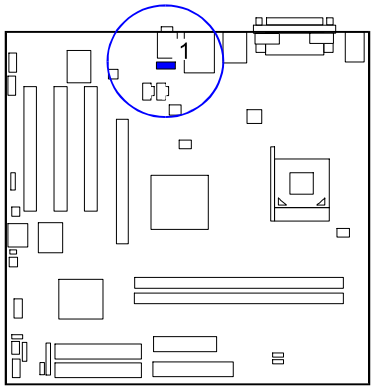
## *Audio I/O Jacks*

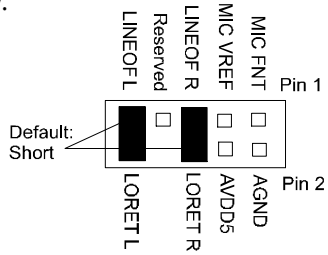
LINE_OUT (lime) can be connected to headphones or preferably powered speakers. LINE_IN (light blue) allows tape players or other audio sources to be recorded by your computer or played through the LINE_OUT. MIC_IN (pink) allows microphones to be connected for audio input.




## *Front Audio Connector*

The mainboard has a front panel audio connector (Intel spec.). It allows users to attach the audio device via front panel (instead of rear panel) by a ribbon cable that in some cases. Its pin definitions are resented below.

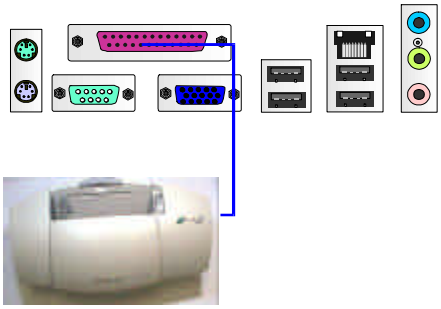



**NOTE:** If you do not use this pinheader, please keep the pinpair 5-6, 9-10 short as default; also, when the front headphone is plugged in, the rear audio output will be disabled.

## *Printer Connector*

This 25-pin D-Sub female burgundy-colored connector is attached to your printer.

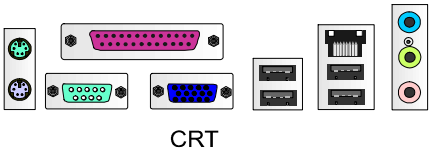


Printer

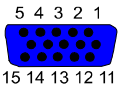

| PIN | DEFINITION |
|---|---|
| 1 | STROBE |
| 2 - 9 | DATA 0 - 7 |
| 10 | ACK# |
| 11 | BUSY |
| 12 | PE |
| 13 | SELECT |
| 14 | AUTO FEED# |
| 15 | ERR# |
| 16 | INIT# |
| 17 | SLIN# |
| 18-25 | GND |

## *CRT Connector*

The connector is linked with your monitor. The pinheaders pin assignments are shown at right side.



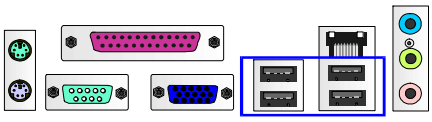
CRT



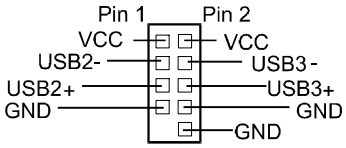

| PIN | DEFINITION |
|---|---|
| 1 | RED |
| 2 | GREEN |
| 3 | BLUE |
| 4 | VCC |
| 5 | GND |
| 6 | GND |
| 7 | GND |
| 8 | GND |
| 9 | VCC |
| 10 | GND |
| 11 | VCC |
| 12 | DDC DATA |
| 13 | HSYNC |
| 14 | VSYNC |
| 15 | DDC CLK |

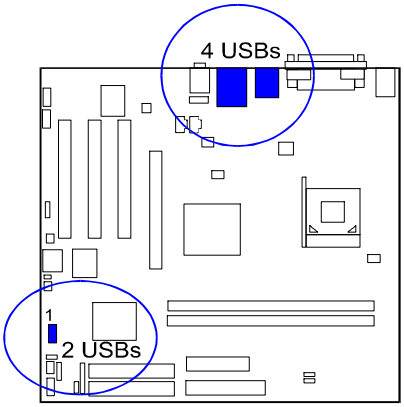
## *Universal Serial Bus Connectors*

The mainbaord have six USB ports; four USB black jacks that integrated on the edge of the board, the other two USB ports (pinheaders) on the board. They allows users to attach with USB devices either from rear or front panels. Please note that your operating system must support USB 1.1/2.0 features.




The figure below is the pin assignments.



