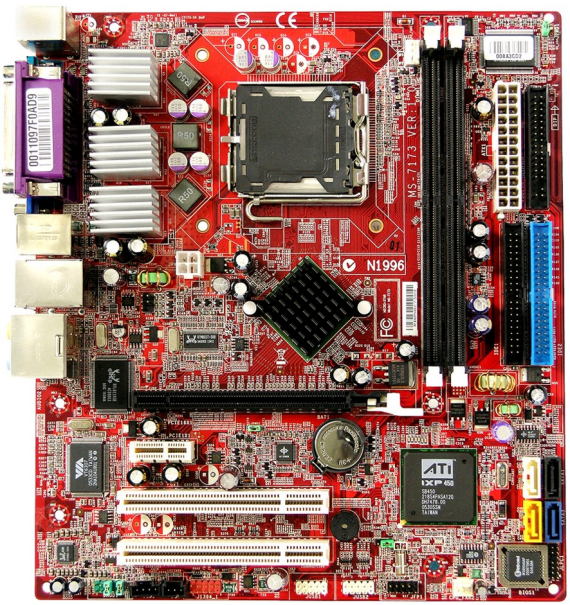
RC410M Series

MS-7173 (v1.X) M-ATX Mainboard



English Version
G52-M7173X1

Copyright Notice

Trademarks

Revision History

Revision	Revision History	Date
V1.0	First release	November 2005

Technical Support

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

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

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - † The power cord or plug is damaged.
    - † Liquid has penetrated into the equipment.
    - † The equipment has been exposed to moisture.
    - † The equipment has not work well or you can not get it work according to User's Manual.
    - † The equipment has dropped and damaged.
    - † The equipment has obvious sign of breakage.
12. DO NOT leave this mainboard in an unconditioned environment with storage temperature above 70°C (158°F) or operating temperature above 35°C (95°F); it may damage the mainboard.

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

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

廢電池請回收

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

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below.

CE N1996

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

Notice 1

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

Notice 2

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

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

FC **Micro-Star International**
MS-7173

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

WEEE (Waste Electrical and Electronic Equipment) Statement

ENGLISH

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

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

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

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

FRANÇAIS

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

Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de 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 vervuiling.

Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

Da bi zaštitili prirodnu sredinu, i kao preduzeće koje vodi računa o okolini i prirodnoj sredini, MSI mora da vas podesti da...

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

POLSKI

Aby chronić nasze środowisko naturalne oraz jako firma dbająca o ekologię, MSI przypomina, że...

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

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektonik cihazların üreticileri, cihazların kullanım süreleri 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 RC410M Series (MS-7173 v1.X) Micro ATX mainboard. The RC410M Series mainboards are based on **ATI® RC410/RC410L** & **SB450** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4 Cedar Mill** processor, the RC410M Series deliver a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

† Supports Intel® Pentium 4 Cedar Mill in LGA 775 package
† Supports 1066/800/533MHz FSB
† Supports 2005 mainstream FMB 05A CPU VR design
(For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset

† ATI® RC410/RC410L Chipset
- Supports single channel DDR II 667/533 SDRAM
- Graphics integrated

† ATI® SB450 Chipset
- Supports dual channel native SATA controller up to 150MB/s with RAID 0 or 1
- Integrated Hardware Sound Blaster/Direct Sound AC97 audio
- Ultra DMA 66/100/133 master mode PCI EIDE controller
- ACPI & PC2001 compliant enhanced power management
- Supports USB2.0 up to 8 ports
- Supports HD audio / AC97 audio

Main Memory

† Supports single channel 64-bit DDR II
† Available bandwidth up to 5.3 GB/s (DDR II 667)
† Supports a maximum memory size of 2GB
(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 x1 slot (PCI Express Bus specification v1.0a compliant)
† One PCI Express x16 slot (PCI Express Bus specification v1.0a compliant)
† Two 32-bit Master 3.3V/5V PCI Bus slots

Onboard IDE

† An IDE controller on the ATI® SB450 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 133/100/66 operation modes
† Can connect up to 4 IDE devices

Onboard Serial ATA

† Supports 4 SATA ports with up to 150MB/s transfer rate

MSI Reminds You...

1. Please note that users cannot install OS, either WinME or Win98, in their SATA hard drives. Under these two OS's, SATA can only be used as an ordinary storage device.

2. *To create a bootable RAID volume for a Windows 2000 environment, Microsoft's Windows 2000 Service Pack 4 (SP4) is required. As the end user cannot boot without SP4, a combination installation CD must be created before attempting to install the operating system onto the bootable RAID volume.*
   To create the combination installation CD, please refer to the following website:
   http://www.microsoft.com/windows2000/downloads/servicepacks/sp4/HFdeploy.htm

LAN

† Realtek RTL8100C / 8110S (Optional)
- Integrated Fast Ethernet MAC and PHY in one chip
- Supports 10/100 Mbps (8100C)
- Supports 10/100/1000 Mbps (8110S)
- Compliance with PCI v2.2
- Supports ACPI Power Management

IEEE 1394 (Optional)

† VIA® 6307 IEEE 1394 controller
- Supports up to two 1394 ports (rear panel x 1, pinheader x 1).
- Transfer rate is up to 400Mbps

Audio

† High Definition link controller integrated in SB450
† Realtek ALC880 8-channel HD audio codec
- Compliance with AC97 v2.3 Spec.
- Meets PC2001 audio performance requirement

On-Board Peripherals

† On-Board Peripherals include:
- 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
- 1 parallel port supporting SPP/EPP/ECP mode
- 1 serial port
- 1 VGA port
- 2 IEEE1394s (Rear * 1 / Front * 1) (Optional)
- 8 USB2.0 ports (Rear*4/Front*4)
- 1 SPDIF-Out connector
- 1 TV-out header
- 1 Line-In/Line-Out/MIC/Center Speaker Out/Rear Speaker Out/Side Surround audio port
- 1 RJ-45 LAN Jack
- 2 IDE ports support 4 IDE devices
- 4 serial ATA ports

BIOS

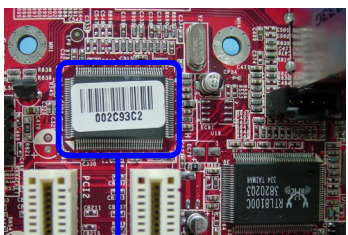
† The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
† The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.
† Supports boot from LAN, USB Device 1.1 & 2.0, and SATA HDD

Dimension

† Micro-ATX Form Factor: 24.4cm X 23.0cm

Mounting

† 6 mounting holes

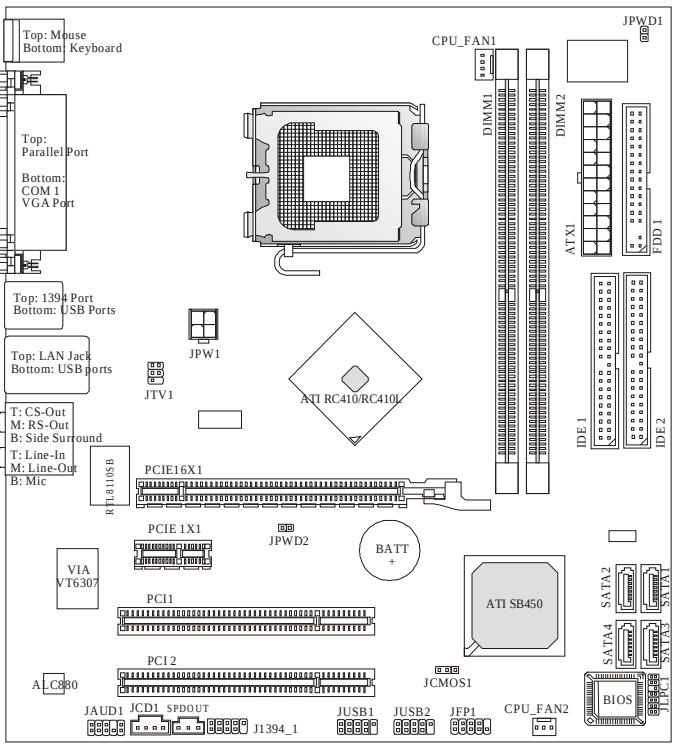


1394 GUID address Label (optional)

MSI Reminds You...

1. Each board will be given a unique 1394 GUID from the manufacturer's default settings in the system BIOS.
2. Use the flash utility or Live Update from MSI's website for BIOS update. The 1394 GUID address is burnt in the BIOS core. If the 1394 GUID address is lost due to an unpredictable event, such as replacing a new BIOS chip, users can use the utility from MSI's website by entering the 1394 GUID address to recover its original one.

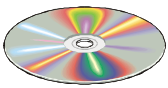
Mainboard Layout



RC410M Series (MS-7173 v1.X) M-ATX Mainboard

Packing Checklist

MSI motherboard



MSI Driver/Utility CD

SATA Cable (Optional)

Power Cable

Standard Cable for Floppy Disk

Standard Cable for IDE Devices

1394 Bracket (Optional)

USB Bracket (Optional)

Back IO Shield

User's Guide

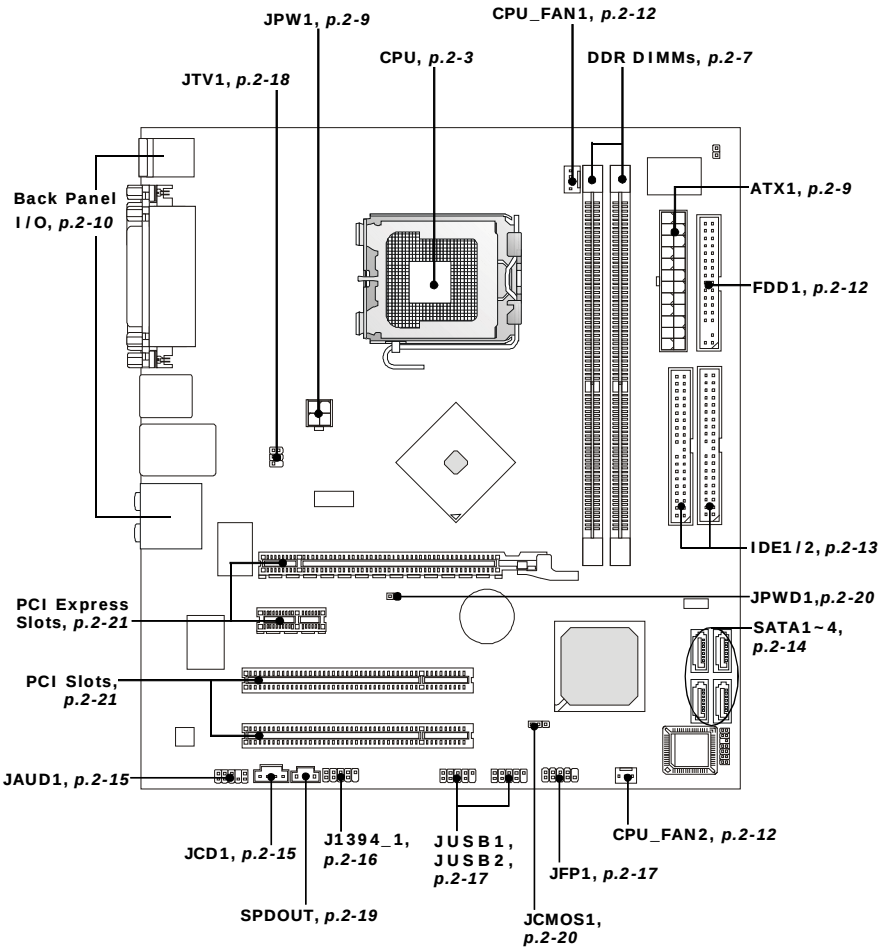
* The pictures are for reference only. Your packing contents may vary depending on the model you purchased.

Hardware Setup

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

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

Quick Components Guide



Central Processing Unit: CPU

This mainboard supports Intel® Pentium 4 Cedar Mill processor in LGA 775 package. 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

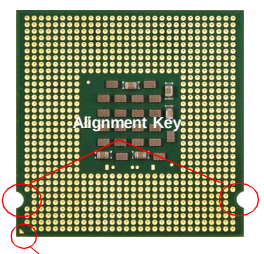
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Replacing the CPU

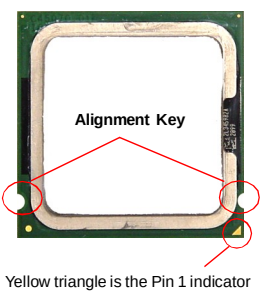
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



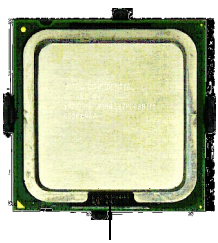
The surface of LGA 775 CPU. Remember to apply some silicone heat transfer compound on it for better heat dispersion.



CPU & Cooler Installation

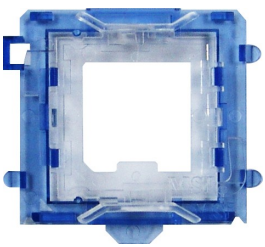
When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating.** If you do not have the cooler, contact your dealer to purchase and install them before turning on the computer. Meanwhile, do not forget to apply some silicon heat transfer compound on CPU 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.

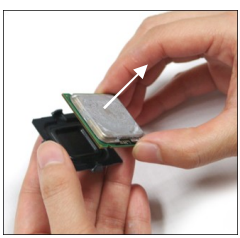


land side cover

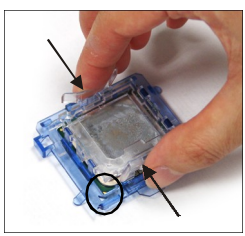
2. Take out the accompanying CPU Clip and rotate it for the same direction as the CPU (Pin 1 indicator is in the left-bottom corner).



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



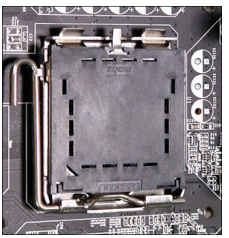
4. Align the two pin 1 indicators (the triangles on the CPU & the CPU Clip), and use the CPU Clip to clip the CPU up, pressing the clips on both sides to the center, as the arrows shown.



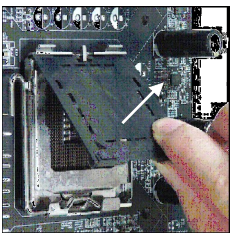
MSI Reminds You...

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.

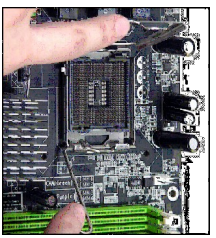
5. The CPU has a plastic cap on it to protect the contact from damage. Before you have installed the CPU, always cover it to protect the socket pin.



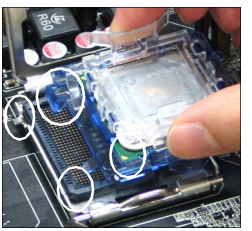
6. Remove the cap from lever hinge side (as the arrow shows). The pins of socket reveal.



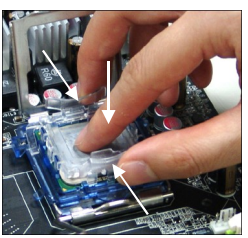
7. Lift the load lever up and open the load plate.



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.

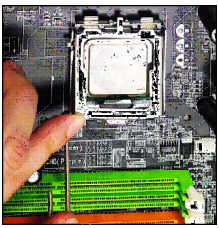


9. Use your thumb and the middle fingers to push the clips to release the CPU, then press down the CPU with your index finger to allow the whole module to be installed onto the CPU socket.

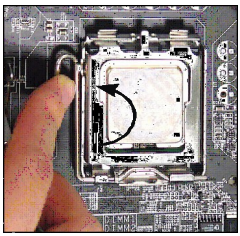


10. The CPU is installed well on the CPU socket.

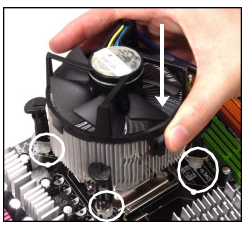
11. Visually inspect if the CPU is seated well into the socket, then remove the CPU Clip with 2 fingers. Then cover the load plate onto the package.



