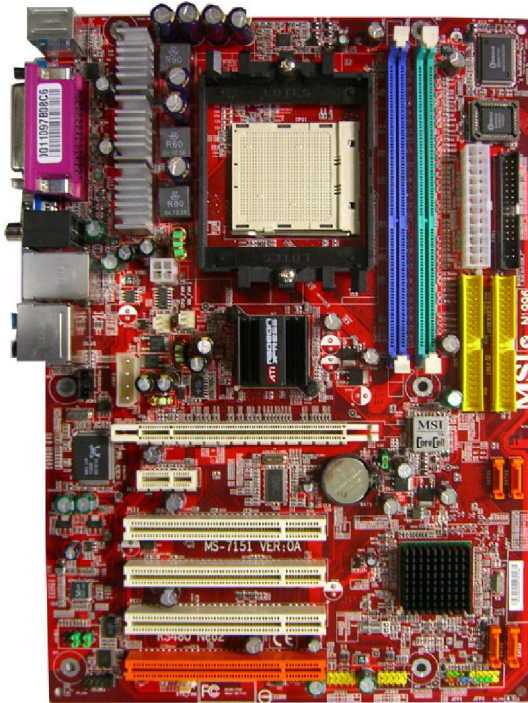




RX480 Neo2

MS-7151 (v1.X) ATX Mainboard



**English Version
G52-M7151X1**

Manual Rev: 1.0

Release Date: August 2005



FCC-B Radio Frequency Interference Statement

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

Notice 1

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

Notice 2

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

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



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

- (1) this device may not cause harmful interference, and*
- (2) this device must accept any interference received, including interference that may cause undesired operation.*

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Windows® 95/98/2000/2003/NT/XP are registered trademarks of Microsoft Corporation.

Netware® is a registered trademark of Novell, Inc.

Award® is a registered trademark of Phoenix Technologies Ltd.

AMI® is a registered trademark of American Megatrends Inc.

Revision History

Revision	Revision History	Date
V1.0	First Release of 7151 v1.x PCB with ATI RX480/SB400 chipsets	August 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 EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**



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



廢電池請回收

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

WEEE Statement



ENGLISH

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

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

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

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

FRANÇAIS

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

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

РУССКИЙ

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

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

ESPAÑOL

MSI como empresa comprometida con la protección del medio ambiente, recomienda:

Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al término 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 período 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 Elektrische 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 eelektronskoj 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 śmieć 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 atılmayacak ve bu elektronik elhazların üreticileri, elhazların 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 márkánév 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 adognerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

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Getting Started

Thank you for choosing the RX480 Neo2 (MS-7151 v1.X) ATX mainboard. The RX480 Neo2 mainboard is based on **ATI® RX480 & ATI® SB400** chipsets for optimal system efficiency. Designed to fit the advanced **AMD® K8 Athlon 64 FX** processor, the RX480 Neo2 delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- † Supports 64-bit AMD® Athlon 64 and Athlon 64 FX processor (Socket 939)
- † Supports up to 4200+ Athlon 64 FX or higher CPU
(For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset

- † ATI® RX480 Chipset
 - HyperTransport™ connection to AMD K8 Athlon64 processor
 - 8 or 16 bit control/address/data transfer both directions
 - 1000/800/600/400/200 MHz "Double Data Rate" operation both direction
 - Compliant with PCI Express 1.0a specifications (one x16 graphics interface, which can be divided into two smaller links for use by other devices)
- † ATI® SB400 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

Main Memory

- † Supports dual channel, four memory banks DDR 333/400, using two 184-pin DDRDIMMs
- † Supports a maximum memory size up to 2GB without ECC
- † Supports 2.5v DDR SDRAM DIMM
(For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.)

Slots

- † One PCI Express x16 slot (supports PCI Express Bus specification v1.0a compliant)
- † One PCI Express x1 slot
- † Four 32-bit Master 3.3V/5V PCI Bus slots

Onboard IDE

- † An IDE controller on the ATI® SB400 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 133/100/66 operation modes, 4X ultra DMA 100/66/33
- † 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 OSs, 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>

USB Interface

- † 8 USB ports
 - 4 ports in the rear I/O, 4 ports via the external bracket

LAN (optional)

- † Realtek® 8100C/8110SB LAN chip (Optional)
 - Integrated Fast Ethernet MAC and PHY in one chip
 - Supports 10Mb/s and 100Mb/s and 1000Mb/s (1000Mb/s for 8110SB only)
 - Compliance with PCI v2.2
 - Supports ACPI Power Management

Audio

- † 8 channels software audio codec RealTek ALC850
 - 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
 - 2 serial ports (COM1 on the rear, COM2 with pinheader)
 - 1 parallel port supporting SPP/EPP/ECP mode
 - 8 USB2.0 ports (Rear*4/Front*4)
 - 1 Audio (Line-Outx3, Line-In, MIC In, SPDIF Out (Coaxial/Fibre) 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.