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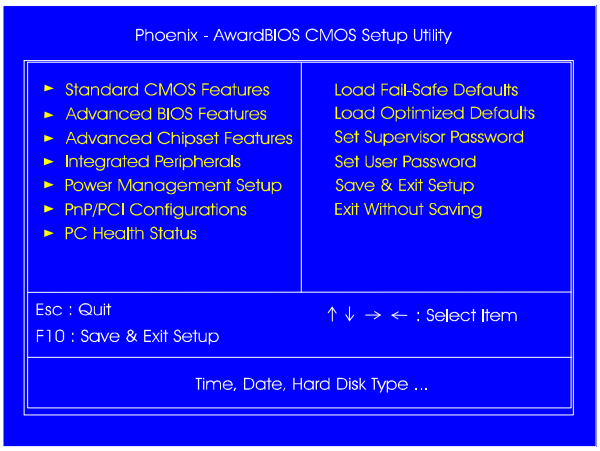
# BIOS Setup

The mainboard comes with the chip that Award BIOS that contains the ROM Setup information of your system. (This chip serves as an interface between the processor and the rest of the mainboard components.) This section explains the information contained in the Setup program and tells you how to modify the settings according to your system configuration.

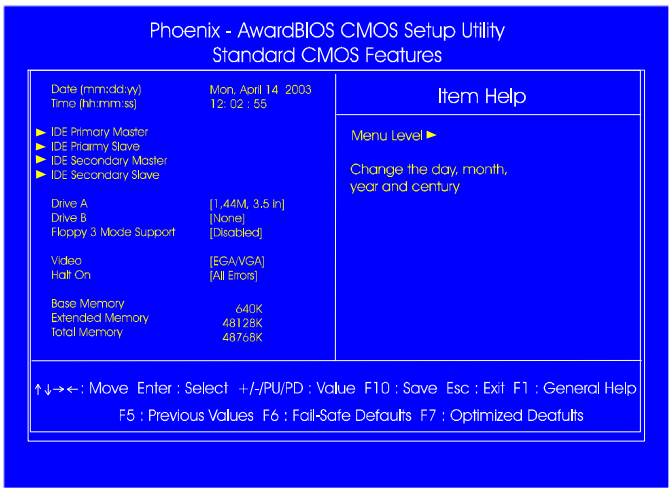
## CMOS Setup Utility






The Setup utility program allows updates to the mainboard configuration settings. The BIOS setup values will be saved in the CMOS. It is executed when the user changes system configuration; user changes system backup battery; or the system detects a configuration error and asks the user to run the Setup program. Use the arrow keys to select and press **Enter** to run the selected program.

# Standard CMOS Setup






The Standard CMOS Setup screen is displayed above. Each item may have one or more option settings. The system BIOS automatically detects memory size, thus no changes are necessary. Use the arrow keys to highlight the item and then use **PgUp** or **PgDn** keys to select the value you want in each item.

### Date

To set the date, highlight the *Date* field and then press **Page Up/Page Down** or **+/-** keys to set the current date. Follow the month, day and year format.

### Time

To set the time, highlight the *Time* field and then press **Page Up/Page Down** or **+/-** keys to set the current time. Follow the hour, minute, and second format.

### Hard Disks

This field records the specifications for all non-SCSI hard drives installed in the system. The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks, the first of which is the *Master* and the second is the *Slave*.

#### Hard Disk Configurations

**Capacity:** The hard disk size. The unit is Bytes.
**Cylinder:** The cylinder number of the hard disk.
**Head:** The read/write head number of hard disk.
**Precomp:** The cylinder number at which the disk drive changes the write current.
**Landing Zone:** The cylinder number that the disk drive heads (read/write) are seated when the disk drive is parked.
**Sector:** The sector number of each track defined on the hard disk.



### Drive A / Drive B

This field records the types of floppy drives installed in the system. To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the **left-** or **right-arrow** key.

### Floppy 3 Mode Support

This is a Japanese standard floppy type drive. The standard stores 1.2MB in a 3.5 inch diskette.

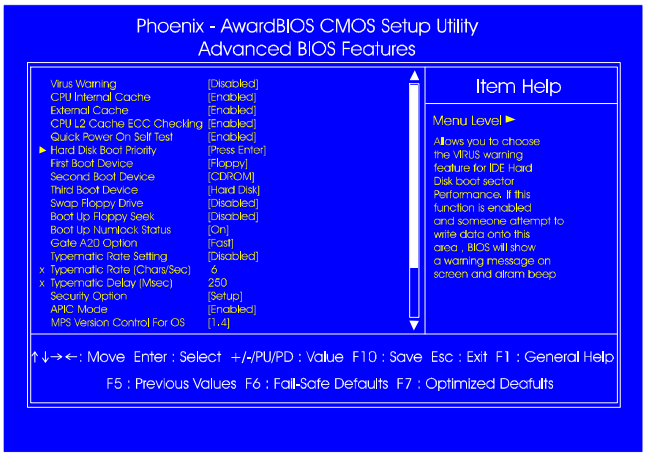
### Video

Set this field to the type of video display card installed in the system.

