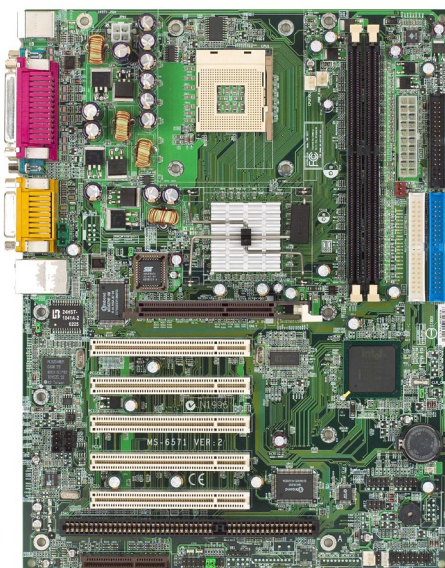




MS-6571 (v2.X) ATX Mainboard



Version 2.0
G52-M6571X1

Manual Rev: 2.0
Release Date: Aug. 2002



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.

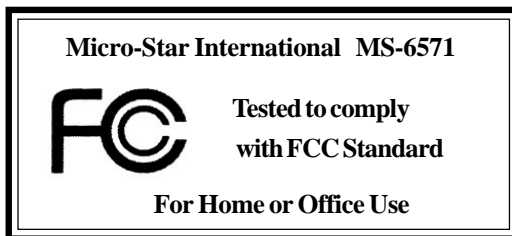
Notice 1

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.



Copyright Notice

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AMI® is a registered trademark of American Megatrends Inc.

Revision History

Revision	Revision History	Date
V2.0	First release for PCB 2.x with Intel Brookdale PE/GE/ G/GL/GV & ICH4 chipsets	Aug. 2002

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 website for FAQ, technical guide, BIOS updates, driver updates, and other information: <http://www.msi.com.tw/>
- 🔍 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°C (140°F), 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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Getting Started

Thank you for purchasing the MS-6571 v2.X ATX mainboard. The MS-6571 is based on **Intel® Brookdale PE/GE/G/GL/GV & Intel® ICH4** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4/Celeron** processor in the 478-pin package, MS-6571 delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- Supports Socket 478 for Intel® Pentium 4 /Celeron processors
- Core Frequency from 1.5 GHz to 2.4 GHz and up

Chipsets

- Intel® Brookdale PE/GE/G/GL/GV chipset
 - Integrated graphic controller (except Brookdale PE)
 - AGP 4x universal slot (Brookdale GE/G/PE only)
 - Support 400/533 MHz Intel NetBurst micro-architecture bus and 100/133 MHz FSB (Brookdale PE/GE/G/GV)
 - Support 400 MHz Intel NetBurst micro-architecture bus and 100 MHz FSB (Brookdale GL only)
- Intel® ICH4 chipset
 - AC'97 controller integrated
 - 2 full IDE channels, up to ATA100
 - Low pin count interface for Winbond SIO

Main Memory

- Supports two 184-pin unbuffered double-sided DDR DIMMs
- Supports up to 2GB DDR 333/DDR266/DDR200 DDR SDRAMs (Brookdale GE/PE only)
- Supports up to 2GB DDR266/DDR200 DDR SDRAMs (Brookdale G/GL/GV only)

Extended Memory Interface (optional)

- Memory Stick supported
- Secure Digital supported

Slots

- One AGP (Accelerated Graphics Port) 4x slot (Brookdale GE/G/PE only)
- Five PCI 2.2 32-bit Master bus slots
 - Support 3.3v/5v PCI bus interface
- One CNR slot (optional)
- One ISA slot (optional)

On-Board IDE

- An IDE controller integrated on ICH4 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 66/100 operation

- Can connect up to four IDE devices

On-Board Peripherals

- On-Board Peripherals include:
 - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
 - COM A and optional COM B & COM 2
 - 1 VGA port (optional)
 - 1 parallel port
 - 1 RJ-45 LAN jack (optional)
 - 1 audio/game port
 - 6 USB ports (Rear * 2/ Front * 4)

Audio

- ICH4 chip integrated
- 2 channels audio codec Realtek ALC201A
- 6 channels audio codec Realtek ALC650 (optional)

H/WLAN (optional)

- Intel 82562EZ or 82540EM

BIOS

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.

Dimension

- ATX Form Factor: 23 cm (L) x 30.5 cm (W)

Mounting

- 6 mounting holes

Others

- Support STR/STD (S3/S4)
- Support WOR/WOL (optional)

MSI Special Features

PC Alert™ 4

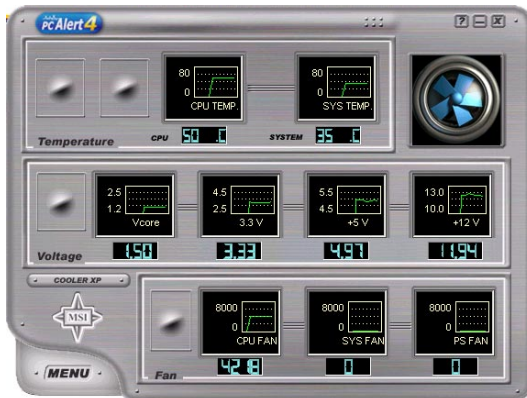
The PC Alert™ 4 is a utility you can find in the CD-ROM disk. The utility is just like your PC doctor that can detect the following PC hardware status during real time operation:

- ✦ monitor CPU & system temperatures
- ✦ monitor fan speed(s)
- ✦ monitor system voltage



If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown until user disables the warning.

To better protect the CPU from overheating, a new feature, **COOLER XP**, has been added to decrease the temperature of AMD Athlon XP CPU. To do so, simply clicking **COOLER XP** and the screen will show a steering wheel (as shown right) with information about the CPU and chipset. Right-click any point on the steering wheel and the system will switch to a different display board with the same CPU and chipset information.



MSI Reminds You...


The new feature **COOLER XP** will work only if your mainboard supports AMD Athlon XP CPU.

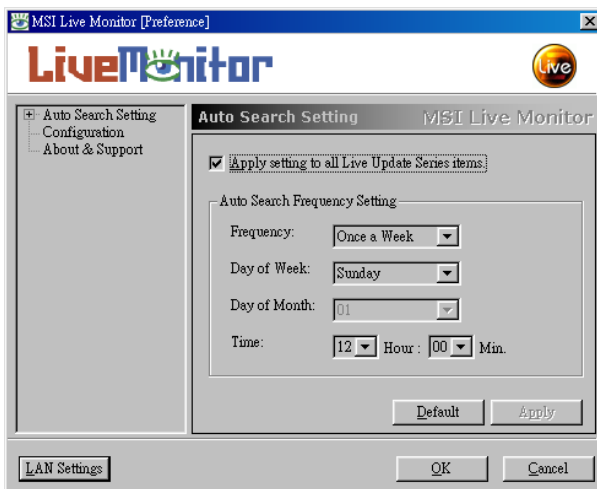
Items shown on PC Alert 4 vary depending on your system's status.

Live Monitor™

The Live Monitor™ is a tool used to schedule the search for the latest BIOS/drivers version on the MSI Web site. To use the function, you need to install the “MSI Live Update Series 2” application. After the installation, the “MSI Live Monitor” icon (as shown on the right) will appear on the screen. Double click this icon to run the application.



Double click the “MSI Live Monitor” icon  at the lower-right corner of the taskbar, and the following dialog box will appear. You can specify how often the system will automatically search for the BIOS/drivers version, or change the LAN settings right from the dialog box.



You can right-click the MSI Live Monitor  icon to perform the functions listed below:

- ✦ **Auto Search** – Searches for the BIOS/drivers version you need immediately.
- ✦ **View Last Result** – Allows you to view the last search result if there is any.
- ✦ **Preference** – Configures the Search function, including the Search schedule.
- ✦ **Exit** – Exits the Live Monitor™ application.


MSI DVD 5.1 Channel (Optional)

The motherboard comes with MSI DVD application which supports 5.1 channel (6-channel audio) operation. The accompanying MSI DVD is a convenient tool to meet increasing demands for home entertainment.



To play DVD with 6-channel audio output, you must configure both the MSI DVD application and the audio codec's software utility. Otherwise, the 6-channel audio function will not work properly. For information on how to select 6-channel mode in the audio software utility, refer to *Appendix. Using 4- or 6-Channel Audio Function.*

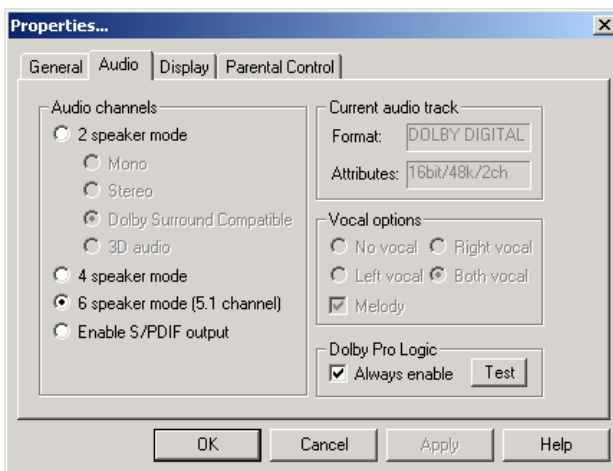
Follow the procedures below to enable 6-channel support with MSI DVD:

1. Click on this button  from the control panel of MSI DVD.
2. Click the **Audio** tab.
3. Select **6 speaker mode (5.1 channel)**.



MSI Reminds You...


MSI DVD supports Dolby Digital format only. To view DTS-formatted video, you should convert it to Dolby Digital format first.



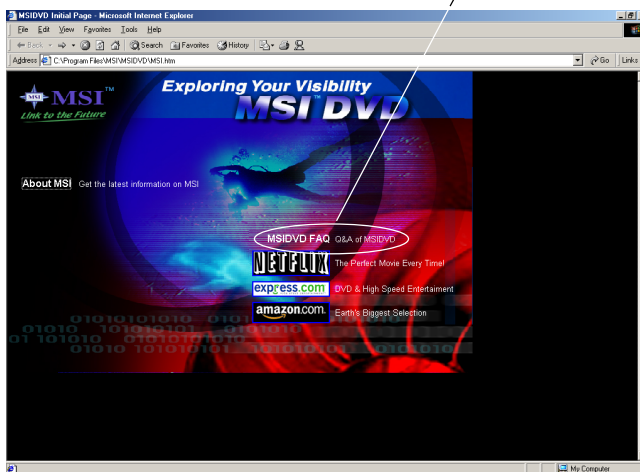
4. Click **OK**.

For more information about MSI DVD, you can refer to the online help coming with the application.

To enter the online help:

1. Click on the icon  at the bottom-right corner of the control panel.
2. The following window appears.

Click here



3. Click **MSIDVD FAQ**.

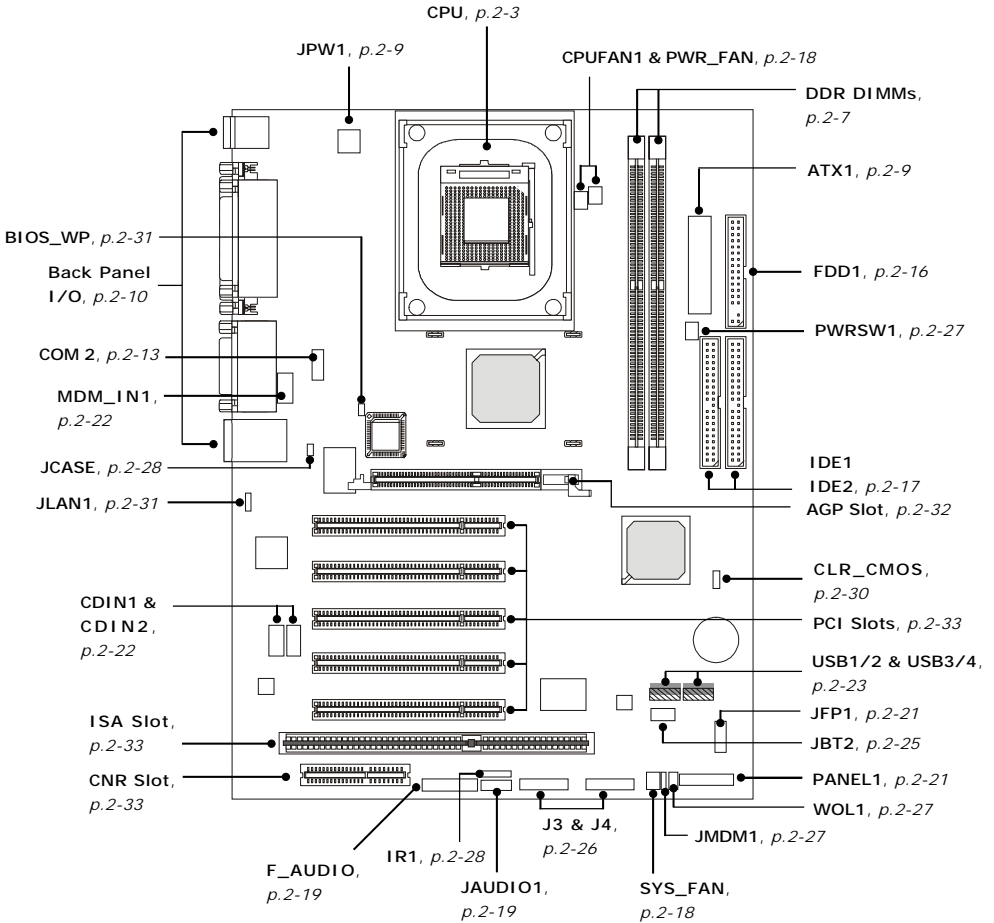
2

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



Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 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.

