945P Series

MS-7176 (v1.X ATX Mainboard)

CE N1996

FCC-B Radio Frequency Interference Statement

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

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

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

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

FC **Micro-Star International**
MS-7176

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

Copyright Notice

Trademarks

Technical Support

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

† Visit the MSI homepage & FAQ site for technical guide, BIOS updates, driver updates, and other information: **http://www.msi.com.tw** & **http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php**
† Contact our technical staff at: **support@msi.com.tw**

Revision History

Revision	Revision History	Date
V1.x	Softcopy for DTS Audio Correction	June. 2006

Safety Instructions

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

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

廢電池請回收

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

WEEE 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 ces 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 vervulling.

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 bittikten 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.

CONTENTS

Getting Started

Thank you for choosing the **945P Series** (MS-7176) v1.x ATX mainboard. The **945P Series** mainboard is based on **Intel® 945P** and **Intel® ICH7/ICH7R** chipset for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4 Prescott LGA775** processor, the **945P Series** mainboard delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

† Supports Intel® Pentium 4/ Celeron D Prescott LGA775 processors (DualCore and CederMill) in LGA775 package.
† Supports 2004 Performance FMB CPU VR Design.
† Supports 3/4 pin CPU Fan Pin-Header with Fan Speed Control.
† Supports up to Pentium 4 3XX, 5XX, 6XX & P4EE (Intel Pentium 4 Processor with HT Technology Extreme Edition).

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

Chipset

† Intel® 945P chipset
- Supports FSB 533/ 800/1066MHz.
- Supports PCI Express x16 graphics interface.
- Supports DDR2 400/533/667/800

† Intel® ICH7/ICH7R chipset (optional)
- Hi-Speed USB (USB2.0) controller, 480Mb/sec, up to 8 ports.
- 4 SATAII ports with transfer rate up to 3Gb/s.
- 1 channel Ultra ATA 100 bus Master IDE controller.
- PCI Master v2.3, I/O APIC.
- ACPI 2.0 Compliant.
- Serial ATA RAID 0, RAID 1, RAID 10, RAID 5 and Matrix RAID. (for ICH7R)
- Integrated AHCI controller.

Main Memory

† Supports four unbuffered DIMM of 1.8 Volt DDR2 SDRAM
† Supports up to 4GB memory size.
† Supports Dual channel DDR memory architecture.
† Supports DDR2 533/667 memory interface.

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

Slots

† One PCI Express x16 slot.
† Two PCI Express x1 slots.
† Three 32-bit v2.3 Master PCI bus slots (support 3.3v/5v PCI bus interface).

On-Board IDE

† One Ultra DMA 66/100 IDE controllers integrated in ICH7/ICH7R.
- Supports PIO, Bus Master operation modes.
- Can connect up to Six Ultra ATA drives.

† SATAII controller integrated in ICH7/ICH7R.
- Up to 300MB/sec transfer speed.
- Can connect up to four SATAII devices.
- Supports AHCI controller with SATA Raid 0, Raid 1 and Matrix Raid (ICH7R).

† VIA 6410, chipest. (optional)
- Supports Raid 0, Raid 1, Raid 0+1 and JBOD. (IDE2, IDE3)

On-Board Peripherals

† On-Board Peripherals include:
- 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
- 1 serial port
- 1 parallel port supports SPP/EPP/ECP mode
- 1 Line-In / Line-Out / MIC-In / Rear Speaker Out / Center-Subwoofer Speaker Out/ SPDIF-Out / Side Speaker Out
- 8 USB ports (Rear * 4/ Front * 4)
- 1 RJ-45 LAN jack

LAN

† Intel 82573V
- Supports 10 / 100 / 1000 Mb/s.
- Compliane with PCI 2.2.
- Supports ACPI Power Management.

1394(optional)

† Supports two IEEE1394 onboard pinheader. Transfer rate is up to 400 Mbps.

† Controlled by VIA VT6307 chip.

Audio

† High Definition link controller integrated in Intel® ICH7R chip.

† 7.1 + 2 channels audio codec Realtek ALC882.
- Compliant with Azalia 1.0 Spec.

† Supports DTS effect.

BIOS

† The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.

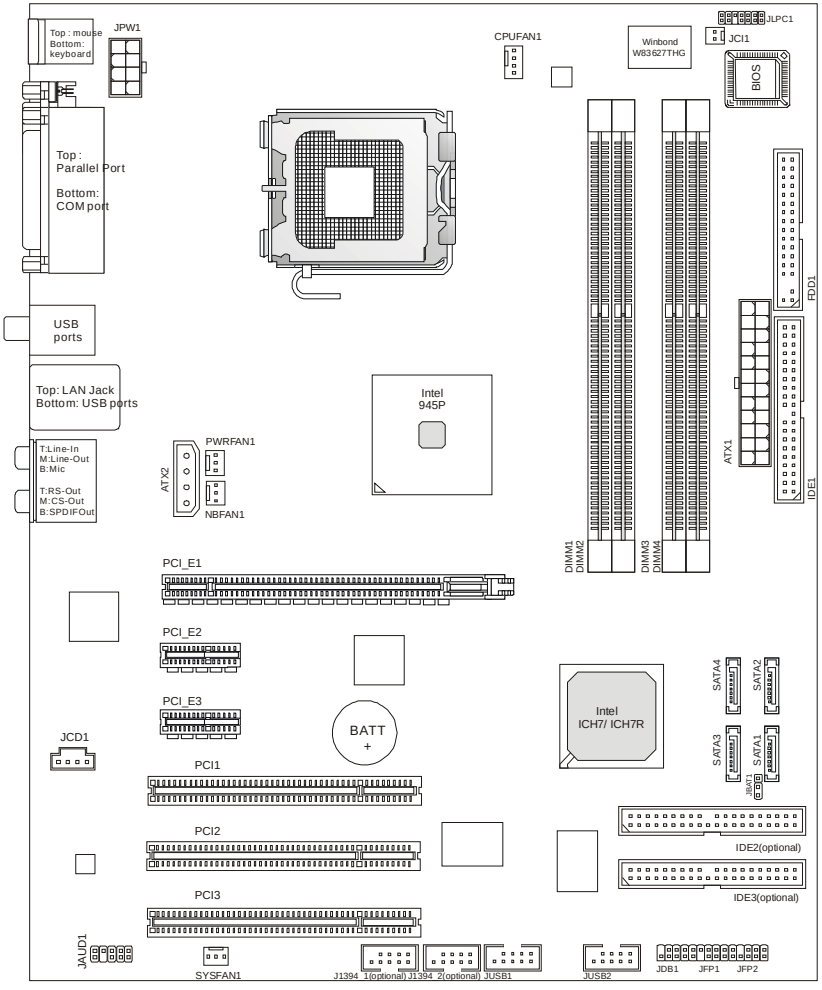
† The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.

Mounting and Dimension

† ATX Form Factor: 29.5 cm x 24.5 cm

† 9 mounting holes

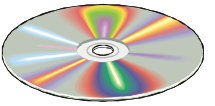
Mainboard Layout



945P Series(MS-7176) v1.x ATX Mainboard

Packing Contents

MSI motherboard



MSI Driver/Utility CD

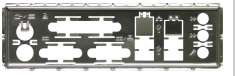
SATA Cable *2

Power Cable

D-Bracket 2
(Optional)

Standard Cable for
IDE Devices

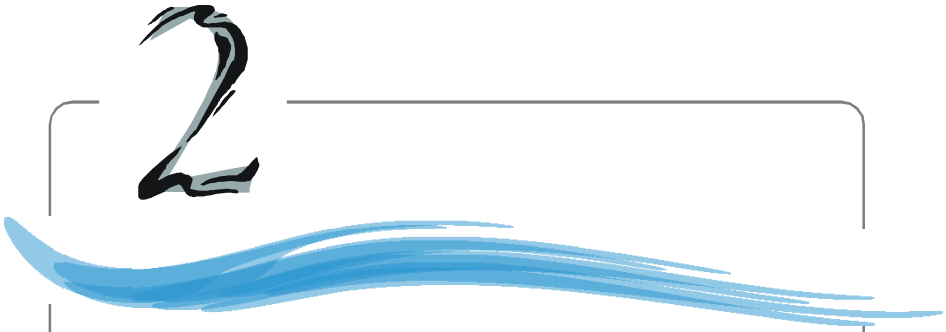
User's Guide



Back IO Shield

IEEE1394-Bracket
(Optional)

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

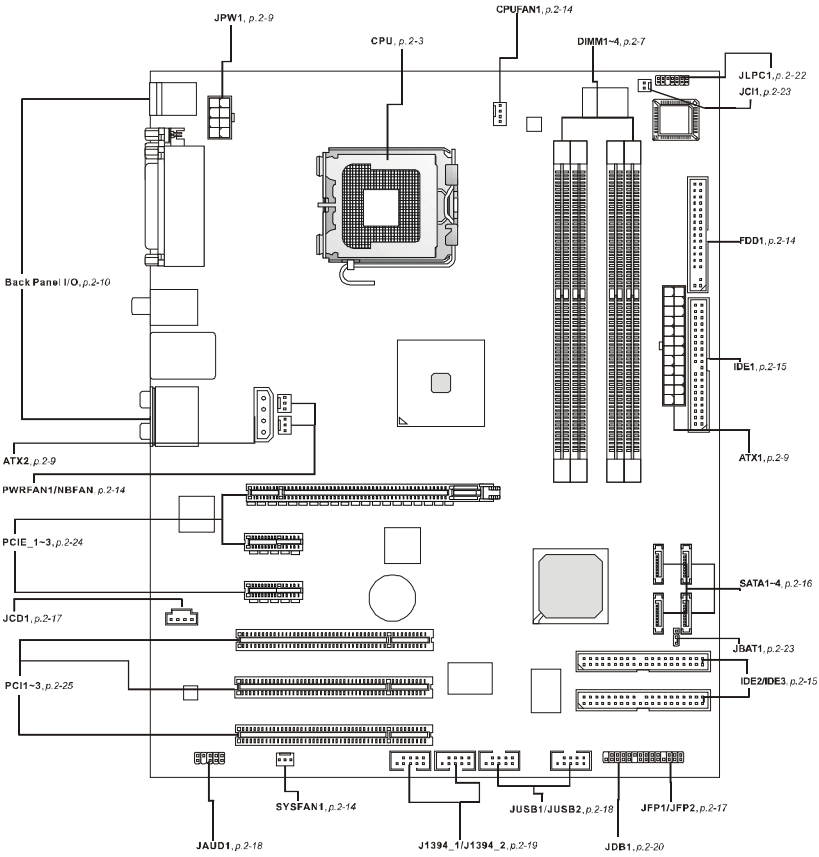


Hardware Setup

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 Prescott processor. 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.

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

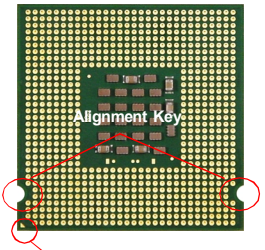
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

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.***

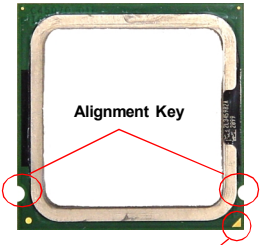
Introduction to LGA 775 CPU

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.



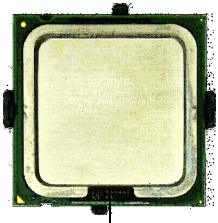
Yellow triangle is the Pin 1 indicator

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.

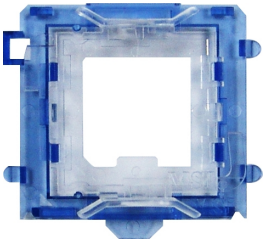
Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause the damage of your CPU & mainboard.

1. The CPU has a land side cover on the bottom to protect the CPU contact from damage. Rotate it to make the pin 1 indicator (yellow triangle) in the right-bottom corner.

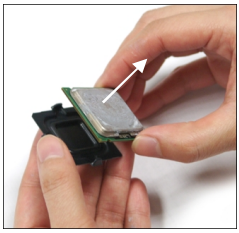


land side cover

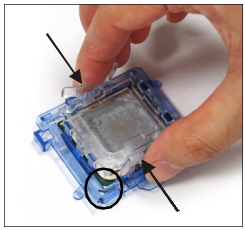
2. Take out the accompanying CPU Clip and rotate it for the same direction as the CPU (Pin 1 indicator is in the left-bottom corner).



3. Use 2 hands to remove the land side cover (if any). Please note not to touch the pins.



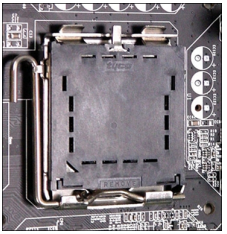
4. Align the two pin 1 indicators (the triangles on the CPU & the CPU Clip), and use the CPU Clip to clip the CPU up, pressing the clips on both sides to the center, as the arrows shown.



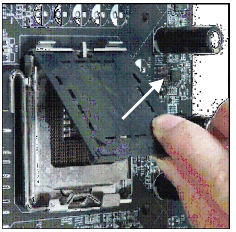
MSI Reminds You...

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.*

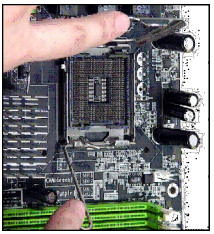
5. The CPU has a plastic cap on it to protect the contact from damage. Before you have installed the CPU, always cover it to protect the socket pin.



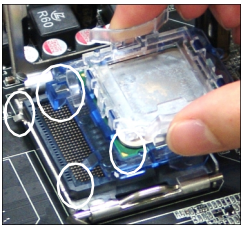
6. Remove the cap from lever hinge side (as the arrow shows). The pins of socket reveal.



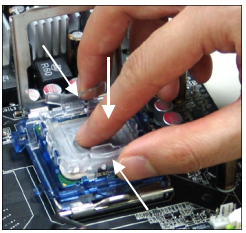
7. Lift the load lever up and open the load plate.



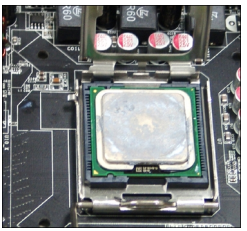
8. Correctly align the triangle of CPU Clip with the CPU chamfer, and the square on the CPU Clip to the hook of the socket.



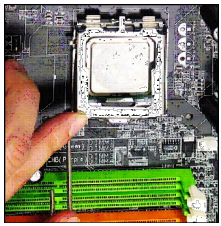
9. Use your thumb and the middle fingers to push the clips to release the CPU, then press down the CPU with your index finger to allow the whole module to be installed onto the CPU socket.



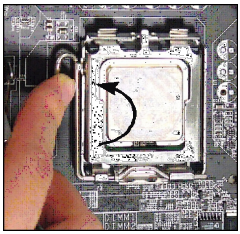
10. The CPU is installed well on the CPU socket.



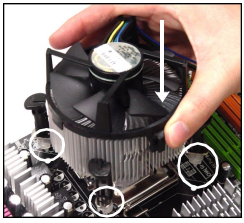
11. Visually inspect if the CPU is seated well into the socket, then remove the CPU Clip with 2 fingers. Then cover the load plate onto the package.



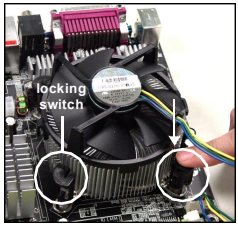
12. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



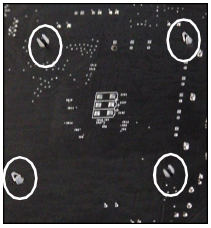
13. Align the holes on the mainboard with the cooler. Push down the cooler until its four clips get wedged into the holes of the mainboard.



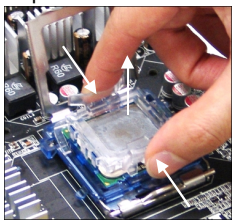
14. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.



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



Note: If you want to uninstall the CPU, align the 4 points (see Point 8 for details) again and push the clip to lift up the CPU.



MSI Reminds You...

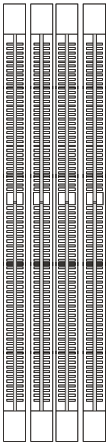
1. *Check the information in **PC Health Status** of **H/W Monitor** in BIOS (Chapter 3) for the CPU temperature.*
2. *Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.*
3. *Please note that the mating/unmating durability of the CPU is 20 cycles. Therefore we suggest you do not plug/unplug the CPU too often.*

Memory

The mainboard provides 4 slots for 240-pin DDR2 DIMM, which supports the memory size up to 4GB.

Since DDR2 modules are not interchangeable with DDR1 and the DDR2 standard is not backward compatible, you should always install DDR2 memory module in the DDR2 slot (DIMM1~DIMM4). Otherwise, you are not able to boot up your system and your mainboard might be damaged.

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



DIMM1~DIMM4
(from left (Green) to right(Orange))

Channel A (DIMM1 & DIMM2): Green
Channel B (DIMM3 & DIMM4): Orange

Introduction to DDR2 SDRAM

DDR2 is a new technology of memory module, and its speed is the top limit of current DDR1 technology. DDR2 uses a 1.8V supply for core and I/O voltage, compared to 2.5V for DDR1, and requires 28% less power than DDR1 chips. DDR2 truly is the future of memory, but will require some changes as the technology is not backwardly compatible and only motherboards specifically designed for DDR2 memory will be able to support these chips.

DDR2 incorporates new features at the chip level that give it better signal integrity, thereby enabling higher clock speeds.

DDR2 modules have 240 pins, versus 184 pins on a DDR1 module, and the length of DDR2 module is 5.25". DDR2 modules have smaller and tighter spaced pins. The height of DDR2 modules varies, but they will typically be less than 1.3" in height.

Memory Module Population Rules

Install at least one DIMM module on the slots. Each DIMM slot supports up to a maximum size of 1GB. Users can install either single- or double-sided modules to meet their own needs. Please note that ***each DIMM can work respectively for single-channel DDR, while both channels (in different color) populated with same amount of memory size will work as dual-channel DDR***.

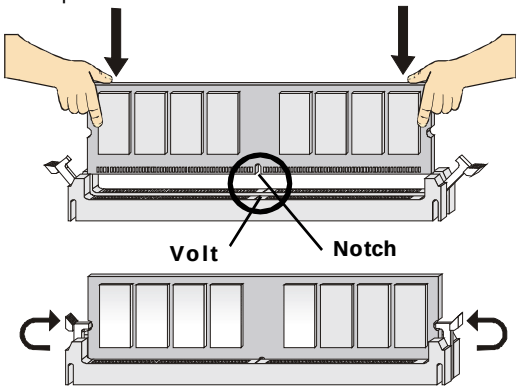
GREEN	GREEN	ORANGE	ORANGE	
DIMM1 (Ch A)	DIMM2 (Ch A)	DIMM3 (Ch B)	DIMM4 (Ch B)	System Density
256MB~1GB		256MB~1GB		512B~2GB
	256MB~1GB	256MB~1GB		512MB~2GB
256MB~1GB			256MB~4GB	512MB~2GB
	256MB~1GB		256MB~1GB	512MB~2GB
256MB~1GB	256MB~1GB	256MB~1GB	256MB~1GB	1GB~4GB

MSI Reminds You...

- *Dual-channel DDR works **ONLY** in the 5 combinations listed in the table shown in the previous page.*
- *Please select the identical memory modules to install on the dual channel, and DO NOT install three memory modules on three DIMMs, or it may cause some failure.*
- *Always insert the memory modules into the GREEN slots first, and it is strongly recommended not to insert the memory modules into the ORANGE slots while the GREEN slots are left empty.*
- *This mainboard DO NOT support the memory module installed with more than 18 pieces of IC (integrated circuit).*
- *Due to the South Bridge resource deployment, the system density will only be detected up to 3+GB (not full 4GB) when each DIMM is installed with an 1GB memory module.*

Installing DDR2 Modules

1. The DDR2 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.

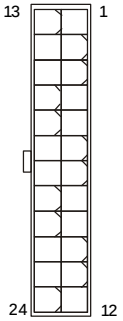
Power Supply

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 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.

ATX1

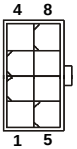


Pin Definition

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	+3.3V	24	GND

ATX 12V Power Connector: JPW1

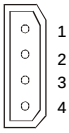
This 12V power connector is used to provide power to the CPU.



JPW1

JPW1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V



ATX2

ATX2 Pin Definition

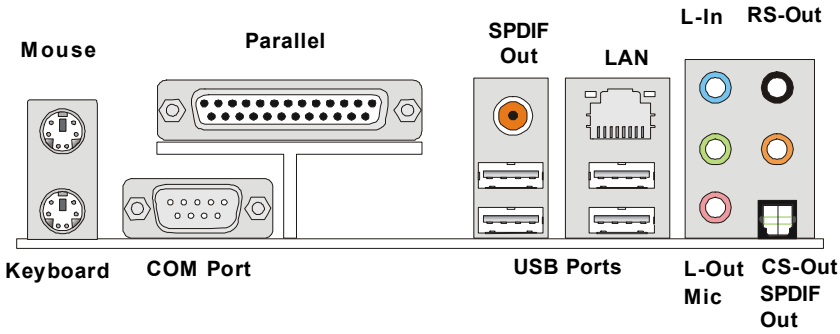
PIN	SIGNAL
1	5V
2	GND
3	GND
4	12V

MSI Reminds You...

1. *These three connectors connect to the ATX power supply and have to work together 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.*

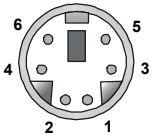
Back Panel

The back panel provides the following connectors:



Mouse/Keyboard Connector

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



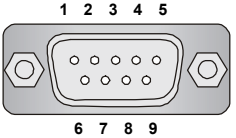
PS/2 Mouse / Keyboard (6-pin Female)

Pin Definition

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

Serial Port Connector: COM Port

The mainboard offers one 9-pin male DIN connector COM Port. It's a 16550A high speed communication port that send/receive/ 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to it.



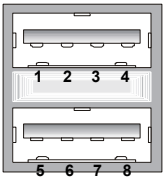
9-Pin Male DIN Connector
COM Port

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

USB Connectors

The mainboard provides an OHCI (Open 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.



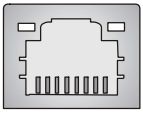
USB Ports

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

LAN (RJ-45) Jack

The mainboard provides 1 standard RJ-45 jack for connection to single Local Area Network (LAN). This LAN enables data to be transferred at 1000Mbps, 100Mbps or 10Mbps. You can connect a network cable to it.



RJ-45 LAN Jack

Giga-bit LAN Pin Definition

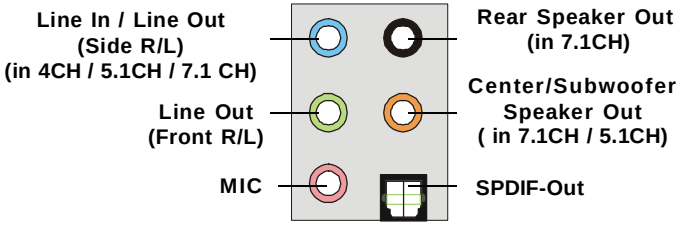
PIN	SIGNAL	DESCRIPTION
1	D0P	Differential Pair 0+
2	D0N	Differential Pair 0-
3	D1P	Differential Pair 1+
4	D2P	Differential Pair 2+
5	D2N	Differential Pair 2-
6	D1N	Differential Pair 1-
7	D3P	Differential Pair 3+
8	D3N	Differential Pair 3-

Audio Port Connectors

The left 3 audio jacks are for 2-channel mode for stereo speaker output: **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.

However, there is an advanced audio application provided by Realtek ALC882 to offer support for **7.1-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/5.1-/7.1- channel audio.