### Halt On

This field determines which types of errors will cause the system to halt.

# Advanced BIOS Features






## Virus Warning

This feature will prompt uses a warning message, when any write boot sector commend executed. The options are: Enabled, Disabled.

## CPU Internal Cache

When enabled, improves the system performance. Disable this item when testing or trouble-shooting. The options are: Enabled, Disabled.

## External Cache

When enabled, supports CPU L2 cache. This feature allows you to disable the cache function when the system performance is unstable to run some software. The options are: Enabled, Disabled.

## CPU L2 Cache ECC Checking

When enabled, it activates the CPU L2 cache check and error correction. The options are: Enabled, Disabled.

## Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test. The options are: Enabled, Disabled.

### Hard Disk Boot Priority

This feature will auto detect all hard disks of bootable device on the system. It also allows users to select hard disk device booting priority.

### First/Second/Third Boot Device

This feature allows user to select the boot device priority. The options are: Floppy, LS120, HardDisk, ZIP100, USB-HDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, Disabled.

### Swap Floppy Drive

Allows you to switch the order in which the operating system accesses the floppy drives. The options are: Enabled, Disabled.

### Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands.
The options are: Enabled, Disabled.



### Boot Up Numlock Status

When set to On, allows the BIOS to automatically enable the Num Lock Function when the system boots up. The options are: On, Off.

### Gate A20 Option

When set at Fast, allows a faster access response of address Line No. 20.
The options are: Fast, Normal.

### Typematic Rate Setting

The term typematic means that when a keyboard key is held down, the character is repeatedly entered until the key is released.
The options are: Disabled, Enabled.

### Typematic Rate (Chars/Sec)

This feature is available only if the above item, Typematic Rate Setting, is set at Enabled. Sets the rate of a character repeat when the key is held down. The options are: 6, 8, 10, 12, 15, 20, 24, 30.

### Typematic Delay (Msec)

This feature is available only if the item, Typematic Rate Setting, is set at Enabled. Sets the delay time before a character is repeated.
The options are: 250, 500, 750, 1000 millisecond.

### Security Option

Allows to set the security level of the system.The options: Setup, System.

### APIC Mode

Allows you to decide if the system enters the APIC (Advanced Programmable Interrupt Controller) mode or not for more IRQs can be released.
The options are: Enabled, Disabled.

### MPS Version Control For OS

When two CPUs onboard (not this board) this feature allows you to select MPS (Multi-Processor Spec.) version control for OS when logo test executes. The options are: 1.1, 1.4.

### OS Select For DRAM > 64MB

If your operating system (OS) is OS/2, select the option OS2. Otherwise, stay with the default setting Non-OS2.The options are: Non-OS2, OS2.

### HDD S.M.A.R.T. Capability

S.M.A.R.T. stands for Self-Monitoring and Analysis Reporting Technology which allows your hard disk drive to report any read/write errors and issues a warning with LDCM installed. The options: Disabled, Enabled.

### Video BIOS Shadow

Enabling this feature will copy the video BIOS to shadow RAM, it will improve the system performance. The options are: Enabled, Disabled.

### BIOS Guardian

It allows the system to prevent computer viruses. Users will need to disable it to update BIOS. The options are: Enabled, Disabled.

**NOTE:** Please disable this BIOS feature about BIOS Guardian before you start to reflash BIOS.

### *BIOS Guardian and Reflash BIOS*

BIOS Guardian by default is enabled, thus effectively acts as a fire-wall against viruses that can attack the BIOS while the system is running. It must be disabled before reflash BIOS.

The steps below show you how to off and on BIOS Guardian when reflash BIOS:

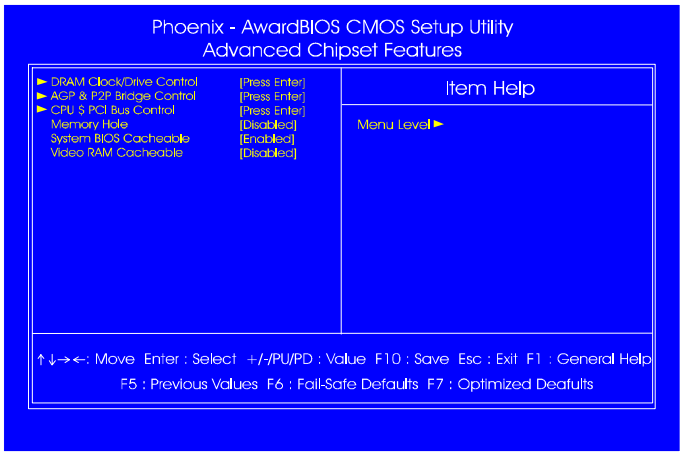
1. Press **Del** key while booting. Go to *CMOS Setup Utility* menu.
2. Go to *Advanced BIOS Features* submenu.
3. Set the feature *BIOS Guardian* at Disabled.
4. Save the setting and exit. The system restarts.
5. POST screen holds. A message about BIOS Guardian shows.
6. Press Space bar.
7. Reflash BIOS. Restart the system after complete it.
8. POST screen holds. A message about BIOS Guardian shows.
9. Press **G** key. The feature BIOS Guardian will be enabled again.

### Full Screen LOGO Show

It decides whether or not the full screen logo is shown during system booting up. The options are: Enabled, Disabled.



## Advanced Chipset Features



### *DRAM Clock/Drive Control*

#### Current FSB Frequency, Current DRAM Frequency

This item allows you to get current FSB and DRAM frequencies.

#### DRAM Clock

The feature allows users to decide DRAM clock.
The options are: By SPD, 133 MHz, 166 MHz.

#### DRAM Timing

The feature allows users to decide DRAM clock.
The options are: Auto By SPD, Manual, Turbo, Ultra.

#### DRAM Timing

The feature allows users to decide DRAM clock.
The options are: Auto By SPD, Manual, Turbo, Ultra.



#### DRAM CAS Latency

Enables you to select the CAS latency time. The value is set at the factory depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM and DRAM clock from DRAM Timing Selectable. The options are: 1.5, 2, 2.5, 3.

#### Bank Interleave

The item allows you to set how many banks of SDRAM support in your mainboard. Default is by SPD. The options are: 2 Bank, 4 Bank, Disabled.

#### Precharge to Active (Trp)

This item refers to the number of cycles required to return data to its original location to close the bank or the number of cycles required to page memory before the next bank activate command can be issued.
The options are: 3T, 2T.

#### Tras Non-DDR400/DDR400

This item sets the timing parameter combinations about non-DDR400 and DDR400 memory. The options are: 6T/8T, 7T/10T, 5T/6T, 8T/12T.

### Active to CMD (Trcd)

This item sets the timing parameters for the system memory such as the CAS (Column Address Strobe) and RAS (Row Address Strobe).
The options are: 3T, 2T.

### DRAM Burst Length

This item sets the timing parameters for the DRAM burst length.
The options are: 4, 8.

### DRAM Command Rate

Setup the timing at each cycle.
The options are: 1T Command, 2T Command.

### Write Recovery Time

This item sets the timing parameters for the write recovery time.
The options are: 2T , 3T.

### tWTR for DDR400 ONLY

This item sets the timing parameters for the DDR400 memory.
The options are: Options: 1T, 2T, 3T.

## *AGP & P2P Bridge Control*

### AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. It refers to a section of the PCI memory address range used for graphics memory.
The options are: 512M, 256M, 128M, 64M, 32M, 16M, 8M, 4M, 1G.

### AGP Mode

Chipset AGP Mode support. The options are: 4X, 8X.

### AGP Driving Control / AGP Driving Value

These two features allow user to improve the performance of AGP card manually by pressing Page Down/Page UP key if necessary.
The options of AGP Driving Control are: Auto, Manual.

### OnChip IDE Channel0/1

When enabled, allows you to use the onboard primary/secondary PCI IDE. If a hard disk controller card is used, set at Disabled.
The options are: Enabled, Disabled.

### IDE Prefetch Mode

When set at Enabled, it allows data to be posted to and prefetched from the primary IDE data ports. Data prefetching is initiated when a data port read occurs. The read prefetch eliments latency to the IDE data ports and allows them to be performed back to back for the highest possible PIO data transfer rates. The first data port read of a sector is called the demand read. Subsequent data port reads from the sector are called prefetch reads. The demand read and all prefetch reads must be of the same size (16 or 32 bits). The options are: Enabled, Disabled.



### Primary Master/Slave PIO

Allows an automatic or a manual configuration of the PCI primary IDE hard drive (master/slave) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

### Secondary Master/Slave PIO

Allows an automatic or a manual configuration of the PCI secondary IDE hard drive (master/slave) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

### Primary Master/Slave UDMA

Allows an automatic configuration of the PCI primary IDE hard drive (master/slave)) mode if Ultra DMA is supported both on the motherboard and the hard disk. The options are: Auto, Disabled.