CPU Core Speed Derivation Procedure

If	CPU Clock	=	100MHz
	Core/Bus ratio	=	14
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	100MHz x 14
		=	1.4 GHz



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

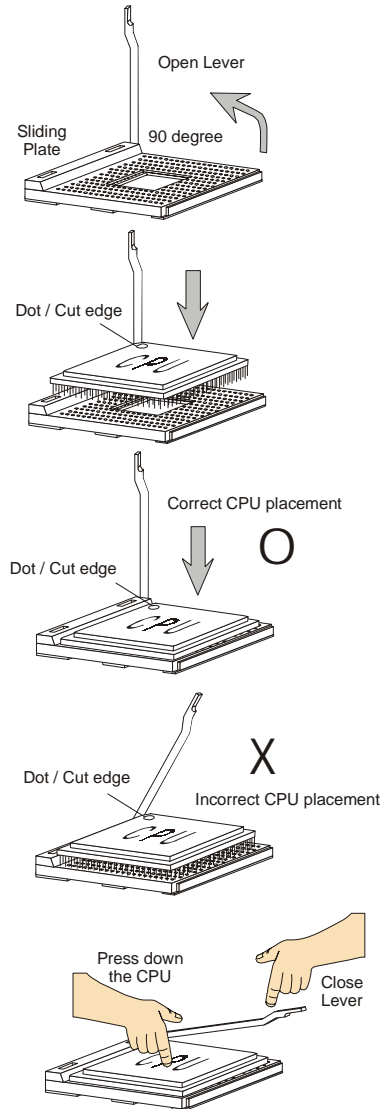
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

Overclocking

*This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

CPU Installation Procedures for Socket 478

1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the cut edge. The cut edge should point towards the lever pivot. The CPU can only fit in the correct orientation.
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.
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.

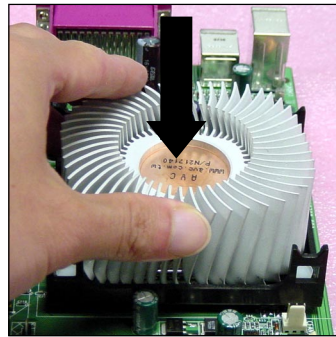
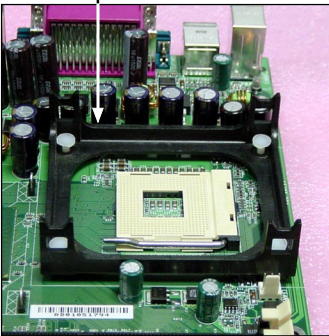


Installing the CPU Fan

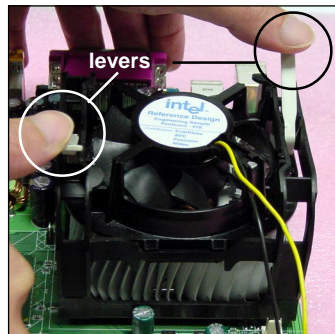
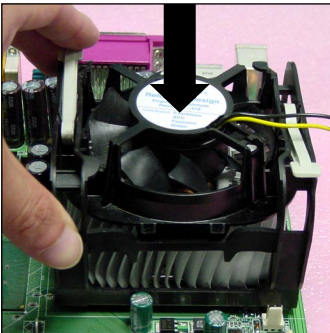
As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly important. To dissipate heat, you need to attach the CPU cooling fan and heatsink on top of the CPU. Follow the instructions below to install the Heatsink/Fan:

1. Locate the CPU and its retention mechanism on the motherboard.
2. Position the heatsink onto the retention mechanism.

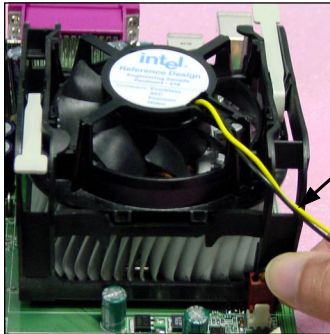
retention mechanism



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.



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



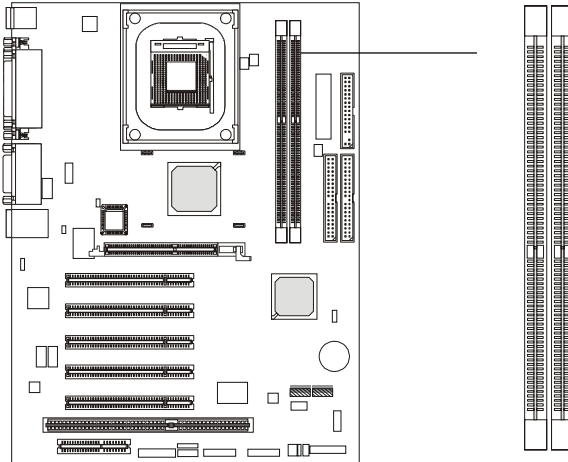
fan power cable



NOTES

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/DDR266/DDR200 (Brookdale PE/GE) or DDR266/DDR200 (Brookdale G/GL/GV) modules on the DDR DIMM slots (DDR 1~2).



**DDR DIMM Slots
(DDR 1~2)**

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.

DIMM Module Combination

Install at least one DIMM module on the slots. 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:

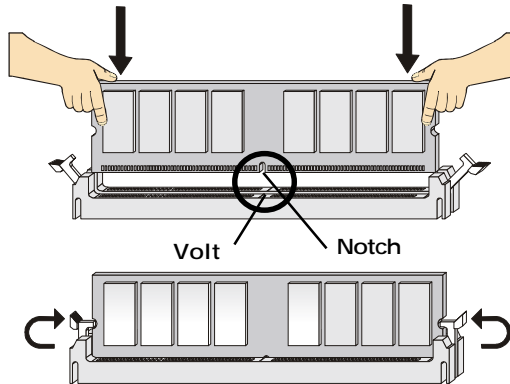
Slot	Memory Module	Total Memory
DIMM 1 (Bank 0 & 1)	S/D	64MB~1GB
DIMM 2 (Bank 2 & 3)	S/D	64MB~1GB
Maximum System Memory Supported		64MB~2GB

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



MSI Reminds You...

You can barely see the golden finger if the module is properly inserted in the socket.

Power Supply

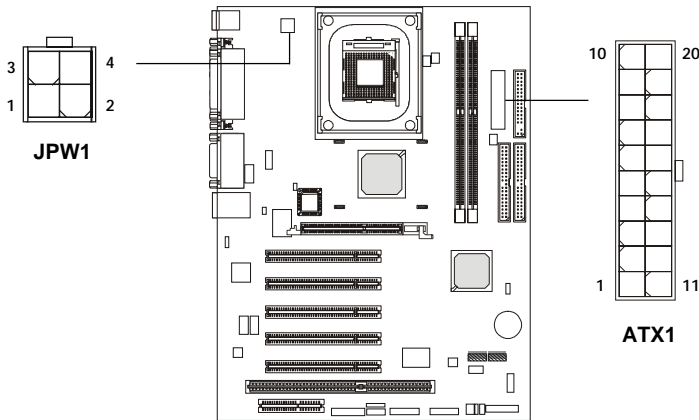
The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Connector: ATX1

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.



ATX1 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

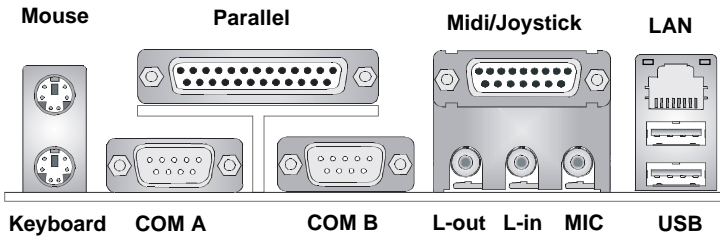
JPW1 Pin Definition

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

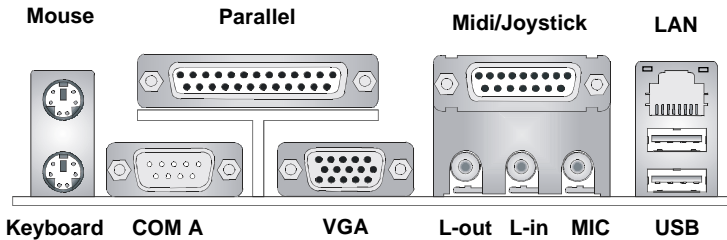
Back Panel

The back panel provides the following connectors:

For Intel Brookdale PE

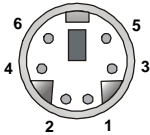


For Intel Brookdale GE/G/GL/GV



Mouse Connector: KBMS1

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:



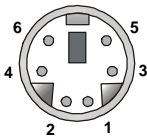
PS/2 Mouse (6-pin Female)

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

Keyboard Connector: KBMS1

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.



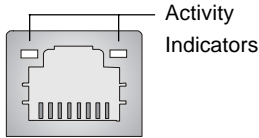
PS/2 Keyboard (6-pin Female)

Pin Definition

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

RJ-45 LAN Jack (Optional)

The mainboard provides a RJ-45 connector that allows your computer to be connected to a network environment.

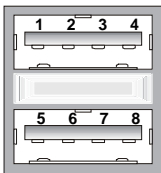


LAN Jack
(RJ-45)

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.



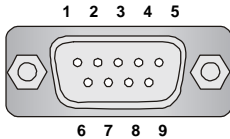
USB Ports

USB Port Description

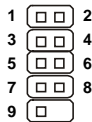
PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

Serial Port Connectors: COM A, COM B & COM 2 (optional)

The mainboard offers one 9-pin male DIN connector as serial port COM A, and two optional serial ports (COM B & COM 2). 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.



**9-Pin Male DIN Connector
COM A & COM B**



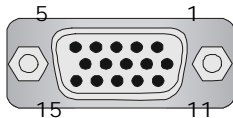
COM2

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

VGA Connector (optional)

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

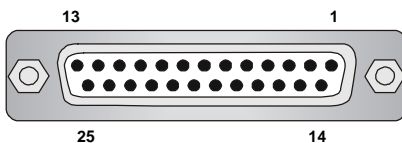


**VGA Connector
(DB 15-pin)**

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

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.

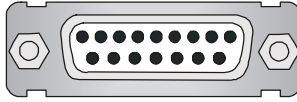


Pin Definition

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

Joystick/Midi Connector

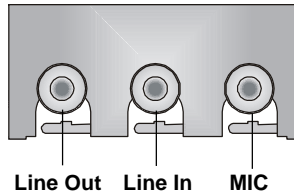
You can connect a joystick or game pad to this connector.



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



MSI Reminds You...

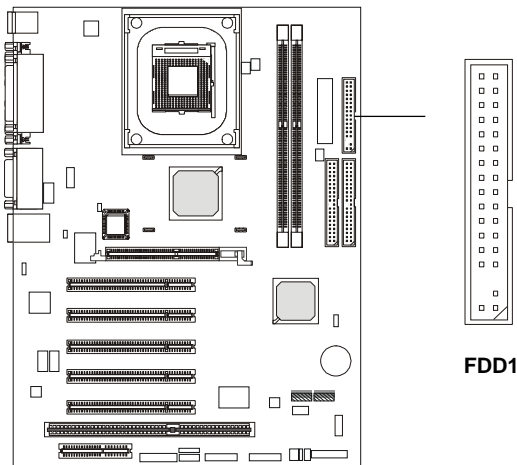
*For advanced audio application, RealTek ALC650 audio chip is provided to offer support for **6-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/6-channel audio. For more information on **6-channel audio operation**, please refer to Appendix. Using 4- or 6-Channel Audio Function.*

Connectors

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

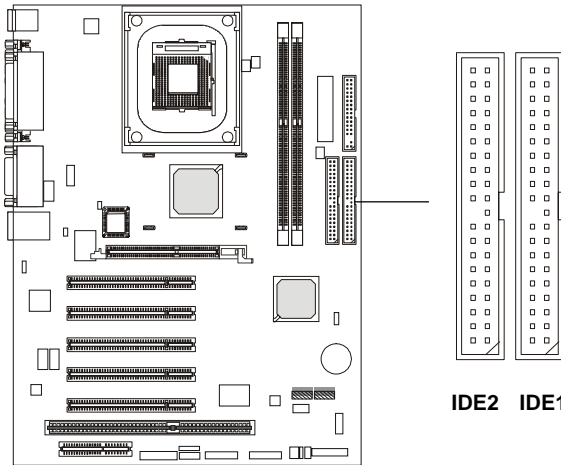
Floppy Disk Drive Connector: FDD1

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



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.



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.

