P4845GLM
USER'S MANUAL

M/B For Socket 478 Pentium 4 Processor

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Manual Revision Information

Reversion	Revision History	Date
1.0	First Release	October 2002

Item Checklist

- ☑ P4845GLM Motherboard
- ☑ Cable for IDE/Floppy
- ☑ CD for motherboard utilities
- ☐ Cable for USB Port 3/4 (Option)
- ☑ P4845GLM 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

Chapter 1

Introduction of P4845GLM Motherboard

1-1 Feature of motherboard

The P4845GLM motherboard is design for use Intel Pentium 4 Processor in 478 Pin Package/Northwood Processor with the Intel 845GL Chipset delivers a high performance and professional desktop platform solution. Which utilize the Socket 478 design and the memory size expandable to 2.0GB.

The P4845GLM motherboard use the newest 845GL Chipset Supports 400MHz System Bus in data transfer rate. The motherboard offer ULTRA ATA **100** to provide speedier HDD throughout that boosts overall system performance.

With integrated 2D/3D Graphics Accelerator which supports 256 bit graphics core, and supports hardware motion compensation assist for software MPEG/DVD decode, makes this board lower cost alternative to a video card. For those wanting even greater graphic performance.

These motherboards also has an integrated AC'97 2.1 CODEC on board support 3D surround positioning Audio, which is fully compatible with Sound Blaster Pro® that gives you the best sound quality and compatibility.

With USB control as well as capability of expanding to 6 USB2.0 function ports to meet future USB demand, also these motherboards built-in hardware monitor function. This will monitor and protect your computer. These motherboards provided special design in hardware to protect BIOS from virus crash BIOS data.

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

P4845GLM provides high performance & meets future specification demand. It is really wise choice for your computer.

1-2 Specification

Spec	Description
Design	* Micro ATX form factor 4 layers PCB size: 24.4x22.0cm
Chipset	* Intel 845GL Graphics Memory Controller Hub (GMCH) Chipset * Intel 82801DB I/O Controller Hub (ICH4) Chipset
CPU Socket **(mPGA478B Socket)**	* Support Intel Pentium 4 478 Pin package utilizes Flip-Chip Pin Grid Array (FC-PGA2) package processor * Support CPU Frequency 400MHz for P4845GLM * Support 1.5G~2.8G 478 Pin Pentium 4 processor * Reserves support for future Intel Pentium 4 processors
Memory Socket	* 184-pin DDR SDRAM module socket x2 * Support DDR266/DDR200 DRAM * Expandable to 2.0GB
Expansion Slot & **Headers**	* 32-bit PCI slot x3 * CNR slot x1
Integrate IDE	* 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
Audio	* AC'97 Digital Audio controller integrated * AC'97 2.1 Audio CODEC on board * Sound Blaster Pro compliant * Audio driver and utility included
BIOS	* Award 2MB Flash ROM
Multi I/O	* PS/2 keyboard and PS/2 mouse connectors * Floppy disk drive connector x1 * Parallel port x1, Serial port x2 * USB 2.0 connector x2 * USB 2.0 headers x2 (connecting cable option) * Audio connector Line-in, Line-out, MIC & Game Port

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)
VGA Expansion Card: NVDIA Geforce2 MX400-64MB (1024x768 Hi-color)
Hard Disk Driver: IBM DTLA-305040 (ATA-100)
BIOS: Award Optimal default
OS: Win 98SE

		Frame Buffer 8M On Board VGA	Geforce2 MX200	Geforce2 MX400
3D Mark 2000		3392	2917	5408
3D Mark 2001SE		1420	1217	2555
3D Winbench 2000		69.8	55.5	104
Final Reality		12.07	10.18	10.06
Content Creation Winstone 2000		44.6	43.8	44.5
Content Creation Winstone 2001		52.5	55.8	56.1
Content Creation Winstone 2002		19.9	20.8	20.8
Business Winstone 2001		46	46.1	46.7
Winbench 99:				
CPU Mark 99		113	110	113
FPU Winmark 99		6640	6620	6620
Business Disk Winmark99		5110	5230	5230
Hi-end Disk Winmark99		17100	18800	16600
Business Graphic Winmark		375	408	438
Hi-end Graphic Winmark		1110	1260	1270
SYS Mark 2000/2001 : SISMark 2000/2001 Rating (Internet Content Creation / Office Productivity)				
SISMark 2000		211 (232/196)	215 (233/203)	216 (232/205)
SISMark 2001		156 (172/142)	151 (172/133)	154 (171/138)
SISOFT Sandra 2002 :				
Dhrystone ALU	MIPS	3577	3578	3582
Whetstone FPU	MFLOPS	1141/2378	1149/2359	1142/2356
RAM Int Buffered iSSE2	MB/S	1900	2033	2033
RAM Float Buffered iSSE2	MB/S	1831	1947	1944
Integer SSE2	IT/S	7582	7570	7565
Floating-Point SSE2	IT/S	9200	9206	9219
QUAKE3 DEMO1	FPS	76.6	118.9	172.1
DEMO2	FPS	76.3	120.2	173.0
WCPUID System / CPU Clock		101/1918.93	101/1918.92	101/1918.93

1-4 Layout Diagram & Jumper Setting

PRINT GAME/MIDI PORT

PS/2 MOUSE

PS/2 Keyboard

USB COM1 VGA

MIC
LINE-IN
LINE-OUT

CPU FAN

PS2 KB/Mouse Port

USB Port

COM2 Connector

Power FAN

PC99 Back Panel

ATX 12V Power Conn.

ATX Power Conn.

Front Panel Audio

CD Audio

PCI Slot

IR Connector

Winbond W83627HF Chip

CNR Slot

On board AC97' Codec
Selector **(JP6)**

CPU Socket

2M Flash ROM BIOS

DDR SDRAM DIMM x2

Intel 845GL Chipset

ATA 100 IDE Conn.