### Secondary Master/Slave UDMA

Allows an automatic configuration of the PCI secondasry IDE hard drive (master/slave)) mode if Ultra DMA is supported both on the motherboard and the hard disk. The options are: Auto, Disabled.

### IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
The options are: Enabled, Disabled.

## *VIA OnChip PCI Device*

### VIA-3058 AC97 Audio

It allows users to disable AC97 audio function in South Bridge.
The options are: Auto, Disabled.

### VIA-3058 Onchip LAN

It allows users to disable onboard LAN feature.
The options are: Auto, Disabled.

### Onboard Lan Boot ROM

Enables and disables the onboard LAN Boot ROM.
The options are: Enabled, Disabled.

### Onboard 1394 Support

It allows users to disable the onboard 1394 feature.
The options are: Enabled, Disabled.

### Onchip USB Controller

Enables the onboard USB controller.
The options are: Enabled, Disabled.

### USB 2.0 Controller

Disable this option if you are not using the onboard USB 2.0 feature (USB 1.1 not effected). The options are: Disabled, Enabled.

### USB Keyboard Support

Your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard Device. When set at Auto, the BIOS will detect if USB keyboard is installed automatically.
The options are: Auto, Enabled, Disabled.

### AGP Fast Write

This feature allows you to set AGP fast write mode.
The options are: Disabled, Enabled.

### AGP 3.0 Calibration cycle

This feature allows users to enable or disable AGP 3.0cablibration cycle.
The options are: Disabled, Enabled.

### VGA Share Memory Size

It allows user to select the frame buffer size of VGA share memory.
The options are: Disabled, 16M, 32M, 64M.



### CPU Direct Access FB

It allows user to enable or disable the direct access from CPU to frame buffer of onboard video chip. The options are: Disabled, Enabled.

## *CPU & PCI Bus Control*

### PCI1/2 Master 0 WS Write

When enabled, allows a zero-wait-state-cycle delay when the PCI1/2 master drive writes data to DRAM. The options are: Enabled, Disabled.

### PCI1/2 Post Write

When enabled, allows the CPU to PCI1/2 master drive excutes post write.
The options are: Enabled, Disabled.AGP Master 1 WS Write
When enabled, the AGP bus master write access to DRAMs will add one wait-state cycle. The options are: Enabled, Disabled.

### VLink 8X Support

Enables VLink 8X support.
The options are: Enabled, Disabled.

### PCI Delay Transaction

Enable this feature to abort the current PCI master cycle and to accept the new PCI master request, it reaccepts the original PCI master and returns the PCI data phase to the original PCI master.
The options are: Disabled, Enabled.

### Memory Hole

When you install a Legacy ISA card, this feature allows you to select the memory hole address range of the ISA cycle when the processor accesses the selected address area. Please read your card manual for detail information. When disabled, the memory hole at the (15-16MB) address will be treated as a DRAM cycle when the processor accesses the15~16MB address area. The options are: 15M - 16M, Disabled.

### System BIOS Cacheable

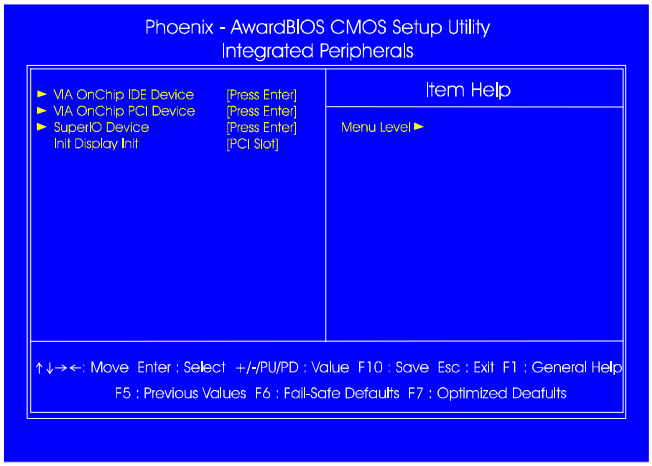
When enabled, allows the ROM area F000H-FFFFH to be cacheable when cache controller is activated. The options are: Enabled, Disabled.

### Video RAM Cacheable

When enabled, allows the video RAM area to be cacheable.
The options are: Enabled, Disabled.



## Integrated Peripherals




### *VIA OnChip IDE Device*

### IDE DMA transfer access

This item allows users to disable the IDE DMA (Direct Memory Access) transfer access function. The options are: Enabled, Disabled.

### OnChip IDE Channel0/1

When enabled, allows you to use the onboard primary/secondary PCI IDE. If a hard disk controller card is used, set at Disabled.
The options are: Enabled, Disabled.

