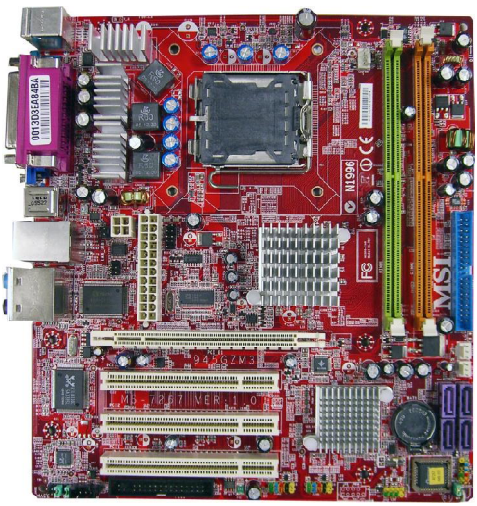
MSI
MICRO-STAR INTERNATIONAL

945GZM3 Series

MS-7267 (V1.X) Mainboard



G52-M7267X1

Copyright Notice

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Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X with Intel 945GZ & ICH7	March 2006

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/program/service/faq/faq/esc_faq_list.php***
- Contact our technical staff at: ***support@msi.com.tw***

Safety Instructions

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



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



警告使用者:
這是甲類的資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。



廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below.

CE N1996

- † Reorient or relocate the receiving antenna.
- † Increase the separation between the equipment and receiver.
- † Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- † Consult the dealer or an experienced radio/television technician for help.

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

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

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

FC **Micro-Star International**
MS-7267

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

WEEE (Waste Electrical and Electronic Equipment) Statement



ENGLISH

To protect the global environment and as an environmentalist, MSI must remind you that...

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. MSI hat europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

En tant qu'écologiste et afin de protéger l'environnement, MSI tient à rappeler ceci...

Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ees équipements seront obligés de récupérer certains produits en fin de vie. MSI prendra en compte cette exigence relative au retour des produits en fin de vie au sein de la communauté européenne. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

Компания MSI предпринимает активные действия по защите окружающей среды, поэтому напоминаем вам, что....

В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы. MSI обязуется соблюдать требования по приему продукции, проданной под маркой MSI на территории ЕС, в переработку по окончании срока службы. Вы можете вернуть эти изделия в специализированные пункты приема.

ESPAÑOL

MSI como empresa comprometida con la protección del medio ambiente, recomienda:
Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al termino de su período de vida. MSI estará comprometido con los términos de recogida de sus productos vendidos en la Unión Europea al final de su periodo de vida. Usted debe depositar estos productos en el punto limpio establecido por el ayuntamiento de su localidad o entregar a una empresa autorizada para la recogida de estos residuos.

NEDERLANDS

Om het milieu te beschermen, wil MSI u eraan herinneren dat....
De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling.
Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

Da bi zaštitili prirodnu sredinu, i kao preduzeće koje vodi računa o okolini i prirodnoj sredini, MSI mora da vas podesti da...
Po Direktivi Evropske unije ("EU") o odbačenoj ekektronskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod "elektronsku i električnu opremu" ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinuđeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja. MSI će poštovati zahtev o preuzimanju ovakvih proizvoda kojima je istekao vek trajanja, koji imaju MSI oznaku i koji su prodati u EU. Ove proizvode možete vratiti na lokalnim mestima za prikupljanje.

POLSKI

Aby chronić nasze środowisko naturalne oraz jako firma dbająca o ekologię, MSI przypomina, że...
Zgodnie z Dyrektywą Unii Europejskiej ("UE") dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005, tzw. "produkty oraz wyposażenie elektryczne i elektroniczne " nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia. MSI wypełni wymagania UE, przyjmując produkty (sprzedawane na terenie Unii Europejskiej) wycofywane z użycia. Produkty MSI będzie można zwracać w wyznaczonych punktach zbiorczych.

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektonik cihazların üreticileri, cihazların kullanım süreleri bitttikten sonra ürünleri geri toplamakla yükümlü olacaktır. Avrupa Birliği'ne satılan MSI markalı ürünlerin kullanım süreleri bittiğinde MSI ürünlerin geri alınması isteği ile işbirliği içerisinde olacaktır. Ürünlerinizi yerel toplama noktalarına bırakabilirsiniz.

ČESKY

Záleží nám na ochraně životního prostředí - společnost MSI upozorňuje...

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti. Společnost MSI splní požadavky na odebírání výrobků značky MSI, prodávaných v zemích EU, po skončení jejich životnosti. Tyto výrobky můžete odevzdat v místních sběrnách.

MAGYAR

Annak érdekében, hogy környezetünket megvédjük, illetve környezetvédőként fellépve az MSI emlékezteti Önt, hogy ...

Az Európai Unió („EU") 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetőek lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén. Az MSI betartja a termékvisszavétellel kapcsolatos követelményeket az MSI márkanév alatt az EU-n belül értékesített termékek esetében, azok élettartamának végén. Az ilyen termékeket a legközelebbi gyűjtőhelyre viheti.

ITALIANO

Per proteggere l'ambiente, MSI, da sempre amica della natura, ti ricorda che....

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita. MSI si adeguerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

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Chapter 1
Getting Started

Thank you for choosing the **945GZM3 Series** (MS-7267) v1.x Micro-ATX mainboard. The **945GZM3 Series** mainboard is based on **Intel® 945GZ** and **Intel® ICH7** chipset for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4 Series LGA775** processor, the **945GZM3 Series** mainboard delivers a high performance and professional desktop platform solution.

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Mainboard Specifications

Processor Support

- Intel® Pemtium 4 Series processors in the LGA775 package.
- Supports Pentium 4 3XX, 5XX, 6XX, 8XX & 9XX.
- Supports 3/4 pin CPU Fan Pin-Header with Fan Speed Control.
- Supports Cedar Mill Value Processor.

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

Supported FSB

- 800/ 533 MHz

Chipset

- North Bridge: Intel® 945GZ chipset
- South Bridge: Intel® ICH7 chipset

Memory Support

- DDRII 400/533 SDRAM (2GB Max)
- 2 DDRII DIMMs (240pin / 1.8V)

LAN

- Supports 10/100/1000 Fast Ethernet by Realtek 8110SB/8100C (1000 Mb/s on 8110SB only)

Audio

- High Definition link controller integrated in Intel® ICH7 chip
- 7.1 channels audio codec Realtek ALC850
- Compliant with AC'97 Rev 2.3 Spec

IDE

- 1 IDE ports by ICH7
- Supports Ultra DMA 66/100/133 mode
- Supports PIO, Bus Master operation mode

SATA

- SATA II ports by ICH7
- Supports four SATA II devices
- Supports storage and data transfers at up to 300MB/s

Floppy

- 1 floppy port
- Supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes

Connectors

- **Back Panel**
  - 1 PS/2 mouse port
  - 1 PS/2 keyboard port.
  - 1 serial port (COM1)
  - 1 parallel port supporting SPP/EPP/ECP mode

- 1 VGA port
- 4 USB 2.0 Ports
- 1 LAN jack
- 5 audio jacks
- 1 Optical SPDIF jack

- **On-Board Pinheaders**
  - 1 COM2 pinheader
  - 1 IrDA pinheader
  - 1 case intrusion pinheader
  - 2 USB 2.0 pinheaders

Slots

- 1 PCI Express x16 slots (special design)
- 3 PCI slots.
- Support 3.3V/ 5V PCI bus Interface

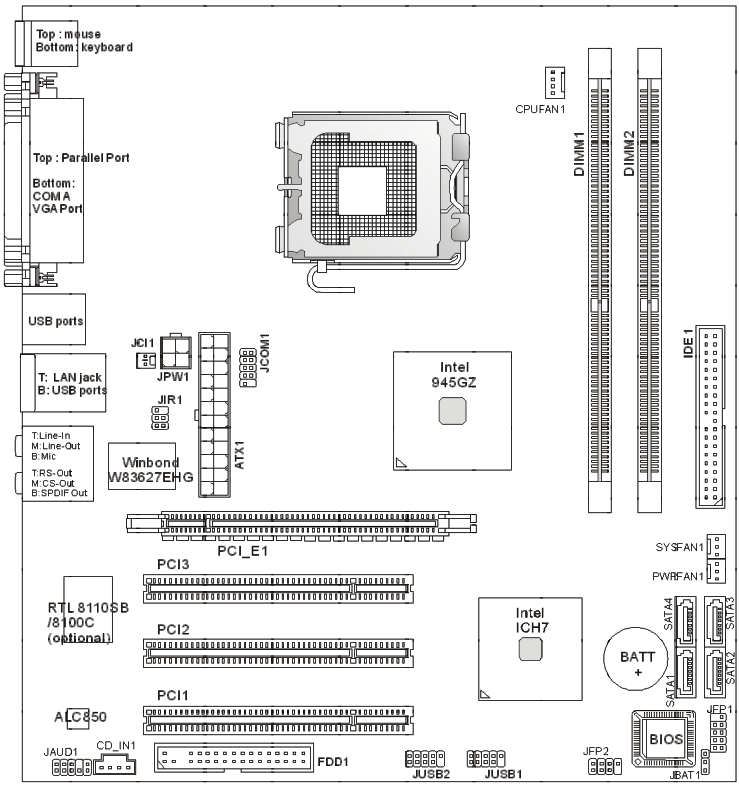
Form Factor

- Micro-ATX (24.5cm X 22.5 cm)

Mounting

- 6 mounting holes

Mainboard Layout

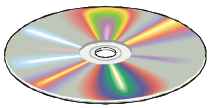


945GZM3 (MS-7267) Series v1.X Micro-ATX Mainboard

Packing Checklist



MSI motherboard



MSI Driver/Utility CD



SATA Cable



Power Cable



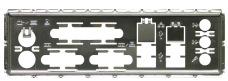
Standard Cable for Floppy Disk



Standard Cable for IDE Devices



USB Bracket (Optional)



Back IO Shield



User's Guide

* The pictures are for reference only and may vary from the packing contents of the product you purchased.