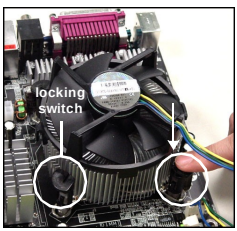
12. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



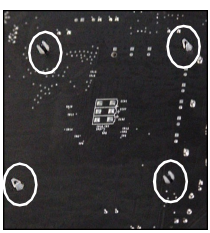
13. Align the holes on the mainboard with the cooler. Push down the cooler until its four clips get wedged into the holes of the mainboard.



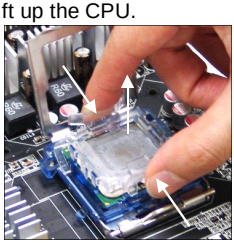
14. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.



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...

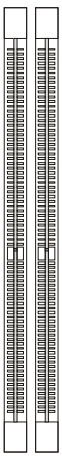
1. *Check the information in **PC Health Status** of **H/W Monitor** in BIOS (Chapter 3) for the CPU temperature.*
2. *Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.*
3. *Please note that the mating/unmating durability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

Memory

The mainboard provides two 240-pin non-ECC **DDR II 667** DIMMs and supports up to 2GB system memory.

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

DIMM1~DIMM2
(from left to right)



Memory Population Rules

This mainboard supports DDR II 667 memory interface.

Each DIMM slot supports up to a maximum size of 2GB. Users can install either single- or double-sided modules depending on their needs.

Slot	Combination 1	Combination 2	Combination 3
DIMM1	64MB~1GB	2GB	0
DIMM2	64MB~1GB	0	2GB
Total Memory	128MB~2GB	2GB	2GB

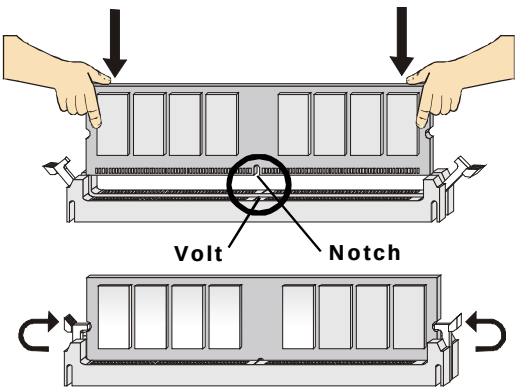
MSI Reminds You...
Make sure that you install memory modules of the same type and density on DDR II DIMMs.

Installing DDR II Modules

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

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

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

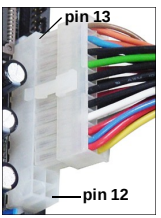


Power Supply

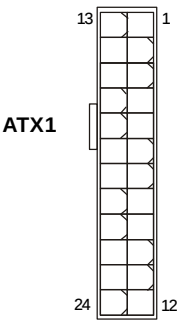
The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

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.



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

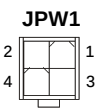


Pin Definition

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

ATX 12V Power Connector: JPW1

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



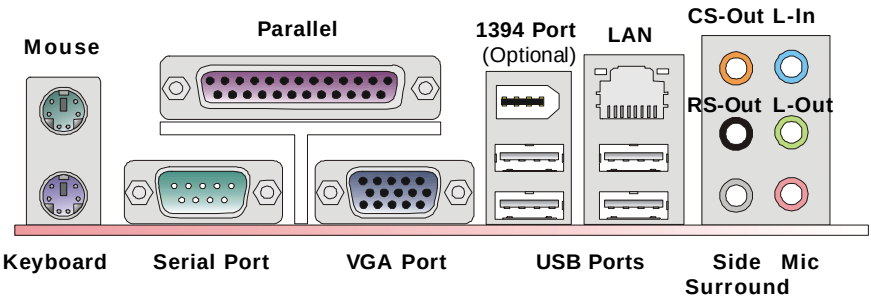
JPW1 Pin Definition

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

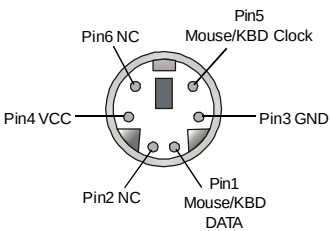
MSI Reminds You...

1. *These two 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.*

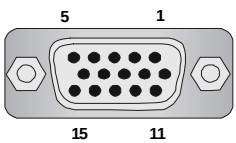
Back Panel



Mouse/Keyboard Connector

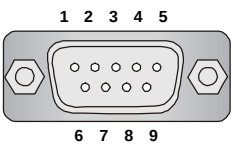


VGA Port



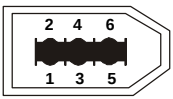
PIN	SIGNAL
1	RED
2	GREEN
3	BLUE
4	N/C
5	GND
6	GND
7	GND
8	GND
9	+5V
10	GND
11	N/C
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

Serial Port



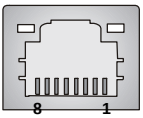
PIN	SIGNAL
1	DCD
2	SIN
3	SOUT
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

IEEE 1394 Port *(Optional)*



PIN	SIGNAL
1	PWR
2	GND
3	TPB-
4	TPB+
5	TPA-
6	TPA+

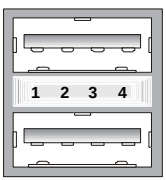
10/100 LAN Jack *(Optional)*



10/100 LAN

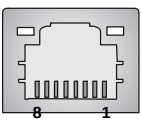
PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

USB Ports



PIN	SIGNAL
1	VCC
2	-Data
3	+Data
4	GND

Gigabit LAN Jack *(Optional)*



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-

Connectors

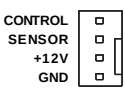
Floppy Disk Drive Connector: FDD1

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

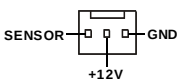
FDD1

Fan Power Connectors: CPU_FAN1 / CPU_FAN2

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



CPU_FAN1



CPU_FAN2

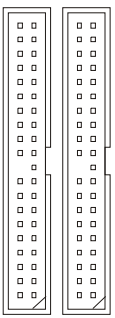
MSI Reminds You...

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

ATA133 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 66/100/133 function. You can connect up to four hard disk drives, CD-ROM and other IDE devices.

The Ultra ATA133 interface boosts data transfer rates between the computer and the hard drive up to 133 megabytes (MB) per second. The new interface is one-third faster than earlier record-breaking Ultra ATA/100 technology and is backwards compatible with the existing Ultra ATA interface.



IDE1 **IDE2**

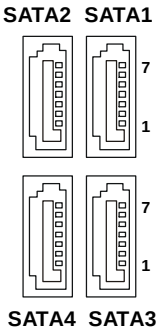
IDE1 (Primary IDE Connector)
The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)
IDE2 can also connect a Master and a Slave drive.

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

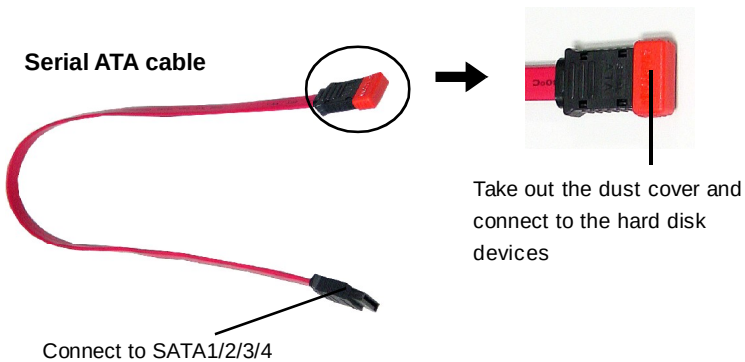
Serial ATA Connectors: SATA1~SATA4

The ATI SB450 SouthBridge supports four serial ATA connectors SATA1~SATA4. SATA1~SATA4 are high-speed Serial ATA interface ports. Each supports 1st generation serial ATA data rates of 150MB/s and is fully compliant with Serial ATA 1.0 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		

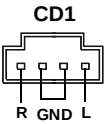


MSI Reminds You...

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

CD-In Connector: JCD1

This connector is provided for CD-ROM audio.



Front Panel Audio Connector: JAUD1

The JAUD1 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.

Pin Definition

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

MSI Reminds You...

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

IEEE 1394 Connectors: J1394_1 (Optional)

The mainboard provides one 1394 pin header that allows you to connect IEEE 1394 ports via an external IEEE1394 bracket (optional).

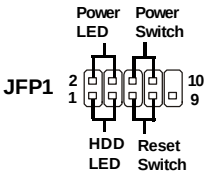
J1394_1

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

Front Panel Connectors: JFP1

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



JFP1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_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.

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)

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 (no pin)	10	USBOC

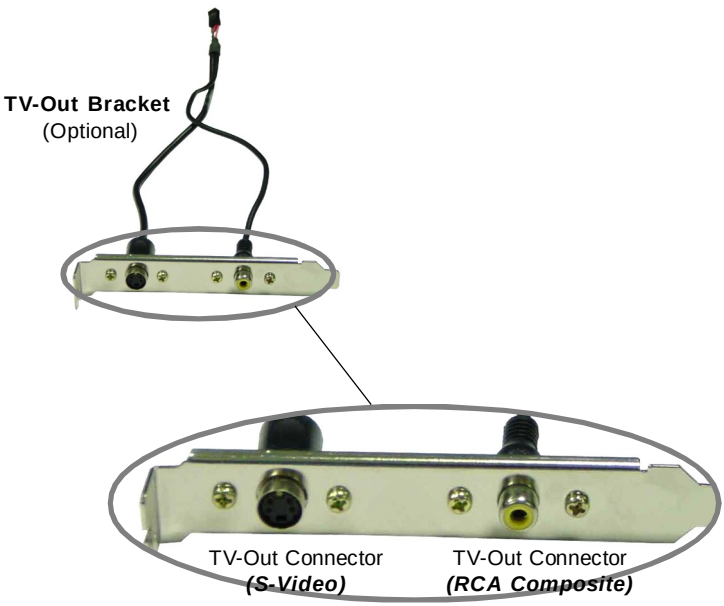
MSI Reminds You...
Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

TV-Out Connector: JTV1 (Optional)

The mainboard optionally provides a TV-Out connector for you to attach a TV-Out bracket. The TV-Out bracket offers two types of TV-Out connectors: S-Video and RCA Composite connector. Select the appropriate one to connect to the television and the television will be able to display PC's information.

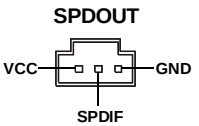
JTV1 Pin Definition

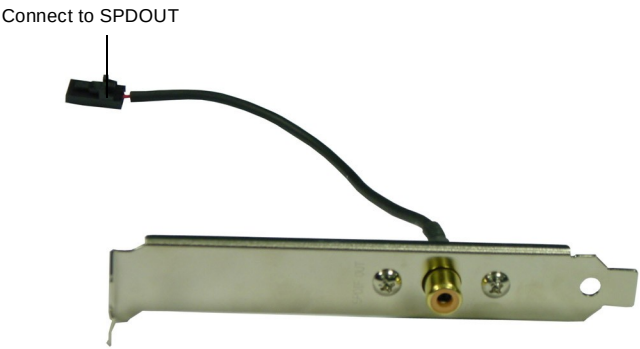
Pin	Description	Pin	Description
1	GND	4	COMP
2	Y	5	GND
3	C		



SPDIF-Out Connector: SPDOUT (Optional)

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





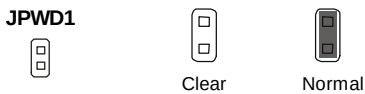
SPDIF Bracket (Optional)

Jumpers

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

Clear BIOS Password Jumper: JPWD1

The jumper is used to clear the BIOS password. To clear the password, open the jumper and restart your computer.



Clear CMOS Jumper: JCMOS1

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

MSI Reminds You...

To clear CMOS you should:

1. *switch off the system and short 2-3 pin of the JCMOS1;*
2. *switch on the system again and the message "CMOS checksum error" should appear;*
3. *switch off the system and return to 1-2 pin (Keep Data) position;*
4. *switch on again for operation.*

Please avoid clearing CMOS while the system is on; it will damage the mainboard.

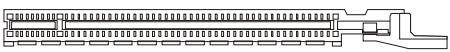
Slots

The motherboard provides one PCI Express x1 slot, one PCI Express x16 slot, and two 32-bit/33MHz PCI slots.

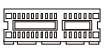
PCI (Peripheral Component Interconnect) Express Slots

The PCI Express slots support high-bandwidth, low pin count, and serial interconnect technology. 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 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, while PCI Express x1 supports transfer rate of 250 MB/s.



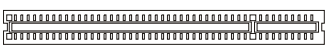
PCI Express x16 slot



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 Slot

PCI Interrupt Request Routing

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

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT E#	INT F#	INT G#	INT H#
PCI Slot 2	INT F#	INT G#	INT H#	INT E#

3

BIOS Setup

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

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

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

A7173MS V1.0 221105 where:

1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.
2nd - 5th digit refers to the model number.
6th - 7th digit refers to the customer as MS = all standard customers.
V1.0 refers to the BIOS version.
221105 refers to the date this BIOS was released.

Entering Setup

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

Press DEL to enter SETUP

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

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

Getting Help

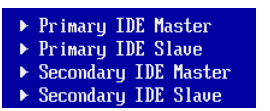
After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

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

Sub-Menu

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

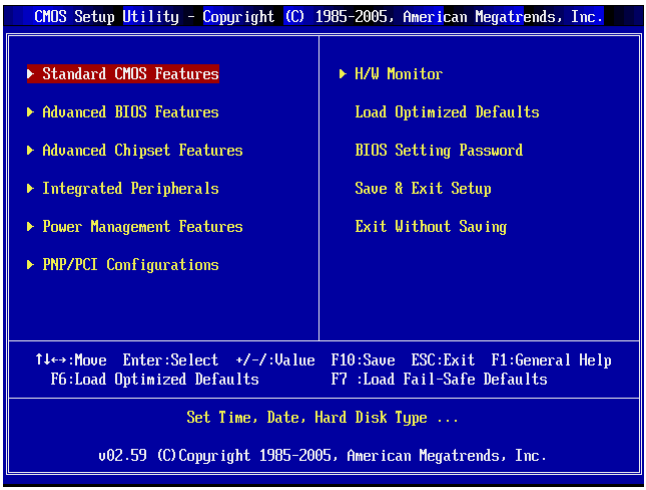


General Help <F1>

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

The Main Menu

Once you enter BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



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

Advanced BIOS Features
Use this menu to setup the items of BIOS 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 Features
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 your PC health status.

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

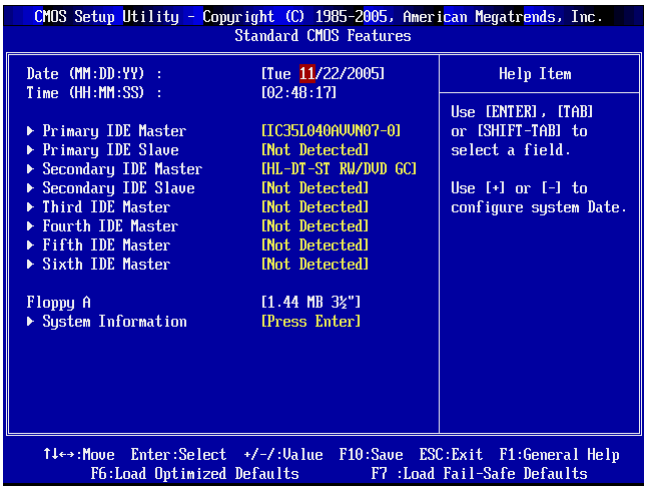
BIOS Setting Password
Use this menu to set the password for BIOS.

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

Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

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



Date

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

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

Primary IDE Master/Slave, Secondary IDE Master/Slave, Third/Fourth/Fifth/ Sixth 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.

