

# **PTM900**

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# **MAINBOARD MANUAL**

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## Content

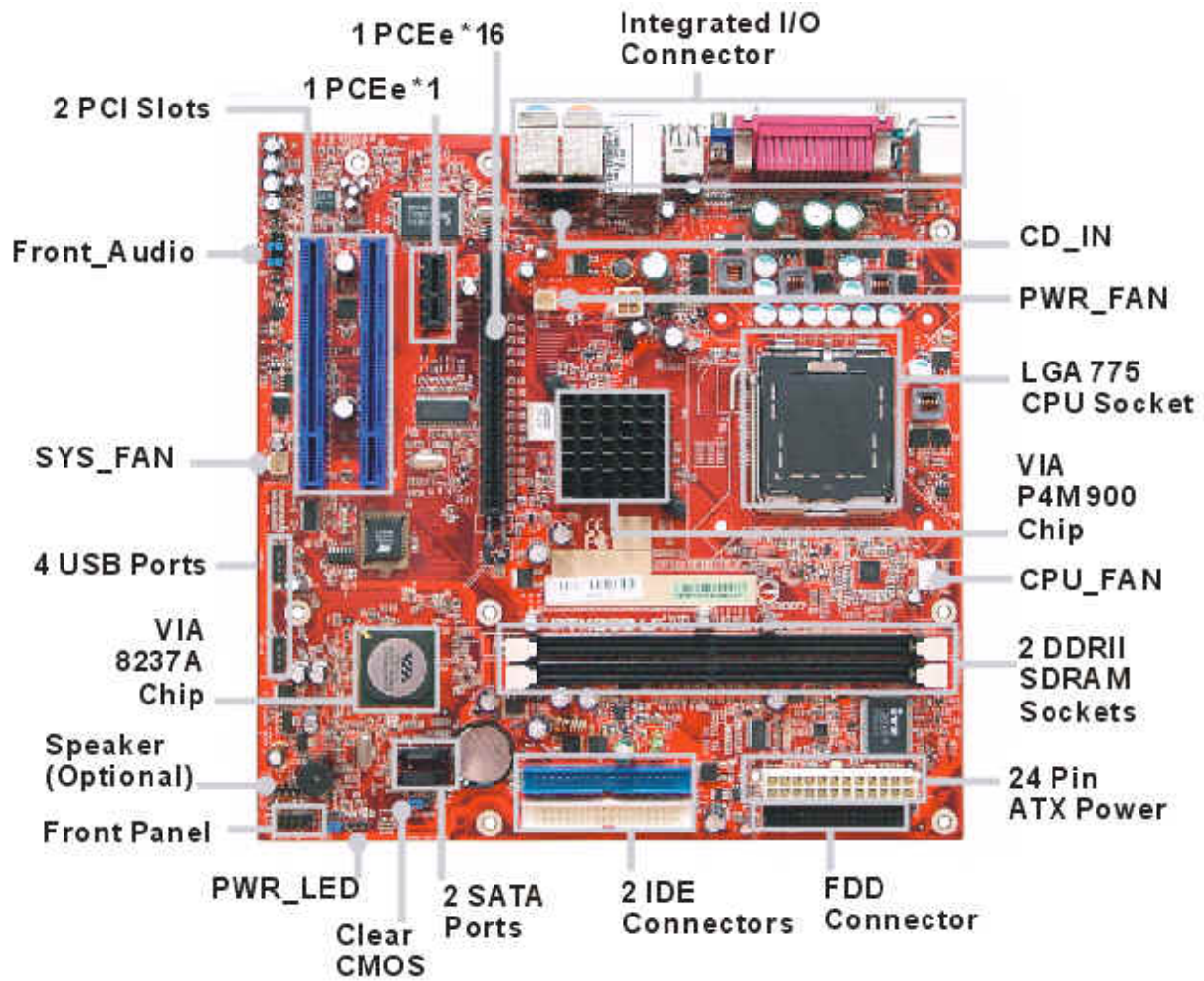
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**Chapter 1**

**Overview**

**The PTM900 Mainboard**



## **Main Features**

### **■ CPU**

LGA 775 socket for Intel Celeron D/  
Pentium4/ Pentium D/ Core 2 Duo Processor  
compatible with Hyper-Threading Technology  
FSB 533/800/1066 support.

### **■ Chipset**

North Bridge: VIA® P4M900  
South Bridge: VIA® VT8237A

### **■ Memory**

2 Memory Sockets:  
Support DDRII 400/533/667 MHz  
total Memory Size up to 2 GBs

### **■ Expansion Slots**

1 PCIe \*16  
1 PCIe \*1  
2 PCI Slots

### **■ IDE Connections**

2 IDE Connectors - PIO Mode, Ultra DMA 66/100/133  
Up to 4 Devices

### **■ SATA Connections**

2x SATA with RAID0,1,JBOD

### **■ Audio Features**

High Definition Audio:  
2 Channels Realtek ALC 260 or

## ■ I/O Ports

- 1 x PS2 Mouse/Keyboard Connector
- 1 x COM port
- 1 x VGA port
- 1 x Parallel Port
- 4 x USB 1.1/2.0 ports
- 1 x RJ45
- 1 x Vertical Audio connectors : Mic-In, Line-In, Speaker-Out
- 1 x Vertical Audio connectors : Front L/R, Rear L/R, Center+Sub (8CH)

## ■ LAN

- Realtek 8100C 10/100 Mbps Lan support or

## ■ Pin Headers or Internal Connectors

- 2 x USB 2.0 pin-header (4 outputs)
- 1 x ATX Power connector (24pin)
- 1 x ATX 12V Power connector (4pin)
- 1 x Front Panel audio pin-header
- 1 x CD-in audio connector
- 1 x Power LED pin-header
- 1 x Speaker pin-header (Optional)
- 1 x Serial port pin-header (Optional)
- 1 x Chassis Intrusion pin-header (Optional)

## ■ Mounting Holes

- 6 holes

## ■ Mainboard Size

- µATX -9.6 x 9.6 (unit: inch)

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## Installation Procedures

The mainboard has several user-adjustable jumpers that allow you to configure the 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.
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.

## 1.) Set System Jumpers

Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. A 1 is written besides pin 1 on jumpers with three pins. To set a jumper, a black cap containing metal contacts is placed over the jumper pin(s) according to the required configuration. A jumper is said to be **shorted** when the black cap has been placed on one or two of its pins.



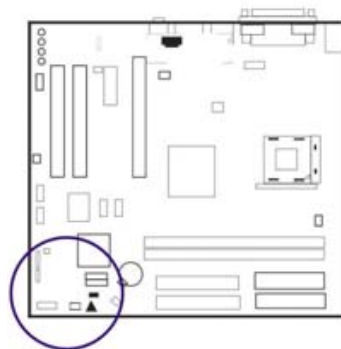
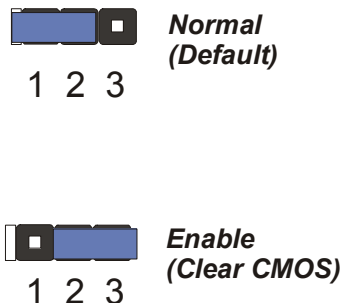
NOTE: Users are not encouraged to change the jumper settings that is not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.

### Clear CMOS

The CMOS RAM is powered by the onboard button cell battery.