### IDE Prefetch Mode

When set at Enabled, it allows data to be posted to and prefetched from the primary IDE data ports. Data prefetching is initiated when a data port read occurs. The read prefetch eliments latency to the IDE data ports and allows them to be performed back to back for the highest possible PIO data transfer rates. The first data port read of a sector is called the demand read. Subsequent data port reads from the sector are called prefetch reads. The demand read and all prefetch reads must be of the same size (16 or 32 bits).
The options are: Enabled, Disabled.



### Primary Master/Slave PIO

Allows an automatic or a manual configuration of the PCI primary IDE hard drive (master/slave) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

### Secondary Master/Slave PIO

Allows an automatic or a manual configuration of the PCI secondary IDE hard drive (master/slave) mode. The options are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

### Primary Master/Slave UDMA

Allows an automatic configuration of the PCI primary IDE hard drive (master/slave)) mode if Ultra DMA is supported both on the motherboard and the hard disk. The options are: Auto, Disabled.

### Secondary Master/Slave UDMA

Allows an automatic configuration of the PCI secondasry IDE hard drive (master/slave)) mode if Ultra DMA is supported both on the motherboard and the hard disk. The options are: Auto, Disabled.

### IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.
The options are: Enabled, Disabled.

## *VIA OnChip PCI Device*

### VIA-3058 AC97 Audio

It allows users to disable AC97 audio function in South Bridge.
The options are: Auto, Disabled.

### VIA-3058 Onchip LAN

It allows users to disable onboard LAN feature.
The options are: Auto, Disabled.

### Onboard Lan Boot ROM

Enables and disables the onboard LAN Boot ROM.
The options are: Enabled, Disabled.

### Onboard 1394 Support

It allows users to disable the onboard 1394 feature.
The options are: Enabled, Disabled.

### Onchip USB Controller

Enables the onboard USB controller.
The options are: Enabled, Disabled.

### USB 2.0 Controller

Disable this option if you are not using the onboard USB 2.0 feature (USB 1.1 not effected). The options are: Disabled, Enabled.

### USB Keyboard Support

Your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard Device. When set at Auto, the BIOS will detect if USB keyboard is installed automatically.
The options are: Auto, Enabled, Disabled.

### *SuperIO Device*

#### Onboard FDC Controller

When enabled, the floppy diskette drive (FDD) controller is activated.
The options are: Enabled, Disabled.

#### Onboard Serial Port 1

If the serial port 1 uses the onboard I/O controller, you can modify your serial port parameters.
The options are: 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

#### IR Controller Port

Allows you to enable the IR function.

The options are: Enabled, Disabled.



#### IR Mode Select

Allows you to select the IR modes if the serial port 2 is used as an IR port.
The options are: Normal, IrDA, ASKIR, SCR.

#### IR Duplex Mode

Allows you to select the IR modes.
The options are: Full, Half.

#### Onboard Parallel Port

Allows you to select from a given set of parameters if the parallel port uses the onboard I/O controller.
The options are: Disabled, 378/IRQ7, 278/IRQ5, 3BC/IRQ7.

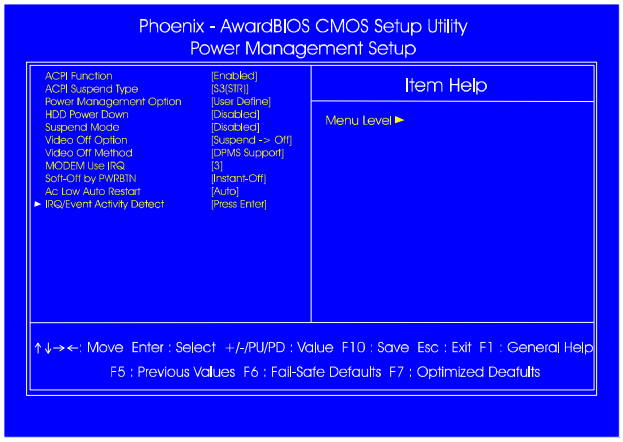
#### Parallel Port Mode

Allows you to connect with an advanced printer via the port mode it supports. The options are: SPP, ECP, EPP, EPP+ECP.

#### ECP Mode Use DMA

This feature allows you to select Direct Memory Access (DMA) channel.
The options are: 1, 3.

# Power Management Setup






## ACPI function

This item allows you to disable the ACPI function.
The options are: Enabled, Disabled.

## ACPI Suspend Type

This item allows you to select ACPI suspend types.
The options are: S1(POS), S3 (STR), S1&S3.

## Power Management Option

This item allows you to adjust the power management features.