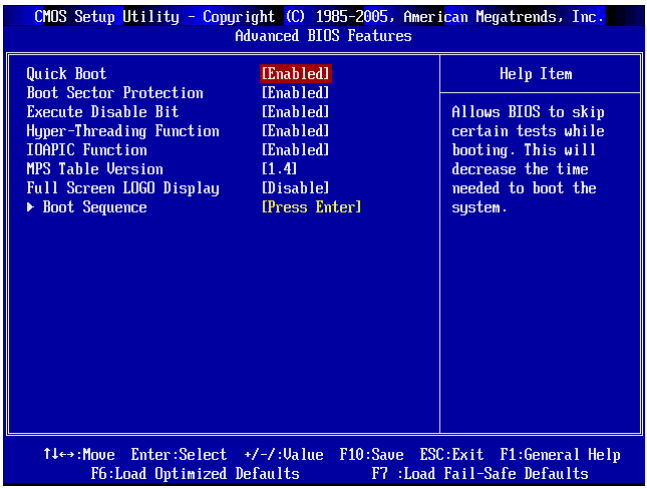
If you select [Manual], related information is asked to be entered to the following items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

[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.

Floppy A
This item allows you to set the type of floppy drives installed.

System Information
The items in this sub-menu show the CPU type, BIOS version and memory status of your system (read only).

Advanced BIOS Features



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

Boot Sector Protection
This function protects the BIOS from accidental corruption by unauthorized users or computer viruses. When enabled, the BIOS' data cannot be changed when attempting to update the BIOS with a Flash utility. To successfully update the BIOS, you'll need to disable this Flash BIOS Protection function.

Execute Disable Bit
Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

Hyper-Threading Function
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

IOAPIC Function

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].

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].

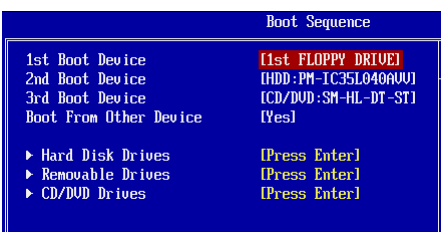
Full Screen LOGO Display

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.

Boot Sequence

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

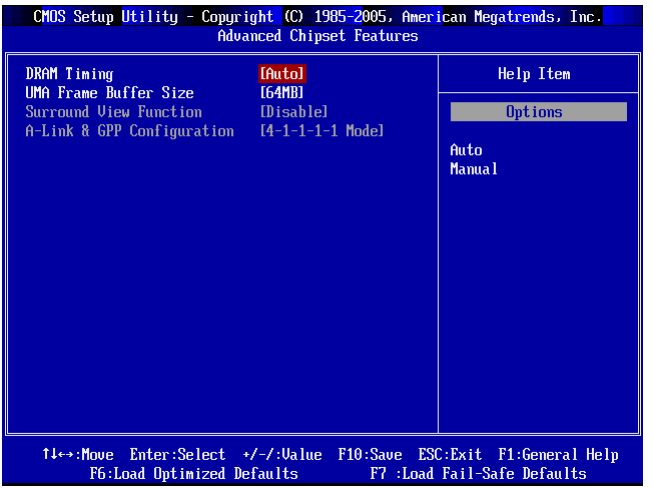


1st/2nd/3rd Boot Device
The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.

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

Hard Disk Drives, Removable Drives, CD/DVD Drives
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 priority list.

Advanced Chipset Features



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

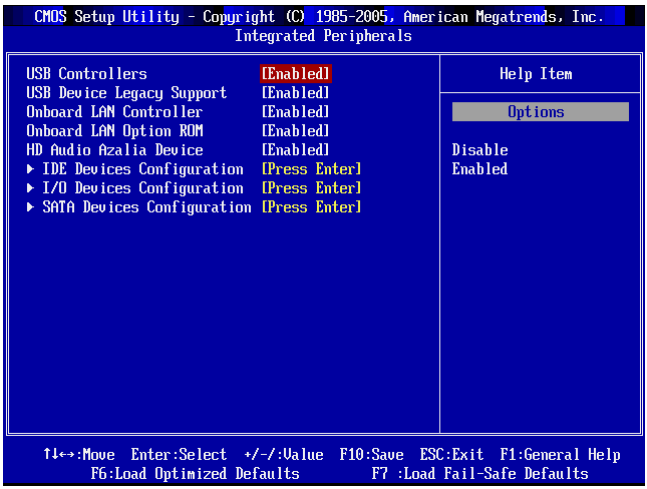
DRAM Timing
This field has the capacity to automatically detect all of the DRAM timing. If you set this field to [Manual], the following fields will be selectable. The settings are: [Auto], [Manual].

UMA Frame Buffer Size
Frame Buffer is the video memory that stores data for video display (frame). This field is used to determine the memory size for Frame Buffer. Larger frame buffer size increases video performance.

Surround View Function
SURROUNDVIEW™ provides the power and convenience of multi-adapter, multi-monitor support for computers that use an AGP- or PCI Express®-based graphics card in conjunction with ATI integrated graphics processors (IGPs). Setting options: [Enabled], [Disabled].

A-Link & GPP Configuration
This setting controls the A-Link & GPP configuration.

Integrated Peripherals



USB Controller
This setting disables/enables the onchip USB controller. Setting options: [Enabled], [Disabled].

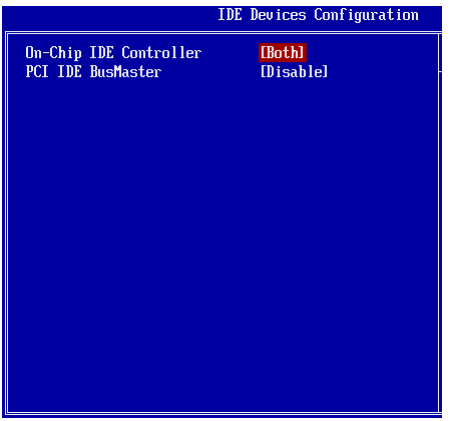
USB Device Legacy Support
Set to [Enabled] if your need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS and SCO Unix. Set to [Disabled] only if you want to use any USB device other than the USB mouse. Setting options: [Disabled],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

Onboard LAN Controller
This setting allows you to enable/disable the onboard LAN controller. Setting options: [Enabled], [Disabled].

Onboard LAN Option ROM
This setting enables/disables the initialization of the onboard LAN Boot ROM during bootup. Selecting [Disabled] will speed up the boot process.

HD Audio Azalia Device
Azalia is the codename of “High Definition Audio.” This setting allows users to disable/enable the High Definition Audio interface integrated in ICH6 / ICH6R southbridge.

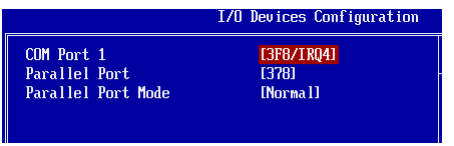
IDE Device Configuration
Press <Enter> to enter the sub-menu and the following screen appears:



On-Chip IDE Controller
The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select [Disabled] to disable the integrated IDE controller, [Primary] to enable only the primary IDE controller, [Secondary] to enable only the secondary IDE controller, or [Both] to enable both IDE controllers. Setting options: [Disabled], [Primary], [Secondary], [Both].

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].

I/O Device Configuration
Press <Enter> to enter the sub-menu and the following screen appears:



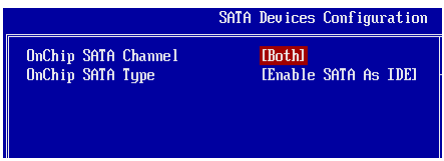
COM Port 1
Select an address and corresponding interrupt for Serial Port 1. The settings are: [3F8/IRQ4], [2E8/IRQ3], [3E8/IRQ4], [2F8/IRQ3], [Disabled], [Auto].

Parallel Port
This specifies the I/O port address and IRQ of the onboard parallel port.

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

SPP/EPP/ECP/ECP+EPP
To operate the onboard parallel port as Standard Parallel Port only, choose [SPP]. To operate the onboard parallel port in the EPP 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. Choose [Normal] to use Standard Parallel Port + Bi-Directional Mode simultaneously.

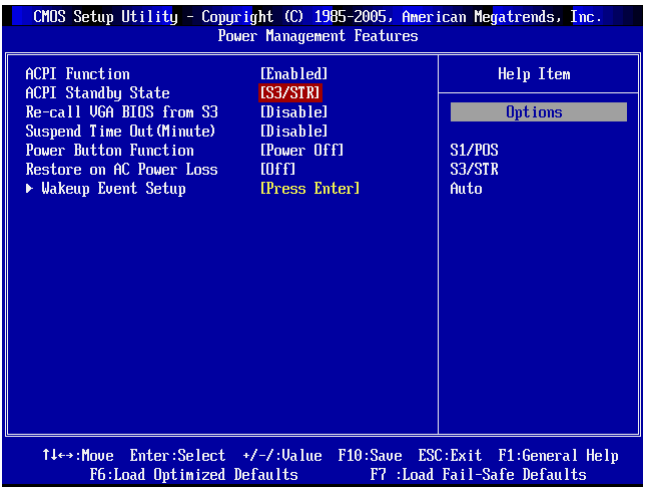
SATA Device Configuration
Press <Enter> to enter the sub-menu and the following screen appears:



OnChip SATA Channel
This setting controls the onchip SATA channel (SATA & PATA).

OnChip SATA Type
This setting specifies the operation mode of SATA devices.

Power Management Setup



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 in formation of system configuration and open applications/ files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a “wake up” event occurs.
S1 & S3	The system will decide when to enter S1 or S3 state.

Re-Call VGA BIOS from S3
When ***ACPI Standby State*** is set to [S3/STR], users can select the options in this field. Selecting [Enable] allows BIOS to call VGABIOS to initialize the VGA card when system wakes up (resumes) from S3 sleep state. The system resume time is shortened when you disable the function, but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3.

Suspend Time Out (Minute)
If system activity is not detected for the length of time specified in this field, all devices except CPU will be shut off. Settings: [Disabled], [1], [2], [4], [8], [10], [20], [30], [40], [50], [60].

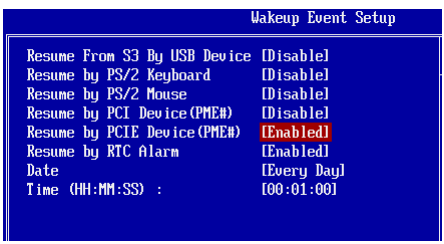
Power Button Function
This feature sets the function of the power button. Settings are:

[Power Off]	The power button functions as normal power off button.
[Suspend]	When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

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

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

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



Resume From S3 By USB Device
This setting allows the activities of USB devices to wake up the system from S3 sleep state. Settings: [Enabled], [Disabled].

Resume by PS/2 Keyboard, Resume by PS/2 Mouse
These fields allow the activity of the PS2 (keyboard and mouse) to wake up the system from S3 sleep state. Settings: [Enabled], [Disabled].

Resume By PCI Device (PME#), Resume By PCIE Device (PME#)
When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event on PCI/PCIE PME (Power Management Event). Settings: [Enabled], [Disabled].

Resume By RTC Alarm
The field is used to enable or disable the feature of booting up the system on a scheduled time/date. Settings: [Enabled], [Disabled].

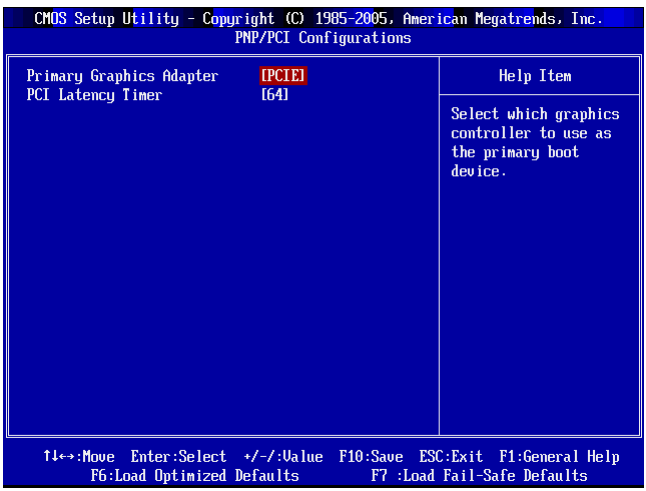
Date
The field specifies the date for ***Resume By RTC Alarm***. Settings: [0]~[31].

Time (HH:MM:SS)
The field specifies the time for ***Resume By RTC Alarm***. Format is <hour> <minute><second>.

MSI Reminds You...
If you have changed this setting, you must let the system boot up until it enters the operating system, before this function will work.

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.

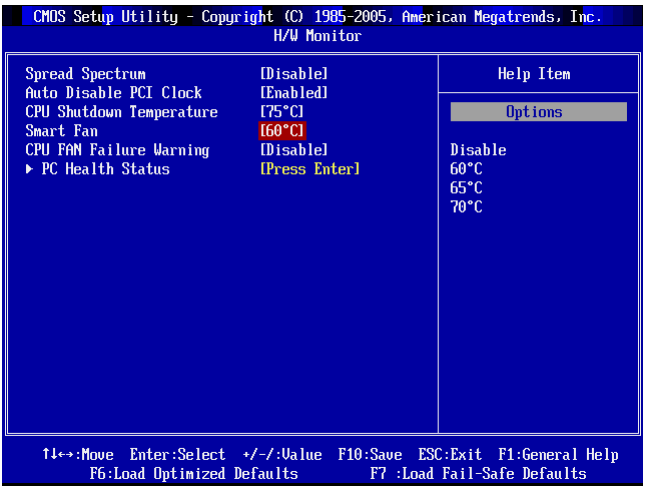


Primary Graphics Adapter
This setting specifies which VGA card is your primary graphics adapter.

PCI Latency Timer
This feature controls how long each PCI device can hold the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. As each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effective PCI bandwidth while higher values improve it. Key in a DEC number between [0] and [255].

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.



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.

MSI Reminds You...

1. *If you do not have any EMI problem, leave the setting at [Disabled] for optimal system stability and performance. But if you are plagued by EMI, select the value of Spread Spectrum for EMI reduction.*
2. *The greater the Spread Spectrum value is, the greater the EMI is reduced, and the system will become less stable. For the most suitable Spread Spectrum value, please consult your local EMI regulation.*
3. *Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.*

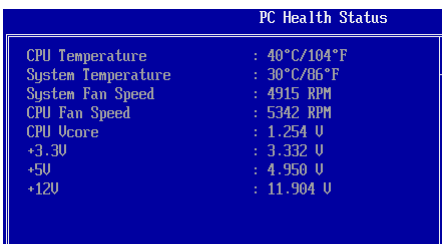
Auto Disable PCI Clock
This item is used to auto detect the PCI slots. When set to [Enabled], the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI). Settings: [Enabled], [Disabled].

CPU Shutdown Temperature
If the CPU temperature reaches the limit preset in this setting, the system will shotdown automatically.

Smart FAN
Smart Fan is an excellent feature which will adjust the CPU fan speed automatically depending on the CPU current temperature, preventing your system from being damaged by overheating.

CPU Fan Failure Warning
When enabled, the system will automatically monitor the CPU fan during boot-up. If it detects that the CPU fan is not rotating, the system will show an error message on the screen and halt the boot-up process. The function is **built with CPU fan power connector (CFAN1) only** and enables you to protect the CPU from possible overheating problem. If you don't connect the CPU fan to the CPU fan power connector, we recommend disabling the feature. Settings: [Enabled], [Disabled].

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



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

Load Optimized Defaults

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

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

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

BIOS Setting Password

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

Type the password, up to 8 characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

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

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Appendix A: Realtek ALC880 8-Channel Audio Function

The mainboard is equipped with Realtek ALC880 chip, which provides support for 8-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC880 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

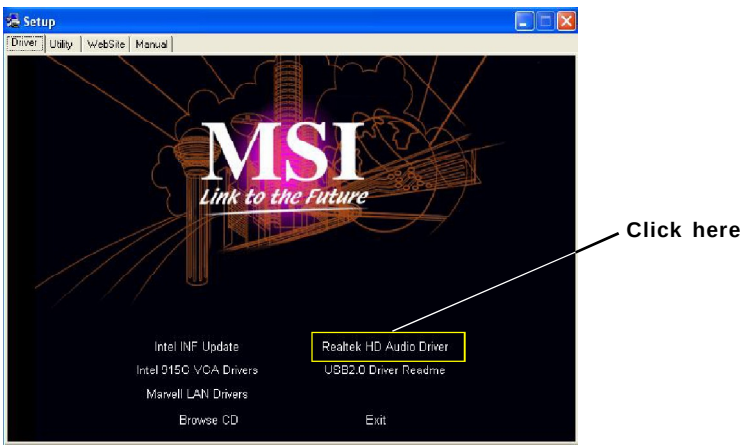
You need to install the driver for Realtek ALC880 codec to function properly before you can get access to 2-, 4-, 6- or 8- channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

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.

