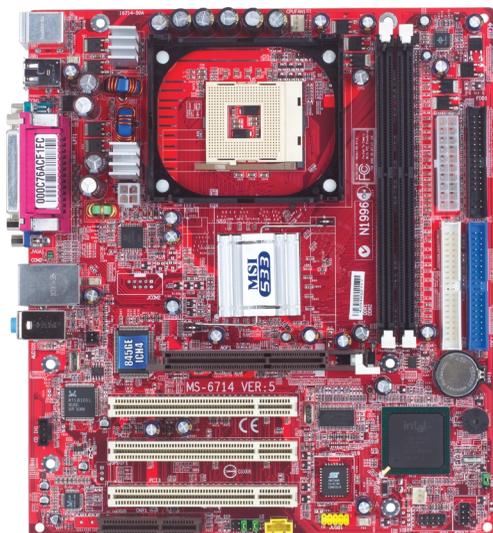**MSI**

845GEM/845GVM Series

MS-6714 (v5.X) M-ATX Mainboard

G52-M6714X9

Manual Rev: 5.1
Release Date: May 2004

CE   N1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

FC **Micro-Star International**
MS-6714
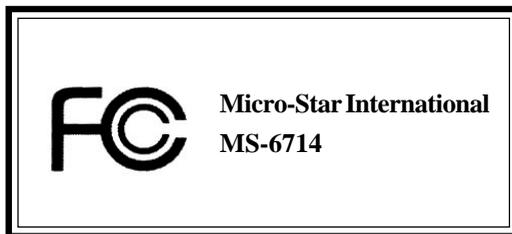
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation

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Revision History

Revision	Revision History	Date
V5.0	First release of PCB 5.0 with Intel 845GE/845GV & Intel ICH4	March 2004
V5.1	Update AGP description	May 2004

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

➤ Visit the MSI homepage & FAQ site for technical guide, BIOS updates, driver

updates, and other information: **http://www.msi.com.tw** & **http://www.msi. com.tw/program/service/faq/faq/esc_faq_list.php**

➤ Contact our technical staff at: **support@msi.com.tw**

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **Do not cover the openings.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    ➤ The power cord or plug is damaged.
    ➤ Liquid has penetrated into the equipment.
    ➤ The equipment has been exposed to moisture.
    ➤ The equipment has not work well or you can not get it work according to User's Manual.
    ➤ The equipment has dropped and damaged.
    ➤ The equipment has obvious sign of breakage.
12. **Do not leave this equipment in an environment unconditioned, storage temperature above 60^0 C (140^0F), it may damage the equipment.**

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

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CONTENTS

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Getting Started

Thank you for purchasing 845GEM/845GVM (MS-6714 v5. X) Micro ATX mainboard. The 845GEM/845GVM is based on **Intel® 845GE/GV** & **ICH4** chipsets and provides 6 USB 2.0 ports for high-speed data transmission and one optional SPDIF pinheader for digital audio transmission. With all these special designs, the 845GEM/845GVM delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU
➤ Supports Intel® P4 Northwood / Prescott (Socket 478) processor.
➤ Supports FSB 800MHz (overclocking spec), 533MHz and 400MHz.
➤ Supports 3.06GHz (and up) speed P4 processor.
(For the latest information about CPU, please visit http://www.msi.com.tw/program/
products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset
➤ Intel® 845GE/GV
    - Supports FSB 400MHz /533MHz/800MHz (Load High Performance Defaults in
    BIOS must be loaded to use 800MHz).
    - Integrated 3D/2D graphic core (for 845GV only).
    - Supports DDR333/DDR400 (FSB 800 must be used) technology.
➤ Intel® ICH4
    - AC'97 Controller Integrated.
    - 6 ports Hi-Speed USB 2.0 controller, 480Mb/sec.
    - Supports both ACPI and legacy APM power management.
    - Legacy free support.

Main Memory
➤ Supports four memory banks using two 184-pin unbuffered DIMM.
➤ Max memory size is 2GB without ECC (1GB/slot).
➤ Supports 2.5V DDR DIMM.
➤ Supports DDR266, DDR333 & DDR400.
(For the updated supporting memory modules, please visit http://www.msi.com.tw/
program/products/mainboard/mbd/pro_mbd_trp_list.php to refer the memory module
part in the test report.)

Slots
➤ One AGP slot (for 845GE only).
➤ Three PCI 2.2 32-bit Master PCI Bus slots.
➤ One CNR slot.

On-Board IDE
➤ Dual IDE controllers integrated in ICH4.
➤ Supports PIO, Bus Master, Ultra DMA 33/66/100 operation modes.
➤ Can connect up to four IDE devices.

On-Board Peripherals
➤ On-Board Peripherals include:
    - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88 bytes.
    - 1 serial port COM 1 and 1 optional serial pinheader JCOM2
    - 1 parallel port supports SPP/EPP/ECP mode
    - 6 USB2.0 ports (Rear * 4 / Front * 2)
    - 1 Line-In/Line-Out/Mic-In port
    - 2 PS/2 mouse/keyboard connectors

- 1 LAN RJ45 connector

Audio
➤ AC97 link controller integrated in Intel ICH4 southbridge.
➤ Realtek ALC 655 codec is compliant with AC97 2.1 Spec and meets PC2001 audio performance requirement.

LAN (Optional)
➤ PCI local bus single-chip Fast Ethernet Controller, RealTek RTL8101L.
  - With external 10/100 Base-T Lan transformer.
  - Integrated Fast Ethernet MAC and PHY in one chip.
  - Supports 10Mb/s and 100Mb/s auto-negotiation operation.
  - Compliant with PCI v2.2 and PC99 standard.
  - Supports ACPI Power Management.

BIOS
➤ 4MB Award BIOS with Plug and Play BIOS for 845GE/PE.
➤ ACPI, SMBIOS 2.3, Green and Boot Block.
➤ Provides DMI 2.0, WFM 2.0, WOL, chassis intrusion, and SMBus for system management.

Dimension
➤ Micro-ATX Form Factor: 24.4 cm (L) x 21.4 cm (W).

Mounting
➤ 6 mounting holes.

Mainboard Layout

Top : mouse
Bottom: keyboard

USB ports

Top : Parallel Port

Bottom:
COM1
VGA port

JPW1

Top: LAN Jack
Bottom: USB
ports

Line-Out
Line-In
Mic

JCASE1

JCOM2
(Optional)

Intel
845GE/GV

Winbond
W83627HF-AW

AGP Slot (for 845GE only)

RTL
8101L

PCI Slot 1

CD_IN1

PCI Slot 2

JSPDIF1
(Optional)

PCI Slot 3

Codec

CNR

JAUDIO1 AUX_IN1

JUSB1

BIOS

ICH4

SYSFAN1

JBAT1

JFP1

JFP2

CPUFAN1

ATX
Power Supply

FDD 1

IDE 2

IDE 1

DDR 1

DDR 2

BATT
+

MS-6714 v5.X Micro ATX Mainboard

2

Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

Quick Components Guide

CPUFAN1, *p.2-13*

JPW1, *p.2-8*   CPU, *p.2-3*

DDR DIMMs, *p.2-6*

CONN1, *p.2-8*

Back Panel
I/O, *p.2-9*

FDD1, *p.2-13*

IDE1, IDE2, *p.2-14*

JCOM2, *p.2-10*
(optional)

JCASE1, *p.2-17*

AGP Slot, *p.2-19*
(for 845GE only)

BATT
+

CD_IN1, *p.2-14*

PCI Slots, *p.2-19*

JSPDIF1, *p.2-17*

JBAT1, *p.2-18*

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JAUDIO1, *p.2-16*

JFP2, *p.2-15*

JFP1, *p.2-15*

AUX_IN1, *p.2-14*

JUSB1, *p.2-16*
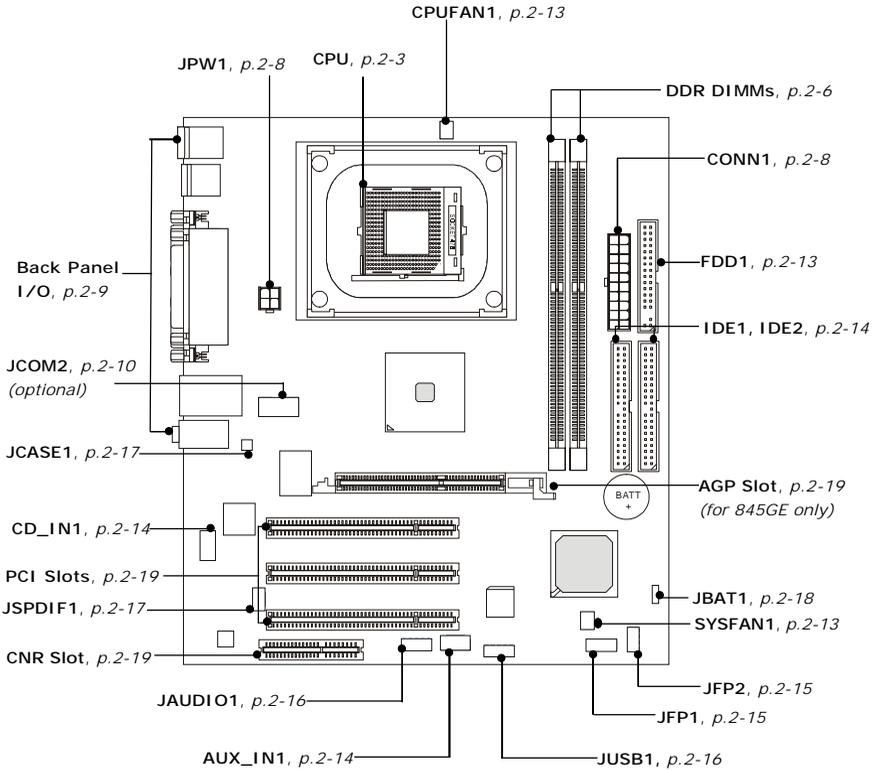
Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 Northwood/Prescott processor in the 478 pin package. The mainboard uses a CPU socket called PGA478 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not find the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php

CPU Core Speed Derivation Procedure

If	CPU Clock	=	200MHz
	Core/Bus ratio	=	12
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	200MHz x 12
		=	2.4 GHz

Memory Speed/CPU FSB Support Matrix

Memory FSB	DDR 266	DDR 333	DDR 400
400 MHz	OK	N/A	N/A
533 MHz	OK	OK	N/A
800 MHz	N/A	N/A	OK*

*: Overclocking spec. In this combination, High Performance Defaults in BIOS must be loaded to make CPU run at FSB 800MHz. Please check chapter 3 for details.