S/PDIF Out-Coaxial

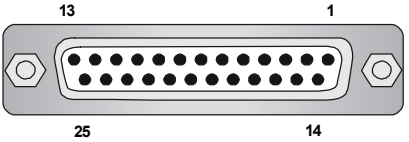


MSI Reminds You...

*For the advanced functions of the audio codec, please refer to **Chapter 7: Introduction to Realtek ALC882 Audio Codec** for details.*

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	PaperEnd
13	SELECT	Select
14	AUTO FEED#	AutomaticFeed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, LAN, and USB Ports.

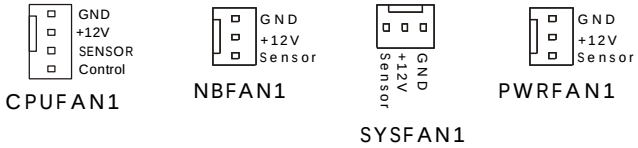
Floppy Disk Drive Connector: FDD1

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

FDD1

Fan Power Connectors: CPUFAN1/NBFAN1/SYSFAN1/PWRFAN1

The CPUFAN1 (processor fan), NBFAN1, SYSFAN1 and PWRFAN1 support system cooling fan with +12V. It supports four/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.

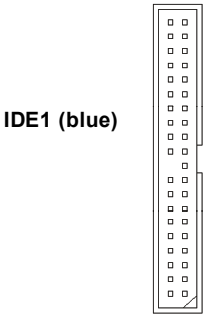


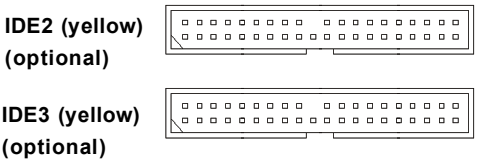
MSI Reminds You...

1. *Always consult the vendors for proper CPU cooling fan.*
2. *CPU_FAN supports the fan control. Fan/heatsink with 3 or 4 fins are both available.*
3. *Be sure to configure the **CPU FAN PIN Select** in BIOS for the CPU Fan you are using first. Please refer the **PC Health** in BIOS for details.*
4. *Please refer to the recommended CPU fans at Intel® official website.*

Hard Disk Connector: IDE1, IDE2, IDE3

The mainboard has 32-bit Ultra DMA 66/100 IDE controllers integrated in the chips Intel ICH7R and VIA 6410, which supports PIO & Bus Master operation modes and it can connect up to two Ultra ATA drives.





IDE1 (Primary IDE Connector), **IDE2** (Second IDE Connector), **IDE3** (Third IDE connector)

Each one can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

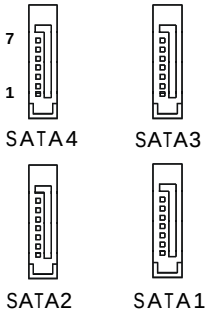
MSI Reminds You...

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.

Serial ATAII Connectors controlled by Intel ICH7: SATA1~SATA4

The SouthBridge of this mainboard is Intel ICH7 which supports four serial ATA connectors SATA1~SATA4.

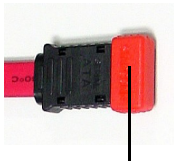
SATA1~SATA4 are dual high-speed Serial ATAII interface ports. Each supports Serial ATAII data rates of 3Gb/s. Both connectors are fully compliant with Serial ATA 1.0 and 2.0 specifications. Each Serial ATA connector can connect to 1 hard disk device.



SATA1~ SATA4 Pin Definition

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

Serial ATA cable



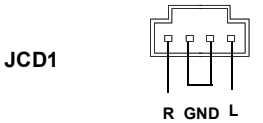
Take out the dust cover and connect to the hard disk devices

MSI Reminds You...

Please do not fold the serial ATA cable in a 90-degree angle, since this might cause the loss of data during the transmission.

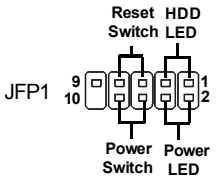
CD-In Connector: JCD1

The connector is for CD-ROM audio connector.



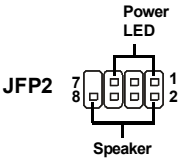
Front Panel Connectors: JFP1 / JFP2

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



JFP1 Pin Definition

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

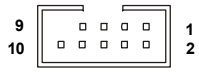


JFP2 Pin Definition

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

Front USB Connectors: JUSB1 / JUSB2

The mainboard provides two standard USB 2.0 pin headers JUSB1 / JUSB2. 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 / JUSB2
(USB 2.0/standard spec)

JUSB1 / JUSB2 Pin Definition

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

MSI Reminds You...
Note that the pins of VCC and GND must be connected correctly, or it may cause some damage.

Front Panel Audio Connector: JAUD1

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

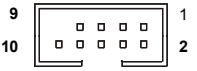
JAUD1

JAUD1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	PORT 1L	Analog Port 1 - Left channel
2	GND	Ground
3	PORT 1R	Analog Port 1 - Right channel
4	PRESENCE#	Active low signal - signals BIOS that a High Definition Audio dongle is connected to the analog header. PRESENCE# = 0 when a High Definition Audio dongle is connected.
5	PORT 2R	Analog Port 2 - Right channel
6	SENSE1_RETIRN	Jack detection return from front panel JACK1
7	SENSE_SEND	Jack detection sense line from the High Definition Audio CODEC jack detection resistor network
8	KEY	ConnectorKey
9	PORT 2L	Analog Port 2 - Left channel
10	SENSE2_RETIRN	Jack detection return from front panel JACK2

IEEE 1394 Connector: J1394_1/J1394_2 (Optional)

The mainboard provides two 1394 pin headers that allow you to connect optional IEEE 1394 port.

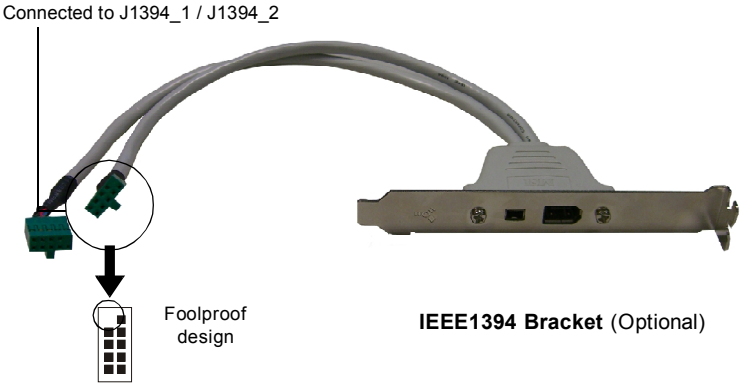


J1394_1 / J1394_2

Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground

How to attach the IEEE 1394 Port:



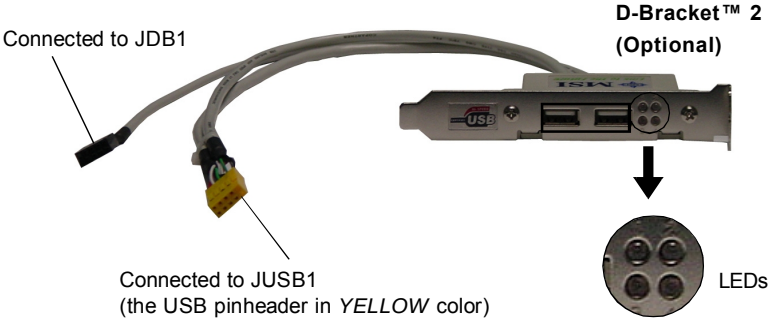
D-Bracket™ 2 Connector: JDB1

The mainboard comes with a JDB1 connector for you to connect to D-Bracket™ 2. D-Bracket™ 2 is a USB Bracket that supports both USB1.1 & 2.0 spec. It integrates four LEDs and allows users to identify system problem through 16 various combinations of LED signals.

JDB1

Pin Definition

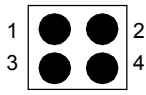
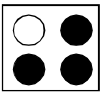
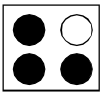
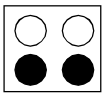
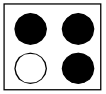
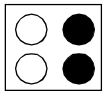
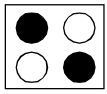
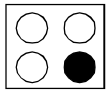
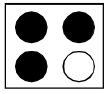
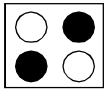
Pin	Signal
1	DBG1 (high for green color)
2	DBR1 (high for red color)
3	DBG2 (high for green color)
4	DBR2 (high for red color)
5	DBG3 (high for green color)
6	DBR3 (high for red color)
7	DBG4 (high for green color)
8	DBR4 (high for red color)
9	Key
10	NC

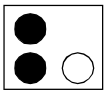
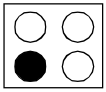
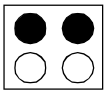
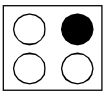
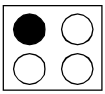
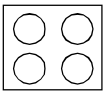


D-Bracket™ 2 is an external USB bracket integrating four Diagnostic LEDs, which use graphic signal display to help users understand their system. The LEDs provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for the overclocking users. These users can use the feature to detect if there are any problems or failures.

D-Bracket™ 2 supports both USB 1.1 & 2.0 specification.

D-Bracket™ 2

D-Bracket™ 2	Description
	System Power ON The D-LED will hang here if the processor is damaged or not installed properly.
	Early Chipset Initialization
	Memory Detection Test Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.
	Decompressing BIOS image to RAM for fast booting.
	Initializing Keyboard Controller.
	Testing VGA BIOS This will start writing VGA sign-on message to the screen.
	Processor Initialization This will show information regarding the processor (like brand name, system bus, etc...)
	Testing RTC (Real Time Clock)
	Initializing Video Interface This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.
	BIOS Sign On This will start showing information about logo, processor brand name, etc...

D-Bracket™ 2	Description
	Testing Base and Extended Memory Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.
	Assign Resources to all ISA.
	Initializing Hard Drive Controller This will initialize IDE drive and controller.
	Initializing Floppy Drive Controller This will initialize Floppy Drive and controller.
	Boot Attempt This will set low stack and boot via INT 19h.
	Operating System Booting

FWH/LPC Debugging Pin Header: JLPC1

The pin header is for internal debugging only.

JLPC1

JLPC1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	LCLK	2	Key (no pin)
3	LRST#	4	VCC3
5	LAD0	6	FID0_LRST
7	LAD1	8	VCC5
9	LAD2	10	Key (no pin)
11	LAD3	12	GND
13	LFRAME#	14	GND

Jumpers

Chassis Intrusion Switch Connector: JCI1

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.

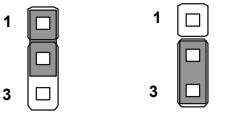
JCI1

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

Clear CMOS Jumper: JBAT1

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

JBAT1



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.

Slots

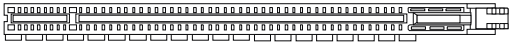
The mainboard provides a PCI Express x16 slot, a PCI Express x1 slot and three 32-bit PCI bus slots.

PCI Express Slots (optional)

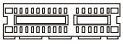
The PCI Express slots, as a high-bandwidth, low pin count, serial, interconnect technology, support Intel highest performance desktop platforms utilizing the Intel Pentium 4 processor with HT Technology.

PCI Express architecture provides a high performance I/O infrastructure for Desktop Platforms with transfer rates starting at 2.5 Giga transfers per second over a PCI Express x1 lane for Gigabit Ethernet, TV Tuners, 1394 controllers, and general purpose I/O. Also, desktop platforms with PCI Express Architecture will be designed to deliver highest performance in video, graphics, multimedia and other sophisticated applications. Moreover, PCI Express architecture provides a high performance graphics infrastructure for Desktop Platforms doubling the capability of existing AGP 8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers.

You can insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first.



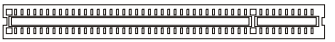
PCI Express x16 slot



PCI Express x1 slot

PCI (Peripheral Component Interconnect) Slots

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



PCI Slots

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 INT A# ~ INT D# pins as follows:

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

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 boot up, and requests you to run SETUP.
- You want to change the default settings for customized features.

MSI Reminds You...

1. The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

2. While booting up, the BIOS version is shown in the 1st line appearing after the memory count. It is usually in the format:
example: W7176IMS V1.0BH 03/04/05

where:
1st digit refers to BIOS maker as A=AMI(R); W=AWARD(R)
2nd-5th digits refer to the model number.
6th digit refers to the customer, MS=all standard customers.
V1.0BH refers to the BIOS version.
03/04/05 refers to the date this BIOS is released.

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup. Also you can press <F8> to enter boot menu.

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
<F5>	Previous Values
<F6>	Load Fail-Safe Defaults
<F7>	Load Optimized Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

After entering the Setup utility, the first screen you see is the Main Menu.

Main Menu

The main menu displays the setup categories the BIOS supplies. You can use the arrow keys (↑↓) to select the item. The on-line description for the selected setup category is displayed at the bottom of the screen.

Default Settings

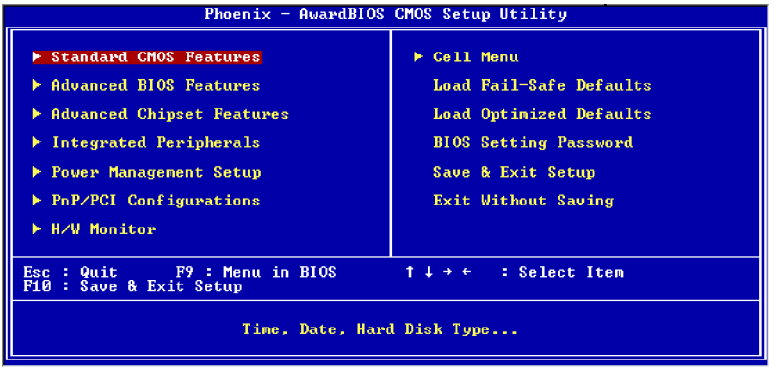
The preset Optimal Defaults of the BIOS setup program provide optimal performance settings for all devices and the system.

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 AwardBIOS CMOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to move among the items and press <Enter> to 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 Award® special enhanced features.

Advanced Chipset Features
Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

Power Management Setup
Use this menu to specify your settings for power management.

PNP/PCI Configurations
This entry appears if your system supports PnP/PCI.

H/W Monitor
This entry shows the status of your CPU, fan, warning for overall system status.

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

Load Fail-Safe Defaults
Use this menu to load the default values set by the BIOS vendor for stable system performance.

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

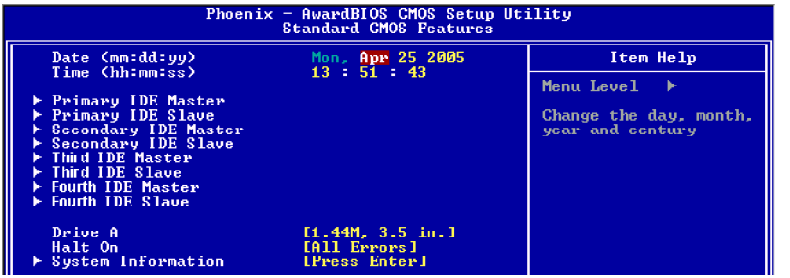
BIOS Setting Password
Use these two menus to set the passwords for BIOS.

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

Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

The items in Standard CMOS Features Menu includes some basic setup items. Use the arrow keys to highlight the item and then use the <+> or <-> keys to select the value you want in each item.



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>.

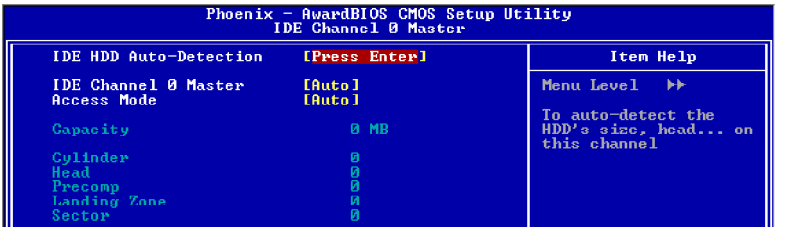
- **day** Day of the week, from Sun to Sat, determined by BIOS. Read only.
- **month** The month from Jan. through Dec.
- **date** The date from 1 to 31 can be keyed by numeric function keys.
- **year** The year can be adjusted by users.

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 Channel

Press <+> or <-> to select the hard disk drive type. The specification of hard disk drive will show up on the right hand according to your selection. Press <Enter> for the sub-menu of each item:



IDE HDD Auto-Detecion

Press <Enter> to auto-detect the hard disk's size, head and other information on this channel.

Primary IDE Master
Press PgUp/<+> or PgDn/<-> to select [Manual], [None] or [Auto] type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.
If you select [Manual], related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

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

Drive A
This item allows you to set the type of the floppy drives installed. Available options: [Disabled], [360 KB, 5$^{1/4}$], [1.2 MB, 5$^{1/4}$], [720 KB, 3 $^{1/2}$], [1.44 MB, 3 $^{1/2}$], [2. 88MB, 3 $^{1/2}$].

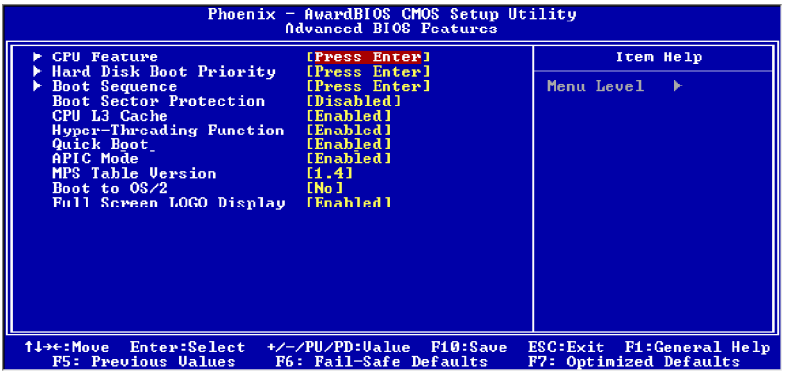
Halt On
The setting determines whether the system will stop if an error is detected at boot. Available options are:

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

System Informaion
Press <Enter> for the sub-menu of each item:

BIOS versin/CPU Type/CPU ID/uCode ID/CPU Frequency/Total Memory
This item shows the BIOS version, CPU type, CPU ID, uCode ID,

Advanced BIOS Features



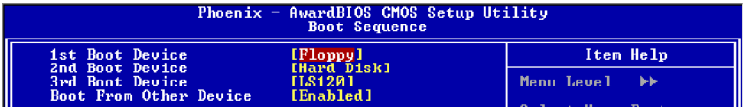
CPU Feature
Press <Enter> to enter the sub-menu.

Delay Prior to Thermal
Setting options: [4 Min], [8 Min], [16 Min], [32 Min].

Thermal Management
Setting options: [Thermal Monitor 1], [Thermal Monitor 2.]

Hard Disk Boot Priority
Press <Enter> to enter the sub-menu. Then you may use the arrow keys (↑↓) to select the desired device, then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in this hard disk boot priority list.

Boot Sequence
Press <Enter> to enter the sub-menu.
The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, modern computers usually load the operating system from the hard drive, and may even load it from a CD-ROM drive.



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

Boot From Other Devices
Setting the option to [Enabled] allows the system to try to boot from other devices if the system fails to boot from the 1st/2nd/3rd boot device. Settings are: [Disabled], [Enabled].

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" will not show up.*

Boot Sector Protection
This function protects the disk , when users attempt to format the disk. Settings: [Enabled], [Disabled].

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

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

CPU L3 Cache
Level 3 cache is the extra cache built into motherboards between the microprocessor and the main memory. Located away from the CPU, the L3 cache is slower than the L1 & L2 caches. This setting allows you to turn on or off the L3 cache. Setting options: *Enabled, Disabled*.

Hyper-Threading Technology
The processor uses Hyper-Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. **Please disable this item if your operating system doesn't support HT Function, or unreliability and instability may occur.**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;*
* ***OS:*** *An operating system that supports HT Technology.*

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

MPS Table Version

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

Boot to OS/2

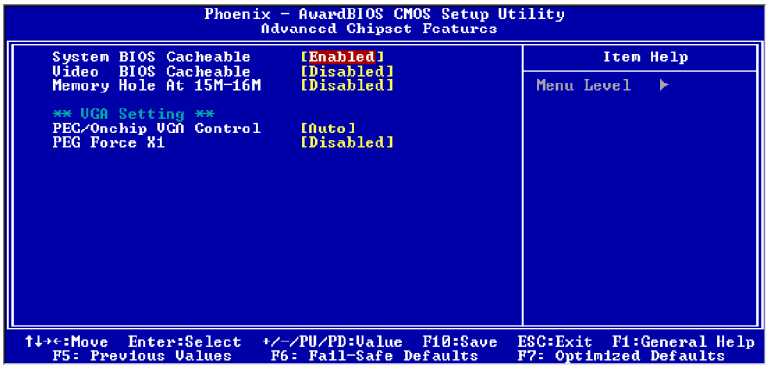
This allows you to run the OS/2® operating system with DRAM greater than 64MB. Setting options: [Yes], [No].

Full Screen LOGO Display

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

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

Advanced Chipset Features



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

System BIOS Cacheable
Selecting [Enabled] allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Setting options: [Enabled], [Disabled].

Video BIOS Cacheable
Selecting [Enabled] allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. Setting options: [Enabled], [Disabled].

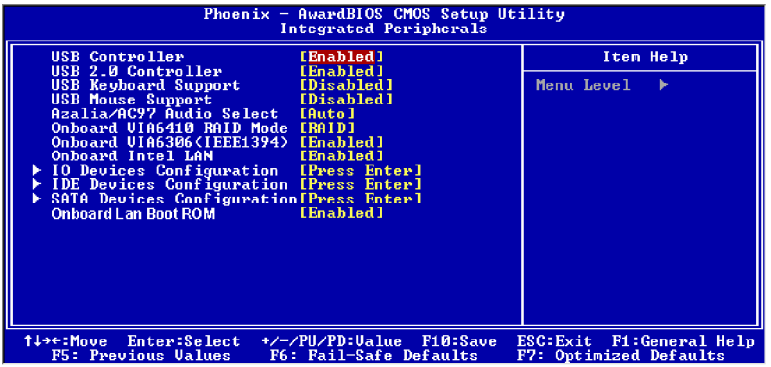
Memory Hole
In order to improve performance, certain space in memory can be reserved for ISA peripherals. This memory must be mapped into the memory space below 16MB. When this area is reserved, it cannot be cached. Settings: [Disabled], [15MB-16MB].

**** VGA Setting ****

PEG/Onchip VGA Control
This setting determines whether the system RAM can be allocated to on-chip video controller for video purposes. When setting to Enabled, up to 128MB system RAM will be allocated to on-chip video controller. Setting options: [Onchip VGA], [PEG Port], [Auto].

PEG Force X1
This setting determines whether the PCI Express x16 graphic is used. When setting to Enabled, force the bandwidth frome x16 down to x1. Setting options: [Enabled] and [Disabled].

Integrated Peripherals



USB Controller
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].

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

Azalia/AC97 Audio Select
This item allows you select Azalia Audio or AC97 Audio Setting options: [Enabled], [Disabled].

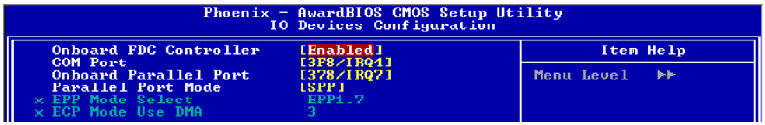
Onboard VIA6410 RAID Mode
The item allows you decide VIA6410 chipset to support IDE or IDE RAID. Setting options: [IDE], [RAID], [Disabled].

OnBoard VIA6307(IEEE1394)
This setting is used to enable/disable the onboard VIA 1394 controller. Setting options: [Enabled], [Disabled].