To clear the RTC data:

- (1) Turn off your computer;
- (2) Open the system case and disconnect the ATX power cable;
- (3) Place the jumper cap onto the pinpair 2-3 for at least 6 seconds to enable CMOS clearance;
- (4) Place the jumper cap onto the pinpair 1-2 to disable the effect of CMOS clearance;
- (5) Connect the ATX power cable and close the system case;
- (6) Turn on your computer until CMOS checksum error appears;
- (7) Hold down the Delete key as it boots;
- (8) Enter the BIOS Setup to re-enter user preferences.

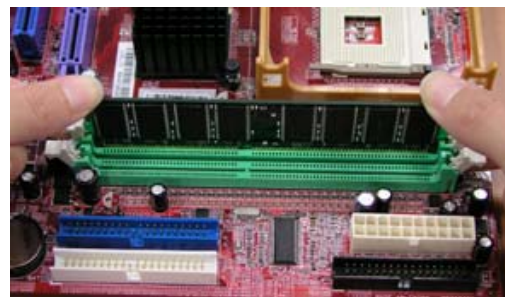
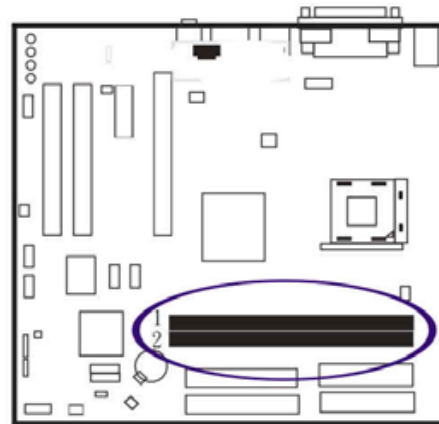


## 2). Install Memory Modules

1. Locate DDRII DIMM sockets on the mainboard.

2. Install DDRII DIMM straight down into the socket 1 using both hands, then socket 2.

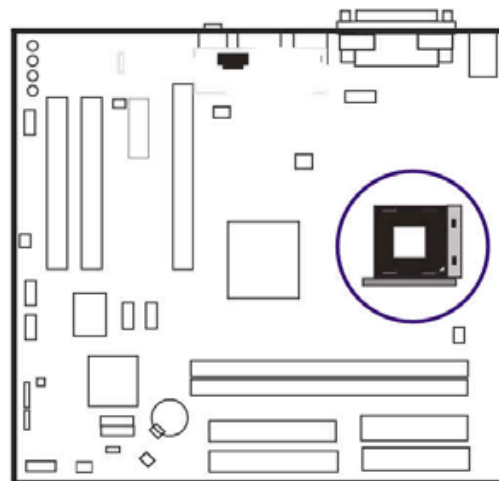
3. The clip on both ends of the socket will close up to hold the DDRII DIMM in place when the DDRII DIMM reaches the socket bottom.



## 3). Install the CPU

The mainboard has built-in Switching Voltage Regulator to support CPU Vcore auto-detection. That is, It has the ability to detect and recognize the CPU voltage, clock, ratio and enables users to set up the CPU frequency from the BIOS Setup Screen. Users can adjust the frequency through Frequency/Voltage Control of the BIOS Setup Screen.

The procedures below show you how to install your CPU and its fan and heatsink. First of all, locate the CPU socket on this mainboard.



1. Swing the lever upward to 90 degree.



2. Install the CPU and make sure the pin 1 orientation by aligning the socket corner marking with the socket corner closest to the lever tip.

Do not insert the CPU by force. Make sure the processor is fully inserted into the socket on all sides.

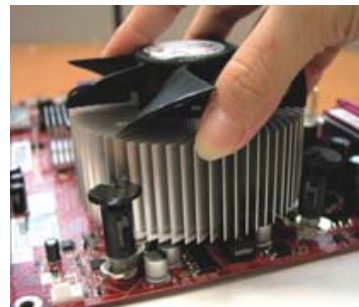


Affix the CPU by pressing the lever downward and locking it beside the socket.

Apply some thermal materials, such as paste or tape, on the CPU top; and install a fan with heatsink that approved by CPU manufacturer to avoid CPU damage. For detail information, please refer to the CPU manufacturer website.



3. Place the fan with heatsink on the CPU top and press down two plastic clips to hook up with the holes on the retention module

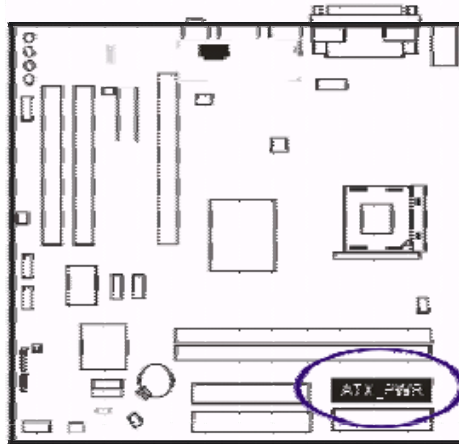


4. Press down the white bar on each clip to fasten the fan set on the retention module.

## Connect ATX Power

The 24-hole power plug (top right) is connected to the ATX power 24-pin pinheaders. The 4-hole 12V power plug (bottom right) is inserted in the ATX\_12V power connector.

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.



### NOTE:

1. Insert the CPU (with fansink and retention module) on |socket.
  2. Connect the 4-pin plug of the power supply
  3. Connect the 24-pin plug of the power supply.
- To remove the processor, please do it in reverse order.



3. 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 card is firmly seated inside the expansion slot. Secure the card with the screw that was removed in Step2.

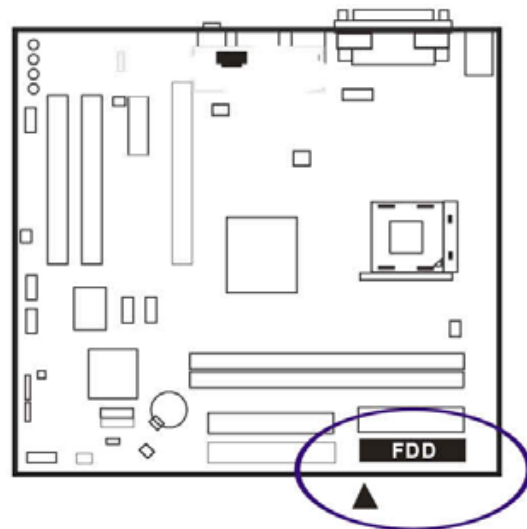


## 5). Connect Devices

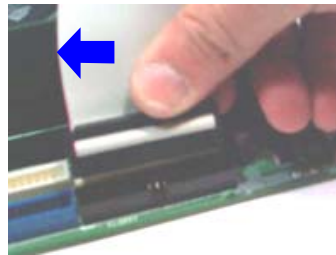
### *Floppy Diskette Drive Connector*

This connector provides the connection with your floppy disk drive.

Insert the floppy ribbon cable (below) onto the floppy connector.



The colored stripe (indicated by the arrow head, right) of the ribbon cable must be the same side with the Pin 1.