MSI

MSI Reminds You...

Overheating
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Replacing the CPU
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

CPU Installation Procedures for Socket 478

1. Please turn off the power and unplug the power cord before installing the CPU.

Open Lever

Sliding Plate   90 degree

2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.

Gold arrow

3. Look for the gold arrow. The gold arrow should point towards the lever pivot. The CPU can only fit in the correct orientation.

Correct CPU placement

Gold arrow

O

4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.

Incorrect CPU placement

Gold arrow

X

5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.

Press down the CPU

Close Lever
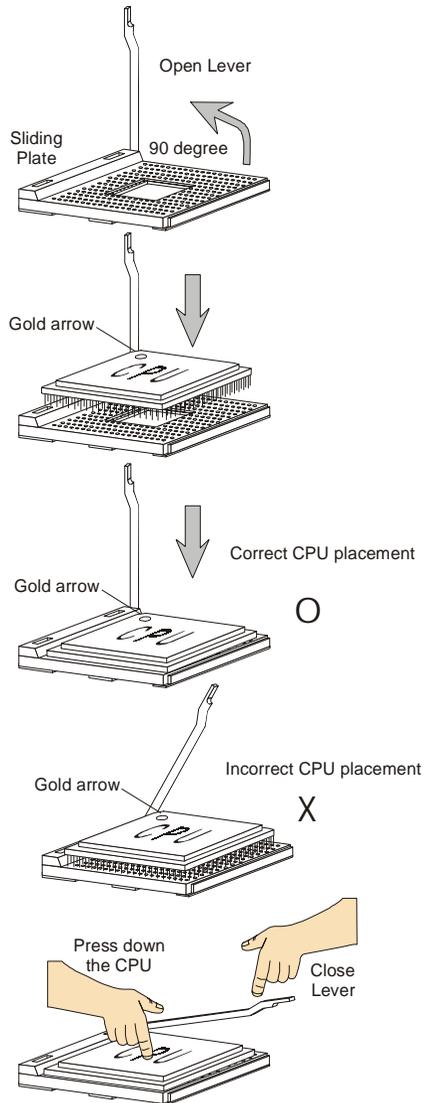
Installing the CPU Fan

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly important. To dissipate heat, you need to attach the CPU cooling fan and heatsink on top of the CPU. Follow the instructions below to install the Heatsink/Fan:

1. Locate the CPU and its retention mechanism on the motherboard.

retention mechanism

2. Position the heatsink onto the retention mechanism.
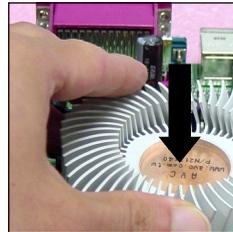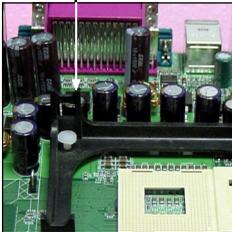
3. Mount the fan on top of the heatsink. Press down the fan until its four clips get wedged in the holes of the retention mechanism.

4. Press the two levers down to fasten the fan. Each lever can be pressed down in only ONE direction.

levers
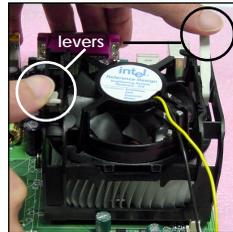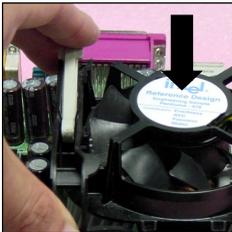
5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the board.
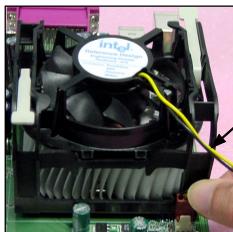
fan power cable

MSI Reminds You...
If your Intel Pentium 4 processor supports 3.0GHz (and up), please be sure to use a multi-direction fan to make the heatsink exhausts air towards the voltage regulators on the board. Multi-direction fan has better performance in CPU overheating.

Memory

The mainboard provides 2 slots for 184-pin DDR SDRAM DIMM (Double In-Line Memory Module) modules and supports the memory size up to 2GB. You can install DDR333 or DDR266 modules on the DDR DIMM slots (DDR 1~2). However, if you are using a CPU with FSB800 and you wish to overclock, you must install DDR400 modules.

For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.

**DDR DIMM Slots
(DDR 1&2, from left to right)**

Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

DDR Module Combination

Install at least one DIMM module on the slot. Memory modules can be installed on the slots in any order. You can install either single- or double-sided modules to meet your own needs.

Memory modules can be installed in any combination as follows:

Slot	Memory Module	Total Memory
DIMM 1 (Bank 0 & 1)	S/D	64MB~1GB
DIMM 2 (Bank 2 & 3)	S/D	64MB~1GB
Maximum System Memory Supported		64MB~2GB

S: Single Side   D: Double Side

Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.

> **MSI Reminds You...**
> *You can barely see the golden finger if the module is properly inserted in the socket.*

3. The plastic clip at each side of the DIMM slot will automatically close.

Volt   Notch
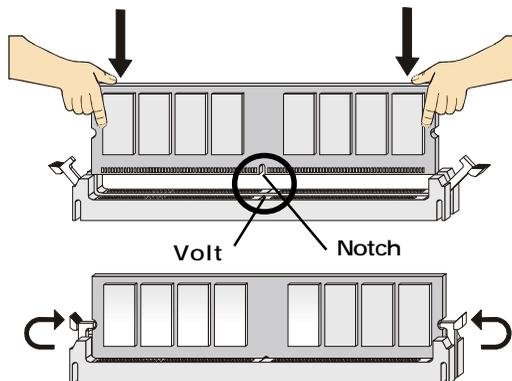
Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Connector: CONN1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.
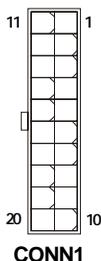
CONN1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

CONN1
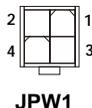
JPW1 Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

JPW1

MSI **MSI Reminds You...**
Power supply of 300 (and up) watts is highly recommended for system stability.

Back Panel

The back panel provides the following connectors:
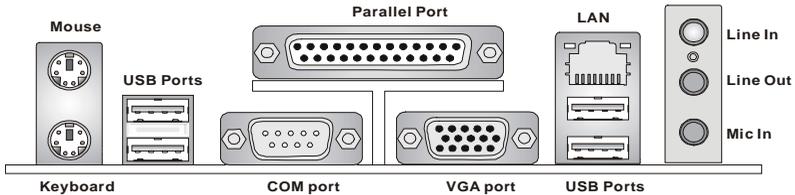
Mouse Connector

The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin assignments are as follows:

Keyboard Connector

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a PS/2® keyboard. You can plug a PS/2® keyboard directly into this connector.
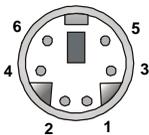
PS/2 Mouse (6-pin Female)

PS/2 Keyboard (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

Serial Port Connectors: COM1 & JCOM2 (Optional)

The mainboard offers one 9-pin male DIN connector as serial port COM1 and one optional serial port JCOM2. All ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to them.

1 2 3 4 5

6 7 8 9

9-Pin Male DIN Connector

9 **1**
2
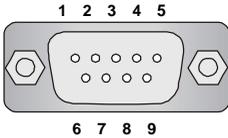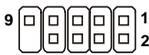
JCOM2 (Optional)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

Audio Port Connectors

Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

1/8" Stereo Audio Connectors

Line in

Line out

MIC
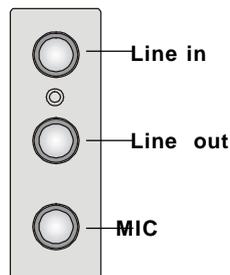
VGA Connector

The mainboard provides a DB 15-pin female connector to connect a VGA monitor.

5   1

15   11
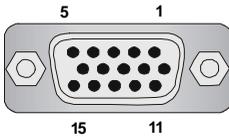
VGA Connector
(DB 15-pin)

Pin	Signal Description	Pin	Signal Description
1	RED	2	GREEN
3	BLUE	4	N/C
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	N/C	12	SDA
13	Horizontal Sync	14	Vertical Sync
15	SCL		

RJ-45 LAN Jack

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). You can connect a network cable to the LAN jack.
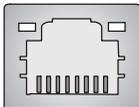
Pin Definition

RJ-45 LAN Jack

PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

USB Connectors

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.
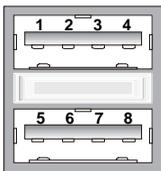
USB Port Description

1   2   3   4

5   6   7   8

USB Ports

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

Parallel Port Connector: LPT1

The mainboard provides a 25-pin female centronic connector as LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.
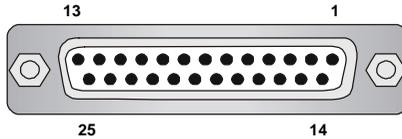
Pin Definition

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, LAN, USB Ports, IR module and CPU/System/Power Supply FAN.

Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.

FDD1
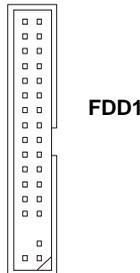
Fan Power Connectors: CPUFAN1/SYSFAN1

The CPUFAN1 (processor fan) and SYSFAN1 (system fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

GND
+12V
SENSOR

CPUFAN1

SENSOR
+12V
GND

SYSFAN1

MSI

MSI Reminds You...
1. Always consult the vendors for proper CPU cooling fan.
2. Please refer to the recommended CPU fans at Intel® official website.
3. If you want to overclock the CPU, it is strongly recommended to use a multi-direction fan for better heatsink.

Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices.
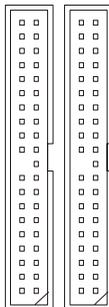
IDE2   IDE1

IDE1 (Primary IDE Connector)
The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.
IDE2 (Secondary IDE Connector)
IDE2 can also connect a Master and a Slave drive.

MSI Reminds You...
If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

CD-In Connector: CD_IN1

This connector is for CD-ROM audio connector.

Aux Line-In Connector: AUX_IN1

The connector is for DVD add-on card with Line-in connector.

R
GND
L

CD_IN1

AUX_IN1

R   L
GND
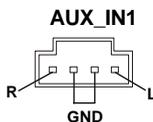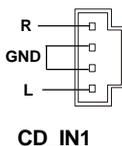
Front Panel Connectors: JFP1 & JFP2

The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
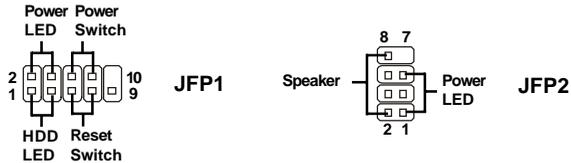
JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

JFP2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	BUZ+
5	PLED	6	BUZ-
7	NC	8	SPK+

Front Panel Audio Connector: JAUDIO1

The JAUDIO1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.

JAUDIO1

JAUDIO1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

MSI Reminds You...

If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.

Front USB Connector: JUSB1

The mainboard provides one standard USB 2.0 pin header *JUSB1*. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.

JUSB1

JUSB1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key	10	USBOC

SPDIF-Out Connector: JSPDIF1 (Optional)

This connector is used to connect SPDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.
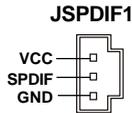
JSPDIF1 Pin Definition

JSPDIF1

VCC
SPDIF
GND

PIN	SIGNAL	DESCRIPTION
1	VCC	VCC5V
2	SPDIF	S/PDIF Output
3	GND	Ground

The JSPDIF1 supports SPDIF output only and can be connected to an external SPDIF Bracket for digital audio transmission.

Connected to JSPDIF1

SPDIF bracket (optional)

Chassis Intrusion Switch Connector: JCASE1

This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

JCASE1

GND
CINTRU   1

Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board that has a power supply from external battery to keep the system configuration data. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:

1

JBAT1

1 **1**

3 **3**
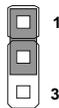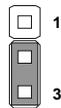
Clear Data **Keep Data**

> **MSI Reminds You...**
> *You can clear CMOS by shorting 1-2 pin while the system is off.*
> *Then return to 2-3 pin position. Avoid clearing the CMOS while the*
> *system is on; it will damage the mainboard.*

Slots

The motherboard provides one optional AGP slot, three 32-bit PCI bus slots and one CNR slot.

AGP (Accelerated Graphics Port) Slot (for 845GE only)

The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory. The slot supports 4x AGP card.
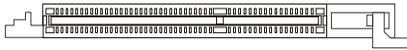
AGP Slot

PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.
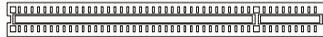
PCI Slots

CNR Slot

The CNR slot allows you to insert the CNR expansion cards. CNR is a specially designed modem riser card for ATX family motherboards. Its main processing is done through software and controlled by the motherboard's chipset.
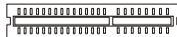
CNR Slot

PCI Interrupt Request Routing

The IRQ, abbreviation of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#

3

BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use. You may need to run the Setup program when:

◈ An error message appears on the screen during the system booting up, and requests you to run SETUP.

◈ You want to change the default settings for customized features.

MSI

MSI Reminds You...
1. The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.
2. While booting up, the BIOS version is shown in the 1st line appearing after the memory counting. It is usually in the format:
example: W7005MS V2.0 091096
where:
1st digit refers to BIOS maker as A=AMI(R); W=AWARD(R)
2nd - 5th digit refers to the model number.
6th - 7th digit refers to the customer, MS=all standard customers.
V2.0 refers to the BIOS version.
091096 refers to the date this BIOS is released.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

```
Press DEL to enter SETUP
```

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the control keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu containing additional options can be launched from this field. You can use control keys (↑↓) to highlight the field and press <Enter> to

call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press <Esc >.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Main Menu

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

```
              Phoenix - AwardBIOS CMOS Setup Utility

 ▸ Standard CMOS Features          ▸ Frequency/Voltage Control
 ▸ Advanced BIOS Features          Load High Performance Defaults
 ▸ Advanced Chipset Features       Load BIOS Setup 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      F9 : Menu in BIOS    ↑ ↓ → ←   : Select Item
 F10 : Save & Exit Setup

                 Time, Date, Hard Disk Type...
```

Standard CMOS Features
Use this menu for basic system configurations, such as time, date etc.

Advanced BIOS Features
Use this menu to setup the items of Award® special enhanced features.

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.

Frequency/Voltage Control
Use this menu to specify your settings for frequency/voltage control.

Load High Performance Defaults (only for FSB800)
If you have a CPU which supports FSB800, you *MUST* load this high performance defaults, or your system will run as FSB533 even if you have a FSB800 CPU installed.

Load BIOS Setup Defaults
Use this menu to load factory default settings into the BIOS for stable system perfor-
mance operations.

Set Supervisor Password
Use this menu to set Supervisor Password.

Set User Password
Use this menu to set User Password.

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

Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu includes some basic 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.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Standard CMOS Features
┌──────────────────────────────────────────────┬──────────────────┐
│  Date (mm:dd:yy)        Tue, Mar  2 2004      │    Item Help     │
│  Time (hh:mm:ss)        14 : 56 : 45          ├──────────────────┤
│                                               │ Menu Level   ▶   │
│ ▶ IDE Primary Master                          │                  │
│ ▶ IDE Primary Slave                           │ Change the day,  │
│ ▶ IDE Secondary Master                        │ month,           │
│ ▶ IDE Secondary Slave                         │ year and century │
│                                               │                  │
│  Drive A                [1.44M, 3.5 in.]      │                  │
│  Drive B                [None]                │                  │
│                                               │                  │
│  Video                  [EGA/VGA]             │                  │
│  Halt On                [All , But Keyboard]  │                  │
│                                               │                  │
│  CPU Type                                     │                  │
│                                               │                  │
│  Base Memory                      640K        │                  │
│  Extended Memory                65472K        │                  │
│  Total Memory                    1024K        │                  │
├──────────────────────────────────────────────┴──────────────────┤
│ ↑↓++:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│      F5: Previous Values      F7: BIOS Setup 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 can be adjusted by users.

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

IDE Primary/Secondary Master/Slave
Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [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.

Access Mode	The settings are [CHS], [LBA], [Large], [Auto].
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

Drive A/B
This item allows you to set the type of floppy drives installed. Available options: [None], [360K, 5.25 in.], [1.2M, 5.25 in.], [720K, 3.5 in.], [1.44M, 3.5 in.], [2.88M, 3.5 in].

Video
The setting controls the type of video adapter used for the primary monitor of the system. Available options: [EGA/VGA], [CGA 40], [CGA 80], [MONO].

Halt On
The setting determines whether the system will stop if an error is detected at boot. Available options are:

[All Errors]	The system stops when any error is detected.
[No Errors]	The system doesn't stop for any detected error.
[All, But Keyboard]	The system doesn't stop for a keyboard error.
[All, But Diskette]	The system doesn't stop for a disk error.
[All, But Disk/Key]	The system doesn't stop for either a disk or a keyboard error.

CPU Type
This item shows the CPU type of your system (read only).

Base/Extended/Total Memory
The three items show the memory status of your system (read only).

Advanced BIOS Features

```
              Phoenix - AwardBIOS CMOS Setup Utility
                    Advanced BIOS Features
┌─────────────────────────────────────────┬──────────────────────┐
│ Virus Warning            [Disabled]    ▲ │     Item Help        │
│ x CPU L1 & L2 Cache       Enabled        │                      │
│ Hyper-Threading Technology[Enabled]      │ Menu Level  ▶        │
│ Fast Boot                [Enabled]       │                      │
│ 1st Boot Device          [Floppy]        │ Allows you to choose │
│ 2nd Boot Device          [HDD-0]         │ the VIRUS warning    │
│ 3rd Boot Device          [CDROM]         │ feature for IDE Hard │
│ Boot Other Device        [Enabled]       │ Disk boot sector     │
│ Swap Floppy              [Disabled]      │ protection. If this  │
│ x Seek Floppy             Enabled        │ function is enabled  │
│ Boot Up Num-Lock LED     [On]            │ and someone attempt  │
│ Gate A20 Option          [Fast]          │ to write data into   │
│ Typematic Rate Setting   [Disabled]      │ this area , BIOS will│
│ x Typematic Rate (Chars/Sec) 6           │ a warning message on │
│ x Typematic Delay (Msec)   250           │ screen and alarm beep│
│ Security Option          [Setup]         │                      │
│ APIC Mode                [Enabled]       │                      │
│ MPS Version Control For OS[1.4]          │                      │
│ Boot OS/2 for DRAM > 64MB [No]           │                      │
│ Full Screen LOGO Show    [Enabled]     ▼ │                      │
├─────────────────────────────────────────┴──────────────────────┤
│ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│      F5: Previous Values      F7: BIOS Setup Defaults            │
└─────────────────────────────────────────────────────────────────┘
```

Virus Warning
The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. Settings: [Disabled], [Enabled].