(JP2)
Front Side Bus Frequency

USB2 Port
Intel 82801DB Chip
CHS FAN
Clear CMOS **(JP8)**
Front Panel Connector

Wake On LAN

USB3 Port

Floppy Connector

Jumpers

Jumper	Name	Description	Page

JP1	CPU Frequency Select	3-pin Block	P.7
JP8	CMOS RAM Clear	3-pin Block	P.7
JP6	On board AC97' Codec Selector	3-pin Block	P.8

Connectors

Connector	Name	Description	Page
PW2	ATX Power Connector	20-pin Block	P.12
PW1	ATX 12V Power Connector	4-pin Block	P.12
KBMS	PS/2 Mouse & PS/2 Keyboard Connector	6-pin Female	P.13
USB1	USB Port Connector	4-pin Connector	P.13
LPT1	Parallel Port Connector	25-pin Female	P.13
GAME	Audio/Game Connector	3 phone jack + 15-pin Connector	P.13
VGA	VGA Display Connector	15-pin Female Connector	P.13
COM1	Serial Port COM1 Connector	9-pin Connector	P.13
FLOPPY	Floppy Driver Connector	34-pin Block	P.13
IDE1/IDE2	Primary/Secondary IDE Connector	40-pin Block	P.14

Headers

Header	Name	Description	Page
COM2	Serial Port COM2 Header	9-pin Block	P.15
Front AUDIO	Line-In/Out, MIC Headers	9-pin Block	P.15
USB2/USB3	USB Port Headers	9-pin Block	P.15
HDLED	Hard Drive Action LED Headers	2-pin Block	P.15
RST	Reset SW Headers	2-pin Block	P.15
SPK	Speaker Connector	4-pin Block	P.16
PWRLED	Power LED Headers	5-pin Block	P.16
SMI	SMI headers	2-pin Block	P.16
PSON	Power On Headers	2-pin Block	P.16
WOL	Wake On-LAN Headers	3-pin Block	P.16
PWRFAN, CHSFAN, CPUFAN	FAN Speed Headers	3-pin Block	P.16
IR	IR infrared module Headers	5-pin Block	P.17
CDIN	CD Audio-In Headers	4-pin Block	P.17

Expansion Sockets

Socket/Slot	Name	Description	Page
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.10
PCI1 ~ PCI3	PCI Slot	32-bit PCI Local Bus Expansion slots	P.11
CNR	CNR Slot	Communication Network Riser Slot	

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) CPU Frequency Select (3-pin) : JP1

CPU Clock	JP1
AUTO	1-2 closed
100 (400) MHz	2-3 closed
133 (533) MHz	Open
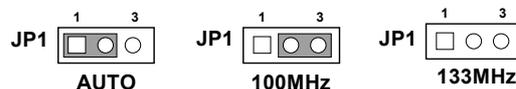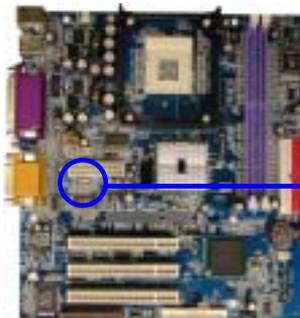
CPU Front Side Bus Frequency Select

(2) CMOS RAM Clear (3-pin) : JP8

A battery must be used to retain the motherboard configuration in CMOS RAM short 1-2 pins of JP8 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 JP8 and short pins 2-3 for a few seconds
4. Return JP8 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

JP8 — 1-2 closed — Normal (Default)   JP8 — 2-3 closed — Clear CMOS

CMOS RAM Clear Setting

(3) On-board AC97' Codec Selector (3-pin) : JP6

JP6 — 1-2 closed — Enabled (Default)   JP6 — 2-3 closed — Disabled
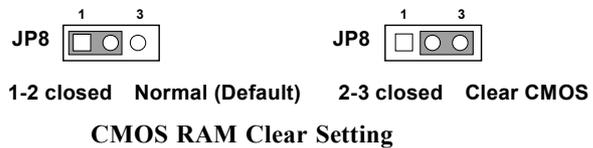
On-board AC97' Codec Selector
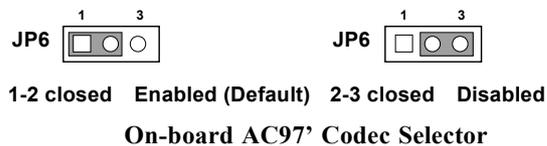
2-3 Install CPU

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 (AGP, PCI, ISA, 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).

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

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, 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.

mPGA478B

→ **Colden Arrow**

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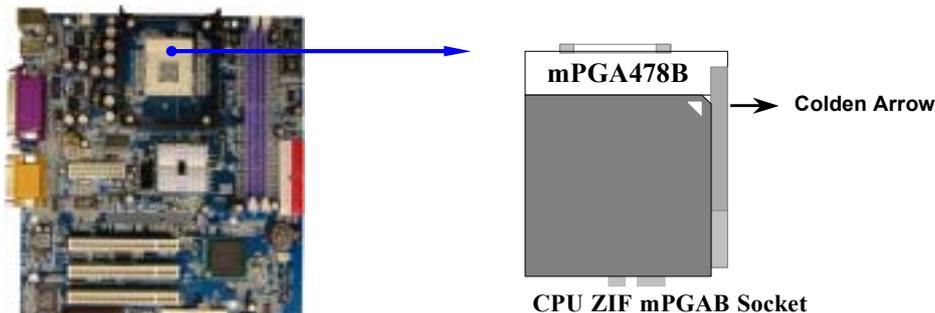
When you put the CPU into the ZIF socket. No force require to insert of the CPU, then press the level to Locate position slightly without any extra force.