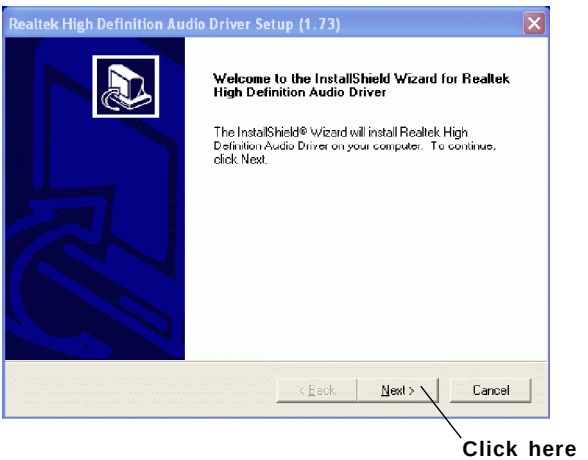
1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Realtek HD Audio Driver**.



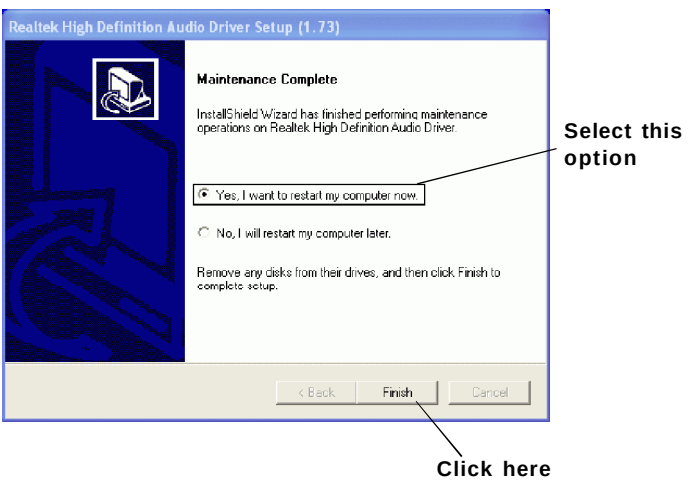
MSI Reminds You...

*The **HD Audio Configuration** software utility is under continuous update to enhance audio application. 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.



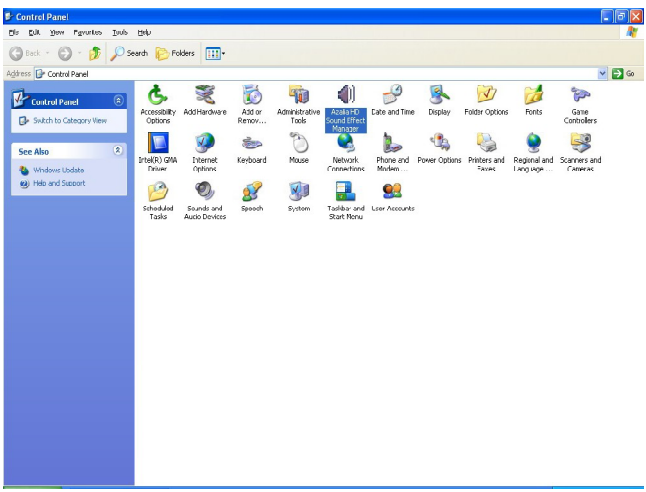
4. Click **Finish** to restart the system.



Software Configuration

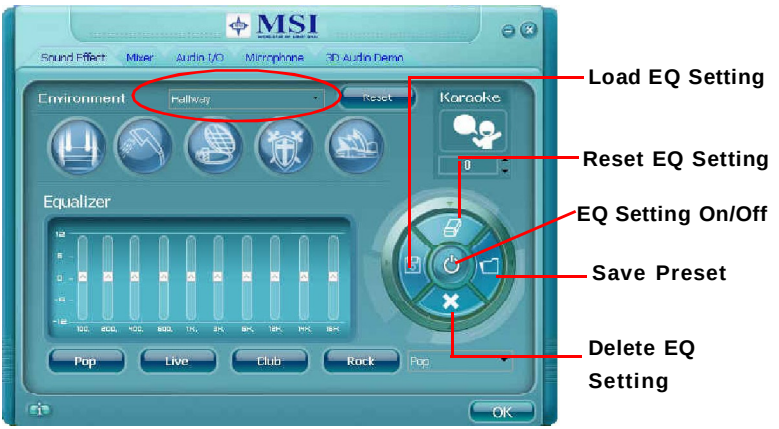
After installing the audio driver, you are able to use the 2-, 4-, 6- or 8- channel audio feature now. Click the audio icon from the system tray at the lower-right corner of the screen to activate the **HD Audio Configuration**. It is also available to enable the audio driver by clicking the **Azalia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

Double click



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.

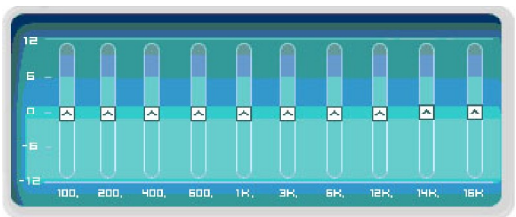
Environment Simulation

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 own 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.

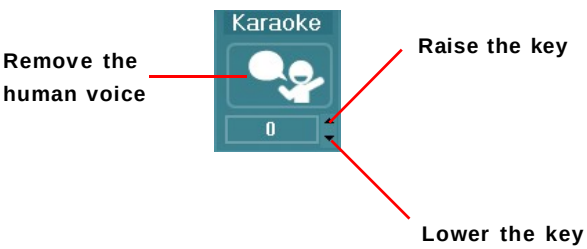
[How to Use It]

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.

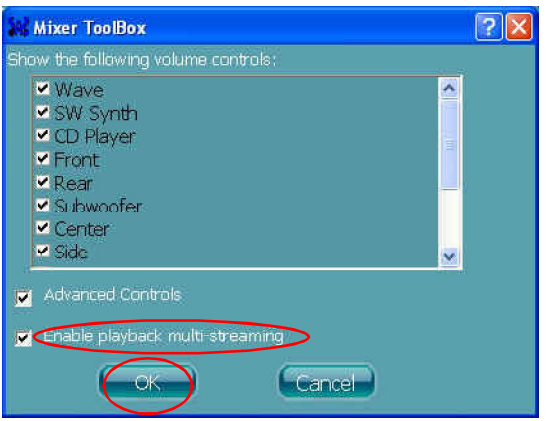
1. Playback
You can adjust the volume of the speakers that you pluged in front or rear panel by select the **Realtek HD Audio rear output** or **Realtek HD Audio front output** items.

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
ALC880 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.

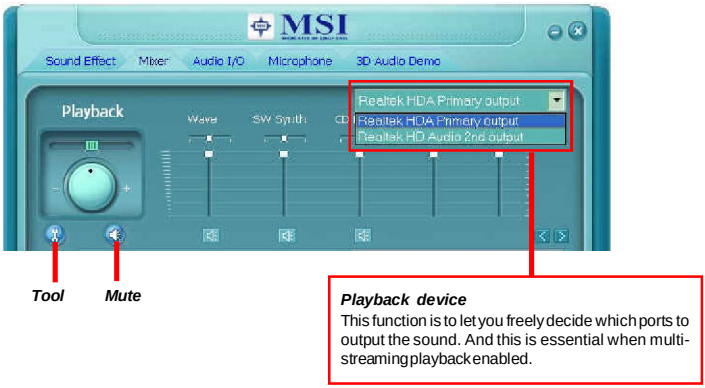
MSI Reminds You...
*We **strongly** recommend that you plug the speakers into the audio jacks on the back & front panels before enabling the multi-stream function.*



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



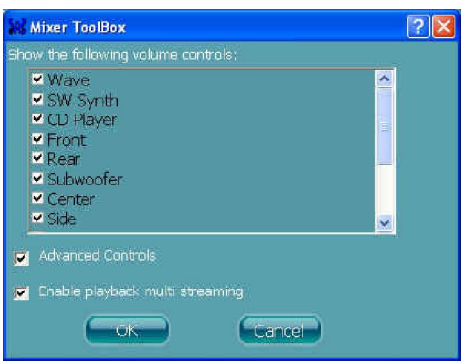
Mute
You may choose to mute single or multiple volume controls or to completely mute sound output.

Tool
Show the following volume control

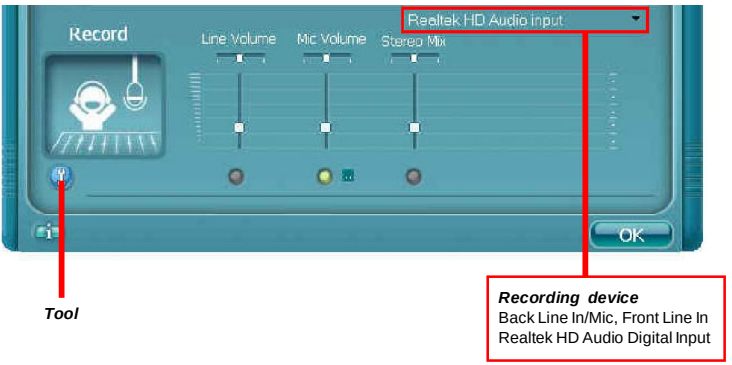
This is to let you freely decide which volume control items to be displayed, total 13 items to be chosen.

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



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

At any given period, you can have maximum 2 streams operating simultaneously.

5. Recording

If you want to use microphone to record, usually the microphone is connected to the MIC jack (the pink one) in the rear panel. You can start recording in this case. If you'd like to connect your microphone to the front audio panel.

You may control the microphone volume by **Mic Volume** or **front mic-in** on the mixer.

MSI Reminds You...

Only the speakers that plugged into the Line-Out jack (the green ne) on the back panel will be functional when you intend to listen to the audio that has been recorded from the microphone.

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".[1]

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.

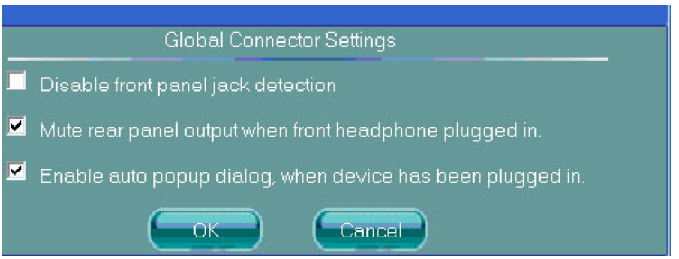
4CH Speakers configuration - check the **Front Speaker Out** & **Rear Speaker Out** anyway.

6CH Speakers configuraion - check the **Front Speaker Out** / **Rear 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. Mute rear panel output when front headphone plugged in

Once this item is checked, whenever front headphone is plugged, the music that is playing from the back panel, will be stopped.

2. Disable front panel jack detection (option)

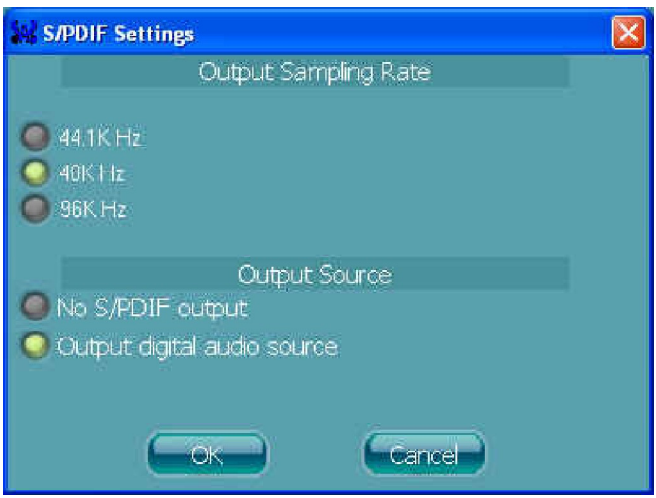
Find no function on front panel jacks? Please check if front jacks on your system are so-called AC'97 jacks. If so, please check this item to disable front panel jack detection.

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

Once this item is checked, the dialog "Connected device" would not automatically pop up when device is 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 recommended while playing CD

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

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

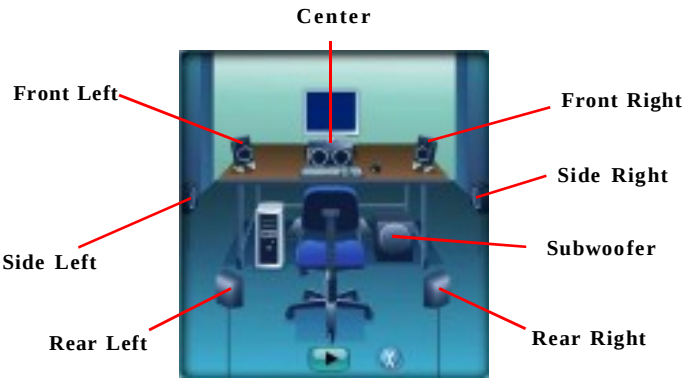
2. Output Source

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

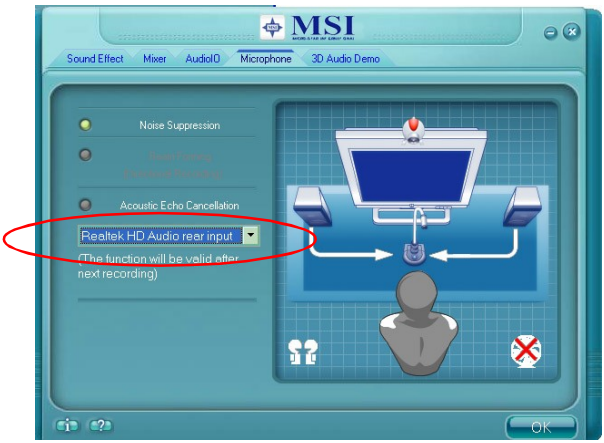
You can select the speaker by clicking it to test its functionality. The one you select will light up and make testing sound. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones. Or you may click the **auto test** 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.

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.

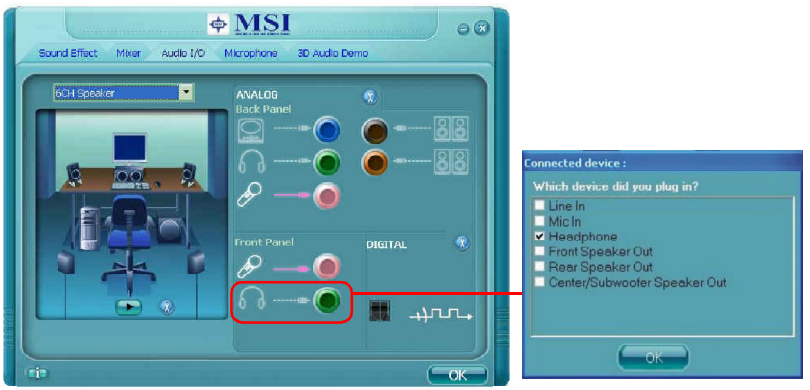
Information

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 pinheaders of the front panel according to Chapter 2.
2. Select **AC97** or **Azalia** in the BIOS setting (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.