Onboard Intel LAN
The item enables or disables the onboard LAN device. Setting options: [Enabled], [Disabled].

IO Devices Configuration

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



Onboard FDC Controller

Select [Enabled] if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install add-on FDC or the system has no floppy drive, select [Disabled] in this field. Setting options: [Enabled], [Disabled].

COM Port

These items specify the base I/O port addresses of the onboard Serial Port 1 . 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].

Onboard Parallel Port

There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

[Disabled]
[3BC/IRQ7] Line Printer port 0
[278/IRQ5] Line Printer port 2
[378/IRQ7] Line Printer port 1

Parallel Port Mode

[SPP] Standard Parallel Port
[EPP] Enhanced Parallel Port
[ECP] Extended Capability Port
[ECP+EPP] Extended Capability Port + Enhanced Parallel Port

To operate the onboard parallel port as Standard Parallel Port only, choose [SPP]. To operate the onboard parallel port in the EPP mode simultaneously, choose [EPP]. By choosing [ECP], the onboard parallel port will operate in ECP mode only. Choosing [ECP + EPP] will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

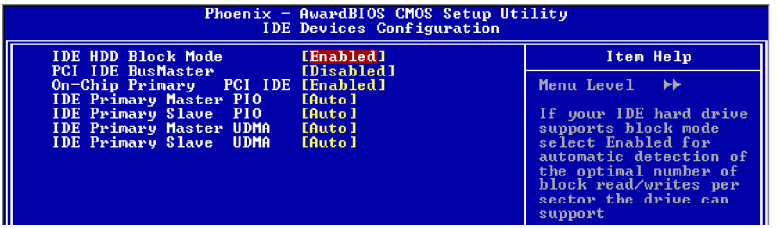
EPP Mode Select

The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: “EPP Mode Select.” At this time either [EPP 1.7] spec or [EPP 1.9] spec can be chosen.

ECP Mode Use DMA

The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: “ECP Mode Use DMA.” At this time, the user can choose between DMA channel [3] or [1].

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



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].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].

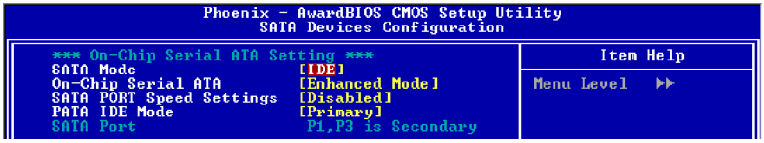
PCI IDE BusMaster
Set this option to [Enabled] to specify that the IDE controller on the PCI local bus has bus mastering capability. Settings options: [Disabled], [Enabled].

OnChip Primary PCI IDE
The integrated peripheral controller contains an IDE interface with support for the IDE channel. Choose [Enabled] to activate the channel. Setting options: [Enabled], [Disabled].

IDE Primary 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. Setting options are: [Auto], [Mode 0], [Mode 1], [Mode 2], [Mode 3], [Mode 4].

IDE Primary Master/Slave UDMA
Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, Ultra DMA/66 and Ultra DMA/100, select Auto to enable BIOS support. Setting optons are: [Auto], [Disabled].

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



***** On-Chip Serial ATA Setting *****

SATA Mode
This setting is used to select the SATA mode. The setting are:
[IDE] no AHCI, no RAID
[RAID] RAID enabled
[AHCI] AHCI enabled, no RAID
Advanced Host Controller Interface (AHCI) includes a description of the hardware/ software interface between system software and the host controller hardware.

On-Chip Serial ATA
This setting is used to specify the SATA controller. The settings are:
[Disabled] Select this if you want to disable both SATA controller.
[Auto] BIOS selects the mode automatically.
[Combined Mode] You can use the IDE channels with S-ATA and P-ATA devices, and maximum of 2 devices in each channel are supported (maxinum of 4 devices). Refer to the table below for the combination.
[Enhanced Mode] This mode can enable both S-ATA and P-ATA, maximum of 6 devices are supported.
[SATA Only] SATA is operating in legacy mode.

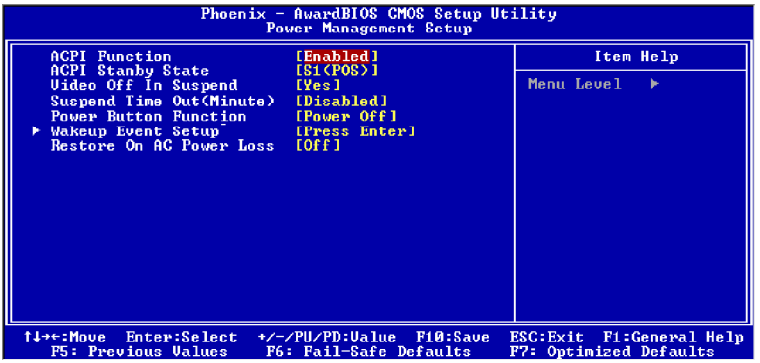
SATA PORT Speed Settings
This item allows you to select the speed of SATA ports.
[Disabled] Disable this function.
[Force GEN I] Force the data transfer rates to 1.5Gb/s(150 MB/s)
[Force GEN II] Force the data transfer rates to 3.0Gb/s(300 MB/s)

PATA IDE Mode/ SATA Port
This Item allows you to set the parallel IDE and the SATA port operation mode.
Setting options: [Primary], [Secondary].

MSI Reminds You...
ICH7R RAID and VIA RAID are not able to be enabled at the same time.

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

Power Management Features



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

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]. Settings: [Enabled] and [Disabled].

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

[S1(POS)] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.

[S3(STR)] The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a “wake up” event occurs.

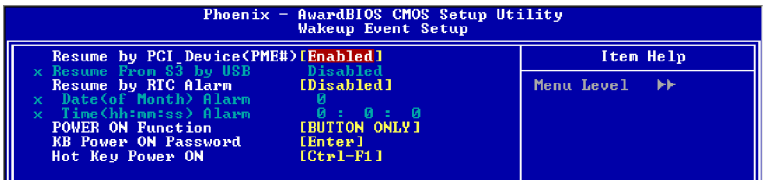
Video Off In Suspend
This option enables the monitor to be turned off during the suspend mode. Settings: [Yes], [No].

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], [1min], [2min], [4min], [8min], [12min], [20min], [30min], [40min], [1hour].

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.

Wakeup Event Setup
Press <Enter> and the following sub-menu appears.



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

Resume From S3 by USB
The item allows the activity of the USB device to wake up the system from S3 (Suspend to RAM) sleep state. Setting options: [Disabled], [Enabled].

Resume by 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 power off state. Setting options: [Disabled], [Enabled].

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 mouse or keyboard can power on the system. Settings: [Password], [Hot KEY], [Mouse Left], [Mouse Left], [Mouse Right], [any KEY], [BUTTON ONLY], [Keyboard 98].

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

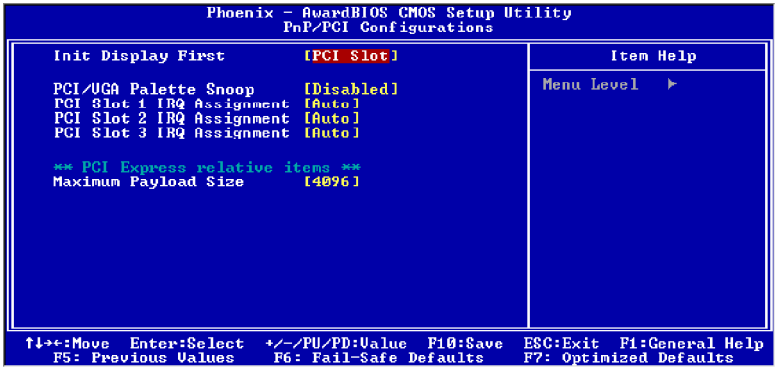
Hot Key Power ON
If ***POWER ON Function*** is set to [Hot KEY], you can assign a hot key combination in the field for the PS/2 keyboard to power on the system. Settings: [Ctrl-F1] through [Ctrl-F12].

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.

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.



Init Display First

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

[PCI Ex] The system initializes the PCI Express graphic first. If a PCI Express graphic card is not available, it will initialize the PCI graphic card.

[PCI Slot] The system initializes the PCI Graphic card first. If a PCI Graphic card is not available, it will initialize the PCI Express graphic.

PCI/VGA Palette Snoop

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

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

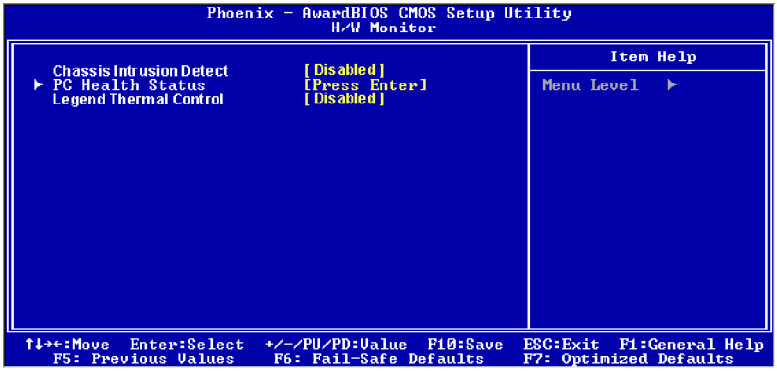
The setting must be set to *Enabled* if any ISA bus adapter in the system requires VGA palette snooping.

PCI Slot1~3 IRQ Assignment
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.

****PCI Express relative items****
Maximum Payload Size
This item allows you to set the maximum TLP (transaction layer packet) payload size for the PCI Express devices. Setting options: [128], [256], [512], [1024], [2048], [4096].

H/W Monitor

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.



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. Setting options: [Enabled], [Reset], [Disabled].

PC Health Status

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

System/ CPU Temperature, Current System/CPU/Power Fan Speed, Vcore (V), +5 V, +12 V, VBAT(V), 5VSB (V).

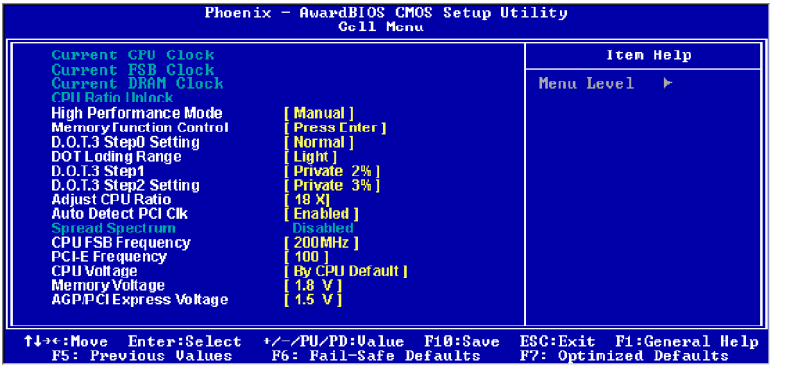
These items display the current status of all of the monitored hardware devices/ components such as CPU voltages, temperatures and all fans' speeds.

Chassis Intrusion Detect

This field can control the fan speed automatically depending on the current temperature to keep it with in a specific range.

Cell Menu

The items here includes some important settings of CPU and PCI functions.



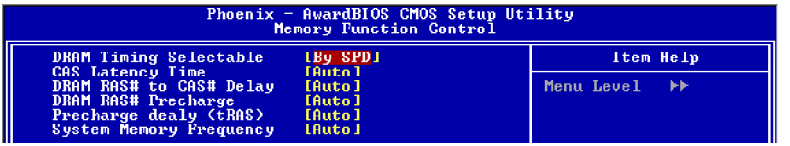
MSI Reminds You...
Change these settings only if you are familiar with the chipset.

Current CPU/FSB/DRAM Clock
This item only displays the current CPU/FSB/DRAM clock.

CPU Ratio Unlock
This item only displays the CPU ratio lock or unlock.

High Performance Mode
This field allows you to select the DDR timing setting. Setting to [Optimized] enables ***Adjust DDR Memory Frequency*** automatically to be determined by SPD. Selecting [Manual] allows users to configure these fields manually. Setting options: [Optimized], [Manual].

Memory Function Control
Press <Enter> and the following sub-menu appears.



DRAM Timing Setectable
This field allows you to select the DRAM timing setting. Setting to *Auto* enables Max Memclock (Mhz) automatically to be determined by SPD. Selecting *Manual* allows users to configure these fields manually.

CAS Latency Time
This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: *2*, *2.5*, *3* (clocks). *2* (clocks) increases the system performance the most while *3* (clocks) provides the most stable performance.

DRAM 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: *4, 3*, *2* (clocks).

DRAM 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: 4, 3, 2 (clocks).

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

System Memory Frequency
This setting allows you to set the bus frequency for installed DRAM. Settings: [Auto], [400MHz], [533MHz], [667MHz].

D.O.T.3 Step0 Setting
You can enable the DOT3 function by setting this item to [Normal]. Dynamic Overclocking Technology 3 is the automatic overclocking function, included in the MSI™'s newly developed CoreCell™ Technology. It is designed to detect the load balance of CPU while running programs, and to adjust the best CPU frequency automatically. When the motherboard detects CPU is running programs, it will speed up CPU automatically to make the program run smoothly and faster. When the CPU is temporarily suspending or staying in the low load balance, it will restore the default settings instead. Usually the Dynamic Overclocking Technology 3 will be powered only when users' PC need to run huge amount of data like 3D games or the video process, and the CPU frequency need to be boosted up to enhance the overall performance.

DOT Loading Range
This setting allows you to set the DOT start point according to system loading condition.
[Light] CPU Loading < PCI-E Loading
[Middle] CPU Loading = PCI-E Loading
[Heavy] CPU Loading > PCI-E Loading

D.O.T.3 Step1 >> D.O.T.3 Step2 Setting
When the system loading reachs to 50%, the system will go overclocking according to the D.O.T.3 Setp1 setting. When the system loading reachs to 65%, the D.O.T.3 Setp2 setting will take effective.
[Private] Increasing the CPU frequency by 3%~4%.
[Sergeant] Increasing the CPU frequency by 4%~5%.
[Captain] Increasing the CPU frequency by 5%~6%.
[Colonel] Increasing the CPU frequency by 6%~7%.
[General] Increasing the CPU frequency by 7%~8%.
[Commander] Increasing the CPU frequency by 8%~9%.

MSI Reminds You...

1. *Even though the Dynamic Overclocking Technology is more stable than manual overclocking, basically, it is still risky. We suggest user to make sure that your CPU can afford to overclocking regularly first. If you find the PC appears to be unstable or reboot incidentally, it's better to disable the Dynamic Overclocking or to lower the level of overclocking options. By the way, if you need to conduct overclocking manually, you also need to disable the Dynamic OverClocking first.*
2. *Meanwhile, there are two functions to protect user's system from crash.*
   - *There is a safe key "Ins" in BIOS. In case the overclocking fails, you can press "Ins" key while system rebooting to restore to the BIOS defaults.*
   - *If the system incidentally reboot for four times, the BIOS will also be restored to the defaults.*

Adjust CPU Ratio
This item allows you to adjust the CPU ratio. Setting range is from [8X] to [50X].

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

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

CPU FSB Frequency
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. Setting options: Give a DEC value by entering a number between maximum [265] MHz to minimum [200] MHz.

PCI-E Frequency
The system board designer selects whether the PCI-E frequency is tightly synchronized with the CPU clock or is asynchronous.

CPU Voltage
The settings are used to adjust the CPU clock multiplier (ratio) and CPU corevoltage (Vcore). These settings offer users a tool to overclock the system.

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

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

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.

BIOS Setting Password

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

Type the password, up to six 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.

Introduction to DigiCell

DigiCell, the most useful and powerful utility that MSI has spent much research and efforts to develop, helps users to monitor and configure all the integrated peripherals of the system, such as audio program, power management, MP3 files management and communication / 802.11g WLAN settings. Moreover, with this unique utility, you will be able to activate the MSI well-known features, Live Update and Core Center, which makes it easier to update the BIOS/drivers online, and to monitor the system hardware status (CPU/Fan temperature and speed) or to overclock the CPU/ memory.

Once you have your DigiCell installed (locate the setup source file in the setup CD accompanying with your mainboard, path: **Utility --> MSI Utility --> MSI DigiCell**), it will have an icon in the system tray, a short cut icon on the desktop, and a short cut path in your “Start-up” menu. You may double-click on each icon to enable DigiCell.

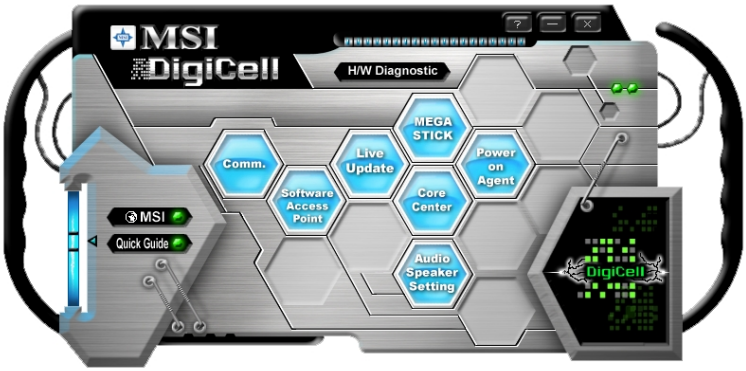
short-cut icon in the system tray

short-cut path in the start-up menu
(path: Start-->Programs-->MSI-->DigiCell)

Main

Before using this utility, it is required to have all the integrated peripherals/cards (LAN card, Wireless LAN card, MegaStick... etc.) and all the necessary drivers (onboard LAN driver, audio driver, CoreCenter, Live Update... etc.) installed correctly.

The icon representing each item will be lit up if it is inserted/installed correctly and properly. Otherwise, the icon will remain gray and user is not able to view the functionality/connection of that item.



Introduction:

Click on each icon appearing above to enter the sub-menu to make further configuration.

MSI

Click on this button to link to MSI website: http://www.msi.com.tw.

Quick Guide

Click on this button and the quick guide of **DigiCell** will be displayed for you to review.

H/W Diagnostic

In this sub-menu, it provides the information of each DigiCell button for you to check if the representing peripherals/cards/drivers are correctly installed.

Comm.

In this sub-menu, you can see the configuration details for communication products, including the status, strength, speed and channel of the connection of the Ethernet LAN & Wireless LAN.

Software Access Point

In this sub-menu, you can change your connection mode to different ones, and configure the advanced settings for each mode, such as the authentication encryption... etc.

Live Update
You can take advantage of **Live Update** to detect and update BIOS and drivers online.

Core Center
You can take advantage of **Core Center** to monitor the health status of your system and to overclock under Windows OS if your system supports overclocking function.

MEGA STICK
If you have your MEGA STICK connected to your system, this icon will be lit up. Click this blue icon to turn DigiCell into a MP3 player, and then you can load media files from your MEGA STICK or the system, and edit the preferred playlist.

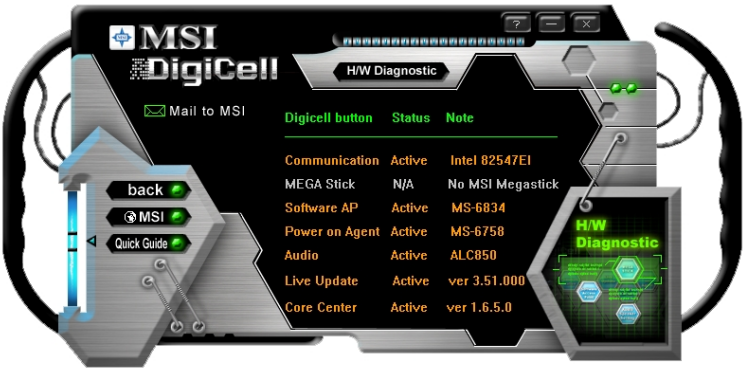
Audio Speaker Setting
In this sub-menu, you can configure and test the multi-channel audio function, speakers, sound effect and environment.

Power on Agent
In this sub-menu, you can configure date, time and auto-executed programs of the power-on, power-off and restarting features.

MSI Reminds You...
*Click on **back** button in every sub-menu and it will bring you back to the main menu.*

H/W Diagnostic

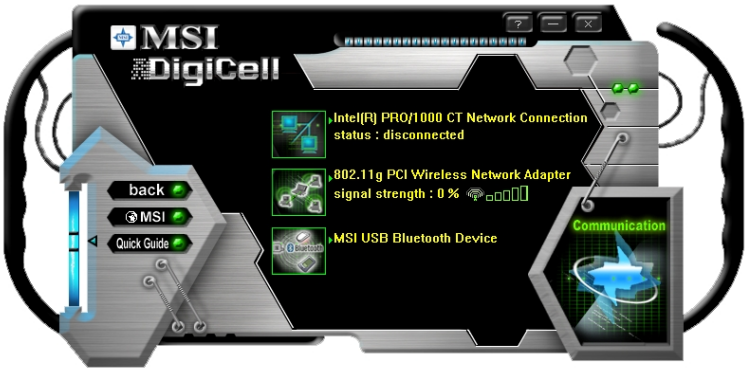
In the **H/W Diagnostic** sub-menu, you can see the information, status and note of each DigiCell. You may double check the connection and installation of the item marked as gray.



You may also click on the **Mail to MSI** button to send your questions or suggestions to MSI's technical support staff.

Communication

In the **Communication** sub-menu, you can see the status of all the LAN / WLAN / Bluetooth on the screen if the hardware is installed. The first icon indicates the onboard LAN on your system, the second icon indicates the wireless LAN status, and the third one is the information about the bluetooth on your system. Click on each item for details.



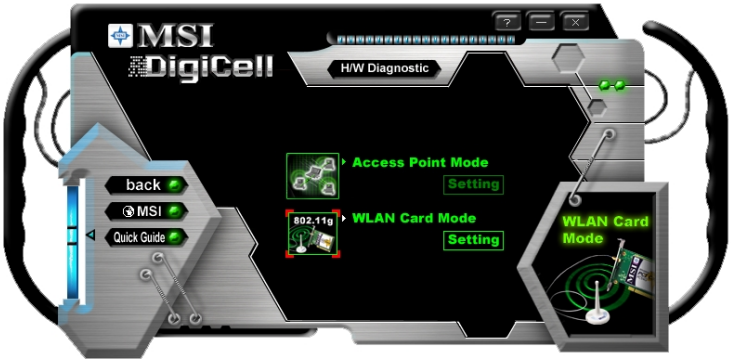
This icon indicates the information and connection status of onboard LAN, which is read-only.

The second icon indicates the wireless connection. You may click this icon to configure the advanced settings in the **WLAN Card Mode** dialogue box (see the image on p.4-8). Please note that it is only available when the **Software Access Point** is set to **WLAN Card Mode**.

The third icon indicates the connection using bluetooth devices. If your system is connected to the bluetooth device, the icon will light up.

Software Access Point

In the **Software Access Point** sub-menu, you can see the communication status on your system and choose the desired software access point mode by clicking on the desired icon, in which the default settings are configured for your usage. The default software access point mode is set to **WLAN Card Mode**. For more advanced security settings and channels switching, click on **"Setting"** button to enter its sub-menu.



Terminology

Here are the introduction of WLAN / AP communication terminology.

WEP Key

In the wireless network environment, the administrator can set up password (Network Key) to protect the network from being attacked or unauthorized access. When building the network, you can set up 4 sets of WEP keys, which can be 5 characters (10 hex-adecimal digital) or 13 characters (26 hex-adecimal digital) and specify one of them to use.