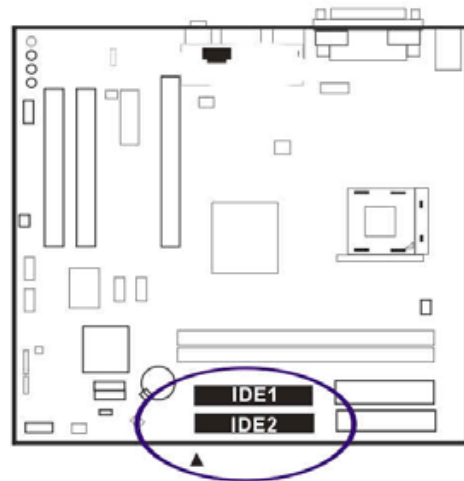
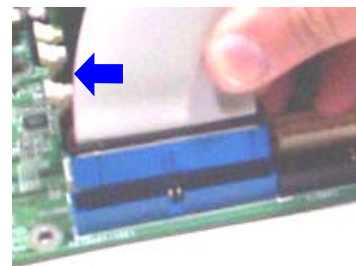
### IDE Device Connectors

The two connectors, IDE1 (PRIMARY) and IDE2 (SECONDARY), are used for your IDE hard disk drives, CD drives, LS-120 drives, or IDE ZIP drives.

Insert the IDE ribbon cable (below) onto the IDE connector.

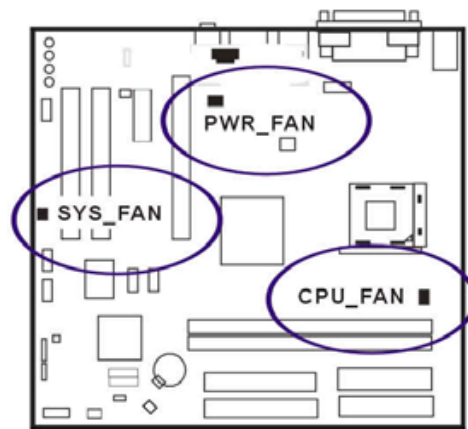
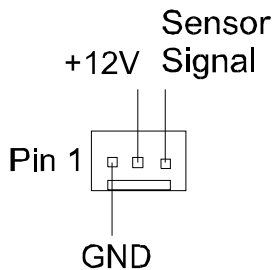


The colored stripe (indicated by the arrow head, right) of the ribbon cable must be the same side as Pin 1.



### Fan Connectors

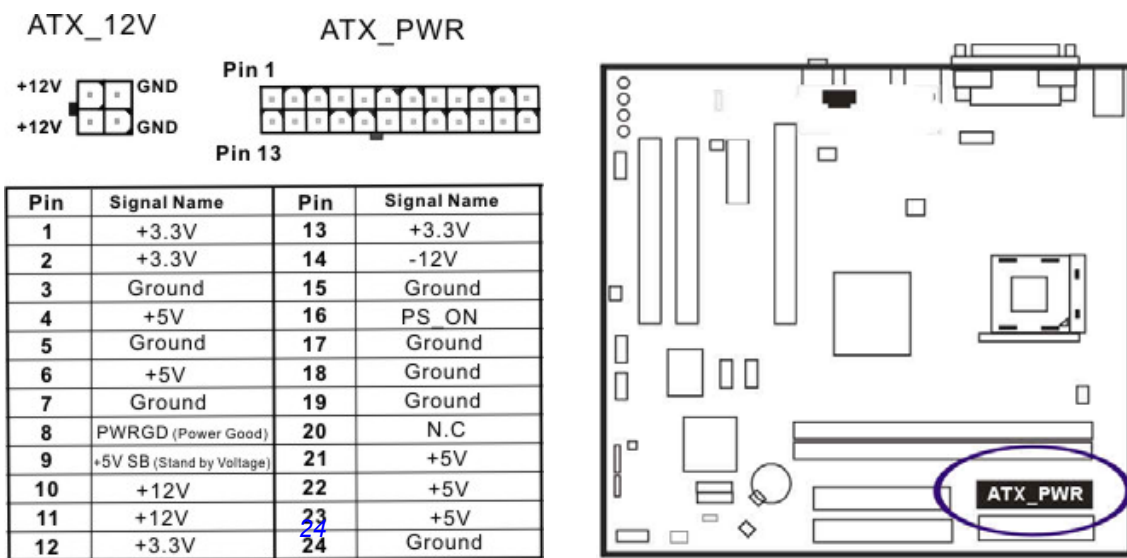
The two connectors, CPU\_FAN and SYS\_FAN are linked to the CPU fan and case fan, respectively. PWR\_FAN can be used with the power supply cooling fan. Pin1 is GND, Pin2 is +12V, Pin3 is Signal (PWR\_FAN Pin3 is no use).





## Power Connectors

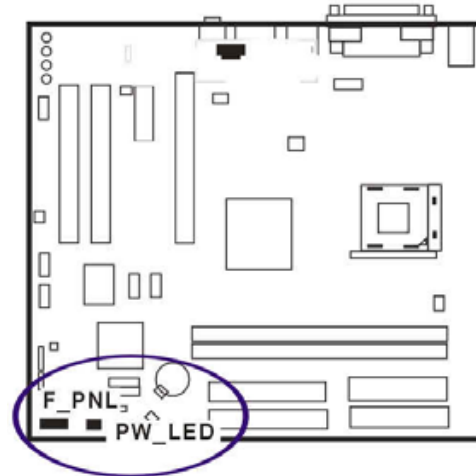
The 20-pin male block connector is connected to the ATX power supply. The 4-pin male block connector is for the ATX\_12V power use. Both connectors are linked with your ATX power supply. The plug from the power supply can only be inserted in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned.



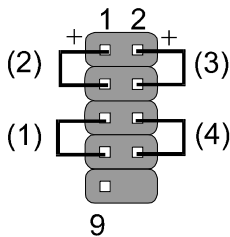
### Front Panel Block, Power LED, and Speaker Connector

This block connector includes the connectors for linking with Power LED (3-pin), HDD LED, power button, power/sleep/message waiting button, and the reset button on the front panel of the system case. Please identify the polarities of the plug wires for the case speaker and LEDs.

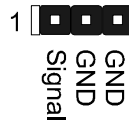
The plug wires (below) polarities of these buttons will not affect the function.



**F\_PNL**  
(Intel Spec.)



**PW\_LED**  
(Power LED, 2/3 Pins,



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

**(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.

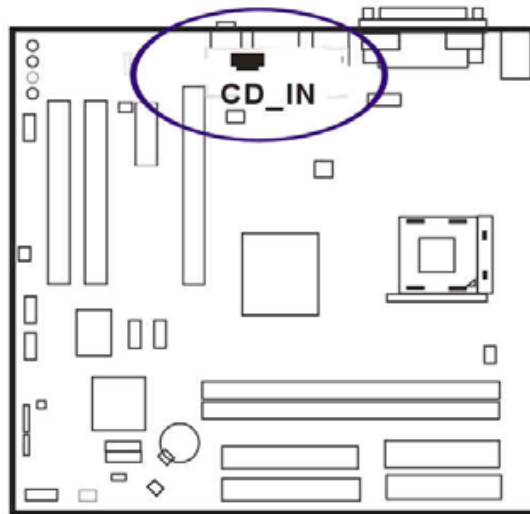
There is another 3-Pin Power LED connector on board for some cases that have a 3-pin plug.

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

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

### ***CD\_In Connectors***

The CD\_IN connector is for CD-ROM drive audio analog input use. The pin assignment are: Pin 1 is Left, Pin2 and 3 are GND, Pin 4 is Right.