2-4 Install Memory

This motherboard provides two 184-pin 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 DDR SDRAM Module	X1	64MB~1.0GB
Bank 2, 3 (DDR2)	DDR200/DDR266 DDR SDRAM Module	X1	64MB~1.0GB
Total	System Memory (Max. 2.0GB)	2	64MB~2.0GB

> **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 DDR200/DDR266 DDR SDRAM module looks like.
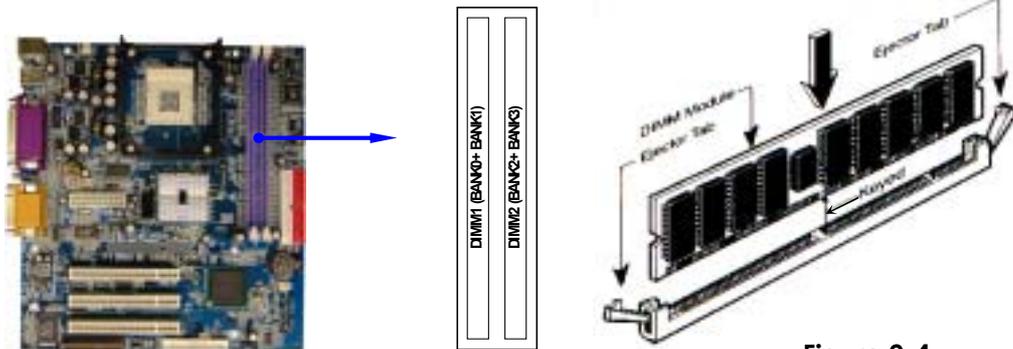
Figure 2-4

> **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 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 SDR 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				√				
Onboard VGA	√							
Onboard LAN					√			
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.

2-6 Connectors, Headers
2-6-1 Connectors

(1) Power Connector (20-pin block) : PW2

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 1**

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) : PW1

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.

Pin 1

(3) PS/2 Mouse & PS/2 Keyboard Connector: KBMS
The connectors for PS/2 keyboard and PS/2 Mouse.

(4) USB Port connector: USB1
The connectors are 4-pin connector that connect USB devices to the system board.

(5) Parallel Port Connector (25-pin female): LPT1
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.

(6) Audio and Game Connector : 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

(7) VGA Connector (15-pin D-Sub) Connector: VGA
VGA is the 15-pin D-Subminiature female connector for display monitor.

(8) Serial Port COM1: COM1
COM1 is 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.
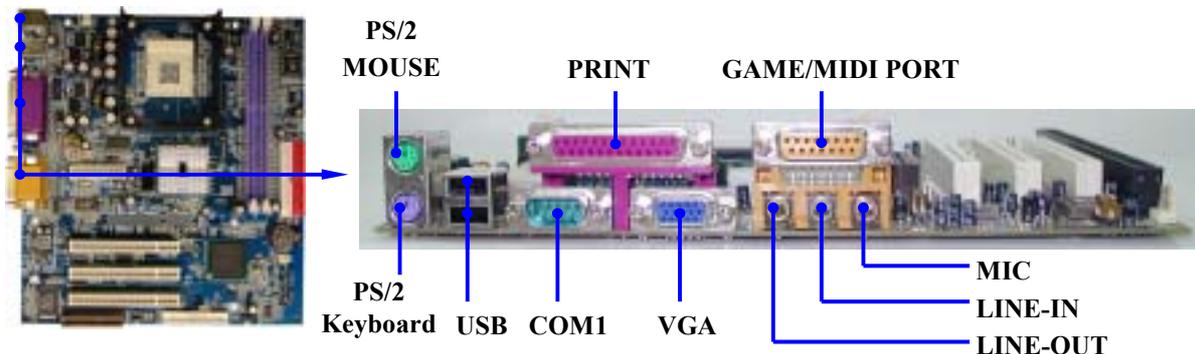
(9) Floppy drive Connector (34-pin block): FDD
This connector supports the provided floppy drive ribbon cable.   After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.

FDD

Pin 1

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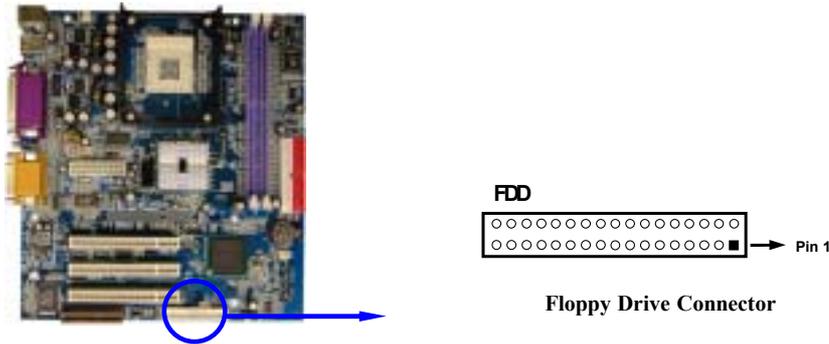
(10) Primary IDE Connector (40-pin block): IDE1

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.

IDE1

Pin 1

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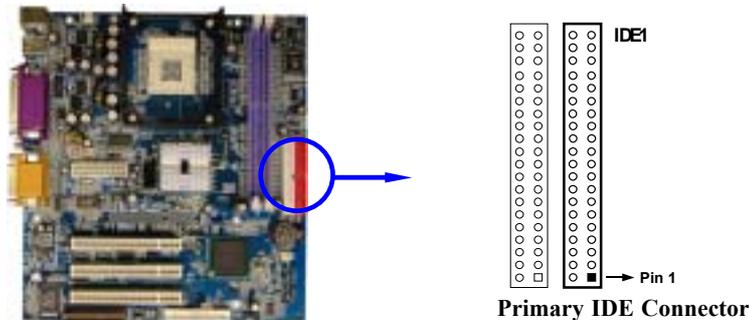
(11) Secondary IDE Connector (40-pin block): IDE2

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.