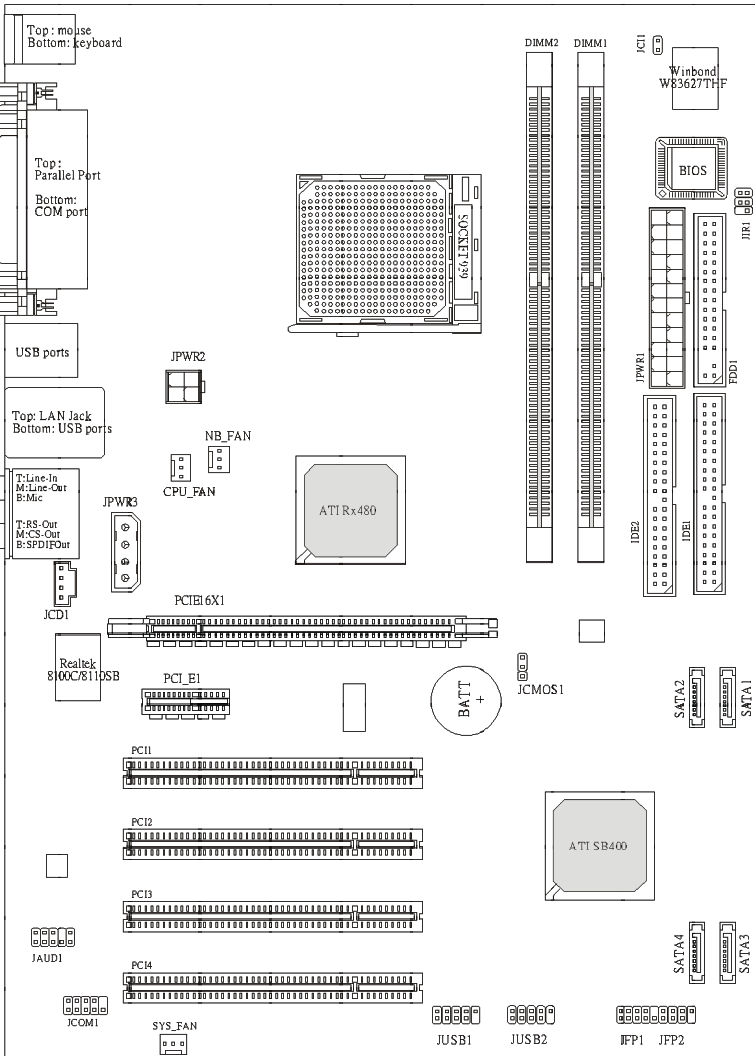
Dimension

† ATX Form Factor: 30.5cm X 21.5cm

Mounting

† 6 mounting holes

Mainboard Layout

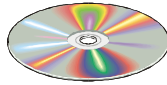


RX80 Neo2 (MS-7151 v1.X) ATX Mainboard

Packing Checklist



MSI motherboard



MSI Driver/Utility CD



SATA Cable (Optional)



Power Cable



Standard Cable for
Floppy Disk



Standard Cable for
IDE Devices



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.