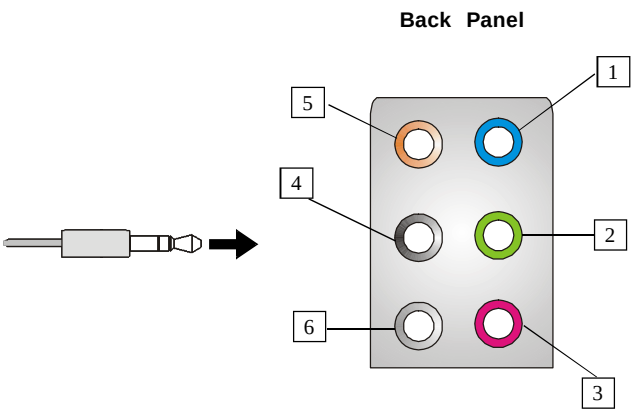
Using 2-, 4-, 6- & 8- Channel Audio Function

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

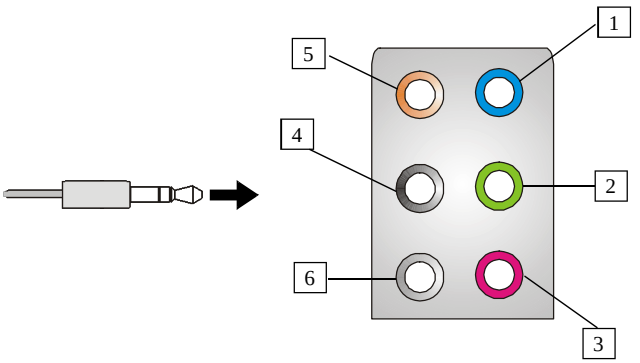
Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.



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 Side Surround *(in 7.1CH / 5.1CH)*

n 4-Channel Mode for 4-Speaker Output

Back Panel

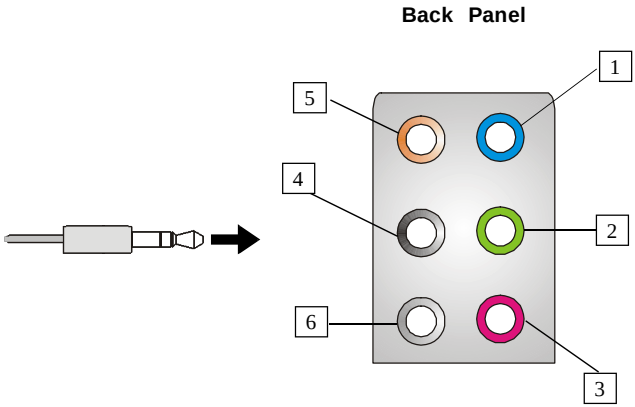


Description:
Connect two speakers to back panel's Line Out connector and two speakers to the real-channel Line Out connector.

4-Channel Analog Audio Output

1. Line In
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel, but no functioning in this mode)*
6. Side Surround *(in 7.1CH / 5.1CH)*

n 6-Channel Mode for 6-Speaker Output



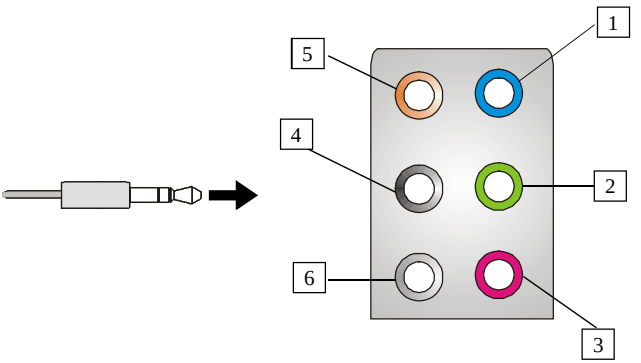
6-Channel Analog Audio Output

1. Line In
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel)*
6. Side Surround *(in 7.1CH / 5.1CH)*

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

n 8-Channel Mode for 8-Speaker Output

Back Panel



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

8-Channel Analog Audio Output

1. Line Out *(Side channels)*
2. Line Out *(Front channels)*
3. MIC
4. Line Out *(Rear channels)*
5. Line Out *(Center and Subwoofer channel)*
6. Side Surround *(in 7.1CH / 5.1CH)*

Appendix B: ATI SATA RAID Setup Guide

Two major challenges facing the storage industry today are (1): keep pace with increasing performance demands of computer systems by improving disk I/O throughput, and (2): provide data accessibility in the event of hard disk failure.

To meet these two challenges, ATI south bridge SB400 supports four SATA ports and incorporates Silicon Image's SiI 3112 Serial ATA host controller, together with Silicon Image's Serial ATA RAID Management Software (SATARaid™).

SATARaid software provides support for RAID Striping and RAID Mirroring. RAID Striping greatly improves hard disk I/O performance by concurrently striping data across multiple drives. RAID Mirroring makes sure data is not lost if a drive fails as data is simultaneously written to two drives. Drives configured for RAID Striping are said to form a RAID 0 set, while drives configured for RAID Mirroring are said to form a RAID 1 set.

The SATARaid software includes a Graphical User Interface (GUI) that provides continuous monitoring of the RAID set(s) supported.

SATA RAID Features

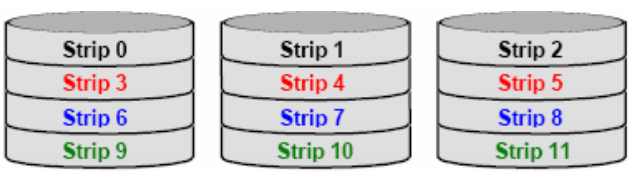
- RAID 0 and RAID 1
- On-line Mirror Rebuilding
- RAID GUI Monitoring Utility:
  - Displays/Logs/Alerts Users to Vital RAID Set Information
  - Manages RAID Set Functions (configures, rebuilds, etc.)
- RAID Set accommodates multiple size HDDs
- HDDs function normally when not in RAID Sets
- Adjustable stripe size for RAID 0
- Automatically selects highest available transfer speed for all ATA and ATAPI devices
- Supports:
  - UDMA up to 150MB/Sec.
  - All UDMA and PIO Modes
  - Up to 4 SATA devices
  - ACPI and ATA/ATAPI6

RAID (Redundant Array of Independent Disks) technology manages multiple disk drives to enhance I/O performance and to provide redundancy in order to withstand the failure of any individual member, without loss of data.

SATARaid™ provides two RAID Set types: Striped Set (RAID 0) and Mirrored Set (RAID 1).

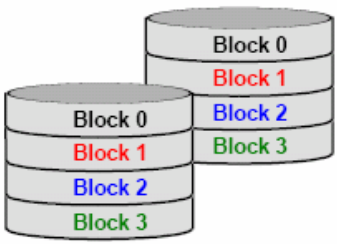
Disk Striping (RAID 0)

Striping is a performance-oriented, non-redundant data mapping technique. It does not provide fault tolerance. With modern SATA and ATA bus mastering technology, multiple I/O operations can be performed in parallel, enhancing performance. Striping arrays use multiple disks to form a larger virtual disk.



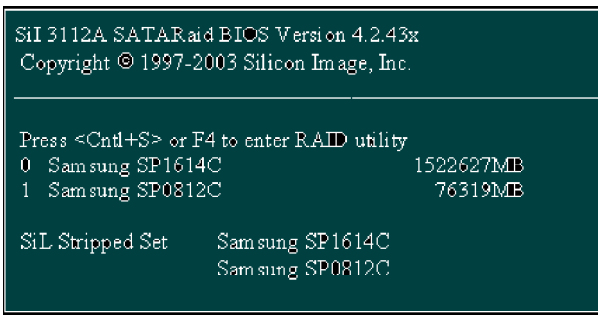
Disk Mirroring (RAID 1)

Disk mirroring creates an identical twin for a selected disk by having the data simultaneously written to two disks. This redundancy provides protection from a single disk failure. If a read failure occurs on one drive, the system reads the data from the other drive.

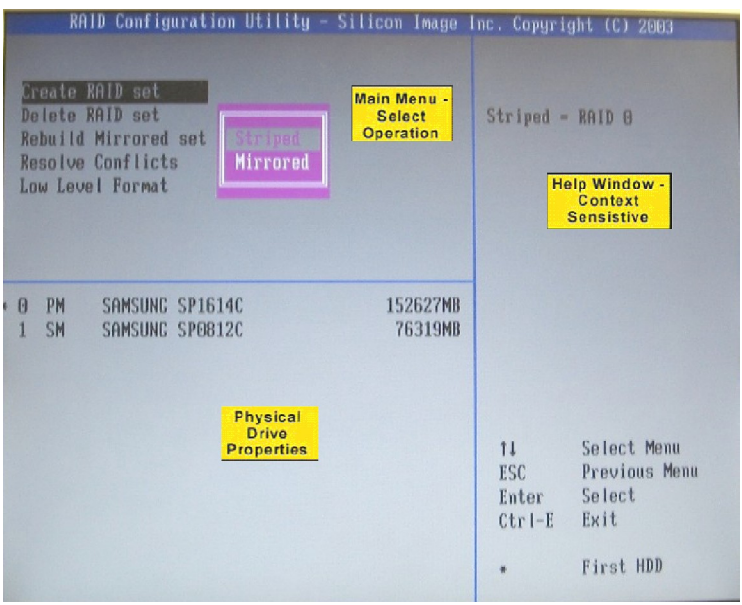


Creating RAID Sets

Creating and deleting RAID sets and performing other RAID setting up operations are done in the BIOS. During bootup, a screen similar to the one below will appear for about 5 seconds. Press CTRL+S or the F4 key to enter the BIOS RAID Utility.



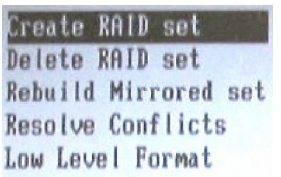
The BIOS RAID Utility menu screen will appear. A brief description of each item on the screen is given on the next page.



BIOS RAID Utility Screen Description

u Main Menu

The Main Menu in the upper left corner is used to choose the operation to be performed.



The selections are:

1. **Create RAID Set** is used to create a new RAID Set (RAID 0 or RAID 1).
2. **Delete RAID Set** is used to delete a RAID Set.
3. **Rebuild Mirrored Set** is used to initiate the rebuild of a RAID 1 set after, for example, a drive in the Set has been replaced.
4. **Resolve Conflicts** is used to automatically find the member drives of a RAID set which has been disrupted (physical drives swapped around, for example) and restore the Set to proper operation.
5. **Low Level Format** allows a single drive to have its data completely wiped out. Drives assigned to Sets cannot be low level formatted.

These operations are described in the pages that follow.

u Help Window

This window displays context-sensitive help and status messages.

u Physical Drive Properties

This window displays the model number and capacities of the drives physically attached to the SATA host adapter.

Description of RAID Setup Operations

u Creating RAID Sets

As previously discussed, the SATA host controller supports RAID 0 and RAID 1 configurations. The selection of the RAID configuration should be based upon factors including performance, data security, and the number of drives available. It is best to carefully consider the long-term role of the system and plan the data storage

strategy. RAID sets can be created either automatically, or to allow the greatest flexibility, manually.

1. Select “Create RAID Set.”
2. Choose a RAID 0 Striped, or a RAID 1 Mirrored set.
3. Select if you want the utility to Automatically Configure or if you want to manually configure the RAID Set.
4. If you chose manual configuration, for Striped Sets, you can change the chunk size. For Mirrored Sets, you assign which drive is the Source and which is the Target.
5. The message “Are You Sure?” will display before completing the configuration. Answer “N” to abort the creation of the new RAID set, or “Y” to proceed with the RAID set creation.

u Deleting RAID Sets

1. To remove one or more RAID sets, select “Delete RAID Set.”
2. Select the desired set and press Enter.
3. Press “Y” when asked “Are You Sure?”
4. The drives will be returned to the selection of logical drives from which a new RAID set can be created

u Rebuild RAID 1 Set

This menu selection is used to initiate the copying of data from an existing drive to a replacement drive that has been installed in a RAID 1 set after the failure of one of the members.

1. Select “Rebuild RAID1 set.”
2. Select the desired set and press Enter.
3. Press “Y” when asked “Are You Sure?”
4. The set will be rebuilt. The status of the rebuild is displayed in the MAIN MENU window.

u Resolving Conflicts

When a RAID set is created, the metadata written to the disk includes drive connection information including the channel on the host controller to which it is connected. If after a drive failure the replacement drive was previously part of a RAID set or used in another system, it may have conflicting metadata, specifically in reference to the drive connection information. If so, this will prohibit the RAID set from being either created or rebuilt. In order for the RAID set to function properly, this old metadata must be first overwritten with the new metadata. To correct this, select “Resolve Conflict”, and the correct metadata, including the correct drive connection information, will automatically be written to the replacement drive.

1. Select “Resolve Conflicts”
2. Select the “Invalid RAID drive” entry in the Logical Drive Status window and press Enter.
3. Follow the prompts to resolve the conflict.

Note that some conflict resolutions may result in the drive letter assignment changing; for example the RAID set may have been drive D: but after the conflict resolution, it may become drive E:. To maintain the same drive lettering, you may need to swap the SATA cable connected to the drive, or in the case of a SATA-based removable drive unit, you may need to change the order of the drives within the chassis.

u Low Level Formatting

The Low Level Format item selection allows you to completely erase the data on a hard drive. However this is a very drastic process and not typically needed. Formatting the drive under Windows is usually sufficient to delete the data.

Installing RAID Drivers (for Windows 2000/XP only)

Installing RAID Drivers during OS Install

Follow the instructions in this section if you are performing a new installation of the OS (Windows 2000/XP), and wish to boot from a RAID drive connected to the SATA controller.

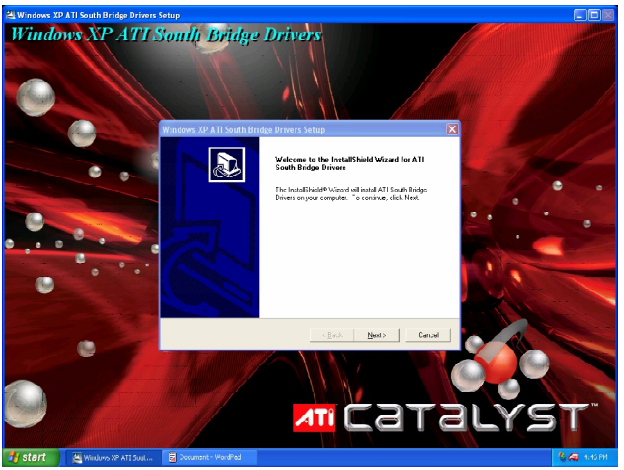
1. Install the new SATA drives
   a. Power off the system.
   b. Connect the hard drives to the RAID controller ports.
   c. Insert your Windows 2000/XP CD into the CD-ROM/DVD drive, or the 2000/XP boot diskette #1 in the floppy drive if your system cannot boot from the CD.
   d. Power up the system.
2. Install the driver during OS boot
   a. Press F6 for third party SCSI or driver installation at the beginning of the text mode installation.
   b. Press 's' when setup asks if you want to specify an additional device, and insert the diskette or CD labelled 'ATI SATARaid Driver Installation Disk'. (You'll have to remove the OS installation CD first.)
   c. Press 'Enter' and select 'ATI Serial ATA Controller'
   d. Press 'Enter' to continue with text mode setup.

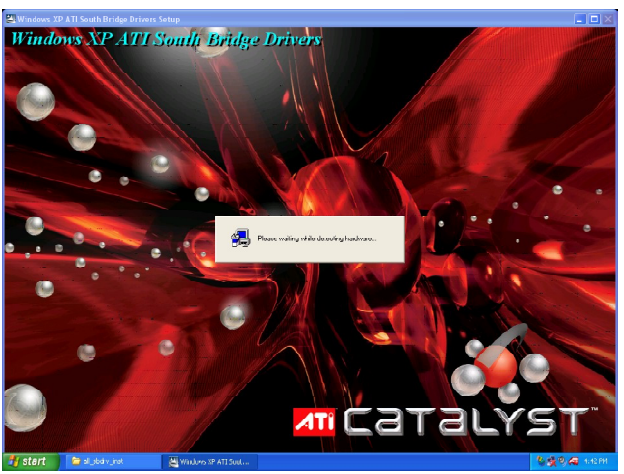
3. Partition and format the Master RAID drive
   a. Follow the setup instructions to select your choice of partition and file system.
4. Install OS on the Master RAID drive
   a. After setup has examined your drives, it will copy files to Windows installation folders and restart the system.
   b. The setup program will continue and finish the installation after restart.
   c. Wait until Windows 2000/XP finishes installing devices, regional settings, networking settings, components, and final set of tasks, reboot the system if it is required.
5. Verify driver installation under Windows 2000 and XP
   a. Right click on 'My Computer' icon, select 'Properties', left click on 'Hardware' tab, and then on 'Device Manager' button.
   b. Double click on 'SCSI and RAID Controllers', If there is no yellow '! ' or ' ? ' in front of 'ATI Serial ATA Controller', the driver is installed correctly.