IDE2

Pin 1

Secondary IDE Connector
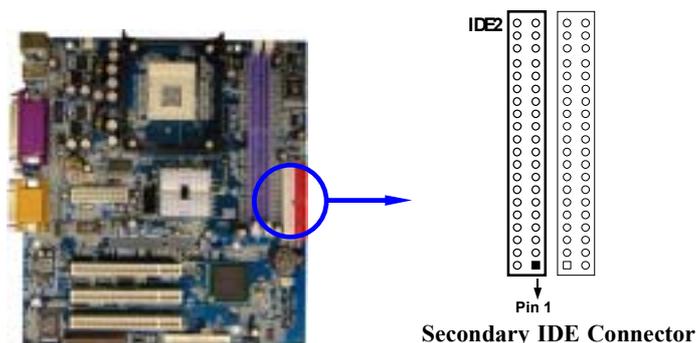
- Two hard disks can be connected to each connector. The first HDD is referred to as the "Master" and the second HDD is referred to as the "Slave".

- 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.

2-6-2 Headers

(1)   Serial Port2 COM2 Header (9-pin) : COM2


```
COM2
 O  O
 O  O
 O  O
 O  O
 O  ■ → Pin1
```

*Note: Orient the read marking on the
COM2 ribbon cable to pin 1*

Serial Port2 COM2 Header
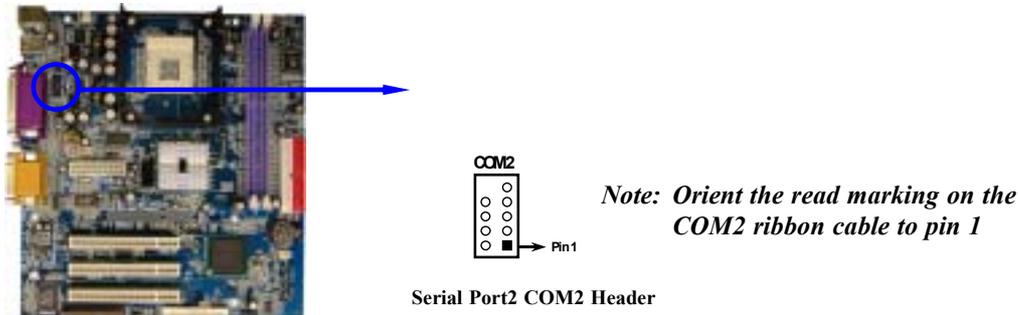
(2)   Line-Out, MIC Headers (9-pin): Front AUDIO
This header connect to Front Panel Line-out, MIC connector with cable.


```
          AUDIO  10   9
AUD_RET_L →  O   O  ← AUD_FPOUT_L
                O   ← HP_ON
AUD_RET_R →  O   O  ← AUD_FPOUT_R
 AUD_VCC  →  O   O  ← AUD_MIC_BIAS
 AUD_GND  →  O   ■  ← AUD_MIC
             2   ↑
            Pin 1
```

Line-In/Out, MIC Headers
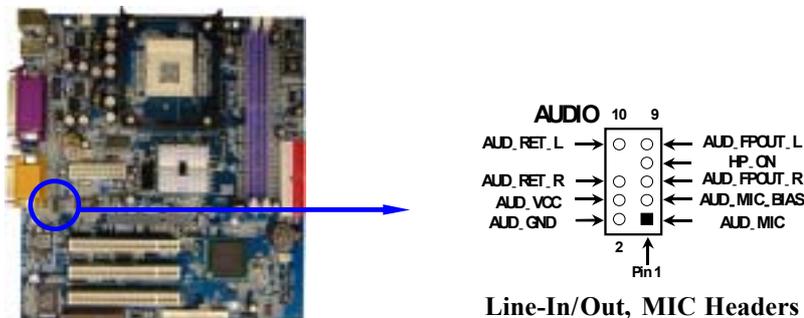
(3)   USB Port Headers (9-pin) : USB2, USB3
These headers are used for connecting the additional USB port plug. By attaching an option USB cable, your can be provided with two additional USB plugs affixed to the back panel.

USB Port Headers
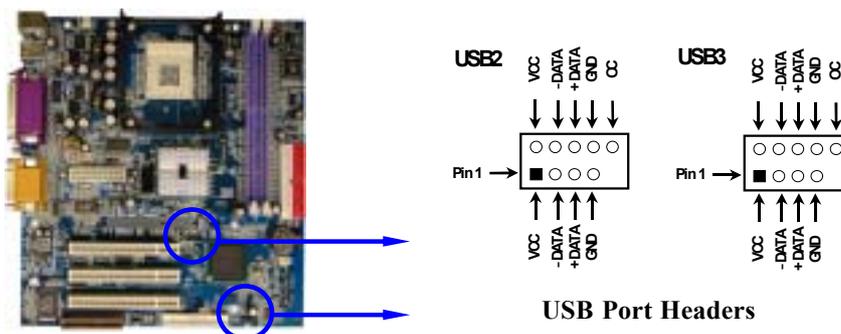
(4)   IDE Activity LED: HDDLED
This connector connects to the hard disk activity indicator light on the case.

(5)   Reset switch lead: RST
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.

(6) Speaker connector: SPK
This 4-pin connector connects to the case-mounted speaker. See the figure below.

(7) Power LED: PWRLED
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: PSON
This 2-pin connector connects to the case-mounted power switch to power ON/OFF the system.

