

# ***845E PRO***

## ***USER'S MANUAL***

***M/B For Socket 478 Pentium 4 Processor***

***NO. G03-845EPR2A***

***Release date: July 2002***

**Trademark:**

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## Manual Revision Information

| Reversion | Revision History | Date      |
|-----------|------------------|-----------|
| 2.0       | Second Edition   | July 2002 |

## Item Checklist

- 845E PRO
- Cable for IDE/Floppy
- CD for motherboard utilities
- Cable for USB Port 3/4 (Option)
- 845E PRO User's Manual

## Intel Pentium 4 Processor Family

### Cooling Solutions

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly crucial when building computer systems. Maintaining the proper thermal environment is key to reliable, long-term system operation. The overall goal in providing the proper thermal environment is keeping the processor below its specified maximum case temperature. Heatsinks induce improved processor heat dissipation through increased surface area and concentrated airflow from attached fans. In addition, interface materials allow effective transfers of heat from the processor to the heatsink. For optimum heat transfer, Intel recommends the use of thermal grease and mounting clips to attach the heatsink to the processor.

When selecting a thermal solution for your system, please refer to the website below for collection of heatsinks evaluated and recommended by Intel for use with Intel processors. Note, those heatsinks are recommended for maintaining the specified Maximum T case requirement. In addition, this collection is not intended to be a comprehensive listing of all heatsinks that support Intel processors.

For vendor list of heatsink and fan, please visit :

<http://developer.intel.com/design/Pentium4/components/index>

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# Chapter 1

## Introduction of 845E PRO Motherboard

### 1-1 Feature of motherboard

The 845E PRO motherboard is design for use Intel Pentium 4 Processor in 478 Pin Package/Northwood Processor with the Intel 845E Chipset delivers a high performance and professional desktop platform solution. Which utilize the Socket 478 design and the memory size expandable to 2.0GB.

This motherboard use the newest Intel 845E Chipset Supports 533MHz System Bus in data transfer rate and 133MHz DRAM clock frequency support DDR266/ SDRAM. The motherboard offers two extra ATA133 IDE interface to provide speedier HDD throughout that boosts overall system performance.

The motherboard also has an integrated AC'97 2.1 CODEC on board support 4-channel 3D Surround & Positioning, which is fully compatible with Sound Blaster Pro® that gives you the best sound quality and compatibility.

For those wanting even greater graphic performance, an AGP 4X slot is included on the board. **(For 1.5V AGP card only. No for 3.3V or Universal AGP card).**

With USB2.0 controller as well as capability of expanding to 6 USB function ports, the 845E PRO meet future USB demand also this motherboard has built-in hardware monitor function. This will monitor and protect your computer.

The 845E PRO motherboard provides special function in BIOS Setup to setting CPU Host clock step by step increasing let users to approach over clocking.

845E PRO provides high performance & meets future specification demand. It is really wise choice for your computer.

### 1-2 Specification

| <b>Spec</b>                            | <b>Description</b>  |
|--|---|
| <b>Design</b>                          | * ATX form factor 4 layers PCB size: 30.5x24.4cm  |
| <b>Chipset</b>                         | * Intel 845E Memory Controller Hub (MCH) Chipset<br>* Intel 82801DB I/O Controller Hub (ICH4) Chipset   |
| <b>CPU Socket</b><br>(mPGA478B Socket) | * Support Intel Pentium 4 478 Pin package utilizes Flip-Chip Pin Grid Array (FC-PGA2) package processor<br>* Support 1.5G~2.4G 400/533 MHz F.S.B. 478 Pin Pentium 4 processor<br>* Reserves support for future Intel Pentium 4 processors                   |
| <b>Memory Socket</b>                   | * 184-pin DDR SDRAM module socket x2<br>* Support DDR266/DDR200 DRAM<br>* Expandable to 2.0GB   |
| <b>Expansion Slot &amp; Headers</b>    | * AGP slot x1 for AGP 1.5V standard only, support AGP 2.0 & 4X mode<br>* 32-bit PCI slot x5<br>* CNR slot x1  |
| <b>Integrate IDE</b>                   | * Two PCI IDE controllers support PCI Bus Mastering, ATA PIO/DMA and the ULTRA DMA 33/66/100 functions that deliver the data transfer rate up to 100 MB/s   |
| <b>ATA-133 Support</b>                 | * Promise PDC20275 IDE ATA133 Controller chip<br>* Supports extra 2 channel ATA133 IDE interface  |
| <b>Audio</b>                           | * AC'97 Digital Audio controller integrated<br>* AC'97 Audio CODEC on board<br>* Audio driver and utility included  |
| <b>BIOS</b>                            | * Award 2MB Flash ROM   |
| <b>Multi I/O</b>                       | * 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 connector x2<br>* USB2.0 headers x4 (connecting cable option)<br>* Audio connector (Line-in, Line-out, MIC & Game Port) |

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## 1-3 Performance List

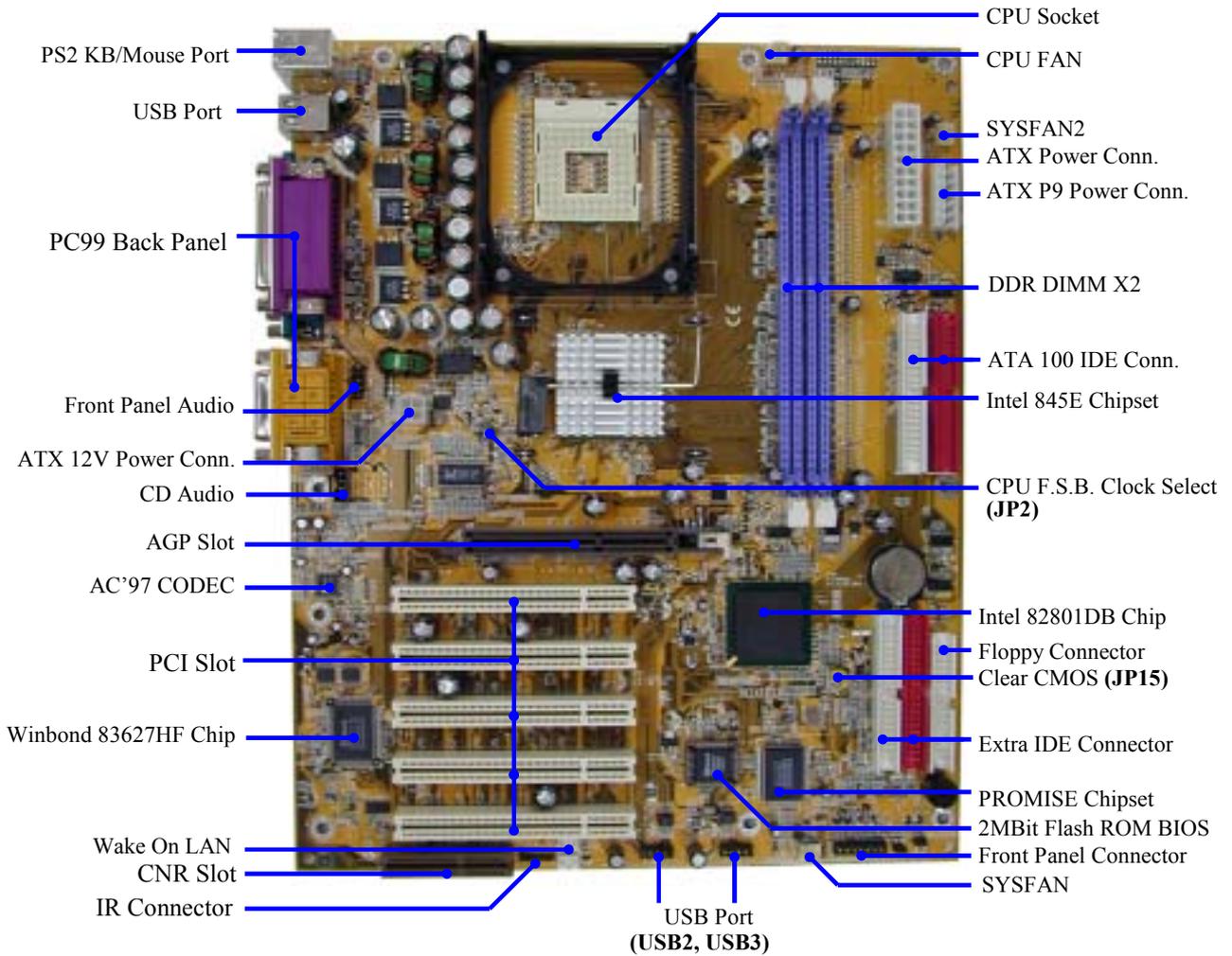
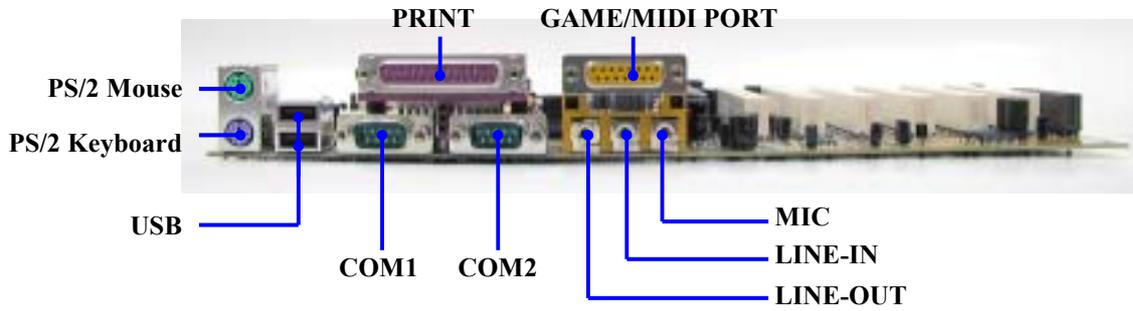
The following performance data list is the testing result of some popular benchmark testing programs. These data are just referred by users, and there is no responsibility for different testing data values gotten by users (the different Hardware & Software configuration will result in different benchmark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