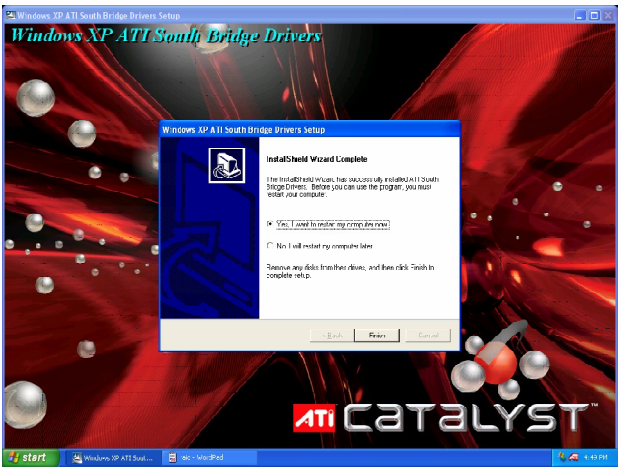
Updating Previously Installed RAID Drivers

1. Insert your Windows 2000/XP ATI driver CD into the CD-ROM/DVD drive. The ATI driver installation Wizard will start.
2. Follow the setup instructions to complete the driver installation.

The following screen shots are taken from the ATI driver installation wizard.



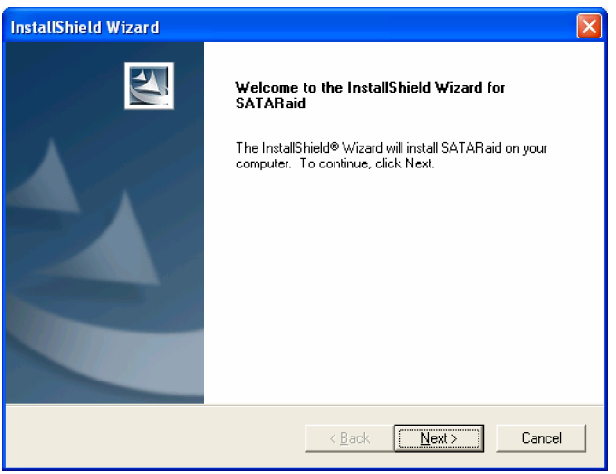


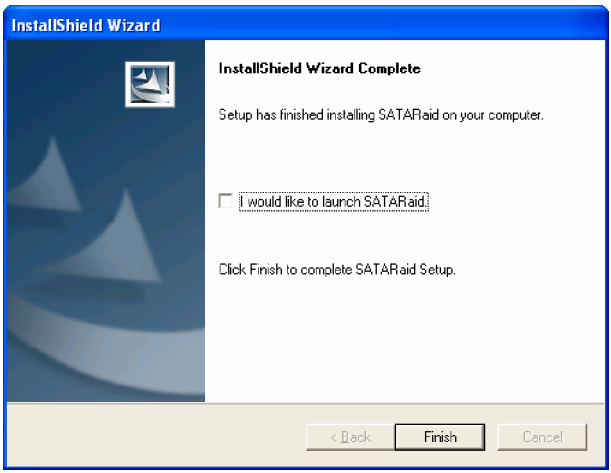

Windows XP ATI South Bridge Drivers Setup
Windows XP ATI South Bridge Drivers
Windows XP ATI South Bridge Drivers Setup
InstallShield Wizard Complete
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
Finish
ATi CATALYST
start

Installing SATARaid Utility

Insert your Windows 2000/XP ATI driver CD into the CD-ROM/DVD drive.
Run the setup.exe program on the CD and follow the setup instructions to complete the installation.

The following screen shots are taken from the installation of SATARaid.



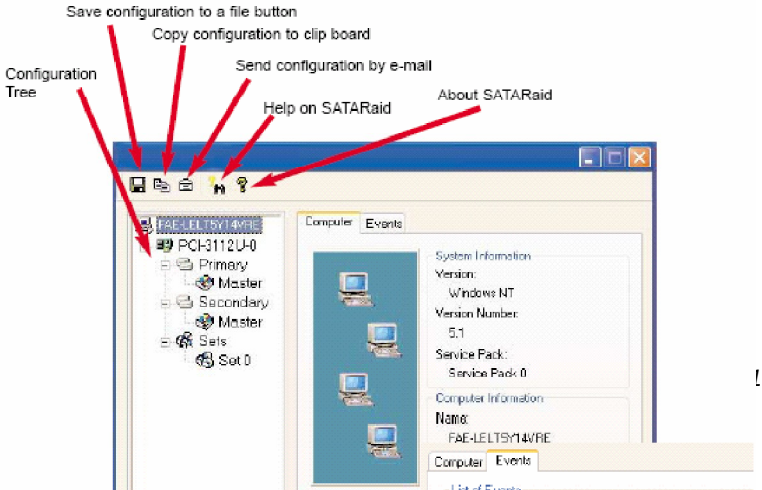

InstallShield Wizard
InstallShield Wizard Complete
Setup has finished installing SATARaid on your computer.
I would like to launch SATARaid.
Click Finish to complete SATARaid Setup.
< Back
Finish
Cancel

SATARaid GUI can be launched from the Task Bar

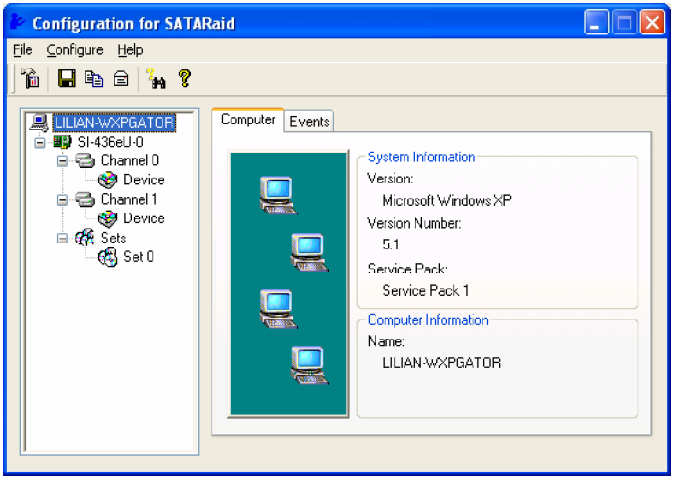
SATARaid GUI

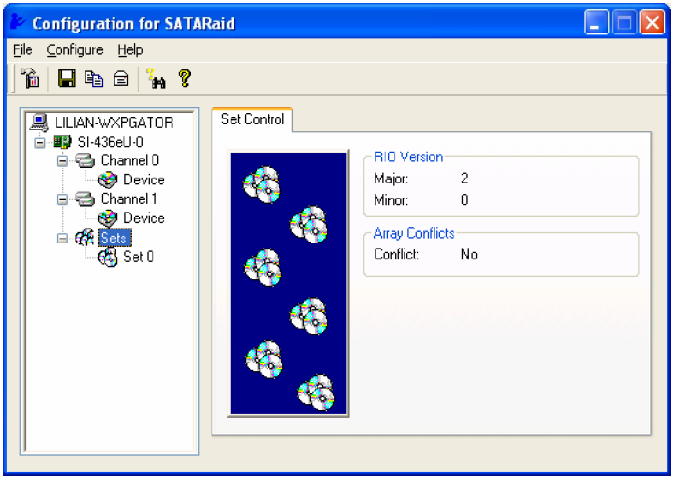
The SATARaid GUI offers the user the ability to easily monitor the RAID Set. To launch the GUI, simply double-click on the icon located in the bottom right hand corner of the Desktop. If the icon does not appear in the bottom right hand corner of the desktop, find where the SATARaid application was saved and launch from there. Upon launching the GUI, the main window, which identifies the computer running SATARaid, should look the following:

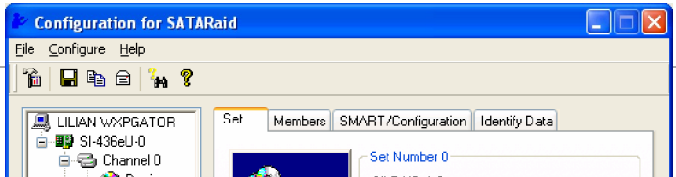
Note: You must have created RAID set(s) in the BIOS as described earlier before you can see the set(s) in the GUI.

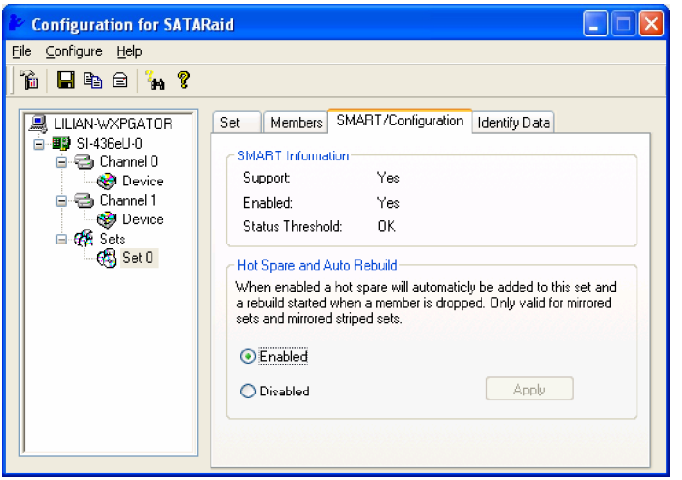


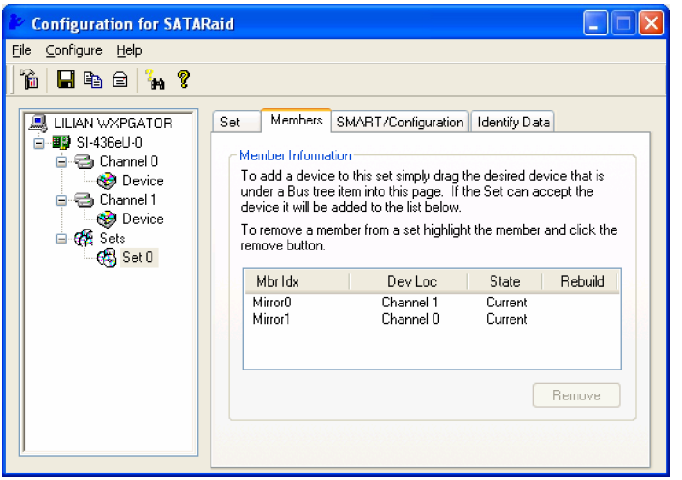
A RAID 1 Set Monitoring Example

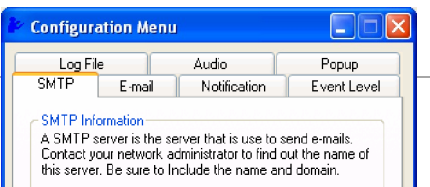




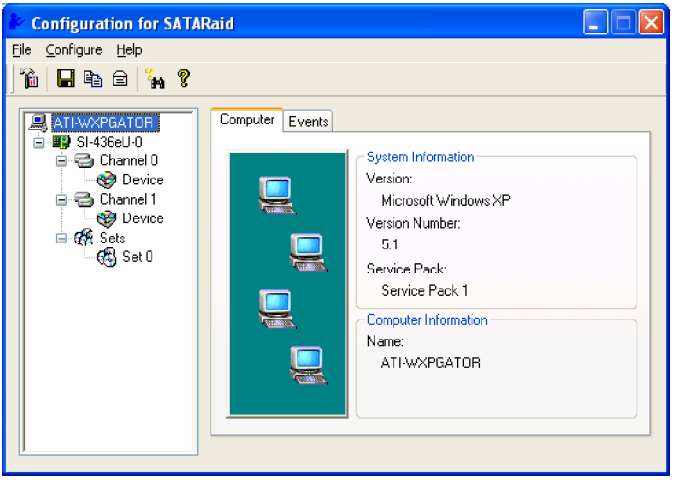


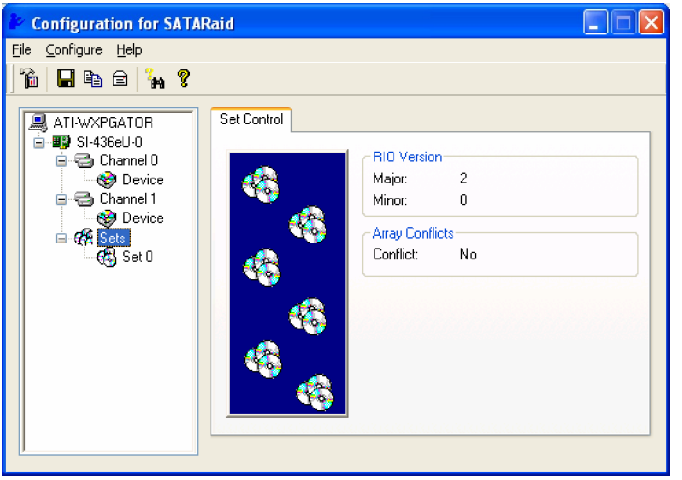

Configuration for SATARaid
File Configure Help
LILIAN-WXPGATOR
SI-436eU-0
Channel 0
Device
Channel 1
Device
Sets
Set 0
Set
Members
SMART/Configuration
Identify Data
SMART Information
Support: Yes
Enabled: Yes
Status Threshold: OK
Hot Spare and Auto Rebuild
When enabled a hot spare will automaticly be added to this set and a rebuild started when a member is dropped. Only valid for mirrored sets and mirrored striped sets.
Enabled
Disabled
Apply

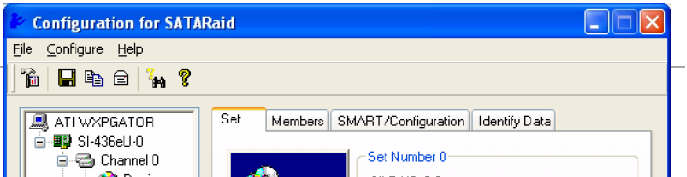

Configuration for SATARaid
File Configure Help
LILIAN-WXPGATOR
SI-436eU-0
Channel 0
Device
Channel 1
Device
Sets
Set 0
Set
Members
SMART/Configuration
Identify Data
Member Information
To add a device to this set simply drag the desired device that is under a Bus tree item into this page. If the Set can accept the device it will be added to the list below.
To remove a member from a set highlight the member and click the remove button.
Mbr Idx
Dev Loc
State
Rebuild
Mirror0
Channel 1
Current
Mirror1
Channel 0
Current
Remove

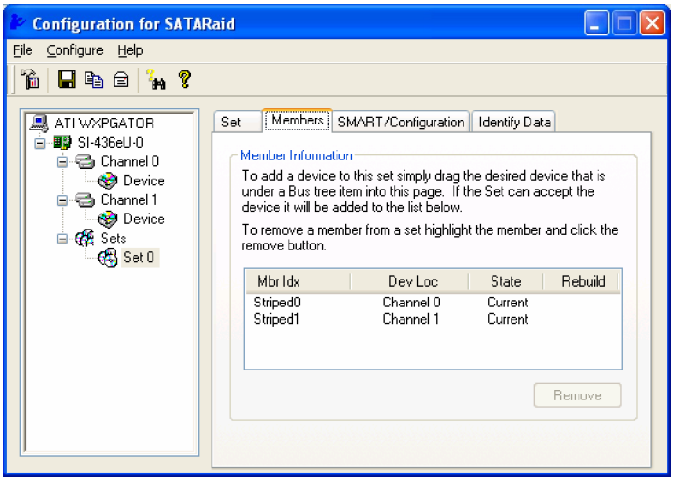

Configuration Menu
Log File
Audio
Popup
SMTP
E-mail
Notification
Event Level
SMTP Information
A SMTP server is the server that is use to send e-mails. Contact your network administrator to find out the name of this server. Be sure to include the name and domain.