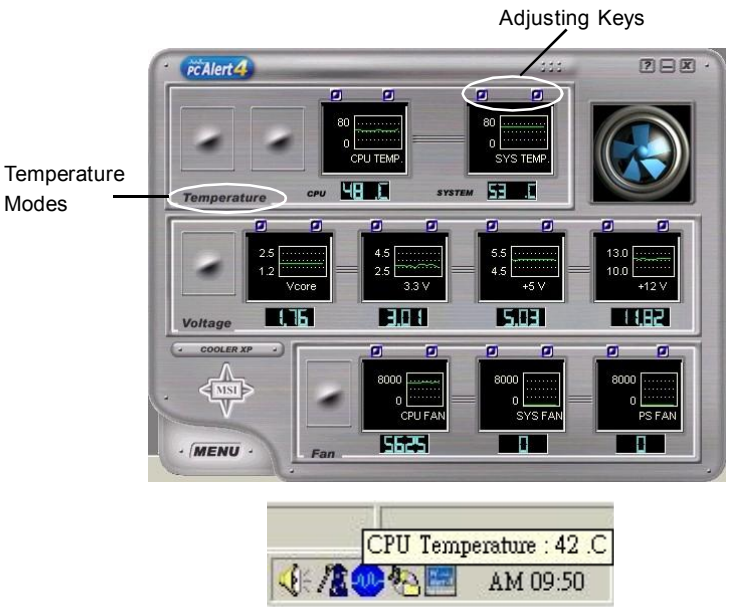
MSI Special Feature

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 speeds
- monitor system voltages

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 the condition returns to the normal status.



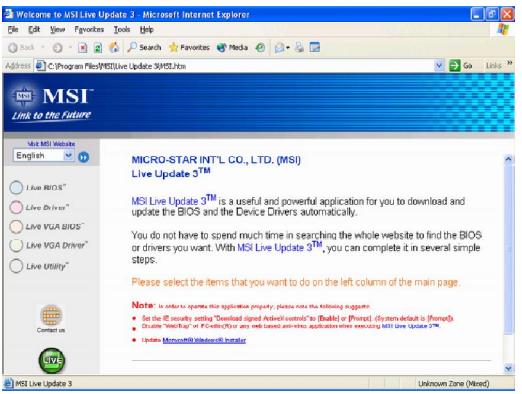
Users can use the Adjusting Keys to change the minimum and maximum threshold of each item for the system to send out a warning message. Click *Temperature* to select the temperature modes of either Fahrenheit (°F) or Celsius (°C). The PC Alert™ 4 icon on the Status Area will show the current CPU temperature.

Live Update

The Live Update 3™ is a tool used to detect and update your BIOS/drivers/VGA BIOS/VGA Driver/Utility online so that you don't need to search for the correct BIOS/driver version throughout the whole Web site. To use the function, you need to install the "MSI Live Update 3" application. After the installation, the "MSI Live Update 3" icon (as shown on the right) will appear on the screen.



Double click the "MSI Live Update 3" icon, and the following screen will appear:



Several buttons are placed on the left column of the screen. Click the desired button to start the update process.

Live BIOS – Updates the BIOS online.
Live Driver – Updates the drivers online.
Live VGA BIOS – Updates the VGA BIOS online.
Live VGA Driver – Updates the VGA driver online.
Live Utility – Updates the utilities online.

If the product you purchased does not support any of the functions listed above, a "sorry" message is displayed. For more information on the update instructions, insert the companion CD and refer to the "Live Update Guide" under the "Manual" Tab.

Chapter 2
Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

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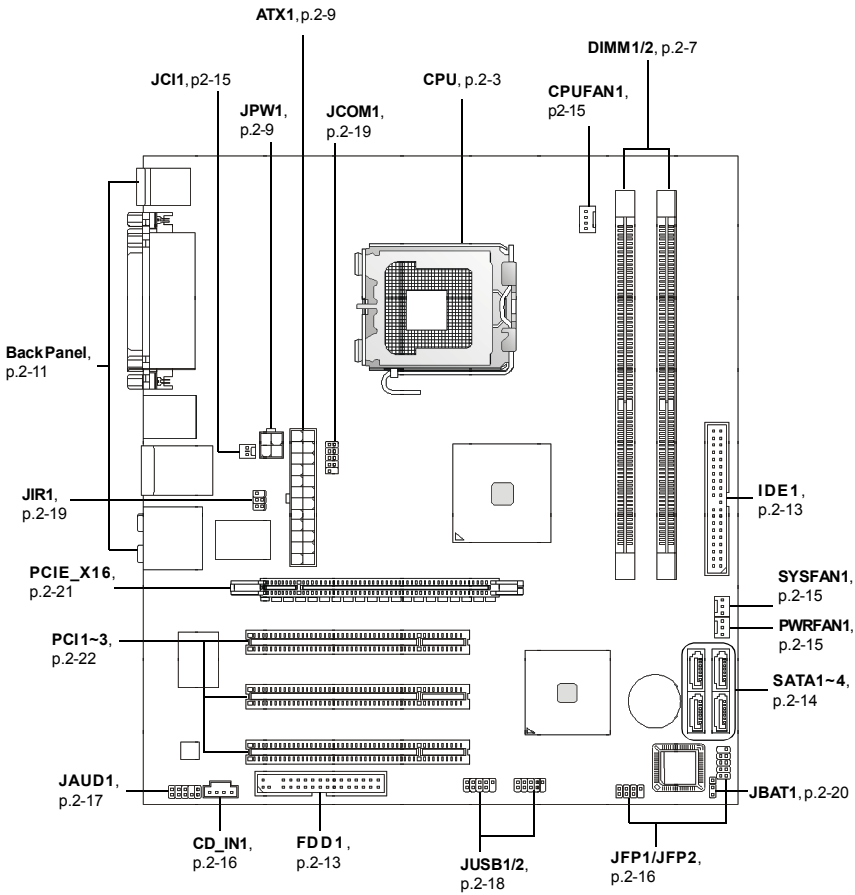
Quick Components Guide



CPU (Central Processing Unit)

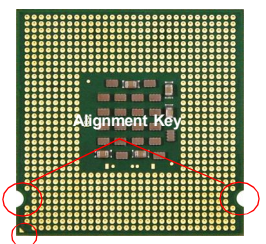
The mainboard supports Intel® Pentium 4 series processors. The mainboard uses a CPU socket called LGA775. When you are installing the CPU, **make sure to install the cooler to prevent overheating.** If you do not have the CPU cooler, contact your dealer to purchase and install them before turning on the computer.
For the latest information about CPU, please visit *http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php*.

Important

1. *Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating.*
2. *Make sure that you apply an even layer of heat sink paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*
3. *While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.*

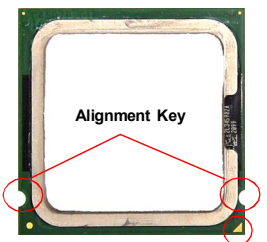
Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 775 CPU. Remember to apply some silicone heat transfer compound on it for better heat dispersion.

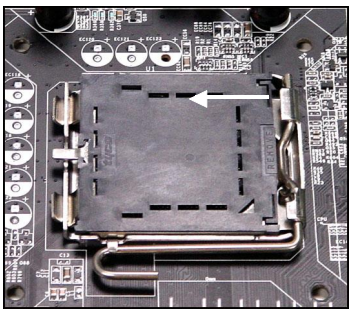


Yellow triangle is the Pin 1 indicator

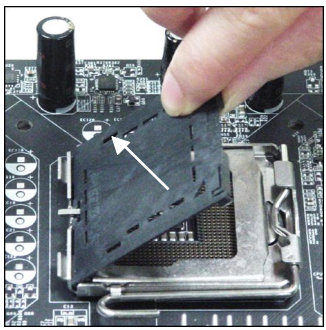
CPU & Cooler Installation

When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating.** If you do not have the cooler, contact your dealer to purchase and install them before turning on the computer. Meanwhile, do not forget to apply some silicon heat transfer compound on CPU before installing the heat sink/ cooler fan for better heat dispersion.
Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause the damage of your CPU & mainboard.

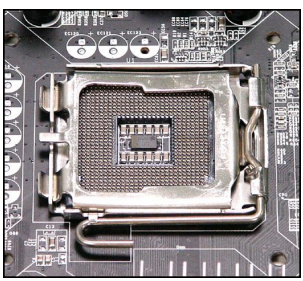
1. The CPU socket has a plastic cap on it to protect the contact from damage. Before you install the CPU, always cover it to protect the socket pin.



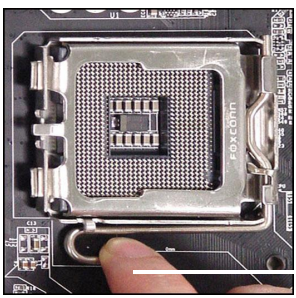
2. Remove the cap from lever hinge side (as the arrow shows).



3. The pins of socket reveal.



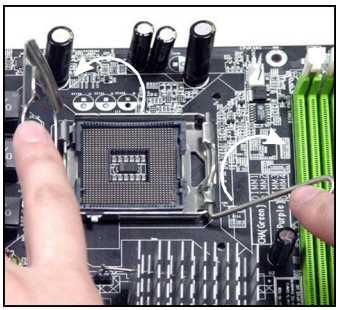
4. Open the load lever.



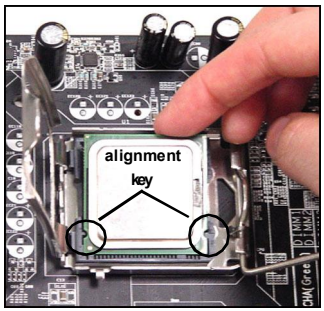
Important

1. Confirm if your CPU cooler is firmly installed before turning on your system.
2. Do not touch the CPU socket pins to avoid damaging.
3. The availability of the CPU land side cover depends on your CPU packing.

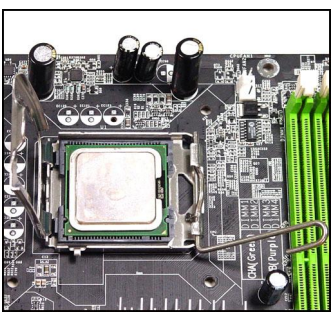
5. Lift the load lever up and open the load plate.



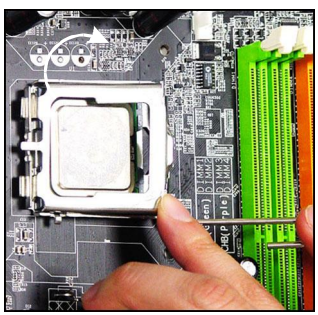
6. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.