### Performance Test Report

**CPU:** Intel Pentium 4 1.9GHz mPGAB package  
**DRAM:** 256MB DDR266 SDRAM x1 (SAMSUNG K4H280838B-TCB0)  
256MB DDR333 SDRAM x1 (MICRON 46V16M8)  
**VGA Expansion Card:** NVIDIA Geforce2 MX400-64MB (1024x768 Hi-color) Driver  
**Hard Disk Driver:** IBM DTLA-305040 (ATA-100)  
**BIOS:** Award Optimal default  
**OS:** Win 98SE

|  | <b>Pentium 4 1.9GHz</b> |             |
|--|-------------------------|-------------|
| <b>3D Mark 2000</b>  | 5426                    |             |
| <b>3D Mark 2001SE</b>  | 2550                    |             |
| <b>3D Winbench 2000</b>  | 104                     |             |
| <b>Final Reality</b>   | 10.29                   |             |
| <b>Content Creation Winstone 2000</b>  | 45.6                    |             |
| <b>Content Creation Winstone 2001</b>  | 52.6                    |             |
| <b>Content Creation Winstone 2002</b>  | 19.6                    |             |
| <b>Business Winstone 2001</b>  | 44.8                    |             |
| <b>Winbench 99:</b>  |                         |             |
| CPU Mark 99  | 109                     |             |
| FPU Winmark 99   | 6620                    |             |
| Business Disk Winmark99  | 4980                    |             |
| Hi-end Disk Winmark99  | 17000                   |             |
| Business Graphic Winmark   | 431                     |             |
| Hi-end Graphic Winmark   | 1260                    |             |
| <b>SYS Mark 2000/2001 : SISMark 2000/2001 Rating (Internet Content Creation / Office Productivity)</b> |                         |             |
| SISMark 2000   | 216 (234/204)           |             |
| SISMark 2001   | 154 (174/137)           |             |
| <b>SISOFT Sandra 2002 :</b>  |                         |             |
| Dhrystone ALU  | MIPS                    | 3576        |
| Whetstone FPU  | MFLOPS                  | 1143/2358   |
| RAM Int Buffered iSSE2   | MB/S                    | 2035        |
| RAM Float Buffered iSSE2   | MB/S                    | 1944        |
| Integer SSE2   | IT/S                    | 7565        |
| Floating-Point SSE2  | IT/S                    | 9217        |
| QUAKE3 DEMO1   | FPS                     | 169.4       |
| DEMO2  | FPS                     | 169.5       |
| WCPUID System / CPU Clock  |                         | 101/1918.92 |

# 1-4 Layout Diagram & Jumper Setting



## Jumpers

| <b>Jumper</b> | <b>Name</b>               | <b>Description</b> | <b>Page</b> |
|---------------|---------------------------|--------------------|-------------|
| JP2           | CPU Front Side Bus Select | 4-pin Block        | P.7         |
| JP15          | CMOS RAM Clear            | 3-pin Block        | P.7         |

### **Connectors**

| <b>Connector</b> | <b>Name</b>                          | <b>Description</b>              | <b>Page</b> |
|------------------|--------------------------------------|---------------------------------|-------------|
| ATXPWR           | ATX Power Connector                  | 20-pin Block                    | P.13        |
| ATX12V           | ATX 12V Power Connector              | 4-pin Block                     | P.13        |
| ATXP9            | ATX P9 Power Connector               | 6-pin Block                     | P.13        |
| PS2 KB/MOUSE     | PS/2 Mouse & PS/2 Keyboard Connector | 6-pin Female                    | P.13        |
| USB1             | USB Port Connector                   | 4-pin Connector                 | P.13        |
| PRINT            | Parallel Port Connector              | 25-pin Female                   | P.14        |
| AUD_GAME         | Audio/Game Connector                 | 3 phone jack + 15-pin Connector | P.14        |
| COM1/COM2        | Serial Port COM1/2 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        |
| IDE3/IDE4        | Extra IDE RAID Connector             | 40-pin Block                    | P.15        |

### **Headers**

| <b>Header</b>           | <b>Name</b>                | <b>Description</b> | <b>Page</b> |
|-------------------------|----------------------------|--------------------|-------------|
| AUDIO                   | Line-In/Out, MIC header    | 9-pin Block        | P.15        |
| USB2, USB3              | USB Port Headers           | 9-pin Block        | P.16        |
| IDE LED                 | IDE activity LED           | 2-pin Block        | P.16        |
| TURBO LED               | Turbo LED switch           | 2-pin Block        | P.16        |
| RESET                   | Reset switch lead          | 2-pin Block        | P.16        |
| SPEAKER                 | Speaker connector          | 4-pin Block        | P.16        |
| PWR-LED                 | Power LED                  | 2-pin Block        | P.16        |
| PWR BTN                 | Power switch               | 2-pin Block        | P.16        |
| WOL                     | Wake On-LAN Headers        | 3-pin Block        | P.17        |
| SYSFAN, SYSFAN2, CPUFAN | FAN Speed Headers          | 3-pin Block        | P.17        |
| IR                      | IR infrared module Headers | 5-pin Block        | P.17        |
| CDIN                    | CD Audio-In Headers        | 4-pin Block        | P.18        |

### **Expansion Sockets**

| <b>Socket/Slot</b> | <b>Name</b>       | <b>Description</b>                        | <b>Page</b> |
|--------------------|-------------------|---|-------------|
| ZIF Socket 478     | CPU Socket        | 478-pin mPGAB CPU Socket                  | P.9         |
| DDR1, DDR2         | DDR Module Socket | 184-pin DDR SDRAM Module Expansion Socket | P.9         |
| PCI1 ~ PCI5        | PCI Slot          | 32-bit PCI Local Bus Expansion Slots      | P.10        |
| AGP                | AGP 4X Mode Slot  | AGP Expansion Slot                        | P.12        |
| CNR                | CNR Slot          | Communication Network Riser Slot          |             |

## **Chapter 2**

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# Hardware installation

## 2-1 Hardware installation Steps

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

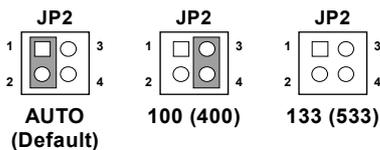
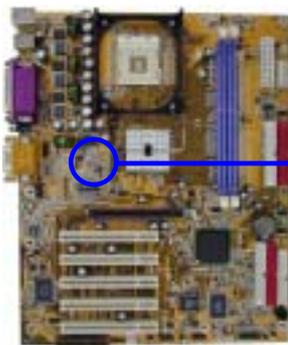
1. Check motherboard jumper setting
2. Install CPU and Fan
3. Install System Memory (DIMM)
4. Install Expansion cards
5. Connect IDE and Floppy cables, Front Panel /Back Panel cable
6. Connect ATX Power cable
7. Power-On and Load Standard Default
8. Reboot
9. Install Operating System
10. Install Driver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

## 2-2 Checking Motherboard's Jumper Setting

### (1) CPU Front Side Bus Select: JP2

By JP2 selector you can choose CPU Front Side Bus 400MHz/533MHz the Default setting is Auto.

| F.S.B.         | JP2 |     |
|----------------|-----|-----|
|                | 1-2 | 3-4 |
| AUTO (Default) | ON  | OFF |
| 100 (400)      | OFF | ON  |
| 133 (533)      | OFF | OFF |



CPU Front Side Bus Select

### (2) CMOS RAM Clear (3-pin) : JP15

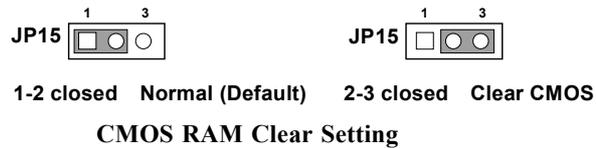
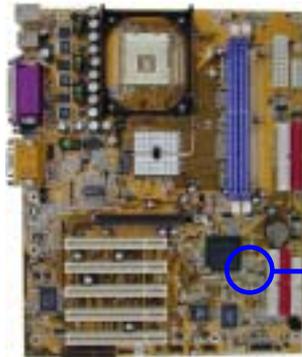
A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JP15 to store the CMOS data.