Ad-hoc Mode

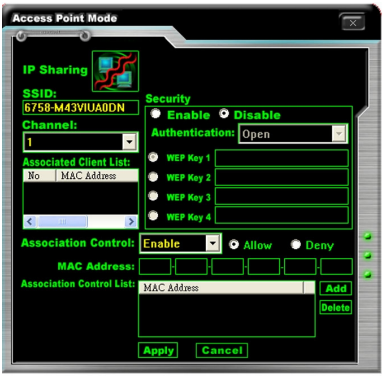
An Ad-hoc network is a local area network or other small network, especially one with wireless or temporary plug-in connections, in which some of the network devices are part of the network only for the duration of a communications session. Users in the network can share files, print to a shared printer, and access the Internet with a shared modem. In this kind of network, new devices can be quickly added; however, users can only communicate with other wireless LAN computers that are in this wireless LAN workgroup, and are within range.

Infrastructure Mode

The difference between Infrastructure network and Ad-hoc network is that the former one includes an Access Point. In an Infrastructure network, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.

Access Point Mode

Click on **"Setting"** button of the **Access Point Mode** and the following screen will display.



IP Sharing

Click on this icon to enable/disable the IP sharing. The default of this setting is disabled.

 Disabled.

 Enabled.

Enabling/disabling IP sharing depends on the different situation. For example:

1. If your family and you are getting on Internet at home with multi computers, and your ISP only provides one IP for you, you may need to enable **IP Sharing** function in order to use this one IP to get on Internet with multi computers simultaneously.
2. If you are getting on Internet in office, usually the LAN card will automatically get the IP this computer uses. In this case you don't have to enable this function.

SSID

Means Service Set Identifier, a ***unique*** name shared among all points in a wireless network. It must be ***identical*** for all points in the network. Then the card will be able to connect to an access point with the same SSID.

Channel

Specifies the operating radio frequency channel in **Infrastructure mode**, which should be set to an available one (ex: with less traffic to ensure the stable and better connection).

Associated Client List

This option is to display information of stations that are currently associated to your wireless gateway.

Association Control
This option allows you to control which PC can connect to the wireless LAN. If you enable this feature, only PCs with MAC address located in Association Control List can connect to the wireless LAN.

MAC Address
MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network.

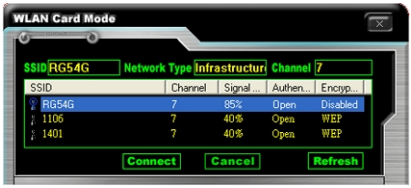
Security
This option allows you to enable/disable the authentication function.

Authentication
Open: Communicates the key across the network.
Shared: Devices must have identical WEP settings to communicate.

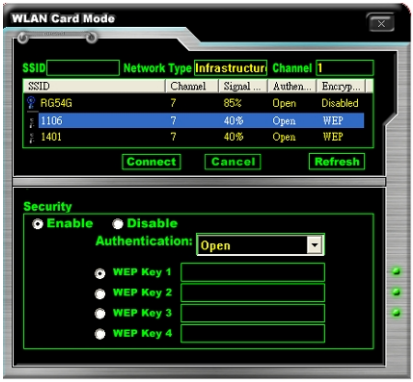
WLAN Card Mode

Click on **"Setting"** button of the **WLAN Card Mode** for the WEP status of your APs.

If the AP you are selecting (the highlighted one) is not encrypted (***Disabled*** shown in the **Encryption** column), the screen will display as below. You can click "**Connect**" to make connection to that AP, click "**Cancel**" to close this dialogue box, or click **"Refresh"** button to update the available WLAN connections.



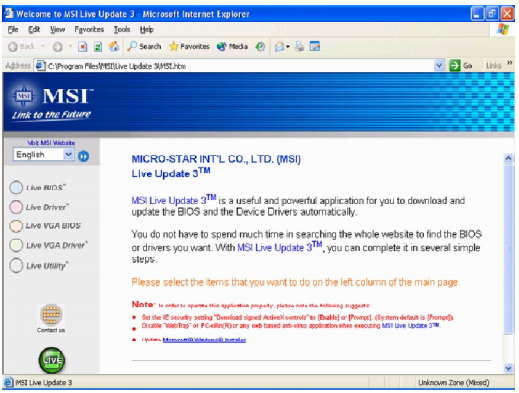
If the network you are selecting is encrypted (***WEP*** shown in the **Encryption** column), the screen will display as below. You need to enter the correct WEP key defined by AP in the specified **WEP Key 1~4** fields to make the connection.



Live Update

Click on the **Live Update** icon in the main menu and the **Live Update** program will be enabled.

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.

MEGA STICK

In the **MEGA STICK** sub-menu, you can configure the settings of MSI MEGA STICK and the media files (*.m3u, *.mp3, *.wav, *.cda, *.wma) on your system.

Basic Function

Here you can edit your own play list with the buttons **"load", "save", "delete", "shuttle", "repeat"** & **"print".**

Load To load media files or the playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.

Save To save a loaded playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.

Delete Click on the media files in the **Play List:** field and use **"Delete"** button to remove the media file from the play list. You may remove multi media files simultaneously by using "Ctrl" to select multi files.

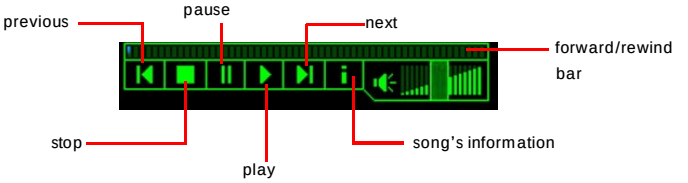
Shuffle To play the media file in the **Play List:** in a random order.

Repeat To repeat the selected files in the **Play List:**.

Print This button has 2 functions:

1. To print out the details of current play list through your printer with the following information:
   Song title --- Song length --- Singer name
2. To save the details of current play list and save the file in the plain text file format in the *Program files**MSI**DigiCell**MyMusic.txt* for your reference. The *MyMusic.txt* file is with the following information:
   Song title --- Song length --- Singer name

There is also a toolbar for you to execute some basic function, like play, stop, pause, previous/next song, song info and volume adjust. There is also a scroll bar on the top for you to forward/rewind.



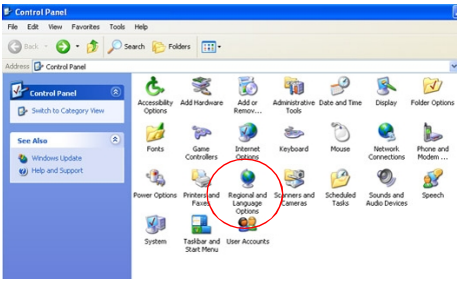
Right-click on the MP3 file and choose **"Info"**, a **MP3 Info** dialogue will pop up to show the information of the file, including the title, artist, album, release year and others. You may also add your own comment in the **comment** field. Then click **"Save"** to save the change, click **"Cancel"** to discard the change, or click **"Remove"** to remove all this information.

Non-Unicode programs supported

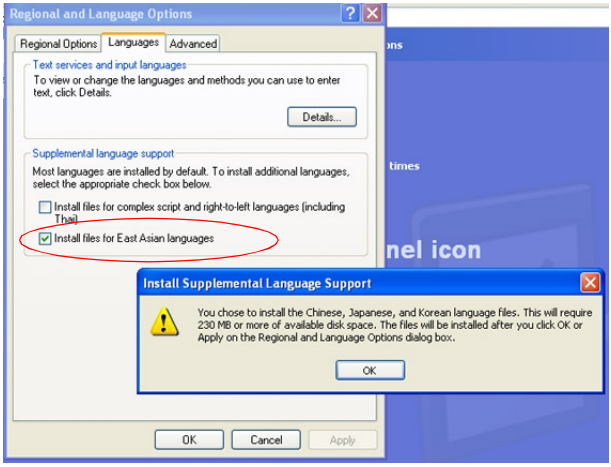
If you are using an operating system in European languages, and you'd like to play the media files in MEGA STICK with East-Asian languages (such as Chinese, Japanese... etc.), it is possible that the file names display incorrectly.

However, you can install the ***Supplemental Language Support*** provided by Microsoft to solve this problem. You need to have your Microsoft Setup CD prepared in the CD-ROM. The system will start to install the necessary components after the settings are configured here. Follow the steps described below.

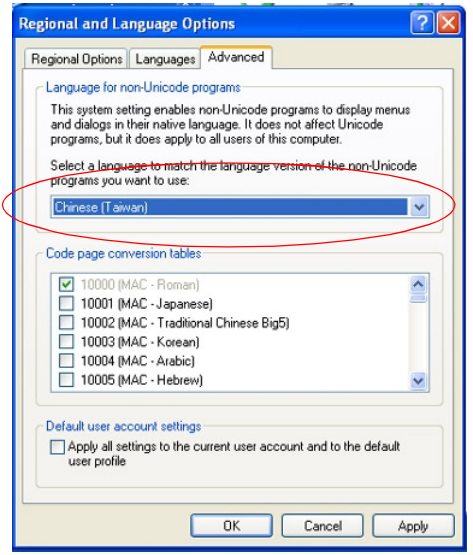
1. Go to [Control Panel] and choose [Regional and Languages Options].



2. Go to the [Languages] tab and enable the check box of [Install files for East Asian languages]. A dialogue box will pop up to remind you the above selection is chosen.



3. Then go to the [Advanced] tab and select ***the language you want to be supported*** (the language of the filename in the MegaStick) from the drop-down list in the [Language for non-Unicode programs], then click [Apply]. The system will install the necessary components from your Microsoft Setup CD immediately.



Core Center (for Pentium 4 CPU)

Click on the **Core Center** icon in the main menu and the **Core Center** program will be enabled.

CoreCenter is just like your PC doctor that can detect, view and adjust the PC hardware and system status during real time operation.
In the left side it shows the current system status including the Vcore, 3.3V, +5V and 12V. In the right side it shows the current PC hardware status such as the CPU & system temperatures and all fans speeds.

When you click the red triangles in the left and right sides, two sub-menus will open for users to adjust the thresholds of system to send out the warning messages.

Left-wing: Current system status

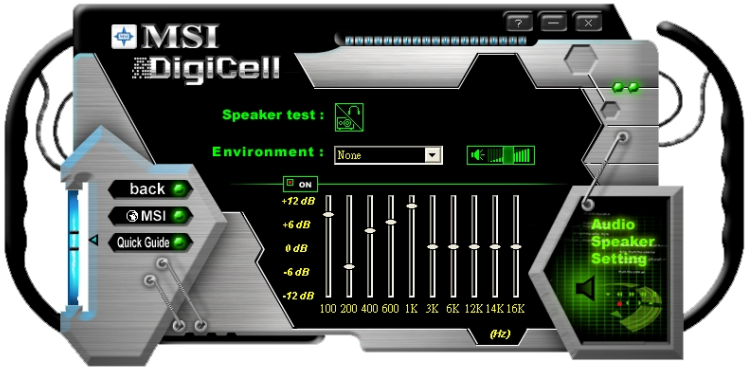
In the left sub-menu, you can configure the settings of FSB, Vcore, Memory Voltage and AGP Voltage by clicking the radio button next to each item and make it available (the radio button will be lighted as yellow when selected), use the "**+**" and "**-**" buttons to adjust, then click **"OK"** to apply the changes. Then you can click **"Save"** to save the values you just configured.
Also you may click **"Auto"** to start testing the maximum CPU overclocking value. The CPU FSB will automatically increase the testing value until the PC reboots. Or you may click **"Default"** to restore the default values.

Right-wing: PC hardware status during real time operation

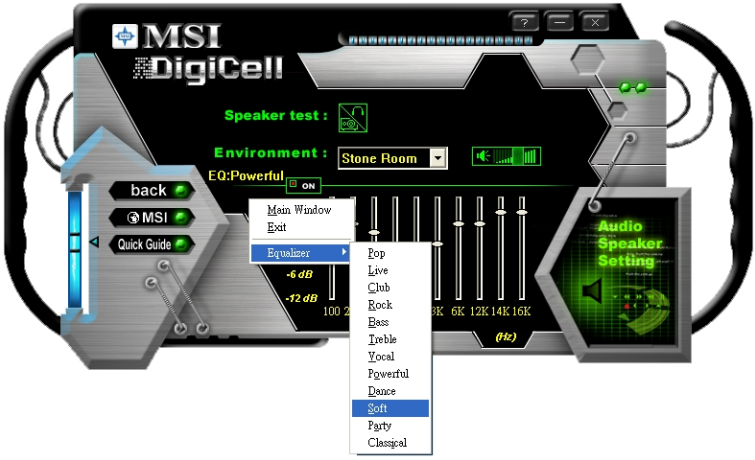
In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click **"OK"** to apply the changes. The values you set for the temperatures are the maximum thresholds for the system for warnings, and the value for fan speeds are the minimum thresholds.

Audio Speaker Setting

In the **Audio Speaker Setting** sub-menu, you can configure the multi-channel audio operation, perform speaker test, and choose the environment you prefer while enjoying the music.



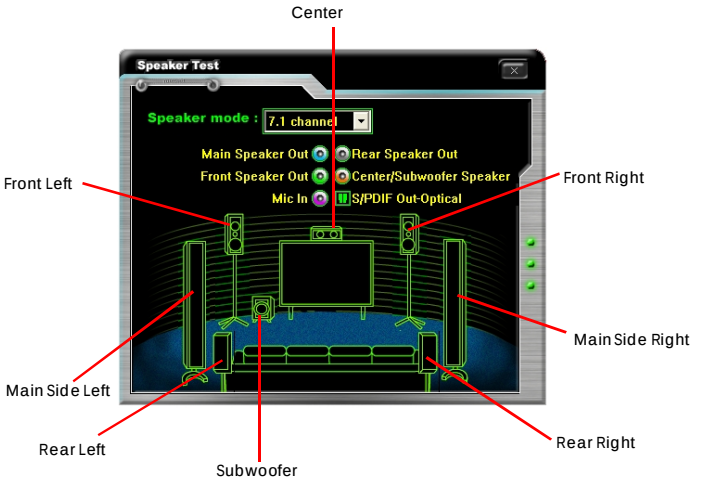
You can scroll the bar of each equalizer to regulate the current playing digital sound source. Also you may click on the **"on"** button to enable/disable the equalizer function. Once the equalizer function is enabled, you can choose several preset equalizers for your preference. You may also right-click anywhere to execute this function. After you have chosen one equalizer, it will be indicated next to the "**on**" button in yellow.



The **Environment** setting lets you select the environment you like, such as ***Cave*** or ***Convert Hall***.

Click on the **"Speaker test"** button and the following dialogue box will appear:

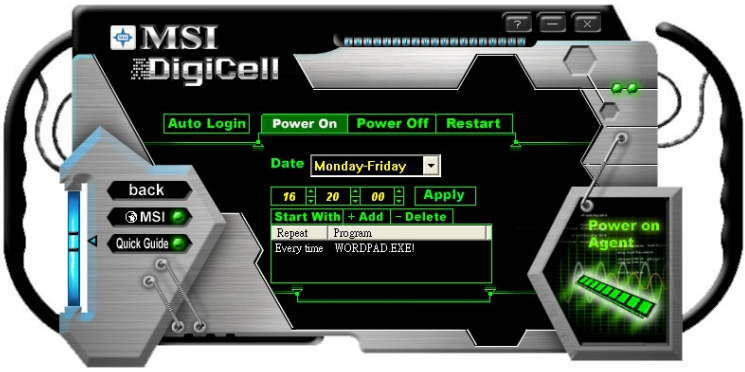
In this **Speaker Configuration** dialogue box, select the audio configuration which is identical to the audio jack on your mainboard. Once the correct audio configuration is selected, click **"Apply"** to save the changes. Then the following screen will appear. In this **Speaker Configuration** dialogue box, first select the correct item from the **Speaker mode** drop-down list, and then click on each connected speaker to ensure if Headphone, 2-, 4-, 5.1-, or 7.1- channel audio operation is working properly. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector, or replace the bad speakers with good ones.



Power on Agent

In the **Power on Agent** sub-menu, you can configure setting of power-on, power-off and restarting status.

In the screen below, you can set the date, time, start-up programs respectively for power-on, power-off and restarting.

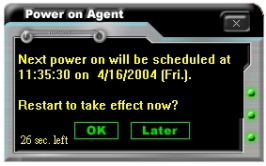


Power On

Here are the available settings for **Power On** function:

Date Use the drop-down list to select the date for power-on.

Time Use the arrow keys to select the hour/minute/second for power-on, power-off and restarting. Then click **"Apply"** to save the changes. As you click **"Apply"**, the following dialogue will appear to show you the next power-on schedule, and the system will start to count down to restart. Click **"OK"** to restart the computer right away or click **"Later"** to restart your computer later.



MSI Reminds You...

Please note that the new setting will not take effect until you restart your computer.

Power Off / Restart

You may configure the time (in the format hh:mm:ss) for the next power-off / restart.

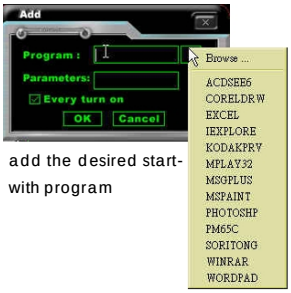
Start With

Use the button **"+Add"** to add the start-up programs as DigiCell is activated next time. For example, you may like to have Outlook activated or a specified website linked when you get to the office every morning.

Step 1: Click on the **Program:** field and click **">>"** button to browse for the path of Outlook or Internet Explorer.

Step 2: Click on **"OK"** to apply the setting.

Step 3: For specified file or specified website, you may enter the file name with the complete path or the website link in the **Parameters:** field.

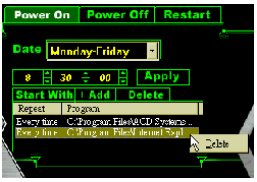


add the desired start-with program

To activate Outlook as DigiCell is enabled next time

To activate a specified website as DigiCell is enabled next time

Of course you may use the button **"-Delete"** to remove the added programs, or you can right-click on the selected program and click **Delete**.



delete the added program

MSI Reminds You...

*You can also enable the **Every turn on** function, which will enable the specified program(s) and file(s) every time the Digi Cell utility runs.*

Auto Login

Since the **Power On** function allows the system to power on automatically, you may have to enable this **Auto Login** function in the following situations:

1. If you are using a computer belonging to a domain in office, and you need to enter your user name & password everytime when you boot up your computer.
2. If there are multi users using the same computer and you'd like to power on the computer automatically with one specific user.

Enable Auto Login

Enable this setting if you want to use the **Auto Login** feature. It supports the following operating systems: Win9X, Windows ME, Windows 2000 & Windows XP.

Default User Name

It is only available for Windows 2000 & Windows XP.

-- If you are using a computer belonging to a domain in office, please enter your login user name in this field.

-- If you are using a computer with multi users (for Windows XP operating system), please enter the user name you'd like to auto power-on in this field.

Default Password

It is only available for Windows 2000 & Windows XP.

-- If you are using a computer belonging to a domain in office, please enter your login password in this field.

-- If you are using a computer with multi-users (for Windows XP operating system), please enter the password for the user name you'd like to auto power-on in this field.

Introduction to Intel ICH7R SATA RAID

The optional southbridge ICH7R provides a hybrid solution that combines four independent SATAII ports for support of up to four Serial ATAII (Serial ATAII RAID) drives.

Serial ATAII (SATAII) is the latest generation of the ATA interface. SATA hard drives deliver blistering transfer speeds up to 300MB/sec. Serial ATA uses long, thin cables, making it easier to connect your drive and improving the airflow inside your PC. The most outstanding features are:

1. Supports 300MB/s transfers with CRC error checking.
2. Supports Hot-plug-n-play feature.
3. Data handling optimizations including tagged command queuing, elevator seek and packet chain command.

Intel® ICH7R offers RAID level 0 (Striping), RAID level 1 (Mirroring and Duplexing), RAID level 5 (Block Interleaved Distributed Parity), RAID level 10 (A Stripe of Mirrors) and Intel® Martix Storage Technology.

RAID 0 breaks the data into blocks which are written to separate hard drives. Spreading the hard drive I/O load across independent channels greatly improves I/O performance. RAID 1 provides data redundancy by mirroring data between the hard drives and provides enhanced read performance. RAID 5 Provides data striping at the byte level and also stripe error correction information. This results in excellent performance and good fault tolerance. Level 5 is one of the most popular implementations of RAID. RAID 10 Not one of the original RAID levels, multiple RAID 1 mirrors are created, and a RAID 0 stripe is created over these. Intel Matrix RAID Technology is the advanced ability for two RAID volumes to share the combined space of two hard drives being used in unison.

MSI Reminds You...

The maximum number of hard drives for RAID 0, RAID 1 or Matrix mode is 2. The maximum number of hard drives for RAID 10 mode is 4. And the maximum number of hard drives for RAID 5 mode is 3.

All the information/volumes listed in your system might differ from the illustrations in this appendix.

BIOS Configuration

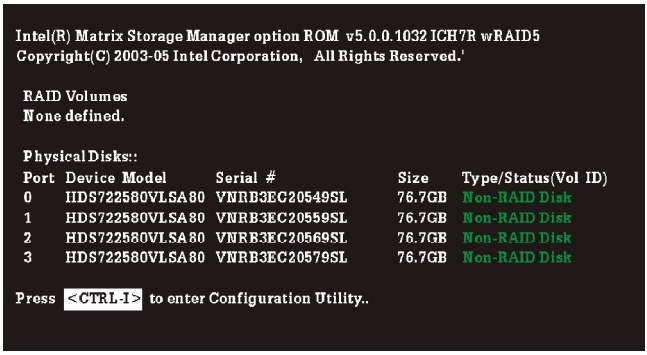
The Intel Matrix Storage Manager Option ROM should be integrated with the system BIOS on all motherboards with a supported Intel chipset. The Intel Matrix Stroage Manager Option ROM is the Intel RAID implementation and provides BIOS and DOS disk services. Please use <Ctrl> + <I> keys to enter the "Intel(R) RAID for Serial ATA" status screen, which should appear early in system boot-up, during the POST (Power-On Self Test). Also, you need to enable the RAID function in BIOS (please to P.3-14 items ***SATA Mode <RAID>*** for details) to create, delete and reset RAID volumes.

Using the Intel Matrix Stroage Manager Option ROM

1. Creating, Deleting and Resetting RAID Volumes:

The Serial ATA RAID volume may be configured using the RAID Configuration utility stored within the Intel RAID Option ROM. During the Power-On Self Test (POST), the following message will appear for a few seconds:

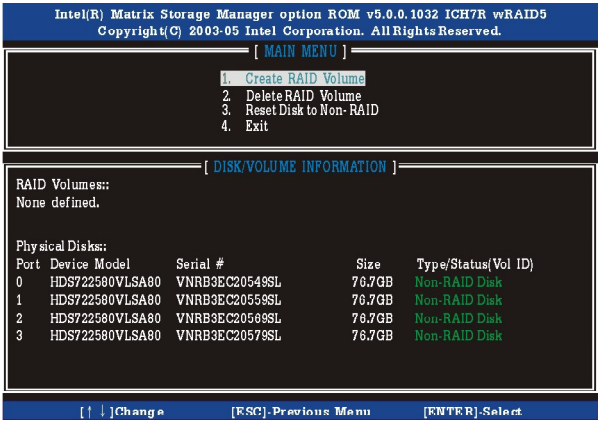
MSI Reminds You...
The "Driver Model", "Serial #" and "Size" in the following example might be different from your system.



After the above message shows, press <Ctrl> and <I> keys simultaneously to enter the RAID Configuration Utility.