Select User Define for configuring your own power management features. Min Saving initiates all predefined timers in their minimum values. Max Saving, on the other hand, initiates maximum values. The options are: User Define, Min Saving, Max Saving.

## HDD Power Down

The option lets the BIOS turn the HDD motor off when system is in Suspend mode. Selecting 1 Min..15 Min allows you define the HDD idle time before the HDD enters the Power Saving Mode.
The options 1 Min..15 Min will not work concurrently. When HDD is in the Power Saving Mode, any access to the HDD will wake the HDD up.
The options are: Disable, 1 Min..15 Min.

### Suspend Mode

When disabled, the system will not enter Suspend mode. The specified time option defines the idle time the system takes before it enters Suspend mode. The options are: Disable, 1, 2, 4, 6, 8, 10, 20, 30, 40 Min, 1 Hour.

### Video Off Option

This feature provides the selections of the video display power saving mode. The option Suspend - Off allows the video display to go blank if the system enters Suspend mode. The option All Modes - Off allows the video display to go blank if the system enters Doze mode or Suspend mode. The option Always On allows the video display to stay in Standby mode even when the system enters Doze or Suspend mode.
The options are: Suspend - Off, All Modes -> Off, Always On.



### Video Off Method

The option *V/H SYNC+Blank* allows the BIOS to blank off screen display by turning off the V-Sync and H-Sync signals sent from add-on VGA card. *DPMS Support* allows the BIOS to blank off screen display by your add-on VGA card which supports DPMS (Display Power Management Signaling function). *Blank Screen* allows the BIOS to blank off screen display by turning off the red-green-blue signals.
The options are: V/H SYNC+Blank, DPMS Support, Blank Screen.

### MODEM Use IRQ

This feature allows you to select the IRQ# to meet your modem IRQ#.
The options are: NA, 3, 4, 5, 7, 9, 10, 11.

### Soft-Off by PWRBTN

The selection Delay 4 Sec. will allow the system shut down after 4 seconds after the power button is pressed. The selection Instant-Off will allow the system shut down immediately once the power button is pressed.
The settings are: Delay 4 Sec, Instant-Off.

### Ac Low Auto Restart

When the system is shut down owing to the power failure, the system will not be back to power on by itself. This feature allows you to set the system back to which power status of the system when the system power is resumed. It always will be back to on if set at On. The system always be back to off if set at Off. The options are Auto, On, Off.

### *IRQ/Event Activity Detect*

#### PS2KB Wakeup Select

This item allows you to select Hot Key or Password to wake-up the system by PS2 Keyboard. When select Password, please press ENTER key to change password max 8 numbers. The options are : Hot key, Password.

#### PS2KB Wakeup from S1-S5

It allows you to set a Hot Key to wake-up the system by PS2 Keyboard. The options are: Disable, Ctrl+F1,..., Ctrl+F12, Power, Wake, Any key. *Power and Wake are Windows98 Keyboard button.*

#### PS2MS Wakeup from S1-S5

This item allows you to wake-up the system by PS2 Mouse. The options are: Enabled, Disabled.

#### USB Resume from S1-S3

This item allows you to wake-up the system by USB device when you save the computer power at S1-S3. The options are: Enabled, Disabled.

#### VGA

When set at On, any VGA activity will aThe options are: wake the system. The options are: OFF, ON.

#### LPT & COM

When LPT/COM is selected, any access of LPT and COM ports will awake the system. Likewise, either LPT or COM is chosen, the system will be awaken by any activity of LPT or COM port.
The options are: LPT/COM, LPT, COM, NONE.

#### HDD & FDD

When it is set at ON, any access happened at hard drives and floppy drives will awake the system. The options are: OFF, ON.

#### PCI Master

To set this feature at ON activates that Power Management feautre (PM) wake-up event for the PCI bus master card. The options are: OFF, ON.

### PowerOn by PCI Card

When set at Enabled, any PCI-PM event awakes the system from a PCI-PM controlled state. The options are Disabled, Enabled.

### Wake Up On LAN/Ring

When set at Enabled, an input signal comes from the other client/server on the LAN/ring awakes the system from a soft off state if connected over LAN/modem. The options are Disabled or Enabled.

### RTC Alarm Resume

*Enabled* allows you to set the time the system will be turned on from the system power-off status. The options are: Enabled, Disabled.



### Date (of Month)

This feature allows you to set the day of the alarm starts when the RTC Alarm Resume From Soft Off is set to be Enabled. The options are: 0, 1..31.