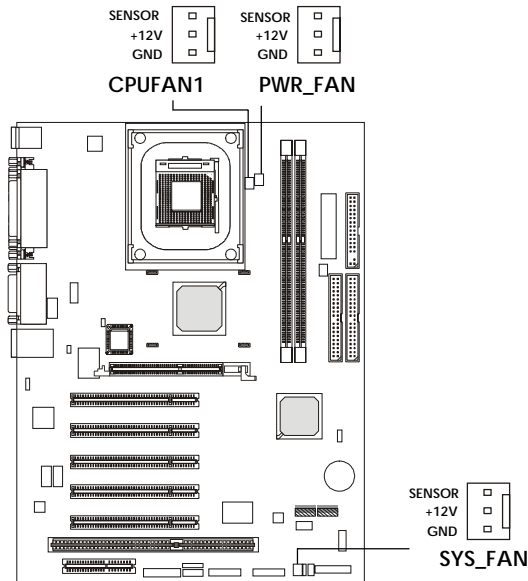


MSI Reminds You...

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.

Fan Power Connectors: CPUFAN1/PWR_FAN/SYS_FAN

The CPUFAN1 (processor fan), PWR_FAN (power fan) and SYS_FAN (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.

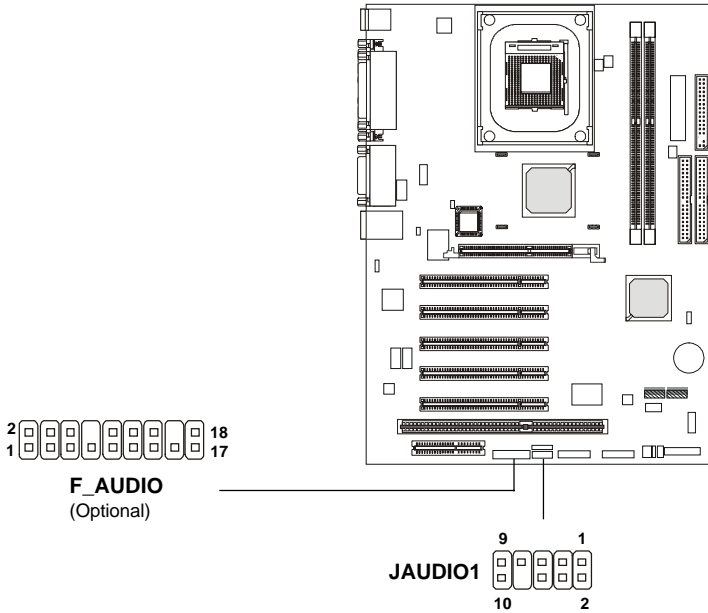


MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.
2. CPUFAN supports the fan control. You can install the PC Alert utility that will automatically control the CPU fan speed according to the actual CPU temperature.

Front Panel Audio Connectors: F_AUDIO (optional) & JAUDIO1

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



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

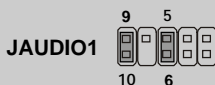
F_AUDIO Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	Active Line Out (R)	2	Active Line Out (L)
3	GND (ALO)	4	GND (ALO)
5	GND (+12)	6	GND (+12)
7	+12V (1A)	8	NC
9	MIC	10	GND (MIC)
11	Front Line Out (R)	12	Line Next (R)
13	Front Line Out (L)	14	Line Next (L)
15	GND (FLO)	16	NC
17	Line In (R)	18	Line In (L)



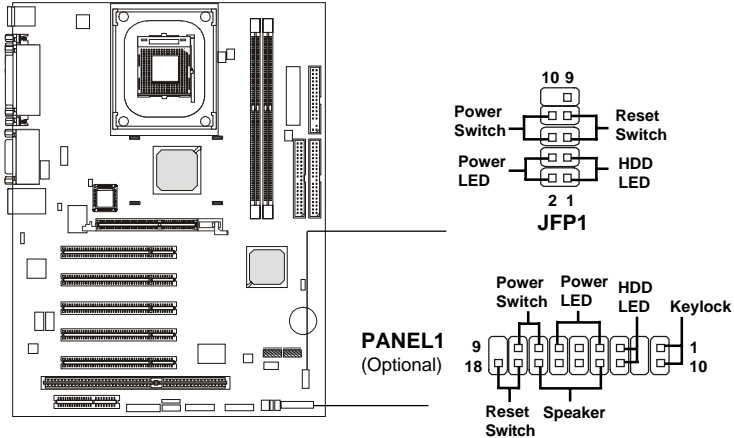
MSI Reminds You...

If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 of JAUDIO1 and pins 11&12, 13&14 of F_AUDIO 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 Panel Connectors: PANEL1 (optional) & JFP1

The mainboard provides one or 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.

PANEL1 Pin Definition

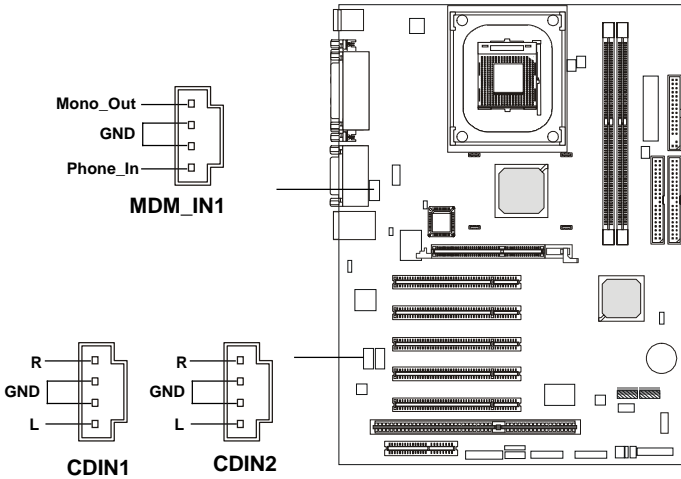
PIN	SIGNAL	PIN	SIGNAL
1	Keylock	10	Keylock
2	NC	11	NC
3	HDD+	12	HDD-
4	SLED-	13	SPK-
5	PLED-	14	BUZ+
6	PLED+	15	BUZ-
7	PWSW+	16	SPK+
8	PWSW-	17	RST+
9	NC	18	RST-

CD-In Connectors: CDIN1 & CDIN2 (optional)

These connectors are for CD-ROM audio connectors.

Modem-In Connector: MDM_IN1 (optional)

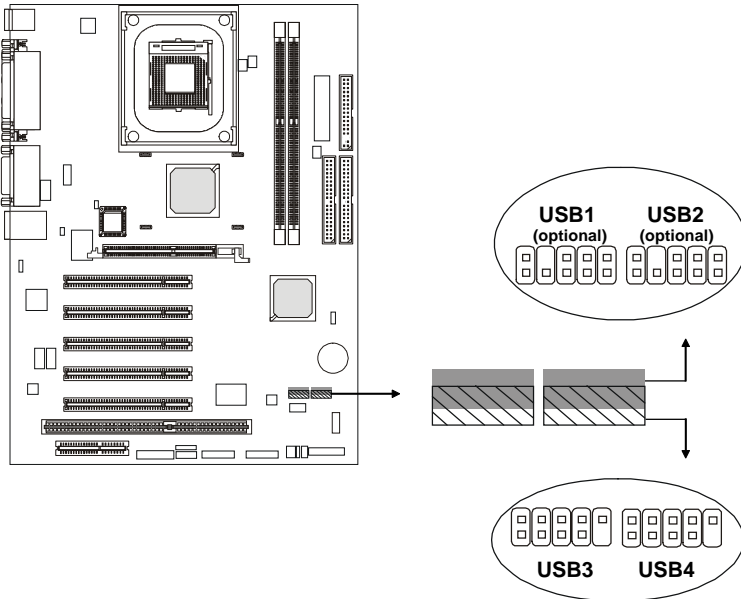
The connector is for modem with internal audio connector.



Front USB Connectors: USB1/2 (optional) or USB3/4

The mainboard provides two USB 2.0 pinheaders (optional USB 2.0 Bracket available). Users can choose either USB1/USB2 or USB3/USB4 depending on the model they purchased. The difference between USB1/USB2 & USB3/USB4 is that USB3/USB4 are compliant with Intel® Front Panel I/O Connectivity Design Guide.

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.**





USB1/2

USB1/2 Pin Definition

Pin	Description	Pin	Description
1	+5V(SB)	2	GND
3	USB2-	4	(Cut away)
5	USB2+	6	USB3+
7	GND	8	USB3-
9	GND	10	+5V(SB)



USB3/4

USB3/4 Pin Definition

Pin	Description	Pin	Description
1	USBPWR	2	USBPWR
3	USBP4-	4	USBP5-
5	USBP4+	6	USBP5+
7	GND	8	GND
9	NC	10	USB0C

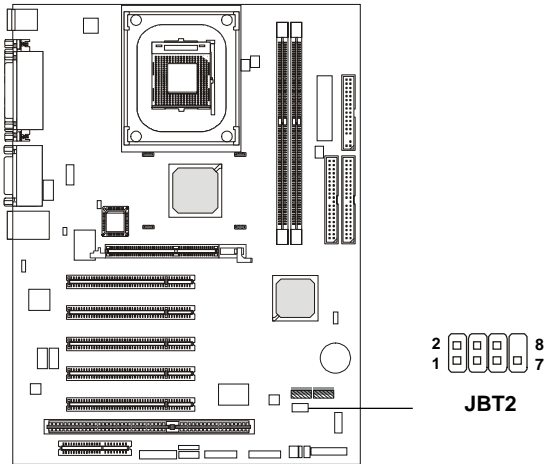


MSI Reminds You...

The USB 2.0 technology is downward compatible with USB 1.1 spec. To use the USB 2.0 ports, you have to install the USB 2.0 driver, which is supplied by Microsoft for Windows® 2000 and XP. If you have any problems regarding the USB 2.0 driver, please visit the Microsoft Web site for more information. For details on the bluetooth settings, please refer to PC2PC Bluetooth Manual.

Bluetooth Connector: JBT2 (optional)

This connector is used to connect a bluetooth module for wireless connection.



JBT2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC5	2	3VDUAL
3	D+ (USB signal)	4	GND
5	D- (USB signal)	6	GND



MSI Reminds You...

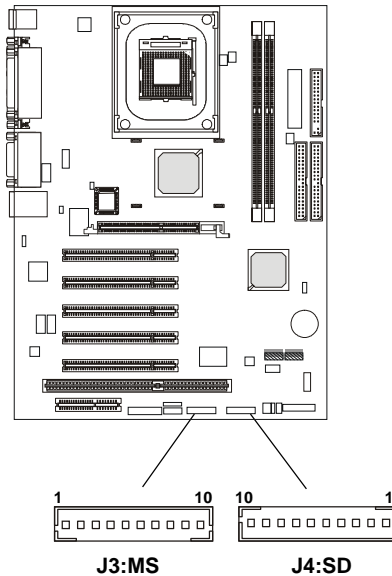
Because the bluetooth connector shares the USB interface with blue-colored USB2.0 connector, the left USB2.0 port will not function when you attach a bluetooth module to this connector.

Memory Stick Connector: J3:MS (optional)

This connector is connected to the Memory Stick (MS) interface so that users can use Memory Sticks to transfer data from handheld digital devices such as cameras and camcorders to the computer.

Secure Digital Connector: J4:SD (optional)

This connector is connected to the Secure Digital (SD) interface. Then users can use Secure Digital memory cards to transfer data from handheld devices such as cellular phones and PDAs to the computer.

**J3:MS Pin Definition**

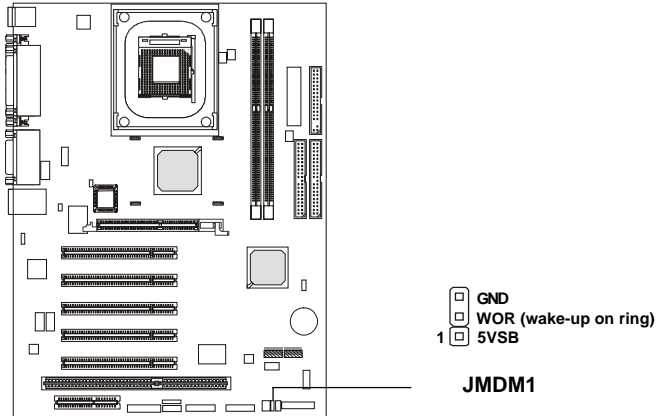
Pin	Description	Pin	Description
1	MSLED	6	MSA3
2	MSPWR#	7	MSA2
3	MSACK	8	VCC
4	MSA5	9	MSA1
5	MSA4	10	VSS

J4:SD Pin Definition

Pin	Description	Pin	Description
1	SDLED	6	MSD3
2	SDPWR#	7	MSD2
3	SDCLK	8	VCC
4	MSD5	9	MSD1
5	MSD4	10	VSS

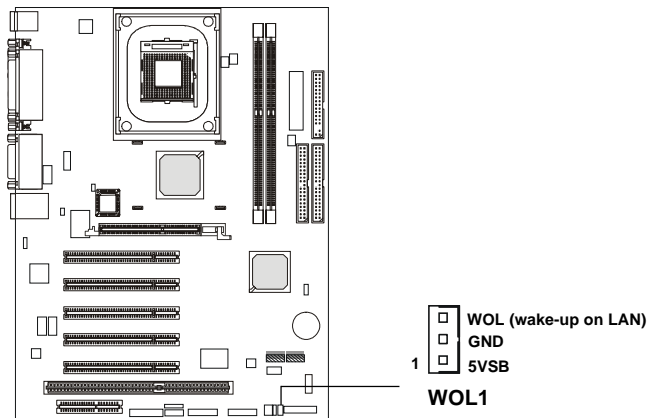
Wake On Ring Connector: JMDM1 (optional)

This connector allows you to connect to a modem card with Wake On Ring function. The connector will power up the system when a signal is received through the modem card.