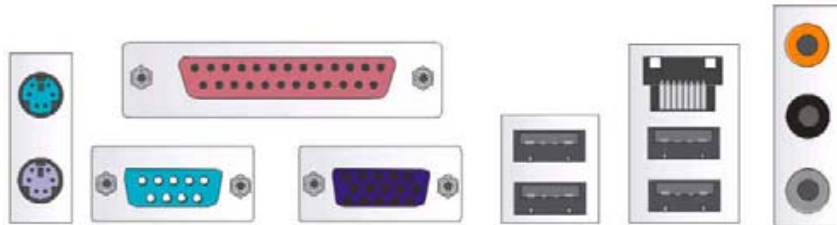
### ***Serial ATA Connectors***

The 2 SATA connectors provide you with the connections to serial ATA devices that conform to the Serial ATA specification. Serial ATA supports all ATA and ATAPI devices. The figures below left are two SATA cables (the top one is for power; the next one is for data). The data cable pin assignments of SATA connector.



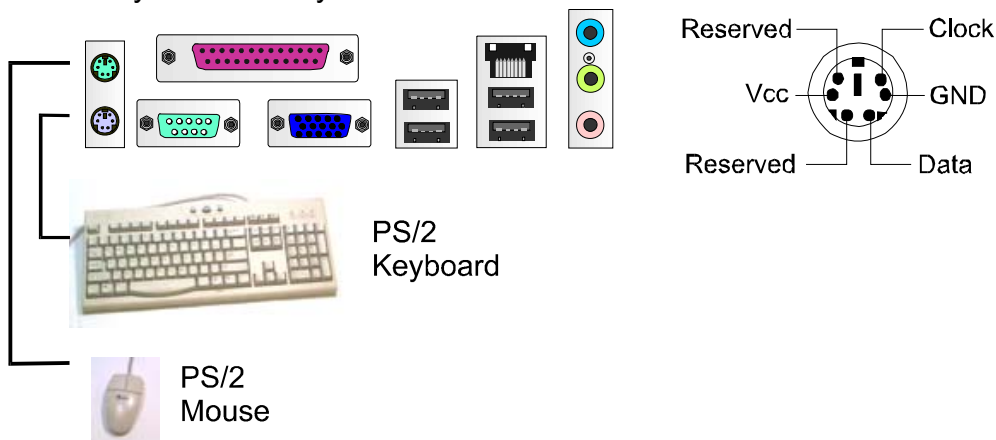
## Types of Rear Panel I/O Connectors

The rear panel I/O connectors.



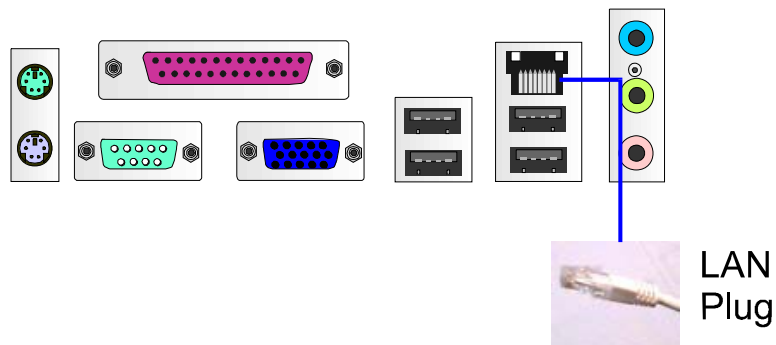
### PS/2 Keyboard and Mouse Connector

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



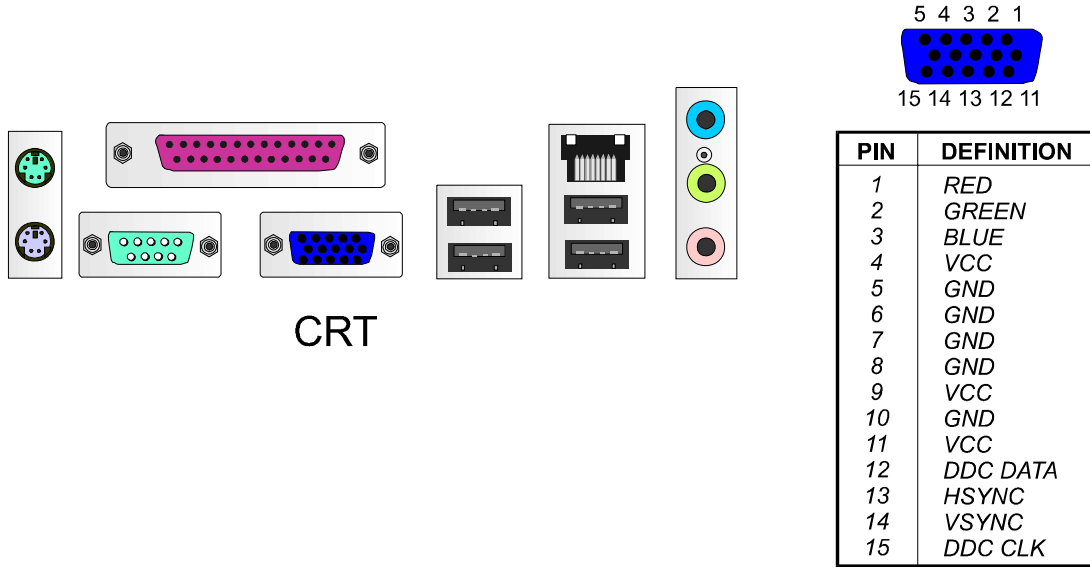
### RJ45 LAN Connector

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



### CRT Connector

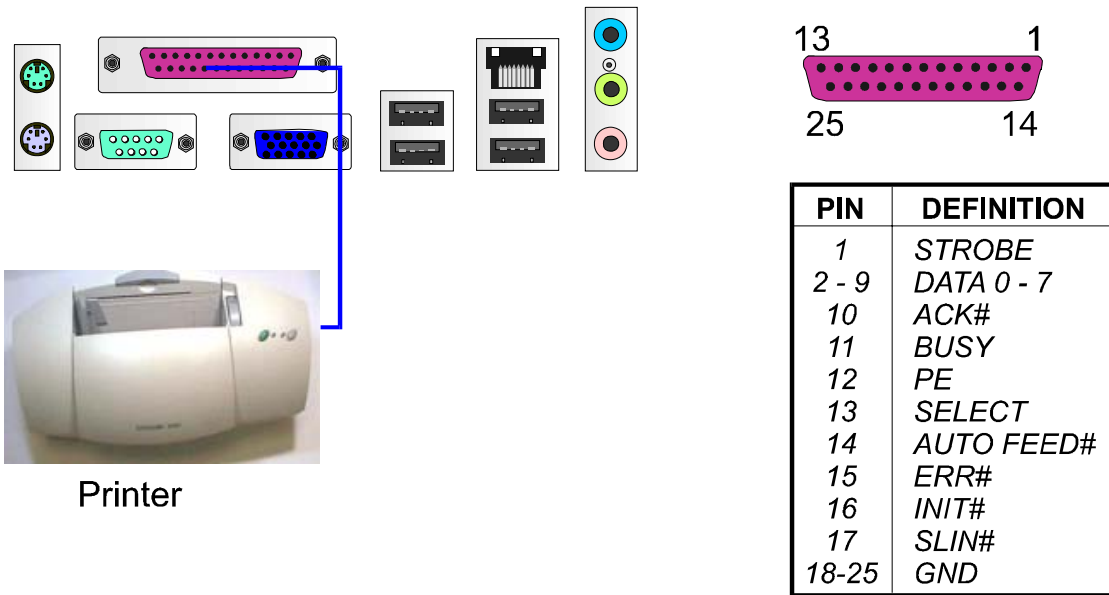
This connector is linked to your monitor. The pinheaders pin assignments are shown at right side.