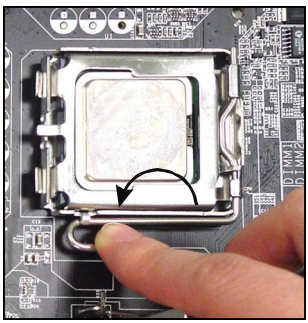
7. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.



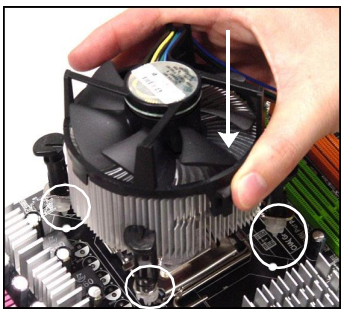
8. Cover the load plate onto the package.



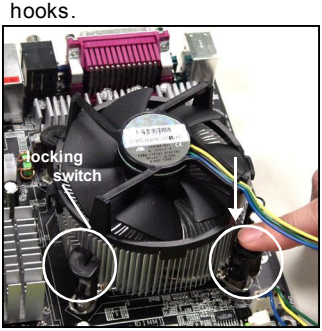
9. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



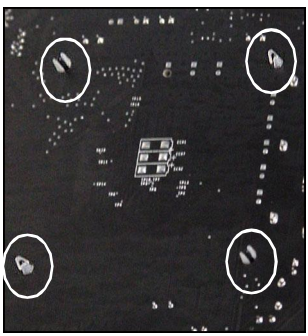
10. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.



11. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.



12. Turn over the mainboard to confirm that the clip-ends are correctly inserted.



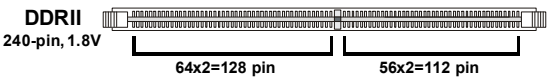
Important

1. Check the information in BIOS (Chapter 3) for the CPU temperature.
2. Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.

Memory

The mainboard provides two 240-pin non-ECC **DDRII** DIMMs and supports dual-channel technology up to 2GB system memory.

For more information on compatible components, please visit *http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php*.



Dual-Channel: Channel A in GREEN; Channel B in ORANGE

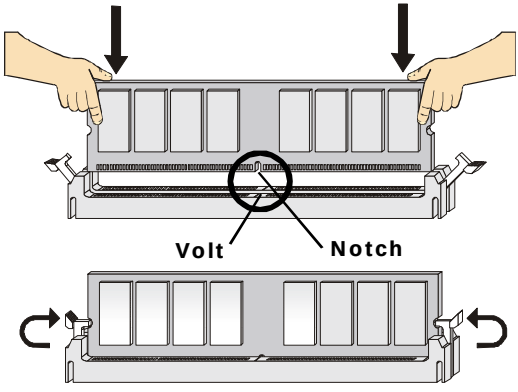
Installing DDRII Modules

1. The memory module has only one notch on the center and 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.

Important

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

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



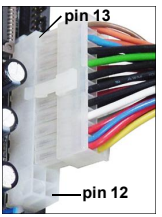
Important

- *DDRII modules are not interchangeable with DDR and the DDRII standard is not backwards compatible. You should always install DDRII memory modules in the DDRII DIMMs and DDR memory modules in the DDR DIMMs.*
- *In dual-channel mode, make sure that you install memory modules of **the same type and density** in different channel DDR DIMMs.*
- *To enable successful system boot-up, always insert the memory modules into the **DIMM1 first.***

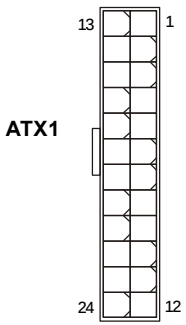
Power Supply

ATX 24-Pin Power Connector: ATX1

This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin 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.



You may use the 20-pin ATX power supply as you like. If you'd like to use the 20-pin ATX power supply, please plug your power supply along with pin 1 & pin 13 (refer to the image at the right hand). There is also a foolproof design on pin 11, 12, 23 & 24 to avoid wrong installation.

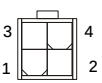


Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	Res
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	NC	24	GND

ATX 12V Power Connector: JPW1

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



JPW1

JPW1 Pin Definition

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

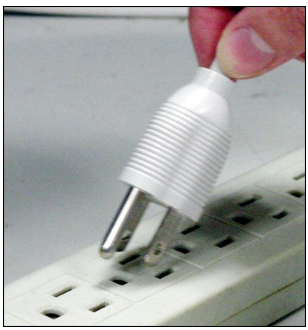
Important

1. *Maker sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.*
2. *Power supply of 350 watts (and above) is highly recommended for system stability.*
3. *ATX 12V power connection should be greater than 18A.*

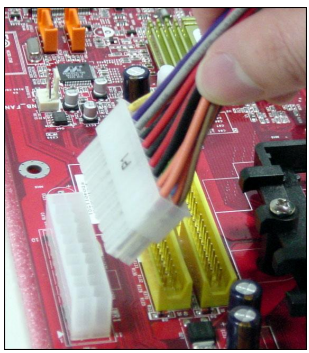
Important Notification about Power Issue

NForce chipset is very sensitive to ESD (Electrostatic Discharge), therefore this issue mostly happens while the users intensively swap memory modules under S5 (power-off) states, and the power code is plugged while installing modules. Due to several pins are very sensitive to ESD, so this kind of memory-replacement actions might cause system chipset unable to boot. Please follow the following solution to avoid this situation.

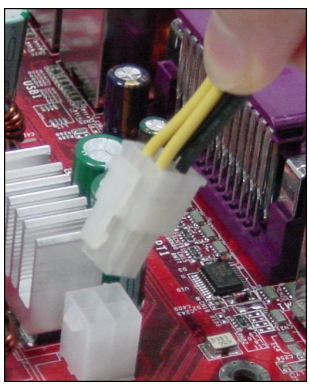
Unplug the AC power cable or unplug the power connectors before the 1st installation or during system upgrade procedure.



Unplug the AC power cable



Unplug the power connector

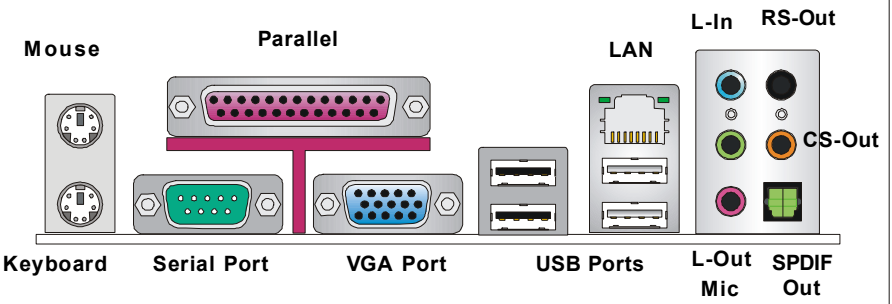


Unplug the power connector

Important

Mainboard photos shown in this section are for demonstration only. The appearance of your mainboard may vary depending on the model you purchase.

Back Panel



▶ Mouse/Keyboard Connector
The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

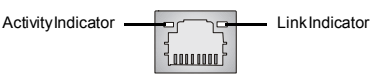
▶ Parallel Port Connector
A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.

▶ Serial Port Connector
The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

▶ VGA Connector
The DB15-pin female connector is provided for VGA monitors.

▶ USB Connectors
The OHCI (Open Host Controller Interface) Universal Serial Bus root is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

▶ LAN (RJ-45) Jack
The standard RJ-45 jack is for connection to single Local Area Network (LAN). You can connect a network cable to it.



LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

▶ Audio Port Connectors

These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

- **Green audio jack** - Line Out, is a connector for speakers or headphones.
- **Blue audio jack** - Line In / Side-Surround Out in 7.1 channel mode, is used for external CD player, tapeplayer or other audio devices.
- **Pink audio jack** - Mic In, is a connector for microphones.
- **Orange audio jack** - Center/ Subwoofer Out in 5.1/ 7.1 channel mode.
- **Black audio jack** - Rear-Surround Out in 5.1/ 7.1 channel mode.
- **Gray audio jack** - If there is a gray audio jack on the back panel in your mainboard, the **Gray audio jack** is for Rear-Surround Out and the **Black audio jack** will be used as the Side-Surround Out.

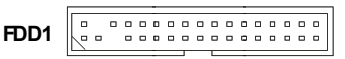
▶ Optical S/PDIF-Out connector

This SPDIF (Sony & Philips Digital Interconnect Format) connector is provided for digital audio transmission to external speakers through an optical cable.

Connectors

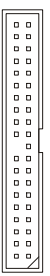
Floppy Disk Drive Connector: FDD1

This standard FDD connector supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



Hard Disk Connector: IDE1

The mainboard provides a one-channel Ultra ATA 100 bus Master IDE controller that supports PIO mode 0~4, Bus Master, and Ultra DMA 66/100 function. You can connect hard disk drives, CD-ROM drives and other IDE devices.



IDE1 Definition

IDE	VDMA	Controller	RAID	ATAPI
1	66/100	Intel ICH7	N/A	Yes

IDE1 (Primary IDE Connector)
IDE1 can connect a Master and a Slave drive. You must configure the second hard drive to Slave mode by setting the jumper accordingly.

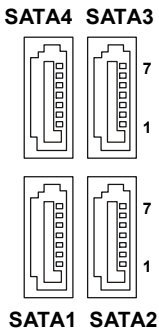


Important

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.

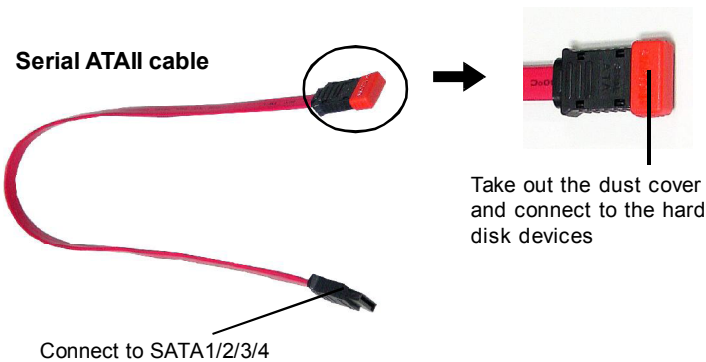
Serial ATAII Connectors: SATA1~SATA4

SATA1~SATA4 are high-speed Serial ATA interface ports. Each supports serial ATA data rates of 300MB/s. Both connectors are fully compliant with Serial ATA 2.0 specifications. Each Serial ATA connector can connect to 1 hard disk device.