CPU L1 & L2 Cache
The item allows you to turn on or off CPU's internal (L1) and external (L2) cache. Settings: [Enabled], [Disabled].

Hyper-Threading Technology
This field is used to enable or disable the Intel Hyper Threading CPU function. Setting to [Enabled] will increase the system performance. Settings: [Enabled], [Disabled]. **Please disable this item if your operating system doesn't support HT Function, or unreliability and instability may occur.**

MSI

MSI Reminds You...
Enabling the functionality of Hyper-Threading Technology for your computer system requires ALL of the following platform Components:
*CPU: An Intel® Pentium® 4 Processor with HT Technology;
*Chipset: A chipset that supports HT Technology;
*BIOS: A BIOS that supports HT Technology and has it enabled;
*OS: Only Microsoft® Windows 2000 and XP can support HT technology.

Fast Boot
Setting the item to [Enabled] allows the system to boot within 5 seconds since it will skip some check items. Settings: [Disabled], [Enabled].

1st/2nd/3rd Boot Device
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

MSI Reminds You...
Available settings for "1st/2nd/3rd Boot Device" vary depending on the bootable devices you have installed. For example, if you did not install a floppy drive, the setting "Floppy" does not show up.

Boot Other Device
Setting the option to [Enabled] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

Swap Floppy
Setting to [Enabled] will swap floppy drives A: and B:. Settings: [Enabled], [Disabled].

Seek Floppy
Setting to Enabled will make BIOS seek floppy drive A: before booting the system. Settings: [Disabled], [Enabled].

Boot Up Num-Lock Status
This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad. Setting options: [On], [Off].

Gate A20 Option
This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value [Fast] is selected, the Gate A20 is controlled by Port92 or chipset specific method resulting in faster system performance. When [Normal] is selected, A20 is controlled by a keyboard controller or chipset hardware.

Typematic Rate Setting
This item is used to enable or disable the typematic rate setting including Typematic Rate & Typematic Delay.

Typematic Rate (Chars/Sec)
After Typematic Rate Setting is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated. Settings: [6], [8], [10], [12], [15], [20], [24], [30].

Typematic Delay (Msec)
This item allows you to select the delay between when the key was first pressed and when the acceleration begins. Settings: [250], [500], [750] and [1000].

Security Option
This specifies the type of BIOS password protection that is implemented. Settings are described below:

Option	Description
[Setup]	The password prompt appears only when end users try to run Setup.
[System]	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

APIC Mode
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance to PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQs resources for the system. Settings: [Enabled], [Disabled].

MPS Table Version
This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: [1.4], [1.1].

Boot OS/2 DRAM > 64MB
This allows you to run the OS/2® operating system with DRAM greater than 64MB. Setting options: [No], [Yes].

Full Screen LOGO Show
This item enables you to show the company logo on the bootup screen. Settings are:
> [Enabled]   Shows a still image (logo) on the full screen at boot.
> [Disabled]   Shows the POST messages at boot.

Advanced Chipset Features

```
           Phoenix - AwardBIOS CMOS Setup Utility
                   Advanced Chipset Features
  Configure DRAM Timing    [By SPD]           │    Item Help
    CAS# Latency           [2.5]              │
    Precharge Delay        [7]                │ Menu Level   ▶
    RAS# to CAS# Delay     [3]                │
    RAS# Precharge         [3]                │
  DRAM Frequency           [Auto]             │
  Delayed Transaction      [Enabled]          │
  Delay Prior to Thermal   [16 Min]           │
  AGP Aperture Size (MB)   [64]               │
                                              │
  ** On-Chip VGA Setting **                   │
  On-Chip VGA              [Enabled]          │
  On-Chip Frame Buffer Size [8MB]             │
  Boot Display             [Auto]             │
                                              │
                                              │
                                              │
↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5: Previous Values      F7: BIOS Setup Defaults
```

MSI Reminds You...
Change these settings only if you are familiar with the chipset.

Configure DRAM Timing
Selects whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to [By SPD] enables DRAM timings to be determined by BIOS based on the configurations on the SPD. Selecting [Manual] allows users to configure the DRAM timings manually.

CAS# Latency
This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: [1.5], [2], [2.5] (clocks). [0.5] (clocks) increases the system performance the most while [2.5] (clocks) provides the most stable performance.

Precharge Delay
The field specifies the idle cycles before precharging an idle bank. Settings: [7], [6], [5] (clocks).

RAS# to CAS# Delay
This field allows you to set the number of cycles for a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from or refreshed. Fast speed offers faster performance while slow speed offers more stable performance. Settings: [3], [2] (clocks).

RAS# Precharge
This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refreshing may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Available settings: [3], [2] (clocks).

DRAM Frequency
This setting allows you to set the bus frequency for installed DRAM. Settings: [Auto], [DDR266], [DDR333].

Delayed Transaction
The chipset has an embedded 32-bit posted write buffer to support delayed transactions cycles so that transactions to and from the ISA bus are buffered and PCI bus can perform other transactions while the ISA transaction is underway. Select [Enabled] to support compliance with PCI specification version 2.1. Setting options: [Enabled], [Disabled].

Delay Prior to Thermal
When the CPU temperature reaches a factory preset level, a thermal monitoring mechanism will be enabled following the appropriate timing delay specified in this field. With the thermal monitoring enabled, clock modulation controlled by the processor's internal thermal sensor is also activated to keep the processor within allowable temperature limit. Setting options: [4 Min], [8 Min], [16 Min], [32 Min].

AGP Aperture Size (MB) (for 845GE only)
This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The option allows the selection of an aperture size of [4], [8], [16], [32], [64], [128], [256].

On-Chip VGA Setting
The following items allow you to configure the settings about On-Chip VGA.

On-Chip VGA
This setting allows you to enable or disable the on-chip VGA function. Setting: [Enabled] and [Disabled].
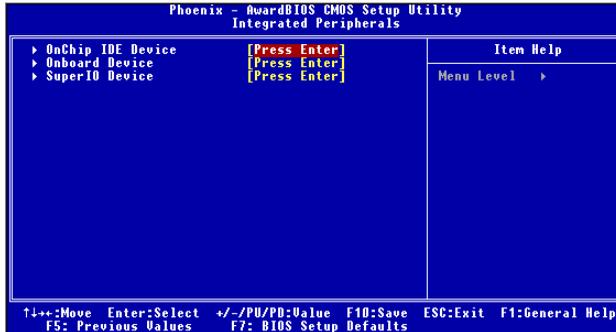
On-Chip VGA Frame Buffer Size
The field specifies the size of system memory allocated for video memory. Settings: [1MB], [8MB].
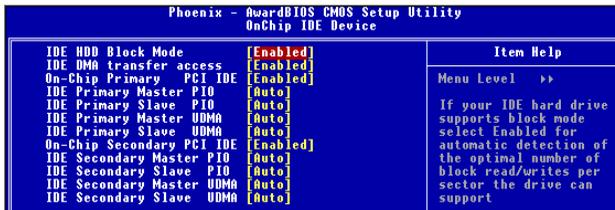
Boot Display
Use the field to select the type of device you want to use as the display(s) of the system. Setting options: [Auto], [CRT], [TV], [EFP], [CRT+EFP], [CRT+TV]. The option [EFP] refers to the LCD display.

Integrated Peripherals

```
                Phoenix - AwardBIOS CMOS Setup Utility
                         Integrated Peripherals
 ▶ OnChip IDE Device              [Press Enter]          Item Help
 ▶ Onboard Device                 [Press Enter]
 ▶ SuperIO Device                 [Press Enter]      Menu Level    ▶




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

OnChip IDE Device
Press <Enter> and the following sub-menu appears:

```
                Phoenix - AwardBIOS CMOS Setup Utility
                           OnChip IDE Device
  IDE HDD Block Mode          [Enabled]               Item Help
  IDE DMA transfer access     [Enabled]
  On-Chip Primary   PCI IDE   [Enabled]      Menu Level    ▶▶
  IDE Primary Master PIO      [Auto]
  IDE Primary Slave  PIO      [Auto]         If your IDE hard drive
  IDE Primary Master UDMA     [Auto]         supports block mode
  IDE Primary Slave  UDMA     [Auto]         select Enabled for
  On-Chip Secondary PCI IDE   [Enabled]      automatic detection of
  IDE Secondary Master PIO    [Auto]         the optimal number of
  IDE Secondary Slave  PIO    [Auto]         block read/writes per
  IDE Secondary Master UDMA   [Auto]         sector the drive can
  IDE Secondary Slave  UDMA   [Auto]         support
```

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. Settings: [Enabled], [Disabled].

IDE DMA transfer access
Setting to [Enabled] will open DMA bus master and execute DMA action in DOS, which will make the data transferring faster. Settings: [Disabled], [Enabled].

On-Chip Primary/Secondary PCI IDE
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose [Enabled] to activate each channel separately. Settings: [Enabled], [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 DMA
Ultra DMA 33/66/100/133 implementation is possible only if your IDE hard drive

supports it and the operating environment includes a DMA driver (Windows ME, XP or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, Ultra DMA/66, Ultra DMA/100 and Ultra DMA/133, select Auto to enable BIOS support. Settings: [Auto], [Disabled].

Onboard Device
Press <Enter> and the following sub-menu appears:

```
              Phoenix - AwardBIOS CMOS Setup Utility
                        Onboard Device

   USB Controller           [Enabled]          Item Help
   USB 2.0 Controller       [Enabled]
   USB Keyboard Support     [Disabled]    Menu Level    ▶▶
   USB Mouse Support        [Disabled]
   AC'97 Audio              [Auto]
   AC'97 Modem              [Auto]
   Onboard LAN selection    [Enabled]
   Onboard Lan Boot ROM     [Disabled]
```

USB Controller
Select [Enabled] if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals. Settings: [Enabled], [Disabled].

USB 2.0 Controller
This item is used to enable/disable the USB 2.0 Support. Settings: [Enabled], [Disabled].

USB Keyboard/Mouse Support
Set to [Enabled] if you need to use a USB keyboard/mouse in the operating system that does not support or does not have any USB driver installed, such as DOS and SCO Unix. Settings: [Enabled], [Disabled].

AC97 Audio
[Auto] allows the mainboard to detect whether an audio device is used. If an audio device is detected, the onboard AC97 (Audio Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Settings: [Auto], [Disabled].

AC'97 Modem
[Auto] allows the mainboard to detect whether a modem is used. If a modem is used, the onboard MC'97 (Modem Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect to a modem. Settings: [Auto], [Disabled].
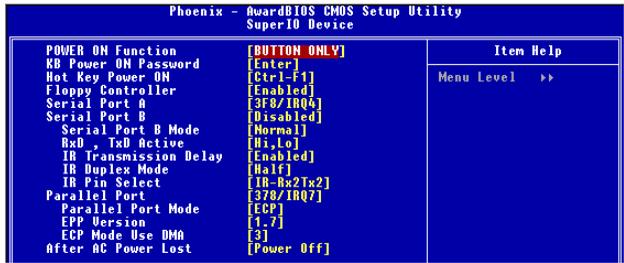
Onboard LAN selection
The field determines whether the onboard LAN controller is activated. Settings: [Enabled], [Disabled].

Onboard Lan Boot ROM
This item is used to decide whether to invoke the Boot ROM of the Onboard LAN Chip. Settings: [Enabled], [Disabled].

SuperIO Device
Press <Enter> and the following sub-menu appears:

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                             SuperIO Device
    POWER ON Function         [BUTTON ONLY]           Item Help
    KB Power ON Password      [Enter]
    Hot Key Power ON          [Ctrl-F1]         Menu Level   ▶▶
    Floppy Controller         [Enabled]
    Serial Port A             [3F8/IRQ4]
    Serial Port B             [Disabled]
      Serial Port B Mode      [Normal]
      RxD , TxD Active        [Hi,Lo]
      IR Transmission Delay   [Enabled]
      IR Duplex Mode          [Half]
      IR Pin Select           [IR-Rx2Tx2]
    Parallel Port             [378/IRQ7]
      Parallel Port Mode      [ECP]
      EPP Version             [1.7]
      ECP Mode Use DMA        [3]
    After AC Power Lost       [Power Off]
```

POWER ON Function
This controls how the PS/2 mouse or keyboard can power on the system. Settings: [Password], [Hot KEY], [Mouse Left], [Mouse Right], [Any KEY], [BUTTON ONLY], [Keyboard 98].

KB Power ON Password
If *POWER ON Function* is set to [Password], then you can set a password in the field for the PS/2 keyboard to power on the system.

Hot Key Power ON
If *POWER ON Function* is set to [Hot KEY], you can assign a hot key combination in the field for the PS/2 keyboard to power on the system. Settings: [Ctrl-F1] through [Ctrl-F12].

Floppy Controller
This is used to enable or disable the onboard Floppy controller.

Option	Description
[Enabled]	Enables the onboard Floppy controller.
[Disabled]	Disables the onboard Floppy controller.

Serial Port A/B (Serial Port B is optional)
These items specify the base I/O port addresses of the onboard Serial Port A (COM A)/Serial Port B (COM B). Selecting [Auto] allows AWARD to automatically determine the correct base I/O port address. Settings: [Auto], [3F8/IRQ4], [2F8/IRQ3], [3E8/COM4], [2E8/COM3] and [Disabled].

Serial Port B Mode
This item sets the operation mode for Serial Port B. Settings: [Normal], [IrDA] and [ASKIR].

Normal:	RS-232C Serial Port
IrDA:	IrDA-compliant Serial Infrared Port
ASKIR:	Amplitude Shift Keyed Infrared Port

RxD, TxD Active
This setting controls the receiving and transmitting speed of the IR peripheral in use. Setting options: [Hi,Hi], [Hi,Lo], [Lo,Hi], [Lo,Lo].

IR Transmission Delay
This setting determines whether the IR transmission rate will be delayed while converting to receiving mode. Setting options: [Disabled], [Enabled].

IR Duplex Mode
This setting controls the operating mode of IR transmission/reception. Setting options: [Full], [Half]. Under [Full] mode, synchronous, bi-directional transmission/reception is allowed. Under [Half] mode, only asynchronous, bi-directional transmission/reception is allowed.

IR Pin Select
Please consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. Setting options: [RxD2,TxD2], [IR-Rx2Tx2].

Parallel Port
This specifies the I/O port address and IRQ of the onboard parallel port. Settings: [378/IRQ7], [278/IRQ5], [3BC/IRQ7], [Disabled].

Parallel Port Mode
This item selects the operating mode for the parallel port: [Normal], [SPP], [EPP], [ECP], or [ECP+EPP].

SPP: Standard Parallel Port
EPP: Enhanced Parallel Port
ECP: Extended Capability Port
ECP+EPP: Extended Capability Port + Enhanced Parallel Port
Normal: Standard Parallel Port + Bi-Directional Mode.

EPP Version
This item selects the Version. Settings: [1.9], [1.7].

ECP Mode Use DMA
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 channel [3] or [1].

After AC Power Lost
This item specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

[Power Off]   Leaves the computer in the power off state.
[Power On]   Leaves the computer in the power on state.
[Last State]   Restores the system to the status before power faiure
                    interrupt occurred.

Power Management Setup

```
          Phoenix - AwardBIOS CMOS Setup Utility
                  Power Management Setup
   IPCA Function             [Enabled]        ▲      Item Help
   ACPI Standby State        [S3/STR]
   Run VGABIOS if S3 Resume  [Auto]                Menu Level  ▶
   Power Management/APM      [User Define]
   Suspend Type             [Stop Grant]
   MODEM Use IRQ            [3]
   Suspend Time Out         [Disabled]
   Power Button Function    [Power Off]
   CPU THRM-Throttling      [50.0%]
   Wake Up On PME           [Enabled]
   USB KB WakeUp From S3(S4) [Disabled]
   Resume By RTC Alarm      [Disabled]
 x  Date(of Month) Alarm       0
 x  Time(hh:mm:ss) Alarm     0 : 0 : 0

   ** Reload Global Timer Events **
   Primary Master IDE       [Disabled]
   Primary Slave IDE        [Disabled]
   Secondary Master IDE     [Disabled]
   Secondary Slave IDE      [Disabled]
   FDC/LPT/COM Ports        [Disabled]        ▼
↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
   F5: Previous Values       F7: BIOS Setup Defaults
```

IPCA Function
This item is to activate the IPCA (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/2000/ME, select [Enabled]. Settings: [Enabled] and [Disabled].

ACPI Standby State
This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

> [S1/POS] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.
> [S3/STR] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

Re-Call VGA BIOS at S3 Resuming
When ***ACPI Standby State*** is set to [S3/STR], users can select the options in this field. Selecting [Yes] allows BIOS to call VGABIOS to initialize the VGA card when system wakes up (resumes) from S3 sleep state. The system resume time is shortened when you disable the function, but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3. Options: [Auto], [Yes], [No].

Power Management/APM
This item is used to select the degree (or type) of power saving and is related to the mode: ***Suspend Mode***. There are three options for power management:

> [Min Saving]   Minimum Power Management. Suspend Mode = 1 Hour.

[Max Saving]   Maximum Power Management. Suspend Mode = 1 Min.
[User Define]   Allows end users to configure the Suspend Mode field.

Suspend Type

This item allows you to select the suspend type for system power management. Settings: [Stop Grant], [PwrOn Suspend].

MODEM Use IRQ

This setting names the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Setting options: [3], [4], [5], [7], [9], [10], [11], [NA].

Suspend Time Out

If system activity is not detected for the length of time specified in this field, all devices except CPU will be shut off. Settings: [Disabled], [1 Min], [2 Min], [4 Min], [8 Min], [12 Min], [20 Min], [30 Min], [40 Min], [1 Hour].

Power Button Function

This feature allows users to configure the Power Button function. Settings are:
[Power Off]   The power button functions as a normal power-on/-off button.
[Suspend]   When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

CPU THRM-Throttling

The item allows you to specify the CPU speed (at percentage) to which it will slow down when the CPU reaches the predetermined overheat temperature. Settings range from [12.5%] to [87.5%] at 12.5% increment.

Wake Up On PME

This field specifies whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected. Settings: [Enabled], [Disabled].

USB Wakeup From S3 (S4)

This field specifies whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected. Settings: [Enabled], [Disabled].

MSI Reminds You...
When the computer loses its power, the above functions - Wake Up On PME & USB Wakeup From S3 (S4) will be unavailable.

Resume by RTC Alarm
The field is used to enable or disable the feature of booting up the system on a scheduled time/date.

* Date (of Month) Alarm
The field specifies the date for Resume by Alarm. Settings: 0~31.

* Time (hh:mm:ss) Alarm
The field specifies the time for *Resume by Alarm. F*ormat is <hour><minute> <second>.

