# *754EXP-G / 754EXP-P*

# *USER'S MANUAL*

# *M/B For Socket 754 AMD Athlon64 Processor*

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# Manual Revision Information

| Reversion | Revision History | Date |
|---|---|---|
| 2.0 | Second Edition | June 2005 |

## Item Checklist

- ☑ 754EXP-G/754EXP-P motherboard
- ☑ Cable for IDE/Floppy
- ☑ CD for motherboard utilities
- ☐ Cable for USB Port 3/4 (Option)
- ☑ Cable for Serial ATA IDE Port
- ☑ 754EXP-G/754EXP-P User's Manual

# AMD K8 Processor Family

## Cooling Solutions

As processor technology pushes to faster speeds and higher performance with increasing operation clock, thermal management becomes increasingly crucial while building computer systems. Maintaining the proper computing environment without thermal increasing is the key to reliable, stable, and 24 hours system operation. The overall goal is keeping the processor below its specified maximum case temperature. Heatsinks induce improved processor heat dissipation through increasing surface area and concentrated airflow from attached active cooling fans. In addition, interface materials allow effective transfers of heat from the processor to the heatsink. For optimum heat transfer, AMD recommends the use of thermal grease and mounting clips to attach the heatsink to the processor.

Please refer to the website below for collection of heatsinks evaluated and recommended for Socket-754 processors by AMD. In addition, this collection is not intended to be a comprehensive listing of all heatsinks that support Socket-754 processors.

For vendor list of heatsinks and Active cooling fans, please visit：
http://www.amd.com/us-en/Processors/DevelopWithAMD/0,,30_2252_869_9460^9515,00.html

# Chapter 1

## Introduction of 754EXP-G/754EXP-P Motherboard

## 1-1 Feature of motherboard

The 754EXP-G/754EXP-P motherboard is design for use 64bit AMD Athlon64 (K8) Processor in 754 Pin HyperTrnsport Processor with the VIA K8T890 Chipset delivers a high performance and professional desktop platform solution. Which utilize the Socket 754 design and the memory size expandable to 2.0GB.

The motherboard use the newest VIA K8T890 Chipset, supports 800MHz System Bus in data transfer rate. The motherboard provided 133MHz/166MHz/200MHz Memory clock frequency, support DDR266/DDR333/DDR400 DDR Module. The motherboard embedded VIA VT8237 V-Link LPC South Bridge offer ULTRA **ATA 133** and **Serial ATA RAID 0, 1** functions to provide speedier HDD throughout that boosts overall system performance.

754EXP-G provided Giga LAN function used the RealTek RT8110S Giga-LAN controller chip supports 10M/100M/1Gbps data transfer rate provided full duplex, half duplex operation. 754EXP-P used RealTek 8100C chip support 10/100Mbps data transfer rate provided full duplex, half duplex function.

The motherboard also has an integrated 6-channel AC'97 CODEC on board which is fully compatible with Sound Blaster Pro® that gives you the best sound quality and compatibility.

The motherboard provided one PCI-Express x16 graphics slot delivers up to 4Gbyte/sec data transfer rate per direction, 3.5 times more bandwidth than AGP8X and up to 8Gbyte/sec concurrent bandwidth. Two PCI Express x1 I/O offers 512Mbyte/sec concurrently, over 3.5 times more bandwidth than PCI at 133Mbye/sec, tackling the most demanding multimedia tasks nowadays.

With USB control as well as capability of expanding to 8x USB2.0 function ports delivering 480Mb/s bandwidth and rich connectivity, these motherboards meet future USB demand also has built-in hardware monitor function to monitor and protect your computer.

Some special features---***Bi-turbo/ CPU Thermal Throttling/ CPU Vcore 7-shit/ CPU Smart Fan/ Debug Port(Option)*** in this motherboard for power user to use the over-clocking function more flexible. For detail description please read next section.

These motherboards provide high performance & meets future specification demand. It is really wise choice for your computer.

## 1-1.1 Special Features of motherboard

**Bi-turbo**---( Hardware-based Dynamic Over-clocking Technology )
The Bi-turbo Technology offers you dual over-clocking modes. On top of the software based BIOS setting "Current CPU Clock" for over-clocking, the onboard hardware circuitry will monitor the change of CPU current to activate 2nd level over-clocking at preset workload level automatically. The Bi-turbo technology offers the versatility of both hardware-based intelligent automatic mode and power-manual mode for extra computing performance. Without complex settings from system BIOS, Bi-turbo provides the seeing promoted system performance by simple and intuitional BIOS setting. Bi-turbo technology offers more flexible ways to choose the over-clocking range the of over-clocking activation by actually CPU hardware loading you define.

**CPU Thermal Throttling Technology**---( The CPU Overheat Protection Technology)
To prevent the increasing heat from damage of CPU or accidental shutdown while at high workload, the CPU Thermal Throttling Technology will force CPU to enter idle mode from 87.5% to 12.5% according to preset CPU operating temperature in BIOS (from 20℃ to 80℃). When the system senses the CPU operating temperature reaching the preset value, the CPU operating bandwidth will be decreased to the preset percentage to cool down the processor. When at throttling mode the beeper sound can be optionally selected to indicate it is in working.

**Debug Port (Option)**--- ( The Professional Hardware Diagnosis System )
Being bugged of abnormal system failure through the tossed and turned nights no more, the embedded Hardware Debug Port offers you the real-time visual system healthy for the demanding usage of computing. No more bugging by unknown system failure and no more time wasted in the first moment of 24-hour nonstop ping business computing, the embedded Debug Port will turn you into a well training hardware professional with the seeing system situation. (The Post Code please refer Appendix)

**CPU Smart Fan**---( The Noise Management System )
It's never been a good idea to gain the performance of your system by sacrificing its acoustics. CPU Smart Fan Noise Management System is the answer to control the noise level needed for now-a-day's high performance computing system. The system will automatically increase the fan speed when CPU operating loading is high, after the CPU is in normal operating condition, the system will low down the fan speed for the silent operating environment. The system can provide the much longer life cycle for both CPU and the system fans for game use and business requirements.

**7-Shift**--- ( Shift to Higher Performance )
The CPU voltage can be adjusted up to 7 steps from 1.875 Volt to 2.xxx Volt at every 0.05 Volt per step for the precisely over-clocking of extra demanding computing performance.

## 1-2 Specification

| Spec | Description |
|---|---|
| **Design** | * ATX form factor 4 layers PCB size: 30.4x21.0cm |
| **Chipset** | * VIA K8T890 North Bridge Chipset<br>* VIA VT8237 South Bridge Chipset |
| **CPU Socket 754** | * Support 64bit AMD Athlon64 754-Pin package utilizes Flip-Chip Pin Grid Array package processor<br>* Support CPU Frequency 800MHz<br>* Support up to 3800+ processor<br>* Reserves support for future AMD Athlon64 754-pin processors |
| **Memory Socket** | * 184-pin DDR Module socket x 2<br>* Support 2pcs DDR266/DDR33/DDR400 DDR Modules Expandable to 2.0GB |
| **Expansion Slot** | * PCI-Express x16 slot 1pcs delivers up to 8GB/s concurrent bandwidth<br>* PCI-Express x1 slot 2pcs delivers up to 512MB/s concurrent bandwidth<br>* 32-bit PCI slot x 3pcs |
| **Integrate IDE and Serial ATA RAID** | * Two PCI IDE controllers support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100/133 functions that deliver the data transfer rate up to 133 MB/s; Two Serial ATA ports provide 150 MB/sec data transfer rate for two Serial ATA Devices and offer RAID 0, 1 functions |
| **Giga-LAN (for 754EXP-G)** | * Integrated RealTek RT8110S PCI-Giga LAN chip<br>* Supports Fast Ethernet LAN function provide 10Mb/100Mb/ 1Gb /s data transfer rate |
| **10M/100M LAN (for 754EXP-P only)** | * Integrated RealTek RT8100C PCI LAN chip<br>* Supports 10/100 Mb/s data transfer rate |
| **6CH-Audio** | * AC'97 Digital Audio controller integrated<br>* 6-channel AC'97 Audio CODEC on board<br>* Audio driver and utility included |
| **BIOS** | * Award 4MB Flash ROM |
| **Multi I/O** | * PS/2 keyboard and PS/2 mouse connectors<br>* Floppy disk drive connector x1<br>* Parallel port x1<br>* Serial port x2<br>* USB2.0 port x 4 and headers x 4 (connecting cable option)<br>* Audio connector (Line-in, Line-out, MIC/ 6CH Audio) |

## 1-3 Performance List

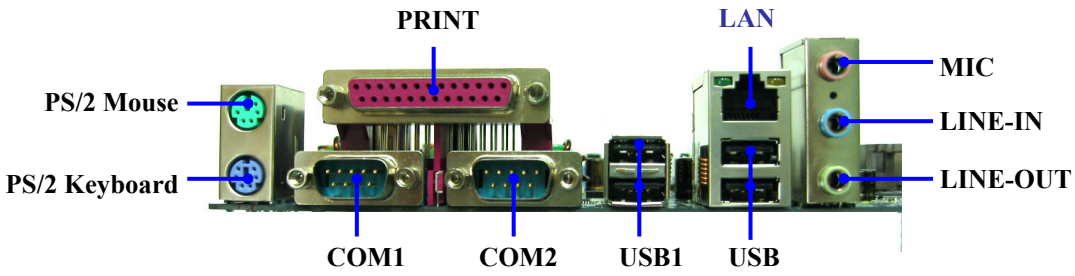
The following performance data list is the testing result of some popular benchmark testing programs. These data are just referred by users, and there is no responsibility for different testing data values gotten by users (the different Hardware & Software configuration will result in different benchmark testing results.)

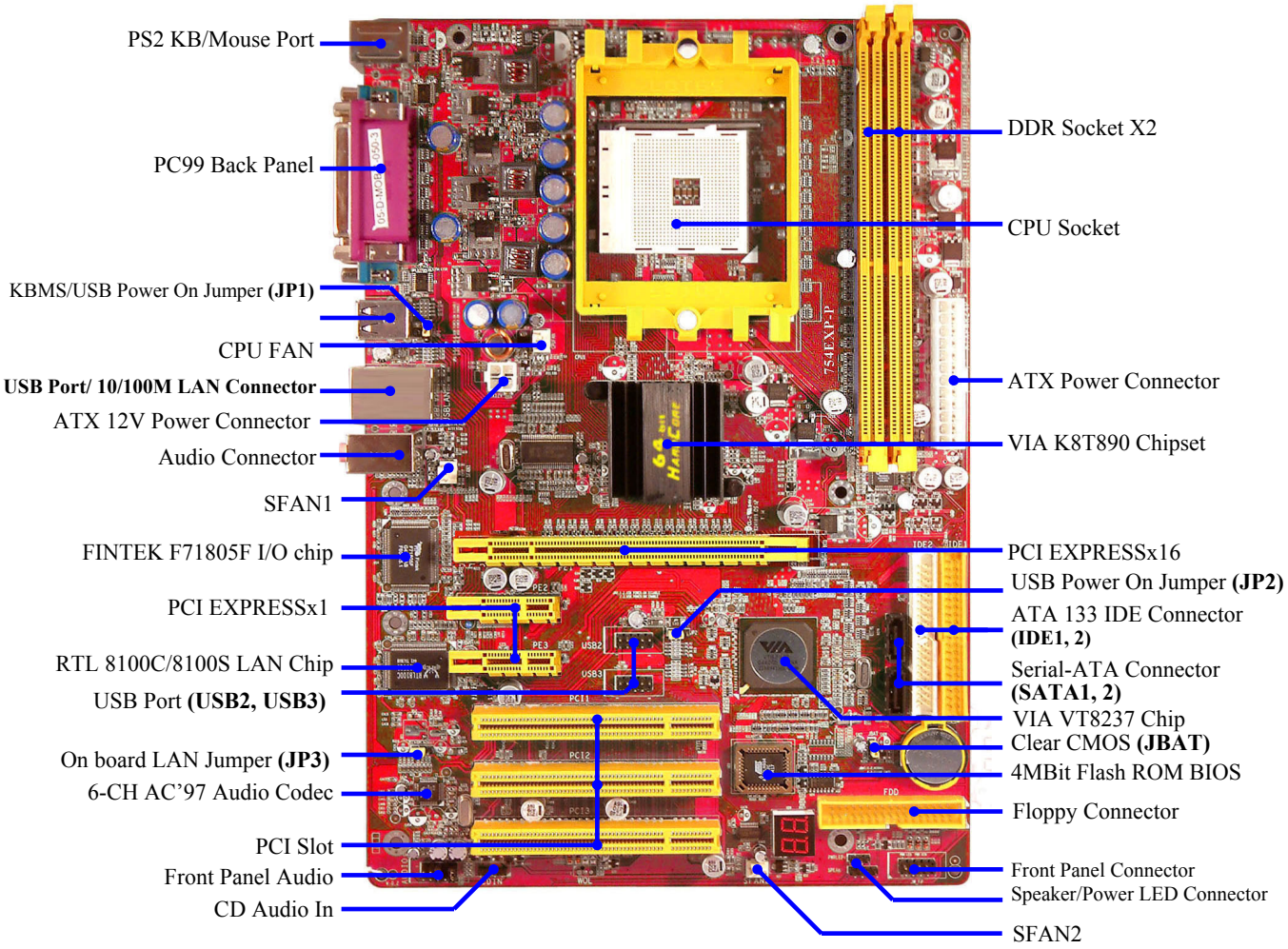
### Performance Test Report

**CPU:** AMD K8 Athlon 64 3200+ (Socket 754 512k L2 cache) Support
**DRAM:** KingMax MPTC220D-38HT DDR-500 512M X 2 (1Gbyte) Memory
**VGA Card :** Geforce 6600GT 128M PCIE VGA CARD (1024X768X32BIT Color)
**Hard Disk Driver:** Seagate Barracude 7200.7 SATA150
**BIOS:** Award Optimal default
**OS:** Windows XP Professional (SERVICE PACK 2)

| | | |
|---|---|---|
| **3D Mark 2001SE** | | 18541 |
| **3D Mark 2003** | | 8121 |
| **3D Mark 2005** | | 3379 |
| **AQUAMRK3** | | 53984 (7650 / 9175) |
| **PCMark2004** | | |
| System / CPU / Memory | | 4114 / 4130 / 3667 |
| Graph / HDD | | 4632 / 4645 |
| Content Creation Winstone 2004 | | 32.5 |
| Business Winstone 2004 | | 23.8 |
| **Winbench 99 V2.0:** | | |
| Business/Hi-end Disk Winmark99 | | 19000 / 42000 |
| Business/Hi-end Graphic Winmark | | 1200 / 1980 |
| **SISMark 2004: SISMark Rating(Internet Content Creation / Office Productivity )** | | |
| SISMark 2004 | | 185 (196 / 174) |
| 3D Creation / 2D Creation | | 182 / 246 |
| / Web publication | | 167 |
| Communication / Document Creation | | 182 / 184 |
| / Data Analysis | | 158 |
| **SISOFT Sandra 2005 : 1.CPU Arithmetic Benchmark 2.Memory bandwidth Benchmark 3.CPU Multi-Media Benchmark** | | |
| 1.Dhrystone ALU | MIPS | 9647 |
| Whetstone FPU iSSE2 | FLOPS | 3617 / 4651 |
| 2.Int/Float Buffered iSSE2 | MB/S | 3041 / 3042 |
| 3.Integer/Floating-Point SSE2 | IT/S | 21004 / 22661 |
| UT2003 Benchmark | FPS | 262.94 / 89.43 |
| DOOM3 | FPS | 71.2 |
| Super Pi (1M) | Second | 42s |
| CPUZ System / memory / CPU Mhz | | 201.0 / 201.0 / **2210.7** |

# 1-4 Layout Diagram & Jumper Setting



## *Jumpers*

| Jumper | Name | Description | Page |
|---|---|---|---|
| JBAT | CMOS RAM Clear | 3-pin Block | P.7 |
| JP1 | Keyboard/USB0,1 Power On Enabled/Disabled | 3-pin Block | P.8 |
| JP2 | USB Power On Enabled/Disabled | 3-pin Block | P.8 |
| JP3 | On board RealTek LAN Enabled/Disabled | 3-pin Block | P.8 |

## *Connectors*

| Connector | Name | Description | Page |
|---|---|---|---|
| ATXPWR24P | ATX Power Connector | 24-pin Block | P.12 |
| ATX12V | ATX 12V Power Connector | 4-pin Block | P.13 |
| PS2KBMS1 | PS/2 Mouse & PS/2 Keyboard Connector | 6-pin Female | P.13 |
| USB/USB1 | USB Port Connector | 4-pin Connector | P.13 |
| USBLAN | LAN Port Connector<br>10M/100M for 754EXP-P<br>10M/100M/1G for 754EXP-G | RJ-45 Connector | P.13 |
| PARALLEL | Parallel Port Connector | 25-pin Female | P.14 |
| J1 | 8-CH Audio Connector | 6 phone jack Connector | P.14 |
| COM1/COM2 | Serial Port COM1/COM2 Connector | 9-pin Connector | P.14 |
| FDD | Floppy Driver Connector | 34-pin Block | P.14 |
| IDE1/IDE2 | Primary/Secondary IDE Connector | 40-pin Block | P.14 |
| SATA1/SATA2 | Serial ATA IDE Connector | 7-pin Connector | P.15 |

## *Headers*

| Header | Name | Description | Page |
|---|---|---|---|
| AUDIO | SPEAKER, MIC header | 9-pin Block | P.16 |
| USB2, USB3 | USB Port Headers | 9-pin Block | P.16 |
| SPEAK | PC Speaker connector | 4-pin Block | P.16 |
| PWR LED | Power LED | 3-pin Block | P.16 |
| JW_FP<br>(Power LED/Reset/ IDE LED/Power Button) | Front Panel Header<br>(including Power LED/ IDE activity LED/Reset switch / Power On Button lead) | 9-pin Block | P.16 |
| SFAN1, SFAN2<br>CPUFAN | FAN Headers | 3-pin Block | P.17 |
| CDIN | CD Audio-In Headers | 4-pin Block | P.17 |

## *Expansion Sockets*

| Socket/Slot | Name | Description | Page |
|---|---|---|---|
| ZIF Socket 754 | CPU Socket | 754-pin mPGAB Athlon64 CPU Socket | P.9 |
| DIMM1~2 | DDR Module Socket | 184-pin DDR Module Socket | P.10 |
| PCI1~ PCI3 | PCI Slot | 32-bit PCI Local Bus Expansion slots | P.11 |
| PE1 | PCI-Express x16 Slot | PCI-Express x16 Expansion Slot | P.12 |
| PE2,PE3 | PCI-Express x1 Slot | PCI-Express x1 Expansion Slot | P.12 |

# Chapter 2
# Hardware installation

## 2-1 Hardware installation Steps

Before using your computer, you had better complete the following steps:

1. Check motherboard jumper setting
2. Install CPU and Fan
3. Install System Memory (DIMM)
4. Install Expansion cards
5. Connect IDE and Floppy cables, Front Panel /Back Panel cable
6. Connect ATX Power cable
7. Power-On and Load Standard Default
8. Reboot
9. Install Operating System
10. Install Driver and Utility

## 2-2 Checking Motherboard's Jumper Setting

**(1) CMOS RAM Clear (3-pin) : JBAT**

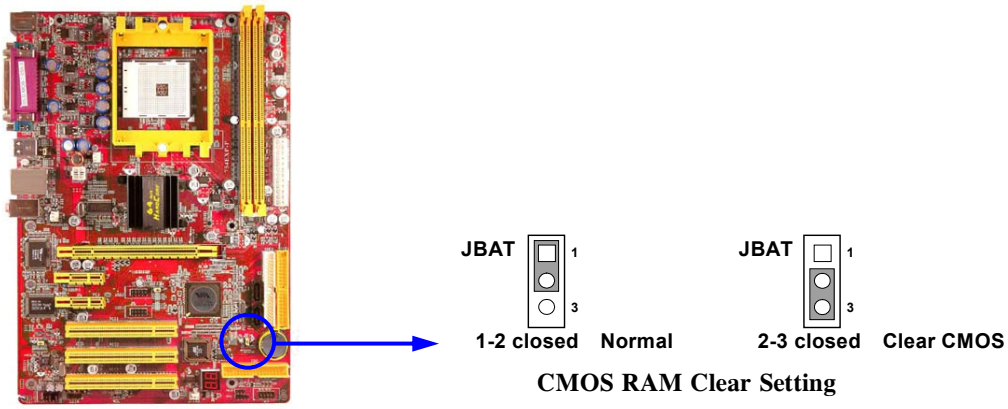
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JBAT to store the CMOS data.