SATA1~ SATA4 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	RXN
3	RXP	4	GND
5	TXN	6	TXP
7	GND		

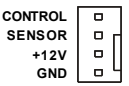


Important

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.

Fan Power Connectors: CPUFAN1, SYSFAN1, PWRFAN1

The fan power connectors support system cooling fan with +12V. 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.



CPUFAN1



SYSFAN1



PWRFAN1

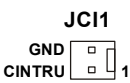


Important

Please refer to the recommended CPU fans at Intel® official website or consult the vendors for proper CPU cooling fan.

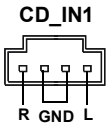
Chassis Intrusion Switch Connector: JCI1

This connector connects 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.



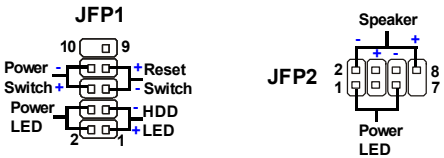
CD-In Connector: CD_IN1

This connector is provided for CD-ROM audio.



Front Panel Connectors: JFP1/JFP2

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



JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED +	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED -	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW -	Reset Switch low reference pull-down to GND
6	PWR_SW +	Power Switch high reference pull-up
7	RST_SW +	Reset Switch high reference pull-up
8	PWR_SW -	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

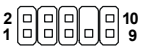
JFP2 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	GND	Ground
2	SPK-	Speaker-
3	SLED	Suspend LED
4	BUZ+	Buzzer+
5	PLED	Power LED
6	BUZ-	Buzzer-
7	NC	No connection
8	SPK+	Speaker+

Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector allows you to connect the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.

JAUD1



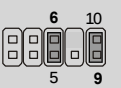
JAUD1 Pin Definition

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



Important

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



Front USB Connectors: JUSB1, JUSB2

The mainboard provides two USB 2.0 pinheaders (optional USB 2.0 bracket available) that are compliant with Intel® 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**.

JUSB1/2



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC

USB 2.0 Bracket
(Optional)

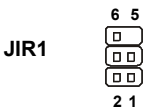


Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

IrDA Infrared Module Header: JIR1

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function. JIR1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

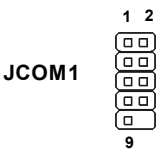


Pin Definition

Pin	Signal
1	IRRX
2	IRTX
3	GND
4	VCC5
5	NC
6	NC

Serial Port Connector: JCOM1

The mainboard provides one 9-pin header as serial port JCOM1. The port is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to it.



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

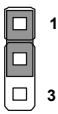
Jumpers

Clear CMOS Jumper: JBAT1

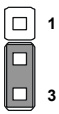
There is a CMOS RAM onboard that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the JCMOS1 (Clear CMOS Jumper) to clear data.



JBAT1



Keep Data



Clear Data



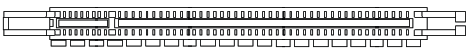
Important

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.

Slots

PCI (Peripheral Component Interconnect) Express Slots

The PCI Express Lite slot (PCI Express x4) is a special design that supports only the following compatible PCI-E x16 VGA cards and runs at x4 speed.



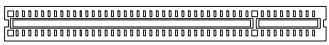
PCI Express x16 Slot

Supported PCI Express VGA Card List for PCI Express Lite Slot (PCI Express x4)

No.	Model	VGA Chip	VGA	Memory/Memory Type	VGA BIOS
01	MSI	MS-8969	Geforce FX5700	128MB, DDR SDRAN	4.36.20.38.12
02	MSI	MS-8968	Geforce FX5200	128MB, DDR SDRAN	4.34.20.76.13
03	MSI	MS-8983 Ver: 200	Geforce 6600GT	128MB, DDR SDRAN	5.43.02.16.00
04	MSI	MS-8979 Ver: 11B	Geforce 6600GT	128MB, DDR SDRAN	5.43.02.64.00
05	MSI	MS-8984 Ver:20B	Geforce 6800	128MB, DDR SDRAN	5.41.02.37.00
06	ASUS	EAX300SE/TD /128M/A	Radeon X300SE	128MB, DDR SDRAN	BK-ATI VER008. 015.117.000
07	MSI	MS-8961	Radeon X600XT	128MB, DDR SDRAN	113-MS896100-04SHynixCRT +DVI+VO
08	MSI	MS-8997 Ver: 1	Radeon X800 Pro	128MB, DDR SDRAN	113-A32110-100
09	MSI	MS-8981 Ver:100	Geforce 6200	128MB, DDR SDRAN	5.43.02.16.00
10	MSI	RX1300Pro-TD256E	Radeon X1300	128MB,DDR2 SDRAM	113-A71300-104-MI
11	MSI	RX700-TD128E /128Bit	Radeon X700	128MB,DDR SDRAM	002
12	MSI	NX6600LE-TD128E/128B	Geforce 6600LE	128MB,DDR SDRAM	5.43.02.69.00
13	ASUS	EN6600LE /SILENCER/TD	Geforce 6600LE	256MB,DDR SDRAM	5.43.02.72.00
14	ASUS	EAX700/TD /256M/A	Radeon X700	256MB,DDR SDRAM	113-AA48910-102
15	MSI	NX6600LE-TD128E(128B	Geforce 6600LE	128MB,DDR SDRAM	5.43.02.75.00

PCI (Peripheral Component Interconnect) Slots

The PCI slots support LAN cards, SCSI cards, USB cards, and other add-on cards that comply with PCI specifications. At 32 bits and 33 MHz, it yields a throughput rate of 133 MBps.



32-bit PCI Slot



Important

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

PCI Interrupt Request Routing

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

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

Chapter 3
BIOS Setup

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

- An error message appears on the screen during the system booting up, and requests you to run SETUP.
- You want to change the default settings for customized features.

MSI
MICRO-STAR INTERNATIONAL

Entering Setup

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

Press DEL to enter SETUP

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



Important

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
2. *Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:*

A7267IMS V1.0 030106 where:

1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.
2nd - 5th digit refers to the model number.
6th digit refers to the chipset vendors.
7th - 8th digit refers to the customer as MS = all standard customers.
V1.0 refers to the BIOS version.
030106 refers to the date this BIOS was released.

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
<F6>	Load Optimized Defaults
<F7>	Load Fail-Safe 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 arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

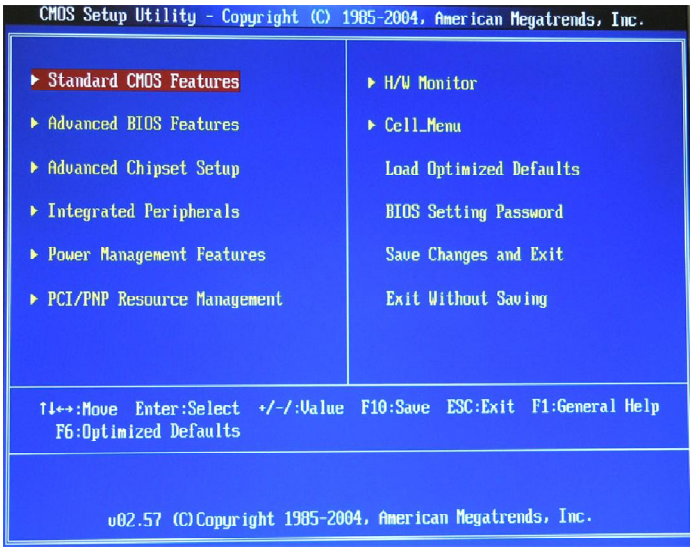
If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.



General Help <F1>

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

The Main Menu



▶ 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 special enhanced features.

▶ Advanced Chipset Setup
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 Features
Use this menu to specify your settings for power management.

▶ PCI/PNP Resource Management
This entry appears if your system supports PnP/PCI.

▶ H/W Monitor
This entry shows your PC health status.

▶ Cell_Menu
Use this menu to specify your settings for CPU/AGP frequency/voltage control and overclocking.

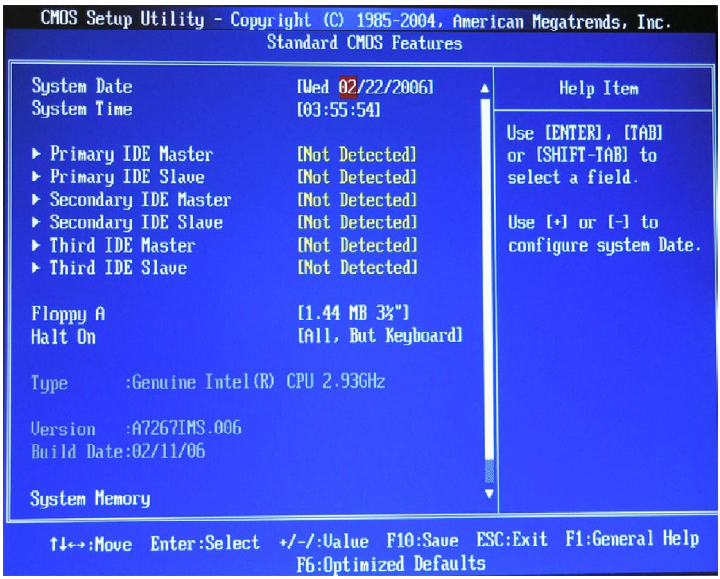
► Load Optimized Defaults
Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

► BIOS Setting Password
Use this menu to set the password for BIOS.

► Save Changes & Exit
Save changes to CMOS and exit setup.

► Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features



▶ System Date (MM:DD:YY)

This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.

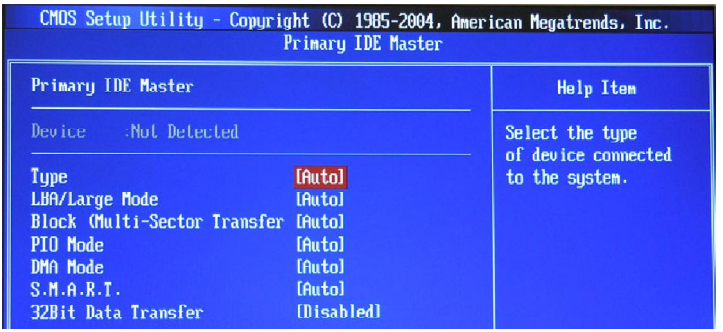
day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.