MSI Reminds You...
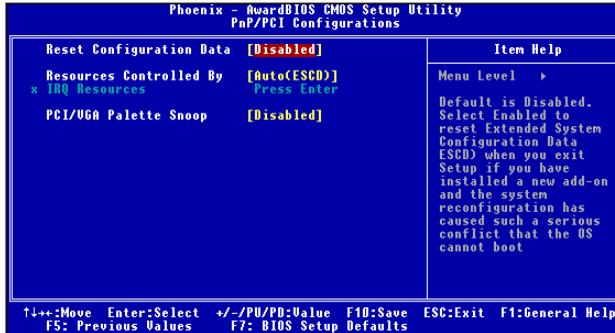*S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.*

** Reload Global Timer Events **
Primary/Secondary Master/Slave IDE, FDC/COM/LPT Ports
The global timer is the hardware timer that counts down to the power saving modes. If the monitoring of the listed hardware peripherals or components is enabled, the activity of the specified peripherals or components will awaken the system or reload the original count of global timer when they are accessed.

PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or Peripheral Component Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its 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.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      PnP/PCI Configurations

   Reset Configuration Data    [Disabled]              Item Help

   Resources Controlled By     [Auto(ESCD)]      Menu Level    ▶
 x IRQ Resources                Press Enter
                                               Default is Disabled.
   PCI/VGA Palette Snoop        [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 OS
                                               cannot boot


 ↑↓++:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
        F5: Previous Values       F7: BIOS Setup Defaults
```
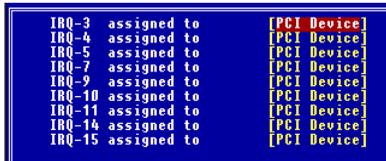
Reset Configuration Data
The ESCD (Extended System Configuration Data) NVRAM (Non-volatile Random Access Memory) is where the BIOS stores resource information for both PNP and non-PNP devices in a bit string format. When the item is set to [Enabled], the system will reset ESCD NVRAM right after the system is booted up and then set the setting of the item back to [Disabled] automatically. Settings: [Disabled], [Enabled].

Resources 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® 98/2000. If you set this field to [Manual], choose specific resources by going into each sub-menu that follows this field. Settings: [Auto(ESCD)], [Manual].

IRQ Resources
The items are adjustable only when *Resources Controlled By* is set to [Manual]. Press <Enter> and you will enter the sub-menu of the items.

```
   IRQ-3   assigned to      [PCI Device]
   IRQ-4   assigned to      [PCI Device]
   IRQ-5   assigned to      [PCI Device]
   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-14  assigned to      [PCI Device]
   IRQ-15  assigned to      [PCI Device]
```

IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings are:

> [PCI Device]   For Plug & Play compatible devices designed for PCI bus architecture.
>
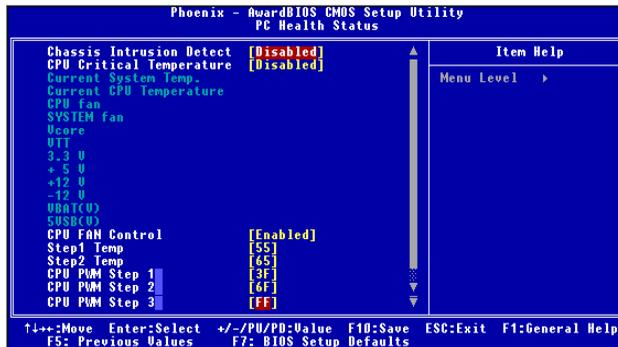> [Reserved]   The IRQ will be reserved for further request.

PCI/VGA Palette Snoop
When set to [Enabled], multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA) and the:

VGA Palette Snoop Bit Setting	Action
[Disabled]	Data read or written by the CPU is only directed to the PCI VGA device's palette registers.
[Enabled]	Data read or written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device's palette registers, permitting the palette registers of both VGA devices to be identical.

The setting must be set to [Enabled] if any ISA bus adapter in the system requires VGA palette snooping.

PC Health Status

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.

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

 Chassis Intrusion Detect    [Disabled]          ▲        Item Help
 CPU Critical Temperature    [Disabled]
 Current System Temp.                                 Menu Level   ▶
 Current CPU Temperature
 CPU fan
 SYSTEM fan
 Vcore
 VTT
 3.3 V
 + 5 V
 +12 V
 -12 V
 VBAT(V)
 5VSB(V)
 CPU FAN Control             [Enabled]
 Step1 Temp                  [55]
 Step2 Temp                  [65]
 CPU PWM Step 1              [3F]
 CPU PWM Step 2              [6F]          ▼
 CPU PWM Step 3              [FF]          ▼

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

Chassis Intrusion Detect
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. This item is available only when your mainboard has JASE1 jumper. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later. Settings: [Enabled], [Reset], [Disabled].

CPU Critical Temperature
If the CPU temperature reaches the upper limit preset in this setting, the system will be shut down automatically. This helps you to prevent the CPU overheating problem. This item is available only when your OS supports this function, such as Windows ME/XP.

Current System/CPU Temperature, CPU/System Fan Speed, Vcore, 3.3 V, +5 V, +12 V, -12 V, VBAT(V), 5VSB(V)
These items display the current status of all of the monitored hardware devices/ components such as CPU voltages, temperatures and all fans' speeds.

CPU FAN Control
This item enables or disables the Smart Fan feature. Smart Fan is an excellent feature which will adjust the CPU fan speed automatically depending on the CPU current temperature, avoiding the overheating to damage your system.

(1) Step1/2 Temp

Step1 Temp: The max. temperature tolerance for the CPU speed of CPU PWM Step 1   Default=[55] (^{0}C)
Step2 Temp: The max. temperature tolerance for the CPU speed of CPU PWM Step 2.   Default=[65] (^{0}C)

(2) CPU PWM Step 1/2/3

CPU PWM Step 1: The regular fan speed at start-up.   Default=[3F] (CPU fan voltage is around 85%)

CPU PWM Step 2: Once the CPU temperature is higher than than the value in Step2 Temp
  (55 ^{0}C), the CPU fan will speed up to this value to avoiding overheating.
  Default=[6F] (CPU fan voltage is around 92%)

CPU PWM Step 3: Once the CPU temperature is higher than the value in Step2 Temp (65 ^{0}C),
  the CPU fan will speed up to this value to avoiding overheating.
  This value is the full speed of CPU fan.
  Default=[FF] (CPU fan voltage is 100%)

*In CPU PWM Steps, if the value you set is [00], the CPU fan voltage is 0%; but the CPU fan voltage changes to 70% if the value you set is [01]. Please refer to the following chart.

CPU Fan voltage (%)
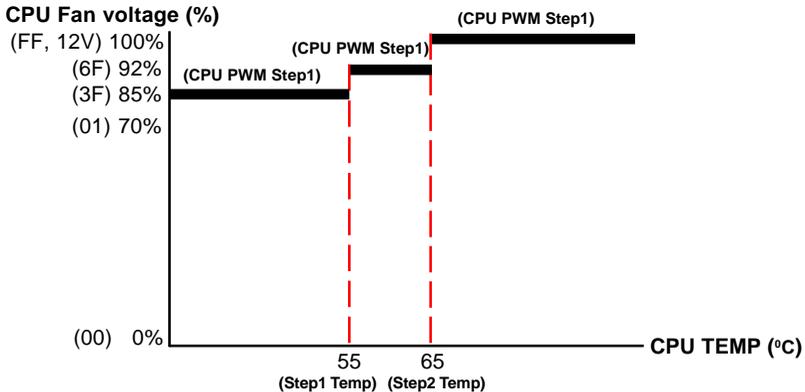
Take the default setting as shown in the screen in the right for example. Your CPU fan will run at the [3F] speed at start-up. Once the CPU temperature reaches to [55] (^{0}C), the CPU fan will speed up to [6F] to cool down the CPU temperature. However, if the CPU temperature keeps on going up to [65] (^{0}C), then the CPU fan will speed up to [FF], which is the CPU full speed, to avoid overheating damage.

Step1 Temp	[55]
Step2 Temp	[65]
CPU PWM Step 1	[3F]
CPU PWM Step 2	[6F]
CPU PWM Step 3	[FF]
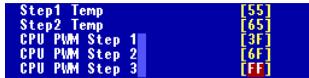
MSI Reminds You...
*If you are using a CPU with FSB800, and you load **High Performance Defaults**, the **CPU Fan Control** is disabled.*

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                       Frequency/Voltage Control
    ┌──────────────────────────────────────────┬──────────────────────┐
    │ CPU Ratio Selection      [ 8 X]          │       Item Help      │
    │ Auto Detect PCI Clock    [Enabled]       ├──────────────────────┤
    │ Spread Spectrum          [+/-0.38%]      │ Menu Level    ►      │
    │ CPU FSB Clock (Mhz)      [100]           │                      │
    │ CPU Vcore Adjust         [OFF]           │                      │
    │ DRAM Voltage Adjust      [2.6 V]         │                      │
    │ AGP Voltage Adjust       [1.50 V]        │                      │
    │                                          │                      │
    │                                          │                      │
    │                                          │                      │
    │                                          │                      │
    │                                          │                      │
    │                                          │                      │
    ├──────────────────────────────────────────┴──────────────────────┤
    │ ↑↓←→:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
    │        F5: Previous Values      F7: BIOS Setup Defaults          │
    └──────────────────────────────────────────────────────────────────┘
```
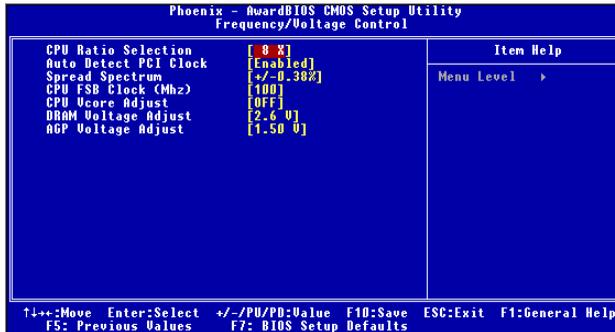
CPU Ratio Selection
This setting controls the multiplier that is used to determine the internal clock speed of the processor relative to the external or motherboard clock speed. It is available only when the processor supports this function.