PSON	PWRBTN	PWRLED	GND
Pin1	5VSBY		KEYLOCK
HDLED	HDDLED		GND
Pin1	VCC5		NC
SMI	EXTSMI	Pin1	VCC5
Pin1	VCC3	SPK	SPKR
RST	GND		GND
Pin1	RSTSW		GND
		Pin1	VCC5

System Case Connections
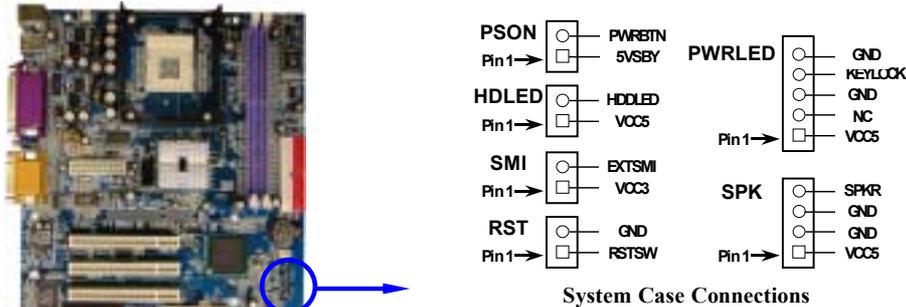
(9) Wake On-LAN Headers (3-pin) : WOL
This connector connects to a LAN card with a WAKE ON-LAN output. This connector power up the system when a wake up signal is received through the LAN card.

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

Wake-On-LAN Headers
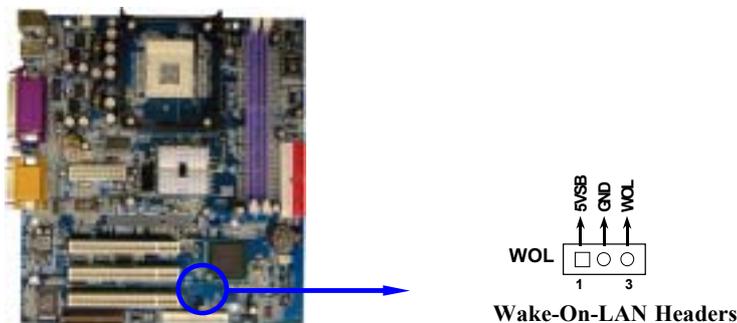
(10) FAN Speed Headers (3-pin) : PWRFAN, CHSFAN, CPUFAN
These connectors support cooling fans of 350mA (4.2 Watts) or less, depending on the fan manufacturer, the wire and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of connector.

CPUFAN

3   1

PWRFAN

1   3

CHSFAN

3

1

FAN Speed Headers
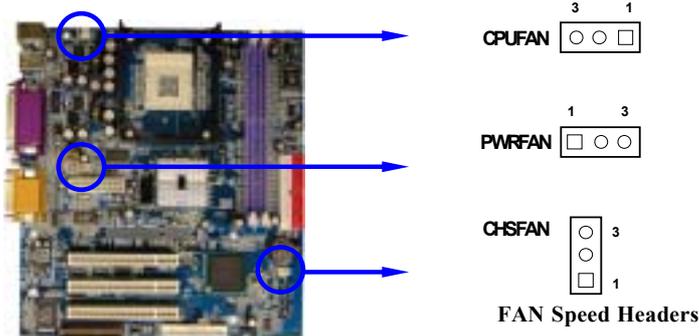
(11) IR infrared module Headers (5-pin) : IR

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.

IR   VCC   IRRX GND IRTX

Pin1

Infrared Module Headers
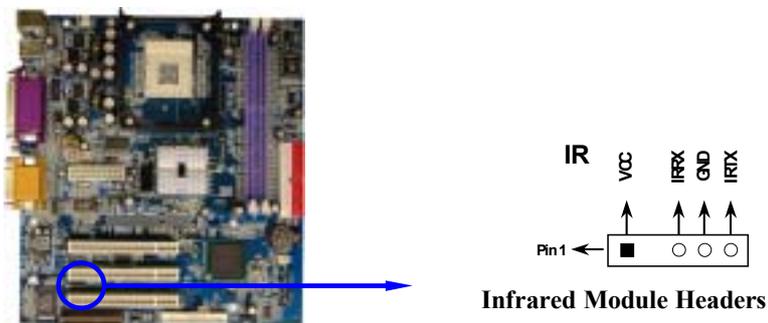
(12) CD Audio-In Headers (4-pin) : CD_IN

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

CD_IN

1   4

CD Audio-In Headers
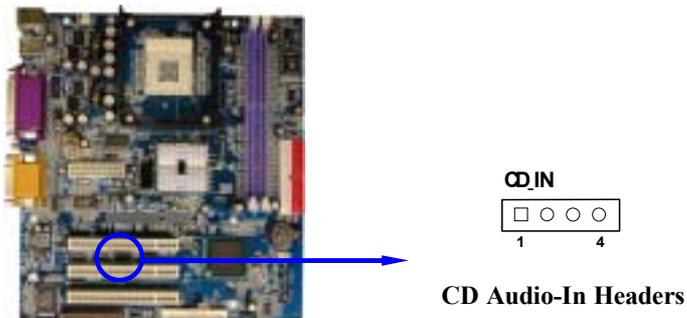
2-7 Starting Up Your Computer

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 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.

```
      CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
 ┌────────────────────────────────────┬────────────────────────────────────┐
 │  Standard CMOS Features            │  Miscellaneous Control             │
 │  Advanced BIOS Features            │  Load optimized Defaults           │
 │  Advanced Chipset Features         │  Load Standard Defaults            │
 │  Integrated Peripherals            │  Set Supervisor Password           │
 │  Power Management Setup            │  Set User Password                 │
 │  PnP/PCI Configurations            │  Save & Exit Setup                 │
 │  PC Health Status                  │  Exit Without Saving               │
 ├────────────────────────────────────┴────────────────────────────────────┤
 │  Esc : Quit                              ↑ ↓ → ←    : Select Item        │
 │  F10 : Save & Exit Setup                                                 │
 ├──────────────────────────────────────────────────────────────────────────┤
 │                 Time, Date, Hard Disk Type...                            │
 └──────────────────────────────────────────────────────────────────────────┘
```

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.