▶ System Time (HH:MM:SS)

This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

▶ IDE Primary/Secondary/Third Master/ Slave

Press <Enter> to enter the sub-menu, and the following screen appears.



▶ Type
This item allows you to select the hard disk type. Setting options: [Auto], [Disabled].

▶ LBA/Large Mode
This allows you to enable or disable the LBA Mode. Setting to Auto enables LBA mode if the device supports it and the devices is not already formatted with LBA mode disabled. Setting options: [Auto], [Disabled].

▶ Block (Multi-Sector Transfer)
When the setting is Auto, it will read or write more sector at every circle to enhance the hard disk performance. Setting options: [Auto], [Disabled].

▶ PIO Mode
The PIO (Programmed Input/Output) Mode let you set a PIO mode (0-4) for the 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].

▶ DMA Mode
This item allows you to enable or disable the DMA (Direct Memory Access) mode. Setting options: [Auto], [Disabled], [UDMA0], [UDMA1], [UDMA2], [UDMA3], [UDMA4], [UDMA5].

▶ S.M.A.R.T.
This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline. Settings: [Auto], [Disabled].

▶ 32Bit Data Transfer
This allows you to activate the 32bit data transfer to enhance the IDE hard disk performance. Settings options: [Enabled], [Disabled].

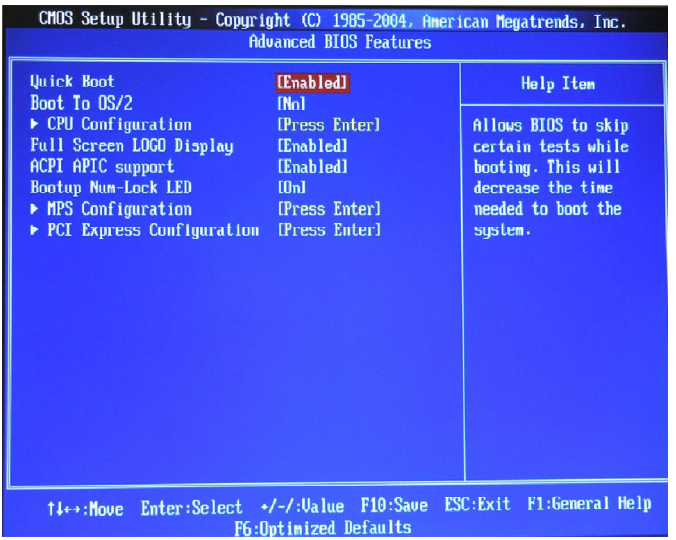
► Floppy A
This item allows you to set the type of floppy drives installed. Available options: [None], [360K, 5.25 in.], [1.2M, 5.25 in.], [720K, 3.5 in.], [1.44M, 3.5 in.], [2.88M, 3.5 in.].

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

[No Errors]	The system doesn't stop for any detected error.
[All, But Keyboard]	The system doesn't stop for a keyboard error.

► Type, Version, Build Date, System Memory
The items show the CPU information, BIOS version and memory status of your system (read only).

Advanced BIOS Features



▶ Quick Boot

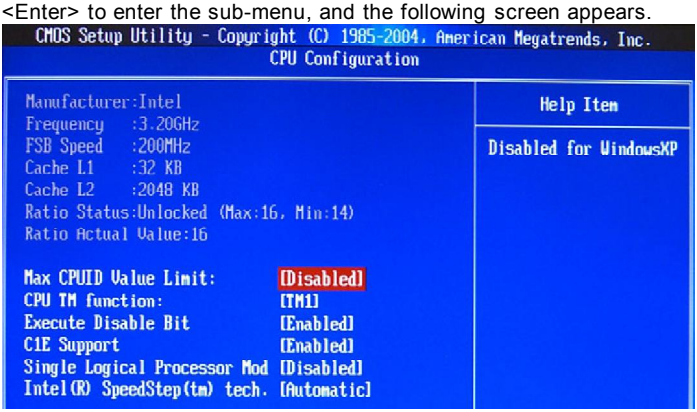
Setting the item to [Enabled] allows the system to boot within 5 seconds since it will skip some check items. Setting options: [Enabled], [Disabled].

▶ Boot to OS/2

This allows you to run the OS/2® operating system with DRAM larger than 64MB. When you choose [No], you cannot run the OS/2® operating system with DRAM larger than 64MB. But it is possible if you choose [Yes].

▶ CPU Configuration

Press <Enter> to enter the sub-menu, and the following screen appears.



▶ Max CPUID Value Limit:

The Max CPUID Value Limit is designed to limit the listed speed of the processor to older operating systems.

▶ CPU TM function

These settings specify the multiplier and VID values used by the processor in TM2 (Thermal Monitor 2) mode.

▶ Execute Disable Bit

Execute Disable Bit allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation. Setting options: [Enabled], [Disabled].

▶ C1E Support

When The CPU ID>0F40 and is above 533MHz/2.8GHz or 800MHz/3.6GHz, you can enable C1E Support to lower the CPU power consumption while idle. Settings: [Enabled], [Disabled].

▶ Single Logical Processor Mod

This item allows you to to force the dual core CPU only use single processor function. Setting options: [Enabled], [Disabled].

▶ Intel(R) SpeedStep(tm) tech.

The Intel SpeedStep technology allows you to set the performance level of the microprocessor whether the computer is running on battery or AC power. This field will appear after you installed the CPU which support speedstep technology. Setting options: [Enabled], [Disabled].

▶ Full Screen LOGO Show

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

[Enabled]	Shows a still image (logo) on the full screen at boot.
[Disabled]	Shows the POST messages at boot.

▶ ACPI APIC support

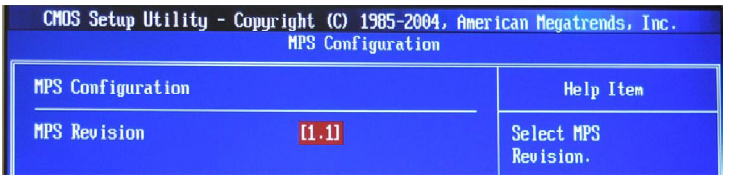
This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/ 2000/ME, select [Enabled]. Settings: [Enabled] and [Disabled].

▶ 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].

▶ MPS Configuration

Press <Enter> to enter the sub-menu, and the following screen appears.

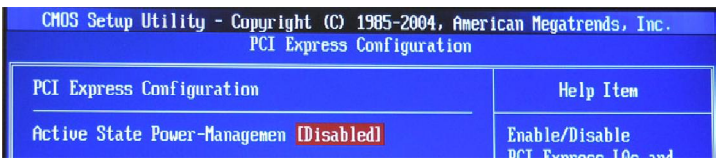


▶ MPS Revision

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].

▶ PCI Express Configuration

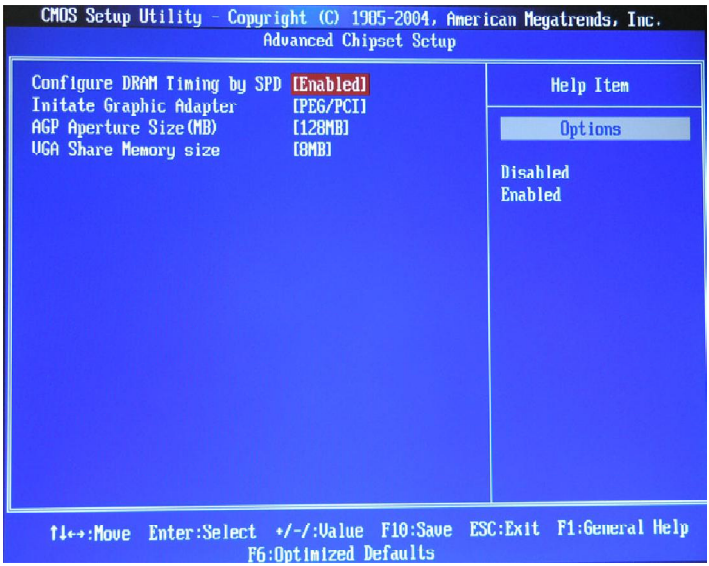
Press <Enter> to enter the sub-menu, and the following screen appears.



▶ Active State Power-Management

These items allow you to enable or disable the PCI Express L0s and L1 link power states.

Advanced Chipset Setup



▶ Configure DRAM Timing by SPD

Selects whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to [Auto By SPD] enables DRAM timings and the following related items to be determined by BIOS based on the configurations on the SPD. Selecting [Manual] lets users configure the DRAM timings and the following related items manually. Setting options: [Enabled], [Disabled].

▶ Initiate Graphic Adapter

This setting specifies which VGA card is your primary graphics adapter. Setting options are:

[IGD]	The system initializes the IGD (internal graphic display) first.
[PEG/IGD]	The system initializes the PEG (PCI Express graphic) first. If a PCI Express graphic card is not available, it will initialize the IGD.
[PEG/PCI]	The system initializes the PEG (PCI Express graphic) first. If a PCI Express graphic card is not available, it will initialize the PCI graphic card.
[PCI/PEG]	The system initializes the PCI graphic card first. If a PCI graphic card is not available, it will initialize the PEG (PCI Express graphic) card.
[PCI/IGD]	The system initializes the PCI graphic card first. If a PCI graphic card is not available, it will initialize the IGD.

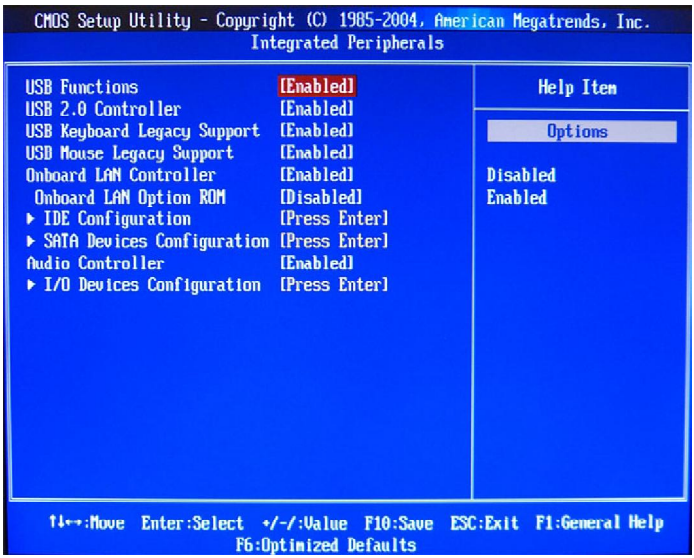
▶ AGP Aperture Size

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.