To clear the CMOS, follow the procedure below:

1. Turn off the system and unplug the AC power
2. Remove ATX power cable from ATX power connector
3. Locate JBAT and short pins 2-3 for a few seconds
4. Return JBAT to its normal setting by shorting pins 1-2
5. Connect ATX power cable back to ATX power connector

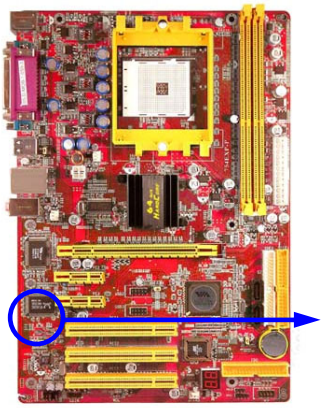
***Note: When should clear CMOS***

1. ***Troubleshooting***
2. ***Forget password***
3. ***After over clocking system boot fail***



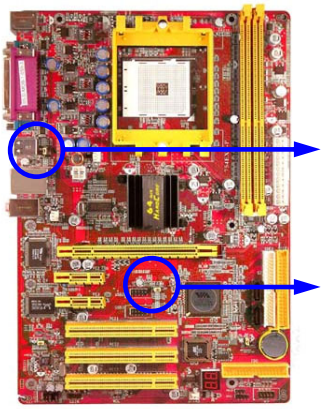

**CMOS RAM Clear Setting**

**(2) On Board RealTek LAN function Enabled/Disabled: JP3**
**(for 754EXP-G only)**




**On Board LAN Setting**

**(3) Keyboard/USB Power On function Enabled/Disabled: JP1, JP2**




**Keyboard/USB Power On Setting**


**USB2/USB3 Power On Setting**

# 2-3 Install CPU

## 2-3-1 Glossary

**Chipset (or core logic)** - two or more integrated circuits which control the interfaces between the system processor, RAM, I/O devises, and adapter cards.

**Processor slot/socket** - the slot or socket used to mount the system processor on the motherboard.

**Slot (PCI-E, PCI, RAM) -** the slots used to mount adapter cards and system RAM.

**AGP** - **A**ccelerated **G**raphics **P**ort - a high speed interface for video cards; runs at 1X (66MHz), 2X (133MHz), or 4X (266MHz), or 8X (533MHz).

**PCI** - **P**eripheral **C**omponent **I**nterconnect - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

**PCI Express-** Peripheral Component Interconnect Express- a high speed interface for video cards, sound cards, network interface cards, and modems.

**ISA** - **I**ndustry **S**tandard **A**rchitecture - a relatively low speed interface primarily used for sound cards and modems; runs at approx. 8MHz.

**Serial Port** - a low speed interface typically used for mouse and external modems.

**Parallel Port** - a low speed interface typically used for printers.

**PS/2** - a low speed interface used for mouse and keyboards.

**USB** - **U**niversal **S**erial **B**us - a medium speed interface typically used for mouse, keyboards,

scanners, and some digital cameras.

**Sound** (interface) - the interface between the sound card or integrated sound connectors and speakers, MIC, game controllers, and MIDI sound devices.

**LAN** (interface) - **L**ocal **A**rea **N**etwork - the interface to your local area network.

**BIOS** (**B**asic **I**nput/**O**utput **S**ystem) - the program logic used to boot up a computer and establish the relationship between the various components.

**Driver** - software, which defines the characteristics of a device for use by another device or other software.

**Processor** - the "central processing unit" (CPU); the principal integrated circuit used for doing the "computing" in "personal computer"

**Front Side Bus Frequency -** the working frequency of the motherboard, which is generated by the clock generator for CPU, DRAM and PCI BUS.

**CPU L2 Cache -** the flash memory inside the CPU, normal it depend on CPU type.

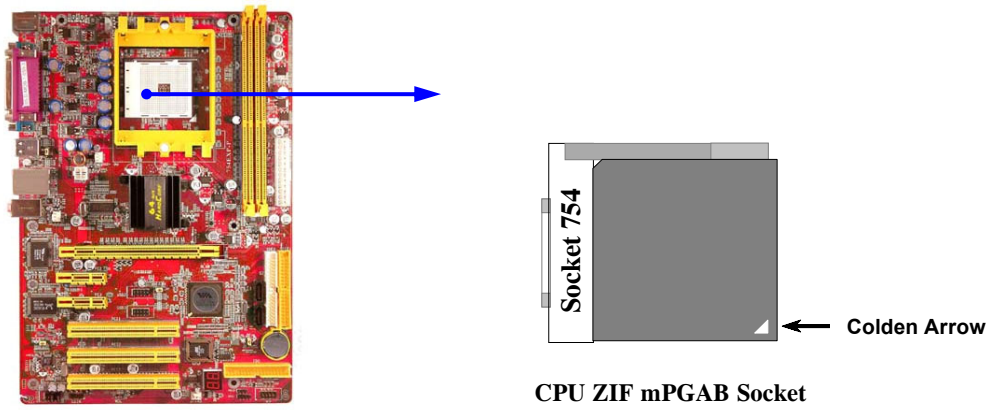
## 2-3-2 About AMD Athlon64 754-pin CPU

This motherboard provides a 754-pin surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA754 socket supports AMD Athlon64 processor in the 754 Pin package utilizes Flip-Chip Pin Grid Array package technology.

The CPU that comes with the motherboard should have a cooling FAN attached to prevent overheating. If this is not the case, then purchase a correct cooling FAN before you turn on your system.

| | |
|---|---|
| **WARNING!** | Be sure that there is sufficient air circulation across the processor's heatsink and CPU cooling FAN is working correctly, otherwise it may cause the processor and motherboard overheat and damage, you may install an auxiliary cooling FAN, if necessary. |

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the level sideways away from the socket then upward to a 90-degree angle. Insert the CPU with the correct orientation as shown below. The notched corner should point toward the end of the level. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the orientation as shown.




**CPU ZIF mPGAB Socket**

When you put the CPU into the ZIF socket. No force require to insert of the CPU, then press the level to Locate position slightly without any extra force.

## 2-4 Install Memory

This motherboard provides two 184-pin DDR DUAL INLINE MEMORY MODULES (DIMM) sites for DDR memory expansion available from minimum memory size of 128MB to maximum memory size of 2.0GB DDR SDRAM.

**Valid Memory Configurations**

| Bank | 184-Pin DIMM | PCS | Total Memory |
|---|---|---|---|
| Bank 0, 1 (DIMM1) | DDRDDR266/DDR333/DDR400 DDR SDRAM Module | X1 | 128MB~1.0GB |
| Bank 2, 3 (DIMM2) | DDRDDR266/DDR333/DDR400 DDR SDRAM Module | X1 | 128MB~1.0GB |
| Total | System Memory (Max. 2.0GB) | X2 | 128MB~2.0GB |

Generally, installing DDR SDRAM modules to your motherboard is very easy, you can refer to figure 2-4 to see what a 184-Pin DDR266/DDR333/DDR400 DDR SDRAM module looks like.

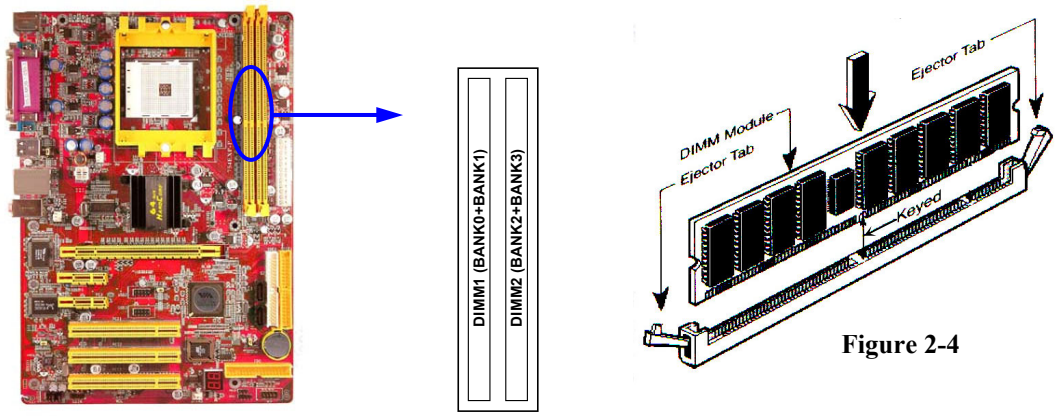



**Figure 2-4**

| | |
|---|---|
| **NOTE!** | When you install DIMM module fully into the DIMM socket the eject tab should be locked into the DIMM module very firmly and fit into its indention on both sides. |
| **WARNING!** | For the DDR SDRAM CLOCK is set at 200MHz, use only DDR400- compliant DDR Modules. When this motherboard operate at 200Mhz, most system will not even boot if non-compliant modules are used because of the strict timing issues, if your DDR Modules are not DDR400-compliant, set the SDRAM clock to 133MHz to ensure system stability. |

## 2-5 Expansion Cards

**WARNING!** Turn off your power when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

### 2-5-1 Procedure For Expansion Card Installation

1. Read the documentation for your expansion card and make any necessary hardware or software setting for your expansion card such as jumpers.
2. Remove your computer's cover and the bracket plate on the slot you intend to use.
3. Align the card's connectors and press firmly.
4. Secure the card on the slot with the screen you remove above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary.
7. Install the necessary software driver for your expansion card.

### 2-5-2 Assigning IRQs For Expansion Card

Some expansion cards need an IRQ to operate. Generally, an IRQ must exclusively assign to one use. In a standard design, there are 16 IRQs available but most of them are already in use.

#### Standard Interrupt Assignments

| IRQ | Priority | Standard function |
|---|---|---|
| 0 | N/A | System Timer |
| 1 | N/A | Keyboard Controller |
| 2 | N/A | Programmable Interrupt |
| 3 * | 8 | Communications Port (COM2) |
| 4 * | 9 | Communications Port (COM1) |
| 5 * | 6 | Sound Card (sometimes LPT2) |
| 6 * | 11 | Floppy Disk Controller |
| 7 * | 7 | Printer Port (LPT1) |
| 8 | N/A | System CMOS/Real Time Clock |
| 9 * | 10 | ACPI Mode when enabled |
| 10 * | 3 | IRQ Holder for PCI Steering |
| 11 * | 2 | IRQ Holder for PCI Steering |
| 12 * | 4 | PS/2 Compatible Mouse Port |
| 13 | N/A | Numeric Data Processor |
| 14 * | 5 | Primary IDE Channel |
| 15 * | 1 | Secondary IDE Channel |

* These IRQs are usually available for ISA or PCI devices.

## 2-5-3 Interrupt Request Table For This Motherboard

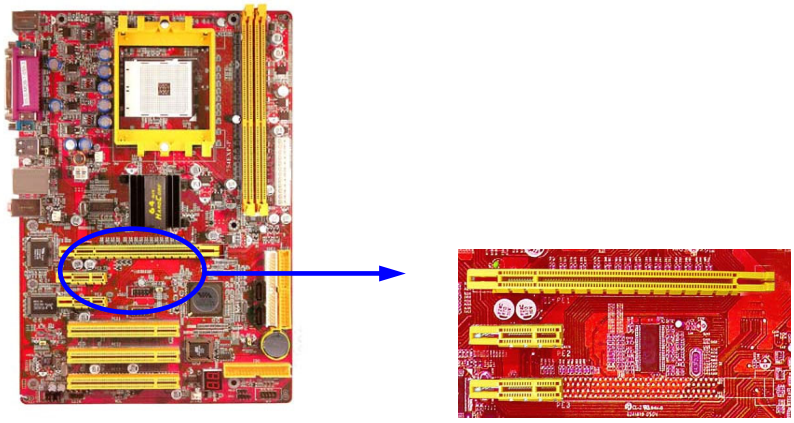
Interrupt request are shared as shown the table below:

| | INT A | INT B | INT C | INT D | INT E | INT F | INT G | INT H |
|---|---|---|---|---|---|---|---|---|
| Slot 1 | √ | | | | | | | |
| Slot 2 | | √ | | | | | | |
| Slot 3 | | | √ | | | | | |
| Onboard USB 1 | | | | | | | √ | |
| Onboard USB 2 | | | | | | | | √ |
| AC97/MC97 | | | √ | | | | | |

**IMPORTANT!** If using PCI cards on shared slots, make sure that the drivers support "Shared IRQ" or that the cards don't need IRQ assignments. Conflicts will arise between the two PCI groups that will make the system unstable or cards inoperable.

## 2-5-4 PCI Express Slot

This motherboard provides one 16-lane PCI Express slot intended for Graphics Attach, and two x1 PCI Express Slot. Fully compliant to the *PCI Express Base Specification revision 1.0a* , support PCI Express VGA card, and other PCI Express device.



# 2-6 Connectors, Headers

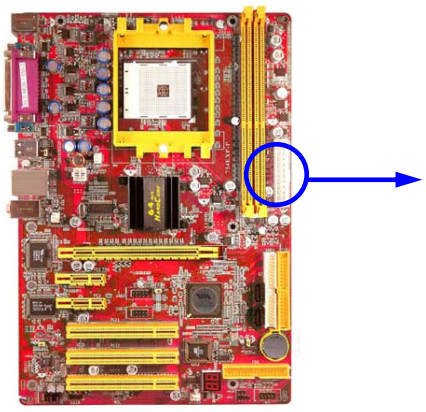
## 2-6-1 Connectors

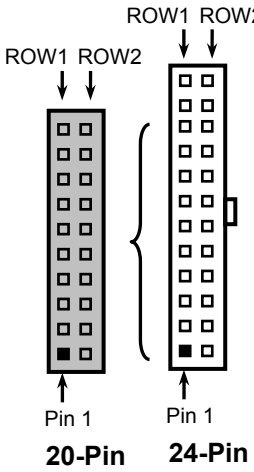
**(1) Power Connector (24-pin block) : ATXPWR**

ATX Power Supply connector. This is a new defined 24-pins connector that usually comes with ATX case. The ATX Power Supply allows to use soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

** We recommend that you use an ATX 12V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350W power rating. This type has 24-pin and 4-pin power plugs.

** If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and the power supply unit has a minimum power rating of 350W. The system may become unstable or may not boot up if the power is inadequate.

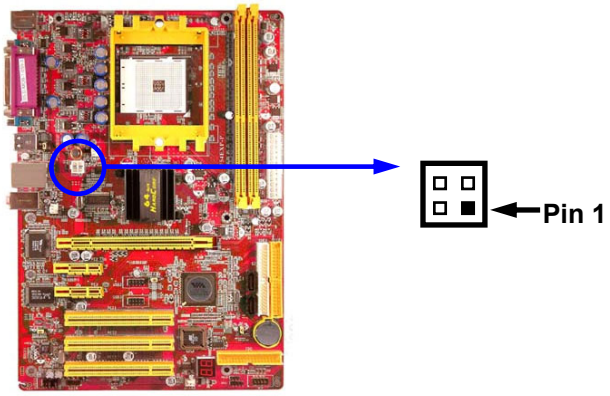





| PIN | ROW1 | ROW2 |
|---|---|---|
| 1 | 3.3V | 3.3V |
| 2 | 3.3V | -12V |
| 3 | GND | GND |
| 4 | 5V | Soft Power On |
| 5 | GND | GND |
| 6 | 5V | GND |
| 7 | GND | GND |
| 8 | Power OK | -5V |
| 9 | +5V (for Soft Logic) | +5V |
| 10 | +12V | +5V |
| 11 | +12V | +5V |
| 12 | +3V | GND |

**(2) ATX 12V Power Connector (4-pin block) : ATX12V**

This is a new defined 4-pins connector that usually comes with ATX Power Supply. The ATX Power Supply which fully support Pentium 4 processor must including this connector for support extra 12V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.




**(3) PS/2 Mouse & PS/2 Keyboard Connector: PS2KBMS1**

The connectors for PS/2 keyboard and PS/2 Mouse.

**(4) USB Port connector: USB/USB1**

The connectors are 4-pin connector that connect USB devices to the system board.

**(5) LAN Port connector: USBLAN**

This connector is standard RJ45 connector for Network
Support 10M/100Mb/s data transfer rate for 754EXP-P
Support 10M/100M/1G b/s data transfer rate for 754EXP-G

**(6) Parallel Port Connector (25-pin female): PARALLEL**

Parallel Port connector is a 25-pin D-Subminiature Receptacle connector. The On-board Parallel Port can be disabled through the BIOS SETUP. Please refer to Chapter 3 "INTEGRATED PERIPHERALS SETUP" section for more detail information.