Wake On LAN Connector: WOL1 (optional)

This connector allows you to connect to a PCI 2.1 LAN card with Wake On LAN function. You can wake up the computer via remote control through a local area network.

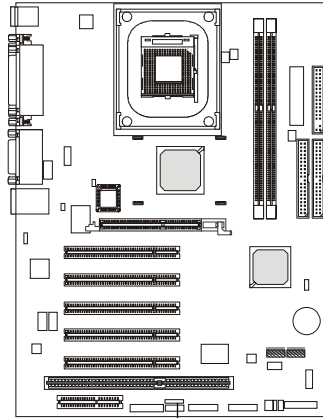
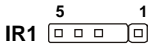


IrDA Infrared Module Header: IR1 (optional)

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function.

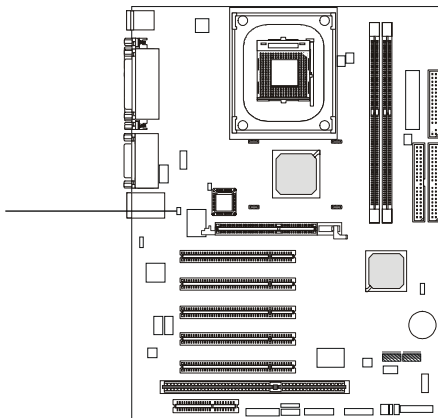
IR1 Pin Definition

PIN	SIGNAL
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX



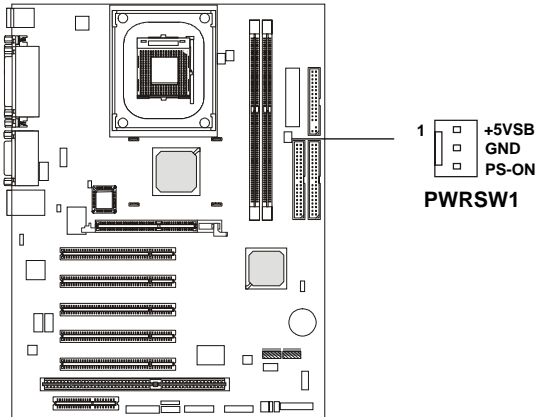
Chassis Intrusion Switch Connector: JCASE

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.



Independent Power Switch Connector: PWRSW1 (optional)

The connector is connected to an independent power switch on the case. Touch the power switch's touch pad will turn on/off the computer.

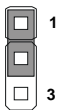
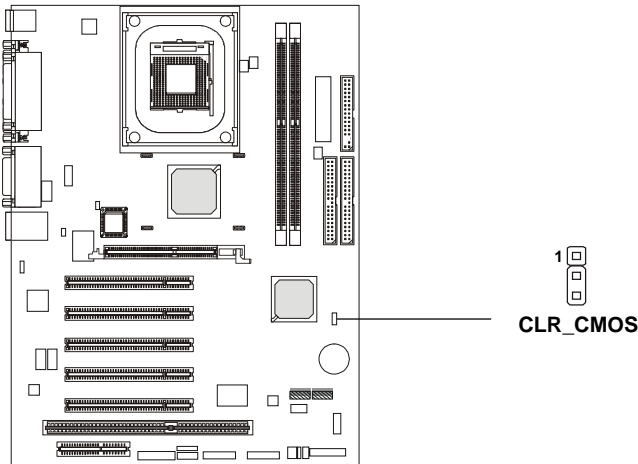


Jumpers

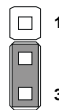
The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: CLR_CMOS

There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. 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 CLR_CMOS (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:



Keep Data



Clear Data

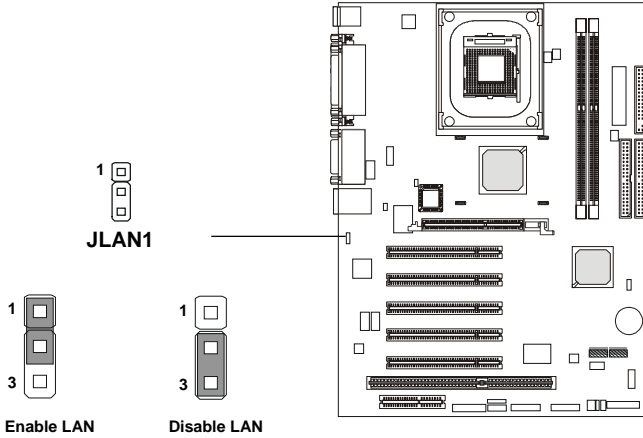


MSI Reminds You...

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

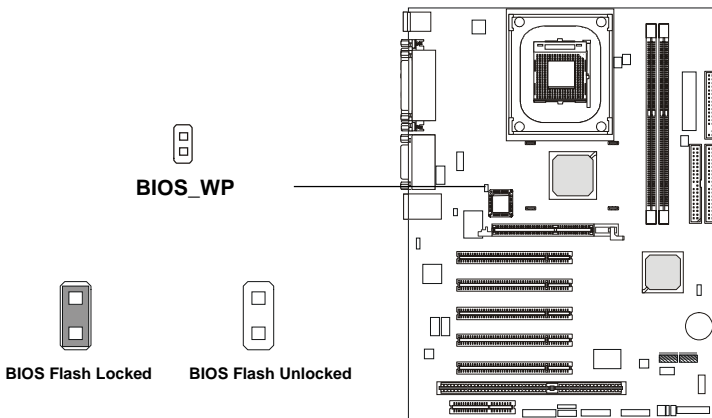
LAN Enable/Disable Jumper: JLAN1 (optional)

The jumper is used to enable or disable the onboard LAN function. The jumper is available only when LAN is integrated on the board.



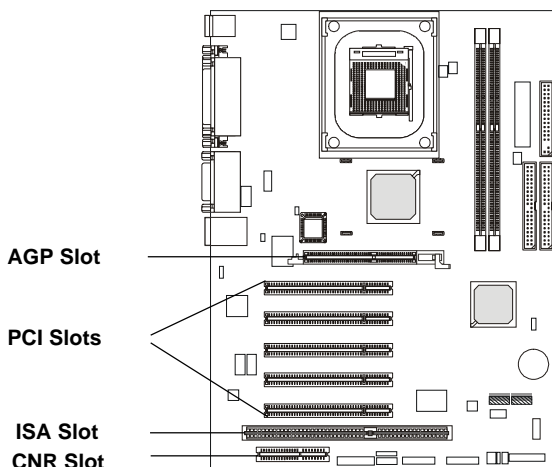
BIOS Flash Jumper: BIOS_WP (optional)

This jumper is used to lock or unlock the boot block area on BIOS. When unlocked, the BIOS boot block area can be updated. When locked, the BIOS boot block area cannot be updated.



Slots

The motherboard provides one AGP slot, five 32-bit Master PCI bus slots, one CNR slot and one ISA slot.



AGP (Accelerated Graphics Port) Slot (optional)

The AGP slot allows you to insert the AGP **1.5V** 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.

Please note that the AGP slot does not support 3.3V AGP card. Use of 3.3V AGP card may cause damages to the mainboard. To avoid the risk of causing permanent damages to the mainboard, the AGP slot is protected with MSI electrical routing device. If users have inserted a 3.3V AGP card into the slot, the MSI routing device will disable the computer's boot-up system. Remove the 3.3V AGP card and the boot-up system will return to normal.

The AGP slot is an optional component and only comes with mainboards with Brookdale GE/G/PE chipset north bridge.



Attention!

DO NOT use the following AGP cards which would result in failure to start the system. The following list is subject to change without prior notice.

Model	AGP Chip
ATI Xpert2000	3D RAGE 128VR
ATI Rage Fury Maxx	3D RAGE 128 Pro
Diamond Monster Fusion	3DFX VooDoo Banshee
Hercules KYRO II 4500	
Leadtek Winfast VR300	SiS300
Matrox Millennium G400	G4+MDHA32G
STB 3Dfx VooDoo3 3500TV	3Dfx VooDoo 3500TV

PCI Slots

Five 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.

CNR (Communication Network Riser) Slot (optional)

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

Please note the CNR slot of the mainboard **supports audio and modem only**.

ISA Slot (optional)

The ISA slot allows you to install the ISA expansion card.

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 “AGP/PCI/USB/LAN” IRQ pins are typically connected to the PCI bus INT A# ~ INT H# pins as follows:

	Order 1	Order 2	Order 3	Order 4
AGP	INT A#	INT B#	/	/
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#
PCI Slot 4	INT D#	INT A#	INT B#	INT C#
PCI Slot 5	INT A#	INT B#	INT C#	INT D#
USB1.1 Controller 1	INT A#	/	/	/
USB1.1 Controller 2	INT D#	/	/	/
USB1.1 Controller 3	INT C#	/	/	/
USB2.0 Controller	INT H#	/	/	/
LAN Controller	INT E#	/	/	/

AGP & PCI Slot 1 & PCI Slot 5 & USB1.1 Controller 1 shared INT A#.

PCI Slot 3 & USB1.1 Controller 3 shared INT C#.

PCI Slot 4 & USB1.1 Controller 2 shared INT D#.

PCI Slot 1~5: Bus Master

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.

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 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
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

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 ($\uparrow\downarrow$) 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 ($\uparrow\downarrow$) 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 >.

- ▶ IDE Primary Master
- ▶ IDE Primary Slave
- ▶ IDE Secondary Master
- ▶ IDE Secondary Slave

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.



MSI Reminds You...

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.

The Main Menu

Once you enter Award® BIOS CMOS Setup Utility, the Main Menu (Figure 1) 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.



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 AMI® 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 Fail-Safe Defaults

Use this menu to load the BIOS values for the best system performance, but the system stability may be affected.

Load Optimized Defaults

Use this menu to load factory default settings into the BIOS for stable system performance operations.

Set Supervisor Password

Use this menu to set Supervisor Password.

Set User Password

Use this menu to set User Password.

Save & Exit Setup

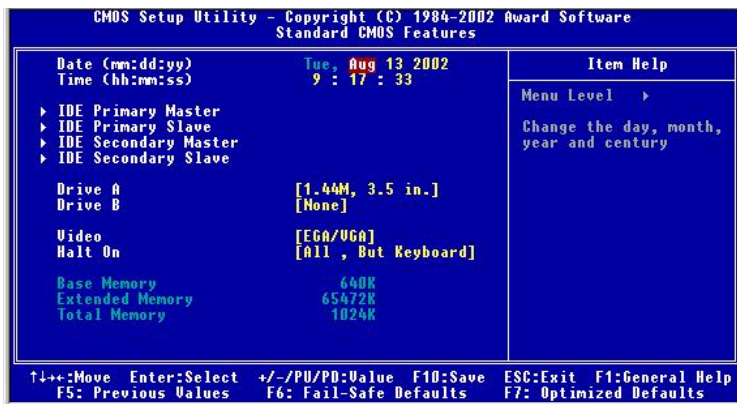
Save changes to CMOS and exit setup.

Exit Without Saving

Abandon all changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu are divided into 11 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



Date

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

day Day of the week, from Sun to Sat, determined by BIOS. Read-only.

month The month from Jan. through Dec.

date The date from 1 to 31 can be keyed by numeric function keys.

year The year 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 follow

ing 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:

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

Base/Extended/Total Memory

The three items show the memory status of your system (read only).

Advanced BIOS Features



Anti-Virus Protection

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*.



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: An Intel® Chipset that supports HT Technology;
- *BIOS: A BIOS that supports HT Technology and has it enabled; and
- *OS: An operating system that supports HT Technology.

For more information on Hyper-threading Technology, go to:
www.intel.com/info/hyperthreading

CPU Hyper-Threading (for Brookdale PE/GE/G/GV chipsets only)

This field is used to enable or disable the Hyper Threading function. Setting to *Enabled* will increase the system performance. Settings: *Enabled, Disabled*.

Fast Boot

The option speeds up Power On Self Test (POST) after you power on the computer. When setting the item to *Enabled*, BIOS will shorten or skip some check items during POST. Settings: *Enabled, Disabled*.

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. The settings are:

<i>Floppy</i>	The system will boot from floppy drive.
<i>LS120</i>	The system will boot from LS-120 drive.
<i>HDD-0</i>	The system will boot from the first HDD.
<i>SCSI</i>	The system will boot from the SCSI.
<i>CDROM</i>	The system will boot from the CD-ROM.
<i>HDD-1</i>	The system will boot from the second HDD.
<i>HDD-2</i>	The system will boot from the third HDD.
<i>HDD-3</i>	The system will boot from the fourth HDD.
<i>ZIP</i>	The system will boot from ATAPI ZIP drive.
<i>LAN</i>	The system will boot from the Network drive.
<i>Disabled</i>	Disable this sequence.