PnP/PCI configurations
This entry appears if your system supports PnP/PCI.

PC Health Status
This entry shows your PC health status.

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

Load Optimized Defaults

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.

```
              CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                             Standard CMOS Features
┌─────────────────────────────────────────────────┬─────────────────────────┐
│   Date (mm:dd:yy)        Mon, Sep, 23 2002        │                         │
│   Time (hh:mm:ss)        11 : 26 : 48             │        Item Help        │
│                                                   ├─────────────────────────┤
│ > IDE Primary Master     Press Enter None         │                         │
│ > IDE Primary Slave      Press Enter None         │   Menu Level >          │
│ > IDE Secondary Master   Press Enter None         │                         │
│ > IDE Secondary Slave    Press Enter None         │   Change the day, month,│
│                                                   │   year and century      │
│   Drive A                1.44M, 3.5 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>.

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

```
          CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                          Advanced BIOS Features
 ┌──────────────────────────────────────────────┬───────────────────────┐
 │  Anti-Virus Protection       Disabled         │                       │
 │  CPU L1 & L2 Cache           Enabled          │       Item Help        │
 │  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 │
 │       F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults │
 └──────────────────────────────────────────────────────────────────────┘
```

Anti-Virus Protection

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 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.

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
 ┌──────────────────────────────────────────────────────────────────────────────┐
 │                                                        │                       │
 │  > DRAM Timing Settings        Press Enter             │      Item Help        │
 │    System BIOS Cacheable       Enabled                 │                       │
 │    Video RAM Cacheable         Enabled                 ├───────────────────────┤
 │    Memory Hole At 15M-16M      Disabled                │                       │
 │    Delay Transaction           Enabled                 │   Menu Level >        │
 │    AGP Transfer Mode           Auto                    │                       │
 │    AGP Aperture Size           64MB                    │                       │
 │                                                        │                       │
 │                                                        │                       │
 ├────────────────────────────────────────────────────────────────────────────── │
 │   ↑↓→← 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

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.

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

```
            CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                            DRAM Timing Settings
┌─────────────────────────────────────────────────────────────────────────┐
│                                                      │                     │
│   Auto Configuration          Standard               │     Item Help       │
│   SDRAM CAS Latency Time       2.5                    │                     │
│   SDRAM Cycle Time             7                      ├─────────────────────┤
│   SDRAM RAS# to CAS# Delay     3                      │                     │
│   SDRAM RAS# Precharge Time    3                      │   Menu Level >>     │
│                                                      │                     │
│                                                      │                     │
│                                                      │                     │
├──────────────────────────────────────────────────────┴─────────────────────┤
│  ↑ ↓ → ← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help│
│       F5:Previous Values    F6:Optimized Defaults   F7:Standard Defaults     │
└─────────────────────────────────────────────────────────────────────────┘
```

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: 2T and 2.5T.
Note: Change these settings only if you are familiar with the chipset.

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: 2T, 3T and 4T.

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 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, 3T and 4T.

3-7 Integrated Peripherals

```
                  CMOS Setup Utility - Copyright(C) 1984-2002 Award Software
                                 Integrated Peripherals
┌────────────────────────────────────────────────────────────────────────────────┐
│  > Onboard IDE Function          Press Enter          ┌──────────────────────┐   │
│  > Onboard Device Function       Press Enter          │      Item Help        │   │
│  > Onboard Super IO Function     Press Enter          │                       │   │
│    Init Display First            PCI Slot             │  Menu Level >         │   │
│    Power On Function             Button Only          │                       │   │
│    KB Power On Password          Enter                │                       │   │
│    Hot Key Power On              Ctrl-F1              │                       │   │
│    Power Loss Function           Always Off           │                       │   │
│                                                       └──────────────────────┘   │
│ ┌──────────────────────────────────────────────────────────────────────────┐    │
│ │ ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help  │    │
│ │      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

```
                  CMOS Setup Utility - Copyright(C) 1984-2002 Award Software
                                 Onboard IDE Function
┌────────────────────────────────────────────────────────────────────────────────┐
│  OnChip Primary PCI IDE        Enabled               ┌──────────────────────┐    │
│  OnChip Secondary PCI IDE      Enabled               │      Item Help        │    │
│  Primary Master   PIO          Auto                  │                       │    │
│  Primary Slave    PIO          Auto                  │  Menu Level >>        │    │
│  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 32-bit Transfer Mode      Enabled               │                       │    │
│  IDE HDD Block Mode            Enabled               │                       │    │
│  Delay For HDD (Secs)           0                    │                       │    │
│                                                       └──────────────────────┘    │
│ ┌──────────────────────────────────────────────────────────────────────────┐    │
│ │ ↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help  │    │
│ │      F5:Previous Values   F6:Optimized Defaults    F7:Standard Defaults    │    │
│ └──────────────────────────────────────────────────────────────────────────┘    │
└────────────────────────────────────────────────────────────────────────────────┘
```

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.