▶ VGA Share Memory size
The system shares memory to the onboard VGA card. This setting controls the exact memory size shared to the VGA card.

Integrated Peripherals



▶ USB Functions
This setting is used to enable/disable the onboard USB host controller. Setting options: [Disabled], [Enabled].

▶ USB 2.0 Controller
Set to [Enabled] if you need to use any USB 2.0 device in the operating system that does not support or have any USB 2.0 driver installed, such as DOS and SCO Unix. Setting options: [Disabled], [Enabled].

▶ Legacy USB Support
Set to [Enabled] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix. Set to [Disabled] only if you want to use any USB device other than the USB mouse. Setting options: [Disabled], [Enabled].

▶ USB Keyboard Legacy Support
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

▶ USB Mouse Legacy Support
Select [Enabled] if you need to use a USB-interfaced mouse in the operating system. The settings are: [Enabled], [Disabled].

▶ Onboard LAN Controller
The item enables or disables the onboard LAN controller. Setting options: [Enabled], [Disabled].

▶ Onboard LAN Option ROM
The item enables or disables the initialization of the onboard LAN Boot ROMs during bootup. Selecting [Disabled] will speed up the boot process. Setting options: [Enabled], [Disabled].

▶ IDE Devices Configuration
Press <Enter> to enter the sub-menu and the following screen appears:



▶ PCI IDE BusMaster
Set this option to [Enabled] to specify that the IDE controller on the PCI local bus has bus mastering capability. Settings options: [Disabled], [Enabled].

▶ ATA(PI) 80Pin Cable Detection
Set this option to detect the cable type.

▶ SATA Devices Configuration
Press <Enter> to enter the sub-menu and the following screen appears:



▶ ATA/IDE Configuration, Configure SATA as
These 2 items allow you to select the ATA/IDE and SATA configuration. Select [Disabled] in ***ATA/IDE Configuration*** if you want to disable both ATA/IDE configuration. Select [Compatible] or [Enhanced] to use the IDE, S-ATA and P-ATA devices. Refer to the following tables for details.

	ATA/IDE Configuration (Compatible)
SATA Only	*[SATA 1/3/2/4]*
PATA Pri, SATA Sec	*[IDE1, SATA2/4]*
SATA Pri, PATA Sec	*[SATA1/3, IDE1]*
PATA Only	*[IDE1]*

	ATA/IDE Configuration (Enhanced)
IDE	*[IDE1, SATA 1/2/3/4]*

For the setting options of ***Configure SATA as***, select [IDE] if you want to have SATA as IDE function.

▶ Audio Controller

This item is used to enable or disable the onboard AC'97 (Audio Codec) controller. Selecting [Enabled] allows the mainboard to enable the onboard AC'97 controller. Disable the function if you want to use other controller cards to connect an audio device. Settings: [Disabled] and [Enabled].

▶ I/O Devices Configuration

Press <Enter> to enter the sub-menu and the following screen appears:



▶ OnBoard Floppy Controller

This item allows you to enable/ disable the floppy controller. Setting options: [Disabled], [Enabled].

▶ Serial Port 1/2 Address

These items specify the base I/O port addresses of the onboard Serial Port 1 (COM A) / Serial Port 2 (COM B). Selecting [Auto] allows BIOS to automatically determine the correct base I/O port address. Settings: [3F8/IRQ4], [2F8/IRQ3], [3E8/IRQ4], [2E8/IRQ3] and [Disabled].

▶ Serial Port2 Mode

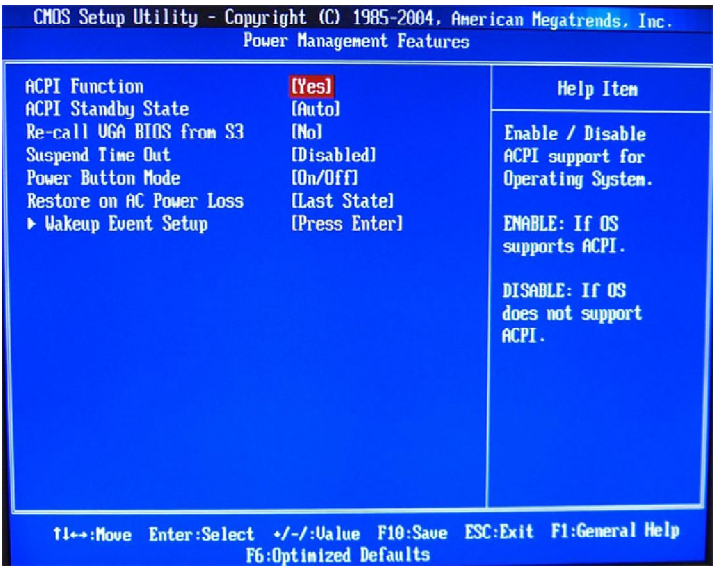
This setting allows you to specify the operation mode for serial port 2. Setting options: [IrDA], [ASKIR], [Disabled].

[Disabled]	RS-232C Serial Port
[IrDA]	IrDA-compliant Serial Infrared Port
[ASKIR]	Amplitude Shift Keyed Infrared Port

▶ Parallel Port Address

This field specifies the base I/O port address of the onboard parallel port. Selecting [Auto] allows BIOS to automatically determine the correct base I/O port address. Settings: [378], [278], [3BC] and [Disabled].

Power Management Features



▶ ACPI 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]. Setting options: [Enabled] and [Disabled].

▶ ACPI Standby State

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

S1/POS	The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.
S3/STR	The S3 sleep mode is a lower power state where the in formation 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.
Auto	The system will decide when to enter S1 or S3 state.

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

▶ Suspend Time Out (Minute)
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], [2], [4], [8], [10], [20], [30], [40], [50], [60].

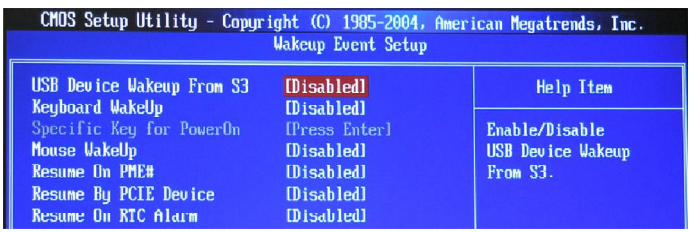
▶ Power Button Mode
This feature allows users to configure the Power Button function. Settings are:

[On/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.

▶ Restore on AC Power Loss
This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

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

▶ Wakeup Event Setup
Press <Enter> to enter sub-menu and the following screen appears.



▶ USB Device Wakeup From S3
This setting allows you to wake up the system from S3 state. Settings are: [Enabled], [Disabled].

▶ Keyboard Wakeup
This controls how and whether the PS/2 keyboard is able to power on the system. If you choose [Specific Key], you must type the password to power on

the system. Settings: [Disabled], [Specific Key] and [Any Key].

► Specific Key for PowerOn
If ***Keyboard Wakeup*** is set to [Specific Key], then you can set a password in the field for the PS/2 keyboard to power on the system.

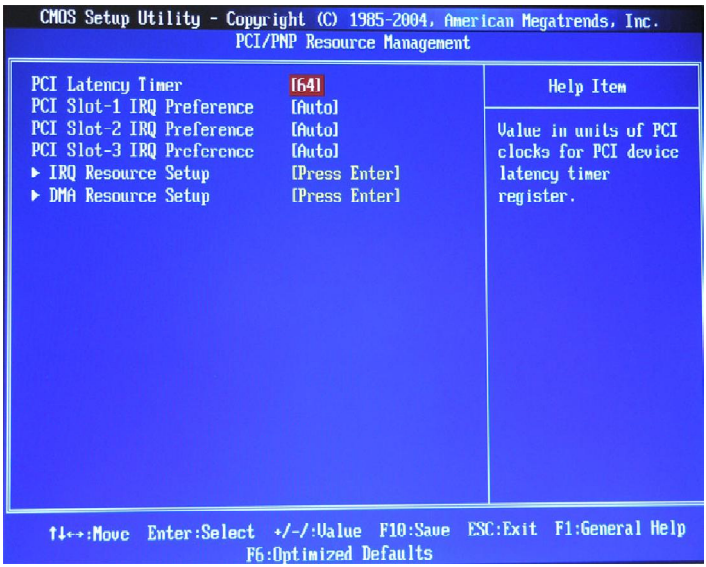
► Mouse Wakeup
The setting determines whether the system will be awakened from power saving modes when the PS/2 mouse input signal is detected. Setting options: [Disabled], [Enabled].

► Resume On PME#
When setting to [Enabled], this setting allows your system to be awakened from the power saving modes through any event on PME (Power Management Event). Setting options: [Disabled], [Enabled].

► Resume By PCIE Device
When setting to [Enabled], this setting allows your system to be awakened from the power saving modes through any event on PME (Power Management Event). Setting options: [Disabled], [Enabled].

► Resume On RTC Alarm
This is used to enable or disable the feature of booting up the system on a scheduled time/date from the S3, S4, and S5 state. Setting options: [Disabled], [Enabled].

PNP/PCI Configurations



▶ PCI Latency Timer

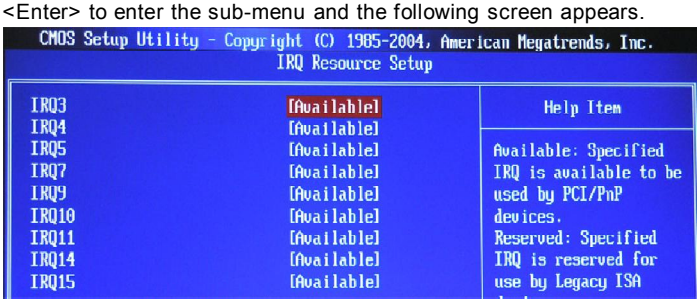
This item controls how long each PCI device can hold the bus before another takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth. For better PCI performance, you should set the item to higher values. Setting options: [32], [64], [96], [128], [160], [192], [224], [248].