**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:.

Seek Floppy

Setting to *Enabled* will make BIOS seek floppy drive A: before booting the system. Settings: *Disabled, Enabled*.

Boot Up Num-Lock LED

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*.

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*. 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
<i>Setup</i>	The password prompt appears only when end users try to run Setup.
<i>System</i>	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 Version Control For OS

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 for DRAM > 64MB

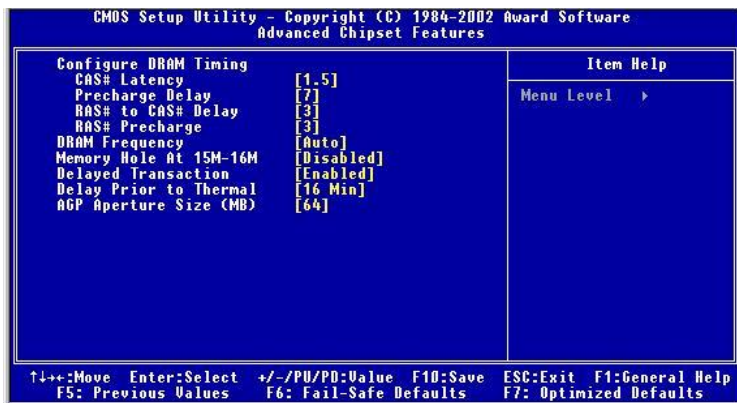
This allows you to run the OS/2® operating system with DRAM greater than 64MB. Setting options: *No, Yes*.

Full Screen LOGO Show

This item enables you to show the company logo on the bootup screen. Settings are:

- | | |
|-----------------|--|
| <i>Enabled</i> | Shows a still image (logo) on the full screen at boot. |
| <i>Disabled</i> | Shows the POST messages at boot. |

Advanced Chipset Features



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 *By User* 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, 3 (clocks). 1.5 (clocks) increases the system performance the most while 3 (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, refresh 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

Use this item to configure the clock frequency of the installed DRAMs. Setting options: *Auto, DDR200, DDR266*.

Memory Hole At 15M-16M

In order to improve performance, certain space in memory can be reserved for ISA peripherals. This memory must be mapped into the memory space below 16MB. When this area is reserved, it cannot be cached. Settings: *Enabled, Disabled*.

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*.

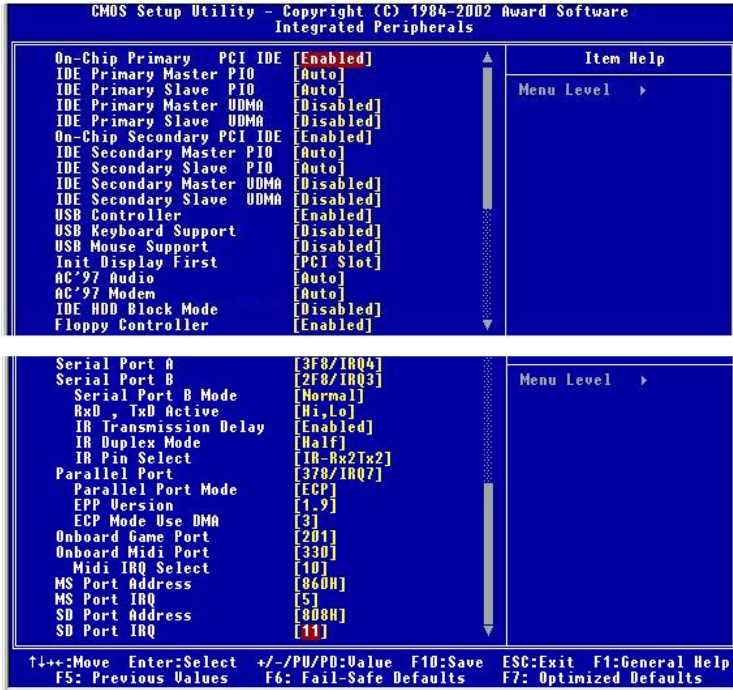
Delay Prior to Thermal

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)

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 *4MB, 8MB, 16MB, 32MB, 64MB, 128MB, and 256 MB*.

Integrated Peripherals



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.

IDE Primary/Secondary Master/Slave PIO

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

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows

95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, Ultra DMA/66 or even Ultra DMA/100, select *Auto* to enable BIOS support. Settings: *Auto, Disabled*.

USB Controller

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

USB Keyboard/Mouse Support

Set to *Enabled* if your need to use a USB keyboard/mouse in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix.

Init Display First

This item specifies which VGA card is your primary graphics adapter. Settings: *PCI Slot* and *Onboard/AGP*.

AC'97 Audio

Auto allows the mainboard to detect whether an audio device is used. If an audio device is detected, the onboard AC'97 (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 detected, the onboard AC'97 modem controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect a modem. Settings: *Auto, Disabled*.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select *Enabled* for automatic detection of the optimal number of block read/writes per sector the drive can support. Settings: *Enabled, Disabled*.

Floppy Controller

The item is used to enable or disable the onboard Floppy controller. Select *Enabled* when you have installed a floppy disk drive and want to use it.

Serial Port A/B

The items specify the base I/O port address and IRQ for the onboard Serial Port A (COM A)/Serial Port B (COM B). Selecting *Auto* allows BIOS to automatically determine the correct base I/O port address. Settings: *Disabled, 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto*.

Serial Port B Mode

This setting allows you to specify the operation mode for serial port 2. Setting options: *IrDA, ASKIR, Normal*.

<i>IrDA</i>	IrDA-compliant Serial Infrared Port
<i>ASKIR</i>	Amplitude Shift Keyed Infrared Port
<i>Normal</i>	RS-232C Serial 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 Duplex mode, synchronous, bi-directional transmission/reception is allowed. Under Half Duplex 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: *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

EPP Version

The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the setting “EPP Version” should be set. At this time either *1.7* spec or *1.9* spec can be chosen.

ECP Mode Use DMA

The ECP mode has to use the DMA channel, so after the user chooses the onboard parallel port with the ECP feature, the setting “ECP Mode User DMA” should be set. At this time, the user can choose between DMA channel *3* or *1*.

Onboard Game Port

This item is used to specify the address for the onboard game port.

Onboard Midi Port

The field specifies the base I/O port address for the onboard Midi Port.

Midi IRQ Select

The item is used to select the IRQ line for onboard Midi port.

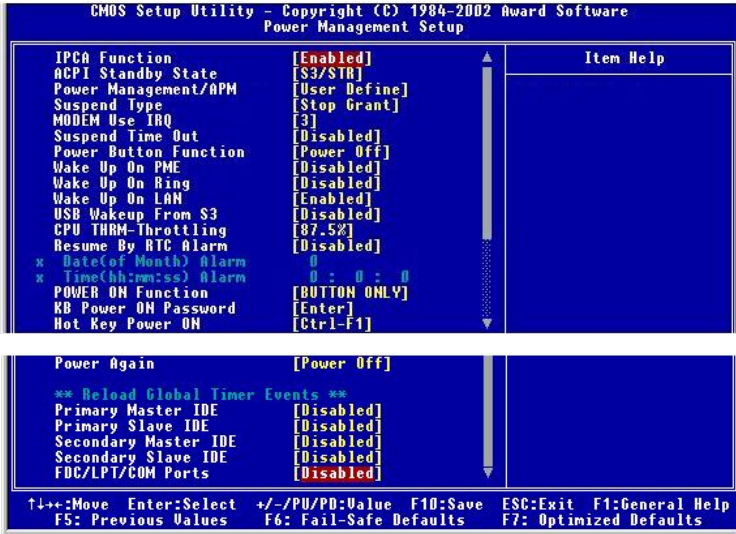
MS Port Address/IRQ (optional)

These fields allow you to specify the base I/O port address and IRQ line for the Memory Stick (MS) interface.

SD Port Address/IRQ (optional)

These fields allow you to specify the base I/O port address and IRQ line for the Secure Digital (SD) interface.

Power Management Setup



MSI Reminds You...

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

IPCA Function

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

ACPI Standby State

This item specifies the power saving modes for ACPI function. Options are:

- | | |
|---------------|--|
| <i>S1/POS</i> | 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. |
| <i>S3/STR</i> | 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.

Power Management/APM

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

- Min Saving* Minimum Power Management. Suspend Time Out = 1 Hour.
- Max Saving* Maximum Power Management. Suspend Time Out = 1 Min.
- User Define* Allows end users to configure the Suspend Time Out field.

Suspend Type

This setting allows you to select the type of Suspend mode. Setting options: *Stop Grant* (saves the state of the entire system to disk and then powers off the system), *PwrOn Suspend* (the CPU and core system remain powered on in a very low-power state).

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.

Wake Up On PME/Ring/LAN, USB Wakeup From S3

These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.



MSI Reminds You...

To use the function of "Wake Up On Ring" and "Wake Up On LAN", you need to install a modem/LAN card supporting power on function.

CPU THRM-Throttling

When CPU's temperature is higher than the predefined thermal level, the thermal monitoring mechanism will slow down the CPU speed to the percentage specified in the field. Settings range from 12.5% to 87.5% at 12.5% increment.

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 RTC Alarm*. Settings: 0~31.

Time(hh:mm:ss) Alarm

The field specifies the time for *Resume By RTC Alarm*. Format is <hour> <minute><second>.

POWER ON Function

This controls how the PS/2 keyboard and mouse can power on the system. Setting options: *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 specify a password in this field for the PS/2 keyboard to power on the system.

Hot Key Power ON

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

Power Again

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 power on state.
- Last State* Restores the system to the status before power failure or interrupt occurred.

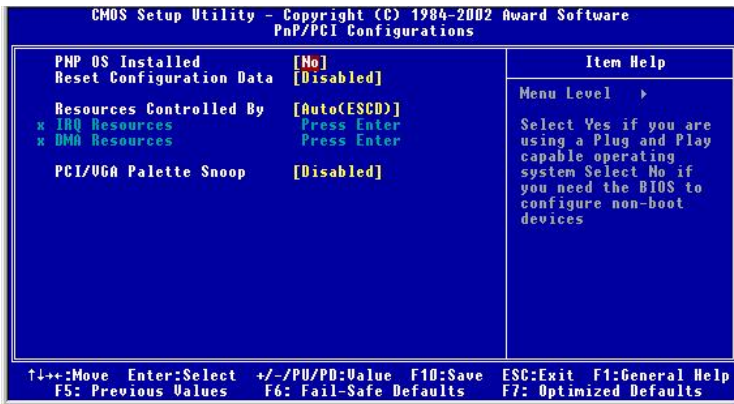
**** Reload Global Timer Events ****

Primary/Secondary Master/Slave IDE, FDC/LPT/COM 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 **P**eripheral **C**omponent **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its 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.



PNP OS Installed

When set to *YES*, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 98. When set to *NO*, BIOS will initialize all the PnP cards. So, select *Yes* if the operating system is Plug & Play aware.

Reset Configuration Data

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

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/DMA Resources

The items are adjustable only when *Resources Controlled By* is set to *Manual*. Press <Enter> and you will enter the sub-menu screen. *IRQ Resources* list IRQ-3/4/5/7/9/10/11/12/14/15 and *DMA Resources* list DMA-0/1/3/5/6/7 for users to set each IRQ/DMA a type depending on the type of device using the IRQ/DMA. Settings are:

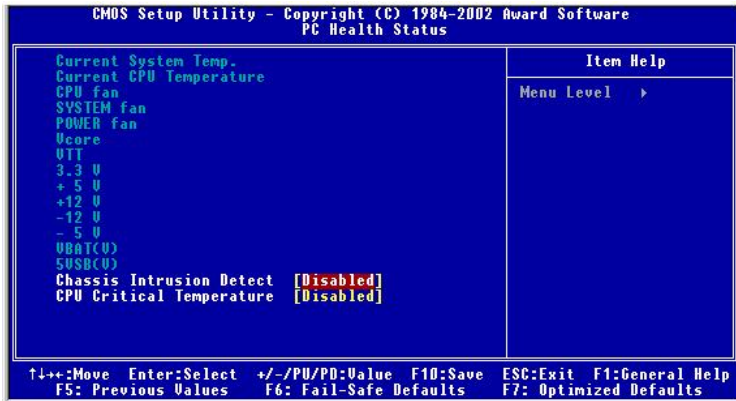
- PCI/ISA PnP* For Plug & Play compatible devices designed for PCI bus architecture.
- Legacy ISA* The IRQ will be reserved for further request.

PCI/VGA Palette Snoop

PCI VGA palette is the set of colors currently used by the video device. Some special VGA cards may not show colors correctly and need to look into the video device’s VGA palette to determine what colors are in use. Then you have to turn on the palette “snoop”, permitting the palette registers of both VGA devices to be identical. The setting must be set to *Enabled* if any non-standard VGA adapter card, such as MPEG card, installed 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.



Current System Temp., Current CPU Temperature, CPU/SYSTEM/POWER fan, Vcore, VTT, 3.3 V, +5 V, +12 V, -12 V, -5 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.