CRT

### Printer Connector

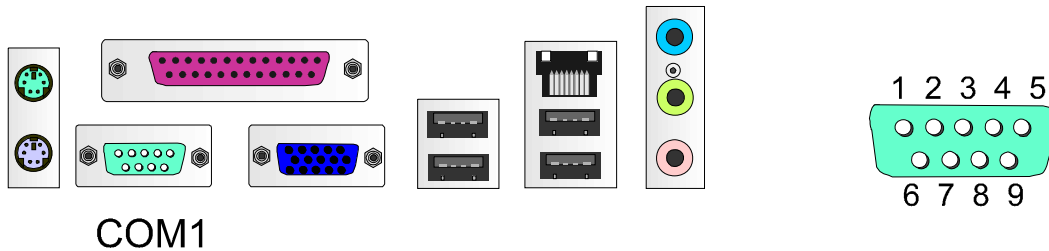
This burgundy-colored 25-pin D-Sub female connector is attached to your printer.



Printer

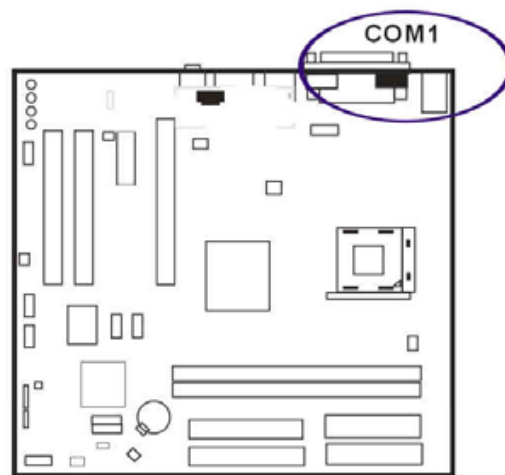
## Serial Port Connectors

COM1 is teal colored 9-pin D-sub male connector, allowing you to connect with devices that use serial ports, such as a serial mouse or an external modem.



COM1

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.

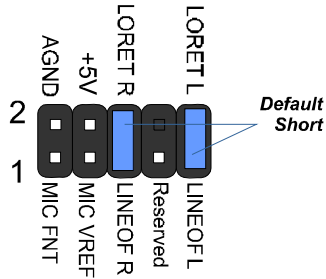
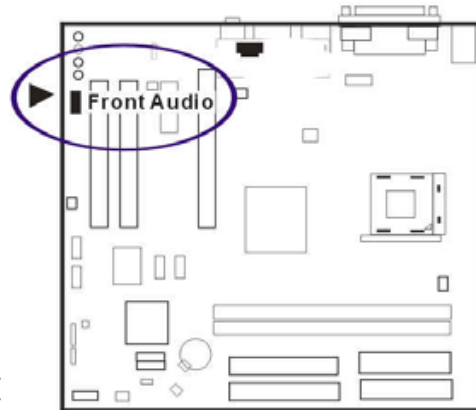
CES/Subwoofer (Orange) can be connected to the center/subwoofer speaker.

Rear (black) can be connected to the rear speaker.

Side (grey) can be connected to the side surrounding speakers.

### Front Audio Connector

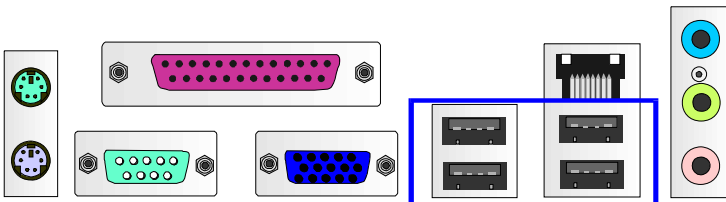
The mainboard has a front panel audio, F\_AUDIO, connector (Intel spec.). It allows you to attach an audio device via the front panel (instead of rear panel) by a ribbon cable. Its pin definitions are presented below.



NOTE: If you do not use F\_AUDIO, 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.

### Universal Serial Bus Connectors

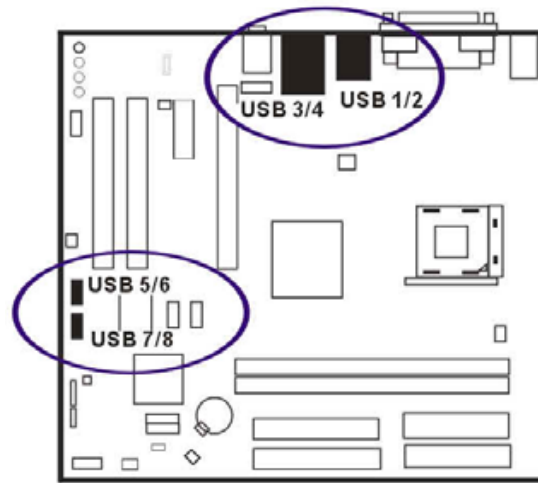
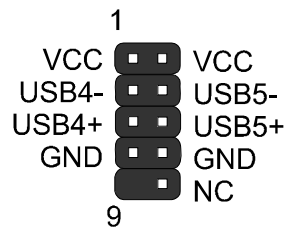
The mainboard has eight USB ports; four USB black jacks that are integrated on the edge of the board, and four other USB ports (pinheaders) on the board. They allow users to attach to USB devices either from the rear or front panels. Please note that your operating system must support USB 1.1/2.0 features.



USBs

The figure at right shows the pin assignments of the USB5/6. Those of USB7/8 are similar.

### **USB4/5**





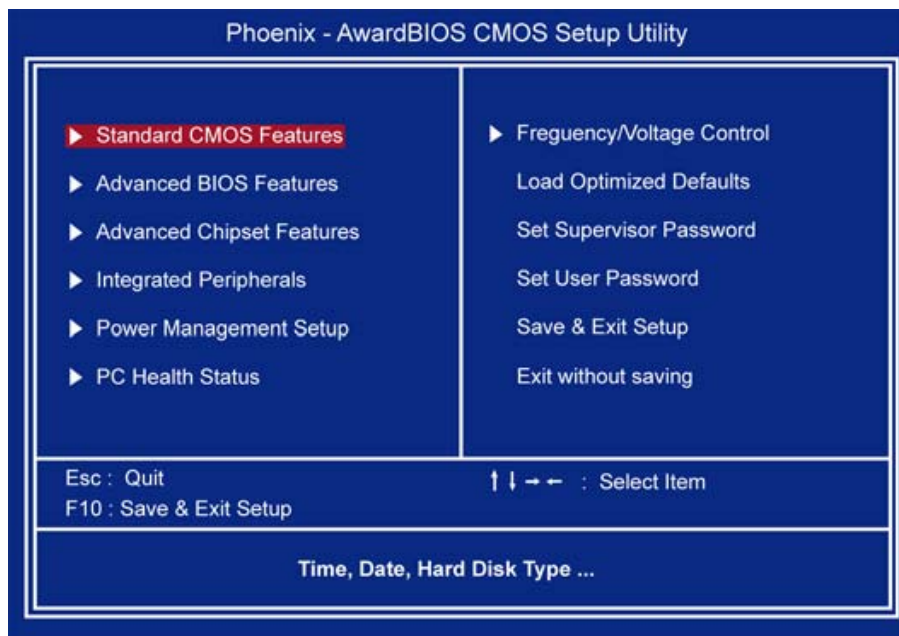
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## BIOS Setup