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 JP15 and short pins 2-3 for a few seconds
4. Return JP15 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*



## 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 devices, and adapter cards.

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

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

**AGP - Accelerated Graphics Port** - a high speed interface for video cards; runs at 1X (66MHz), 2X (133MHz), or 4X (266MHz).

**PCI - Peripheral Component Interconnect** - a high speed interface for video cards, sound cards, network interface cards, and modems; runs at 33MHz.

**ISA - Industry Standard Architecture** - 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 - Universal Serial Bus** - 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) - **Local Area Network** - the interface to your local area network.

**BIOS (Basic Input/Output System)** - 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, normally Athlon CPU has 256K or above, while Duron will have 64K.

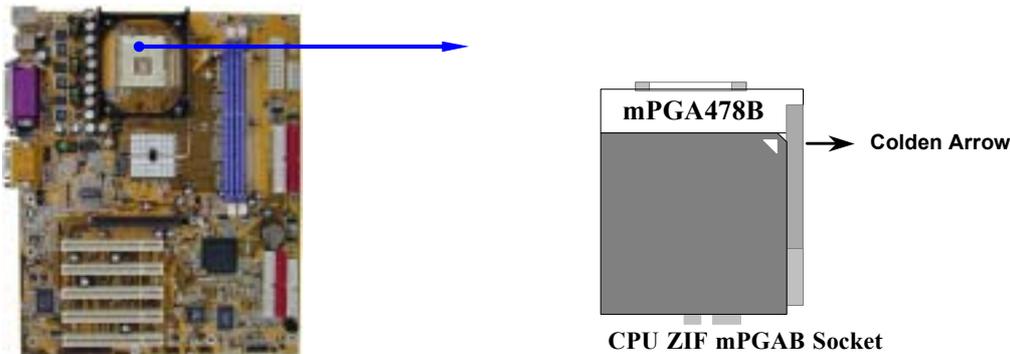
### 2-3-2 About Intel Pentium 4 478-pin CPU

This motherboard provides a 478-pin surface mount, Zero Insertion Force (ZIF) socket, referred to as the mPGA478B socket supports Intel Pentium 4 processor in the 478 Pin package utilizes Flip-Chip Pin Grid Array (FC-PGA2) 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.



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 DUAL INLINE MEMORY MODULES (DIMM) sites for memory expansion available from minimum memory size of 64MB to maximum memory size of 2.0GB DDR SDRAM.

### Valid Memory Configurations

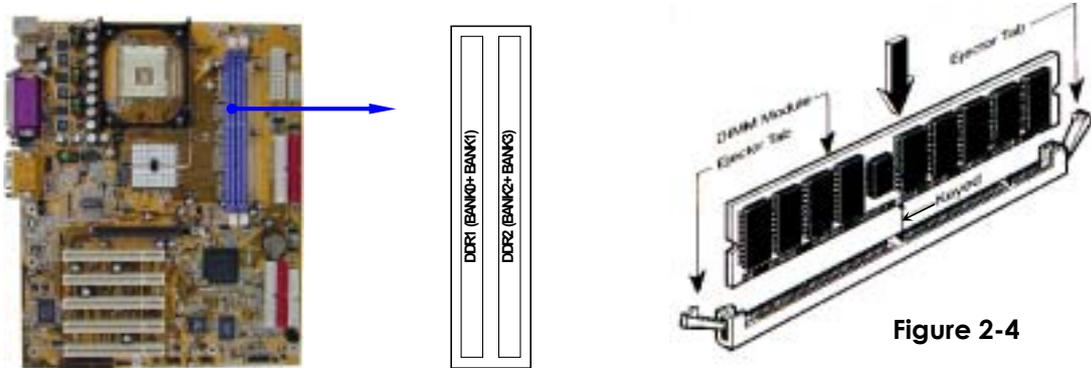
| Bank             | 184-Pin DIMM                      |    | Total Memory |
|------------------|-----------------------------------|----|--------------|
| Bank 0, 1 (DDR1) | DDR200/DDR266<br>DDR SDRAM Module | X1 | 64MB~1.0GB   |
| Bank 2, 3 (DDR2) | DDR200/DDR266<br>DDR SDRAM Module | X1 | 64MB~1.0GB   |
| Total            | System Memory (Max. 2.0GB)        | 2  | 64MB~2.0GB   |

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**NOTE!** Make sure the installed memory are DDR266 SDRAM support 133MHz memory clock, otherwise the system may hang during startup.

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/DDR200 DDR SDRAM module looks like.



**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 indentation on both sides.

**WARNING!** For the DDR SDRAM CLOCK is set at 133MHz, use only DDR266-compliant DDR Modules. When this motherboard operate at 133Mhz, most system will not even boot if non-compliant modules are used because of the strict timing issues, if your DDR Modules are not DDR266-compliant, set the DDR SDRAM clock to 100MHz 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        |       |       | √     |       |       |       |       |       |
| Slot 4        |       |       |       | √     |       |       |       |       |
| Slot 5        |       |       |       |       | √     |       |       |       |
| Onboard USB 1 | √     |       |       |       |       |       |       |       |
| Onboard USB 2 |       |       |       | √     |       |       |       |       |
| Onboard USB 3 |       |       | √     |       |       |       |       |       |
| 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 AGP Slot

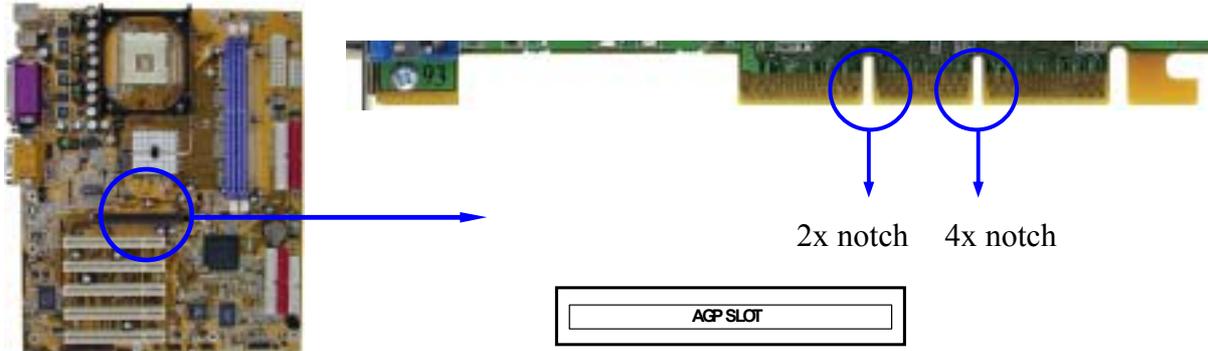
This motherboard provides an AGP Slot, only support the 1.5V 4X AGP VGA card.

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Do not use AGP 2X card (3.3V) in this motherboard. It will burn and damage the motherboard due to Intel® 845 chipset can not support AGP 2X (3.3V).

**IMPORTANT!** Before you plug-in AGP card, please make sure the following notice is fully understood and practiced. If your AGP card has “AGP 4X notch (show below) please make sure your AGP card is AGP 4X (1.5V) not AGP 2X (3.3V)



**Example 1:** SiS 305 & ATi Rage 128 Pro AGP card those golden finger is compatible with 2X/4X mode AGP slot, but only can support 2X (3.3V) only. If you install these cards in Intel® 845 based motherboard it will burn and damage the motherboard.

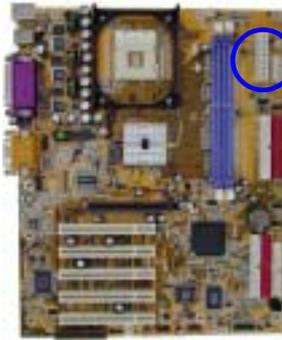
**Example 2:** We also find Diamond Vipper V770 golden finger is design for 2X/4X mode AGP Slot. It can be adjusted the jumper for AGP 2X (3.3V) or AGP 4X (1.5V). But the factory default setting is 2X (3.3V). If you install this AGP card in motherboard without change the jumper setting to 4X (1.5V), it will burn the motherboard.