Chassis Intrusion Detect

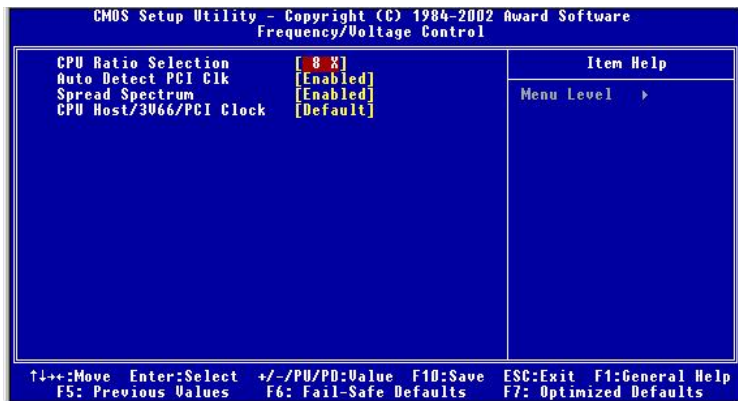
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to *Reset*. The setting of the field will automatically return to *Enabled* later. Settings: *Enabled*, *Reset*, *Disabled*.

CPU Critical Temperature

If the CPU temperature reaches the upper limit preset in this setting, the warning mechanism will be activated. This helps you to prevent the CPU overheating problem.

Frequency/Voltage Control

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



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.

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 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. If you do not have any EMI problem, leave the setting at *Disabled* for optimal system stability and performance. But if you are plagued by EMI, setting to *Enabled* for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clockspeed which may just cause your overclocked processor to lock up.

CPU Host/3V66/PCI Clock

This item specifies the clock frequency of CPU host bus (FSB), AGP (3V66) and PCI bus. It provides a method for end users to overclock the processor. If the item shows *Default*, the setting will use the default value for the clock frequency of CPU host bus, AGP and PCI bus.

Load Fail-Safe/Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to the default Fail-Safe or Optimized values. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

When you select Load Fail-Safe Defaults, a message as below appears:



Pressing *Y* loads the BIOS default values for the most stable, minimal system performance.


When you select Load Optimized Defaults, a message as below appears:



Pressing *Y* loads the default factory settings for optimal 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: Using 4- or 6-Channel Audio Function

The motherboard is equipped with Realtek ALC650 chip, which provides support for 6-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC650 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.

TOPICS

<i>Installing the Audio Driver</i>	<i>A-2</i>
<i>Using 4-/6-Channel Audio Function</i>	<i>A-4</i>
<i>Testing the Connected Speakers</i>	<i>A-14</i>
<i>Playing KaraOK</i>	<i>A-15</i>

Installing the Audio Driver

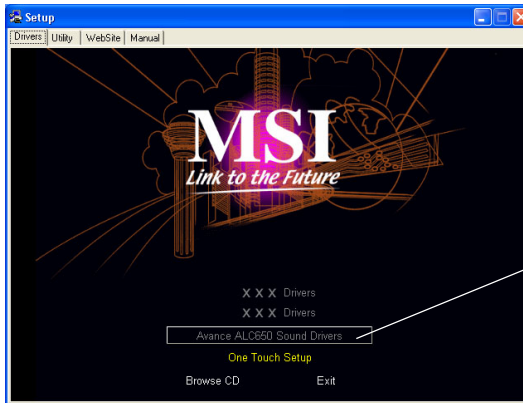
You need to install the driver for Realtek ALC650 chip to function properly before you can get access to 4-/6-channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 98SE/ME/2000/XP

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

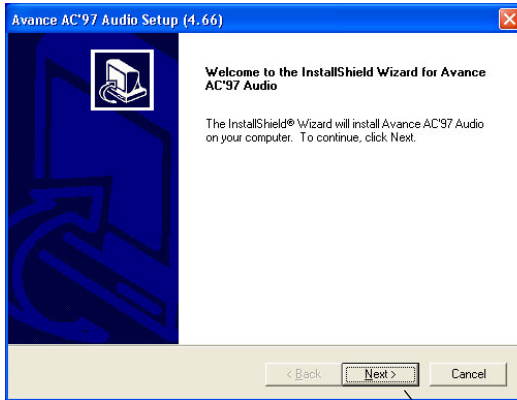
The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Avance ALC650 Sound Drivers**.



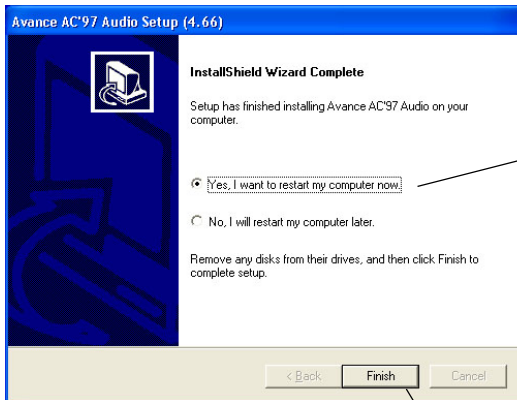
Click here

3. Click **Next** to start installing files into the system.



Click here

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



Select this option

Click here

Using 4- or 6-Channel Audio Function

After installing the audio driver, you are able to use the 4-/6-channel audio feature now. To enable 4- or 6-channel audio operation, first connect 4 or 6 speakers to the appropriate audio connectors, and then select 4- or 6-channel audio setting in the software utility.

There are two ways to utilize the function and connect the speakers to your computer:


- **Use the optional S-Bracket**
If your motherboard supports S-Bracket and you have installed S-Bracket in the computer, you can connect two speakers to back panel's Line-Out connector, and the rest of speakers to S-Bracket.
- **Use the Back Panel only**
If you do not have a S-Bracket, you can connect all speakers to the audio connectors on the back panel.

Use the Optional S-Bracket

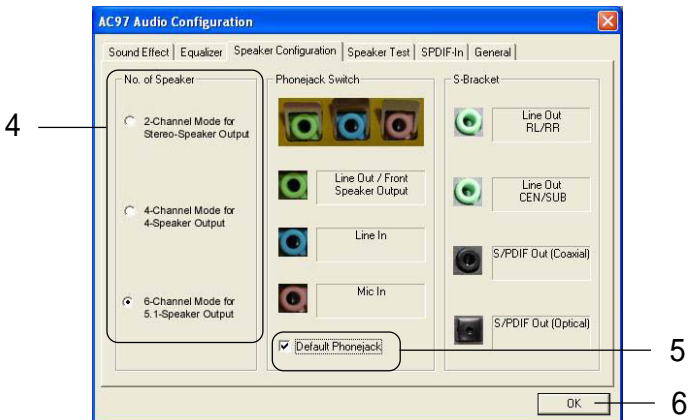
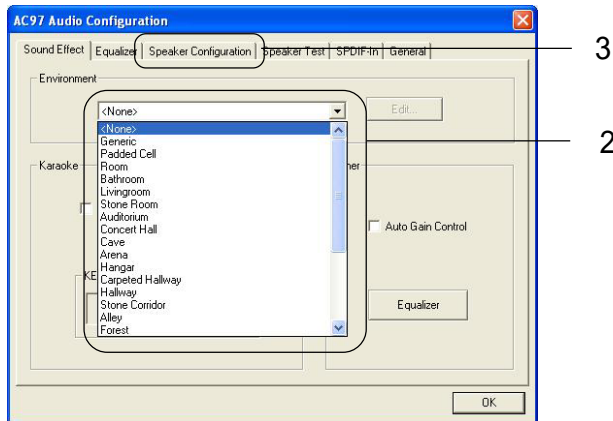
S-Bracket integrates the SPDIF (Sony & Philips Digital Interface) and analog LINE OUT connectors together. With this optional accessory, users will be able to decide either analog or digital audio output when applying the speakers to the connectors.

Read the following instructions to have the Multi-Channel Audio Function mode properly set in the software utility, and then have your speakers correctly connected to the S-Bracket:

Configuration in the Software Utility

1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. Select a desired surround sound effect from the “Environment” drop-down menu.
3. Click the **Speaker Configuration** tab
4. Select a desired multi-channel operation from **No. of Speakers**.
 - a. 2-Channel mode for Stereo-Speaker Output
 - b. 4-Channel mode for 4-Speaker Output

- c. 6-Channel mode for 5.1-Speaker Output
- d. Digital Audio Output
- 5. Select or deselect “Default Phonejack” to decide which audio device that you wish to use as the audio output connectors.
If “Default Phonejack” is selected, the speakers should be connected to the phonejacks on the S-Bracket.
If “Default Phonejack” is deselected, the speakers should be connected to the phonejacks either on the S-Bracket or Back Panel.
- 6. Click **OK** to close this window.



Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phonejacks in accordance with the setting in software utility.

■ 2-Channel Mode for Stereo-Speaker Output

When this mode is selected, it is recommended to attach the speakers to the Line Out connector on the back panel instead of the Line Out connector on the S-Bracket.

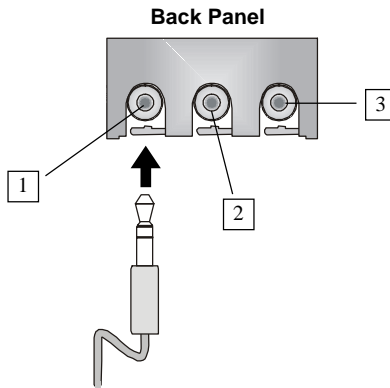
Refer to the following diagram and caption for the function of each phonejack on the back panel when 2-Channel mode is selected.

Select “Default Phonejack”

- 1 Line Out (*Front channels*)
- 2 Line In
- 3 MIC

Deselect “Default Phonejack”

- 1 Line Out (*Front channels*)
- 2 Line In
- 3 MIC



■ **4-Channel Mode for 4-Speaker Output**

When this mode is selected, plug the two front speakers to the Line Out connector on the back panel, and the other two rear speakers to the Line Out connector on the S-Bracket.

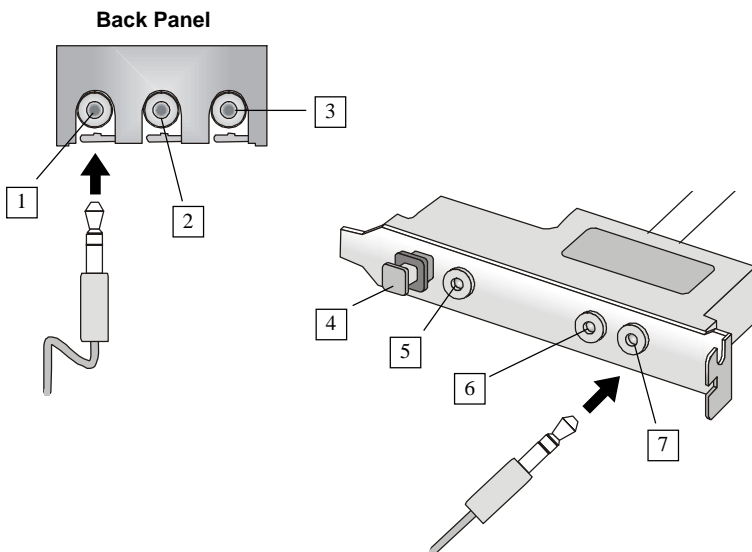
Refer to the following diagram and caption for the function of each phonejack on the back panel and S-Bracket when 4-Channel mode is selected.

Select “Default Phonejack”

- 1 Line Out (*Front channels*)
- 2 Line In
- 3 MIC
- 4 Optical SPDIF jack
- 5 Coaxial SPDIF jack
- 6 Line Out (*Reserved for Center and Subwoofer channel, but it is not functioning here*)
- 7 Line Out (*Rear channels*)

Deselect “Default Phonejack”

- 1 Line Out (*Front channels*)
- 2 Rear Speaker Out (*Rear channels*)
- 3 MIC
- 4 Optical SPDIF jack
- 5 Coaxial SPDIF jack
- 6 Line Out (*Reserved for Center and Subwoofer channel, but it is not functioning here*)
- 7 Line Out (*Rear channels*)



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

When this mode is selected, plug the two front speakers to the Line Out connector on the back panel, and the other two rear speakers to the Line Out connector on the S-Bracket.

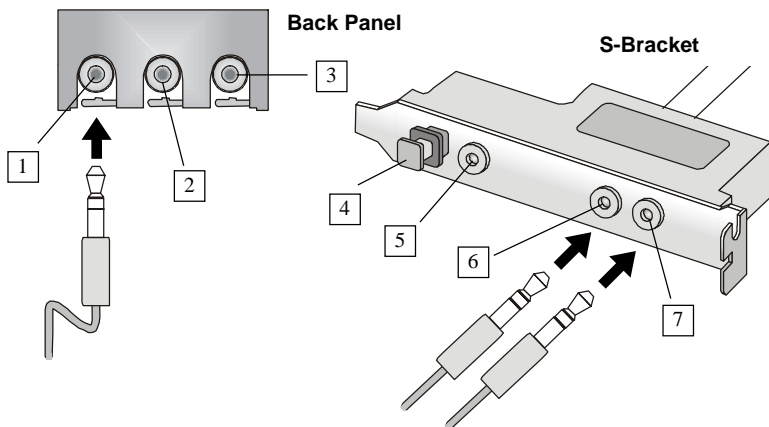
Refer to the following diagram and caption for the function of each phonejack on the back panel and S-Bracket when 6-Channel mode is selected.