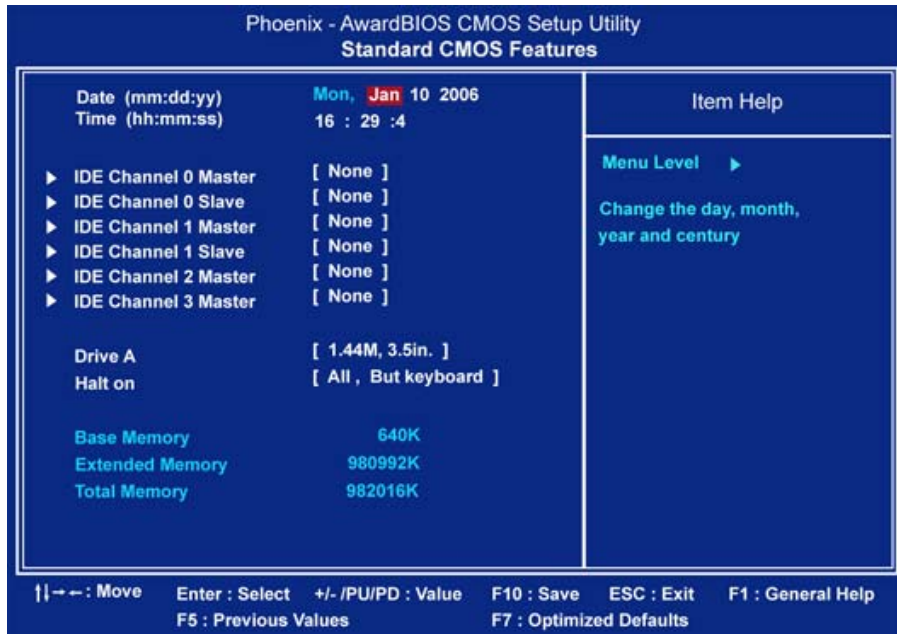
The mainboard comes with the chip that Award BIOS that contains the ROM Setup information of your system. (This chip serves as an interface between the processor and the rest of the mainboard components.) This section explains the information contained in the Setup program and tells you how to modify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

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

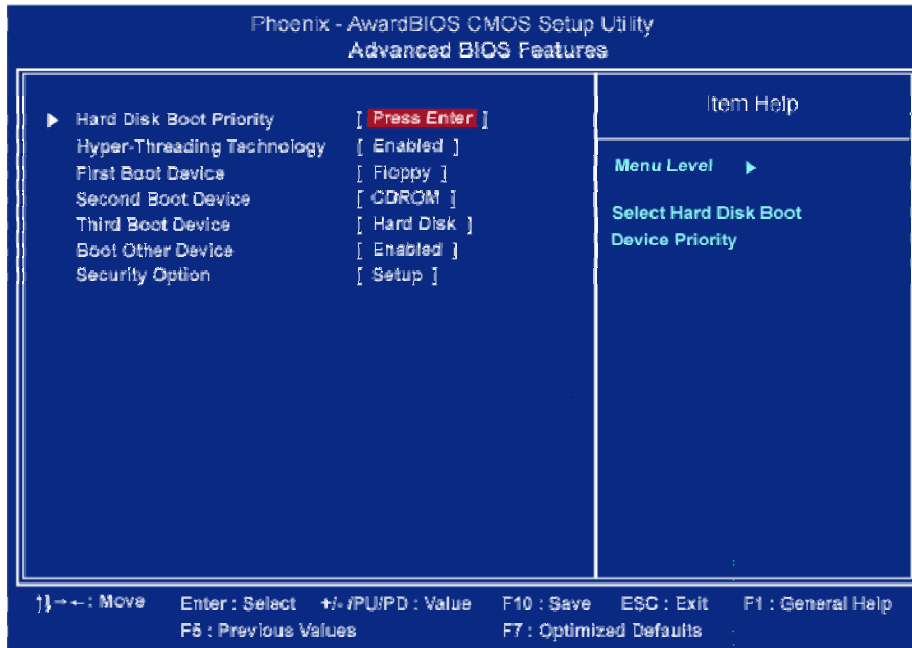
### *Drive A*

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.

### *Halt On*

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

## Advanced BIOS Features



### **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.

### **Hyper-Threading Technology**

This feature allows user to enable or disable the Hyper-Threading Technology. The options are: Enabled, Disabled.

### **First/Second/Third Boot Device**

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

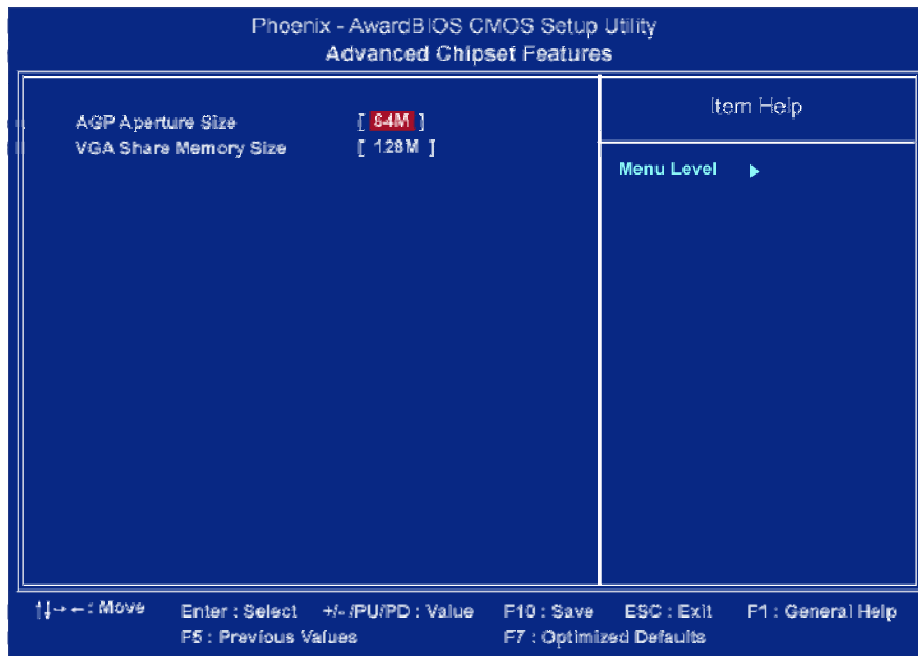
### **Boot Other Device**

This feature allows user to select the boot device priority. The options are: Enabled, Disabled.