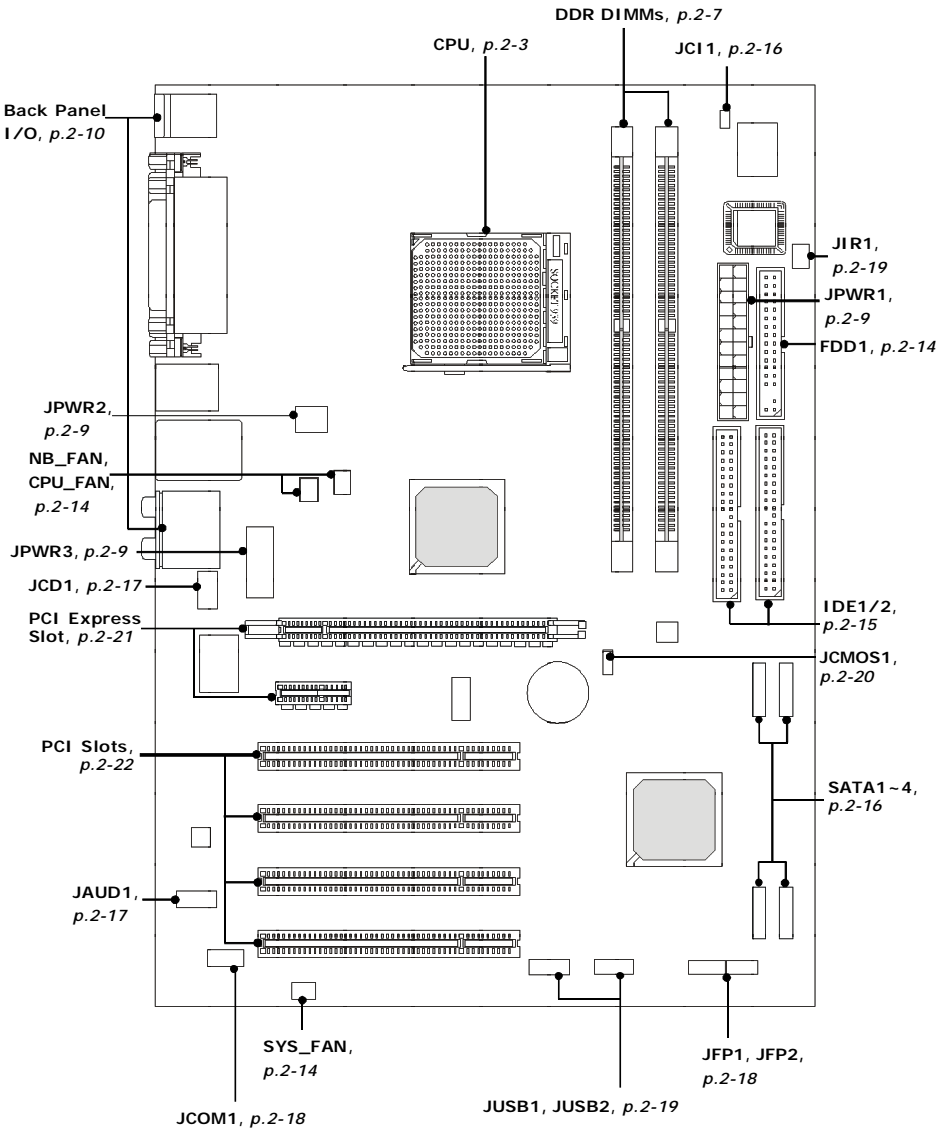
2

Hardware Setup

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

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

Quick Components Guide



Central Processing Unit: CPU

The mainboard supports AMD® Athlon64 processor. The mainboard uses a CPU socket called Socket-939 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

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



MSI Reminds You...

Overheating

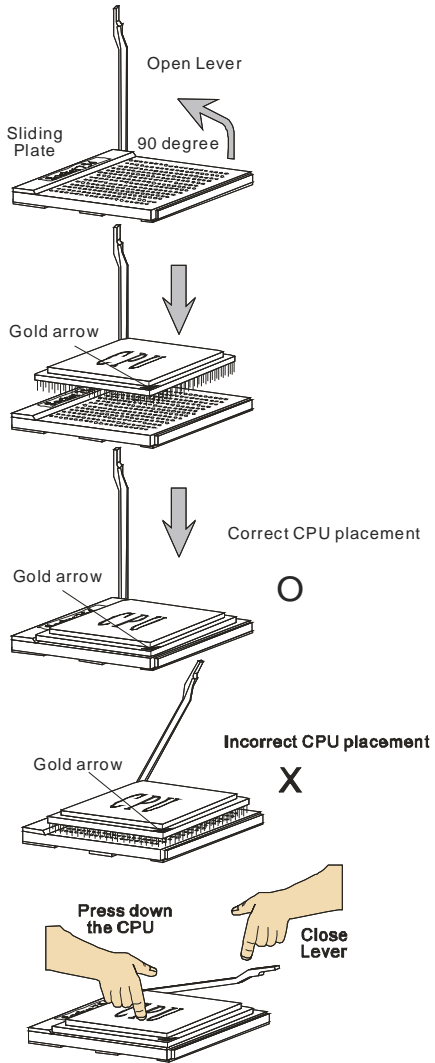
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

Replacing the CPU

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

CPU Installation Procedures for Socket 939

1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the gold arrow of the CPU. The gold arrow should point as shown in the picture. The CPU can only fit in the correct orientation.
4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.
5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



Installing AMD Athlon64 CPU Cooler Set

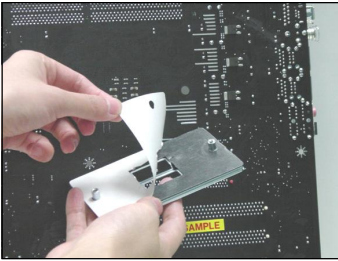
When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.