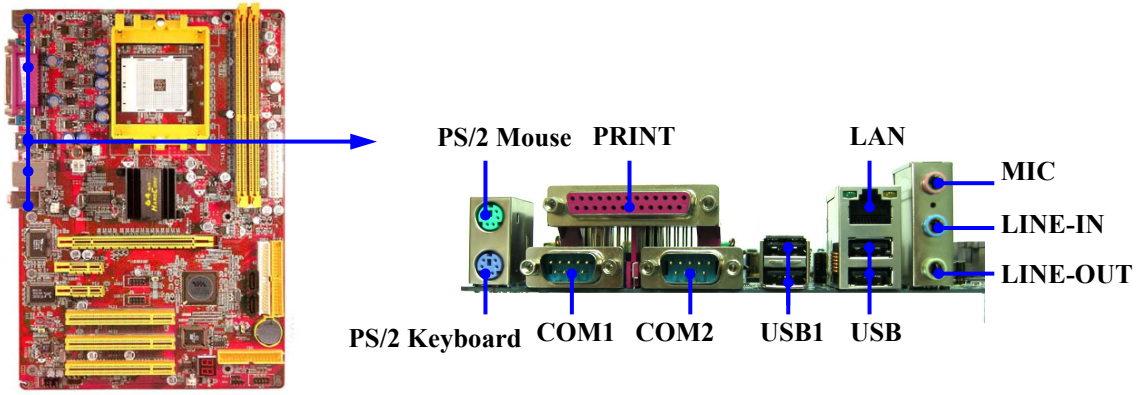
**(7) Audio Line-In, Lin-Out, MIC Connector : J1**

This Connector are 3 phone Jack for LINE-OUT, LINE-IN, MIC, Surround, CEN/LEF

| | |
|---|---|
| **Line-out : (GREEN)** | Audio output to Front speaker |
| **Line-in : (BLUE)** | Audio input to sound chip/ Rear speaker out |
| **MIC : (PINK)** | Microphone Connector/ Center/Subwoofer speaker out |

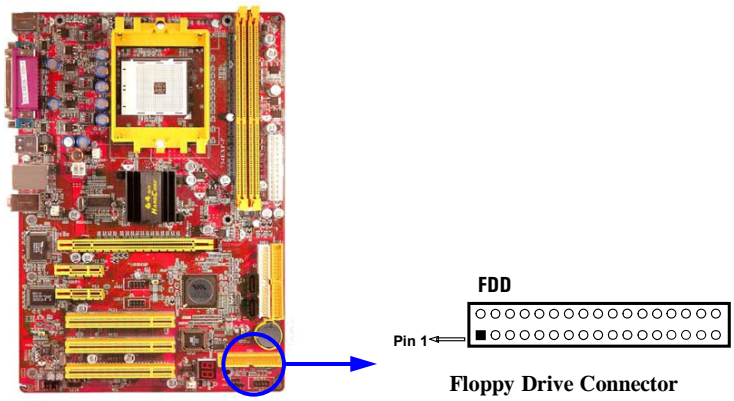
**(8) Serial Port COM1/COM2 : COM1/COM2**

COM1 is the 9-pin D-Subminiature male connector. The On-board serial port can be disabled through BIOS SETUP. Please refer to Chapter 3 "INTEGRATED PERIPHERALS SETUP" section for more detail information.



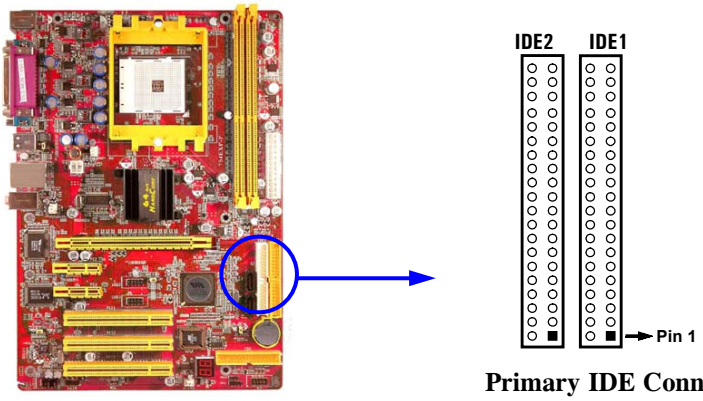

**(9) Floppy drive Connector (34-pin block): FDD**

This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.




**(10) Primary IDE Connector (40-pin block): IDE1**

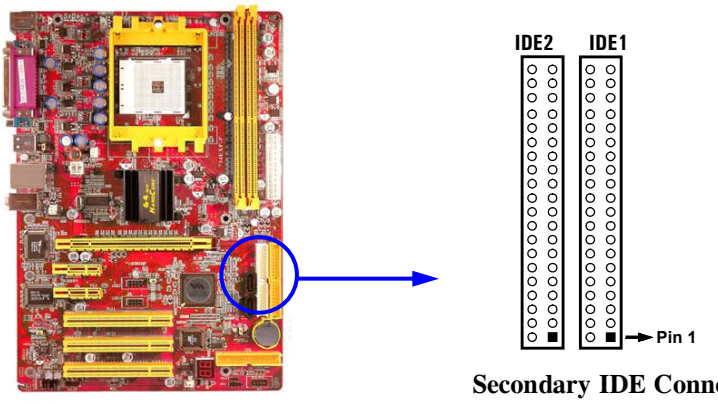
This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.




**Primary IDE Connector**

**(11) Secondary IDE Connector (40-pin block): IDE2**

This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.

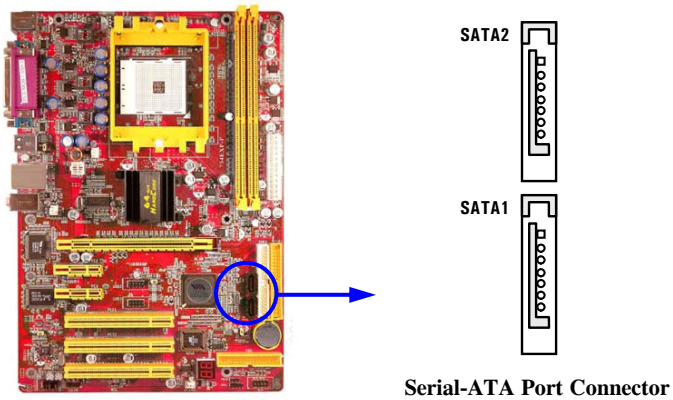



**Secondary IDE Connector**

- Two hard disks can be connected to each connector. The first HDD is referred to as the "Master" and the second HDD is referred to as the "Slave".
- For performance issues, we strongly suggest you don't install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance on this channel may drop.

**(12) Serial-ATA Port connector: SATA1/SATA2**

This connector support the provided Serial ATA IDE hard disk cable to connecting the motherboard and serial ATA hard disk.



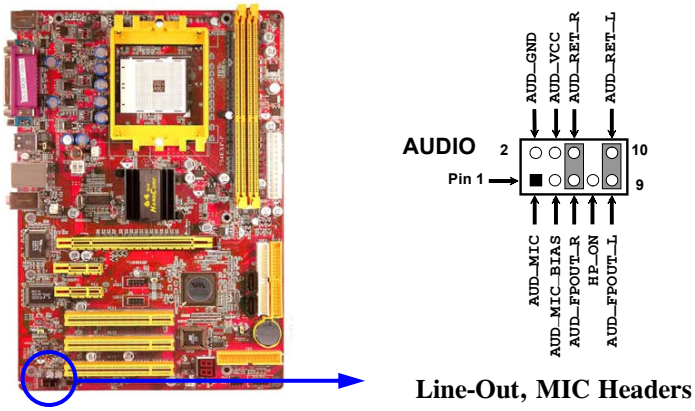

**Serial-ATA Port Connector**

## 2-6-2 Headers

**(1) Line-Out/MIC Header for Front Panel (9-pin): AUDIO**

This header connect to Front Panel Line-out, MIC connector with cable.

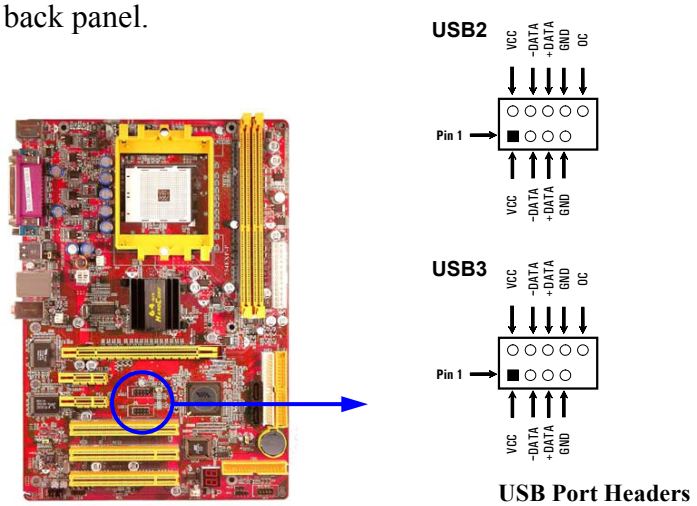
Without install the cable, this header default setting is 5-6 short, 9-10 short. When you install the cable you have take off these jumpers.




**Line-Out, MIC Headers**

**(2) USB Port Headers (9-pin) : USB2/USB3**

These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.




**USB Port Headers**

**(3) Speaker connector: SPEAK**

This 4-pin connector connects to the case-mounted speaker. See the figure below.

**(4) Power LED: PWR LED**

The Power LED is light on while the system power is on. Connect the Power LED from the system case to this pin.

**(5) IDE Activity LED: HD LED**

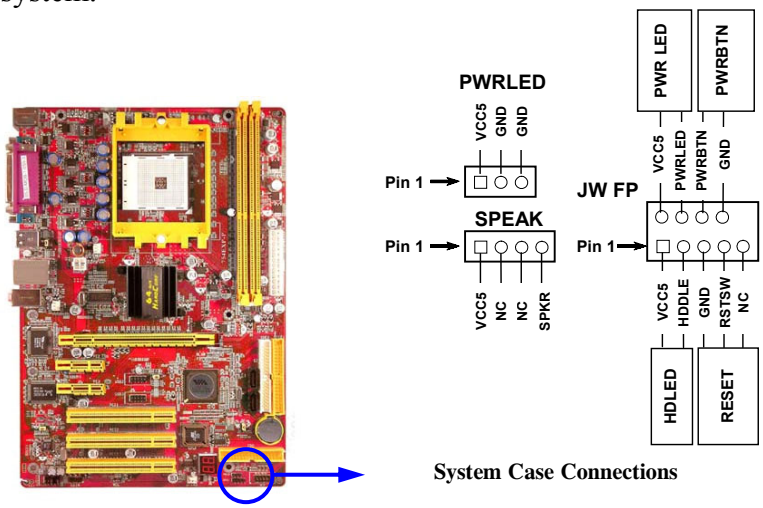
This connector connects to the hard disk activity indicator light on the case.

**(6) Reset switch lead: RESET**

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the lift of the system's power supply. See the figure below.

**(7) Power switch: PWR BTN**

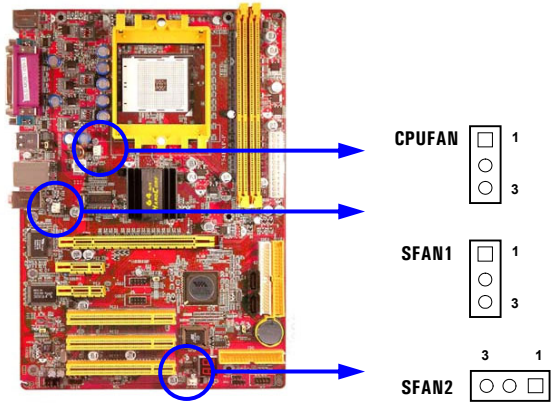
This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.




System Case Connections

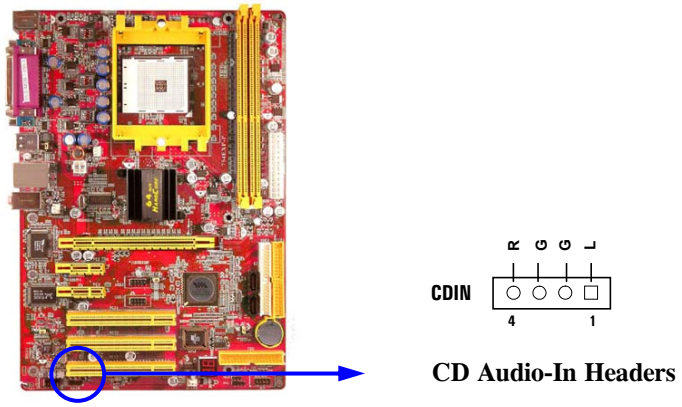
**(8) FAN Headers (3-pin) : SFAN1, SFAN2, CPUFAN**

These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.




**(9) CD Audio-In Headers (4-pin) : CDIN**

CDIN are the connectors for CD-Audio Input signal. Please connect it to CD-ROM CD-Audio output connector.




CD Audio-In Headers

## 2-7 Starting Up Your Computer

1. After all connection are made, close your computer case cover.
2. Be sure all the switch are off, and check that the power supply input voltage is set to proper position, usually in-put voltage is 220V~240V or 110V~120V depending on your country's voltage used.
3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
4. Turn on your peripheral as following order:
   a. Your monitor.
   b. Other external peripheral (Printer, Scanner, External Modem etc…)
   c. Your system power. For ATX power supplies, you need to turn on the power supply and press the ATX power switch on the front side of the case.
5. The power LED on the front panel of the system case will light. The LED on the monitor may light up or switch between orange and green after the system is on. If it complies with green standards or if it is has a power standby feature. The system will then run power-on test. While the test are running, the BIOS will alarm beeps or additional message will appear on the screen.

   If you do not see any thing within 30 seconds from the time you turn on the power. The system may have failed on power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

| **Beep** | **Meaning** |
|---|---|
| One short beep when displaying logo | No error during POST |
| Long beeps in an endless loop | No DRAM install or detected |
| One long beep followed by three short beeps | Video card not found or video card memory bad |
| High frequency beeps when system is working | CPU overheated<br>System running at a lower frequency |

6. During power-on, press <Delete> key to enter BIOS setup. Follow the instructions in BIOS SETUP.
7. **Power off your computer:** You must first exit or shut down your operating system before switch off the power switch. For ATX power supply, you can press ATX power switching after exiting or shutting down your operating system. If you use Windows 9X, click **"Start"** button, click **"Shut down"** and then click **"Shut down the computer?"** The power supply should turn off after windows shut down.

# Chapter 3

# Introducing BIOS

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

In the BIOS Setup main menu of Figure 3-1, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press <Esc> to quit the BIOS Setup.
- Press ↑↓←→ (up, down, left, right) to choose, in the main menu, the option you want to confirm or to modify.
- Press <F10> when you have completed the setup of BIOS parameters to save these parameters and to exit the BIOS Setup menu.
- Press Page Up/Page Down or +/– keys when you want to modify the BIOS parameters for the active option.

## 3-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup.
If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

**Press <F1> to continue, <Ctrl-Alt-Esc> or <Del> to enter Setup**

## 3-2 Getting Help

### Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

## 3-3 The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 3-1) will appear on the screen. The Main Menu allows you to select from fourteen setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

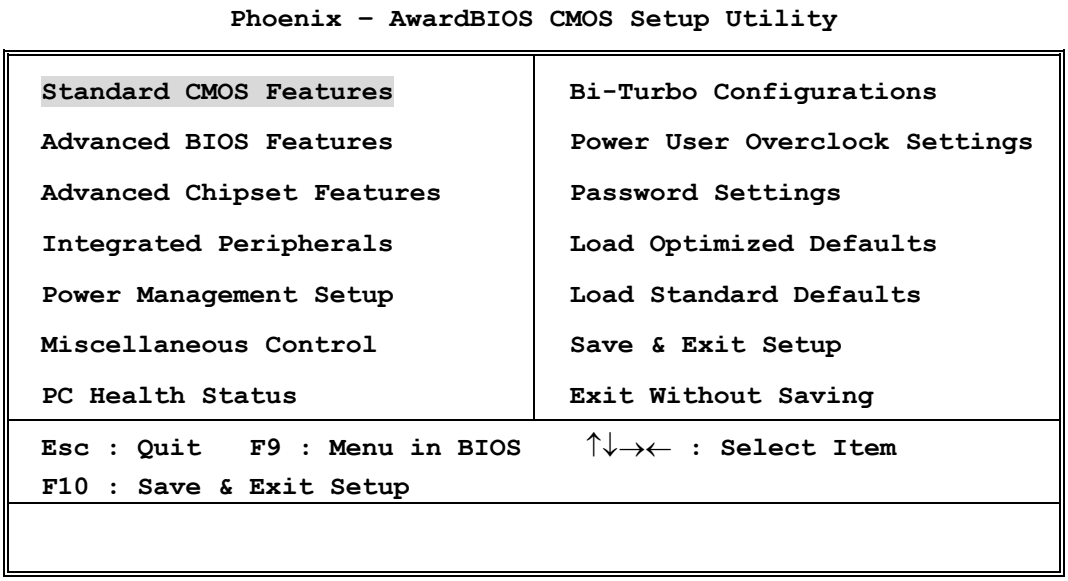



Figure 3-1

**Standard CMOS Features**
Use this Menu for basic system configurations.

**Advanced BIOS Features**
Use this menu to set the Advanced Features available on your system.

**Advanced Chipset Features**
Use this menu to change the values in the chipset registers and optimize your system's performance.

**Integrated Peripherals**
Use this menu to specify your settings for integrated peripherals.

**Power Management Setup**
Use this menu to specify your settings for power management.

**Miscellaneous Control**
Use this menu to specify your settings for Miscellaneous control.

**PC Health Status**
This entry shows your PC health status.

**Bi-Turbo Configurations**
This entry appears if your system supports BiTurbo Configurations.

**Power User Overclock Settings**
Use this menu to specify your settings (frequency, Voltage) for overclocking demand

**Password Settings**
This entry for setting Supervisor password and User password

**Load Optimized Defaults**
Use this menu to load the BIOS default values these are setting for optimal performances system operations for performance use.

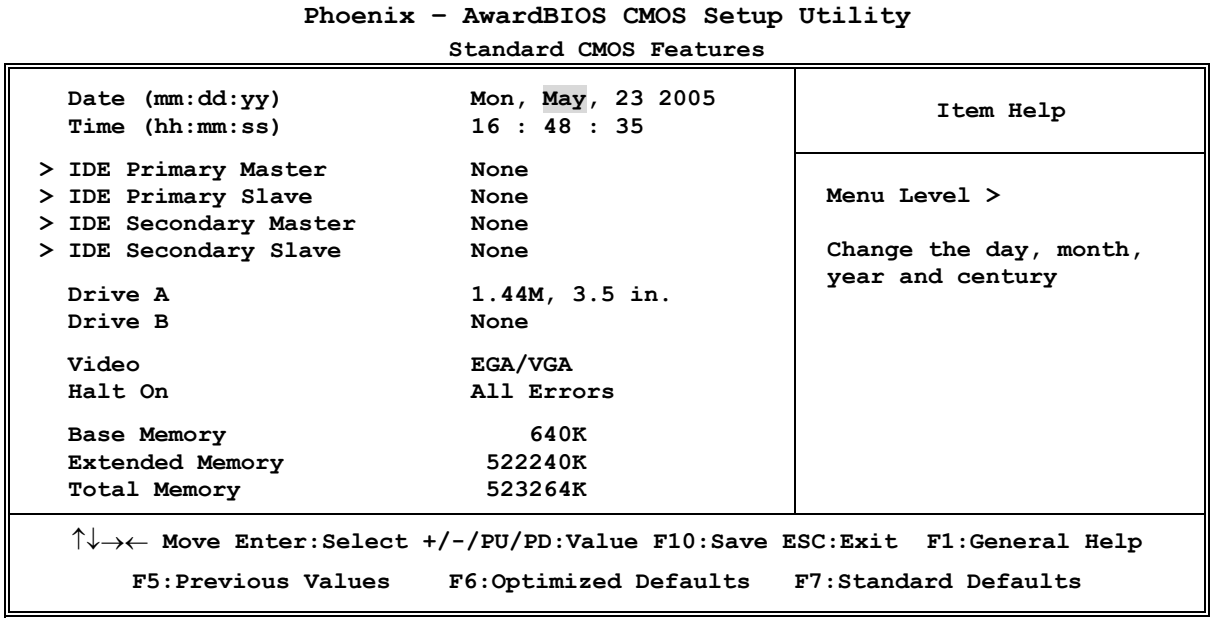
**Load Standard Defaults**
Use this menu to load the BIOS default values for the stable performance system operation that are factory settings for normal use.