## 2-6 Connectors, Headers

### 2-6-1 Connectors

#### (1) Power Connector (20-pin block) : ATXPWR

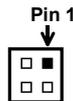
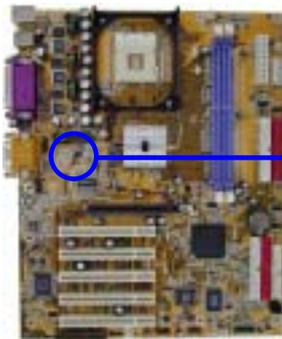
ATX Power Supply connector. This is a new defined 20-pins connector that usually comes with ATX case. The ATX Power Supply allows to use soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the 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.



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

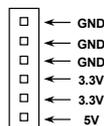
**(2) ATX 12V Power Connector (4-pin block) : ATX12V**

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.

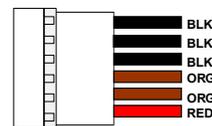


**(3) ATX P9 Power Connector (6-pin block) : ATXP9**

This is a new defined 6-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 3.3V and 5V voltage to maintain system power consumption. Without this connector might cause system unstable because the power supply can not provide sufficient current for system.



Power Connector on Motherboard



Power Plugs from Power Supply

**(4) PS/2 Mouse & PS/2 Keyboard Connector: PS2 KB/MOUSE**

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

**(5) USB Port connector: USB1**

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

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

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.

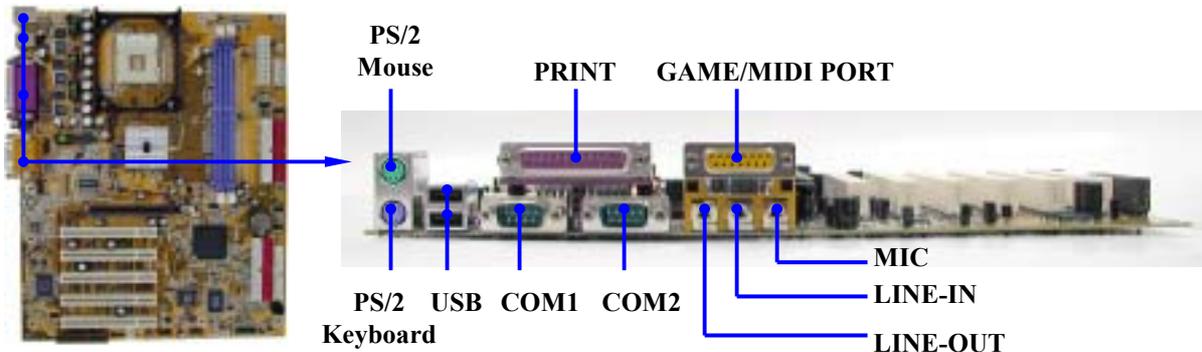
(7) **Audio and Game Connector : AUD\_GAME**

This Connector are 3 phone Jack for LINE-OUT, LINE-IN, MIC and a 15-pin D-Subminiature Receptacle Connector for joystick/MIDI Device.

- Line-out :** Audio output to speaker  
**Line-in :** Audio input to sound chip  
**MIC :** Microphone Connector  
**Game/MIDI :** For joystick or MIDI Device

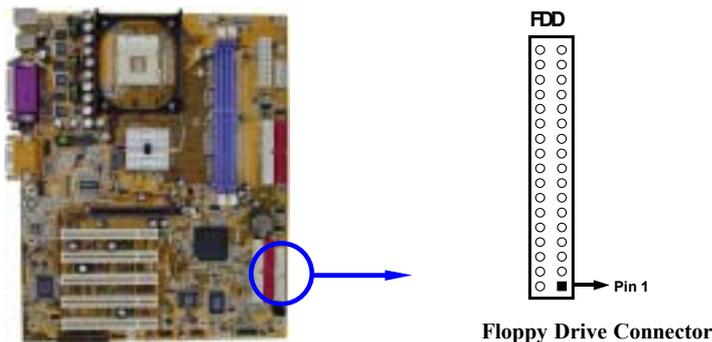
(8) **Serial Port COM1, COM2 : COM1, COM2**

COM1, COM2 are the 9-pin D-Subminiature mail 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.

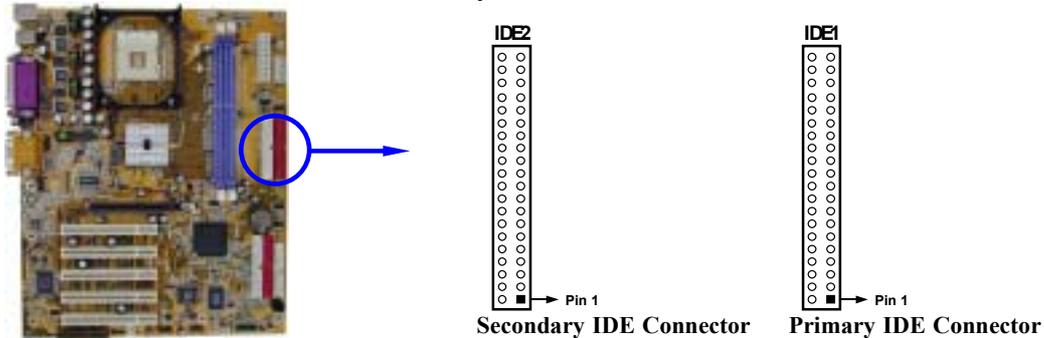


(10) **Primary IDE Connector (40-pin block): IDE1**

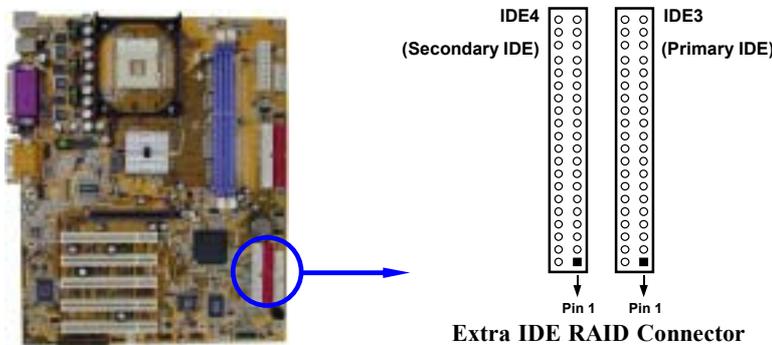
This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer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

(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.



**(12) Extra IDE RAID Connectors : IDE3/IDE4**

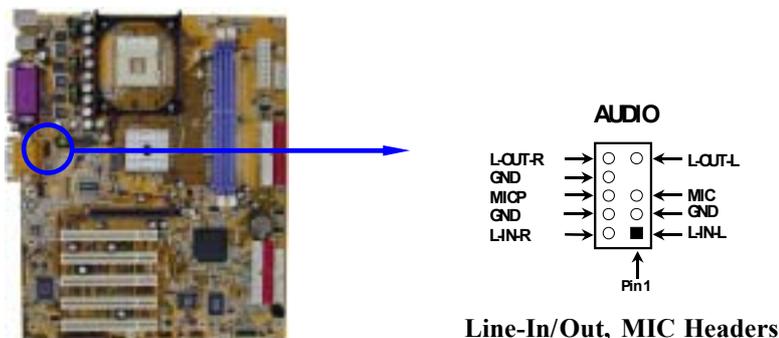


- Two hard disks can be connected to each connector. The first HDD is referred to as the “Master” and the second HDD is referred to as the “Slave”.
- For performance issues, we strongly suggest you don’t install a CD-ROM or DVD-ROM drive on the same IDE channel as a hard disk. Otherwise, the system performance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

**2-6-2 Headers**

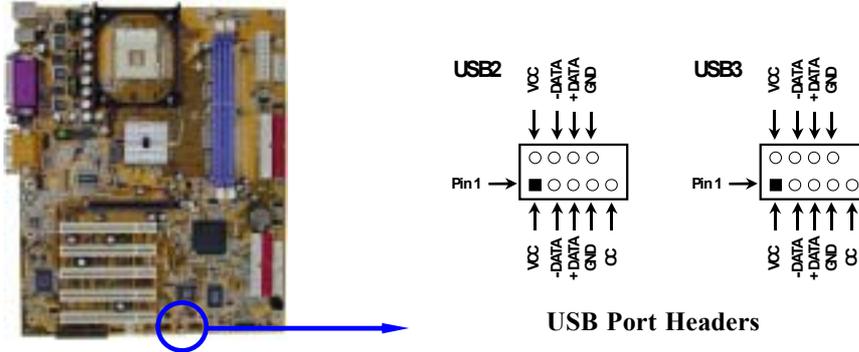
**(1) Line-In/Out, MIC Header (9-pin): AUDIO**

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



**(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.



**(3) IDE Activity LED: IDE LED**

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

**(4) Turbo LED switch: TURBO LED**

Since the motherboard's turbo function is always on. The turbo LED will remain constantly on while the system power is on. You may wish to connect the Power LED from the system case to this lead. See the figure below.