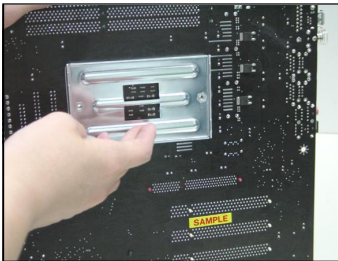
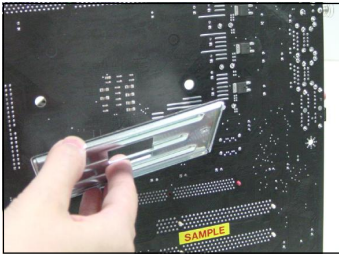
MSI Reminds You...

Mainboard photos shown in this section are for demonstration of the cooler installation for Socket 939 CPUs only. The appearance of your mainboard may vary depending on the model you purchase.

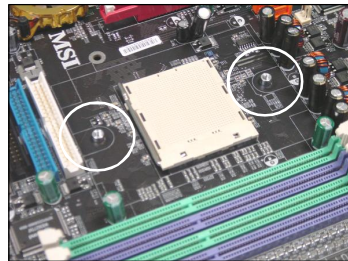
1. Detach the shield off the backplate's paster.



2. Turn over the mainboard, and install the backplate to the proper position.

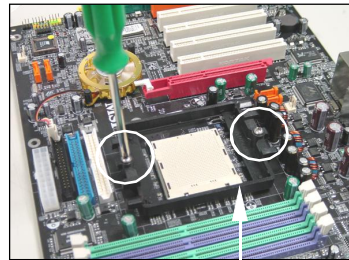


3. Turn over the mainboard again, and place the mainboard on the flat surface. Locate the two screw holes of the mainboard.



4. Align the retention mechanism and the backplate.

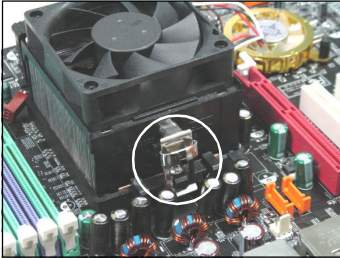
Fix the retention mechanism and the backplate with two screws.



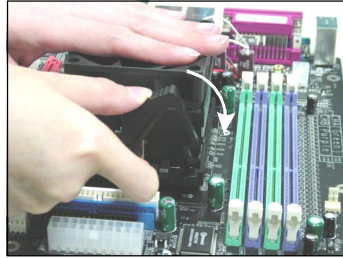
retention mechanism

5. Position the cooling set onto the retention mechanism.

Hook one end of the clip to hook first, and then press down the other end of the clip to fasten the cooling set on the top of the retention mechanism.

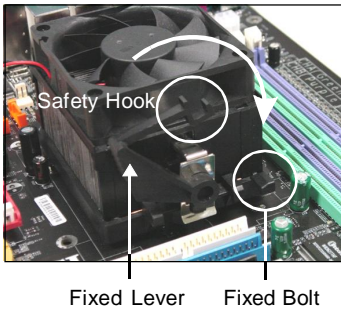


7. Fasten down the lever.

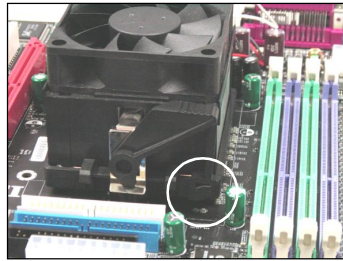


6. Locate the Fix Lever, Safety Hook and the Fixed Bolt.

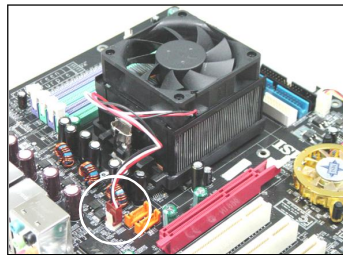
Lift up the intensive fixed lever.



8. Make sure the safety hook completely clasps the fixed bolt of the retention mechanism.



9. Attach the CPU Fan cable to the CPU fan connector on the mainboard.



MSI Reminds You...

While disconnecting the Safety Hook from the fixed bolt, it is necessary to keep an eye on your fingers, because once the Safety Hook is disconnected from the fixed bolt, the fixed lever will spring back instantly.

Memory

The mainboard provides 2 slots for 184-pin DDR DIMM (Double In-Line Memory Module) modules and supports the memory size up to 2GB. You can install DDR 333/400 modules on the DDR DIMM slots (DIMM 1~2).