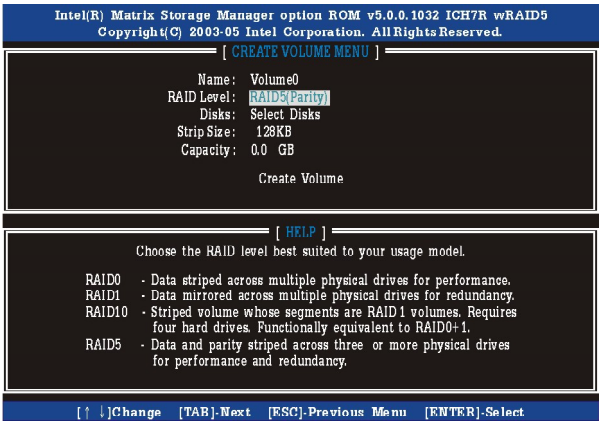
MSI Reminds You...
The following procedure is only available with a newly-built system or if you are reinstalling your OS. It should not be used to migrate an existing system to RAID.

After pressing the <Ctrl> and <I> keys simultaneously, the following window will appear:

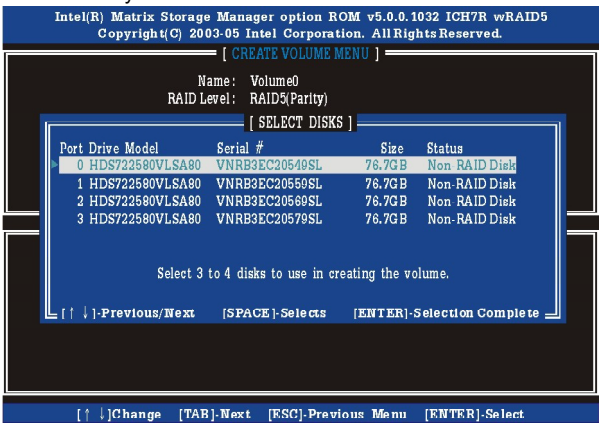


(1) Create RAID Volume

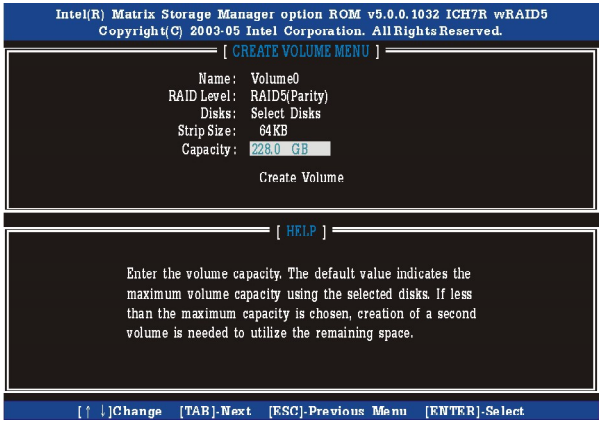
1. Select option 1 “Create RAID Volume” and press <Enter> key. The following screen appears. Then in the **Name** field, specify a RAID Volume name and then press the <TAB> or <Enter> key to go to the next field.
2. Use the arrow keys to select the RAID level best suited to your usage model in **RAID Level**.



3. In the **Disk** field, press <Enter> key and the following screen appears. Use <Space> key to select the disks you want to create for the RAID volume, then click <Enter> key to finish selection.



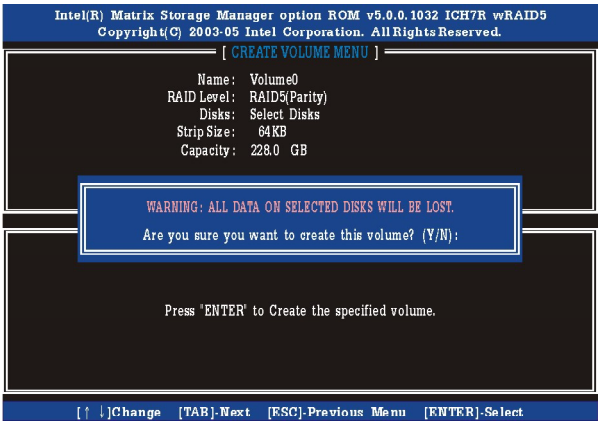
4. Then select the strip value for the RAID array by using the “upper arrow” or “down arrow” keys to scroll through the available values, and pressing the <Enter> key to select and advance to the next field. The available values range from 4KB to 128 KB in power of 2 increments. The strip value should be chosen based on the planned drive usage. Here are some typical values:
   RAID0 – 128KB
   RAID10 – 128KB
   RAID5 – 64KB
5. Then select the capacity of the volume in the **Capacity** field. The default value is the maximum volume capacity of the selected disks.



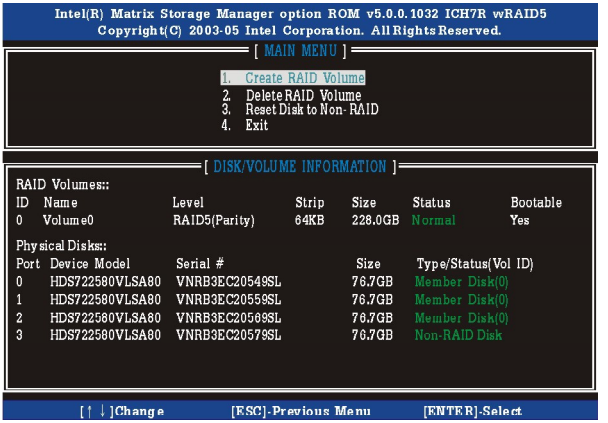
MSI Reminds You...

Since you want to create two volumes (Intel Matrix RAID Technology), this default size (maximum) needs to be reduced. Type in a new size for the first volume. As an example: if you want the first volume to span the first half of the two disks, re-type the size to be half of what is shown by default. The second volume, when created, will automatically span the remainder of two hard drives.

6. Then the following screen appears for you to confirm if you are sure to create the RAID volume. Press <Y> to continue.



7. Then the following screen appears to indicate that the creation is finished.



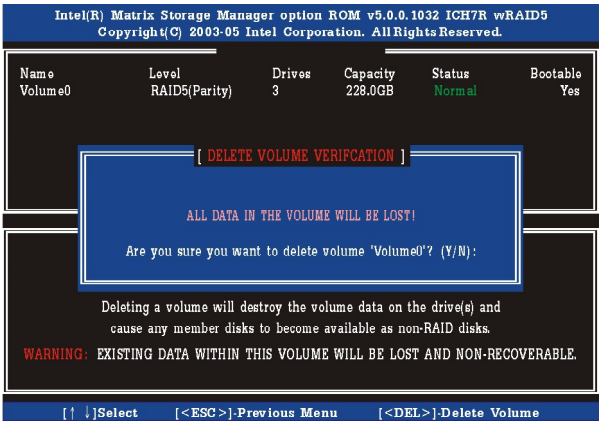
(2) Delete RAID Volume

Here you can delete the RAID volume, but please be noted that all data on RAID drives will be lost.

MSI Reminds You...

If your system currently boots to RAID and you delete the RAID volume in the Intel RAID Option ROM, your system will become unbootable.

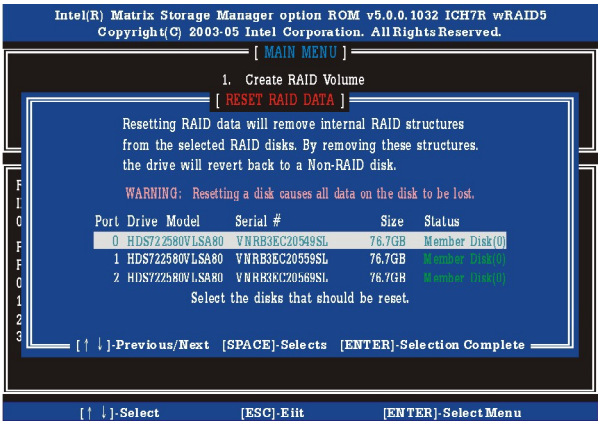
Select option 2 **Delete RAID Volume** from the main menu window and press <Enter> key to select a RAID volume for deletion. Then press <Delete> key to delete the selected RAID volume. The following screen appears.



Press <Y> key to accept the volume deletion.

(3) Reset Disks to Non-RAID

Select option 3 **Reset Disks to Non-RAID** and press <Enter> to delete the RAID volume and remove any RAID structures from the drives. The following screen appears:



Press <Y> key to accept the selection.

MSI Reminds You...

1. *You will lose all data on the RAID drives and any internal RAID structures when you perform this operation.*
2. *Possible reasons to 'Reset Disks to Non-RAID' could include issues such as incompatible RAID configurations or a failed volume or failed disk.*

Installing Software

Install Driver in Windows XP / 2000

† **New Windows XP / 2000 Installation**

The following details the installation of the drivers while installing Windows XP / 2000.

1. Start the installation:
   Boot from the CD-ROM. Press F6 when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows XP Setup window is generated, press S to specify an Additional Device(s).
3. Insert the driver diskette ***Intel IAA RAID XP Driver For ICH7R (NH82801GR)*** into drive A: and press <Enter>.
4. Choose the driver ***Intel(R) 82801GR SATA RAID Controller*** from the drop-down list that appears on Windows XP Setup screen, and press the <Enter> key.
5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.
6. From the Windows XP/2000 Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP/2000 installation.

† **Existing Windows XP/2000 Driver Installation**

1. Insert the MSI CD into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the Driver tab, click on ***Intel IAA RAID Edition***.
4. The drivers will be automatically installed.

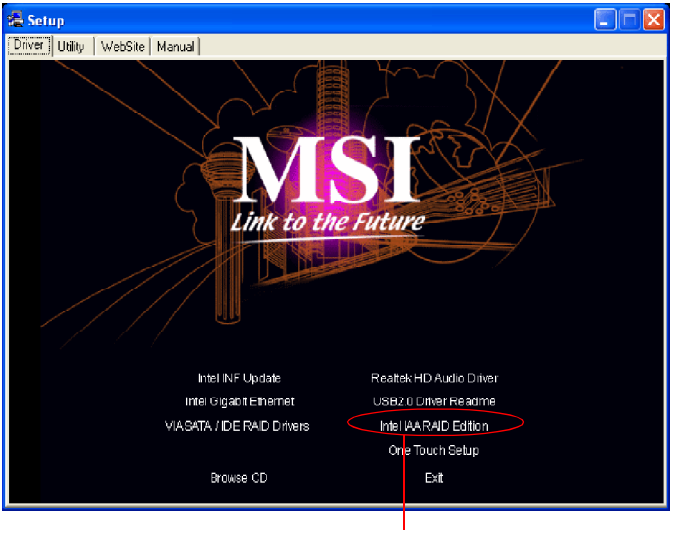
† **Confirming Windows XP/2000 Driver Installation**

1. From Windows XP/2000, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "**+**" in front of the **SCSI and RAID Controllers** hardware type. The driver ***Intel(R) NH82801GR SATAII RAID Controller*** should appear.

Installation of Intel Matrix Stroage Console

The Intel Application Accelerator RAID Edition driver may be used to operate the hard drive from which the system is booting or a hard drive that contains important data. For this reason, you cannot remove or un-install this driver from the system after installation; however, you will have the ability to un-install all other non-driver components.

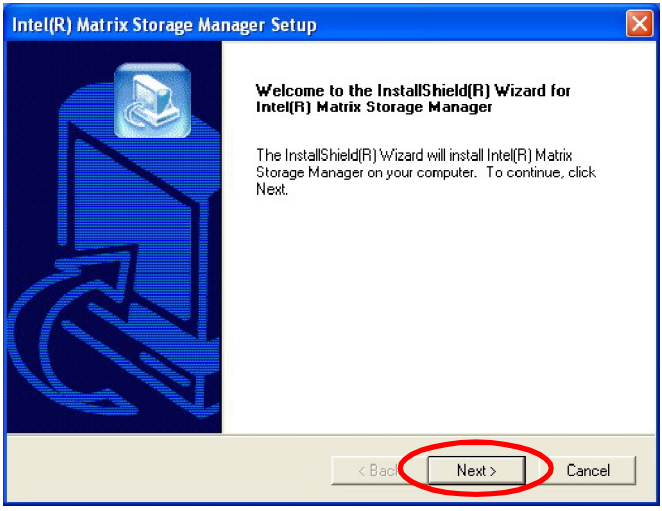
Insert the MSI CD and click on the **Intel IAA RAID Edition** to install the software.



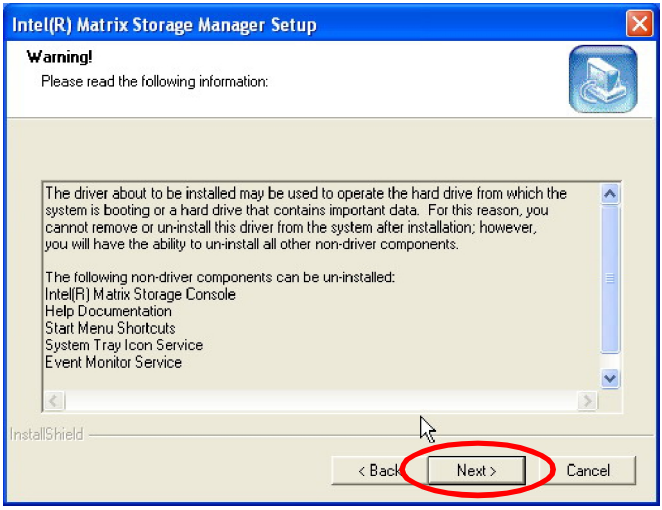
Click on this item

The **InstallShield Wizard** will begin automatically for installation showed as following:

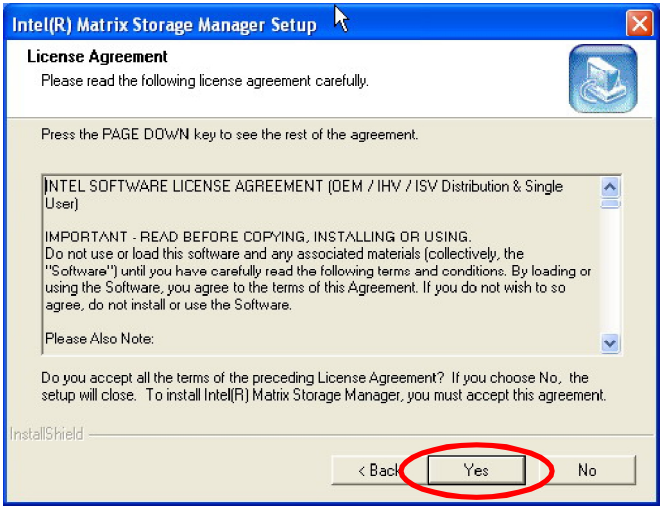
Click on the **Next** button to proceed the installation in the welcoming window.



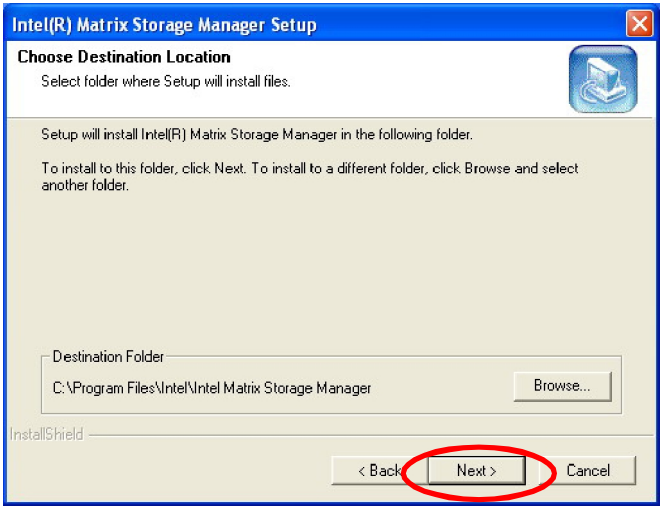
The window shows the components to be installed. Click **Next** button to continue.



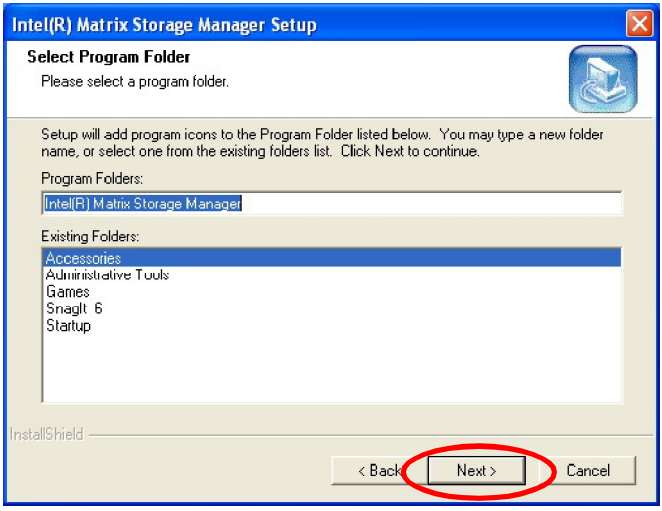
After reading the license agreement in the following window, click **Yes** button to continue.



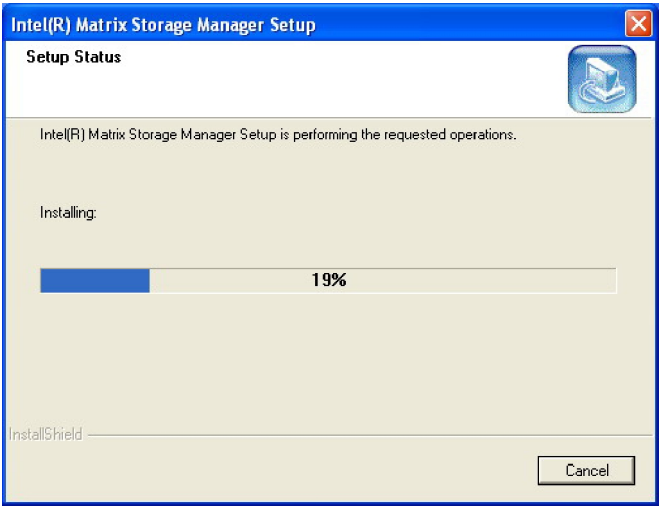
Select the folder in which you want the program to be installed in the following window, and click **Next** button to start installation.



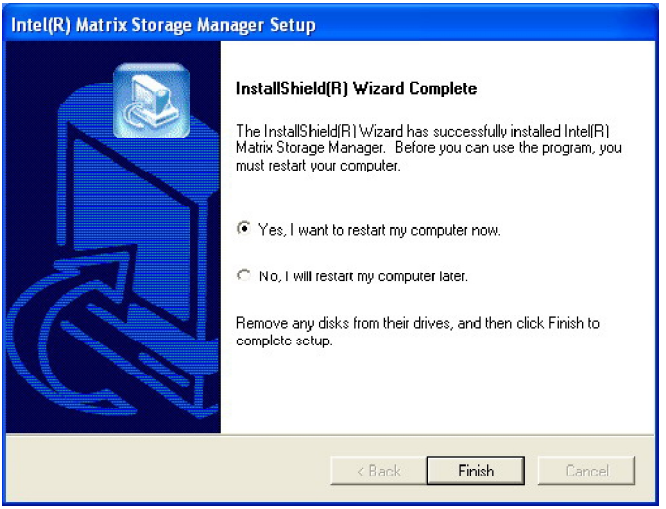
Select a program folder in the following window where you want Setup to add the program icon.



The following window appears to show the Intel Application Accelerator RAID Edition Setup installation status.



Once the installation is complete, the following window appears.



RAID Migration Instructions

The Intel Matrix Storage Console offers the flexibility to upgrade from a single Serial ATA (SATA) hard drive to RAID configuration when an additional SATA hard drive is added to the system. This process will create a new RAID volume from an existing disk. However, several important steps must be followed at the time the system is first configured in order to take advantage of RAID when upgrading to a second SATA hard drive:

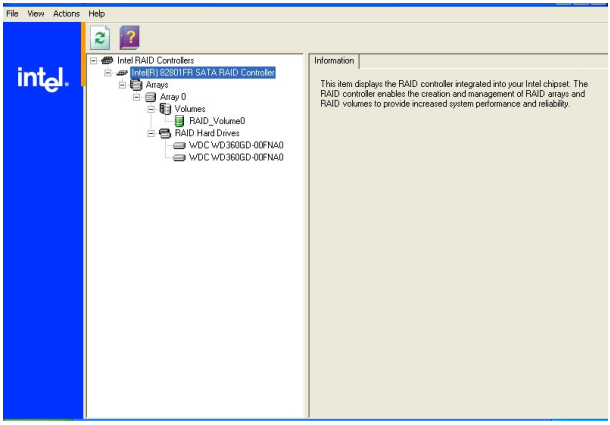
1. BIOS must be configured for RAID before installing Windows XP on the single SATA hard drive. Refer to **On Chip SATA Setting** for properly setting of the BIOS.
2. Install the Intel Application Accelerator RAID Driver during Windows Setup. Refer to **Installing Software** for instructions on installing the driver during Windows Setup.
3. Install the Intel Matrix Storage Console after the operating system is installed.

To create a volume from an existing disk, complete the following steps:

MSI Reminds You...

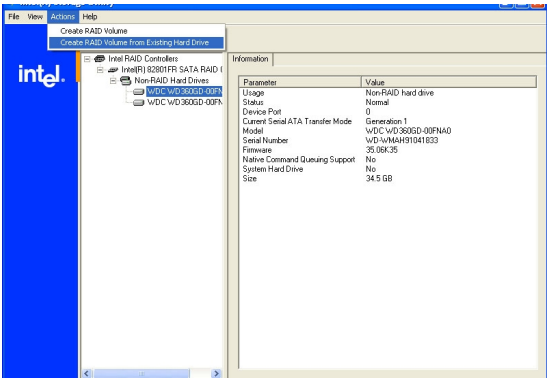
*A **Create from Existing Disk** operation will delete all existing data from the added disk and the data cannot be recovered. It is critical to backup all important data on the added disk before proceeding. However, during the migration process, the data on the source disk is preserved.*

After the Intel Matrix Storage Console has been successfully installed and the system has rebooted, click on the Intel Application Accelerator shortcut link (**Start --> All Programs --> Intel Matrix Storage Manager --> Intel Matrix Storage Console**) and the following window will appear:

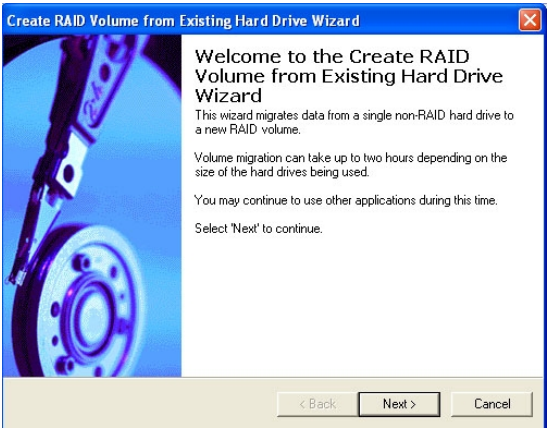


Create RAID Volume from Existing Disk

To create a RAID volume from an existing disk, choose **Action --> Create RAID Volume from Existing Hard Drive**.

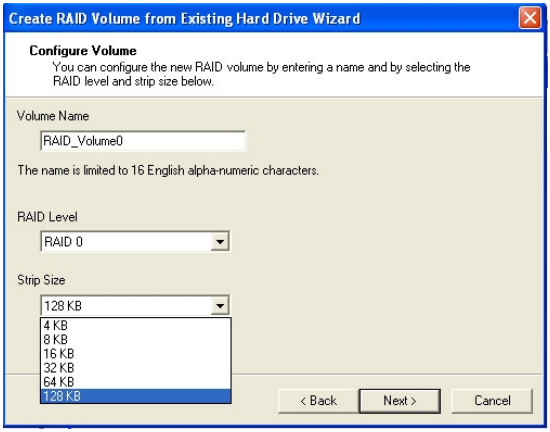


The **Create RAID Volume from Existing Hard Drive Wizard** pops up to lead you for the following procedure. Click **Next** to continue.