**Save & Exit Setup**
Save CMOS value changes to CMOS and exit setup.

**Exit Without Saving**
Abandon all CMOS value changes and exit setup.

## 3-4 Standard CMOS Features

The items in Standard CMOS Setup Menu are divided into several categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.




**Date**
The date format is <day><month><date><year>.

| | |
|---|---|
| **Day** | Day of the week, from Sun to Sat, determined by BIOS. Read-only. |
| **Month** | The month from Jan. through Dec. |
| **Date** | The date from 1 to 31 can be keyed by numeric function keys. |
| **Year** | The year depends on the year of the BIOS. |

**Time**
The time format is <hour><minute><second>.

**Primary Master/Primary Slave**
**Secondary Master/Secondary Slave**
Press PgUp/<+> or PgDn/<–> to select Manual, None, Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Manual to define your own drive type manually.
If you select Manual, related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.
If the controller of HDD interface is SCSI, the selection shall be "None".
If the controller of HDD interface is CD-ROM, the selection shall be "None"

**Access Mode** The settings are Auto Normal, Large, and LBA.
**Cylinder** number of cylinders
**Head** number of heads
**Precomp** write precomp
**Landing Zone** landing zone
**Sector** number of sectors

## 3-5 Advanced BIOS Features

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                          Advanced BIOS Features
```

| | | |
|---|---|---|
| Virus Warning | Disabled | Item Help |
| CPU L1 Cache | Enabled | |
| CPU L2 Cache | Enabled | |
| CPU L2 Cache ECC Checking | Disabled | |
| Quick Power On Self Test | Enabled | Menu Level > |
| SATA &SCSI Boot Order | SATA, SCSI | |
| First Boot Device | Floppy | |
| Second Boot Device | HDD-0 | |
| Third Boot Device | CDROM | |
| Boot other Device | Enabled | |
| Swap Floppy Drive | Disabled | |
| Boot Up Floppy Seek | Enabled | |
| Boot Up NumLock Status | On | |
| Typematic Rate Setting | Disabled | |
| Typematic Rate (Chars/Sec) | 6 | |
| Typematic Delay (Msec) | 250 | |
| Security Option | Setup | |
| APIC Mode | Enabled | |
| MPS Version Control For OS | 1.4 | |
| OS Select For DRAM > 64MB | Non-OS2 | |
| HDD S.M.A.R.T. Capability | Disabled | |
| Report No FDD For Windows | Yes | |
| Video BIOS Shadow | Enabled | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults
```

**Virus Warning**
Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

| | |
|---|---|
| **Disabled** (default) | No warning message to appear when anything attempts to access the boot sector or hard disk partition table. |
| **Enabled** | Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table. |

**CPU Internal Cache**
The default value is Enabled.

| | |
|---|---|
| **Enabled** (default) | Enable cache |
| **Disabled** | Disable cache |

***Note: The internal cache is built in the processor.***

**External Cache**
Choose Enabled or Disabled. This option enables the Level 2 cache memory.

**Quick Power On Self-Test**
This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled. BIOS will shorten or skip some check items during POST.

| | |
|---|---|
| **Enabled** (default) | Enable quick POST |
| **Disabled** | Normal POST |

**First/Second/Third/Fourth Boot Device**
The BIOS attempts to load the operating system from the devices in the sequence selected in these items. The settings are Floppy, LS/ZIP, HDD-0/HDD-1/HDD-3, SCSI, CDROM, LAD and Disabled.

**Swap Floppy Drive**
Switches the floppy disk drives between being designated as A and B. Default is Disabled.

**Boot Up Floppy Seek**
During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks.

**Boot Up NumLock Status**
The default value is On.

| | |
|---|---|
| **On** (default) | Keypad is numeric keys. |
| **Off** | Keypad is arrow keys. |

**Typematic Rate Setting**
Keystrokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected. The settings are: Enabled/Disabled.

**Typematic Rate (Chars/Sec)**
Sets the number of times a second to repeat a keystroke when you hold the key down. The settings are: 6, 8, 10, 12, 15, 20, 24, and 30.

**Typematic Delay (Msec)**
Sets the delay time after the key is held down before is begins to repeat the keystroke. The settings are 250, 500, 750, and 1000.

**Security Option**
This category allows you to limit access to the system and Setup, or just to Setup.

| | |
|---|---|
| **System** | The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. |
| **Setup** (default) | The system will boot, but access to Setup will be denied if the correct password is not entered prompt. |

## 3-6 Advanced Chipset Features

The Advanced Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

```
Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features

> DRAM Timing Settings          Press Enter      |  Item Help
> LDT & PCI Timing Settings     Press Enter      |
  System BIOS Cacheable         Enabled          |
  Memory Hole                   Disabled         |  Menu Level >

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults
```

**DRAM Timing Settings**
Please refer to section 3-6-1

**LDT & PCI Timing Settings**
Please refer to section 3-6-2

**System BIOS Cacheable**
Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. The settings are: Enabled and Disabled.

**Memory Hole**
You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements. The settings are: Enabled and Disabled.

## 3-6-1 DRAM Timing Settings

```
Phoenix – AwardBIOS CMOS Setup Utility
DRAM Timing Settings
```

| | | |
|---|---|---|
| Timing Mode | Auto | Item Help |
| DRAM CAS Latency | 2.5T | |
| SDRAM Cycle Time | 8T | Menu Level >> |
| SDRAM RAS-to-CAS Delay | 4T | |
| SDRAM Precharge Time | 2T | |
| MTRR Mapping Mode | Continuous | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults
```

**SDRAM RAS-to-CAS Delay**
This field let's you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 4T and 3T.

**SDRAM Precharge Time**
If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain date. *Fast* gives faster performance; and *Slow* gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The settings are: 2T and 3T.

**DRAM CAS Latency**
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: 2T and 2.5T.

## 3-6-2 LDT & PCI Timing Settings

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                          LDT & PCI Timing Settings
```

| | | |
|---|---|---|
| Data Scramble | Disabled | Item Help |
| Upstream LDT Bus Width | 16 bit | |
| Downstream LDT Bus Width | 16 bit | Menu Level >> |
| LDT Bus Frequency | Auto | |
| PCI1 Master 0 WS Write | Enabled | |
| PCI2 Master 0 WS Write | Enabled | |
| PCI1 Post Write | Enabled | |
| PCI2 Post Write | Enabled | |
| PCI Delay Transaction | Disabled | |
| VLink Mode Selection | Mode 4 | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults
```

**PCI Delay Transaction**
The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. The settings are: Enabled and Disabled.

## 3-7 Integrated Peripherals

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                          Integrated Peripherals
```

| | | |
|---|---|---|
| > OnChip IDE Function | Press Enter | Item Help |
| > OnChip Device Function | Press Enter | |
| > Onboard Super IO Function | Press Enter | Menu Level > |
| Init Display First | PCI Slot | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults
```

**OnChip IDE Function**
Please refer to section 3-7-1

**OnChip Device Function**
Please refer to section 3-7-2

**Onboard Super IO Function**
Please refer to section 3-7-3

**Init Display First**
This item allows you to decide to activate whether PCI Slot or AGP VGA first. The settings are: PCI Slot, AGP Slot.

## 3-7-1 OnChip IDE Function

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                              OnChip IDE Function
```

| | | |
|---|---|---|
| OnChip IDE Channel0 | Enabled | Item Help |
| OnChip IDE Channel1 | Enabled | |
| Primary Master PIO | Auto | Menu Level >> |
| Primary Slave PIO | Auto | |
| Secondary Master PIO | Auto | |
| Secondary Slave PIO | Auto | |
| Primary Master UDMA | Auto | |
| Primary Slave UDMA | Auto | |
| Secondary Master UDMA | Auto | |
| Secondary Slave UDMA | Auto | |
| IDE DMA Transfer Access | Enabled | |
| IDE HDD Block Mode | Enabled | |
| IDE Prefetch Mode | Disabled | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults
```

**OnChip IDE Channal0/Channel1**
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately. The settings are: Enabled and Disabled.

**Primary/Secondary Master/Slave PIO**
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The settings are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

**Primary/Secondary Master/Slave UDMA**
Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33 and Ultra DMA/66, select Auto to enable BIOS support. The settings 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 settings are: Enabled, Disabled.

## 3-7-2 OnChip Device Function

```
Phoenix – AwardBIOS CMOS Setup Utility
OnChip Device Function

VIA SATA Function              Enabled        |  Item Help
RealTek LAN BootROM            Disabled       |
AC97 Sound Device              Auto           |  Menu Level >>
USB Host Controller            All Enabled    |
USB 2.0 Support                Enabled        |
USB Device Legacy Support      All Off        |
USB Keyboard Legacy Support    Disabled       |
USB Mouse Legacy Support       Disabled       |

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
     F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults
```

**AC97 Sound Device**

This item allows you to decide to enable/disable the chipset family to support AC97 Audio. The settings are: Enabled, Disabled.

**USB Host Controller**

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB peripherals. The settings are: Enabled, Disabled.

**USB Keyboard Legacy Support**

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard. The settings are: Enabled, Disabled.

## 3-7-3 Onboard Super IO Function

```
Phoenix – AwardBIOS CMOS Setup Utility
Onboard Super IO Function

Onboard FDD Controller         Enabled        |  Item Help
Onboard Serial Port 1          3F8/IRQ4       |
Onboard Serial Port 2          2F8/IRQ3       |  Menu Level >>
UART Mode Select               Normal         |
IR Duplex Mode                 Half           |
Onboard Parallel Port          378/IRQ7       |
Parallel Mode                  SPP            |
ECP Mode Use DMA               3              |

↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
     F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults
```

**Onboard FDD Controller**

Select Enabled if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select Disabled in this field. The settings are: Enabled and Disabled.

**Onboard Serial Port 1/Port 2**
Select an address and corresponding interrupt for the first and the second serial ports. The settings are: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

**Onboard Parallel Port**
There is a built-in parallel port on the on-board Super I/O chipset that Provides Standard, ECP, and EPP features. It has the following option:

| | |
|---|---|
| **Disabled** | |
| **(3BCH/IRQ7)/** | Line Printer port 0 |
| **(278H/IRQ5)/** | Line Printer port 2 |
| **(378H/IRQ7)** | Line Printer port 1 |

**Parallel Port Mode**

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port

**SPP/EPP/ECP/ECP+EPP**

To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the EPP modes simultaneously, choose "EPP." By choosing "ECP", the onboard parallel port will operate in ECP mode only. Choosing "ECP+EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA" at this time, the user can choose between DMA channels 3 to 1. The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select." At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

# 3-8 Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy saving while operating in a manner consistent with your own style of computer use.

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                              Power Management Setup

  ACPI Function                  Enabled          |  Item Help
  ACPI Suspend Type              S1(POS)          |
  Video Off Option               Always Off       |
  Video off Method               V/H SYNC+Blank   |  Menu Level >
  MODEM Use IRQ                  3                |
  Power Button Function          Instant-Off      |
  Power After Power Failure      Always Off       |
  AMD K8 Cool'n'Quiet Control    Auto             |
> Wake Up Events                 Press Enter      |

  ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
      F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults
```

**ACPI Function**
This item allows you to Enabled/Disabled the Advanced Configuration and Power Management (ACPI). The settings are Enabled and Disabled.

**Video Off Option**
This determines the manner in which the monitor is blanked. The choice are Suspend → off, All Modes → Off, and Always On.

**Video Off Method**
This determines the manner in which the monitor is blanked.

| | |
|---|---|
| **DPMS** (default) | Initial display power management signaling. |
| **Blank Screen** | This option only writes blanks to the video buffer. |
| **V/H SYNC+Blank** | This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer. |

**Modem Use IRQ**
This determines the IRQ in which the MODEM can use.
The settings are: 3, 4, 5, 7, 9, 10, 11, NA.

**Power Button Function**
Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state.
The settings are: Delay 4 Sec, Instant-Off.

**Wake Up Events**
Please refer to section 3-8-1

## 3-8-1 Wake up Events

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                                Wake Up Events
```

| | | |
|---|---|---|
| VGA | OFF | Item Help |
| LPT & COM | LPT/COM | |
| HDD & FDD | ON | Menu Level >> |
| PCI Master | OFF | |
| Wake-Up on Ring | Disabled | |
| Wake-Up on PCI PME | Disabled | |
| PS2 KB Wake up Selection | Hot Key | |
| Wake-Up on Hot Key (PS2 KB) | Disabled | |
| Wake-Up on USB Device | Disabled | |
| Wake-Up on RTC Alarm | Disabled | |
| Date of Month Alarm | 0 | |
| Time (hh:mm:ss) Alarm | 0 : 0 : 0 | |
| > IRQs Activities | Press Enter | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values    F6:Optimized Defaults    F7:Standard Defaults
```

**Wake Up On Ring/PME**
During Disabled, the system will ignore any incoming call from the modem. During Enabled, the system will boot up if there's an incoming call from the modem.

**Wake-Up on RTC Alarm**
This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

**Date(of month) Alarm**
You can choose which month the system will boot up. Set to 0, to boot every day.

**Time(hh:mm:ss) Alarm**

You can choose what hour, minute and second the system will boot up.

**Note:** If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work.

**IRQs Activities**
Please refer to section 3-8-1.1

## 3-8-1.1 IRQs Activities

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                                IRQs Activities
```

| | | |
|---|---|---|
| Primary INTR | ON | Item Help |
| IRQ3 (COM 2) | Disabled | |
| IRQ4 (COM 1) | Enabled | |
| IRQ5 (LPT 2) | Enabled | Menu Level >>> |
| IRQ6 (Floppy Disk) | Enabled | |
| IRQ7 (LPT 1) | Enabled | |
| IRQ8 (RTC Alarm) | Disabled | |
| IRQ9 (IRQ2 Redir) | Disabled | |
| IRQ10 (Reserved) | Disabled | |
| IRQ11 (Reserved) | Disabled | |
| IRQ12 (PS/2 Mouse) | Enabled | |
| IRQ13 (Coprocessor) | Enabled | |
| IRQ14 (Hard Disk) | Enabled | |
| IRQ15 (Reserved) | Disabled | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
    F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults
```

# 3-9 Miscellaneous Control

This section is for setting CPU Frequency/Voltage Control.

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                              Miscellaneous Control
```

| | | |
|---|---|---|
| Auto Detect PCI Clock | Enabled | Item Help |
| Spread Spectrum | Disabled | |
| Flash Part Write Protect | Enabled | Menu Level > |
| > IRQ Resources | Press Enter | |
| PCI/VGA Palette Snoop | Disabled | |
| *** PCIExpress Relative Items *** | | |
| Maximum Payload Size | 4096 | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
     F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults
```

**Auto Detect PCI Clock**
This item allows you to enable/disable auto detect PCI Clock.

**Spread Spectrum**
This item allows you to set the CPU Host/PCI clock and Spread Spectrum.
The settings are: Enabled, Disabled.

**IRQ Resources**
When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.
Please refer to section 3-9-1

# 3-9-1 IRQ Resources

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                                IRQ Resources
```

| | | |
|---|---|---|
| IRQ-3 assigned to | PCI Device | Item Help |
| IRQ-4 assigned to | PCI Device | |
| IRQ-5 assigned to | PCI Device | Menu Level >> |
| IRQ-7 assigned to | PCI Device | |
| IRQ-9 assigned to | PCI Device | |
| IRQ-10 assigned to | PCI Device | |
| IRQ-11 assigned to | PCI Device | |
| IRQ-12 assigned to | PCI Device | |
| IRQ-14 assigned to | PCI Device | |
| IRQ-15 assigned to | PCI Device | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
     F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults
```

## 3-10 PC Health Status

This section shows the Status of you CPU, Fan, Warning for overall system status. This is only available if there is Hardware Monitor onboard.

```
Phoenix – AwardBIOS CMOS Setup Utility
PC Health Status
```

| | | |
|---|---|---|
| Shutdown Temperature | Disabled | Item Help |
| Show PCHealth in Post | Enabled | |
| > Smart FAN Configurations | Press Enter | Menu Level > |
| Vcore | 1.39V | |
| VDIMM 2.5V | 2.53V | |
| +3.3V | 3.28V | |
| +5V | 4.99V | |
| +12V | 11.9V | |
| 3VSB | 3.22V | |
| 5VSB | 4.89V | |
| VBAT | 3.12V | |
| CPU Temperature | 40°C/104°F | |
| System Temperature | 29°C/84°F | |
| CPUFAN | 4440 RPM | |
| SFAN1 | 3375 RPM | |
| SFAN2 | 3375 RPM | |

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults
```

**Shutdown Temperature**

This item can let users setting the Shutdown temperature, when CPU temperature over this setting the system will auto shutdown to protect CPU.

**Show PC Health in Post**

During Enabled, it displays information list below. The choice is either Enabled or Disabled

**Smart FAN Configurations**

Please refer to section 3-10-1

**Current CPU Temperature/Current System Temp/Current FAN1, FAN2 Speed/Vcore/ Vdd/3.3V/+5V/+12V/-12V/VBAT(V)/5VSB(V)**

This will show the CPU/FAN/System voltage chart and FAN Speed.

## 3-10-1 Smart FAN Configurations