### Security Option

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

## Advanced Chipset Features



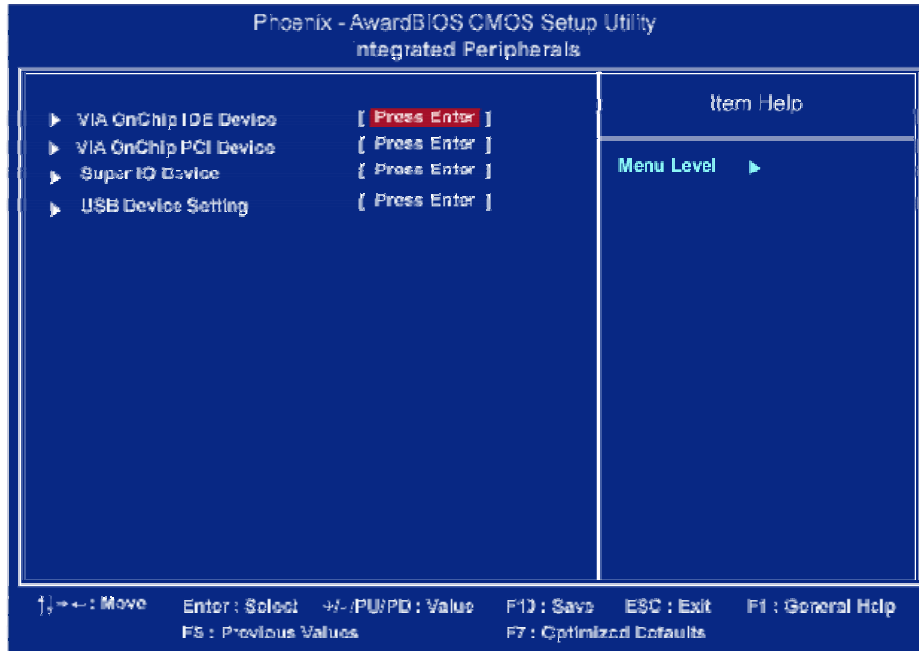
### AGP Aperture Size

It allows you to select the main memory frame size for AGP use. The options list presents all provided possibilities.

### VGA Share Memory Size

This feature allows you to select the size in the VGA shared memory. The options are: 32M, 64M, 128M.

## Integrated Peripherals



## VIA OnChip IDE Device





### **SATA Controller**

This item allows users to enable or disable the SATA controller function.  
The options are: Enabled, Disabled.

### **SATA Controller Mode**

This item allows users to select the SATA controller mode  
The options are: IDE, Raid.

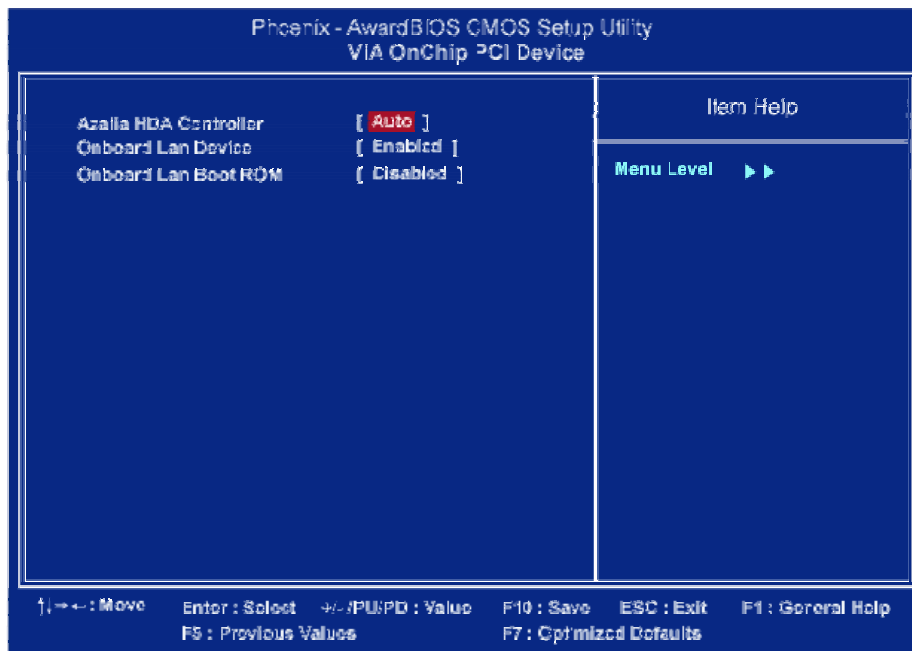
### **OnChip IDE Channel0**

This item allows users to enable or disable the IDE Channel 0 function though the system will auto detect this device.  
The options are: Enabled, Disabled.

### **OnChip IDE Channel1**

This item allows users to enable or disable the IDE Channel 1 function though the system will auto detect this device.  
The options are: Enabled, Disabled.

## **VIA OnChip PCI Device**



### ***Azalia HAD Controller***

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

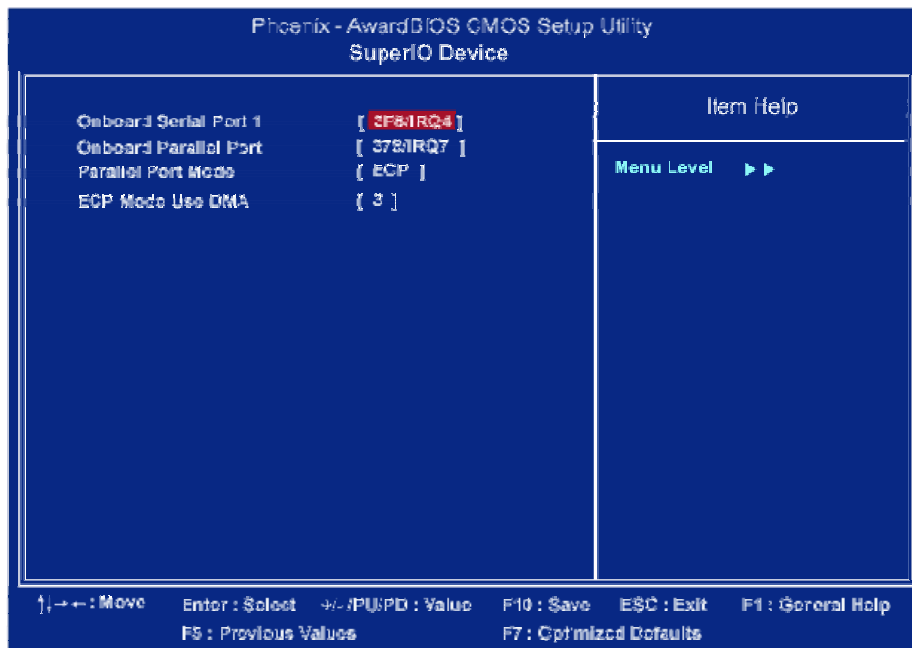
### ***Onboard LAN Device***

This feature allows users to enable or disable the onboard LAN device.  
The options are: Enabled, Disabled.

### ***Onboard Lan Boot ROM***

This feature allows users to enable or disable the onboard Lan boot ROM to boot system. The options are: Enabled, Disabled.

## **SuperIO Device**



### ***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.

### **Onboard Parallel Port**

Allows you to select from a given set of parameters if the parallel port uses the onboard I/O controller.