(1) Step 1: Configure Volume

Here you can configure the new RAID volume by entering the volume name, selecting the RAID level and strip size.



† **RAID Volume Name:**

A desired RAID volume name needs to be typed in where the 'RAID_Volume1' text currently appears above. The RAID volume name has a maximum limit of 16 characters. The RAID volume name must also be in English alphanumeric ASCII characters.

† **RAID Level:**

Select the desired RAID level:

RAID 0 (Performance) – A volume optimized for performance will allow you to access your data more quickly.

RAID 1 (Redundancy) – A volume optimized for data redundancy will provide you with a realtime duplicate copy of your data. Note: Only half of the available volume space will be available for data storage.

RAID 5 (Useful) – RAID 5 can be used on three or more disks, with zero or more spare-disks. The resulting RAID-5 device size will be (N-1)*S, where N is the how many drive, S is the size of the smallest drive in the array. If one of the disks fail, all data are still intact. It can rebuild the disk from the parity information. If spare disks are available, reconstruction will begin immediately after the device failure. If two disks fail simultaneously, all data are lost. RAID-5 can survive one disk failure, but not two or more. Both read and write performance usually increase, but can be hard to predict how much. Reads are similar to RAID-0 reads, writes can be either rather

expensive (requiring read-in prior to write, in order to be able to calculate the correct parity information), or similar to RAID-1 writes. The write efficiency depends heavily on the amount of memory in the machine, and the usage pattern of the array. Heavily scattered writes are bound to be more expensive.

RAID 10 (Mirrored Stripes) – A RAID 1 array of two RAID 0 arrays.

† **Strip Sizes:**

Select the desired strip size setting. As indicated, the optimal setting is 128KB. Selecting any other option may result in performance degradation. Even though 128KB is the recommended setting for most users, you should choose the strip size value which is best suited to your specific RAID usage model. The most typical strip size settings are:

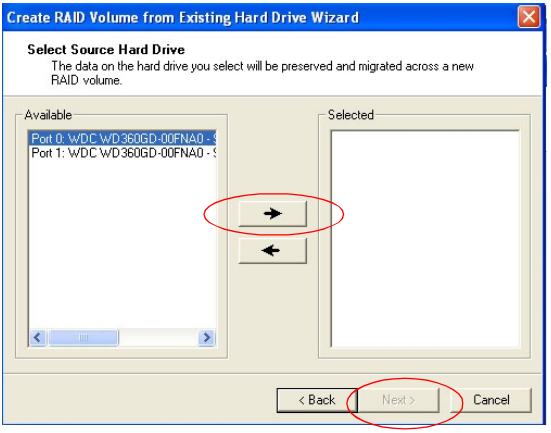
4KB: For specialized usage models requiring 4KB strips
8KB: For specialized usage models requiring 8KB strips
16KB: Best for sequential transfers
32KB: Good for sequential transfers
64KB: Good general purpose strip size
128KB: Best performance for most desktops and workstations

(2) Select the source disk

Then select the source disk that you wish to use and then click **"--->"** to move it to the **Selected** field. Then click **Next** to continue.

It is very important to note which disk is the source disk (the one containing all of the information to be migrated) and which one is the target disk. On a RAID Ready system, this can be determined by making a note during POST of which port (e.g. Port 0 or Port 1) the single disk is attached to.

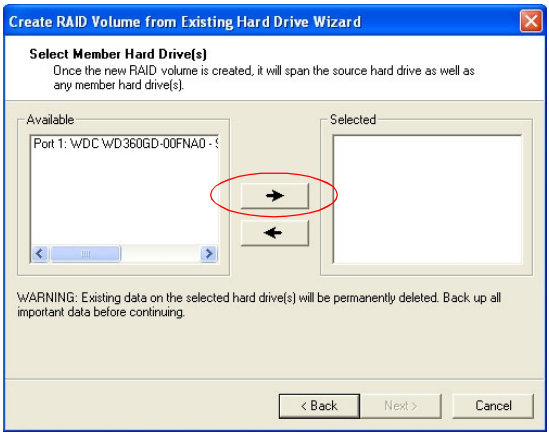
You can also use the Intel Application Accelerator RAID Edition utility before the second disk is installed to verify the Port and serial number of the drive that contains all the data.

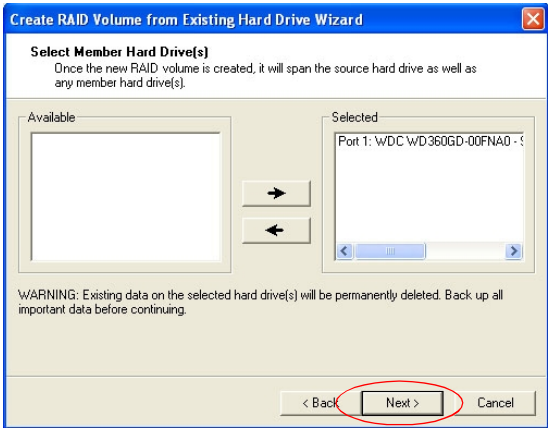


(3) Select Member Hard Drive(s)

Then select the member disk (the target disk) that you wish to use and then click **"--->"** to move it to the **Selected** field. Then click **Next** to continue.

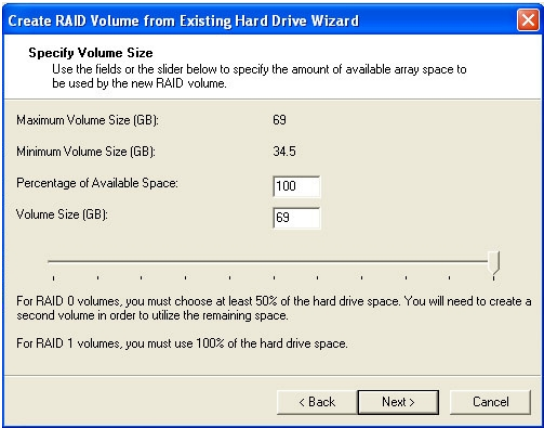
Please note that the existing data on the selected hard drive(s) will be deleted permanently. Do not forget to back up all the important data before continuing.





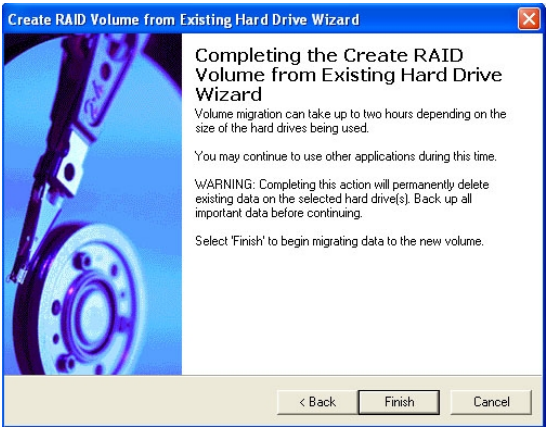
(4) Specify Volume Size

Specify the amount of available array space to be used by the new RAID volume. You may enter the amount in the space or use the slider to specify. It is recommended you use 100% of the available space for the optimized usage. For RAID 0 volume, if you do not specify 100% of the hard drive space, the rest hard drive space will be worked as RAID 1 volume, which is the new technology called Intel Matrix RAID. Then click **Next** to continue.



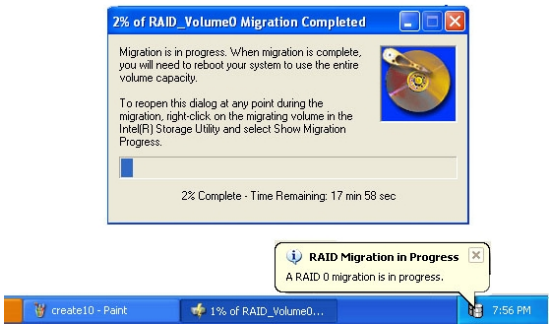
(5) Start Creating RAID Volume from Existing Hard Drive Wizard

Before you continue the procedure of RAID volume creation from existing hard drive, read the dialogue box below carefully. Please note that once you click **Finish**, the existing data on the selected hard drive(s) will be deleted permanently and this operation cannot be undone. It is critical that you backup all important data before selecting **Finish** to start the migration process.



(6) Start Migration

The migration process may take up to two hours to complete depending on the size of the disks being used and the strip size selected. A dialogue window will appear stating that the migration process may take considerable time to complete, meanwhile a popup dialogue at the taskbar will also show the migration status. While you can still continue using your computer during the migration process, once the migration process starts, it cannot be stopped. If the migration process gets interrupted and your system is rebooted for any reason, it will pick up the migration process where it left off. You will be provided with an estimated completion time (the remaining time will depend on your system) once the migration process starts.



The following screen appears if the migration process is completed successfully. Then you have to reboot your system to use the full capacity of the new volume.

Introduction to VIA VT6410 IDE RAID

The VIA IDE RAID solution uses the VT6410 chip (a two-channel ATA 133 solution) as a RAID controller. The RAID software is a Windows-based software utility. Its graphical user interface provides an easy way to configure and manage disk drives or disk arrays connected to the VT6410 controller. Listed below are the main features and benefits of VIA IDE RAID:

1. Supports ATA 133 high performance hard disk drive.
2. Supports hard disk drive larger than 137 GB (48-bits LBA).
3. Dual independent ATA channels and maximum connection of four hard disk drives allowed.
4. Supports Ultra DMA mode 6/5/4/3/2/1/0, DMA mode 2/1/0, and PIO mode 4/3/2/1/0.
5. Supports PCI Plug and Play. PCI interrupt sharing and coexists with mainboard IDE controller.
6. Supports IDE bus master operation.
7. Supports RAID 0, 1, 0+1, and JBOD.
8. 4 KB to 64 KB striping block size support.
9. Bootable disk or disk array support.
10. Windows-based RAID configuration and management software tool. (Compatible with BIOS)
11. Real-time monitoring of device status and error alarm with popup message box and beeping.
12. Supports hot-swap failed disk drive in RAID 1 and 0+1 array.
13. Mirroring automatic background rebuilds support.
14. ATA SMART function support.
15. Event log for easy troubleshooting.
16. On-line help for easy operation for RAID software.

Introduction

This section gives a brief introduction on the RAID-related background knowledge and a brief introduction on VIA IDE RAID Host Controller. For users wishing to install their VIA IDE RAID driver and RAID software, proceed to **Installing Software** section.

RAID Basics

RAID (Redundant Array of Independent Disks) is a method of combining two or more hard disk drives into one logical unit. The advantage of an Array is to provide better performance or data fault tolerance. Fault tolerance is achieved through data redundant operation, where if one drives fails, a mirrored copy of the data can be found on another drive. This can prevent data loss if the operating system fails or hangs. The individual disk drives in an array are called “members”. The configuration information of each member is recorded in the “reserved sector” that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the operating system.

Hard disk drives can be combined together through a few different methods. The different methods are referred to as different RAID levels. Different RAID levels represent different performance levels, security levels and implementation costs. The RAID levels which the VIA VT6410 SATA RAID Host Controller supports are RAID 0, RAID 1, RAID 0+1 & JBOD. The table below briefly introduce these RAID levels.

RAID Level	No. of Drives	Capacity	Benefits
RAID 0 (Striping)	2	Number drives * Smallest size	Highest performance without data protection
RAID 1 (Mirroring)	2	Smallest size	Data protection
RAID 0+1 (Striping/Mirroring)	4	2* smallest size	Highest performance with data protection
JBOD (Spanning)	2	Sum of all drives	No data protection and performance improvement, but disk capacity is fully used.

RAID 0 (Striping)

RAID 0 reads and writes sectors of data interleaved between multiple drives. If any disk member fails, it affects the entire array. The disk array data capacity is equal to the number of drive members times the capacity of the smallest member. The striping block size can be set from 4KB to 64KB. RAID 0 does not support fault tolerance.

RAID 1 (Mirroring)

RAID 1 writes duplicate data onto a pair of drives and reads both sets of data in parallel. If one of the mirrored drives suffers a mechanical failure or does not respond, the remaining drive will continue to function. Due to redundancy, the drive capacity of the array is the capacity of the smallest drive. Under a RAID 1 setup, an extra drive called the “spare drive”. can be attached. Such a drive will be activated to replace a failed drive that is part of a mirrored array. Due to the fault tolerance, if any RAID 1 drive fails, data access will not be affected as long as there are other working drives in the array.

RAID 0+1 (Striping/Mirroring)

RAID 0+1 is a combination of RAID 0 and RAID 1 array types. A minimum of four drives needs to be installed. With a four-drive array, there must be two pairs of RAID 0 drives. Each pair mirrors the data on the other pair of striping drives. The data capacity is two times the smallest drive. In a four-drive array, a single drive failure will cause the whole array to become, in essence, a RAID Level 0 array. However, this does not impact the data access. Another unique feature of RAID 0+1 is dual fault tolerance. In some cases, two drives can fail simultaneously and still maintain the integrity of the data. The data can still be accessed and worked like a RAID 0 array. Assume the drives are configured as follows (M = Master, S = Slave, A/B indicates which striping pair the drive belongs to, number indicates which part of stripe data):

	IDE 2	**IDE 3**
M	Drive A1	Drive A2
S	Drive B1	Drive B2

In a RAID 0+1 array, the data integrity will remain if any 1, 2 combination survives. The following table indicates the possible combination of dual drive failure and the respective results of each case.

Failed Drives	**Array Status**	**Note**
A1, A2	Working	B1, B2 retains array integrity
B1, B2	Working	A1, A2 retains array integrity
A1, B2	Working	B1, A2 retains array integrity
B1, A2	Working	A1, B2 retains array integrity
A1, B1	Failure	A2, B2 contains only half of array data
A2, B2	Failure	A1, B1 contains only half of array data

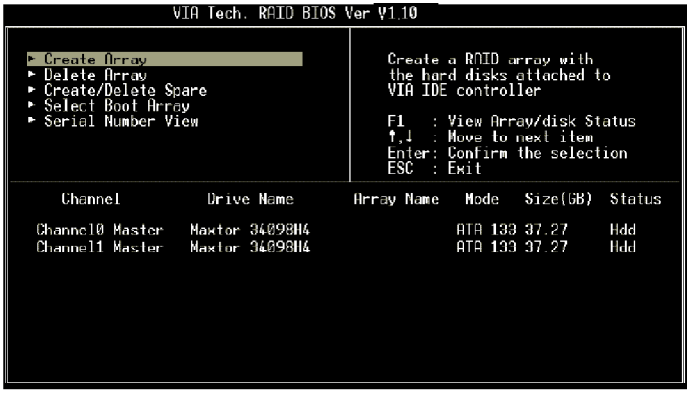
JBOD (Spanning)

A spanning disk array is equal to the sum of the all drives when the drives used are having different capacities. Spanning stores data onto a drive until it is full, then proceeds to store files onto the next drive in the array. When any disk member fails, the failure affects the entire array. JBOD is not really a RAID and does not support fault tolerance.

BIOS Configuration

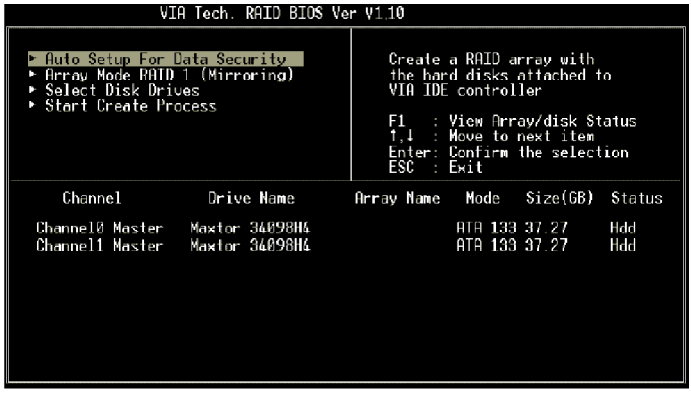
When the system powers on during the POST (Power-On Self Test) process, press <Tab> key to enter the BIOS configuration.

The VIA IDE RAID volume may be configured using the VIA Tech. RAID BIOS. Always use the arrow keys to navigate the main menu, use up and down arrow key to select each item and press <Enter> to call out the list of creation steps. The main interface of BIOS configuration utility is as below:



Create Disk Array

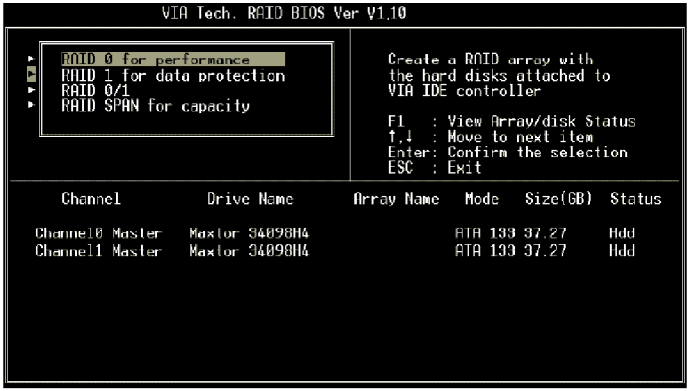
Use the up and down arrow keys to select the **Create Array** command and press <Enter>.



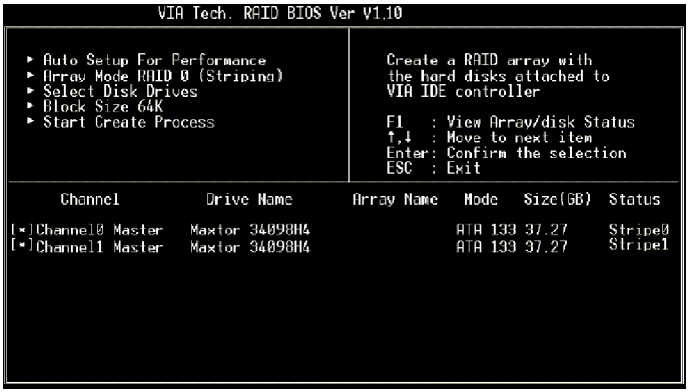
MSI Reminds You...

The "Channel", "Drive Name", "Mode" and "Size (GB)" in the following example might be different from your system.

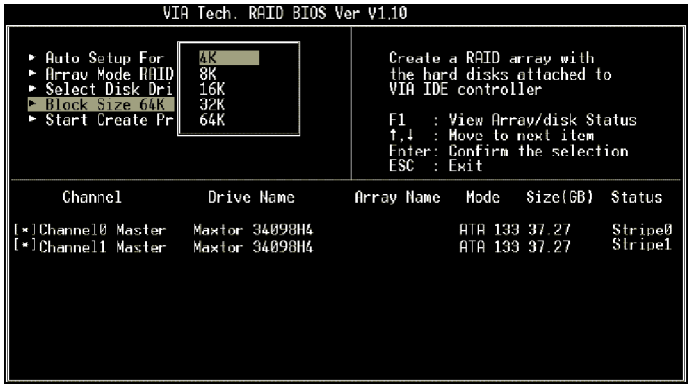
Select **Array Mode** and press <Enter>, a list of array modes will appear. Highlight the target array mode that you want to create, and press <Enter> to confirm the selection. If RAID 1 or RAID 0/1 is selected, an option list will popup and enable the users to select **Create only** or **Create and duplicate**. **Create only** will allow BIOS to only create an array. The data on the mirroring drive may be different from the source drive. **Create and duplicate** lets BIOS copy the data from the source to the mirroring drive.



After array mode is selected, there are two methods to create a disk array. One method is "**Auto Setup**" and the other one is "**Select Disk Drives**". **Auto Setup** allows BIOS to select the disk drives and create arrays automatically, but it does not duplicate the mirroring drives even if the user selected **Create and duplicate** for RAID 1. It is recommended all disk drives are new ones when wanting to create an array. **Select Disk Drives** lets the user select the array drives by their requirements. When using **Select Disk Drives**, the channel column will be activated. Highlight the target drives that you want to use and press <Enter> to select them. After all drives have been selected, press <Esc> to go back to the creation steps menu.



If user selects a RAID 0 array in step 2, the block size of the array can also be selected. Use the arrow key to highlight **Block Size** and press <Enter>, then select a block size from the popup menu. The block size can be 4KB to 64KB.



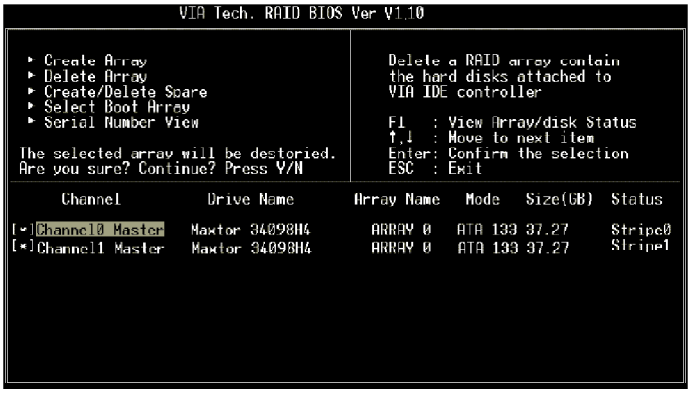
MSI Reminds You...
Even though 64KB is the recommended setting for most users, you should choose the block size value which is best suited to your specific RAID usage model.
***4KB**: For specialized usage models requiring 4KB blocks*
***8KB**: For specialized usage models requiring 8KB blocks*
***16KB**: Best for sequential transfers*
***32KB**: Good for sequential transfers*
***64KB**: Optimal setting*

Use the arrow key to highlight **Start Create Process** and press <Enter>. A warning message will appear, Press **Y** to finish the creation, or press **N** to cancel the creation. Important note: All existing content in the hard drive will be destroyed after array creation.

Delete Disk Array

A RAID can be deleted after it has been created. To delete a RAID, use the following steps:

1. Select **Delete Array** in the main menu and press <Enter>. The channel column will be activated.
2. Select the member of an array that is to be deleted and press <Enter>. A warning message will show up, press Y to delete or press N to cancel.

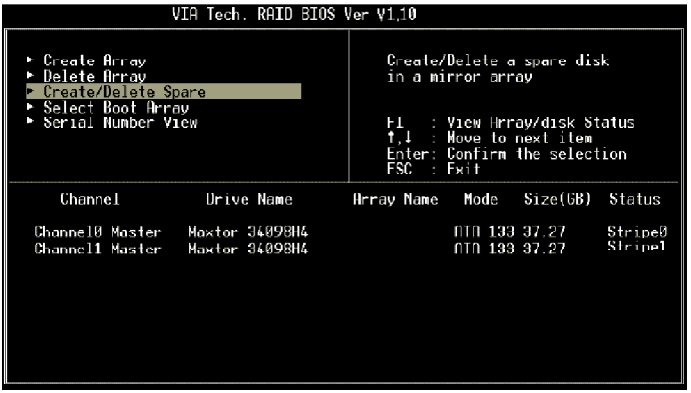


Deleting a disk array will destroy all the data on the disk array except RAID 1 arrays. When a RAID is deleted, the data on these two hard disk drives will be reserved and become two normal disk drives.