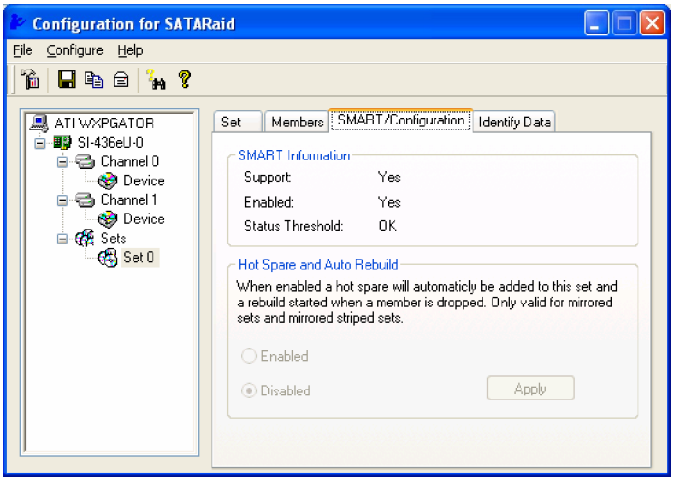
A RAID 0 Set Monitoring Example



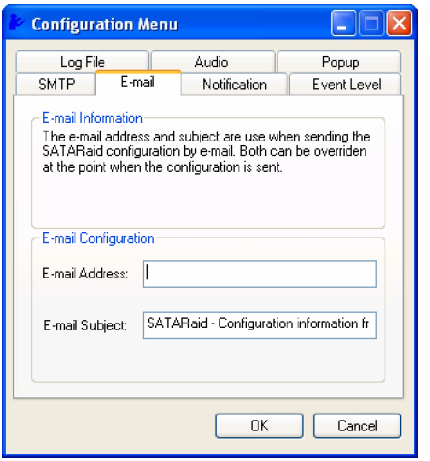


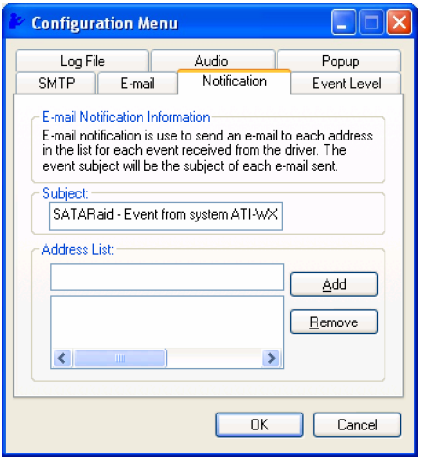


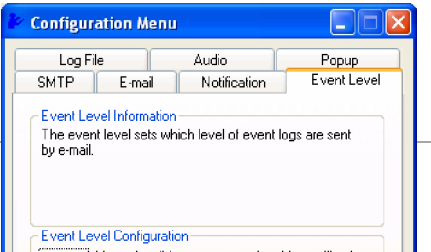

Configuration for SATARaid
File Configure Help
ATI WXPGATOR
SI-436eU-0
Channel 0
Device
Channel 1
Device
Sets
Set 0
Set
Members
SMART/Configuration
Identify Data
Member Information
To add a device to this set simply drag the desired device that is under a Bus tree item into this page. If the Set can accept the device it will be added to the list below.
To remove a member from a set highlight the member and click the remove button.
Mbr Idx
Dev Loc
State
Rebuild
Striped0
Channel 0
Current
Striped1
Channel 1
Current
Remove

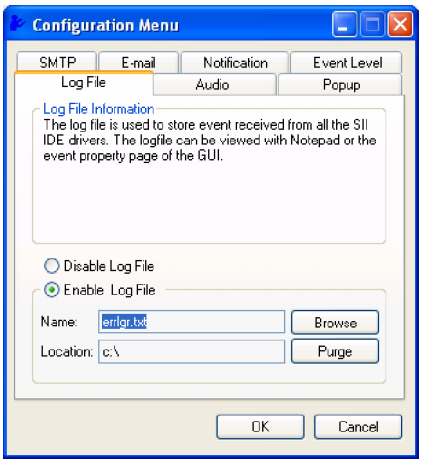

Configuration for SATARaid
File Configure Help
ATI WXPGATOR
SI-436eU-0
Channel 0
Device
Channel 1
Device
Sets
Set 0
Set
Members
SMART/Configuration
Identify Data
SMART Information
Support: Yes
Enabled: Yes
Status Threshold: OK
Hot Spare and Auto Rebuild
When enabled a hot spare will automatically be added to this set and a rebuild started when a member is dropped. Only valid for mirrored sets and mirrored striped sets.
Enabled
Disabled
Apply

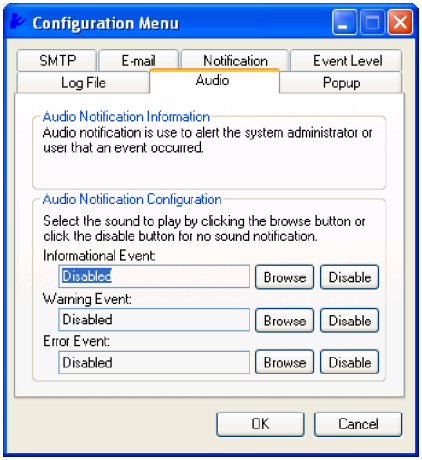

Configuration Menu
Log File
Audio
Popup
SMTP
E-mail
Notification
Event Level
SMTP Information
A SMTP server is the server that is use to send e-mails. Contact your network administrator to find out the name of this server. Be sure to include the name and domain.
Example: server.company.com

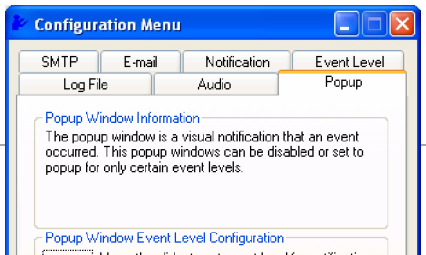

Configuration Menu
Log File
Audio
Popup
SMTP
E-mail
Notification
Event Level
E-mail Information
The e-mail address and subject are use when sending the SATARaid configuration by e-mail. Both can be overriden at the point when the configuration is sent.
E-mail Configuration
E-mail Address:
E-mail Subject:
SATARaid - Configuration information fr
OK
Cancel

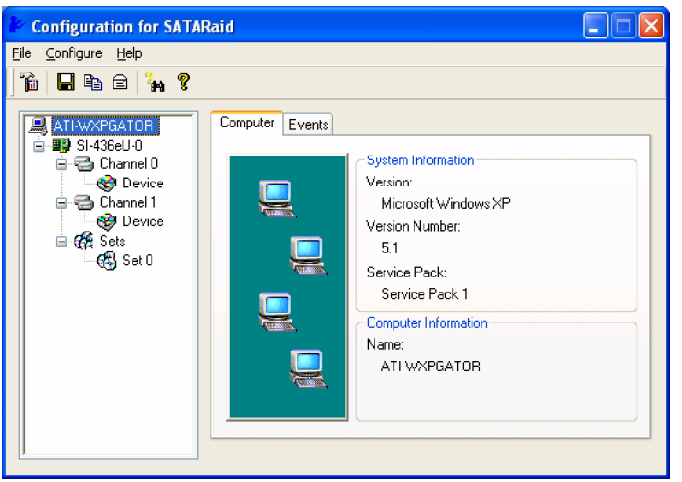

Configuration Menu
Log File
Audio
Popup
SMTP
E-mail
Notification
Event Level
E-mail Notification Information
E-mail notification is use to send an e-mail to each address in the list for each event received from the driver. The event subject will be the subject of each e-mail sent.
Subject:
SATARaid - Event from system ATI-WX
Address List:
Add
Remove
OK
Cancel


Configuration Menu
Log File
Audio
Popup
SMTP
E-mail
Notification
Event Level
Event Level Information
The event level sets which level of event logs are sent by e-mail.
Event Level Configuration


Configuration Menu
SMTP
E-mail
Notification
Event Level
Log File
Audio
Popup
Log File Information
The log file is used to store event received from all the SII IDE drivers. The logfile can be viewed with Notepad or the event property page of the GUI.
Disable Log File
Enable Log File
Name:
errlgr.txt
Browse
Location:
c:\
Purge
OK
Cancel


Configuration Menu
SMTP
E-mail
Notification
Event Level
Log File
Audio
Popup
Audio Notification Information
Audio notification is use to alert the system administrator or user that an event occurred.
Audio Notification Configuration
Select the sound to play by clicking the browse button or click the disable button for no sound notification.
Informational Event:
Disabled
Browse
Disable
Warning Event:
Disabled
Browse
Disable
Error Event:
Disabled
Browse
Disable
OK
Cancel


Configuration Menu
SMTP
E-mail
Notification
Event Level
Log File
Audio
Popup
Popup Window Information
The popup window is a visual notification that an event occurred. This popup windows can be disabled or set to popup for only certain event levels.
Popup Window Event Level Configuration


Configuration for SATARaid
File Configure Help
ATI-WXPGATOR
SI-436eU-0
Channel 0
Device
Channel 1
Device
Sets
Set 0
Computer
Events
System Information
Version:
Microsoft Windows XP
Version Number:
5.1
Service Pack:
Service Pack 1
Computer Information
Name:
ATI WXPGATOR

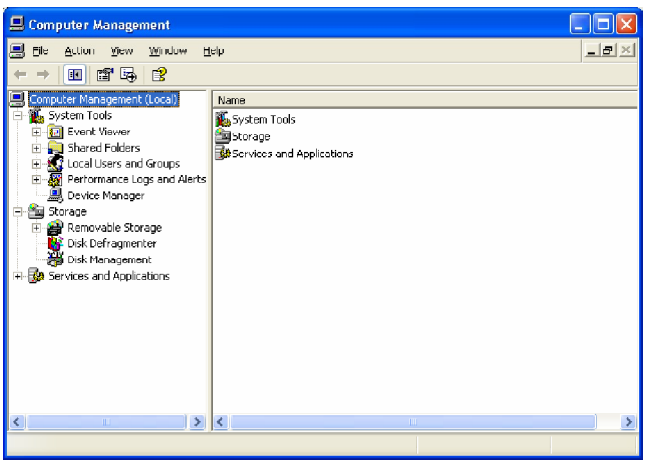
Configuring RAID 0 Set(s) with Windows Disk Manager

Note: This section is only applicable to non-initiated drives. It is not applicable if the drives have been set up as RAID 0 with the BIOS utility.

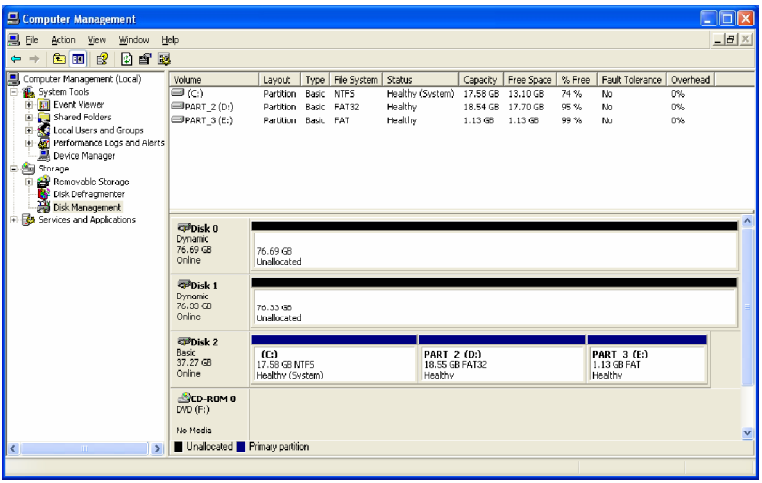
The Windows XP built-in Disk Manager can be used to set up installed SATA drives in Disk Striping (RAID 0) configuration.

The difference between using the Disk Manager and using the BIOS utility is that the former can select the size of the Striped Disk, while the latter assigns the entire volume of the SATA drives to RAID 0.

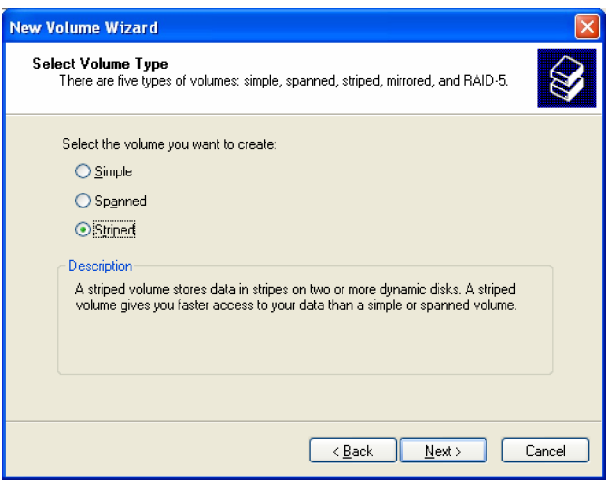
Right clicking on the My Computer icon will access Computer Management. The following screen will appear when Computer Management is started. Select Disk Management under the Storage tree.



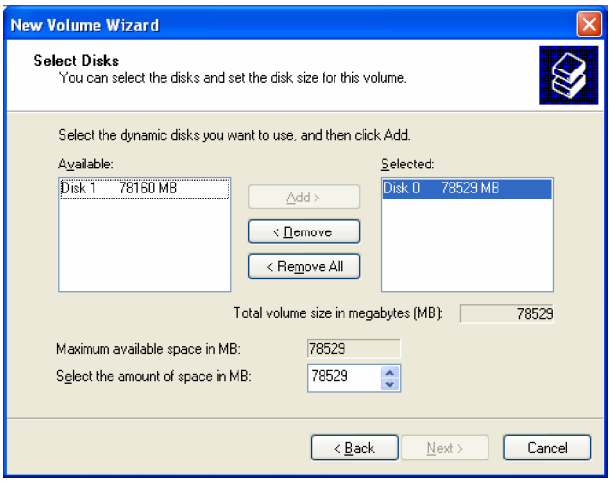
If SATA drives had not been initialized, initialize the disk as Dynamic.

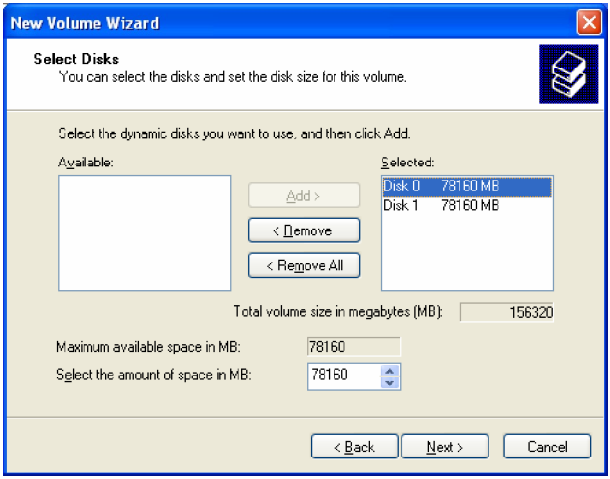


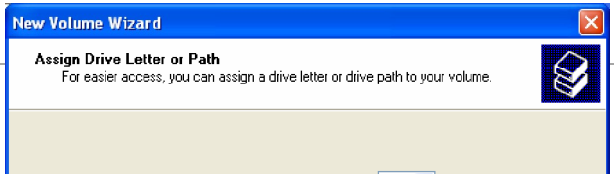
Right click on Disk 0 and select ‘New Volume’. At ‘New Volume Wizard’ select Striped for type of volume.