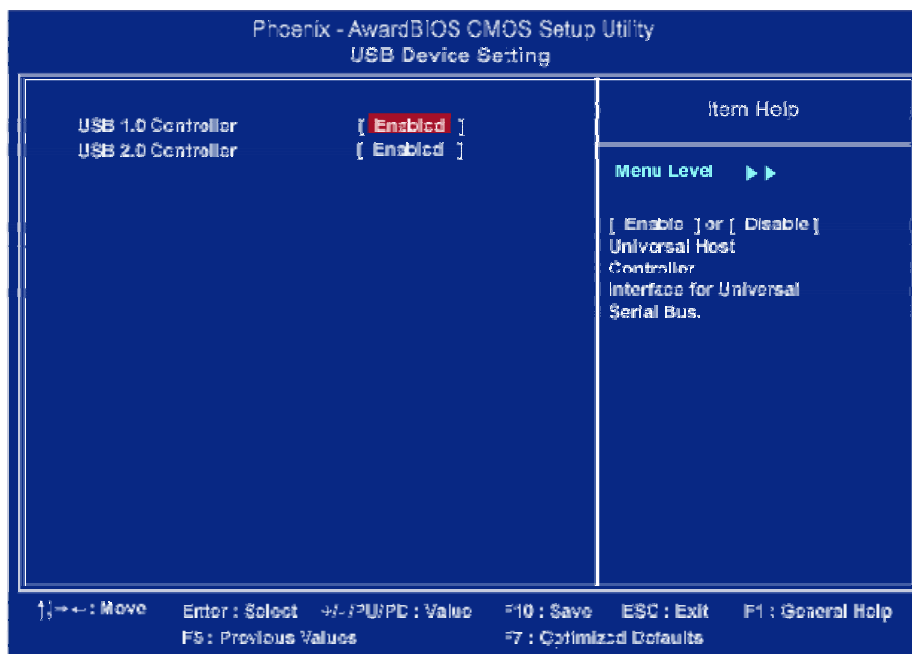
### **Parallel Port Mode**

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

### **ECP Mode Use DMA**

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

## **USB Device Setting**



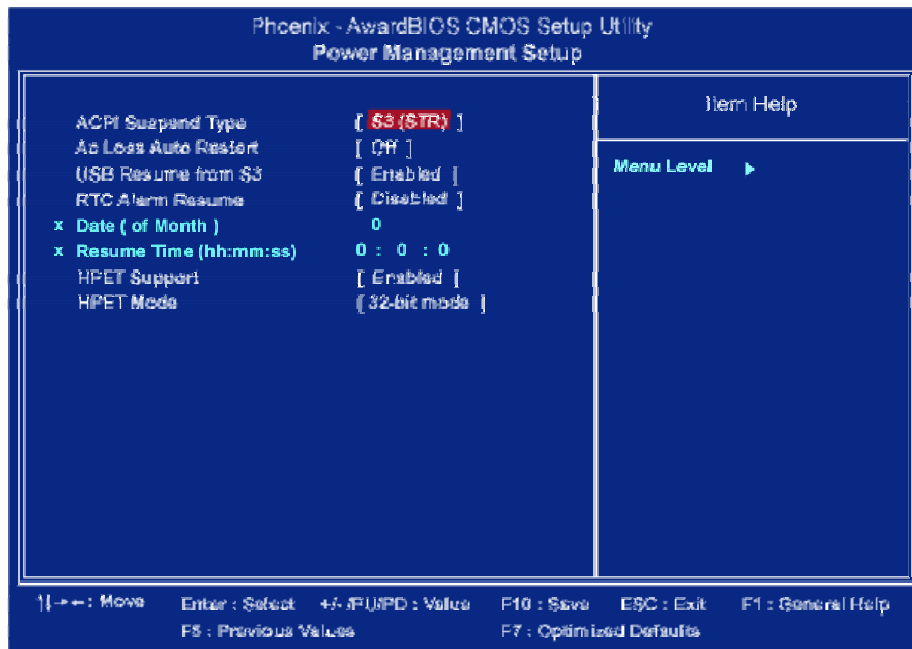
### **USB1.0 Controller**

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

### **USB2.0 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.

## Power Management Setup



### ACPI Suspend Type

This item allows you to select suspend mode when the system in ACPI mode. The options are: S1 (POS), S3 (PTR), S1&S3.

### AC Loss Auto Restart

When the system is shut down owing to the power failure, the system itself will not be back to power on. This feature allows you to set the system back to the previous power status when the system is resumed.

The options are Off, On, Former-STS.

### USB Resume From S3

This option determines to activate or inactive the USB function when the system resumes from S3.

### RTC Alarm Resume

This option lets you set up the time to activate the system booting function automatically.

### **Date (of Month)**

This option lets you set up the RTC alarm date.

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

This option lets you set up the RTC alarm time.

### **HPET Support**

This option lets you enable or disable the “High Precision Event Timers” function. The options are : Disabled, Enabled.

### **HPET Mode**

This option lets you set up the “High Precision Event Timers” mode. The options are : 32-bit, 64-bit.

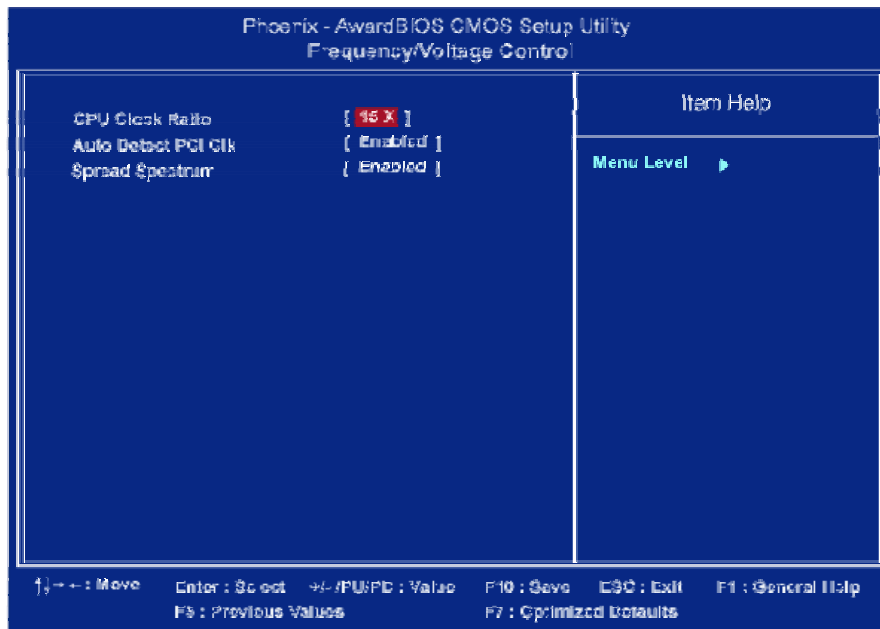
## **PC Health Status**



### **Vcore / 3.3V / +5V / +12V / CPU Temperature / System Temperature / CPU FAN / System FAN**

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

## Frequency/Voltage Control



### **CPU Clock Ratio**

This option lets you specify the Clock Ration for CPU frequency. The options are : 15X, 16X, 17X. (depent on CPU type)

### **Spread Spectrum**

This feature allows users to select the range of spread spectrum. The options are: Disabled, -1.50%, -1.00%, -0.70%, -0.50%, +/-0.75%, +/-0.50%, +/-0.35%, +/-0.25%.

### **Auto Detect PCI Clk**

When enabled, BIOS will detect the PCI slot and DIMM slot. If no any device in, BIOS will auto disable its clock. The options are: Enabled, Disabled.

## 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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