Create and Delete Spare Hard Drive

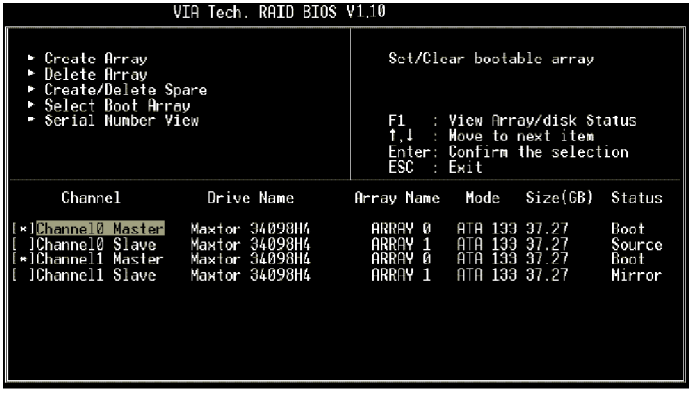
If a RAID 1 array is created and there are drives that do not belong to other arrays, the one that has a capacity which is equal to or greater than the array capacity can be selected as a spare drive for the RAID 1 array. Select **Create/ Delete Spare** and press <Enter>, the channel column will then be activated. Select the drive that you want to use as a spare drive and press <Enter>, the selected drive will be marked as **Spare**. The spare drive cannot be accessed in an OS.

To delete a spare drive, highlight **Create/Delete Spare** and press <Enter>. The spare drive will be highlighted, press <Enter> to delete the spare drive.



Select Boot Array

User can select a disk array as boot device if user wants to boot operating system from an array. Boot disk array cannot be selected if the operating system does not boot from the disk array. Highlight the **Select Boot Array** item; press <Enter> and the channel column will be activated. Then highlight the target disk array and press <Enter>. If user selects a disk array that has a boot mark and press <Enter>, its boot setting will be canceled.



View Serial Number of Hard Drive

Highlight **Serial Number View** and press <Enter>. Use arrow key to select a drive, the selected drive's serial number can be viewed in the last column. The serial number is assigned by the disk drive manufacturer.

Press the **F1** key to show the array status on the lower screen. If there are no disk arrays then nothing will be displayed on the screen.

Duplicate Critical RAID 1 Array

When booting up the system, BIOS will detect if the RAID 1 array has any inconsistencies between user data and backup data. If BIOS detects any inconsistencies, the status of the disk array will be marked as critical, and BIOS will prompt the user to duplicate the RAID 1 in order to ensure the backup data consistency with the user data.

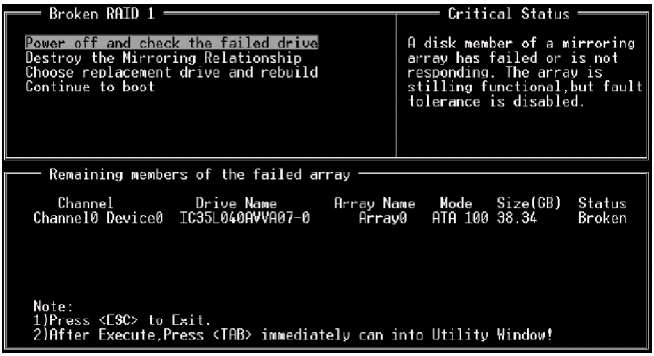
If user selects **Continue to boot,** it will enable duplicating the array after booting into OS.

Rebuild Broken RAID 1/0+1 Array

When booting up the system, BIOS will detect if any member disk drives of RAID has failed or is absent. If BIOS detects any disk drive failures or missing disk drives, the status of the array will be marked as broken.

If BIOS detects a broken RAID 1 array but there is a spare hard drive available for rebuilding the broken array, the spare hard drive will automatically become the mirroring drive. BIOS will show a main interface just like a duplicated RAID 1 main interface. **Continue to boot** will enable duplicating the array after booting into operating system.

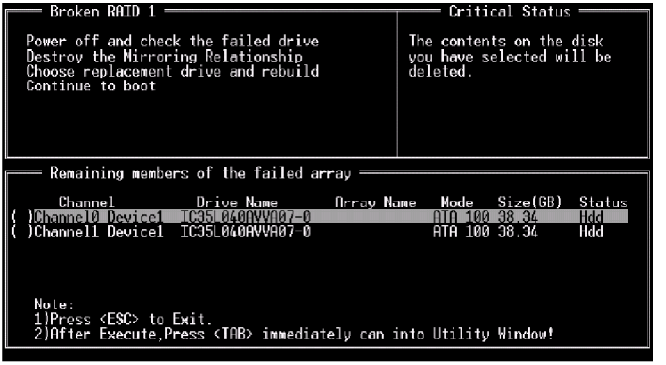
If BIOS detects a broken RAID 1 or 0+1 array but there is no spare hard drive available for rebuilding the array, BIOS will provide several operations to solve such problem.



1. **Power off and Check the Failed Drive:**
   This item turns off the computer and replaces the failed hard drive with a good one. If your computer does not support APM, you must turn off your computer manually. After replacing the hard drive, boot into BIOS and select **Choose replacement drive and rebuild** to rebuild the broken array.

2. **Destroy the Mirroring Relationship:**
   This item cancels the data mirroring relationship of the broken array. For broken RAID 1 arrays, the data on the surviving disk will remain after the destroy operation. However, **Destroy the Mirroring Relationship** is not recommended because the data on the remaining disk will be lost when the hard drive is used to create another RAID 1 array.

3. Choose Replacement Drive and Rebuild:
This item enables users to select an already-connected hard drive to rebuild the broken array. After choosing a hard drive, the channel column will be activated.



Highlight the target hard drive and press <Enter>, a warning message will appear. Press **Y** to use that hard drive to rebuild, or press **N** to cancel. Please note selecting option **Y** will destroy all the data on the selected hard drive.

4. Continue to boot:
This item enables BIOS to skip the problem and continue booting into OS.

Installing Software

Install Driver in Windows XP/2000

† **New Windows XP/2000 Installation**

The following details the installation of the drivers while installing Windows XP.

1. Start the installation:
   Boot from the CD-ROM. Press **F6** when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows Setup window is generated, press **S** to specify an Additional Device(s).
3. Insert the driver diskette ***Intel ICH7R/VIA VT6410 Disk Driver*** into drive A: and press <Enter>.
4. Depending on your operating system, choose the driver ***VIA RAID Controller (Windows XP), VIA RAID Controller (Windows 2000)*** which matches your OS.
5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.
6. From the Windows XP/2000 Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP installation

† **Existing Windows XP/2000 Driver Installation**

1. Insert the MSI CD into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the **Driver** tab, click on ***VIA IDE RAID Drivers***.
4. The drivers will be automatically installed.

† **Confirming Windows XP/2000 Driver Installation**

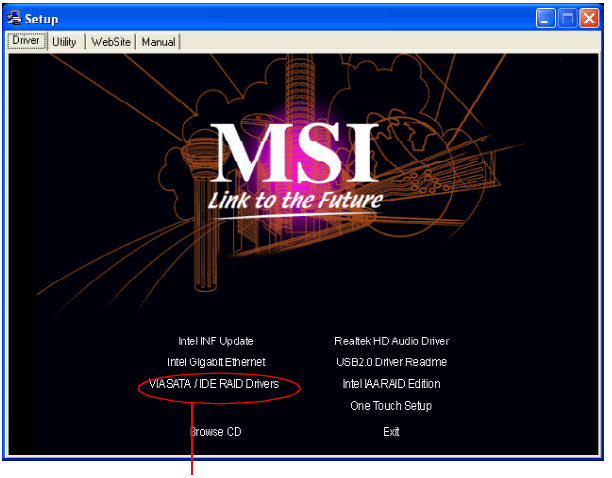
1. From Windows XP/2000, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "**+**" in front of the **SCSI and RAID Controllers** hardware type. The driver ***VIA VT6410 RAID Controller*** should appear.

Installation of VIA IDE RAID Utility

The VIA IDE RAID Utility is the software package that enables high-performance in the Windows XP/2000 operating system. This version of VIA IDE RAID Utility contains the following key features:

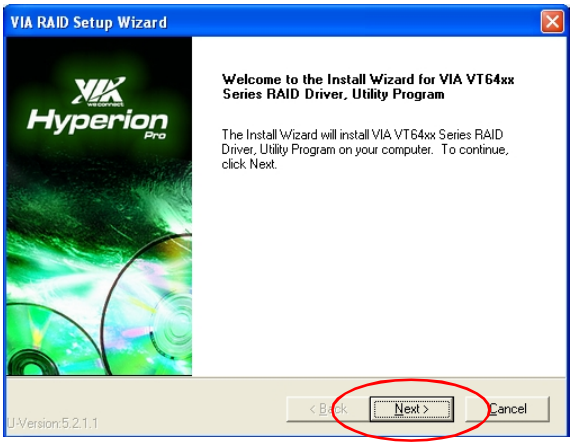
- † IDE RAID driver
- † VIA IDE RAID utility
- † RAID0, RAID1 & RAID0+1 functions

Insert the MSI CD and click on the **VIA IDE RAID Utility** to install the software.

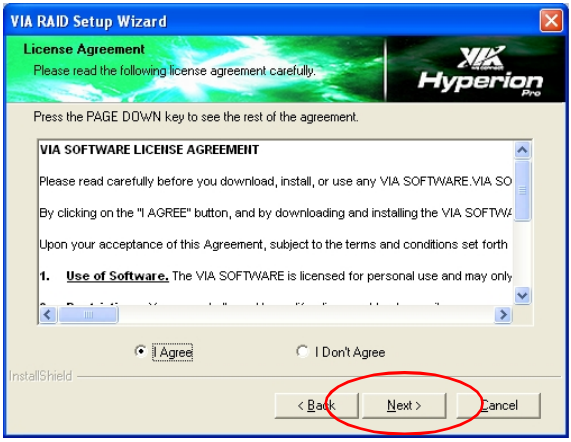


Click on this item

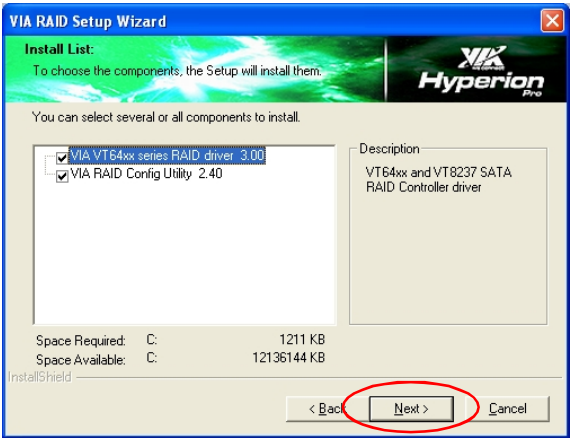
The **InstallShield Wizard** will begin automatically for installation. Click on the **Next** button to proceed the installation in the welcoming window.



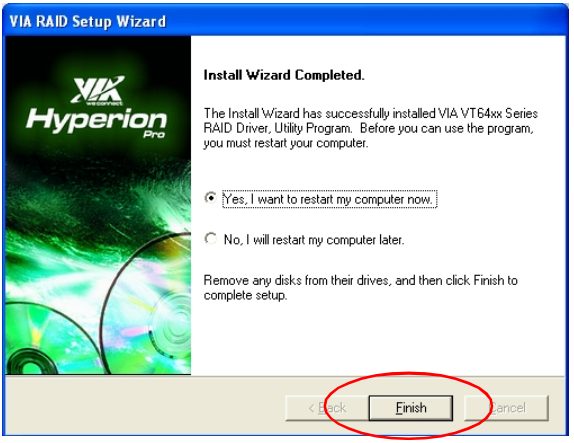
Select **I Agree** to accept the VIA Software License Agreement, and click on the **Next** button to continue.



Put a check mark in the check box to install the feature you want. Then click **Next** button to proceed the installation.

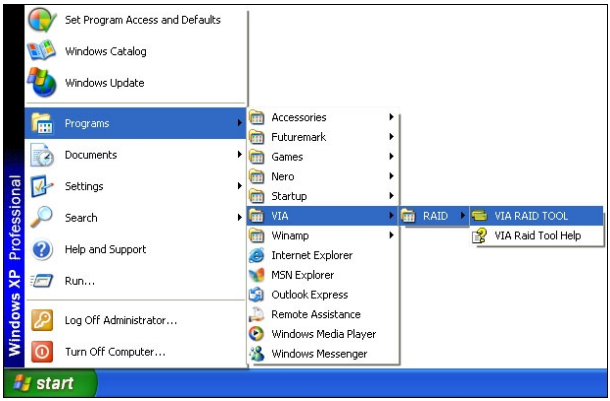


Remember to restart your computer before using this newly installed program.



Using VIA RAID Tool

Once the installation is complete, go to **Start** ---> **Programs** --->**VIA** ---> **RAID** to enable **VIA RAID TOOL**.



After the software has finished installation, it will automatically start every time Windows is initiated. You may double-click on the icon shown in the system tray of the tool bar to launch the **VIA RAID Tool** utility.

The main interface is divided into two windows and the toolbar above contains the main functions. Click on these toolbar buttons to execute their specific functions. The left window pane displays the controller and disk drives. The right window pane displays the details of the controller or disk drives. In this model, the available features are as follows:

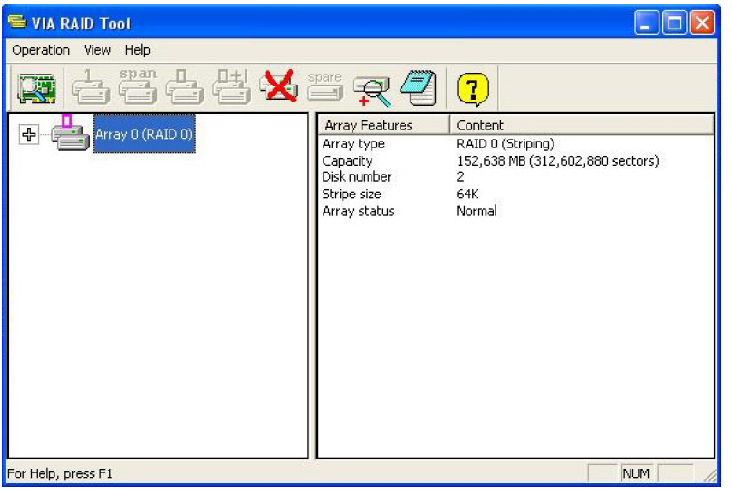

View by Controllers


Check All Disks

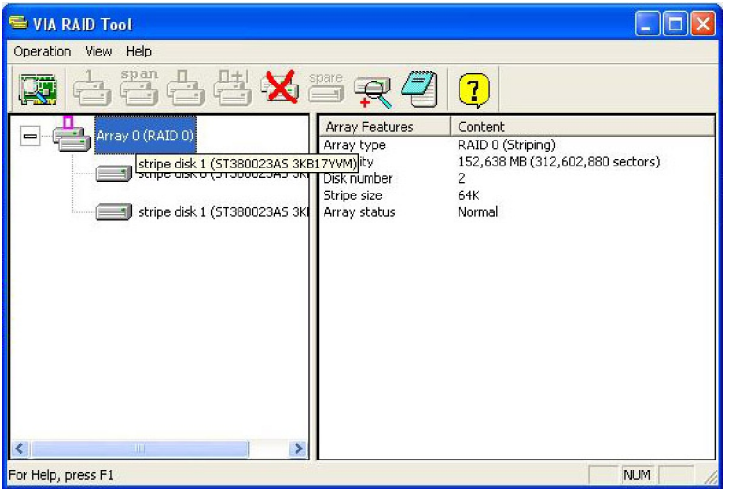

View Event log


Help Topics

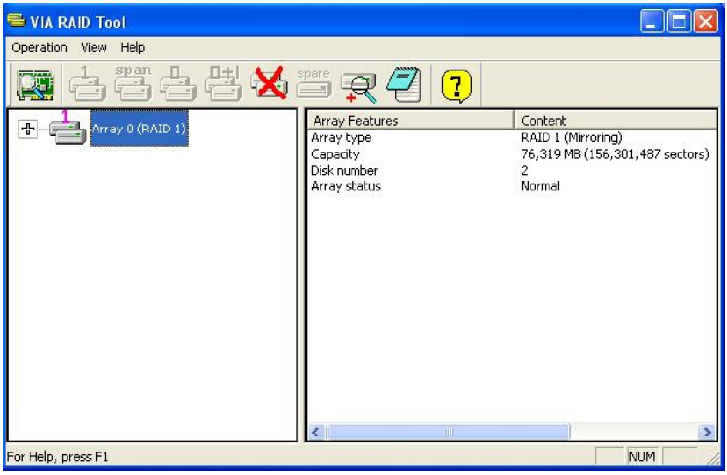
Click on  or  button to determine the viewing type of left window pane. There are two viewing types: By controllers and by device. Click on the object in the left window pane to display the status of the object in the right window pane. The following screen shows the status of Array 0---RAID 0.



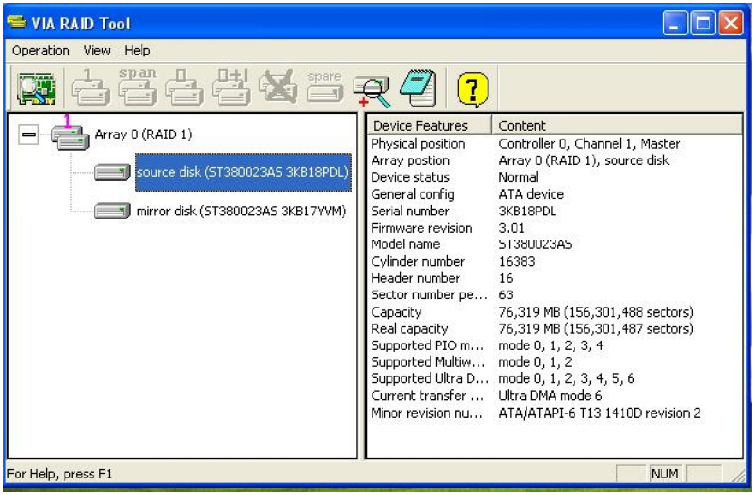
Click on the plus (+) symbol next to Array 0---RAID 0 to see the details of each disk.

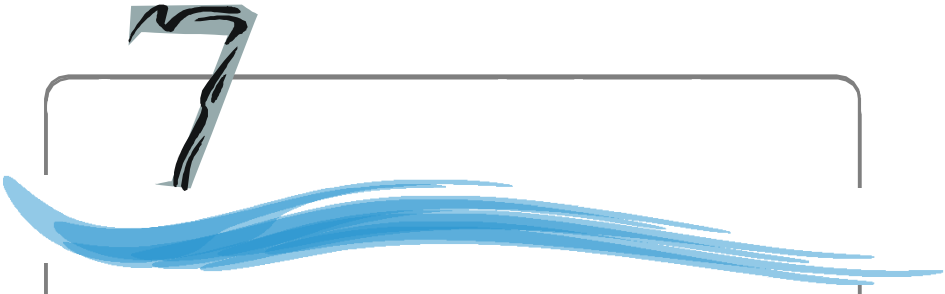


You may also use the same  or  button to view the status of Array 0---RAID 1.



Click on the plus (+) symbol next to Array 0---RAID 1 to see the details of each disk.





Introduction to Realtek ALC882

The mainboard is equipped with Realtek ALC882 chip, which provides support for 7.1+2 channel audio output, including 2 Front, 2 Rear, 2 Side, 1 Center, 1 Subwoofer and 2 Front Pannel channel. ALC882 allows the board to attach 2, 4, 6 or 8 speakers for better surround sound effect. The section will tell you how to install and use 2-, 4-, 6- or 8-channel audio function on the board.

Installing the Realtek HD Audio Driver

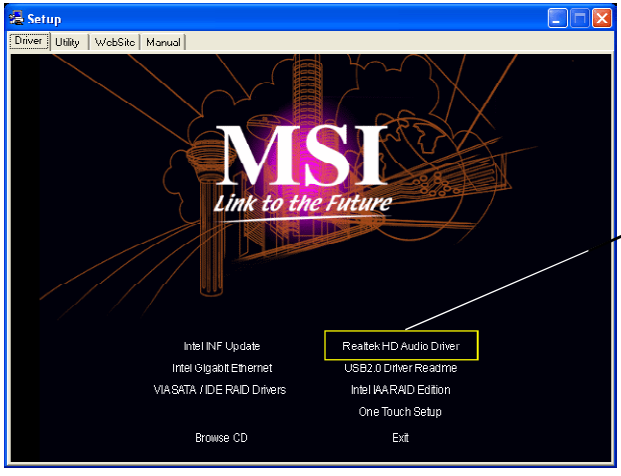
You need to install the driver for Realtek ALC882 codec to function properly before you can get access to 2-, 4-, 6- or 8- channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 2000/XP

For Windows® 2000, you must install Windows® 2000 Service Pack4 or later before installing the driver. And for Windows® XP, you must install Windows® XP Service Pack1 or later before installing the driver.

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

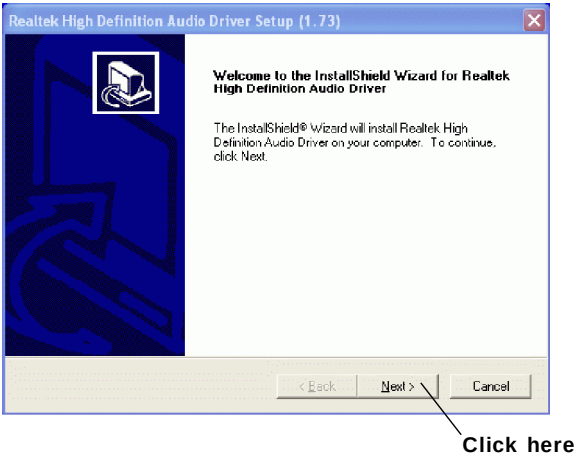
1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Realtek HD Audio Driver**.



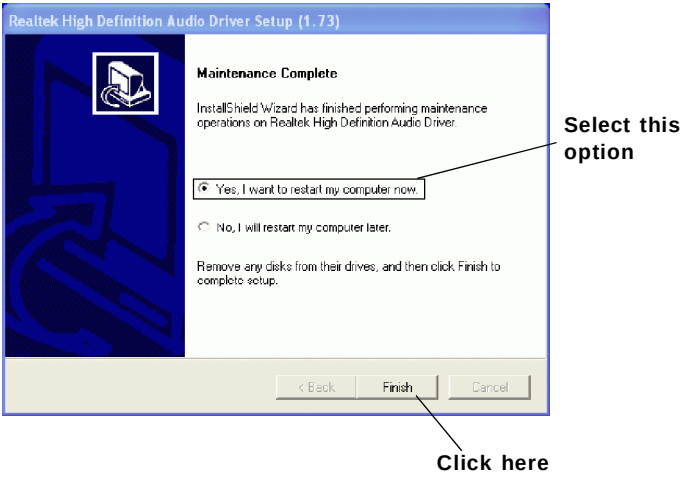
MSI Reminds You...

*The **HD 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 Realtek High Definition Audio Driver.

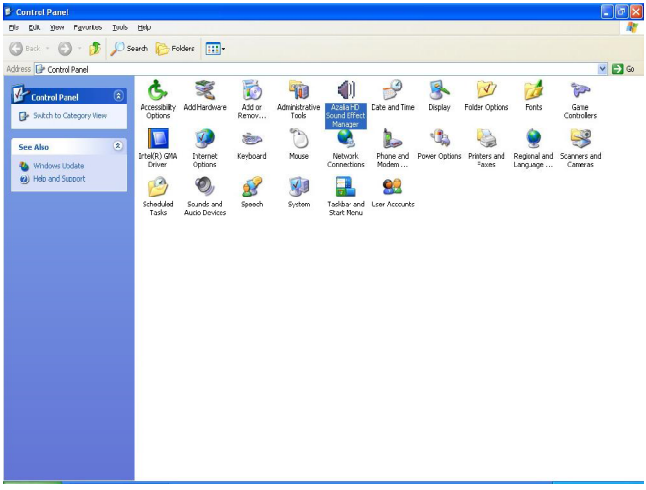


4. Click **Finish** to restart the system.



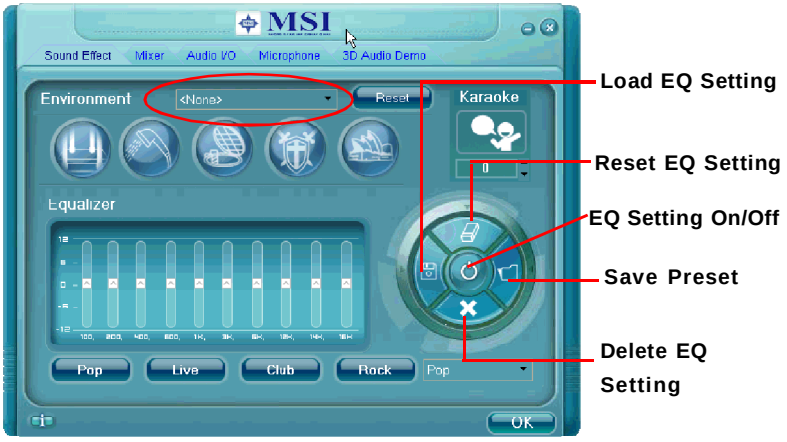
Software Configuration

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 **HD Audio Configuration**. It is also available to enable the audio driver by clicking the **Azalia HD Sound Effect Manager** from the **Control Panel**.