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 Onboard Device Function

```
          CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                            Onboard Device Function
┌─────────────────────────────────────────────┬─────────────────────────┐
│                                              │        Item Help        │
│   USB Controller             Enabled         │                         │
│   USB Keyboard Legacy Support    Disabled    ├─────────────────────────┤
│   ** Onboard AC97 Codec is ALC101 **         │                         │
│   AC97 Audio                 Auto            │    Menu Level >>        │
│   AC97 Modem                 Auto            │                         │
│   Game Port Address          201             │                         │
│   Midi Port Address          Disabled        │                         │
│ 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.

AC97 Modem

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

Game Port Address/Midi Port Address

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

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                      Normal         Menu Level >>
       RxD, TxD Active                 Hi, Lo
       IR Transmission Delay           Enabled
       IR Duplex Mode                  Half
       Use IR Pins                     IRRX/IRTX
       Onboard Parallel Port           378/IRQ7
       Parallel Mode                   SPP
       EPP Mode Select                 EPP1.9
       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

This item allows you to determine which InfraRed(IR) function of the onboard I/O chip, this functions uses.

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.

```
              CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                                Power Management Setup
┌──────────────────────────────────────────────────────────────────────────────────┐
│                                                                                    │
│     ACPI Function                   Enabled            ┌─────────────────────────┐ │
│     Power Management                User Define        │        Item Help        │ │
│     Video off Method                V/H SYNC+Blank     ├─────────────────────────┤ │
│     Video Off In Suspend            Yes                │                         │ │
│     Suspend Type                    Stop Grant         │  Menu Level >           │ │
│     MODEM Use IRQ                   3                  │                         │ │
│     Suspend Mode                    Disabled           │                         │ │
│     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             │                         │ │
│   > PM Timer Reload 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 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

```
           CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                            PM Timer Reload Events
```

Primary IDE 0	Disabled	Item Help
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	Menu Level >>
FDD, COM, LPT Port	Disabled	
PCI PIRQ [A-D] #	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 PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, 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.

```
           CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                            PnP/PCI Configurations
```

Reset Configuration Data	Disabled	Item Help
Resources Controlled By	Manual	
x IRQ Resources	Press Enter	Menu Level >
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	

```
↑↓→← Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit  F1:General Help
      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

```
              CMOS Setup Utility – Copyright(C) 1984-2002 Award Software
                                    IRQ Resources

    IRQ-3    assigned to          PCI Device          Item Help
    IRQ-4    assigned to          PCI Device
    IRQ-5    assigned to          PCI Device
    IRQ-7    assigned to          PCI Device         Menu Level >>
    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.

```
            CMOS Setup Utility – Copyright(C) 1984-2001 Award Software
                             PC Health Status

    Shutdown Temperature          Disabled
    CPU Warning Temperature       Disabled               Item Help
    Show PC Health in Post        Enabled
    Current System Temperature    25ºC
    Current CPU Temperature       38ºC
    Current CPUFAN Speed          5000 rpm          Menu Level  >
    Current PWRFAN Speed          5000 rpm
    Current CHRFAN 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
         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.

```
               CMOS Setup Utility - Copyright(C) 1984-2002 Award Software
                                Miscellaneous Control
┌─────────────────────────────────────────────────┬──────────────────────────┐
│  CPU Clock Ratio                    X 8           │                          │
│  Auto Detect PCI Clk                Enabled       │       Item Help          │
│  Spread Spectrum                    Disabled      ├──────────────────────────┤
│  ** Current Host Clock is 100/33MHz **            │                          │
│  HOST/PCI Clock at Next Boot is     100/33MHz     │   Menu Level >           │
│  ** Current DRAM Clock is 133MHz **               │                          │
│  DRAM Clock at Next Boot is         133MHz        │                          │
│                                                   │                          │
│                                                   │                          │
│                                                   │                          │
│                                                   │                          │
│                                                   │                          │
│                                                   │                          │
├─────────────────────────────────────────────────┴──────────────────────────┤
│  ↑↓→← 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 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 is 100MHz.

PCI Clock Ratio

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

3-12 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.

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

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 9 selections:
1. INF   install Intel 845 chipset system driver
2. VGA   install Intel 845G VGA driver
3. SOUND   install ALC101 Audio Codec driver
4. DIRECTX8   install Microsoft DirectX 8.1 driver
5. PC-CILLIN   install PC-CILLIN2002 anti-virus program
6. MAGIC BIOS   install BIOS Live Update Utility
7. IAA   install Intel Application Accelerator software
8. BROWSE CD   to browse the contents of the CD
9. 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 VGA   install Intel 845G VGA Driver

1. Click VGA when MAGIC INSTALL MENU appears

2. Click NEXT When Intel (R) Brookdale-G-830M Chipset Graphics Driver Software Setup

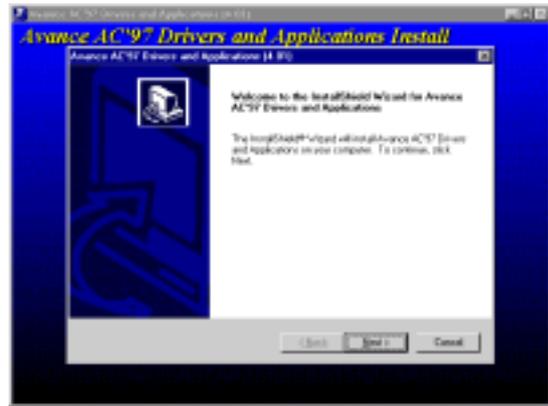3. Click YES, This is Announce CopyRight

4. If You Want Re-start Computer , Click FINISH

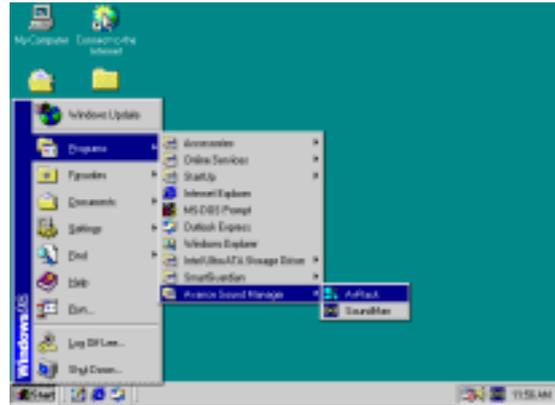## 4-3 SOUND Install ALC Audio Codec Driver