```
Phoenix – AwardBIOS CMOS Setup Utility
Smart FAN Configurations
```

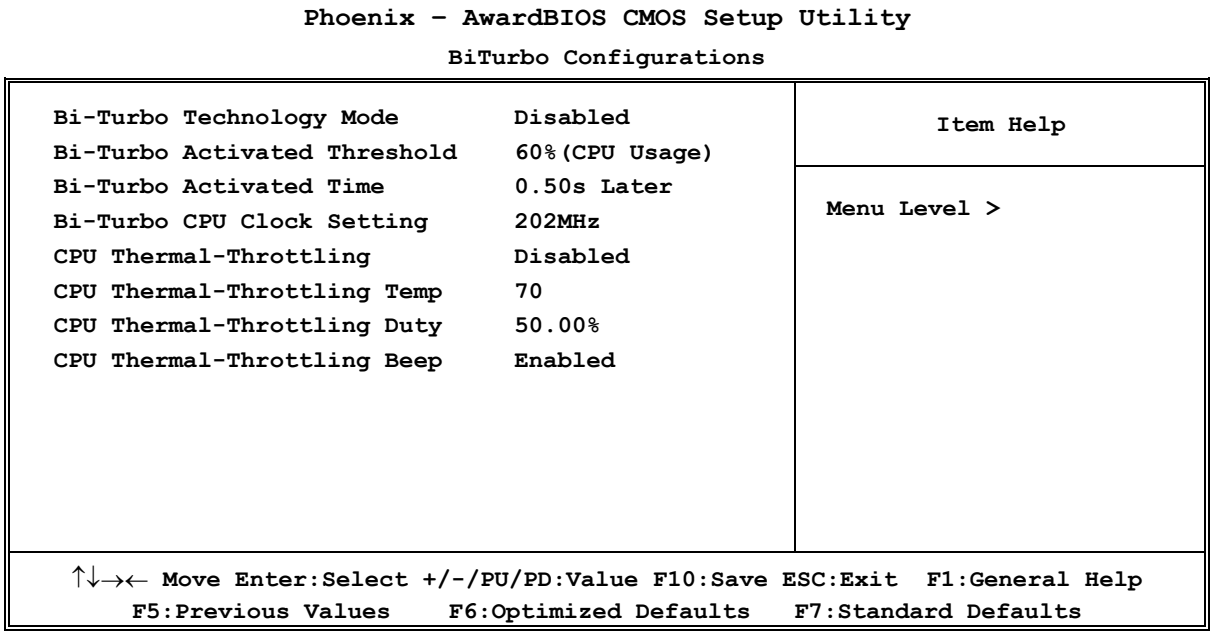
| | | |
|---|---|---|
| CPUFAN Smart Mode | Enabled | Item Help |
| CPU SmartFAN Full-Speed | 50 | |
| CPU SmartFAN Idle Temp | 30 | Menu Level > |
| SFAN1 Smart Mode | Enabled | |
| SFAN1 SmartFAN Full-Speed Temp | 50 | |
| SFAN1 SmartFAN Idle Temp | 30 | |

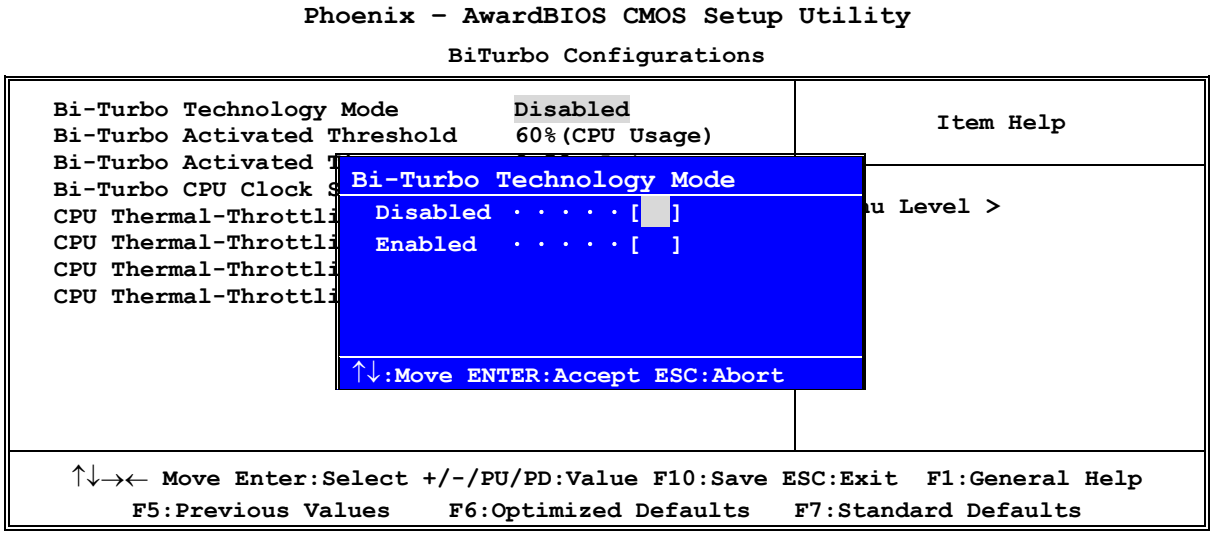
```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Optimized Defaults F7:Standard Defaults
```

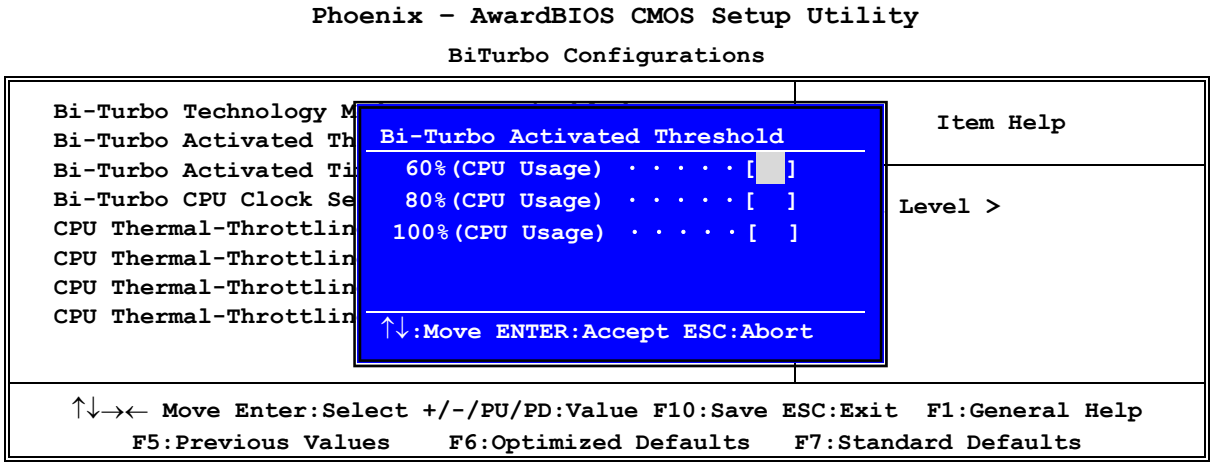
**CPU/SFAN1 Smart FAN Full-Speed Temp**
This item allows you setting the FAN works in full speed when the temperature over the value which out set. If the temperature below the value but over the Idle Temperature, the FAN will works over 60% of full speed, and the higher temperature will gain higher FAN speed, after over the temperature which this item setting, the FAN works in full speed.

**CPU/SFAN1 Smart FAN Idle Temp**
This item allows you setting the FAN works in 60% of full speed, when the temperature lower than the temperature which you setting.

## 3-11 Bi-Turbo Configurations

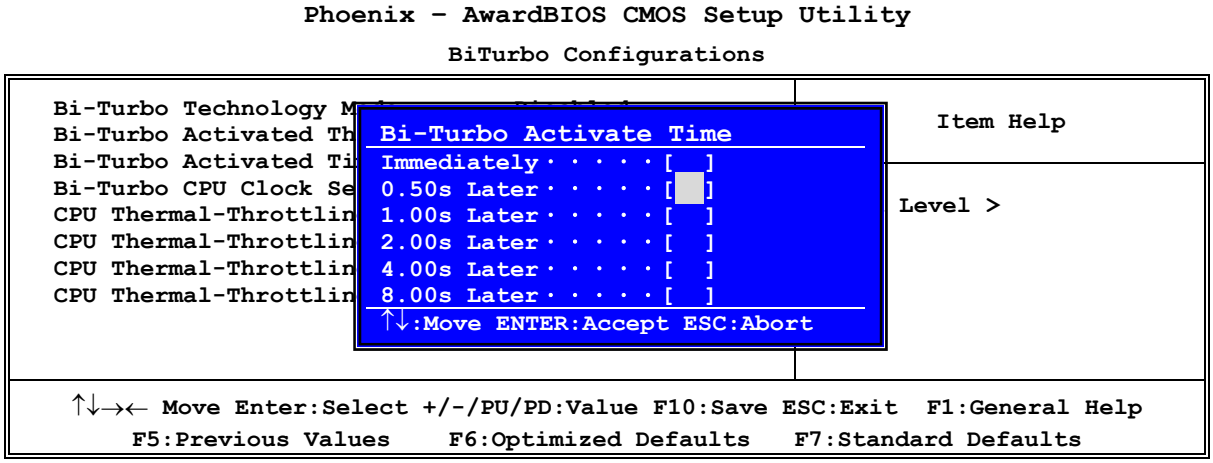




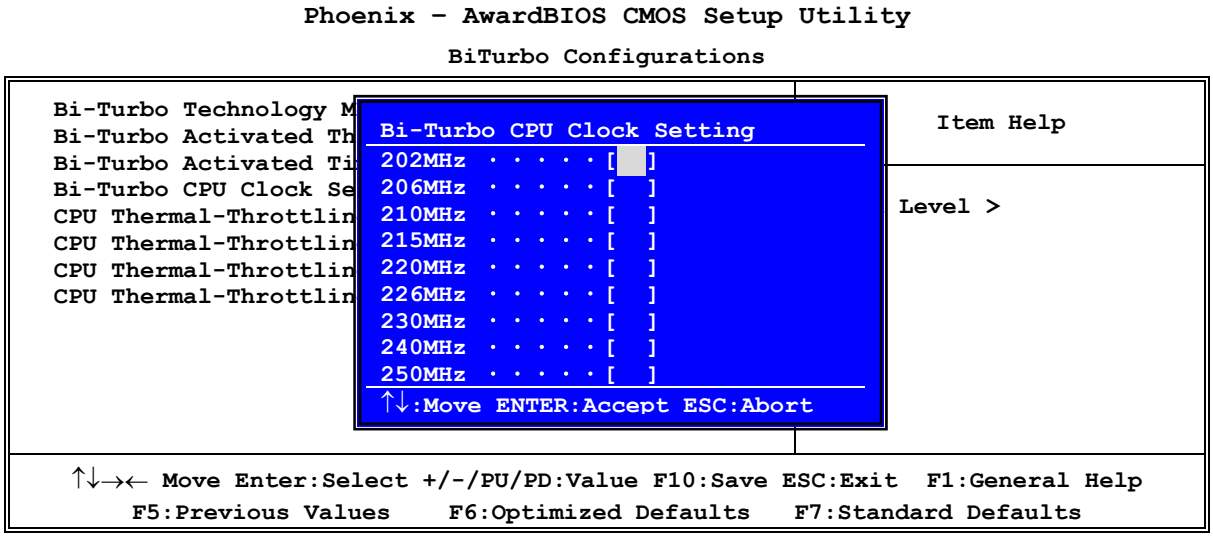

**Bi-Turbo Activated Threshold**

This item allows you select to activate the Bi-Turbo function at 60%, 80%, or 100% CPU usage. ***Suggest setting 60% to assure the optimized system performance and reliability.***



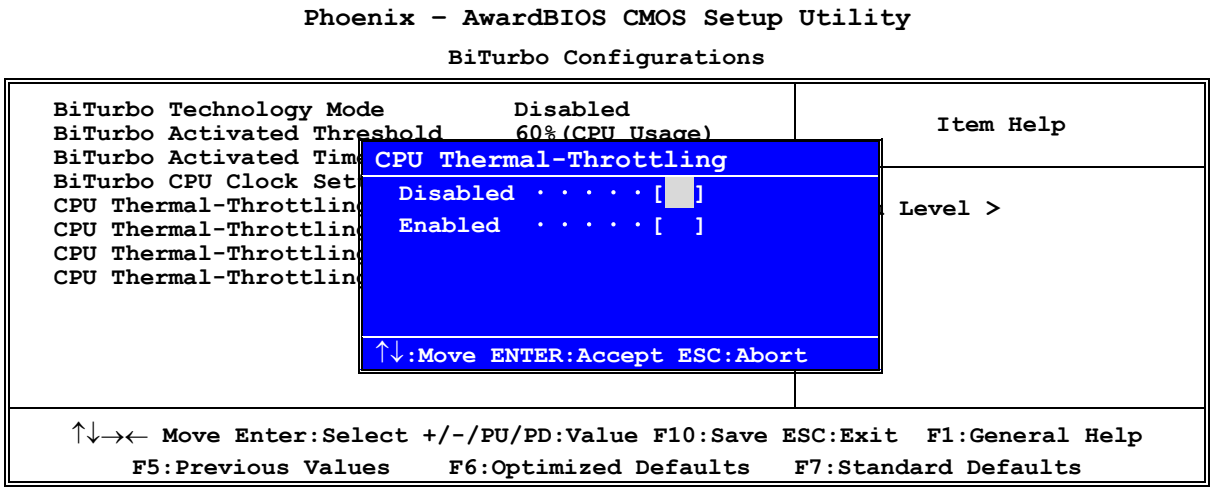

**Bi-Turbo Activated Time**

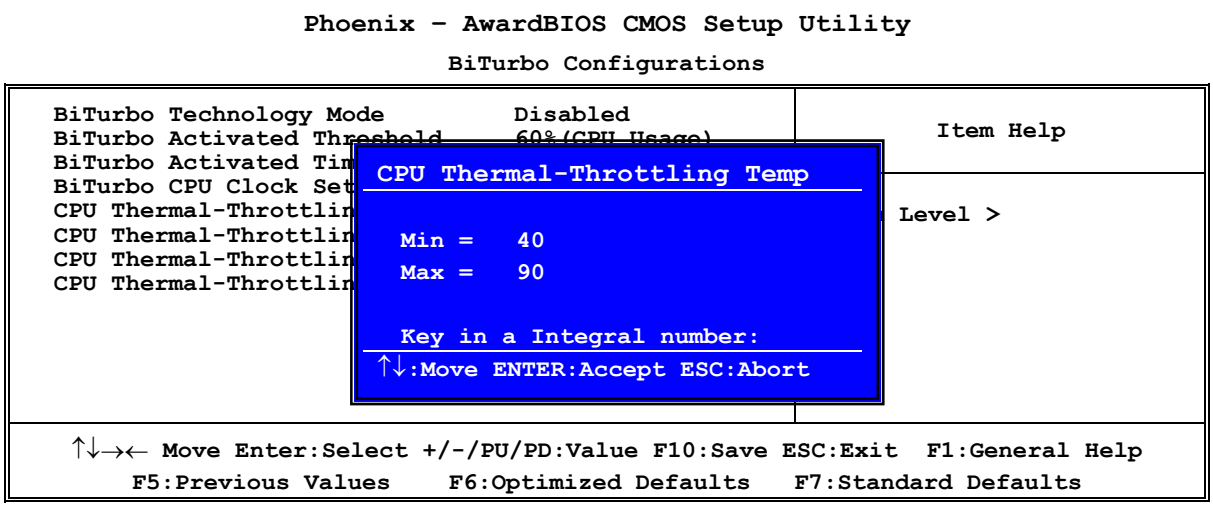
This item allows you to select when to activate the Bi-Turbo function after the BIOS detects the preset percentage of CPU usage. The settings are: Immediately, 0.50s Later, 1.00s Later, 2.00s Later, 4.00s Later, or 8.00s Later

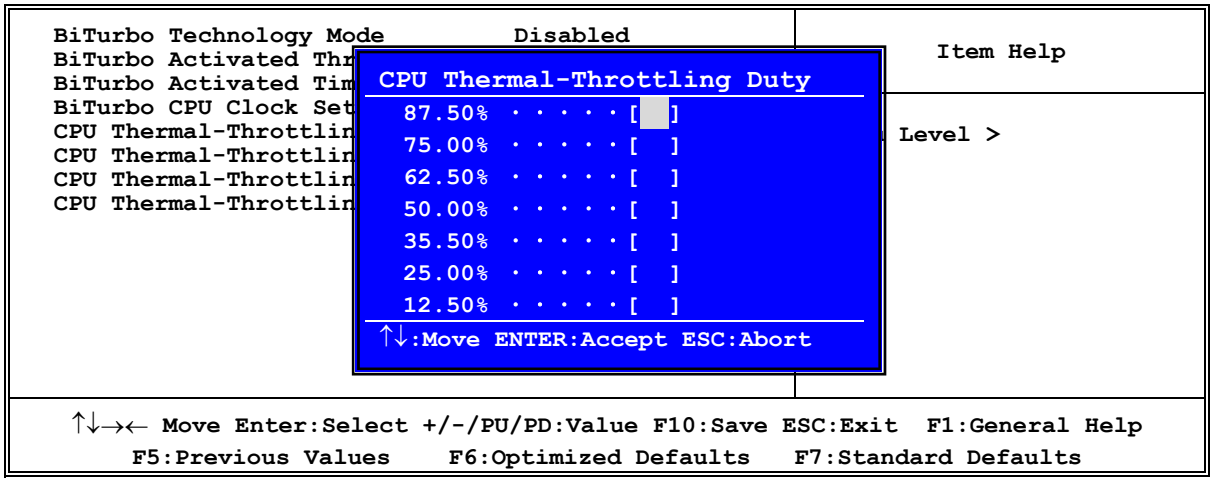