**(5) 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 life of the system's power supply. See the figure below.

**(6) Speaker connector: SPEAKER**

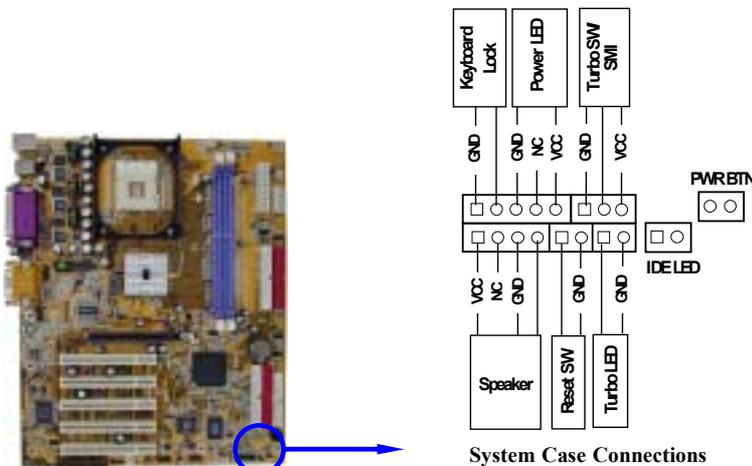
This 4-pin connector connects to the case-mounted speaker. See the figure below.

**(7) 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.

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

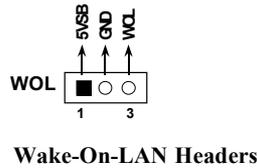
This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.



**(9) Wake On-LAN Headers (3-pin) : WOL**

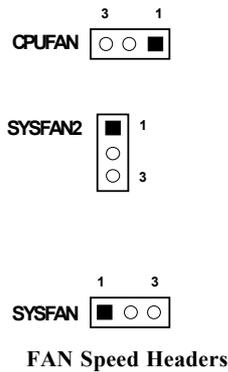
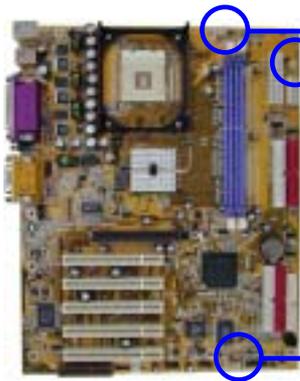
This connector connects to a LAN card with a WAKE ON-LAN output. This connector power up the system when a wake up signal is received through the LAN/Modem card.

**NOTE:** This feature requires that Wake On LAN or Ring In Wake up is enabled.



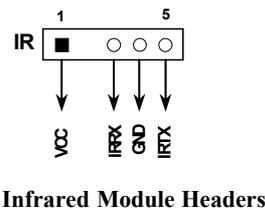
**(10) FAN Speed Headers (3-pin) : SYSFAN, SYSFAN2, CPUFAN**

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.



**(11) IR infrared module Headers (5-pin) : IR**

This connector supports the optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function.

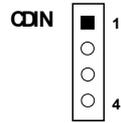
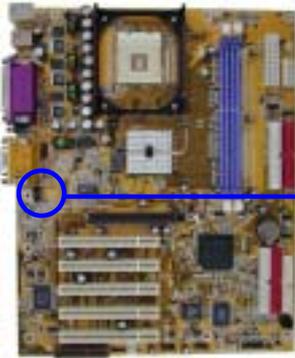


**(12) CD Audio-In Headers (4-pin) : CDIN**

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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.

| <b>Beep</b>                                 | <b>Meaning</b>  |
|---|---|
| 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

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## 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



Use this menu to load the BIOS default values that are settings for optimal performances system operations.

### Load Standard Defaults

Use this menu to load the BIOS default values that are factory settings for the stable performance system operation.

### Set Supervisor/User Password

Use this menu to set User and Supervisor Passwords.

### 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.

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### Standard CMOS Features

|   |                   |   |  |
|---|-------------------|---|--|
| Date (mm:dd:yy)   | Thu, Apr, 18 2002 | Item Help   |  |
| Time (hh:mm:ss)   | 17 : 51 : 38      |   |  |
| > IDE Primary Master  | Press Enter None  | Menu Level ><br><br>Change the day, month, year and century |  |
| > IDE Primary Slave   | Press Enter None  |   |  |
| > IDE Secondary Master  | Press Enter None  |   |  |
| > IDE Secondary Slave   | Press Enter None  |   |  |
| Drive A   | 1.44M, 3.25 in.   |   |  |
| Drive B   | None              |   |  |
| Video   | EGA/VGA           |   |  |
| Halt On   | All,But Keyboard  |   |  |
| Base Memory   | 640K              |   |  |
| Extended Memory   | 56320K            |   |  |
| Total Memory  | 57344K            |   |  |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help |                   |   |  |
| F5:Previous Values F6:Optimized Defaults F7:Standard Defaults               |                   |   |  |

### 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>.

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### 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

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### Advanced BIOS Features

|  |             |              |
|--|-------------|--------------|
| Anti-Virus Protection  | Disabled    | Item Help    |
| Hard Disk Boot Priority  | Press Enter |              |
| CPU L1 &L2 Cache   | Enabled     |              |
| Quick Power On Self Test   | Enabled     |              |
| Hard Disk Boot Priority  | Press Enter | Menu Level > |
| First Boot Device  | Floppy      |              |
| Second Boot Device   | Hard Disk   |              |
| Third Boot Device  | CDROM       |              |
| Boot other Device  | Enabled     |              |
| Swap Floppy Drive  | Disabled    |              |
| Boot Up Floppy Seek  | Enabled     |              |
| Boot Up NumLock Status   | On          |              |
| Gate A20 Option  | Fast        |              |
| Typematic Rate Setting   | Disabled    |              |
| Typematic Rate (Chars/Sec)   | 6           |              |
| Typematic Delay (Msec)   | 250         |              |
| Security Option  | Setup       |              |
| APIC Mode  | Disabled    |              |
| MPS Version Control For OS   | 1.1         |              |
| OS Select For DRAM > 64MB  | Non-OS2     |              |
| HDD S.M.A.R.T. Capability  | Disabled    |              |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults |             |              |

### Anti-Virus Protection

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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.

### **CPU L2 Cache ECC Checking**

Choose Enabled or Disabled. This option enables the Level 2 cache memory ECC (error check correction).

### **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.

### **Gate A20 Option**

**Normal** The A20 signal is controlled by keyboard controller or chipset hardware.

**Fast** (default) The A20 signal is controlled by port 92 or chipset specific method.

### **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 it 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.

**OS Select For DRAM > 64MB**

Allows OS2® to be used with >64MB or DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2.

**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.

CMOS Setup Utility - Copyright(C) 1984-2002 Award Software  
Advanced Chipset Features

|   |                               |
|---|-------------------------------|
| <pre> &gt; DRAM Timing Settings      Press Enter System BIOS Cacheable      Enabled Video RAM Cacheable        Enabled Memory Hole At 15M-16M     Disabled Delay Transaction           Enabled AGP Transfer Mode          Auto AGP Aperture Size          64MB           </pre> | Item Help<br><br>Menu Level > |
| <pre> ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5:Previous Values F6:Optimized Defaults F7:Standard Defaults           </pre>  |                               |

**DRAM Timing Settings**

Please refer to section 3-6-1

**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.

**Video RAM Cacheable**

Select Enabled allows caching of the video BIOS, 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.

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### Memory Hole At 15M-16M

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.

### 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.

### AGP Transfer Mode

In this item you can select AGP transfer mode Auto/4X/1X the Default setting is Auto.

## 3-6-1 DRAM Timing Settings

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### DRAM Timing Settings

|  |          |               |
|--|----------|---------------|
| Auto Configuration   | Standard | Item Help     |
| SDRAM CAS Latency Time   | 3        |               |
| SDRAM Cycle Time   | 7        |               |
| SDRAM RAS# to CAS# Delay   | 3        | Menu Level >> |
| SDRAM RAS# Precharge   | 3        |               |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>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: Auto(Default), 2T and 3T.

### SDRAM RAS# 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 data. *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: Auto (Default), 2T and 3T.