### Resume Time (hh:mm:ss)

If an ATX power supply is installed and when RTC Alarm Resume is Enabled, this feature allows you to set the time of the alarm starts when the RTC Alarm Resume From Soft Off is set to be Enabled.
The options are: hh (*hour*) - 0, 1, 2,.., 23; mm (*minute*) - 0, 1, 2,..,59; ss (*second*) - 0, 1, 2,..,59.

## *IRQs Activity Monitoring*

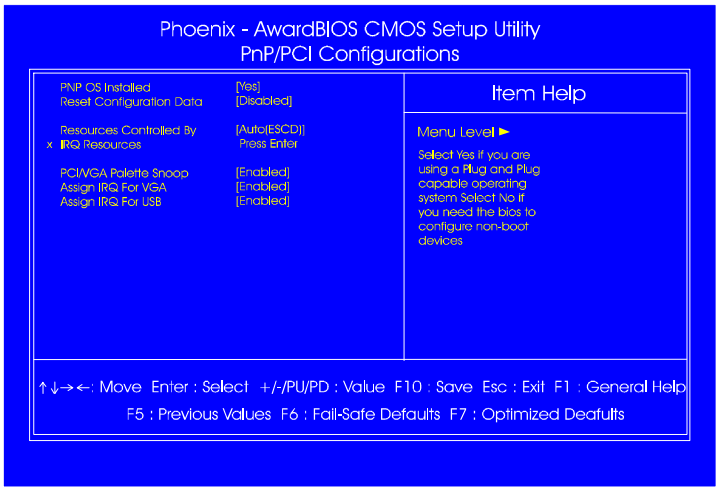
### Primary INTR

If set at ON, the Primary interrupt (the Primary option in the feature of IRQ# Acitivity) will make the power management wake up the system.
The options are: ON, OFF.

### IRQs 3-15

Allows you to set system to monitor IRQs 3-15 for activity to awaken system from a power management mode.

# PnP/PCI Configurations






## PNP OS Installed

If your operating system is a Plug-and-Play one, such as Windows NT, Windows 95, select Yes. The options are: No, Yes.

## Reset Configuration Data

Enabling it to reset the system 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. The options are: Disabled, Enabled.

## Resources Controlled By

If set at Auto, the BIOS arranges all system resources. If there exists conflict, select Manual. The options are: Auto (ESCD), Manual.

The manual options of **IRQ- / DMA**- assigned to are: PCI/ISA PnP, Legacy ISA.

## PCI/VGA Palette Snoop

Set this feature to be enabled if any ISA adapter card installed in the system requires the VGA palette snoop function.

The options are: Disabled, Enabled.

### Assign IRQ For VGA

If your PCI VGA card devices do not need an IRQ, select Disabled; therefore, an IRQ can be released for the system use.
The options are: Enabled, Disabled.

### Assign IRQ For USB

If your USB devices do not need an IRQ, select Disabled; therefore, an IRQ can be released for the system use.
The options are: Enabled, Disabled.

## PC Health Status



### Shutdown Temperature (optional)

This feature helps to shutdown the system when the system temperature is as high as the selected temperature to prevent from the overheat problem. The allowed item list presents all the temperatures that supported by the board and Disabled.

### *System Item Report*

The rest items of the menu allow end users and technicians to monitor data provided by the BIOS on this mainboard. It is not user-configurable.

## Load Fail-Safe Defaults

This submenu is selected to diagnose the problem after the computer boots, if the computer will not boot. These settings do not give optimal performance.

## Load Optimized Defaults

This submenu is selected for default settings which provide the best system performance.

## Supervisor/User Password

To enable the Supervisor/User passwords, select the item from the Standard CMOS Setup. You will be prompted to create your own password. Type your password up to eight characters and press Enter. You will be asked to confirm the password. Type the password again and press Enter. To disable password, press Enter twice when you are prompted to enter a password. A message appears, confirming the password is disabled.

Under the BIOS Feature Setup, if *Setup* is selected under the Security Option field and the Supervisor/User Password is enabled, you will be prompted password every time you try to enter the CMOS Setup Utility. If *System* is selected and the Supervisor/User Password is enabled, you will be requested to enter the Password every time when you reboot the system or enter the CMOS Setup utility.

## Save and Exit Setup

After you have made changes under Setup, press Esc to return to the main menu. Move cursor to Save and Exit Setup or press F10 and then press Y to change the CMOS Setup. If you did not change anything, press Esc again or move cursor to Exit Without Saving and press Y to retain the Setup settings. The following message will appear at the center of the screen to allow you to save data to CMOS and exit the setup utility: **SAVE to CMOS and EXIT (Y/N)?**

## Exit without Saving

If you select this feature, the following message will appear at the center of the screen to allow you to exit the setup utility without saving CMOS modifications: **Quit Without Saving (Y/N)?**

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