Select “Default Phonejack”

- 1 Line Out (*Front channels*)
- 2 Line In
- 3 MIC
- 4 Optical SPDIF jack
- 5 Coaxial SPDIF jack
- 6 Line Out (*Center and Subwoofer channels*)
- 7 Line Out (*Rear channels*)

Deselect “Default Phonejack”

- 1 Line Out (*Front channels*)
- 2 Rear Speaker Out (*Rear channels*)
- 3 Center/Subwoofer Speaker Out (*Center and Subwoofer channels*)
- 4 Optical SPDIF jack
- 5 Coaxial SPDIF jack
- 6 Line Out (*Center and Subwoofer channels*)
- 7 Line Out (*Rear channels*)



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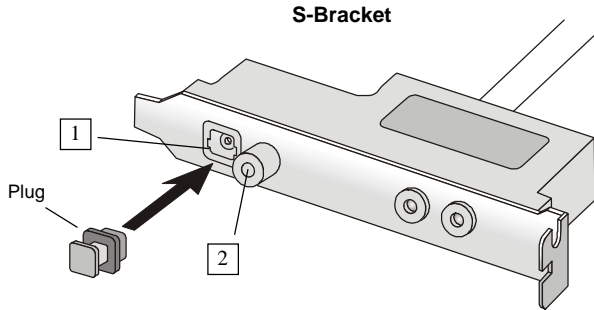
If the Center and Subwoofer speaker exchange their audio channels when you play video or music on the computer, a converter may be required to exchange center and subwoofer audio signals. You can purchase the converter from a speaker store .

■ **Digital Audio Output**

When any Multi-Channel Audio Function mode is selected, you may also connect your speakers to the Optical or Coaxial SPDIF phonejack on the S-Bracket to experience digital surround sound effect.

Remove the plug from the optical SPDIF phonejack before inserting the fiber-optic cable, and read the following diagram and captions for the function of each phonejack on the S-Bracket.

- 1 Optical SPDIF jack
- 2 Coaxial SPDIF jack




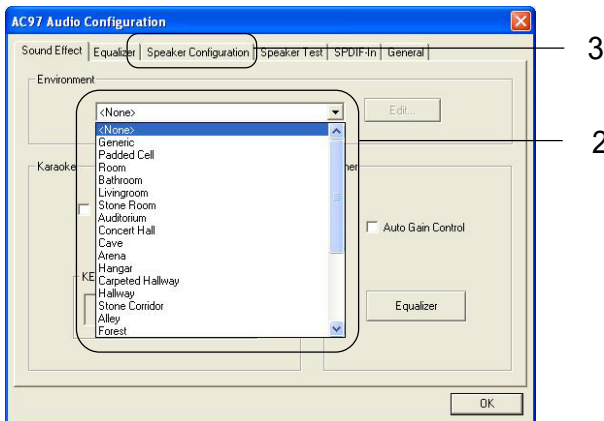
Use the Back Panel only

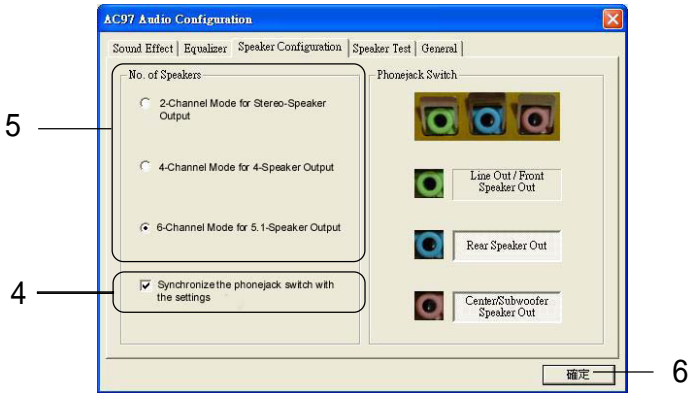
In addition to a default 2-Channel analog audio output function, the audio connectors on the Back Panel also provide 4- or 6-Channel analog audio output function if a proper setting is made in the software utility.

Read the following steps to have the Multi-Channel Audio Function properly set in the software utility, and have your speakers correctly connected to the Back Panel:

Configuration in the Software Utility

1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. Select a desired surround sound effect from the “Environment” drop-down menu.
3. Click the **Speaker Configuration** tab.
4. Select **Synchronize the phonejack switch with the settings**.
5. Select a desired multi-channel operation from **No. of Speakers**.
 - a. 2-Channel Mode for Stereo-Speaker Output
 - b. 4-Channel Mode for 4-Speaker Output
 - c. 6-Channels Mode for 5.1-Speaker Output
6. Click **OK** to close this window.



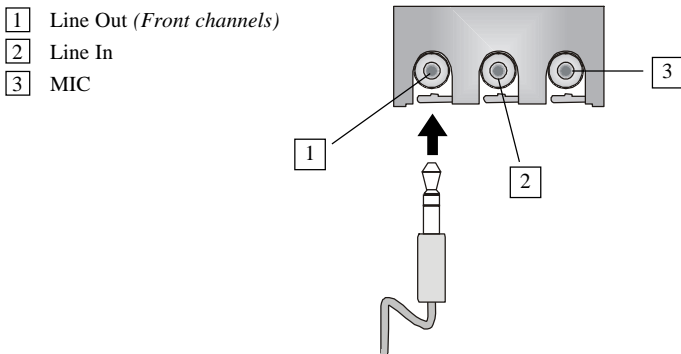


Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phonejacks in accordance with the setting in software utility.

■ 2-Channel Mode for Stereo-Speaker Output

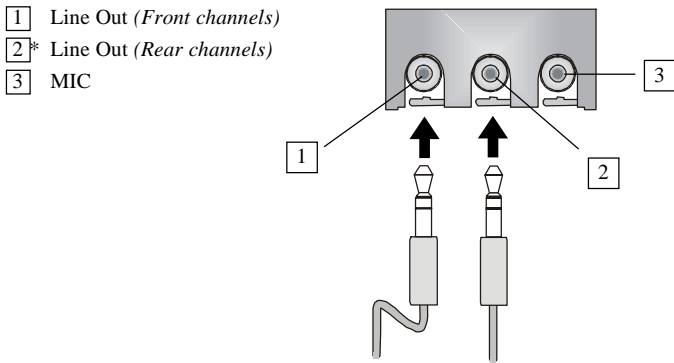
Refer to the following diagram and caption for the function of each phonejack on the back panel when 2-Channel mode is selected.



■ **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- channels analog audio jacks by selecting the corresponding multi-channel operation from **No. of Speakers**.

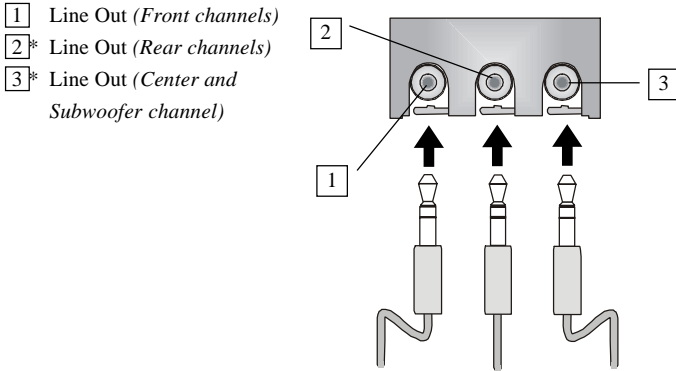
Refer to the following diagram and caption for the function of each jack on the back panel when 4-Channels mode is selected.



* 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-Channels mode is selected.




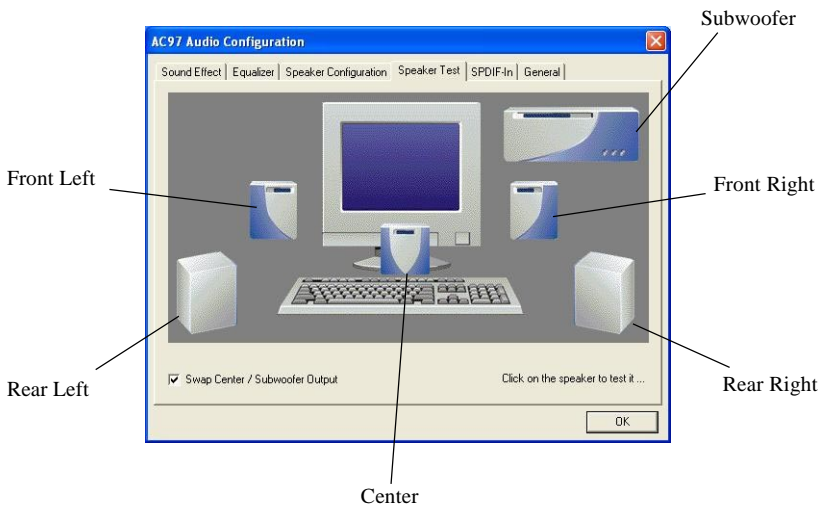
* Both Line In and MIC function are converted to Line Out function when 4-Channel Mode for 6-Speaker Output is selected.

Testing the Connected Speakers

To ensure that 4- or 6-channel audio operation works properly, you may need to test each connected speaker to make sure every speaker work properly. If any speaker fails to sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones.

Testing Each Speaker:

1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. Click the **Speaker Test** tab.
3. The following window appears. Select the speaker which you want to test by clicking it.



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6 speakers appear on the "Speaker Test" window only when you select "6 channels mode" in the "No. of Speakers" column. If you select "4 channels mode", only 4 speakers appear on the window.

4. 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 .




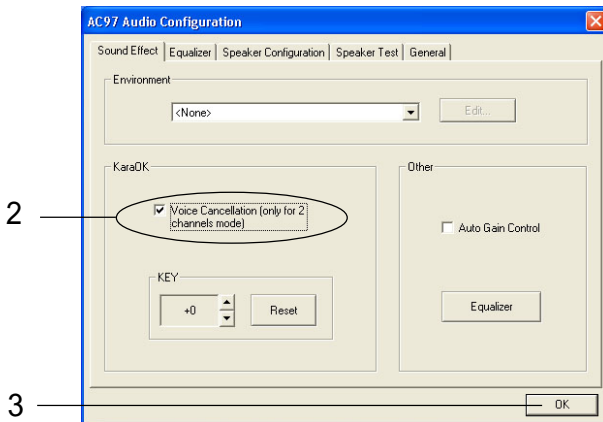
Select this function

Playing KaraOK

The KaraOK function 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.

Playing KaraOK:

1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. In the Sound Effect tab, select **Voice Cancellation** under “KaraOK.”
3. Click **OK** to close this window.



Troubleshooting

Q: Where will I find the model number of the mainboard?

A: There are two places where you can find the model number of the mainboard:

1. Somewhere between the PCI slots you shall find MS-xxxx or the marketing name like "K7T Turbo". You can also find the version number beside it.
2. At the back cover of the user's manual.

Q: What do you mean by PCB version 1?

A: PCB is printed circuit board. Saying PCB version 1 is the same as saying motherboard version 1.

Q: Why my motherboard BIOS sticker is "Phoenix BIOS" but when I boot up my system I saw that "Award BIOS" is being used?

A: Phoenix & Award already merged as one company. All MSI motherboard using Award BIOS comes with Phoenix logo sticker.

Q: How do I know what MSI D-LED or D-bracket light mean?

A: Please follow the special tech issue, http://www.msi.com.tw/support/techexpress/special_tech/smartled.htm

Q: I have got MSI Motherboard and when it says detecting drives, it detects them but says an error saying "Primary IDE Channel no 80 Conductor Cable Installed"

A: This is not a problem. It merely means that you're using an ATA-66 or ATA-100 HDD, but you're using the conductor 40 ATA-33 cable.

Q: I have high speed CPU cooling fan like Taisol CGK760092, Vantec CCK-6035D & GlobalWin WBK38. Can I install the fan directly to the motherboard?

A: We strongly recommend that you do NOT connect those described CPU fan directly to your motherboard, as it draws so much power, that it could damage it. Please use a 3-Pin to 4-Pin Cable that comes together with the fan.

Q: Can I use more than 512MB memory on Win9x or WinME?

A: No, you can't. You can only use more than 512MB memory on Win2000 or WinXP. This is a Microsoft OS issue. Please check <http://support.microsoft.com/support/kb/articles/Q108/0/79.ASP>

Q: I have tried to download the MSI Live Update utility from <http://www.msi.com.tw/support/liveupdate/livedriver.htm> but it keeps on failing?

A: This can be solved by one of the following suggestions: 1. Dont install zonealarm 2. Disable "WebTrap" of PC-cillion 2000 3. Disable any web based anti-virus Software.

Q: Can Live Update Series support WinXP?

A: Live Update Series version 215 can support WinXP. Download it from <http://www.msi.com.tw/support/liveupdate/livedriver.htm>

Q: After flashing the BIOS, my system for unknown reason dont want to boot, what should I do?