1. Click SOUND when MAGIC INSTALL MENU appears

2. Then auto detect operation system language edition, click Next, start to install DRIVER

3. Click Finish and Restart Windows

4. Click Start→Program→Avance Sound Manager→AvRack. Then AVRACK Windows appears

**NOTE: MAGIC INSTALL will auto detect file path:**
X:\CODEC\ALCCODEC\SETUP.EXE
(for WINDOWS 98SE/ME/NT4.0/2000/XP)

You need setting the "Environment Form Sound Effect" before you want to change 4/6 channel speaker output (Example: Room\Livingroom…..)

5. Avance Audio Rack table can play CD, WAV, MID, MP3, AVI, MPG Format File

4-4 PC-CILLIN Install PC-CILLIN 2002 Anti-virus program

1. Click PC-CILLIN when MAGIC INSTALL MENU appear
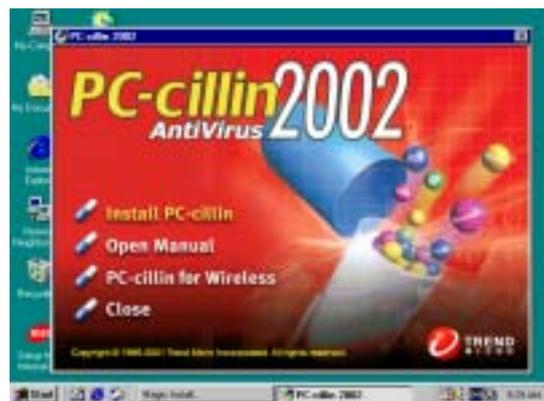
2. (1) Click "Install PC-CILLIN" when PC-CILLIN 2002 main menu appears, and Click NEXT when "Install Shield Wizard For PC-CILLIN 2002"
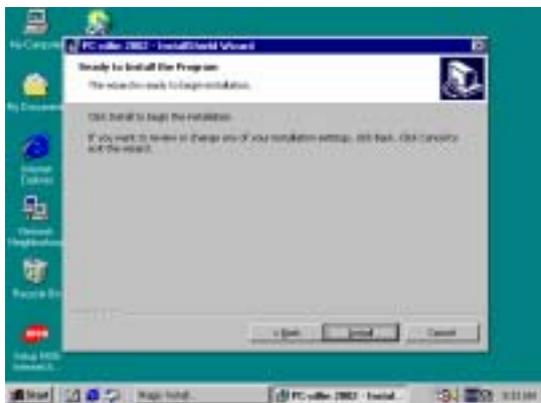
(2) Click Open Manual. you can learn PC-CILLIN 2002 how to use

3. This is license agrement, select "I Accept the terms" and Click NEXT

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

5. Click INSTALL, Start to install the software
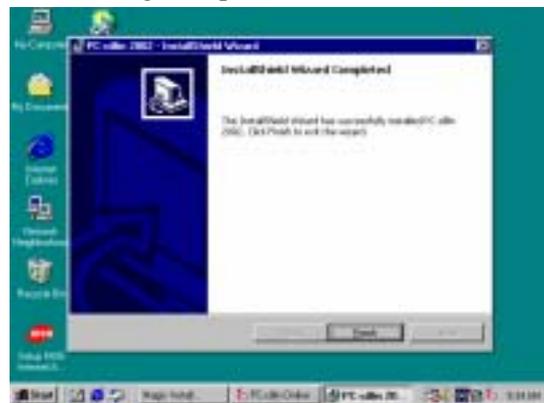
6. Setup Complete and click FINISH

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 ro 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

4-5 MAGIC BIOS Install BIOS Live Update Utility

1. Click Magic BIOS when Magic Install MENU appears

2. Click Next to install the Magic BIOS in Destination Folder
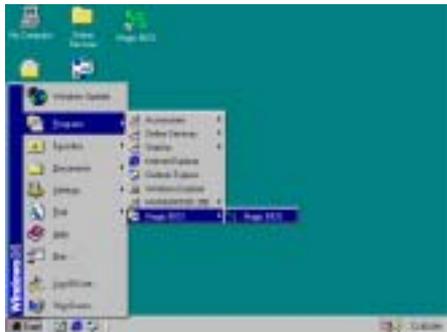
3. After finish Setup you will have a Magic BIOS icon in your screen

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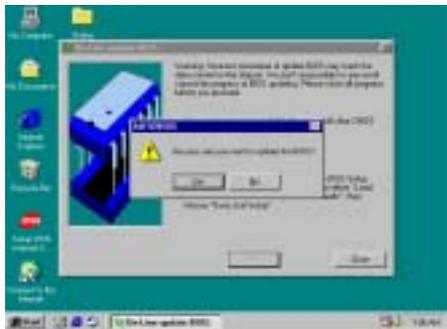
7. Click Yes if you want to update the BIOS otherwise choose No to exit

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.

4-7 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 Operation System is before these version, you can download Service Pack file from Microsoft "Download Center" or use "Windows Update" Function to Update Operation system USB2.0 Driver.

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 HOW TO UPDATE BIOS

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

Method 1. Use "Magic BIOS" update BIOS in Windows 98 (refer)

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 P4845GLM from our web site to your boot disc.

STEP 4. Insert your boot disc into A:,
start the computer, type "Awdflash A:\P4845GLMAxxx.BIN /SN/PY/CC/R"
P4845GLMAxxx.BIN is the file name of latest BIOS it can be P4845GLMA03.BIN or P4845GLMB02.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