Sound Effect

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



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.

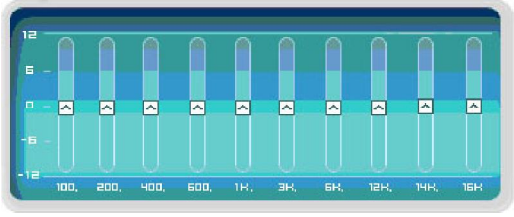
Environment Simulation

You will be able to enjoy different sound experience by pulling down the arrow, totally 23 kinds of sound effect will be shown for selection. Realtek HD Audio Sound Manager also provides five popular settings "Stone Corridor", "Bathroom", "Sewer pipe", "Arena" and "Audio Corridor" for quick enjoyment.

Equalizer Selection

Equalizer frees users from default settings; users may create their owned preferred settings by utilizing this tool.

10 bands of equalizer, ranging from 100Hz to 16KHz.



Save
The settings are saved permanently for future use

Reset
10 bands of equalizer would go back to the default setting

Enable / Disable
To disable, you can temporarily stop the sound effect without losing the settings

Load
Whenever you would like to use preload settings, simply click this, the whole list will be shown for your selection.

Delete
To delete the pre-saved settings which are created from previous steps.

Frequently Used Equalizer Setting

Realtek HD Audio Sound Manager provides you certain optimized equalizer settings that are frequently used for your quick enjoyment.

[How to Use It]

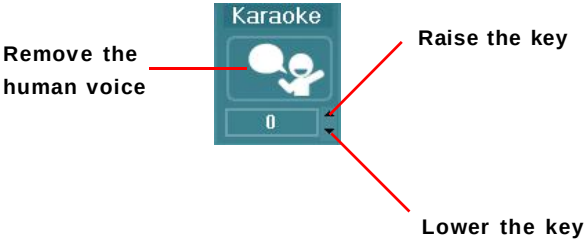
Other than the buttons “Pop” “Live” “Club” & “Rock” shown on the page, to pull down the arrow in “Others” , you will find more optimized settings available to you.

Karaoke Mode

Karaoke mode brings Karaoke fun back home. Simply using the music you usually play, Karaoke mode can help you eliminate the vocal of the song or adjust the key to accommodate your range.

1.Vocal Cancellation: Single click on “Voice Cancellation”, the vocal of the song would be eliminated, while the background music is still in place, and you can be that singer!

2.Key Adjustment: Using “Up / Down Arrow” to find a key which better fits your vocal range.

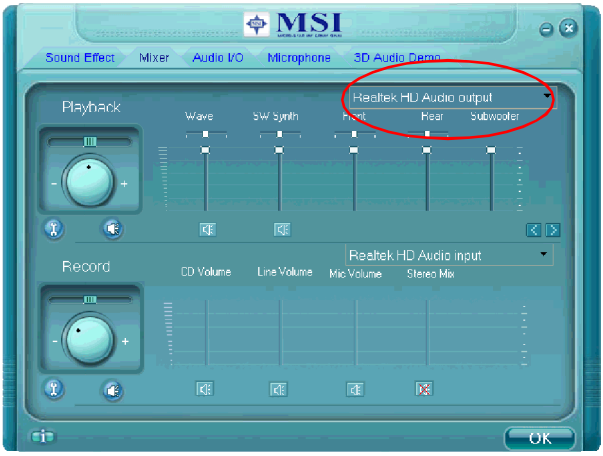


Mixer

In the **Mixer** part, you may adjust the volumes of the rear and front panels individually.

1. Playback

You can adjust the volume of the speakers that you pluged in front or rear panel by select the **Realtek HD Audio rear output** or **Realtek HD Audio front output** items.



MSI Reminds You...

*Before set up, please make sure the playback devices are well plugged in the jacks on the rear or front panel. The **Realtek HD Audio front output** item will appear after you pluging the speakers into the jacks on the front panel.*

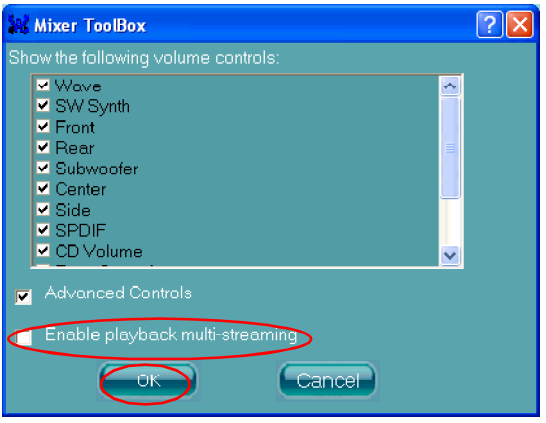
2. Multi-Stream Function

ALC882 supports an outstanding feature called Multi-Stream, which means you may play different audio sources simultaneously and let them output respectively from the indicated real panel or front panel. This feature is very helpful when 2 people are using the same computer together for different purposes.

Click the button and the Mixer **ToolBox** menu will appear. Then check the **Enable playback multi-streaming** and click **OK** to save the setup.

MSI Reminds You...

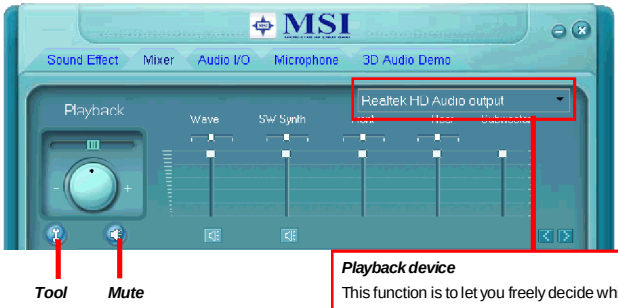
If you use AC97 front panel, the device have to be plugged into the jacks on the panel before enable the multi-stream function.



When you are playing the first audio source (for example: use Windows Media Player to play DVD/VCD), the output will be played from the rear panel, which is the default setting.

Then you **must** to select the **Realtek HD Audio front output** from the scroll list first, and use a different program to play the second audio source (for example: use Winamp to play MP3 files). You will find that the second audio source (MP3 music) will come out from the Line-Out audio jack of Front Panel.

3. Playback control



Playback device

This function is to let you freely decide which ports to output the sound. And this is essential when multi-streaming playback enabled.

- Realtek HD Audio Rear Output

- Realtek HD Audio Front Output

Mute

You may choose to mute single or multiple volume controls or to completely mute sound output.

Tool

- Show the following volume controls

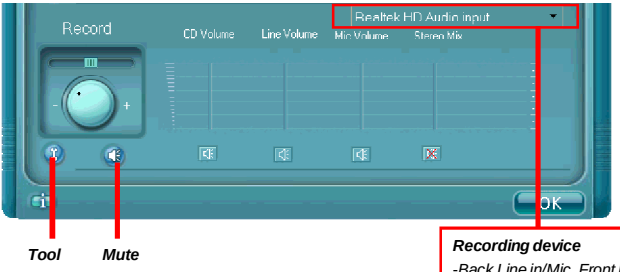
This is to let you freely decide which volume control items to be displayed, total 13 items to be chosen.

- Advanced controls

- Enable playback multi-streaming

With this function, you will be able to have an audio chat with your friends via headphone (stream 1 from front panel) while still have music (stream 2 from back panel) in play. At any given period, you can have maximum 2 streams operating simultaneously.

4. Recording control



Mute

You may choose to mute single or multiple volume controls or to completely mute sound input.

Tool

- Show the following volume controls

This is to let you freely decide which volume control items to be displayed.

- Advanced controls.

Advanced control is a “Microphone Boost” icon.

Once this item is checked, you will find “advanced” icon beside “Front Pink In” & “Mic Volume”. With this, the input signal into “Front Pink In” & “Mic Volume” will be strengthen.

- Enable recording multi-streaming

MSI Reminds You...

ALC882 allows you to record the CD, Line, Mic and Stereo Mix channels simultaneously, frees you from mixing efforts. At any given period, you may choose 1 of following 4 channels to record.

Audio I/O

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

You can choose 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 (default setting)

Realtek HD Audio Manager frees you from default speaker settings. Different from before, for each jack, they are not limited to perform certain functions. Instead, now each jack is able to be chosen to perform either output (i.e. playback) function or input (i.e. Recording) function, we call this “Retasking”.

Audio I/O aims to help you set jacks right. Moreover, other than blue to blue, pink to pink, the way that you used to do, Audio I/O would guide you to other right jacks that can also serve as microphone / speaker / headphone.

Speaker Configuration

Step 1: Plug in the device in any available jack.

Step 2: Dialogue “connected device” will pop up for your selection. Please select the device you are trying to plug in.

If the device is being plugged into the correct jack, you will be able to find the icon beside the jack changed to the one that is same as your device.

If not correct, Realtek HD Audio Manager will guide you to plug the device into the correct jack.

Correct Message

Assume to plug a headphone in the Green jack at back panel. The icon beside green jack become visible and the dialogue “connected device” pops up. Check the headphone, then click OK. As soon as OK is clicked, the icon beside green jack becomes “headphone” as your selection.

Error Message

Assume to plug a headphone in the Blue jack at back panel. The icon beside Blue jack becomes visible and the dialogue “connected device” pops up (the default setting of blue jack is “Line-in”. Check the **headphone** anyway, then click OK. You should notice the icon beside blue jack remains the same without any change and the error message pops.

Pop-screen check list

2CH Speakers configutaion - check the **Front Speaker Out** anyway.

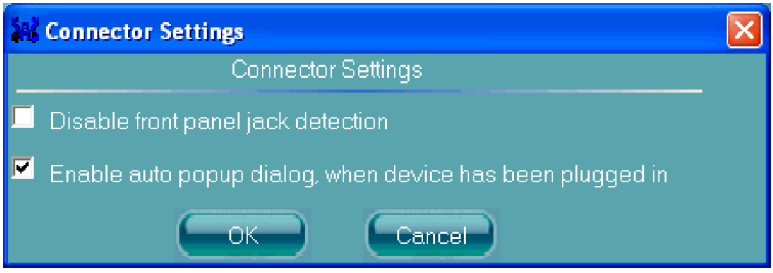
4CH Speakers configuration - check the **Front Speaker Out** & **Side Speaker Out** anyway.

6CH Speakers configuraion - check the **Front Speaker Out** / **Side Speaker Out** & **Center/ Subwoofer Speaker out** anyway.

8CH Speakers configuraion - check the **Front Speaker Out** / **Rear Speaker Out** / **Center/Subwoofer Speaker out** & **Side Speaker Out** anyway.

Global Connector Settings

Click  to access global connector settings.



1. Disable front panel jack detection

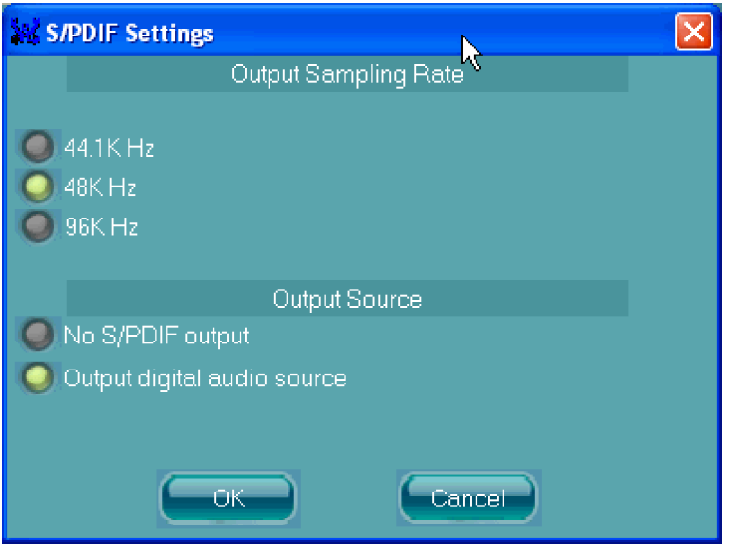
Find no function on front panel jacks? Please check if front jacks on your system are so-called AC'97 jacks. If so, please check this item to disable front panel jack detection.

2. Enable auto popup dialogue, when device has been plugged in

Once this item checked, the dialog "Connected device" would not automatically pop up when device plugged in.

S/PDIF

Short for Sony/Philips Digital Interface, a standard audio file transfer format. S/PDIF allows the transfer of digital audio signals from one device to another without having to be converted first to an analog format. Maintaining the viability of a digital signal prevents the quality of the signal from degrading when it is converted to analog.



1. Output Sampling Rate

44.1KHz: This is recommend while playing CD

48KHz: This is recommended while playing DVD or Dolby.

96KHz: This is recommended while playing DVD-Audio.

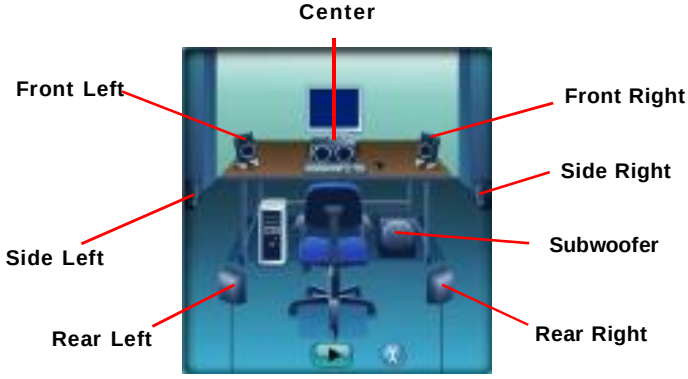
2. Output Source

Output digital audio source: The digital audio format (such as .wav, .mp3,.midi etc) will come out through S/PDIF-Out.

S/PDIF-in to S/PDIF -out pass though mode: The data from S/PDIF-In can be real-time played from S/PDIF-Out.

Test Speakers

You can 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.

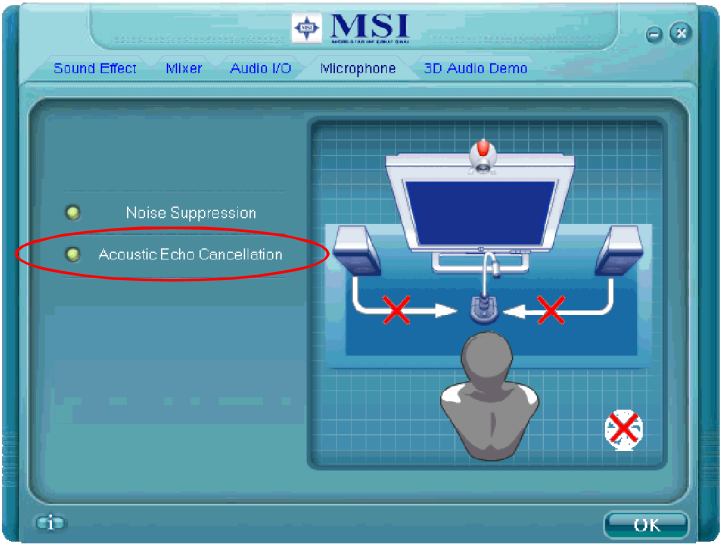


Microphone

In this tab you may set the function of the microphone. Select the **Noise Suppression** to remove the possible noise during recording, or select **Acoustic Echo Cancelltion** to cancel the acoustic echo druing recording.

Acoustic Echo Cancelltion prevents playback sound from being recorded by microphone together with your sound. For example, you might have chance to use VOIP function through Internet with your friends. The voice of your friend will come out from speakers (playback). However, the voice of your friend might also be recorded into your microphone then go back to your friend through Internet. In that case, your friend will hear his/her own voice again. With AEC(Acoustic Echo Cancellation) enabled at your side, your friend can enjoy the benefit with less echo.

Also, please use the drop-down list to choose the recording source from **Realtek HD Audio real input** or **Realtek HD Audio front input**.



3D Audio Demo

In this tab you may adjust your 3D positional audio before playing 3D audio applications like gaming. You may also select different environment to choose the most suitable environment you like.

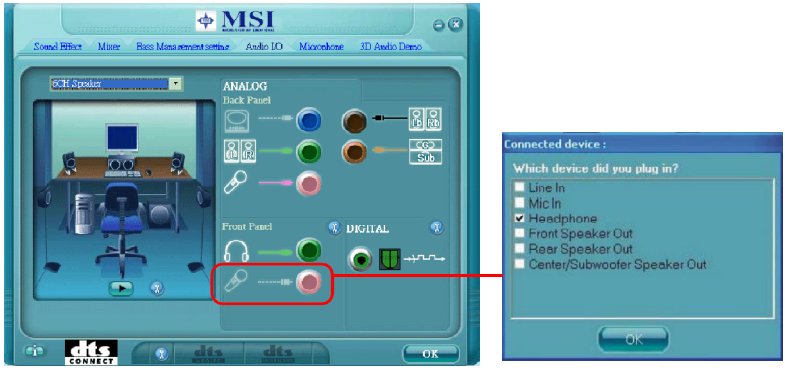
Information

In this tab it provides some information about this HD Audio Configuration utility, including Audio Driver Version, DirectX Version, Audio Controller & Audio 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.

Before you begin using the front panel function, please complete the following steps:

1. Please install the JAUD1 pin headers for the front panel according to **Chapter2 Hardware Setup.**
2. Select **Enable** for Azalia, **Disable** for AC'97 in the **Azalia/AC97 Audio Select** BIOS setting. Please refer to **Chapter 3**.
3. If you are using **Azalia** setting, the microphone function on the front panel is fixed, but the headphone jack will auto detect the device you connect and pop-up the selection window.



4. If you are using **AC97** setting, both microphone and headphone on the front panel are fixed.

How to Enable DTS effect

DTS (Digital Theater Systems) means to bring you a new class of entertainment experience, by using home PCs.

Your DTS Connect contains 2 elements

1. DTS Interactive
2. DTS Neo: PC

Figure 1 DTS control button

1. How to Enable DTS effect

1.1. For DTS Neo: PC

DTS Neo: PC turn your stereo audio (WMA, MP3, CD, and more!) into a convincing 7. 1-channel audio experience

- Change speaker mode to 8CH Speaker @ Audio I/O tab
- Single click on “DTS Neo: PC” button to enable/disable it

1.2. For DTS Interactive

DTS Interactive provides a single cable connection to your DTS enabled surround sound system. Your stereo or multi-channel (up to 5.1) audio sources are re-encoded into a DTS audio signal and sent out from your PC to any DTS enabled system such as, powered PC speakers, an A/V receiver or any other DTS compatible surround sound system.

- Single click on “DTS Interactive” button to enable/disable it

2. Advanced Controls

provides you more controls over DTS Neo: PC . Single click on “Tool” button to access advanced controls.

2.1. DTS Neo: PC

Cinema mode

The Cinema mode is for use with stereo television shows and all programs encoded in DTS Surround. The result is enhanced soundfield directionality that approaches the quality of discrete 7.1-channel sound.

Music mode

The music mode is for use with any stereo music recordings, which preserves the integrity of the stereo mix while augmenting it with a center channel to anchor the image, and deriving enough surround content to yield a spacious, three-dimensional listening experience. The Music mode includes the control that allows the sound to be tailored to room layout and personal preferences.

Center Width control

This allows center-channel sound to be positioned between center speaker and left/ right speakers over a range of 8 steps. Figure 2 indicates the default setting. By dragging the scroll to the left, the setting gives more center dominance, which is particularly desirable if listeners are located well off center.

Wide mode 

This extends the front stereo image to include the surround speakers. It is particularly effective for recordings that have left- or right- channel elements in the mix.

Figure 2 DTS Neo: PC

Using 2-, 4-, 6- & 8- Channel Audio Function

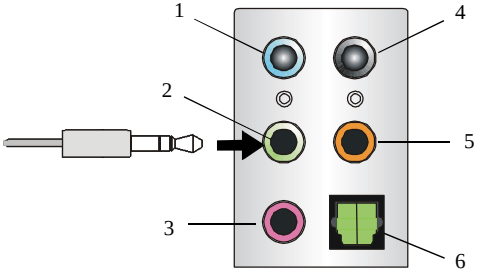
Connecting the Speakers

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

n 2-Channel Mode for Stereo-Speaker Output

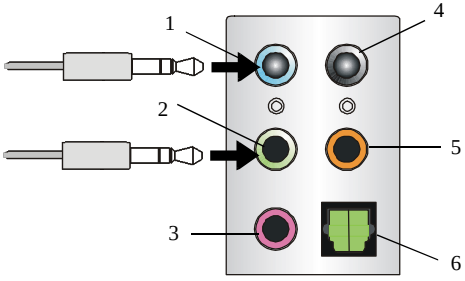
Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

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 S/PDIF Out-Optical(in 7.1CH / 5.1CH)

n 4-Channel Mode for 4-Speaker Output

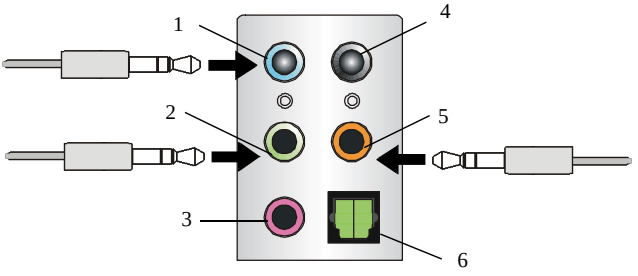


Description:
Connect two speakers to back panel's Line Out connector and two speakers to the side channel Line Out connector.

4-Channel Analog Audio Output

1. Line Out *(Side channels)*
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. S/PDIF Out-Optical(in 7.1CH / 5.1CH)

n 6-Channel Mode for 6-Speaker Output

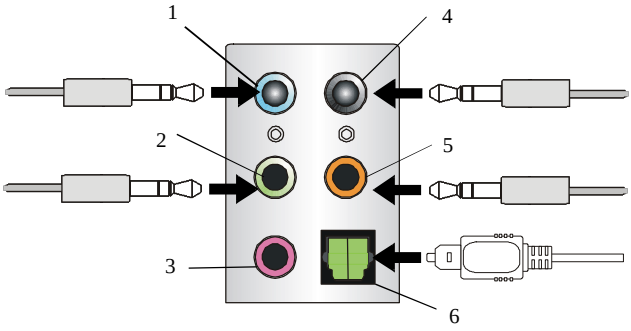


Description:
Connect two speakers to back panel's Line Out connector, two speakers to the side channel and two speakers to the center/subwoofer-channel Line Out connectors.

6-Channel Analog Audio Output

1. Line Out *(Side channels)*
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)*
6. S/PDIF Out-Optical(in 7.1CH / 5.1CH)

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 si dhannel 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 channel)*
6. Optical SPDIF jack