A: Please refer to the following suggestions: 1. Try the BIOS boot recovery feature as described in <http://www.msi.com.tw/support/bios/boot.htm> 2. Try to clear the CMOS If problem still persists, ask your reseller for new BIOS chip or contact one of MSI office near your place for new BIOS chip <http://www.msi.com.tw/contact/main.htm>

Q: Should I update my BIOS, once a new BIOS is released?

A: A new BIOS is usually released due to the following reasons:

1. New function is supported
2. New BIOS source code

3. Bugs are found
4. Customer-specific request

When we release a new BIOS, there's usually a release note attached which lists the reason for the release. Refer to this release note and decide for yourself if upgrading to the new BIOS will be worth it. A word of advice, though, do not upgrade to the new BIOS, unless you really have to.

Q: How do I update the BIOS?

A: Please refer to <http://www.msi.com.tw/support/bios/note.htm> for details.

Q: How do I identify the BIOS version?

A: Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:

1. For older model number:

AG76091096 where:

1st digit refers to BIOS maker as A = AMI(R) W = AWARD(R) P = PHOENIX (R).

2nd digit refers to the internal chipset code.

3rd digit refers to the processor class as 5 = 486, 7 = 586, 8 = 686.

4th digit is incremental.

091096 refers to the date this BIOS is released.

2. For newer model number:

W5139MS V1.091096 where:

1st digit refers to BIOS maker as A = AMI(R) W = AWARD(R) P = PHOENIX (R).

2nd - 5th digit refers to the model number.

6th - 7th digit refers to the customer as MS = all standard customers.

V1.0 refers to the BIOS version.

091096 refers to the date this BIOS is released.

Q: After flashing the bios and rebooting the system, the screen went blank.

A: *For AMI BIOS*

Rename the desired AMI BIOS file to AMIBOOT.ROM and save it on a floppy disk. e.g. Rename A569MS23.ROM to AMIBOOT.ROM

Insert this floppy disk in the floppy drive. Turn On the system and press and hold Ctrl-Home to force update. It will read the AMIBOOT.ROM file and recover the BIOS from the A drive.

When 4 beeps are heard you may remove the floppy disk and restart the computer.

For Award BIOS

Make a bootable floppy disk

Copy the Award flash utility & BIOS file to the said floppy disk

Create an autoexec.bat with "awdf1535 biosfilename" in the content e.g.

awdf1535 a619mj21.bin

Boot up system with the said floppy (it will take less than 2 minutes before screen comes out)

Re-flash the BIOS & reboot.

Glossary

ACPI (*Advanced Configuration & Power Interface*)

This power management specification enables the OS (operating system) to control the amount of power given to each device attached to the computer. Windows 98/98SE, Windows 2000 and Windows ME can fully support ACPI to allow users managing the system power flexibly.

AGP (*Accelerated Graphics Port*)

A new, high-speed graphics interface that based on PCI construction and designed especially for the throughput demands of 3-D graphics. AGP provides a direct channel (32-bit wide bus) between the display controller and main memory for high graphics quality and performance.

Bluetooth

Bluetooth refers to a worldwide standard for the wireless exchange of data between two devices. Bluetooth requires that a low-cost transceiver chip be included in each device. The transceiver transmits and receives in a previously unused frequency band of 2.45 GHz that is available globally (with some variation of bandwidth in different countries). In addition to data, up to three voice channels are available. Each device has a unique 48-bit address from the IEEE 802 standard. Connections can be point-to-point or multipoint. The maximum range is 10 meters. Data can be exchanged at a rate of 1 megabit per second (up to 2 Mbps in the second generation of the technology).

BIOS (*Basic Input/Output System*)

On PCs, an essential software that contains all the control code of input/output interface (such as keyboard, disk drives, etc.). It executes hardware test on booting the system, starts the OS, and provides an interface between the OS and the components. The BIOS is stored in a ROM chip.

Bus

A set of hardware lines within the computer system, through which the data is transferred among different components. In a PC, the term **bus** usually refers to a local bus that connects the internal components to the CPU and main memory.

Cache

A special memory subsystem that is used to speed up the data transfer. It stores the

contents of frequently accessed RAM locations and the addresses where these data items are stored.

Chipset

A collection of integrated chips designed to perform one or more related functions. For example, a modem chipset contains all the primary circuits for transmitting and receiving data; a PC chipset provides the electronic interfaces between all subsystems.

Clock Cycle

Clock cycle (or tick) is the smallest unit of time recognized by a device. For personal computers, clock cycles generally refer to the main system clock, which runs at 66 MHz. This means that there are 66 million clock cycles per second. Since modern CPUs run much faster (up to 533 MHz), the CPU can execute several instructions in a single clock tick.

CMOS (*Complementary Metal-Oxide Semiconductor*)

CMOS is a widely used type of semiconductor, which features high speed and low power consumption. PCs usually contain a small amount of battery-powered CMOS memory to retain the date, time, and system setup parameters.

DRAM (*Dynamic RAM*)

A most common type of computer memory. It usually uses one transistor and a capacitor to represent a bit. As the development of technology, the memory type and specification used in computer becomes variety, such as SDRAM, DDR SDRAM, and RDRAM. For further instruction, please see the table below:

Dynamic RAM (DRAM) Memory Technologies					
Type	First Used	Clock Rate	Bus* Width	Peak Bandwidth	Volts
FPM (60,70ns)	1990	25MHz	64 bits	200 MBps	5v
EDO (50,60,70ns)	1994	40MHz	64 bits	320 MBps	5v
SDRAM (66MHz)	1996	66MHz	64 bits	528 MBps	3.3v
SDRAM (100MHz)	1998	100MHz	64 bits	800 MBps	3.3v
SDRAM (133MHz)	1999	133MHz	64 bits	1.1 GBps	3.3v
RDRAM (Direct Rambus)	1999	400MHz	16 bits	1.6 GBps	2.5v
DDR SDRAM (100MHz)	2000	100MHz	64 bits	1.6 GBps	3.3v
DDR SDRAM (133MHz)	2000	133MHz	64 bits	2.1 GBps	3.3v

* Memory channel width (64 bits started with 75MHz Pentium)

Source: *Computer Desktop Encyclopedia*

ECC Memory (*Error Correcting Code Memory*)

A type of memory that contains special circuitry for testing the accuracy of data and correcting the errors on the fly.

EEPROM

Acronym for Electrically Erasable Programmable Read-Only Memory. An EEPROM is a special type of PROM that can be erased by exposing it to an electrical charge. Like other types of PROM, EEPROM retains its contents even when the power is turned off. Also like other types of ROM, EEPROM is not as fast as RAM. EEPROM is similar to flash memory (sometimes called flash EEPROM). The principal difference is that EEPROM requires data to be written or erased one byte at a time whereas flash memory allows data to be written or erased in blocks. This makes flash memory faster.

EIDE

Short for Enhanced IDE, a newer version of the IDE mass storage device interface standard developed by Western Digital Corporation. It supports data rates of between 4 and 16.6 MBps, about three to four times faster than the old IDE standard. In addition, it can support mass storage devices of up to 8.4 gigabytes, whereas the old standard was limited to 528 MB. Because of its lower cost, enhanced EIDE has replaced SCSI in many areas. There are four EIDE modes defined. The most common is Mode 4, which supports transfer rates of 16.6 MBps. There is also a new mode, called ATA-3 or Ultra ATA, that supports transfer rates of 33 MBps.

EISA (*Extended Industry Standard Architecture*)

EISA is a standard bus (computer interconnection) architecture that extends the ISA standard to a 32-bit interface. It was developed in part as an open alternative to the proprietary Micro Channel Architecture (MCA) that IBM introduced in its PS/2 computers. EISA data transfer can reach a peak of 33 megabytes per second.

ESCD (*Extended System Configuration Data*)

It is a format for storing information about Plug-and-Play (PnP) devices in the BIOS. Windows and the BIOS access the ESCD area each time you re-boot your computer

External Cache

Short for Level 2 cache, cache memory that is external to the microprocessor. In general, L2 cache memory, also called the secondary cache, resides on a separate chip from the microprocessor chip. Although, more and more microprocessors are including L2 caches into their architectures.

IDE (*Integrated Drive Electronics*)

A type of disk-drive interface widely used to connect hard disks, CD-ROMs and tape drives to a PC, in which the controller electronics is integrated into the drive itself, eliminating the need for a separate adapter card. The IDE interface is known as the ATA (AT Attachment) specification.

IEEE 1394

A new, high speed external bus standard, also known as *FireWire* or *iLink*, which supports data transfer rates of up to 400 Mbps for connecting up to 63 external devices.

Internal Cache

Short for Level 1 cache, a memory cache built into the microprocessor. The L1 cache is also called the primary cache.

IrDA (*Infrared Data Association*)

A group of device vendors, including computer, component and telecommunications, who have developed a standard for transmitting data via infrared light waves. This enables you to transfer data from one device to another without any cables.

IRQ (*Interrupt Request Line*)

IRQs are hardware lines over which devices can send interrupt signals to the microprocessor. When you add a new device to a PC, you sometimes need to set its IRQ number by setting a DIP switch. This specifies which interrupt line the device may use. IRQ conflicts used to be a common problem when adding expansion boards, but the Plug-and-Play specification has removed this headache in most cases.

ISA (*Industry Standard Architecture*)

ISA is a standard bus (computer interconnection) architecture that is associated with the IBM AT motherboard. It allows 16 bits at a time to flow between the motherboard circuitry and an expansion slot card and its associated device(s). Also see EISA and MCA.

LAN (*Local Area Network*)

A computer network that covers a relatively smaller area, such as in a building or an enterprise. It is made up of servers, workstations, shared resources, a network operating system and a communications link. These individual PCs and devices on a LAN are known as “nodes”, and are connected by cables to access data and devices anywhere on the LAN, so that many users can share expensive devices and data.

LBA (*Logical Block Addressing*)

Logical block addressing is a technique that allows a computer to address a hard disk larger than 528 megabytes. A logical block address is a 28-bit value that maps to a specific cylinder-head-sector address on the disk. 28 bits allows sufficient variation to specify addresses on a hard disk up to 8.4 gigabytes in data storage capacity. Logical block addressing is one of the defining features of Enhanced IDE (EIDE), a hard disk interface to the computer bus or data paths.

LED (*Light Emitting Diode*)

A semiconductor device that converts electrical energy into light. Since it lights up (usually red) when electricity is passed through it, it is usually used for the activity lights on computer's component, such as disk drivers.

LPT (*Line Printer Terminal*)

Logical device name for a line printer; a name reserved by the MS-DOS for up to three parallel printer ports: LPT1, LPT2, and LPT3. It is frequently used by the OS to identify a printer.

Overclocking

Overclocking is resetting your computer so that the microprocessor runs faster than the manufacturer-specified speed (for example, setting an Intel 166 MHz (megahertz) microprocessor to run at 200 Mhz).

PCI (*Peripheral Component Interconnect*)

A local bus standard developed by Intel that first appeared on PCs in late 1993. PCI provides "plug and play" capability and allows IRQs to be shared. The PCI controller can exchange data with the system's CPU either 32 bits or 64 bits at a time.

PnP (*Plug and Play*)

A set of specifications that allows a PC to configure itself automatically to work with peripherals. The user can "plug" in a peripheral device and "play" it without configuring the system manually. To implement this useful feature, both the BIOS that supports PnP and a PnP expansion card are required.

POST (*Power On Self Test*)

During booting up your system, the BIOS executes a series of diagnostic tests, include checking the RAM, the keyboard, the disk drives, etc., to see if they are properly connected and operating.

PS/2 Port

A type of port developed by IBM for connecting a mouse or keyboard to a PC. The PS/2 port supports a mini DIN plug containing just 6 pins. Most modern PCs equipped with PS/2 ports so that the special port can be used by another device, such as a modem.

RAID

RAID (Redundant Array of Independent Disks; originally Redundant Array of Inexpensive Disks) is a way of storing the same data in different places (thus, redundantly) on multiple hard disks. By placing data on multiple disks, I/O operations can overlap in a balanced way, improving performance. Since multiple disks increases the mean time between failure (MTBF), storing data redundantly also increases fault-tolerance.

SCSI

Acronym for Small Computer System Interface. Pronounced "scuzzy," SCSI is a parallel interface standard used by Apple Macintosh computers, PCs, and many UNIX systems for attaching peripheral devices to computers. SCSI interfaces provide for faster data transmission rates (up to 80 megabytes per second) than standard serial and parallel ports. In addition, you can attach many devices to a single SCSI port, so that SCSI is really an I/O bus rather than simply an interface.

USB (*Universal Serial Bus*)

A hardware interface for low-speed peripherals such as the keyboard, mouse, joystick, etc. USB provides a maximum bandwidth of 12 Mbit/sec (Mbps) for connecting up to 127 peripheral devices to PC. USB features hot swap capability and multiple data streams, allows external devices to be plugged in and unplugged without turning the system off.

Virus

A program or a piece of code that infects computer files by inserting in those files copies of itself. The virus code is buried within an existing program, and is activated when that program is executed. All the viruses are man-made, and often have damaging side effects.

WLAN

Acronym for wireless local-area network. Also referred to as LAWN. A type of local-area network that uses high-frequency radio waves rather than wires to communicate between nodes.