Auto Detect PCI Clk
This item is used to auto detect the PCI slots. When set to [Enabled], the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI). Settings: [Enabled], [Disabled].

Spread Spectrum
When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The **Spread Spectrum** function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. Remember to disable **Spread Spectrum** if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up. Setting options: [Disabled], [+/-0.25%], [-0.5%], [+/-0.5%], [+/-0.38%].

CPU FSB Clock (Mhz)
Use this item to select the appropriate clock frequency of the CPU host bus. Setting ranges are: [100]~[255].

DDR Voltage Adjust
Adjusting the DDR voltage can increase the DDR speed. Any changes made to this setting may cause a stability issue, so **changing the DDR voltage for long-term purpose is NOT recommended**.

AGP Voltage Adjust
AGP voltage is adjustable in the field, allowing you to increase the performance of your AGP display card when overclocking, but the stability may be affected.

With AGP card installed   Default value= [1.50 V]
Without AGP card installed   Default value= [1.70 V]

3-23

Load High Performance/BIOS Setup Defaults

The two options on the main menu allow users to restore all of the BIOS settings to High Performance defaults or BIOS Setup defaults. The High Performance Defaults are the values set by the mainboard manufacturer for the best system performance but probably will cause a stability issue. The BIOS Setup Defaults are the default values also set by the mainboard manufacturer for stable performance of the mainboard.

When you select **Load High Performance Defaults**, a message as below appears:

```
                [ Load High Performance Defaults ]
WARNING! This default might have potential reliability risk.
                     Press [Enter] to Continue
                          Or [ESC] to Abort
```

Pressing <Enter> loads the default BIOS values that enable the best system performance but may lead to a stability issue.

> **MSI Reminds You...**
> *If you have a DDR400 memory module (or more) installed on your system, and you are using a CPU with FSB 800MHz and you wish to overclock, you must load this **High Performance Defaults**. If not, your system will run at FSB533MHz even you have a FSB-800MHz CPU. Use of high performance defaults will tighten most timings to increase the system performance.*
> *However, **we don't recommend that users should apply the high performance defaults in their regular systems.** Otherwise, the system may become unstable or even crash. If the system crashes or hangs after enabling the feature, please CLEAR CMOS DATA to re-solve the problem. For more information, refer to "Clear CMOS Jumper: JBAT1" in Chapter 2.*

When you select **Load BIOS Setup Defaults**, a message as below appears:

```
        [ Load BIOS Setup Defaults ]

         Press [Enter] to Continue
              Or [ESC] to Abort
```

Pressing <Enter> loads the default values that are factory settings for stable system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:

```
Enter Password:
```

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

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, 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 have BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the **Security Option** of the **Advanced BIOS Feature** menu. If the **Security Option** is set to [System], the password is required both at boot and at entry to Setup. If set to [Setup], password prompt only occurs when you try to enter Setup.

MSI Reminds You...
About Supervisor Password & User Password:
Supervisor password: Can enter and change the settings of the setup menu.
User password: Can only enter but do not have the right to change the settings of the setup menu.

Appendix A: Using 2-, 4- & 6-Channel Audio Function

The mainboard is equipped with Realtek ALC655 chip, which provides support for 6-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC655 allows the board to attach 4 or 6 speakers for better surround sound effect. The section will tell you how to install and use 4-/6-channel audio function on the board.

Installing the Audio Driver

You need to install the driver for Realtek ALC655 chip to function properly before you can get access to 4-/6-channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 98SE/ME/2000/XP

For Windows® 2000, you must install Windows® 2000 Service Pack2 or later before installing the driver.

The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.

2. Click **Realtek AC97 Audio Drivers**.

Click here

MSI Reminds You...
*The **AC97 Audio Configuration** software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.*

3. Click **Next** to install the AC97 Audio software.

Realtek AC'97 Audio Setup (4.87)

Welcome to the InstallShield Wizard for Realtek AC'97 Audio

The InstallShield® Wizard will install Realtek AC'97 Audio on your computer. To continue, click Next.

< Back   Next >   Cancel

Click here

4. Click **Finish** to restart the system.

Realtek AC'97 Audio Setup (4.87)

Maintenance Complete

InstallShield Wizard has finished performing maintenance operations on Realtek AC'97 Audio.

Select this option

○ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks from their drives, and then click Finish to complete setup.

< Back   Finish   Cancel
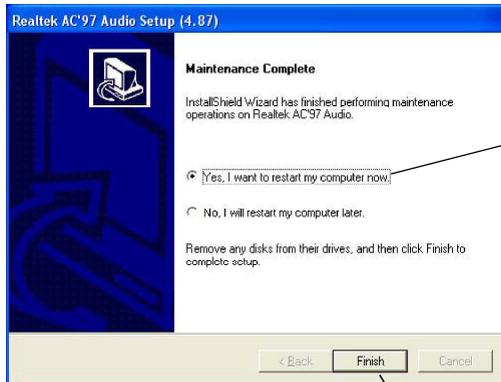
Click here

Software Configuration

After installing the audio driver, you are able to use the 4-/6-channel audio feature now. Click the audio icon from the window tray at the lower-right corner of the screen to activate the **AC97 Audio Configuration**.

Sound Effect

Here you can select a sound effect you like from the **Environment** list.
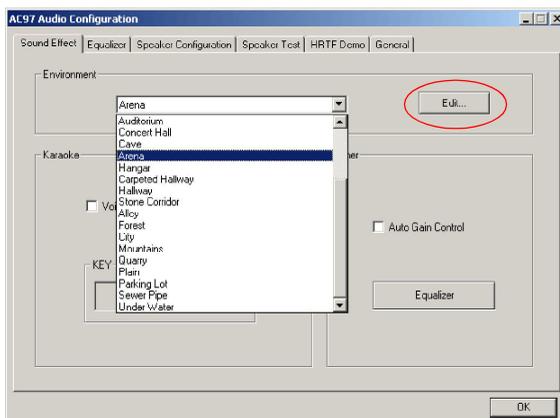
You may also edit the properties for an environment as you wish by clicking the **Edit** button, then just scroll the bar in the bottom for each property to adjust.
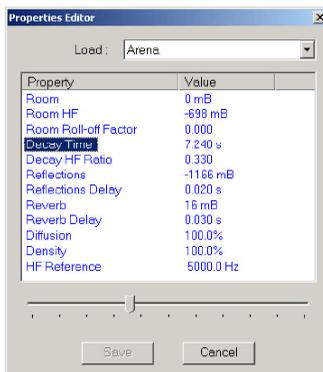
Here it provides the Karaoke function which will automatically remove human voice (lyrics) and leave melody for you to sing the song. Note that this function applies only for 2-channel audio operation.

Just check the **Voice Cancellation** box and then click **OK** to activate the Karaoke function.
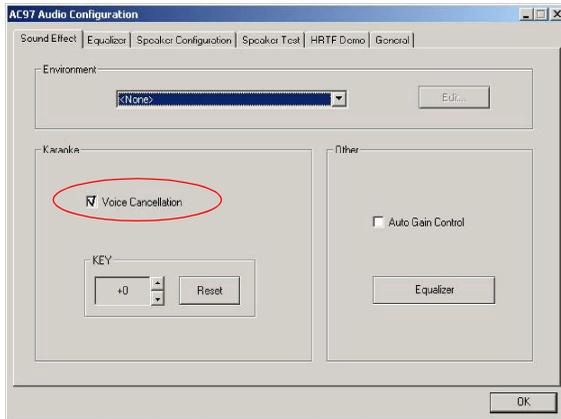
Equalizer

Here you regulate each equalizer for current playing digital sound sources.
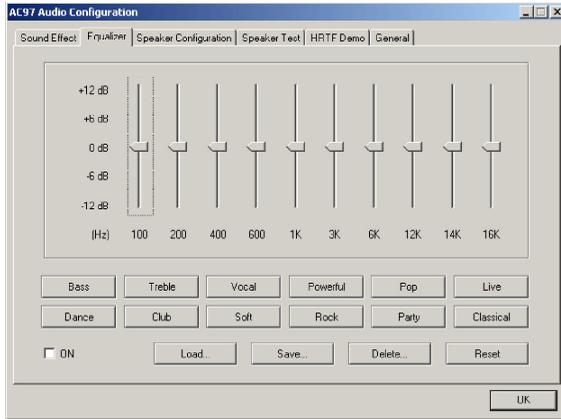
You may choose the provided sound effects, and the equalizer will adjust automatically. If you like, you may also load an equalizer setting or make an new equalizer setting to save as an new one by using the buttons **Load** and **Save**. Or you may click **Reset** to use the default value.
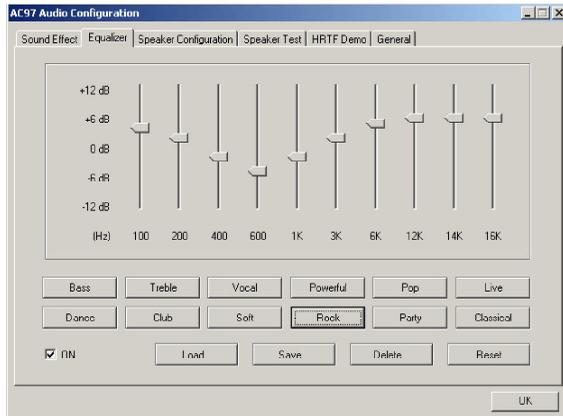
Speaker Configuration