### SDRAM CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. The settings are: Auto (Default), 2T and 3T.

**Note:** *Change these settings only if you are familiar with the chipset.*

## 3-7 Integrated Peripherals

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### Integrated Peripherals

|  |                        |
|--|------------------------|
| > Onboard IDE Function <b>Press Enter</b><br>> Onboard Device Function <b>Press Enter</b><br>> Onboard Super IO Function <b>Press Enter</b><br>Init Display First <b>PCI Slot</b><br>Power Loss Function <b>Always Off</b> | <b>Item Help</b>       |
|  | <b>Menu Level &gt;</b> |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults   |                        |

### Onboard IDE Function

Please refer to section 3-7-1

### Onboard 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 Onboard IDE Function

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### Onboard IDE Function

|   |                            |
|---|----------------------------|
| OnChip Primary PCI IDE <b>Enabled</b><br>OnChip Secondary PCI IDE <b>Enabled</b><br>IDE Primary Master    PIO <b>Auto</b><br>IDE Primary Slave     PIO <b>Auto</b><br>IDE Secondary Master PIO <b>Auto</b><br>IDE Secondary Slave   PIO <b>Auto</b><br>IDE Primary Master    UDMA <b>Auto</b><br>IDE Primary Slave     UDMA <b>Auto</b><br>IDE Secondary Master UDMA <b>Auto</b><br>IDE Secondary Slave   UDMA <b>Auto</b><br>IDE 32-bit Transfer Mode <b>Enabled</b><br>IDE HDD Block Mode <b>Enabled</b><br>IDE Prefetch Mode <b>Enabled</b><br>Delay For HDD (Secs) <b>0</b> | <b>Item Help</b>           |
|   | <b>Menu Level &gt;&gt;</b> |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults  |                            |

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### OnChip IDE Primary/Secondary

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.

### IDE 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.

### IDE 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 Onboard Device Function

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### Onboard Device Function

|   |          |               |
|---|----------|---------------|
| Promise ATA/RAID Function   | Enabled  | Item Help     |
| USB Controller  | Enabled  |               |
| USB Keyboard Legacy Support   | Disabled | Menu Level >> |
| **Onboard AC97 Codec is CMI9738**   |          |               |
| AC97 Audio  | Auto     |               |
| AC97 Modem  | Auto     |               |
| Game Port Address   | 201      |               |
| Midi Port Address   | 330      |               |
| x Midi Port IRQ   | 10       |               |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help |          |               |
| F5:Previous Values F6:Optimized Defaults F7:Standard Defaults               |          |               |

### AC97 Audio

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

### Game Port Address/Midi Port Address

This will determine which Address the Game Port/Midi Port will use.

### AC97 Modem

This item allows you to decide to enable/disable the 845E chipset family to support AC97 Modem. The settings are: Auto, Disabled.

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---

### USB 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

CMOS Setup Utility - Copyright(C) 1984-2002 Award Software

### Onboard Super IO Function

|                        |           |               |
|------------------------|-----------|---------------|
| Onboard FDD Controller | Enabled   | Item Help     |
| Onboard Serial Port 1  | 3F8/IRQ4  |               |
| Onboard Serial Port 2  | 2F8/IRQ3  |               |
| UART2 Mode Selection   | Normal    | Menu Level >> |
| RxD, TxD Active        | Hi, Lo    |               |
| IR Duplex Mode         | Half      |               |
| Use IR Pins            | IRRX/IRTX |               |
| Onboard Parallel Port  | 378/IRQ7  |               |
| Parallel Mode          | SPP       |               |
| EPP Mode Select        | EPP1.7    |               |
| 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.

### UART2 Mode Selection

This item allows you to determine which InfraRed(IR) function of the onboard I/O chip, this functions uses. The settings are: IrDA/ASKIR/Normal.

### 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.

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### Power Management Setup

|  |                | Item Help    |
|--|----------------|--------------|
| ACPI Function  | Enabled        |              |
| Video Off Option   | Suspend -> off |              |
| Video off Method   | V/H SYNC+Blank |              |
| Video Off In Suspend   | Yes            |              |
| MODEM Use IRQ  | 3              | Menu Level > |
| HDD Power Down   | Disabled       |              |
| Soft-off by PWR-BTTN   | Instant-off    |              |
| Wake-Up by PCI card  | Disabled       |              |
| Power On by Ring   | Disabled       |              |
| Resume by Alarm  | Disabled       |              |
| X Date (of Month)  | 0              |              |
| X Time (hh:mm:ss)  | 0 : 0 :0       |              |
| CPU Thermal Management Timer   | 32 Min         |              |
| DRAM Read Thermal Management   | Disabled       |              |
| > PM Timer Reload Events   | Press Enter    |              |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>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 in Suspend

This determines the manner in which the monitor is blanked. The choice are Yes → Video will off , and No→ Video 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 by PCI card /Power On by Ring

During Disabled, the system will ignore any incoming call from the PCI card/modem. During Enabled, the system will boot up if there's an incoming call from the PCI card /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

### PM Timer Reload Events

Please refer to section 3-8-1

## 3-8-1 PM Timer Reload Events

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### PM Timer Reload Events

|  |          |               |
|--|----------|---------------|
| Primary IDE 0  | Disabled | Item Help     |
| Primary IDE 1  | Disabled |               |
| Secondary IDE 0  | Disabled | Menu Level >> |
| Secondary IDE 1  | Disabled |               |
| FDD, COM, LPT Port   | Disabled |               |
| PCI PIRQ [A-D] #   | Disabled |               |
|  |          |               |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults |          |               |

## 3-9 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **Personal Computer Interconnect**, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

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PnP/PCI Configurations

|  |                       |              |
|--|-----------------------|--------------|
| Reset Configuration Data   | Disabled              | Item Help    |
| Resources Controlled By<br>x IRQ Resources   | Manual<br>Press Enter | Menu Level > |
| PCI/VGA Palette Snoop<br>Assign IRQ For VGA  | Disabled<br>Enabled   |              |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults |                       |              |

### Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The settings are: Enabled and Disabled.

### Resource Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95/98. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “>”).

The settings are: Auto(ESCD), Manual.

### 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

### PCI/VGA Palette Snoop

Leave this field at *Disabled*. The settings are Enabled, Disabled.

## 3-9-1 IRQ Resources

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<br>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.

PC Health Status

|  |          |              |
|--|----------|--------------|
| Shutdown Temperature   | Disabled | Item Help    |
| CPU Warning Temperature  | Disabled |              |
| Show PC Health in Post   | Enabled  | Menu Level > |
| Current System Temperature   | 25°C     |              |
| Current CPU Temperature  | 38°C     |              |
| Current CPUFAN Speed   | 5000 rpm |              |
| Current SYSFAN Speed   | 5000 rpm |              |
| Current SYSFAN2 Speed  | 5000 rpm |              |
| Vcore  | 1.71V    |              |
| Vcc1.5   | 1.51V    |              |
| Vcc3.3   | 3.31V    |              |
| + 5V   | 4.98V    |              |
| +12V   | 12.22V   |              |
| -12V   | -12.36V  |              |
| - 5V   | -4.99V   |              |
| VBAT (V)   | 3.21V    |              |
| 5VSB (V)   | 5.02V    |              |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults |          |              |

#### Show PC Health in Post

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

**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.

#### 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.

### 3-11 Miscellaneous Control

This section is for setting CPU Frequency/Voltage Control.

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Miscellaneous Control

|  |           |              |
|--|-----------|--------------|
| CPU Clock Ratio  | X 8       | Item Help    |
| Auto Detect PCI Clk  | Enabled   |              |
| Spread Spectrum  | Disabled  |              |
| ** Current Host Clock is 100/33MHz **  |           | Menu Level > |
| HOST/PCI Clock at Next Boot is   | 100/33MHz |              |
| ** Current DRAM Clock is 133MHz **   |           |              |
| DRAM Clock at Next Boot is   | 133MHz    |              |
| PCI Clock Ratio  | Host/3    |              |
| CPU Vcore Select   | Default   |              |
| Vcc1.5 Select  | 1.5V      |              |
| VDIMM Select   | 2.5V      |              |
| Flash Part Write Protect   | Enabled   |              |
| ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help<br>F5:Previous Values F6:Optimized Defaults F7:Standard Defaults |           |              |

**Auto Detect PCI Clk**

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

The settings are: Enabled, Disabled.

**Spread Spectrum**

This item allows you to set the CPU Host/PCI clock and Spread Spectrum.

The settings are: Enabled, Disabled.

**Host/PCI Clock at Next Boot**

This item allows you to select CPU frequency step by step increasing.

The choice are: 100MHz~200MHz

**DRAM Clock at Next Boot is**

This item allows you select the DRAM Clock same as Host clock, or can add 33MHz when Host Clock under 109MHz.