▶ PCI Slot-1/2/3 IRQ Preference

These items specify the IRQ line for each PCI slot. Setting options: [3], [4], [5], [7], [9], [10], [11], [12], [14], [15], [Auto]. Selecting [Auto] allows BIOS to automatically determine the IRQ line for each PCI slot.

▶ IRQ Resource Setup

Press <Enter> to enter the sub-menu and the following screen appears.



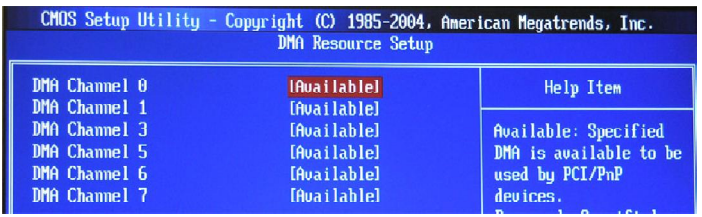
▶ IRQ 3/4/5/7/9/10/11/14/15

These items specify the bus where the specified IRQ line is used.

The settings determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the IRQ pool, the end user can use these settings to reserve the IRQ by assigning an [Reserved] setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as [Available]. If all IRQs are set to [Reserved], and IRQ 14/15 are allocated to the onboard PCI IDE, IRQ 9 will still be available for PCI and PnP devices. Available settings: [Reserved] and [Available].

▶ DMA Resource Setup

Press <Enter> to enter the sub-menu and the following screen appears:



▶ DMA Channel 0/1/3/5/6/7

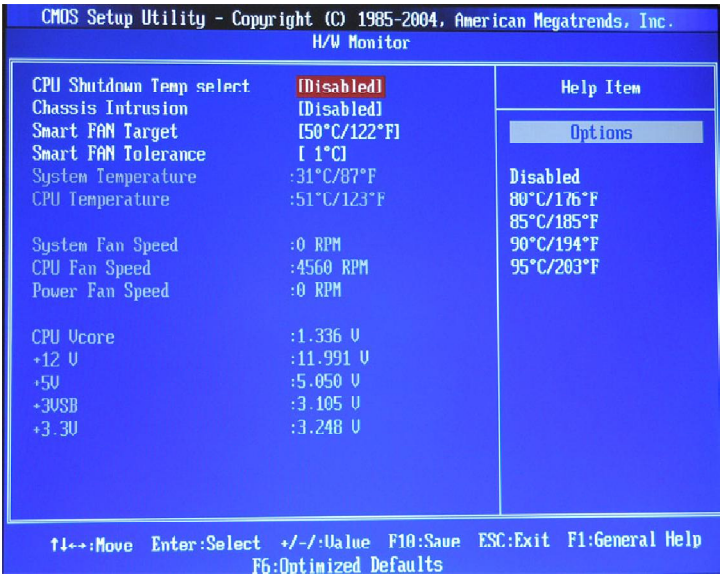
These items specify the bus that the system DMA (Direct Memory Access) channel is using. The settings determine if BIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the ESCD NVRAM. If more DMAs must be removed from the pool, the end user can reserve the DMA.



Important

IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the I/O device.

H/W Monitor



▶ CPU Shutdown Temp select
If the CPU temperature reaches the limit preset in the next setting, the system will shutdown automatically. This helps you to prevent the CPU overheating problem. This item is available only when your OS supports this function, such as Windows ME/XP. Setting options: [Disabled], [80°C/176°F], [85°C/185°F], [90°C/194°F], [95°C/203°F].

▶ Chassis Intrusion
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. Setting options: [Enabled], [Reset], [Disabled].

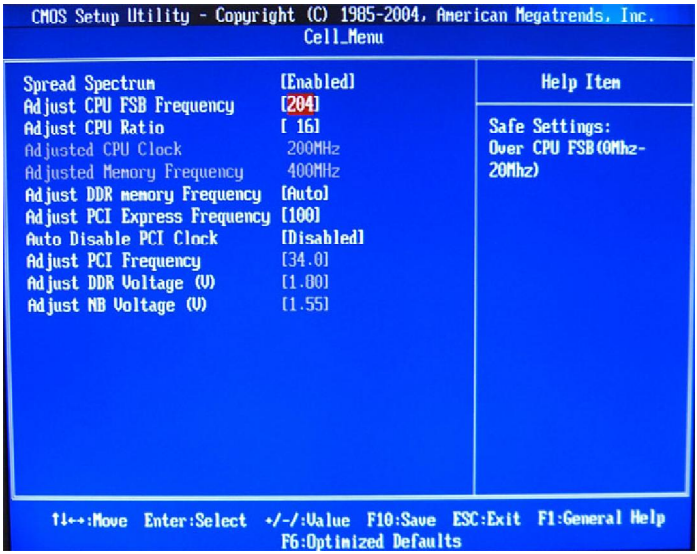
▶ Smart FAN Target
The mainboard provides the Smart Fan system which can control the fan speed automatically depending on the current temperature to keep it with in a specific range.

▶ Smart FAN Tolerance
You can select a fan tolerance value here for the specific range for the “Smart Fan Target Temp. (°C)” item. If the current temperature of the fan reaches to the maximum threshold (the temperatures set in the “Smart Fan Target Temp. (°C)” plus the tolerance values you set here), the fan will speed up for cooling down. On the contrary, if the current temperature reaches to the minimum threshold (the set temperatures minus the tolerance value), the fan will slow down to keep the temperature stable.

► System/CPU Temperature, System/CPU/Power FAN Speed, CPU Vcore, +12V, +5V, +3VSB, +3.3V

These items display the current status of all of the monitored hardware devices/ components such as CPU voltages, temperatures and all fans' speeds.

Cell_Menu



▶ Spread spectrum

When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves.



Important

1. *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, select the value of Spread Spectrum for EMI reduction.*
2. *The greater the Spread Spectrum value is, the greater the EMI is reduced, and the system will become less stable. For the most suitable Spread Spectrum value, please consult your local EMI regulation.*
3. *Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.*

▶ Adjust CPU FSB Frequency

This item allows you to select the CPU Front Side Bus clock frequency (in MHz) and overclock the processor by adjusting the FSB clock to a higher frequency. Setting options: For CPU FSB200: [200]~[220]

▶ Adjust CPU Ratio
This item allows you to adjust the CPU ratio. Setting to [Startup] enables the CPU running at the fastest speed which is detected by system.

▶ Adjusted CPU Clock
This item shows the current CPU clock.

▶ Adjusted Memory Frequency
This item shows the current DDR memory frequency.

▶ Adjust DDR Memory Frequency
When it is set to [Manual] in ***High Performance Mode***, user can place an artificial memory clock limit on the system. Please note that memory is prevented from running faster than this frequency. Setting options: [200 MHz], [266 MHz], [333 MHz], [400 MHz], [By SPD].

▶ Adjust PCI Express Frequency
This item allows you to select the PCI Express clock frequency (in MHz) and overclock the processor by adjusting the PCI Express clock to a higher frequency.

▶ Auto Disable PCI Clock
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).

▶ Adjust PCI Frequency
This item allows you to select the PCI clock frequency (in MHz) and overclock the processor by adjusting the PCI clock to a higher frequency.

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

▶ Adjust NB Voltage (V)
These item adjusts the voltage of North Bridge Voltage. Any changes made to this setting may cause a stability issue, so ***changing the NB voltage for long-term purpose is NOT recommended***.

Load Optimized Defaults

The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

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



Pressing *Y* loads the default factory settings for optimal system performance.

BIOS Setting Password

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



Type the password, up to 6 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.

Appendix A
Realtek ALC850 Audio

The Realtek ALC850 supports 8-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. It enables connection to 2, 4, 6 or 8 speakers for better surround sound effect. This section tells you how to install and use 2-, 4-, 6- or 8-channel audio function on the board.

MSI
MICRO-STAR INTERNATIONAL

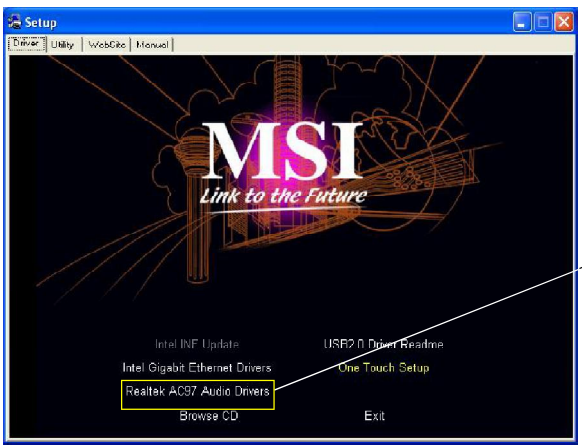
Installing the Audio Driver

You need to install the driver for Realtek ALC850 codec to function properly before you can get access to 2-, 4-, 6- or 8- 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.

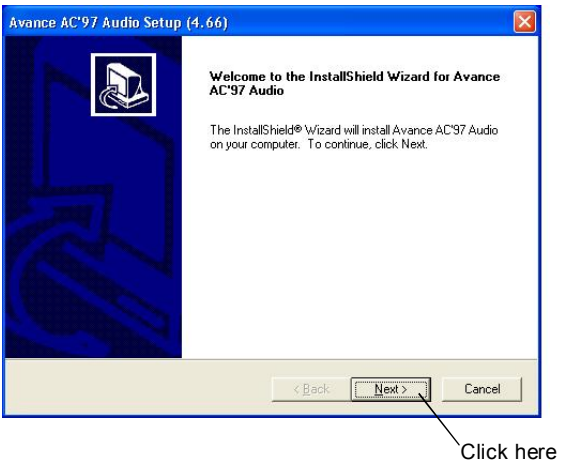
1. Insert the application CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Realtek AC97 Audio Drivers**.