## Bi-Turbo CPU Clock Setting

This item allows you to set the CPU Clock which you need to operate after Bi-Turbo is activated. The settings are: 202MHz, 206MHz, 210MHz, 215MHz, 220MHz, 226MHz, 230MHz, 240MHz, 250MHz.

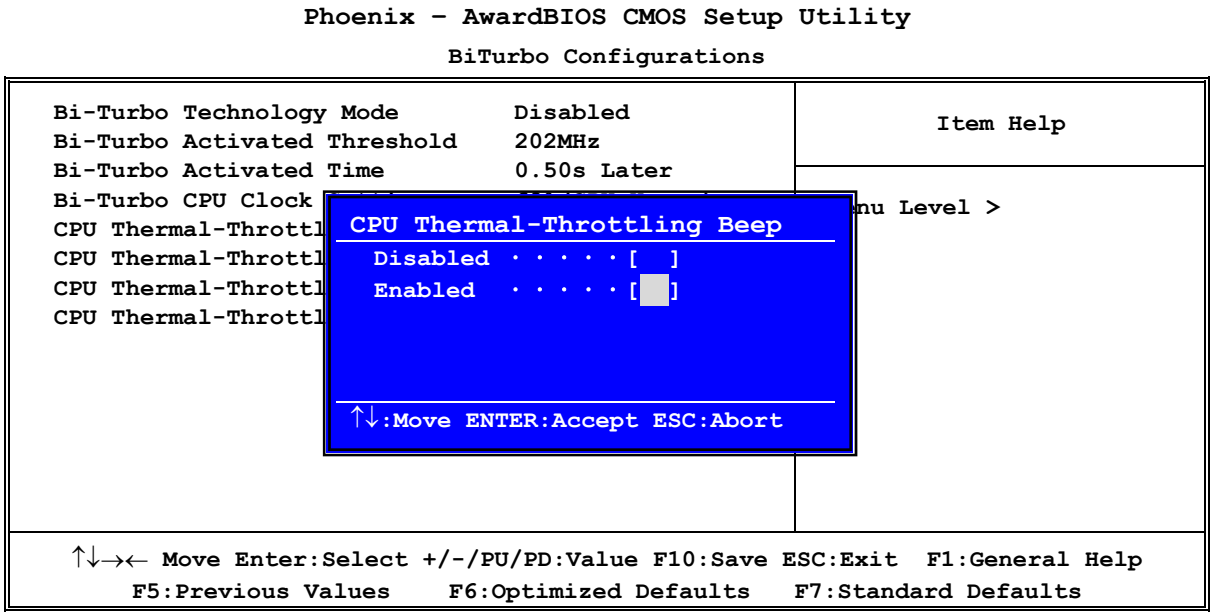


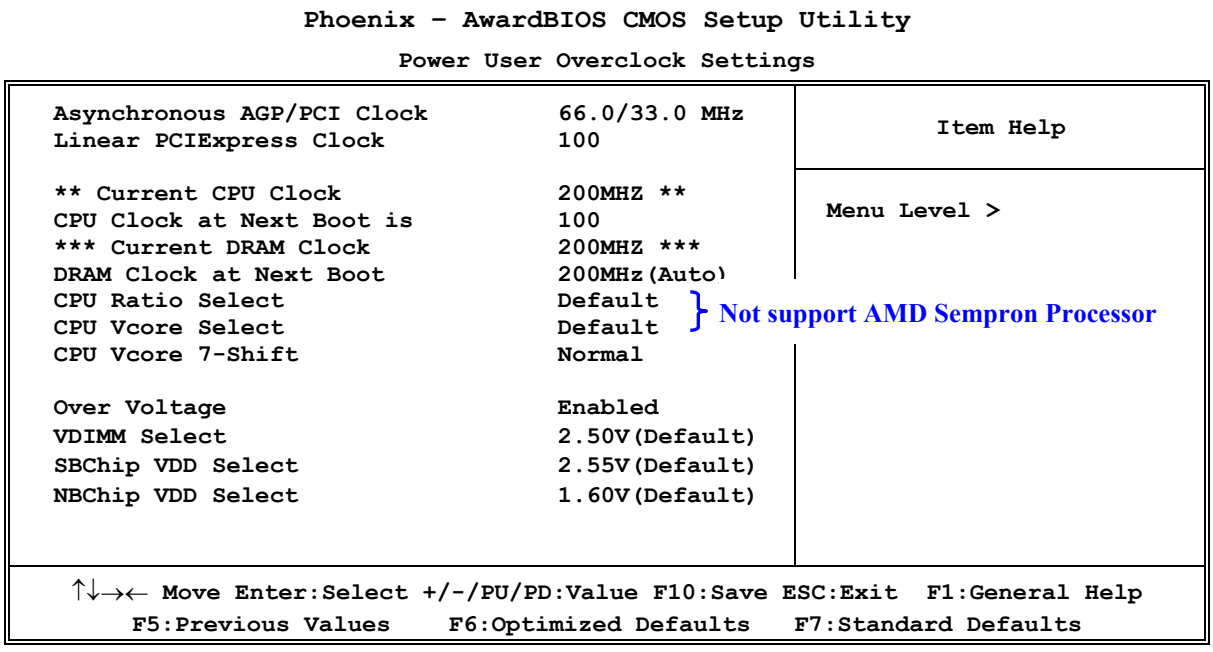



**CPU Thermal Throttling Temp**

This item allows you to activate the CPU Thermal Throttling function when the CPU temperature is over the value which you set to low down the CPU temperature when at high workload to protect processor from damage or accidental shutdown.




# 3-12 Power User Overclock Settings




**CPU/DRAM Clock at next Boot is**

This item allows you change the CPU Host /DRAM clock for overclock demand. *When the CPU Host clock is over the CPU default value BIOS will auto disabled Bi-Turbo function.*

### CPU Vcore 7-Shift

This item allows you select the CPU Vcore Voltage xx% more than the standard value, by this function for the precise over-clocking for extra demanding of performance.

### VDIMM Select

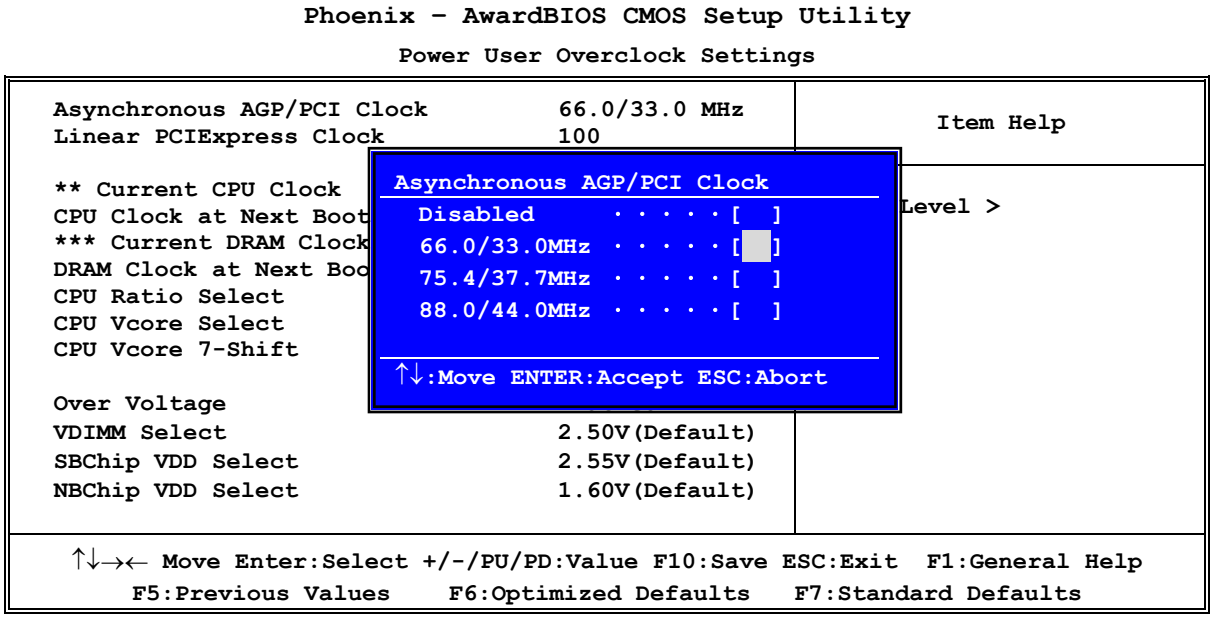
This item allows you to select 2.5V of the DDR Module. The choice are: 2.55V, 2.6V, 2.65V, 2.7V.

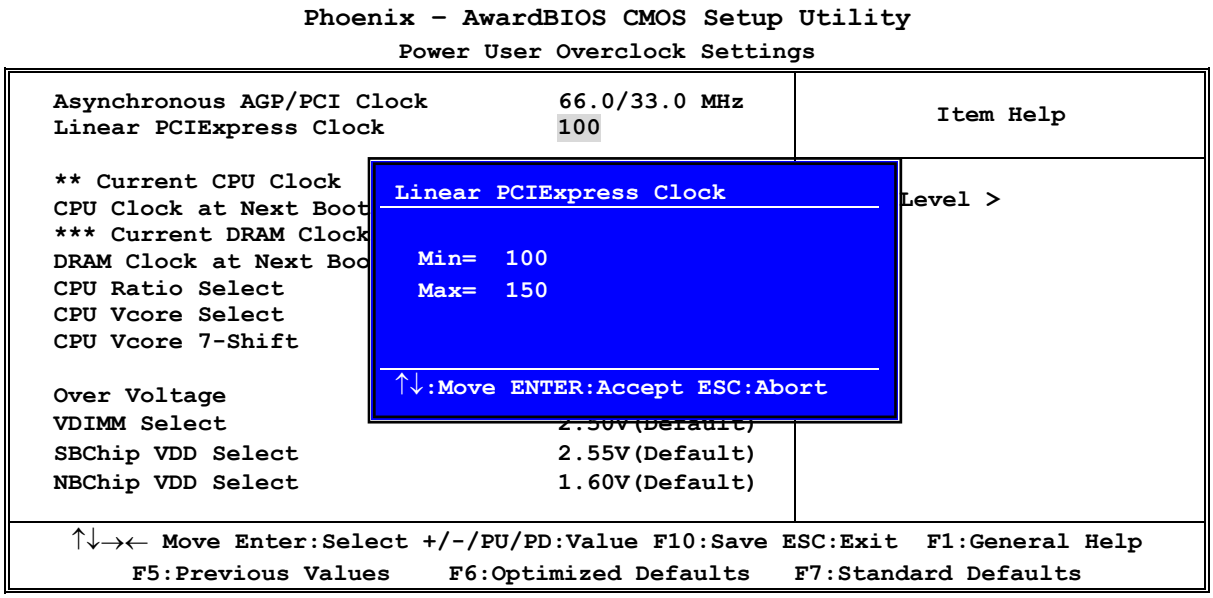
### NBChip VDD Select

This item allows you to select 1.5V of the AGP 4X/8X VGA card. The choice are: 1.5V, 1.6V, 1.7V, 1.8V.

### SBChip VDD Select

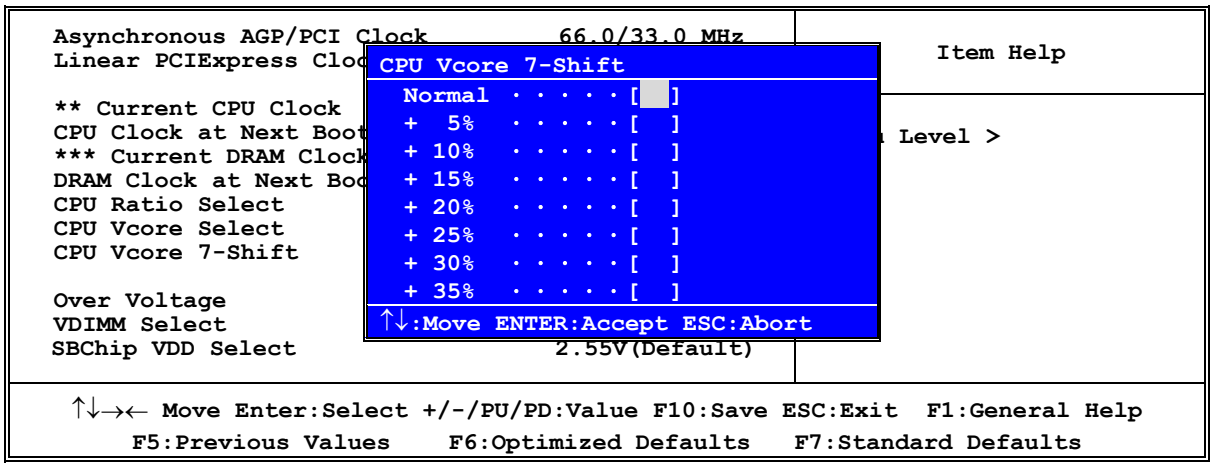
This item allows you to select 2.5V of the VCC2.5V Voltage. The choice are: 2.55V, 2.6V, 2.65V, 2.7V.



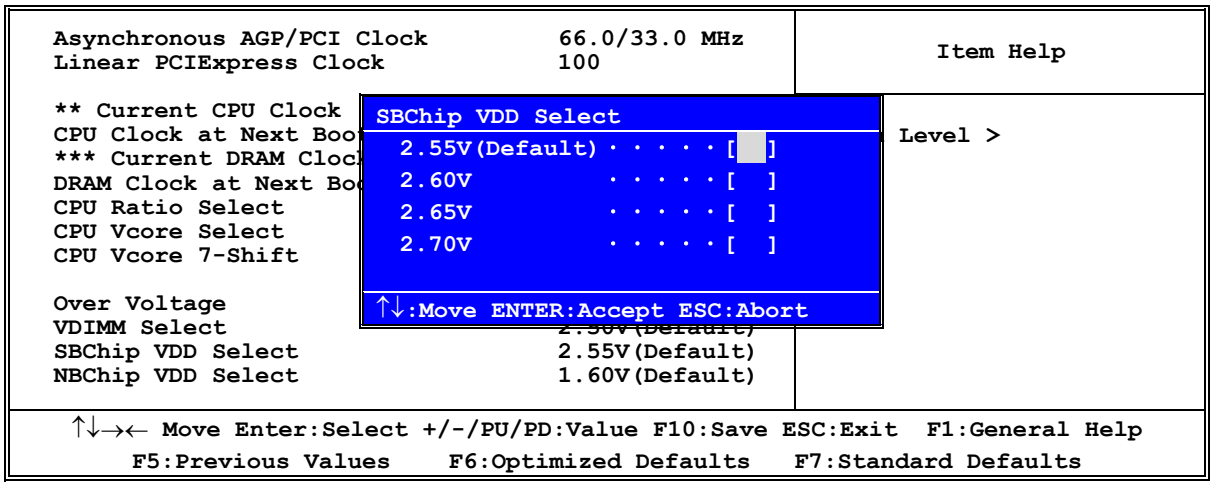
Phoenix – AwardBIOS CMOS Setup Utility

Power User Overclock Settings



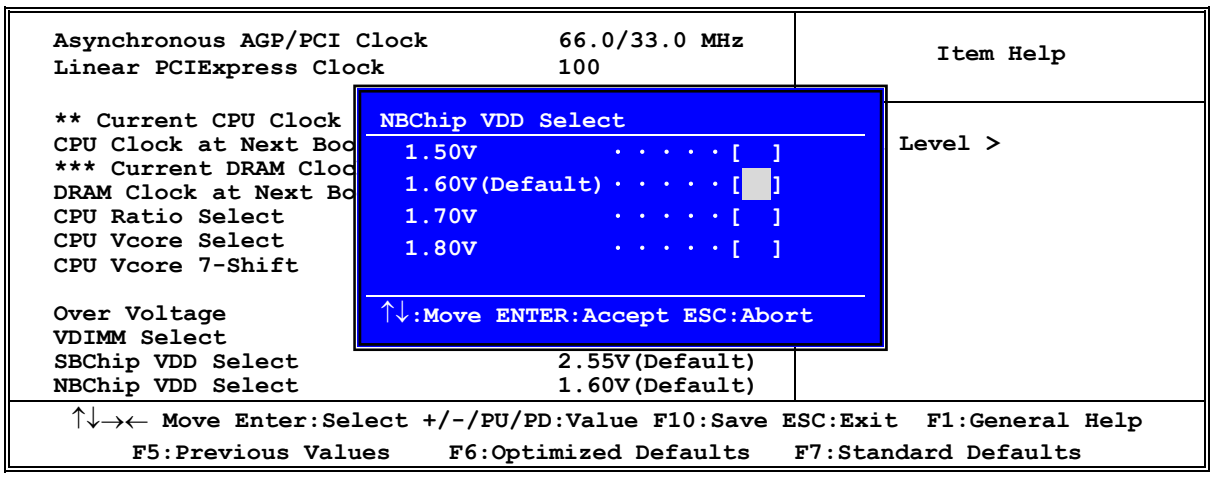

Phoenix – AwardBIOS CMOS Setup Utility

Power User Overclock Settings




Phoenix – AwardBIOS CMOS Setup Utility

Power User Overclock Settings



# 3-13 Password Settings