**PCI Clock Ratio**

This item allows you to set PCI Clock Ratio. The choice are: Host/3, Host/4, Host/5, Host/6.

**CPU Vcore Select**

This item allows you select CPU Vcore Voltage by increase 0.025V step by step from 1.0V to 1.85V the Default setting is Default (CPU manufacturer Default setting).

**Vcc1.5 Select**

This item allows you to select 1.5V of the AGP VGA card. The choice are: Default, 1.5V, 1.6V.

**VDIMM Select**

This item allows you select DRAM Voltage. The choice are: 2.5V/2.6V/2.7V/2.8V.

**Flash Part Write Protect**

This item allows you protect your BIOS chip from Virus destroy data. When Flash BIOS you have Disabled this item.

**3-12 Load Standard/Optimized Defaults**

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### 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.

## 3-13 Set Supervisor/User Password

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.

## Chapter 4

### DRIVER & FREE PROGRAM INSTALLATION

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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 98SE/ME/NT4.0/2000/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. INF                   install Intel 845 chipset system driver
2. SOUND               install CMI9738 Audio Codec driver
3. ATA133               install ATA133 Controller driver
4. PC-HEALTH           install Intel 845 PC-HEALTH monitor
5. MAGIC BIOS          install BIOS Live Update Utility
6. DIRECTX8            install Microsoft DirectX 8.1 driver
7. IAA                   install Intel Application Accelerator software
8. PC-CILLIN            install PC-CILLIN2002 anti-virus program
9. BROWSE CD           to browse the contents of the CD
10. EXIT                to exit from MAGIC INSTALL menu

### **4-1 INF       install INTEL 845 chipset system driver**

After you have completed the installation of your operation system (WINDOWS 98SE). You will find an UNKNOWN DEVICE in the device manager (START/SETTING/ CONTROL PANEL/ SYSTEM/DEVICE MANAGER). You have to install INF driver as shown below:



1. Click INF in the MAGIC INSTALL MENU



2. Click NEXT when Chipset Software Install Utility appears



3. This chart shows motherboards supported by the driver click Yes



4. Select if you want computer re-started click Finish

**NOTE: MAGIC INSTALL will auto detect file path X:\INTEL845\INF\SETUP.EXE  
This driver supports WINDOWS 98SE/ME/2000/XP  
(NT4.0 do not require)**

## 4-2 SOUND Install CMI9738 Audio Codec Driver



1. Click SOUND when MAGIC INSTALL MENU appears



2. Choose Install component in Installation Package



3. Click Next when copyright Issue appears, click Next or choose BROWSE to change the path for the file to be store



4. Enter Program folders name or click Next



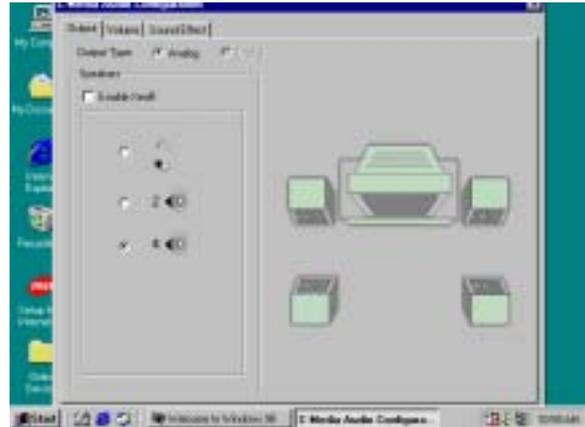
5. C-Media Media Rack can Auto Play following Format file choose need component and Click Next



6. Click Next when Start copying files windows appears, OS can Auto Find C-Media AC97 Audio Device Click Next



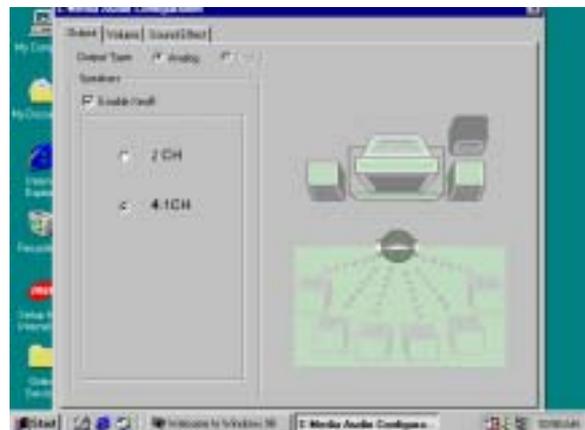
7. C-Media Media Rack Play table



8. C-Media Audio Configuration setting



9. C-Media Multi-Channel Audio Demo Program, you can Test speaker position



10. When Enabled XeaR, you can plug earphone in Speak-Out connector as a Rear speaker, and 2-channel speaker plug in Line-In as Front Speaker to get 4-channel effect

### 4-3 ATA133 Install Promise Ultra133 IDE Controller Driver



1. Click PROMISE ATA133 Controller Driver in MAGIC INSTALL MENU



2. Install PROMISE ATA133 Controller Driver



3. Click Yes to Restart your computer after Driver Install Finish

**NOTE: The path of the file:**

**For Windows 95/98/ME is X:\PROMISE133\ULTRA133\WIN9X-ME**

**For Windows 2000 is X:\PROMISE133\ULTRA133\WIN2000**

**For Windows NT4.0 is X:\PROMISE133\ULTRA133\NT4**

#### 4-4 PC-HEALTH Intel 845 PC-Health Monitor

The path of the file is X:\INTEL845\HW30\SETUP.EXE (Only support WINDOWS 98SE/ME)

In Windows 95/98 Winbond Hardware Doctor Monitoring Software needs some system files to copy in Utility that's why it needs install PC-HEALTH twice to complete setup.



1. Click PC-Health when Magic Install Menu appears



2. Click Next when Winbond Hardware Doctor Setup Window appears



3. Click Next to continue installation

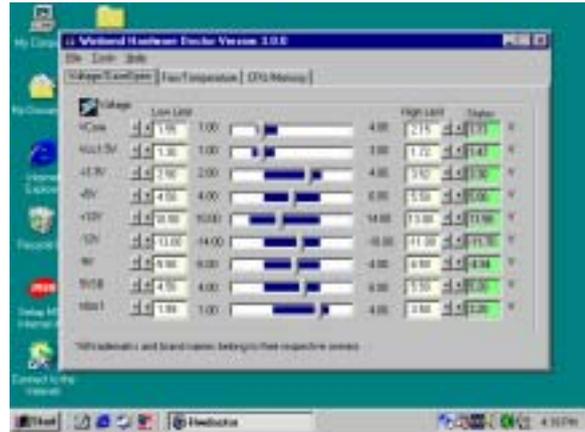


4. Select Program Group name or enter a new group name, click Next, and click Finish after setup complete

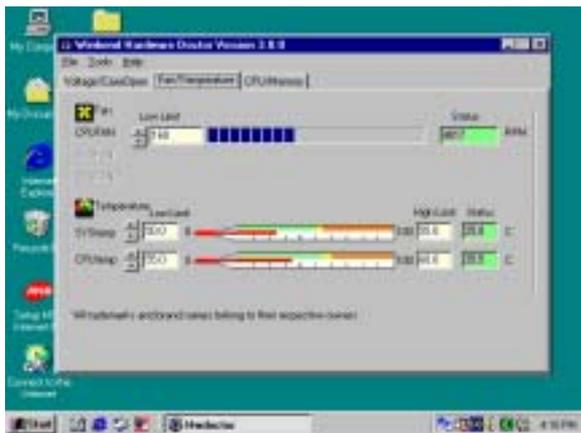
#### 4-4-1 How To Utilize PC-HEALTH



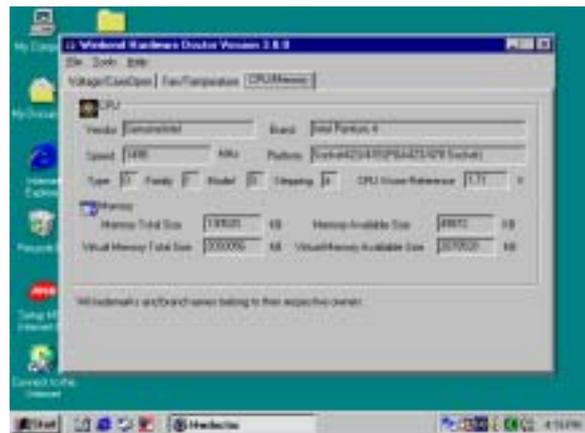
1. Click Program → Winbond Hardware Doctor → Hardware Doctor the Winbond Hardware Doctor will appears  
You can remove the Utility in Control Panel → Add/Remove Program icon