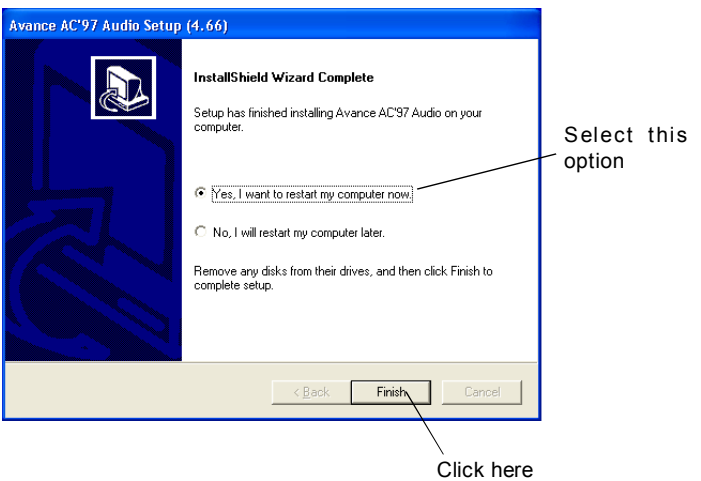
Important

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

3. Click **Next** to install the AC'97 Audio software.

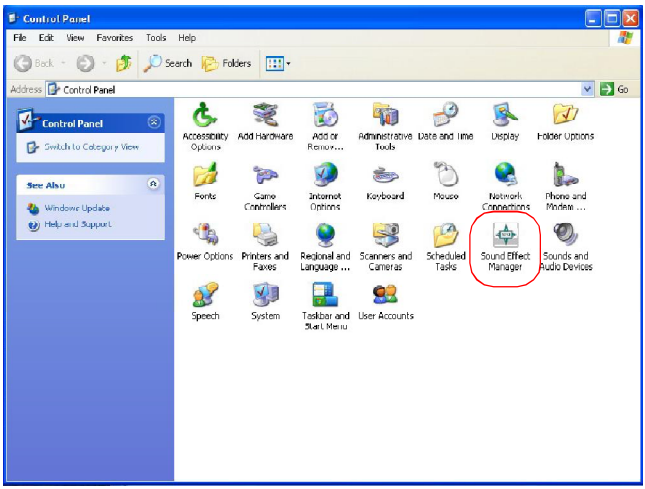


4. Click **Finish** to restart the system.



Software Configuration

After installing the audio driver, you are able to use the 2-, 4-, 6- or 8- channel audio feature now. Click the audio icon from the system tray at the lower-right corner of the screen to activate the **AC97 Audio Configuration**. It is also available to enable the audio driver by clicking the **Sound Effect Manager** from the **Control Panel**.

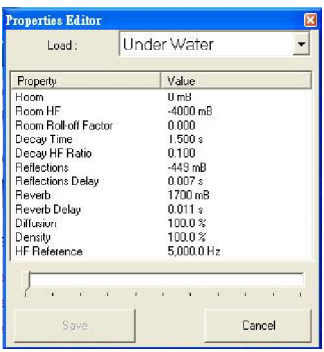


Sound Effect

Here you can select a sound effect you like from the **Environment** list.

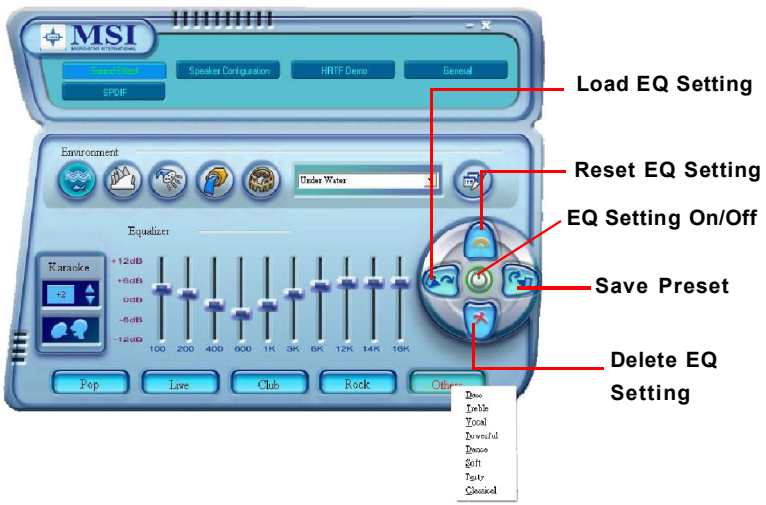


You may also edit the properties for an environment as you wish by clicking the "**Edit**" button, then just scroll the bar in the bottom for each property to adjust.



You may choose the provided sound effects, and the equalizer will adjust automatically. If you like, you may also load an equalizer setting or make an new equalizer setting to save as an new one by using the "**Load EQ Setting**" and "**Save Preset**" button, click "**Reset EQ Setting**" button to use the default value, or click "**Delete EQ Setting**" button to remove a preset EQ setting.

There are also other pre-set equalizer models for you to choose by clicking "**Others**" under the **Equalizer** part.



Here it provides the Karaoke function which will automatically remove human voice (lyrics) and leave melody for you to sing the song. You may use the "up arrow" and "down arrow" button to raise/lower the key, and press the lower button to remove the human voice.



Speaker Configuration

In this tab, you can easily configure your multi-channel audio function and speakers.

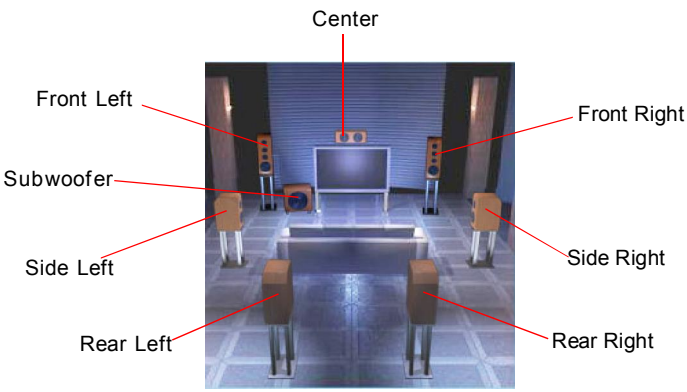
1. First you have to select the audio configuration below which is identical to the audio jack on your mainboard. In this model it uses Realtek ALC850 codec which supports 8-channel S/PDIF, therefore you should choose **8CH-S/PDIF (Optical & Coaxial).**



2. Select a desired multi-channel operation here.
   a. **Headphone** for the common headphone
   b. **2CH Speaker** for Stereo-Speaker Output
   c. **4CH Speaker** for 4-Speaker Output
   d. **6CH Speaker** for 5.1-Speaker Output
   e. **8CH Speaker** for 8-Speaker Output



Select the speaker by clicking it to test its functionality. The one you select will light up and make testing sound. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones. Or you may click the **"Auto Test"** button to test the sounds of each speaker automatically.



3. While you are testing the speakers in 8-Channel / 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to readjust these two channels.

HRTF Demo

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



General

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



Also there is a selection **Show icon in system tray**. Switch it on and an icon will show in the system tray. Right-click on the icon and the **Audio Accessories** dialogue box will appear which provides several multimedia features for you to take advantage of.



SPDIF

In this tab it provides options about SPDIF-Out for you to configure.



† **No Output:** With this option, there is no S/PDIF output signal while playing analog and digital audio.
† **Output digital only:** With this option, only digital audio will be allowed to play via SPDIF out while playing analog and digital audio.
† **Output digital and analog:** With this option, both digital and analog audio will be allowed to play via SPDIF out while playing analog and digital audio.

Hardware Setup

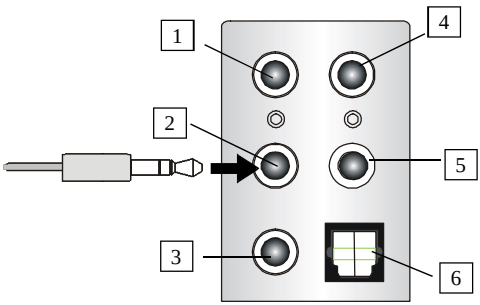
Connecting the Speakers

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

n 2-Channel Mode for Stereo-Speaker Output

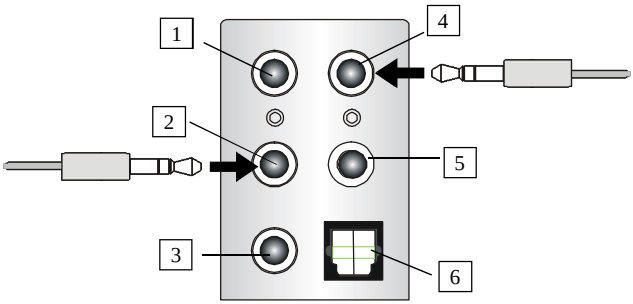
Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

Back Panel



1 Line In
2 Line Out *(Front channels)*
3 MIC
4 Line Out *(Rear channels, but no functioning in this mode)*
5 Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6 SPDIF Out Optical jack

n 4-Channel Mode for 4-Speaker Output

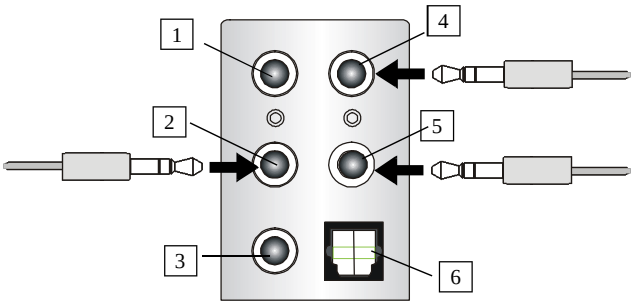


Description:
Connect two speakers to back panel's Line Out connector and two speakers to the real-channel Line Out connector.

4-Channel Analog Audio Output

1. Line In
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6. Optical SPDIF Out

n 6-Channel Mode for 6-Speaker Output

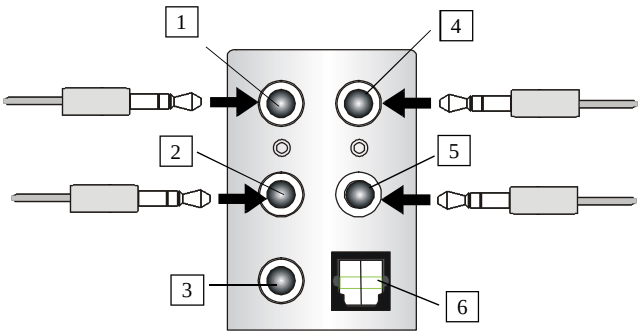


Description:
Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel and two speakers to the center/subwoofer-channel Line Out connectors.

6-Channel Analog Audio Output

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

n 8-Channel Mode for 8-Speaker Output



Description:
Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel, two speakers to the center/ subwoofer-channel Line Out connectors, and two speakers to the side-channel Line Out connectors.

8-Channel Analog Audio Output

1. Line Out *(Side channels)*
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channels)*
6. Optical SPDIF Out