```
                    Phoenix – AwardBIOS CMOS Setup Utility
                              Password Settings

 Set Supervisor Password          Press Enter     |  Item Help
 Set User Password                Press Enter     |
                                                  |  Menu Level >

   ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
       F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults
```

You can set either supervisor or user password, or both of them. The differences are:

**Supervisor password:** Can enter and change the options of the setup menus.

**User password:** Can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

**ENTER PASSWORD:**

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm that the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

**PASSWORD DISABLED.**

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration. Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

# 3-14 Load Standard/Optimized Defaults

**Load Standard Defaults**

When you press <Enter> on this item, you get confirmation dialog box with a message similar to:

Load Standard Defaults (Y/N)? N

Pressing <Y> loads the BIOS default values for the most stable, minimal-performance system operations.

**Load Optimized Defaults**

When you press <Enter> on this item, you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N)? N

Pressing <Y> loads the default values that are factory settings for optimal performance system operations.

# Chapter 4

## DRIVER & FREE PROGRAM INSTALLATION

Check your package and there is A MAGIC INSTALL CD included. This CD consists of all DRIVERS you need and some free application programs and utility programs. In addition, this CD also include an auto detect software which can tell you which hardware is installed, and which DRIVERS needed so that your system can function properly. We call this auto detect software MAGIC INSTALL.

## MAGIC INSTALL supports WINDOWS 9X/NT/2K/XP

Insert CD into your CD-ROM drive and the MAGIC INSTALL Menu should appear as below. If the menu does not appear, double-click MY COMPUTER / double-click CD-ROM drive or click START / click RUN / type X:\SETUP.EXE (assuming X is your CD-ROM drive).


**From MAGIC INSTALL MENU you may make 10 selections:**

1. VIA 4 IN 1 install VIA Service Pack 4 IN 1 driver
2. SOUND install AC97 Audio Codec Installing driver
3. LAN install RTL8139C/8100 Fast Ethernet driver
4. USB2.0 install VIA USB 2.0 driver
5. SATA install VIA Serial ATA driver
6. DIRECTX9 install Microsoft DirectX 9 driver
7. PC-CILLIN install PC-CILLIN2005 anti-virus program
8. PC-HEALTH install Myguard utility
9. BROWSE CD to browse the contents of the CD
10. EXIT to exit from MAGIC INSTALL menu

# 4-1 VIA 4IN1 Install VIA Service Pack 4 IN 1 Driver

*** The path of the file is X:\VIA\DRIVER\VIAHYPERION4IN1456V.EXE**

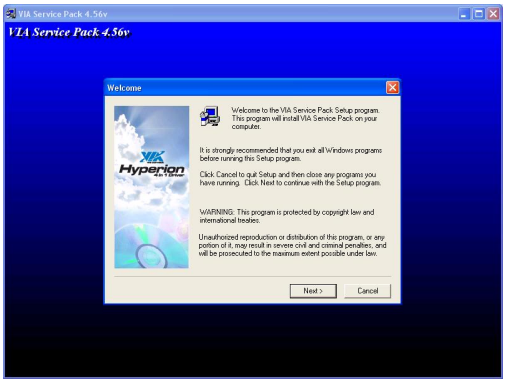
**IDE :** VIA ATAPI VENDOR SUPPORT DRIVER IS USED TO FIXED COMPATIBILITY ISSUE FOR IDE DEVICES

**AGPVXD :** VIA AGPVXD DRIVER IS TO BE INSTALLED, IF YOU ARE USING AN AGP VGA CARD, VIAGART.VXD WILL PROVIDE SERVICE ROUTINES TO YOUR VGA DRIVER AND INTERFACE DIRECTLY TO HARDWARE, PROVIDING FAST GRAPHIC ACCESS

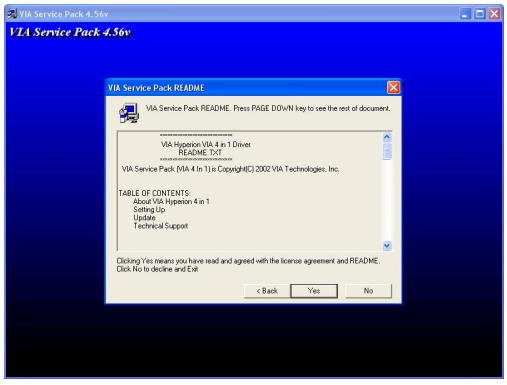
**IRQ ROUTING :** VIA PCI IRQ MINIPORT DRIVER IS TO BE INSTALLED UNDER WIN98 ONLY, IT WILL FIX PCI IRQ ROUTING SEQUENCE

**INF :** VIA REGISTRY DRIVER IS TO BE INSTALLED UNDER WINDOWS THE DRIVER WILL ENABLE VIA POWER MANAGERMENT CONTROLLER

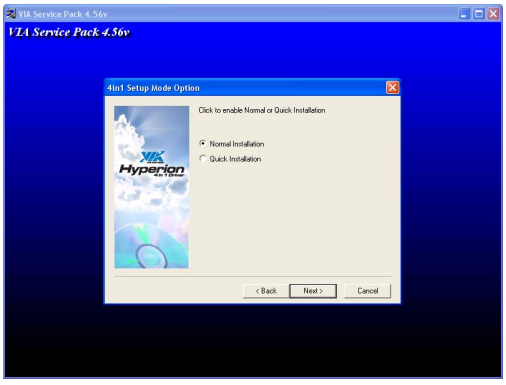

1. Click IDE when MAGIC INSTALL MENU appears



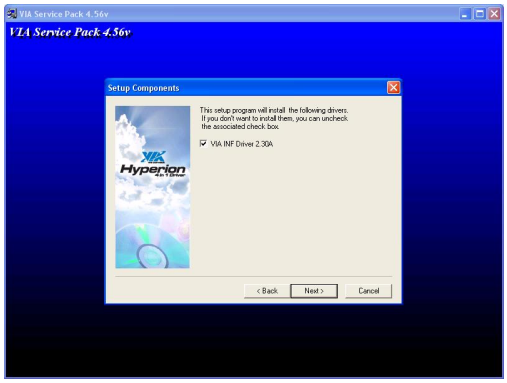

2. Click NEXT when VIA Service Pack Wizard appears



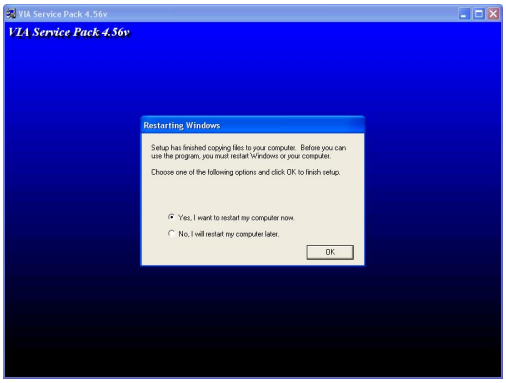

3. This is to announce the Copy Write, click Yes




4. Please select normal installation and Click NEXT



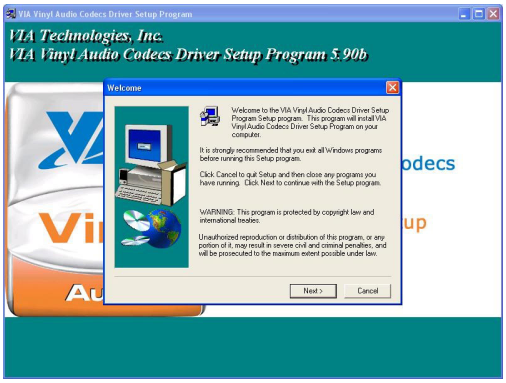

5. Click NEXT to Install ATAPI Vender Support Driver



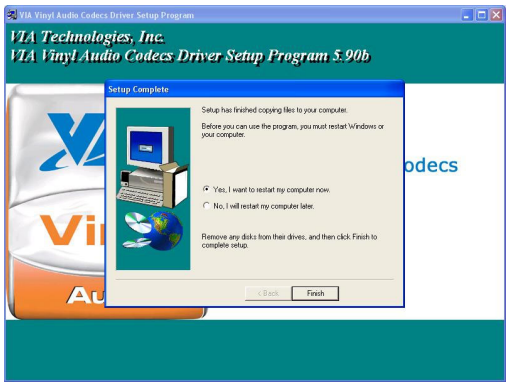

6. Click OK and Restart your computer

## 4-2 SOUND install VIA AC97' Codec Audio Driver


1. Click SOUND when MAGIC INSTALL MENU appears




2. Click NEXT and start to install VIA Vinyl Audio Codecs driver




3. Click Finish and restart your computer


4. This is 6-channel audio output test program

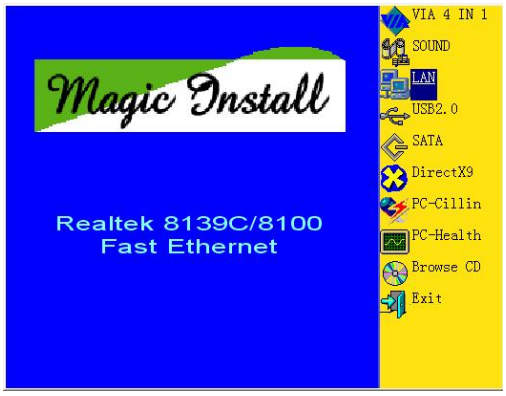

5 . Phone jack configuration setting and enable smart 5.1 plus function


6. Sound effect and sound expander function

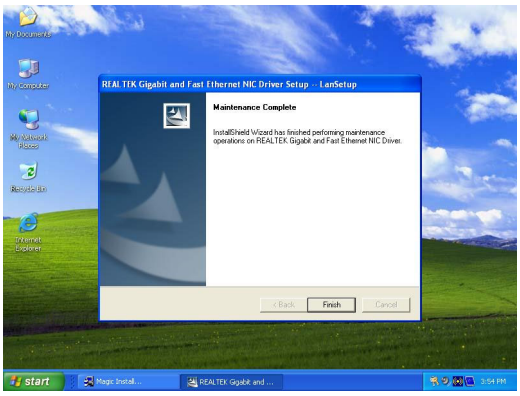
**Note: The path of the file**
**For WIN98/NT4.0/WIN2K/XP is X:\CODEC\VIACODEC\SETUP.EXE**

**Note: In Win2K/WinME users have to click Control Panel\System\Device Manager\ DVD\CD-ROM drives to Enabled digital CD Audio for the CD-ROM Device when use the SPDIF-Out digital signal.**

## 4-3 LAN install Realtek RTL8100C 10/100M Fast Ethernet NIC Driver




1. Click LAN when Magic Install Menu appear




2. Click finish , and select restart computer

## 4-4 USB2.0 Install VIA USB2.0 DEVICE DRIVER


1. Click USB2.0 when MAGIC INSTALL MENU Appear


2. When USB2.0 Setup Program Appear, Click NEXT

*Note: Please Install Microsoft Service Pack 1 in Windows XP OS Before you Install VIA USB2.0 Device Driver.*

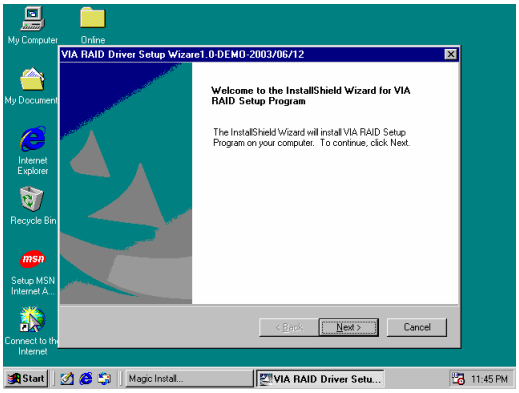
*Please Install Microsoft Service Pack 4 in Windows 2000 OS Before you Install VIA USB2.0 Device Driver.*



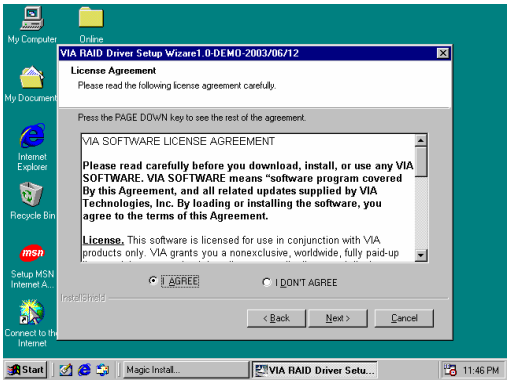
**The Path of the file is X:\VIA\VIAUSB20\SETUP.EXE**

## 4-5 SATA Install VIA Serial ATA driver and tools

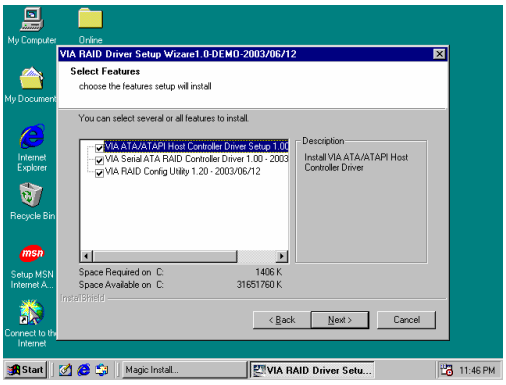

1. Click SATA when MAGIC INSTALL MENU appears



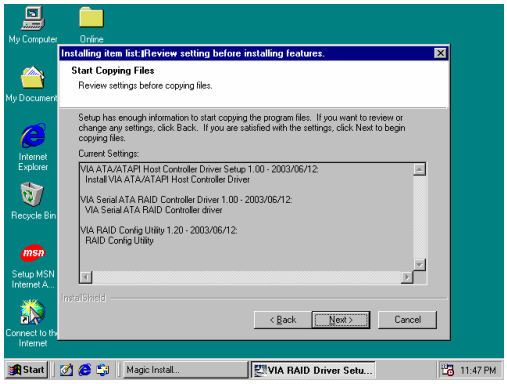

2. Start install VIA serial ATA driver , then click NEXT



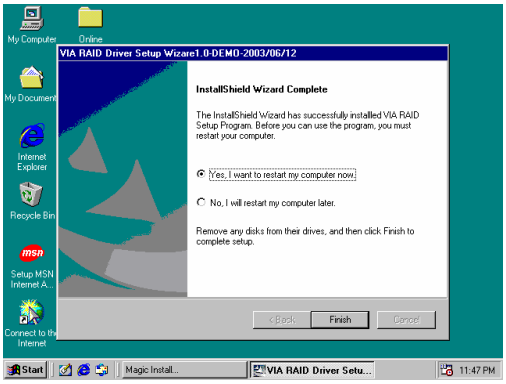

3. When license agreement appear, choose I agree and click NEXT




4. Select you want to install driver




5. Review install driver and utility component, then click NEXT




6. Click FINISH and restart your computer

## Making SATA HDD driver diskette before Install WindowsXP/2000

If you only have Serial ATA HDDs on your system, before you install the Windows XP or Windows 2000, you will need to make a SATA HDD driver diskette before you start to install the Operating System.

## How to make a SATA HDD driver diskette?

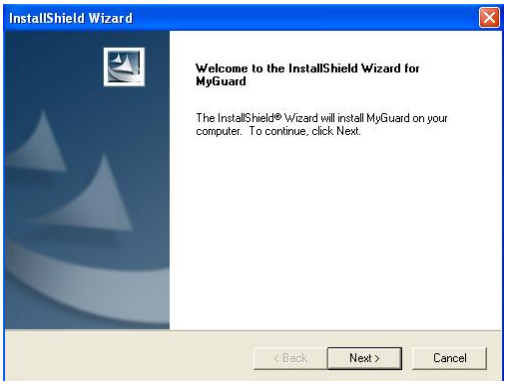
STEP 1: Insert the diskette which be formatted in floppy drive on a system which can start OS.
STEP 2: After booting OS insert the bundle CD in your CD-ROM
STEP 3: Copy all the files from \VIA\VIASATA\DriverDisk to floppy diskette
Once you have the SATA driver diskette ready, you may start to install Windows XP or Windows 2000 on your System.

## Installation of Windows XP/ Windows 2000

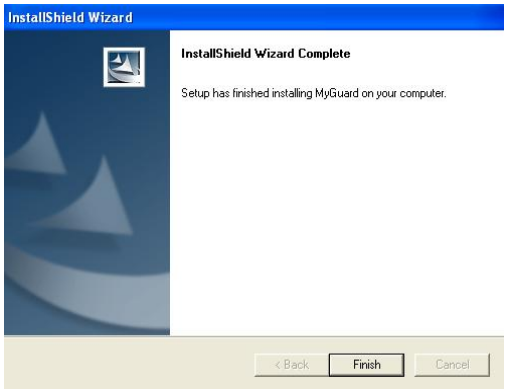
For installation of Windows XP or Windows 2000, please insert Windows XP or Windows 2000 CD into the CD-ROM drive. Then remove the floppy diskette, and boot the system. At the very beginning, you will see the message at the bottom of screen, "Press F6 if you need to install a third party SCSI or RAID driver…."
At this moment, please press <F6> key and follow the instructions of Windows XP or Windows 2000 for the proper installation.

## 4-6 PC-HEALTH install Myguard Hardware monitor Utility


1. Click PC-HEALTH when MAGIC INSTALL MENU appears




2. Click Next when Install shield wizard Window appears, Choose destination location and click Next, when the start copy file windows appear, click next




3. Select Finish after setup complete


4. Execute MY GUARD utility, On-time Monitoring your system health

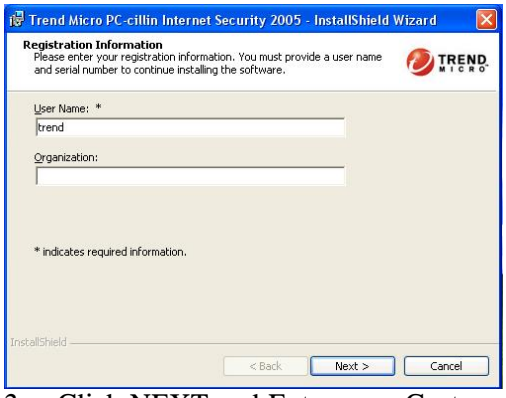
**NOTE:**

**MAGIC INSTALL will auto detect file path X:\VIA\F71805\SETUP.EXE**

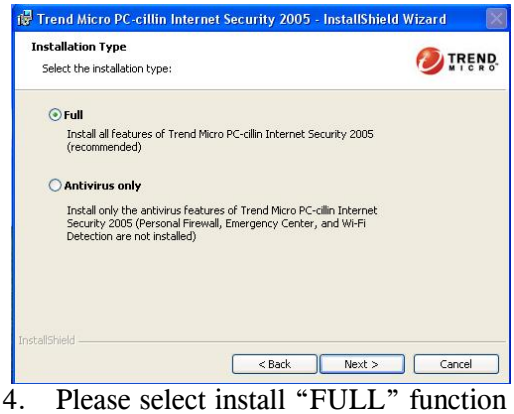
## 4-7 PC-CILLIN Install PC-CILLIN 2005 Anti-virus program


1. Click PC-CILLIN when MAGIC INSTALL MENU appear

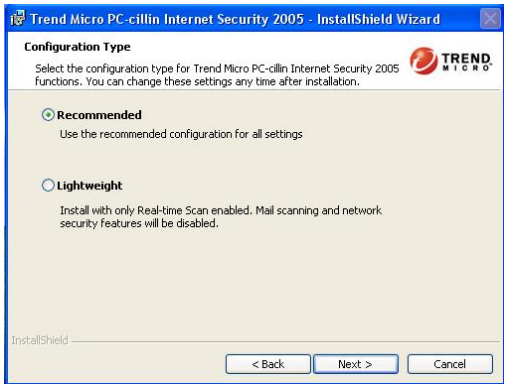

2. Please select “Install program” when the "Trend Micro internet security" installshield wizard windows appear



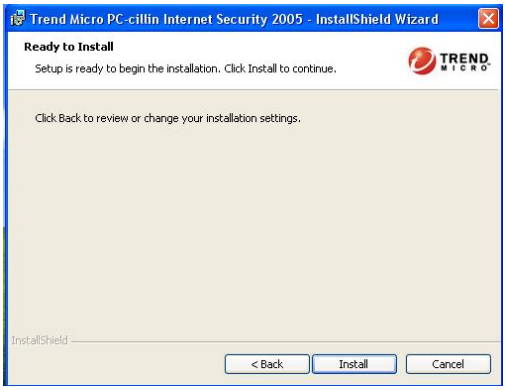

3. Click NEXT and Enter your Customer Information, Click NEXT or choose Change to change the path for the file to be stored




4. Please select install “FULL” function or install “Antivirus software” only




5. We suggest to use “Recommend configuration”.




6. Click Install , start install Pccillin 2005 internet security software , after finish Installation , please select restart your computer

**Note : Please install ACROBAT READER, Before you read PC-CILLIN 2004 User Manual, the path at X:\acrobat\adberdr6_enu_full.exe**

# 4-8 HOW TO DISABLE ON-BOARD SOUND

Enter BIOS SETUP choose INTEGRATE PERIPHERALS choose ON-CHIP DEVICE FUNCTION choose AC97 SOUND DEVICE

Disable on-board sound function by press PAGE DOWN KEY to Disable

# 4-9 Pro Magic Plus Function Introduction

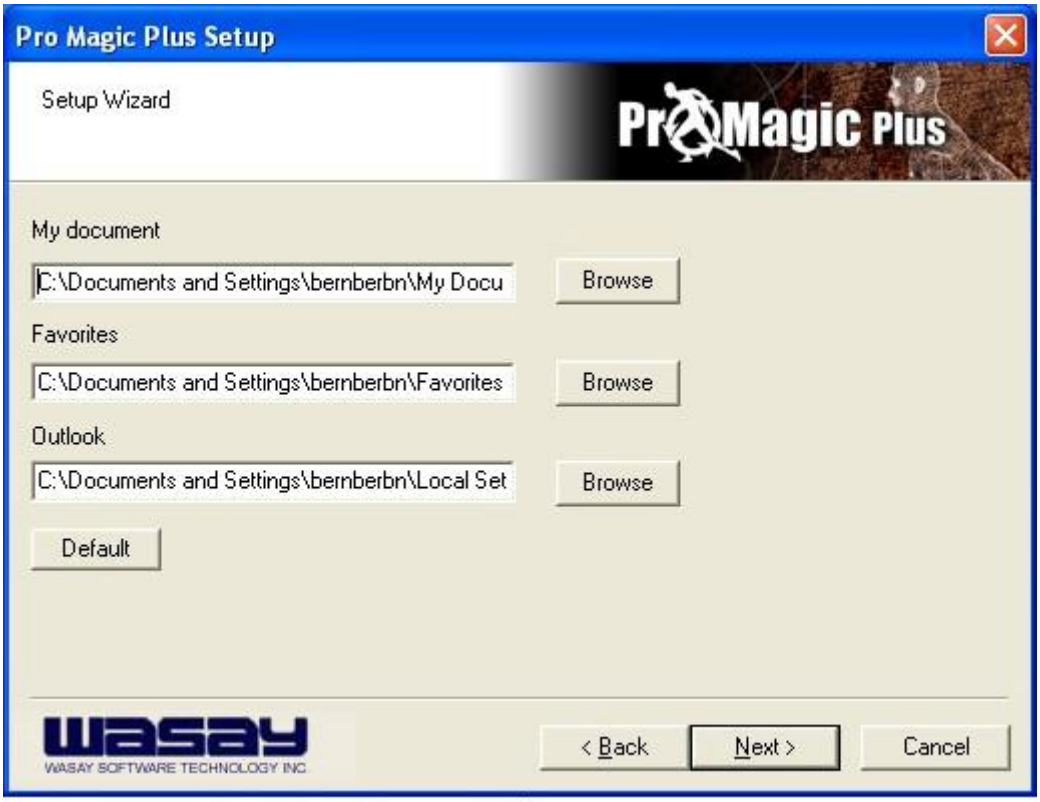
## What's Pro Magic Plus?

Tired with reinstall OS each time when it doesn't work? Does your computer often crash down or unable to work after installed new software? Have you had great loses and troubles because of computer problems? Still using time-consuming backup software that occupies lots of HD space?

Pro Magic Plus- an instant system recovery software tailored to solve these problems for you. It combines various application tools (e.g. anti-virus, backup software, uninstall software, multi-boot software) to satisfy your needs of all sorts of system protections.

## What functions does Pro Magic Plus have?

1. **Instant System Restoration** – Regardless of mis-operation or system crash, install Pro Magic Plus beforehand would allow you to instantly restore your system back by simply reboot your computer.
2. **Easy-to-use** – Auto installation from CD ROM; Supports Mouse
3. **System Uninstall** – Pro Magic provides a protection mode, which allows user to freely test any software. If user does not want to keep the software, just reboot the computer to restore back to the previous state, and Pro Magic will remove it completely from you computer.
4. **Password Security** – Pro Magic provides double password protection, including user password for entering each OS and manager password for managing 'Pro Magic', which can effectively prevent others from using your computer without permission or data from being stolen. (disable item for OEM version)
5. **Complete Protection** – Pro Magic not only protects the system disk, but also can protect your data disk, and does not require to reboot when backup or restore data disk.
6. **Multipoint Save/Restore** – You can backup your system whenever you need and restore them back to anytime you wish, 1 hour, 1 day or 1 month ago. Restore points are unlimited. (disable item for OEM version)
7. **Data Disk Protection** – Pro Magic Plus now comes with data disk protection, provides complete protection for your computer! (disable item for OEM version)
8. **You can choose to change the default path of 'My Document', 'My Favorite' and 'Outlook Express'**, so that when you are restoring the system, data in these folders will not be restored as well. (This is optional, you can leave it as it is).




graph 4

**NOTE:** Functions of each version will differ from each other, and will be based on the function descriptions of each version.

## System Requirements

- First OS must be Windows 98 SE/ME/2000/XP
- Support Only Windows OS (No Linux)
- Windows server OS and Windows NT not supported
- Minimum of Intel 486 or above, 16MB of memory or above
- Minimum of 500MB free/usable space or above
- Support for SCSI & SATA Hard disk

*Pro Magic Plus only supports SCSI hard disk with Windows 2000 or OS above*

## Notice Before Installation

1. Before install Pro Magic Plus, turn off all anti-virus software. (Include BIOS anti-virus function)
2. Pro Magic Plus does not support multiple PRI partitions. If you have multiple PRI partitions, please repartition your HD before installation.
3. If your HDD is not fully partitioned (with un-partitioned/unused space at end of HDD), please repartition the HDD before install Pro Magic Plus.

# APPENDIX

## Debug Port Post Code

### *Normal POST Codes*

***NOTE:*** **EISA POST codes are typically output to port address 300h.**

**ISA POST codes are output to port address 80h.**

| Code(hex) | Name | Description |
|---|---|---|
| C0 | Turn Off Chipset And CPU test | OEM Specific-Cache control cache Processor Status (1FLAGS) Verification. Tests the following processor status flags: Carry, zero, sign, overflow, The BIOS sets each flag, verifies They are set, then turns each flag off and verifies it is off. Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FF and 00. RAM must be periodically refreshed to keep the memory from decaying. This function ensures that the memory refresh function is working properly. |
| C1 | Memory Presence | First block memory detect OEM Specific-Test to size on-board memory. Early chip set initialization Memory presence test OEM chip set routines Clear low 64K of memory Test first 64K memory. |
| C2 | Early Memory Initialization | OEM Specific- Board Initialization |
| C3 | Extend Memory DRAM select | OEM Specific- Turn on extended memory Initialization Cyrix CPU initialization Cache initialization |