2. After executing Winbond Hardware Doctor it supports system voltage, Fan speed and CPU/SYSTEM Temperature. Because this is a On-time Monitoring program therefore the value will change after it detected, if the value is over default setting the system will have warning picture and beeps. This is a System Voltage status



3. This is a CPU/System Fan Speed and Temperature status information



4. This is a CPU and System Memory status information

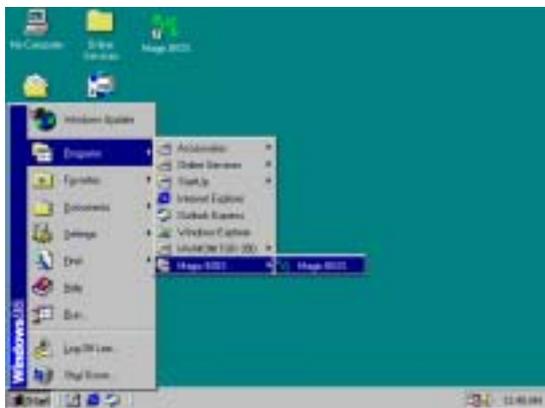
## 4-5 MAGIC BIOS Install BIOS Live Update Utility



1. Before update BIOS Users have to Flash Part Write Protect : **Disable**  
Click Magic BIOS when Magic Install MENU appears



2. Click Next to install the Magic BIOS in Destination Folder



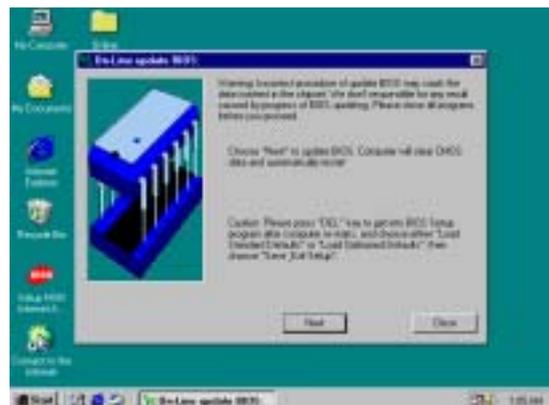
3. After finish Setup you will have a Magic BIOS icon in your screen



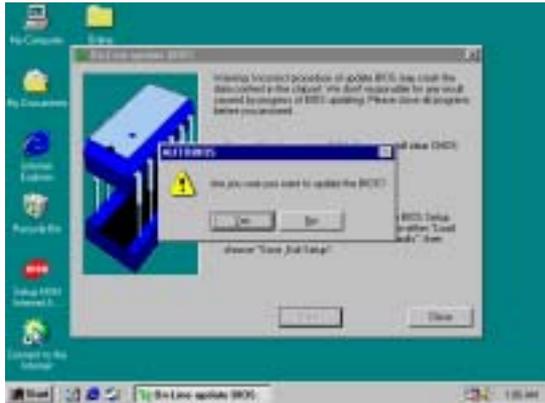
4. Double click the Magic BIOS icon you will have this picture, choose from internet you can upgrade BIOS On-line



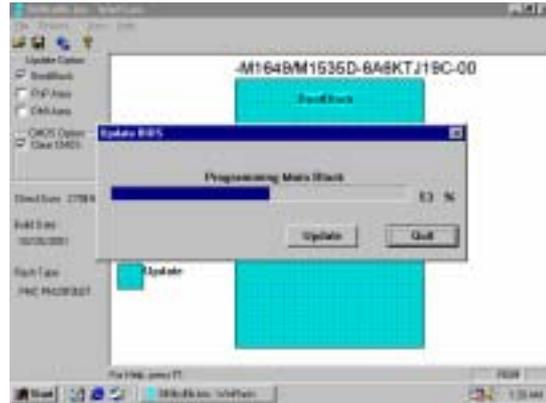
5. When On-line update BIOS the program will auto-check your BIOS version



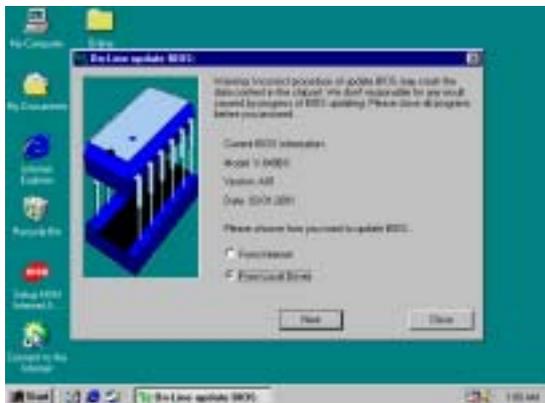
6. Click Next if you need update BIOS, after upgrade BIOS, the system will clear CMOS and automatically restart



7. Click Yes if you want to update the BIOS otherwise choose No to exit



8. When System programming BIOS don't turn off power, after finish update BIOS, the system will clear CMOS and automatically Restart



9. When choose From Local Driver to update BIOS, you must have the correct BIOS file in your Local Driver



10. Choose the correct BIOS file to update BIOS

## 4-6 IAA Install Application Accelerator Software



The Intel Application Accelerator is designed to improve performance of the storage sub-system and overall system performance. This software delivers improved performance through several ingredient technologies (components).

Certain components will be available only on Pentium® 4 processor-based systems running Microsoft\* Windows\* 2000 Professional. Software installation is flexible and fully automated for Microsoft\* Windows\* 98, Windows 98 Second Edition (SE), Windows\* 98 Millennium Edition(Me), Windows NT\* 4.0, and Windows 2000 operating system.





7. After PC-CILLIN 2002 complete, Please register your information and get LICENSE KEY from TREND MICRO web site, enter your license key and click FINISH
8. finish register process, we recommend select update item to download newest engine code and virus code

**Note :** Please install ACROBAT READER, Before you read PC-CILLIN 2002 User Manual, the path at X:\acrobat\ar500eng.exe

## 4-8 HOW TO INSTALL USB 2.0 DRIVER

There are only Windows \* 2000 and Windows\* XP can support USB 2.0 Driver. In Windows 2000 Supported on Service Pack 4 or later version Windows XP supported on Service Pack1 or later version. If your Operating System is before these version, you can download USB 2.0 driver file “USBHUB.SYS” from Microsoft Web site for installation. But if you use Windows 98/ME it only supported USB 1.1 driver can not support USB 2.0 driver.

### How to install USB 2.0 driver :

- Step1:** First make sure you have two files, one is supported from Intel hardware driver which in CD, the path is X:\INTEL845\USB2\USB2.INF, and the other one is supported from Microsoft Windows OS file name is USBHUB.SYS.
- Step2:** Boot from Windows 2000/XP Double click “My computer” \ “Control Panel” \ “System Properties” \ “Hardware” tab \ “Device Manager” \ Other Device \ Universal Serial BUS (USB) Controller“, Select “Driver \ Update Driver”
- Step3:** After “Update Device Driver Wizard” window appear, select “Next” to choose “Display a list of known drivers for the device”, and select “Next” \ “Have Disk” \ “Browse” change the directory path from “A:\” to “ X:\INTEL845\USB2\USB2.INF” select “ OK”
- Step4:** The Windows 2000/XP will detect “Intel® USB Enhanced Host Controller (ICH4)” Device, select “NEXT”, the OS will ask the “USBHUB.SYS” file for install, please change the directory where your USB 2.0 driver file located to finish installation.

## 4-9 HOW TO DISABLE ON-BOARD SOUND

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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

## 4-10 HOW TO UPDATE BIOS

Before update BIOS users have to “Flash Part Write Protect”: **Disable** item which in “Miscellaneous Control” of BIOS SETUP. Otherwise the system will not allow you to upgrade BIOS by Award Flash Utility.

**Method 1.** Use “Magic BIOS” update BIOS in Windows 98 (refer [page 42](#))

**Method 2.** In DOS Mode

**STEP 1.** Prepare a boot disc. (you may make one by click START click RUN type SYS A: click OK)

**STEP 2.** Copy utility program to your boot disc. You may copy from DRIVER CD X:\FLASH\AWDFLASH.EXE or download from our web site.

**STEP 3.** Copy latest BIOS for 845E PRO from our web site to your boot disc.

**STEP 4.** Insert your boot disc into A:;

start the computer, type “Awdflash A:\845EPROAxxx.BIN /SN/PY/CC/R”

845EPROAxxx.BIN is the file name of latest BIOS it can be 845EPROA03.BIN or 845EPROB02.BIN

SN means don't save existing BIOS data

PY means renew existing BIOS data

CC means clear existing CMOS data

R means restart computer

**STEP 5.** Push ENTER and the BIOS will be updated, computer will be restarted automatically