In this tab, you can easily configure your multi-channel audio function and speakers.
1. Select **Synchronize the phonejack switch with the settings**.
2. Select a desired multi-channel operation from **No. of Speakers**.
   Headphone
   2-Channel Mode for Stereo-Speaker Output
   4-Channel Mode for 4-Speaker Output
   6-Channel Mode for 5.1-Speaker Output
3. Click **OK** to close this window.
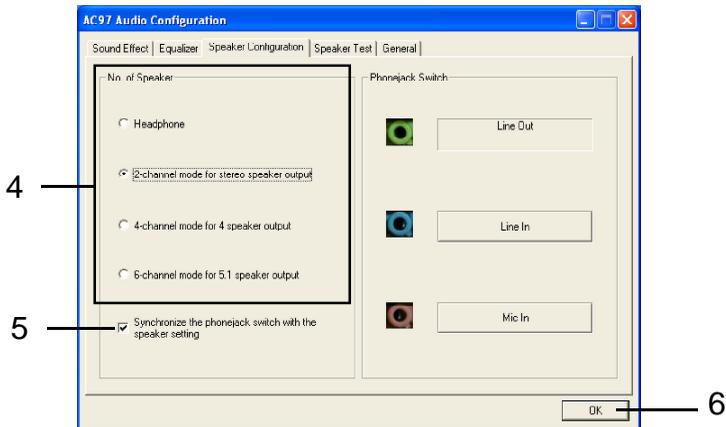
Speaker Test

You can use this tab to test each connected speaker to ensure if 4- or 6-channel audio operation works properly. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones.
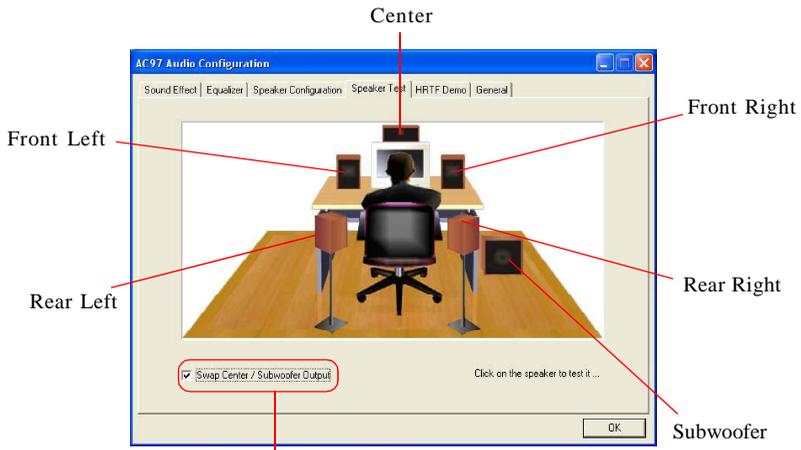
Select this function

Select the speaker by clicking it to test its functionality. The one you select will light up and make testing sound.

MSI Reminds You...

1. 6 speakers appear on the "Speaker Test" tab only when you select "6-Channel Mode" in the "Number of Speakers" column in "Speaker Configuration" tab. If you select "4-Channel Mode", only 4 speakers appear on the window.

2. While you are testing the speakers in 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select Swap Center/Subwoofer Output to readjust these two channels.

HRTF Demo

In this tab you may adjust your HRTF (Head Related Transfer Functions) 3D positional audio before playing 3D audio applications like gaming. You may also select different environment to choose the most suitable environment you like.
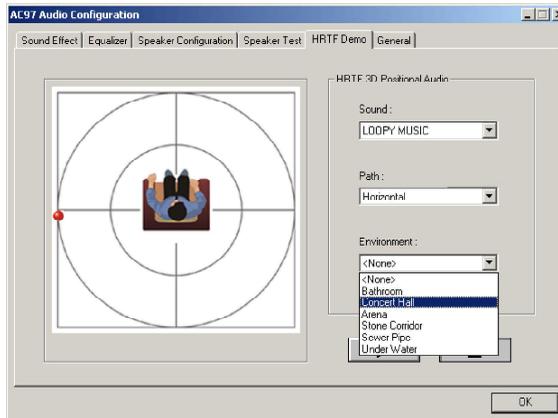
General

In this tab it provides some information about the AC97 Audio Configuration utility, including Audio Driver Version, DirectX Version, Audio Controller & AC97 Codec. You may also select the language of this utility by choosing from the **Language** list.
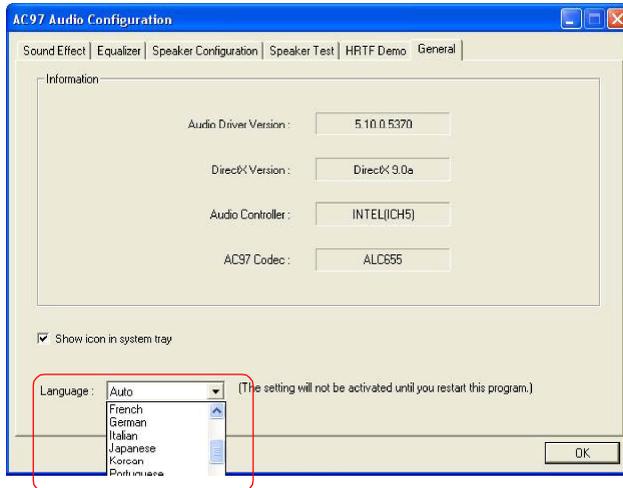
Using 2-, 4- & 6- Channel Audio Function

Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software utility.
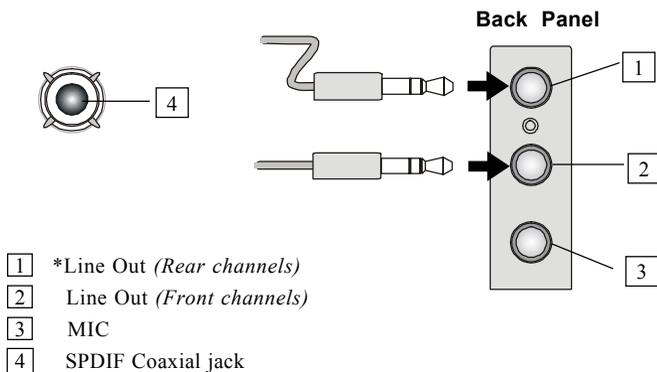
■ **2-Channel Mode for Stereo-Speaker Output**
    Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

Back Panel

[1] Line In
[2] Line Out *(Front channels)*
[3] MIC
[4] SPDIF Coaxial jack
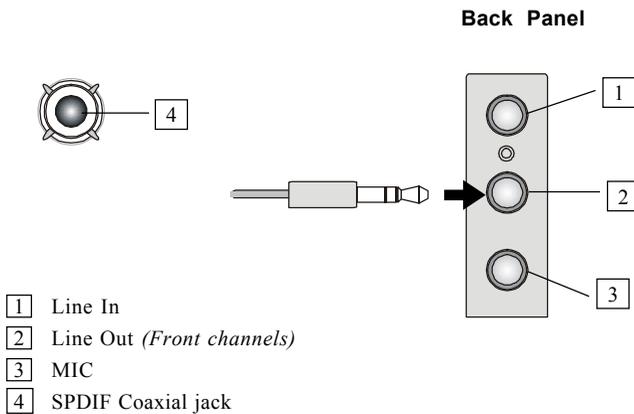
■ **4-Channel Mode for 4-Speaker Output**

The audio jacks on the back panel always provide 2-channel analog audio output function, however these audio jacks can be transformed to 4- or 6-channel analog audio jacks by selecting the corresponding multi-channel operation from **No. of Speakers**.

Refer to the following diagram and caption for the function of each jack on the back panel when 4-Channel Mode is selected.

Back Panel

| 1	*Line Out *(Rear channels)*
2	Line Out *(Front channels)*
3	MIC
4	SPDIF Coaxial jack

* Line In function is converted to Line Out function when 4-Channel Mode for 4-Speaker Output is selected.

■ **6-Channel Mode for 6-Speaker Output**

Refer to the following diagram and caption for the function of each jack on the back panel when 6-Channel Mode is selected.

Back Panel

1̄ * Line Out *(Rear channels)*

2̄   Line Out *(Front channels)*

3̄ * Line Out *(Center and Subwoofer channel)*

4̄   SPDIF Coaxial jack
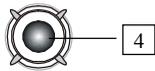
* Both Line In and MIC function are converted to Line Out function when 6-Channel Mode for 6-Speaker Output is selected.

MSI
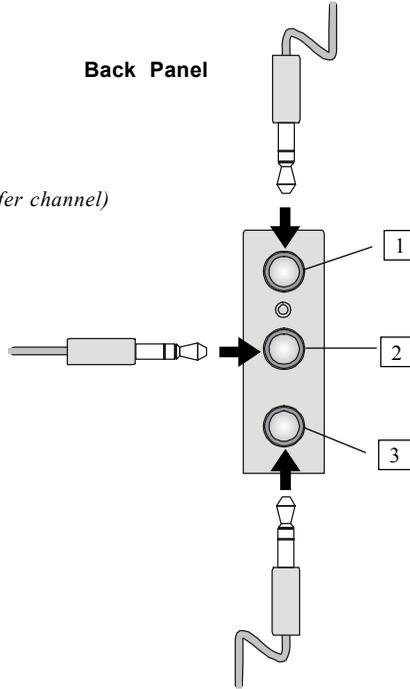
MSI Reminds You...

If the audio signals coming from the Center and Subwoofer speaker are swapped when you play video or music on the computer, a converter may be required to exchange center and subwoofer audio signals. The converter can be purchased from a speaker store.