| C4 | Special Display Handling | OEM Specific- Display/Video Switch Handling so that Switch Handling display switch errors never occurs |
| C5 | Early Shadow | OEM specific- Early shadow enable for fast boot |
| C6 | Cache presence test | External cache size detection |
| CF | CMOS Check | CMOS checkup |
| B0 | Spurious | If interrupt occurs in protected mode. |
| B1 | Unclaimed NMI | If unmasked NMI occurs, display Press F1 to disable NMI, F2 reboot. |
| BF | Program Chip Set | To program chipset from defaults values |
| E1-EF | Setup Pages | E1- Page 1, E2 - Page 2, etc. |
| 1 | Force load Default to chipset | Chipset defaults program |
| 2 | Reserved | |
| 3 | Early Superio Init | Early Initialized the super IO |

| Code(hex) | Name | Description |
|---|---|---|
| 4 | Reserved | |
| 5 | Blank video | Reset Video controller |
| 6 | Reserved | |
| 7 | Init KBC | Keyboard controller init |
| 8 | KB test | Test the Keyboard |
| 9 | Reserved | |
| A | Mouse Init | Initialized the mouse |
| B | Onboard Audio init | Onboard audio controller initialize if exist |
| C | Reserved | |
| D | Reserved | |
| E | CheckSum Check | Check the intergraty of the ROM,BIOS and message |
| F | Reserved | |
| 10 | Auto detec EEPROM | Check Flash type and copy flash write/erase routines to 0F000h segments |
| 11 | Reserved | |
| 12 | Cmos Check | Check Cmos Circuitry and reset CMOS |
| 13 | Reserved | |
| 14 | Chipset Default load | Program the chipset registers with CMOS values |
| 15 | Reserved | |
| 16 | Clock Init | Init onboard clock generator |
| 17 | Reserved | |
| 18 | Identify the CPU | Check the CPU ID and init L1/L2 cache |
| 19 | Reserved | |
| 1A | Reserved | |
| 1B | Setup Interrupt Vector Table | Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL |
| 1C | Reserved | |
| 1D | Early PM Init | First step initialize if single CPU onboard |
| 1E | Reserved | |
| 1F | Re-initial KB | Re-init KB |
| 20 | Reserved | |
| 21 | HPM init | If support HPM, HPM get initialized here |
| 22 | Reserved | |
| 23 | Test CMOS Interface and Battery Status | Verifies CMOS is working correctly, detects bad battery. If failed, load CMOS defaults and load into chipset |
| 24 | Reserved | |
| 25 | Reserved | |
| 26 | Reserved | |
| 27 | KBC final Init | Final Initial KBC and setup BIOS data area |
| 28 | Reserved | |
| 29 | Initialize Video Interface | Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter. |
| 2A | Reserved | |
| 2B | Reserved | |
| 2C | Reserved | |
| 2D | Video memory test | Test video memory, write sign-on message to screen. |
| 2E | Reserved | Setup shadow RAM – Enable shadow according to Setup. |

| Code(hex) | Name | Description |
|---|---|---|
| 2F | Reserved | |
| 30 | Reserved | |
| 31 | Reserved | |
| 32 | Reserved | |
| 33 | PS2 Mouse setup | Setup PS2 Mouse and reset KB |
| 34 | Reserved | |
| 35 | Test DMA Controller 0 | Test DMA channel 0 |
| 36 | Reserved | |
| 37 | Test DMA Controller 1 | Test DMA channel 1 |
| 38 | Reserved | |
| 39 | Test DMA Page Registers | Test DMA Page Registers. |
| 3A | Reserved | |
| 3B | Reserved | |
| 3C | Test Timer Counter 2 | Test 8254 Timer 0 Counter 2. |
| 3D | Reserved | |
| 3E | Test 8259-1 Mask Bits | Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines. |
| 3F | Reserved | |
| 40 | Test 8259-2 Mask Bits | Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines. |
| 41 | Reserved | |
| 42 | Reserved | |
| 43 | Test Stuck8259's Interrupt Bits Test 8259 Interrupt Functionality | Turn off interrupts then verify no interrupt mask register is on. Force an interrupt and verify the interrupt occurred. |
| 44 | Reserved | |
| 45 | Reserved | |
| 46 | Reserved | |
| 47 | Set EISA Mode | If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests an clear EISA mode flag. |
| 48 | Reserved | |
| 49 | Size Base and Extended Memory | Size base memory from 256K to 640K and extended memory above 1MB. |
| 4A | Reserved | |
| 4B | Reserved | |
| 4C | Reserved | |
| 4D | Reserved | |
| 4E | Test Base and Extended Memory | Test base memory from 256K to 640K and extended memory above 1MB using various patterns.<br><br>NOTE: This test is skipped in EISA mode and can be skipped with ESC key in ISA mode. |
| 4F | Reserved | |
| 50 | USB init | Initialize USB controller |
| 51 | Reserved | |

| Code(hex) | Name | Description |
|---|---|---|
| 52 | Memory Test | Test all memory of memory above 1MB using Virtual 8086 mode, page mode and clear the memory |
| 53 | Reserved | |
| 54 | Reserved | |
| 55 | CPU display | Detect CPU speed and display CPU vendor specific version string and turn on all necessary CPU features |
| 56 | Reserved | |
| 57 | PnP Init | Display PnP logo and PnP early init |
| 58 | Reserved | |
| 59 | Setup Virus Protect | Setup virus protect according to Setup |
| 5A | Reserved | |
| 5B | Awdflash Load | If required, will auto load Awdflash.exe in POST |
| 5C | Reserved | |
| 5D | Onboard I/O Init | Initializing onboard superIO |
| 5E | Reserved | |
| 5F | Reserved | |
| 60 | Setup enable | Display setup message and enable setup functions |
| 61 | Reserved | |
| 62 | Reserved | |
| 63 | Initialize & Install Mouse | Detect if mouse is present, initialize mouse, install interrupt vectors. |
| 64 | Reserved | |
| 65 | PS2 Mouse special | Special treatment to PS2 Mouse port |
| 66 | Reserved | |
| 67 | ACPI init | ACPI sub-system initializing |
| 68 | Reserved | |
| 69 | Setup Cache Controller | Initialize cache controller. |
| 6A | Reserved | |
| 6B | Setup Entering | Enter setup check and auto-configuration check up |
| 6C | Reserved | |
| 6D | Initialize Floppy Drive & Controller | Initialize floppy disk drive controller and any drives. |
| 6E | Reserved | |
| 6F | FDD install | Install FDD and setup BIOS data area parameters |
| 70 | Reserved | |
| 71 | Reserved | |
| 72 | Reserved | |
| 73 | Initialize Hard Drive & Controller | Initialize hard drive controller and any drives. |
| 74 | Reserved | |
| 75 | Install HDD | IDE device detection and install |
| 76 | Reserved | |
| 77 | Detect & Initialize Serial/Parallel Ports | Initialize any serial and parallel ports (also game port). |

| Code(hex) | Name | Description |
|---|---|---|
| 78 | Reserved | |
| 79 | Reserved | |
| 7A | Detect & Initialize Math Coprocessor | Initialize math coprocessor. |
| 7B | Reserved | |
| 7C | HDD Check for Write protection | HDD check out |
| 7D | Reserved | |
| 7E | Reserved | |
| 7F | POST error check | Check POST error and display them and ask for user intervention |
| 80 | Reserved | |
| 81 | Reserved | |
| 82 | Security Check | Ask password security (optional). |
| 83 | Write CMOS | Write all CMOS values back to RAM and clear screen. |
| 84 | Pre-boot Enable | Enable parity checker<br>Enable NMI, Enable cache before boot. |
| 85 | Initialize | Initialize any option ROMs present<br>Option ROMs from C8000h to EFFFFh.<br>NOTE: When FSCAN option is enabled, ROMs initialize from C8000h to F7FFFh. |
| 86 | Reserved | |
| 87 | Reserved | |
| 88 | Reserved | |
| 89 | Reserved | |
| 8A | Reserved | |
| 8B | Reserved | |
| 8C | Reserved | |
| 8D | Reserved | |
| 8E | Reserved | |
| 8F | Reserved | |
| 90 | Reserved | |
| 91 | Reserved | |
| 92 | Reserved | |
| 93 | Boot Medium detection | Read and store boot partition head and cylinders values in RAM |
| 94 | Final Init | Final init for last micro details before boot |
| 95 | Special KBC patch | Set system speed for boot<br>Setup NumLock status according to Setup |
| 96 | Boot Attempt | Set low stack<br>Boot via INT 19h. |
| FF | Boot | |

# *Quick POST Codes*

| Code(hex) | Name | Description |
|---|---|---|
| 65 | Init onboard device | Early Initialized the super IO<br>Reset Video controller<br>Keyboard controller init<br>Test the Keyboard Initialized the mouse Onboard audio controller initialize if exist. Check the intergraty of the ROM, BIOS and message Check Flash type and copy flash write/erase routines to 0F000h segments Check Cmos Circuitry and reset CMOS Program the chipset registers with CMOS values<br>Init onboard clock generator |
| 66 | Early System setup | Check the CPU ID and init L1/L2 cache<br>Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize<br>INT 00h-1Fh according to INT_TBL<br>First step initialize if single CPU onboard. Re-init KB<br>If support HPM, HPM get initialized here |
| 67 | KBC and CMOS Init | Verifies CMOS is working correctly, detects bad battery. If failed, load CMOS defaults and load into chipset<br>Final Initial KBC and setup BIOS data area. |
| 68 | Video Init | Read CMOS location 14h to find out type of video in use.<br>Detect and Initialize Video Adapter.<br>Test video memory, write sign-on message to screen.<br>Setup shadow RAM - Enable shadow according to Setup. |
| 69 | 8259 Init | Init 8259 channel 1 and mask IRQ 9 |
| 6A | Memory test | Quick Memory Test |
| 6B | CPU Detect and IO init | Detect CPU speed and display<br>CPU vendor specific version string and turn on all necessary CPU features<br>Display PnP logo and PnP early init<br>Setup virus protect according to Setup. If required, will auto load Awdflash.exe in POST<br>Initializing onboard superIO |
| 6C | Reserved | |
| 6D | Reserved | |
| 6E | Reserved | |
| 6F | Reserved | |
| 70 | Setup Init | Display setup message and enable setup functions Detect if mouse is present, initialize mouse, install interrupt vectors. Special treatment to PS2 Mouse port<br>ACPI sub-system initializing |
| 71 | Setup Cache Controller | Initialize cache controller. |

| Code(hex) | Name | Description |
|---|---|---|
| 72 | Install FDD | Enter setup check and auto-configuration check up<br>Initialize floppy disk drive controller and any drives.<br>Install FDD and setup BIOS data area parameters |
| 73 | Install HDD | Initialize hard drive controller and any drives.<br>IDE device detection and install<br>Initialize any serial and parallel ports (also game port). |
| 74 | Detect & Initialize Math Coprocessor | Initialize math coprocessor. |
| 75 | HDD Check for Write protection | HDD check out |
| 76 | Reserved | |
| 77 | Display POST error | Check POST error and display them and ask for user intervention<br>Ask password security (optional). |
| 78 | CMOS and Option ROM Init | Write all CMOS values back to RAM and clear screen.<br>Enable parity checker<br>Enable NMI, Enable cache before boot.<br>Initialize any option ROMs present from C8000h to EFFFFh.<br>NOTE: When FSCAN option is enabled, ROMs initialize from C8000h to F7FFFh. |
| 79 | Reserved | |
| 7A | Reserved | |
| 7B | Reserved | |
| 7C | Reserved | |
| 7D | Boot Medium detection | Read and store boot partition head and cylinders values in RAM |
| 7E | Final Init | Final init for last micro details before boot |
| 7F | Special KBC patch | Set system speed for boot<br>Setup NumLock status according to Setup |
| 80 | Boot Attempt | Set low stack<br>Boot via INT 19h. |
| FF | Boot | |

# *S4 POST Codes*

| Code(hex) | Name | Description |
|---|---|---|
| 5A | Early Chipset Init | Early Initialized the super IO<br>Reset Video controller<br>Keyboard controller init<br>Test the Keyboard<br>Initilized the mouse |
| 5B | Cmos Check | Check Cmos Circuitry and reset CMOS |
| 5C | Chipset default Prog | Program the chipset registers with CMOS values. Init onboard clock generator |
| 5D | Identify the CPU | Check the CPU ID and init L1/L2 cache |

| Code(hex) | Name | Description |
|---|---|---|
| 5E | Setup Interrupt Vector Table | Initialize first 120 interrupt vectors with SPURIOUS_INT_HDLR and INT 00h-1Fh according to INT_TBL First step initialize if single CPU Onboard. Re-init KB If support HPM, HPM get initialized Here. |
| 5F | Test CMOS Interface and Battery status | Verifies CMOS is working correctly, detects bad battery. If failed, load CMOS defaults and load into chipset |
| 60 | KBC final Init | Final Initial KBC and setup BIOS data area |
| 61 | Initialize Video Interface | Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter. |
| 62 | Video memory test | Test video memory, write sign-on message to screen. Setup shadow RAM - Enable shadow according to Setup. |
| 63 | Setup PS2 mouse and test DMA | Setup PS2 Mouse and reset KB Test DMA channel 0 |
| 64 | Test 8259 | Test 8259 channel 1 and mask IRQ 9 |
| 65 | Init Boot Device | Detect if mouse is present, initialize mouse, install interrupt vectors. Special treatment to PS2 Mouse port ACPI sub-system initializing Initialize cache controller. |
| 66 | Install Boot Devices | Enter setup check and auto-configuration check up Initialize floppy disk drive controller and any drives. Install FDD and setup BIOS data area Parameters Initialize hard drive controller and any drives. IDE device detection and install |
| 67 | Cache Init | Cache init and USB init |
| 68 | PM init | PM initialization |
| 69 | PM final Init and issue SMI | Final init Before resume |
| FF | Full on | |

# *BootBlock POST Codes*

| Code(hex) | Name | Description |
|---|---|---|
| 1 | Base memory test | Clear base memory area (0000:0000--9000:ffffh) |
| 5 | KB init | Initialized KBC |
| 12 | Install interrupt vectors | Install int. vector (0-77), and initialized 00-1fh to their proper place |
| 0D | Init Video | Video initializing |
| 41 | Init FDD | Scan floppy and media capacity for onboard superIO |
| FF | Boot | Load boot sector |