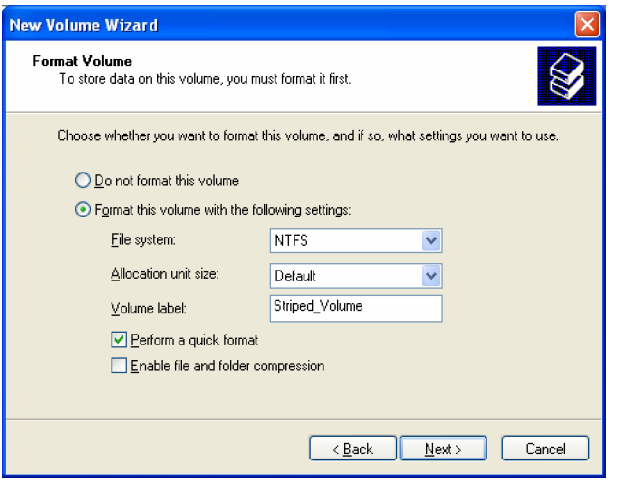


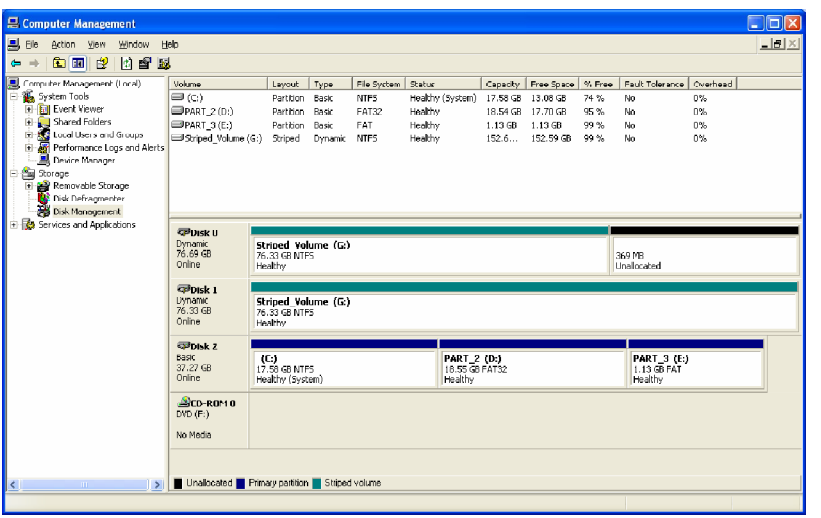
Total size of disk set for striping is set next.








New Volume Wizard
Format Volume
To store data on this volume, you must format it first.
Choose whether you want to format this volume, and if so, what settings you want to use.
Do not format this volume
Format this volume with the following settings:
File system:
NTFS
Allocation unit size:
Default
Volume label:
Striped_Volume
Perform a quick format
Enable file and folder compression
< Back
Next >
Cancel


Computer Management
File
Action
View
Window
Help
Volume
Layout
Type
File System
Status
Capacity
Free Space
% Free
Fault Tolerance
Overhead
Striped_Volume (G:)
Striped_Volume (G:)
Striped_Volume (G:)
Unallocated
Primary partition
Striped volume

Appendix C: ATI SURROUNDVIEW™

ATI SURROUNDVIEW™ is an integrated feature supported by the onboard ATI northbridge chipset. It provides the power and convenience of multi-adapter, multi-monitor support for computers that use an AGP- or PCI Express®-based graphics card in conjunction with specific ATI integrated graphics processors (IGPs).

Getting Started

SURROUNDVIEW™ provides the power and convenience of multi-adapter, multi-monitor support for computers that use an AGP- or PCI Express®-based graphics card in conjunction with the following ATI integrated graphics processors (IGPs):

- RADEON® XPRESS 200
- RADEON® 9100 Pro
- RADEON® 9100
- RADEON® 9000

SURROUNDVIEW™ enables support for up to three independent monitors.

Multi-monitor capability increases productivity, allowing you to read e-mail on one screen, work on a spreadsheet on another, and create a document on yet another. SURROUNDVIEW™ is also ideal for an office environment. For example, a brokerage can monitor trades, place orders, and sell—each on a different display.

When the home-office computer is not being used for work, it can be used to play the latest games, several of which can take advantage of SURROUNDVIEW™'s multi-monitor display capabilities. For example, with Microsoft® Flight Simulator, cyber pilots can move different views to separate monitors.

Enabling the SURROUNDVIEW™ feature requires only a few steps:

1. Installing a graphics card in the motherboard's PCIe™ slot.
2. Enabling the integrated graphics processor (if necessary).
3. Enabling SURROUNDVIEW™ in the BIOS.

System Requirements

Supported ATI Products	Integrated graphics processors (enabled by system BIOS): • RADEON® XPRESS 200 • RADEON® 9100 Pro • RADEON® 9100 IGP • RADEON® 9000 IGP AGP/PCIe™ graphics cards: • RADEON® X800 series • RADEON® X700 series • RADEON® X600 series • RADEON® X300 series • RADEON® 9800 SE / PRO / XT • RADEON® 9600 Series • RADEON® 9500 / PRO • RADEON® 9200 / SE / PRO • RADEON® 9000 Series • All All-in-Wonder® cards
Expansion Slot	• AGP 2X, 8X, or 2X/4X/8X • PCIe™ X16
Operating System	• Windows® 2000 • Windows® XP (Home or Pro)
CPU	Pentium® 4 2.0 GHz or equivalent; 3.0 GHz recommended.
System Memory	256 MB minimum; 512 MB recommended.
AGP Aperture (for AGP-based cards)	128 MB minimum; 256 MB recommended.
UMA Frame Buffer	64 MB minimum; 128 MB recommended.

Installing a Graphics Card

MSI Reminds You...
*This section provides **generic** installation instructions only. In most cases a graphics card will come with **specific** installation instructions, in which case users should consult their graphics card manual and follow the instructions therein.*

Before You Begin

Before you begin installing your graphics card, please do the following:

1. Record any serial numbers printed on the card itself.
2. Update your PCIe™ chipset drivers to the latest version. Consult your motherboard manual or manufacturer's Web site for more information.
3. Uninstall the graphics drivers for any previously installed graphics card if you are installing a new ATI graphics card.

MSI Reminds You...
Your integrated graphics processor will have separate drivers from your PCIe™ graphics card. Do not uninstall the drivers for your IGP.

Basic Graphics Card Installation

u To install a graphics card

1. Turn off the computer, monitor, and other peripheral devices.
2. Unplug the computer's power cord and disconnect all cables from the back of your computer.

MSI Reminds You...
WARNING - Wait approximately 20 seconds after unplugging the power cord before disconnecting a peripheral or removing a component from the motherboard to avoid possible damage to the motherboard.

3. Remove the computer cover. If necessary, consult your computer's manual for help in removing the cover.

MSI Reminds You...
WARNING - Remember to discharge your body's static electricity by touching the power supply or the metal surface of the computer chassis.

4. Unscrew or unfasten and remove any existing graphics card from your computer.
5. Locate the appropriate slot and, if necessary, remove the metal back-plate cover.
6. Align your graphics card with the slot and press it in firmly until the card is fully seated.
7. Screw in or fasten the graphics card securely and replace the computer cover.
8. Reconnect any cables you have disconnected and plug in the computer's power cord.
9. Turn on the monitor and then your computer. If you have properly installed your graphics card, operating system messages will appear once the boot procedure is finished.

Your monitor will be running in a basic video mode. Higher refresh rates are not available at this stage of the installation. Once you have installed the proper drivers and software, you can use the Display Properties control panel to adjust the video settings and configure multiple monitors.

Enabling SURROUNDVIEW™

Enabling the Integrated Graphics Processor

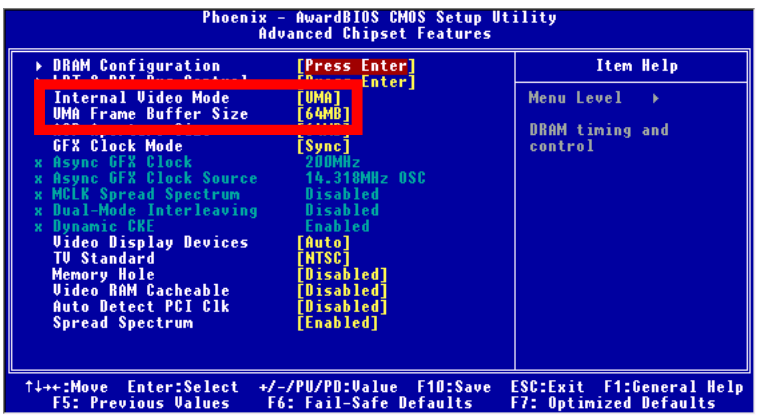
In order to use SURROUNDVIEW™, the integrated graphics processor (IGP) on the motherboard must be enabled in addition to the graphics card in the PCIe™ slot. Make sure the IGP is enabled (using the BIOS setup utility) in addition to the graphics card before continuing.

- **u** BIOS options (under "***Advanced Chipset Features***" and "***Integrated Peripherals***").

Enabling SURROUNDVIEW™

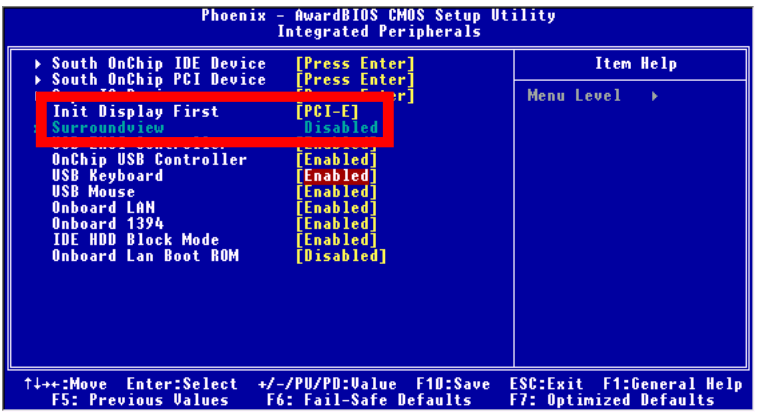
To enable SURROUNDVIEW™, you must first alter your computer's BIOS settings.

1. Restart your system, and enter CMOS setup. CMOS is part of your system's BIOS (Basic Input/Output System). When restarting, press **DEL** key to enter Setup. The CMOS Setup screen appears.
2. Use the arrow keys to navigate to **Advanced Chipset Features**, and then press Enter. The Advanced Chipset Features screen appears.



3. Use the arrow keys to navigate to **Internal Video Mode** and set it to **UMA**.
4. Use the arrow keys to navigate to **UMA Frame Buffer Size** and set it to **64MB**.
5. Press **Esc** to return to the CMOS Setup screen.

6. Use the arrow keys to navigate to **Integrated Peripherals**, and then press Enter. The Integrated Peripherals screen appears.



7. Use the arrow keys to navigate to **Init Display First** and set it to **PCI-E**.
8. Use the arrow keys to navigate to **Surroundview** and set it to **Enabled**.
9. Press **F10** to Save your changes. When the **Save to CMOS and Exit** prompt appears, press **Y**.

Frequently Asked Questions

Using SURROUNDVIEW™	
Question	**Answer**
Does the Windows® "Standby" function work when SURROUNDVIEW™ is enabled?	Yes, Standby should work properly with SURROUNDVIEW™.
Do all ATI cards support SURROUNDVIEW™? **Can SURROUNDVIEW™ run with other manufacturers' graphics cards?**	No, only the ATI graphics cards noted in System Requirements will support SURROUNDVIEW™.
If the integrated graphics processor (IGP) is enabled and I install a PCI graphics card, is SURROUNDVIEW™ available?	No, this function is called "dual adaptor," and functions similarly to using two, discrete graphics cards. SURROUNDVIEW™ requires an AGP- or PCIe-based graphics card.

Using Multiple Displays

Setting Up Multiple Displays

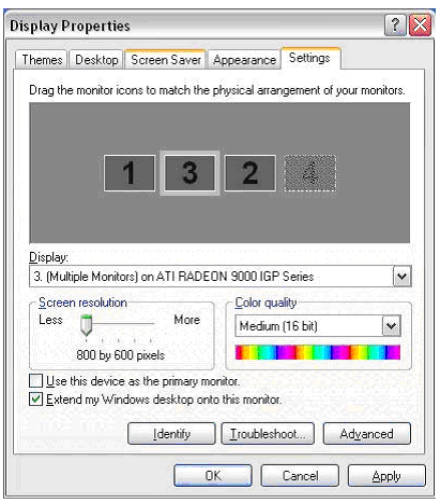
To use SURROUNDVIEW™, connect display devices to the output connections of both your integrated graphics processor (IGP) and your PCI Express® graphics card.

There will normally be three connections: one from the IGP and two from the graphics card.

u To connect your monitors

1. **Power off** your computer and monitors.
2. **Plug** the monitor cables into their appropriate connectors.
3. **Power on** your monitors first, and then restart your computer so that Windows® can detect the new hardware settings.

Once your monitors are connected, you can configure them for a multi-monitor display using SURROUNDVIEW™.



Windows® Display Properties Dialog with Multiple Monitors

u To set up a multi-monitor display

1. Right-click on a clear area of your desktop and choose **Properties**. The Display Properties dialog opens.
2. Select the **Settings** tab.
3. Click the **Identify** button to display a large number on each monitor.
4. Right-click the display icon in the Display Properties dialog that you wish to be your primary (main) monitor, and choose **Primary**.

   Note: When you use multiple monitors with your card, one monitor will always be Primary. All additional monitors will be designated as Secondary.
5. Select the display icon identified by the number **2**.
6. Click **Extend my Windows desktop onto this monitor**.
7. Right-click the display icon and choose **Attached**, if necessary.
8. Set the **Screen Resolution** and **Color Quality** as appropriate for the second monitor. Click **Apply** or **OK** to apply these new values.
   - u Refer to your Windows® online help and documentation for further information on using the **Settings** tab.

   Note: Each display can use a different screen resolution. For games, it is recommended that you use the same resolution on all displays.
9. Repeat steps 5 through 7 for the display icon identified by the number three.
10. Click and drag the display icons to positions that represent the physical setup of your monitors that you wish to use. The placement of display icons determines how you move items from one monitor to another.
    - u To move items by dragging left and right, place the display icons side by side.
    - u To move items by dragging up and down, play the display icons one above the other.

Using SURROUNDVIEW™

Business Applications

Using SURROUNDVIEW™, you can run multiple applications simultaneously — for example, a spreadsheet, a Web browser and a stock trader could be run and viewed on separate screens at the same time.

u To enable SURROUNDVIEW™ for business applications

1. Right-click a clear area of your desktop, click **Properties**, click the **Settings** tab, and then click the **Identify** button to display a large number on each monitor, showing which monitor corresponds with each icon.

Identifying your screens

2. Open your spreadsheet program. Your spreadsheet opens in the primary monitor.

Launching a spreadsheet in your primary monitor

3. Open your Web browser, and then drag it to monitor 2.

Web browser displayed on monitor 2

4. Launch another instance of your Web browser, and then drag it to monitor 3.

Another Web browser displayed on monitor 3

Games

The following section uses Microsoft® Flight Simulator as an example of using SURROUNDVIEW™ for games.

Using SURROUNDVIEW™, you can display a different Flight Simulator view on each of your monitors.

MSI Reminds You...
*For best results, in the **Flight Simulator Settings Display** dialog, set the full screen resolution for each video adapter to match the desktop resolution for the corresponding display.*
Because the simulation creates additional information that is sent to the video hardware and monitors, running multiple displays always affects performance compared to a single-display configuration.

u To enable SURROUNDVIEW™ for Microsoft® Flight Simulator

1. Start with Flight Simulator running in windowed mode, so that you can move windows off the primary display.

   To switch between full-screen and windowed mode, press **Alt + Enter** or, in the **Views** menu, click **Full Screen**.

   Your displays will look like the following:

Initial Start Up Screen for Microsoft® Flight Simulator

u **Monitor 2**

v **Monitor 1 (Primary)**

w **Monitor 3**

2. Click the **FLY NOW!** button to start Flight Simulator. Then click the "X" button to continue. You are now "flying".

"Flying" in Microsoft® Flight Simulator using primary monitor only

3. From the **Views** menu, create a new window, and then drag it to monitor 2.

Microsoft® Flight Simulator with both Primary and Monitor 2 running

MSI Reminds You...

1. *When moving a 3D window, you may see some hesitation when crossing the boundary to a secondary display. After you move the 3D window to the secondary display, that scene will be displayed in 3D. You can return to full-screen mode on each display after you move the windows.*
2. *Multiple full-screen setups are not saved in the Flight Simulator or Flight Configuration (.cfg) files. You can save a Flight while each display is in windowed mode, and then switch to full-screen mode after you launch Flight Simulator.*

4. From the **Views** menu, create another new window, and then drag it to monitor 3.

Microsoft® Flight Simulator using all three monitors