DIMM1~DIMM2
(from right to left)



DIMM Module Combination

Install at least one DIMM module on the slots. Each DIMM slot supports up to a maximum size of 1GB. Users can install either single- or double-sided modules to meet their own needs. Users may install memory modules of different type and density on different-channel DDR DIMMs. However, **memory modules of the same type and density** are required while using dual-channel DDR, or instability may happen.

Slots		Mode
DIMM1 (CH A)	DIMM2 (CH B)	
128MB~1GB		Single Channel
128MB~1GB	128MB~1GB	Dual Channel

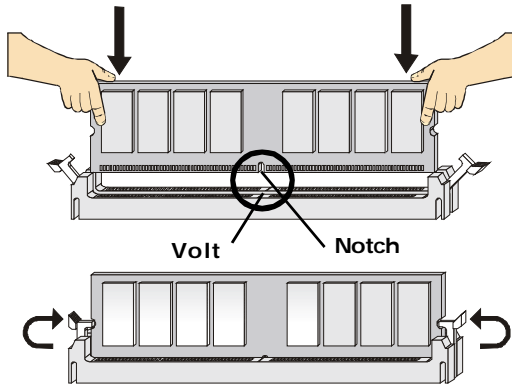


MSI Reminds You...

- The system operates **ONLY** when the DDR modules are installed in accordance with the above-mentioned memory population rules.
- In dual-channel mode, make sure that you install memory modules of **the same type and density** on DDR DIMMs.
- To enable successful system boot-up, always insert the memory modules into the **Channel A slots (DIMM1) first**.
- This mainboard **DO NOT** support the memory module installed with more than 18 pieces of IC (integrated circuit).

Installing DDR Modules

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



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: JPWR1

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.

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: JPWR2

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

ATX 4-Pin VGA Power Connector: JPWR3

This connector is designed to connect 12V power supply for add-on PCI Express graphics card(s).

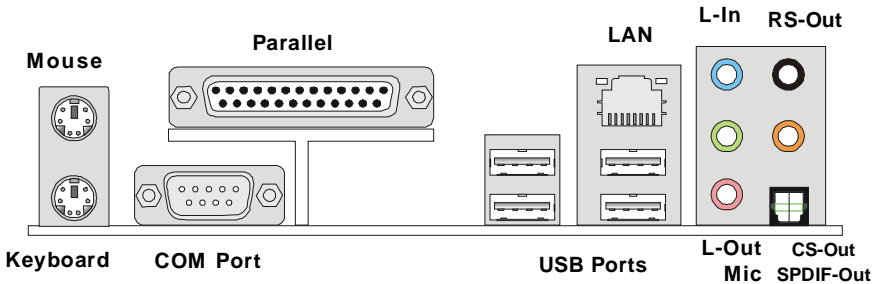
JPWR2 Pin Definition		JPWR3 Pin Definition	
PIN	SIGNAL	PIN	SIGNAL
1	GND	1	5V
2	GND	2	GND
3	12V	3	GND
4	12V	4	12V



MSI Reminds You...

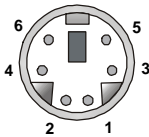
1. These two connectors connect to the ATX power supply and have to work together to ensure stable operation of the mainboard.
2. Power supply of 350 watts (and above) is highly recommended for system stability.
3. ATX 12V power connection should be greater than 18A.

Back Panel



Mouse/Keyboard Connector

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



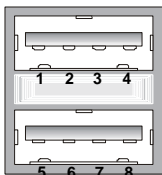
PS/2 Mouse / Keyboard
(6-pin Female)

Pin Definition

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

USB Connectors

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



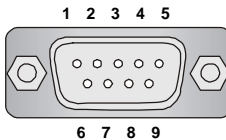
USB Ports

USB Port Description

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

Serial Port Connector: COM Port

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



**9-Pin Male DIN Connector
COM Port**

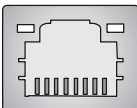
Pin Definition

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

LAN (RJ-45) Jack

The mainboard provides 1 standard RJ-45 jack for connection to single Local Area Network (LAN). This LAN enables data to be transferred at 1000Mbps (Realtek 8100S), 100Mbps or 10Mbps. You can connect a network cable to it.

Giga-bit LAN Pin Definition

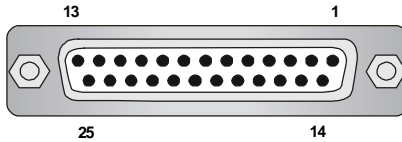


RJ-45 LAN Jack

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-

Parallel Port Connector: LPT1

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



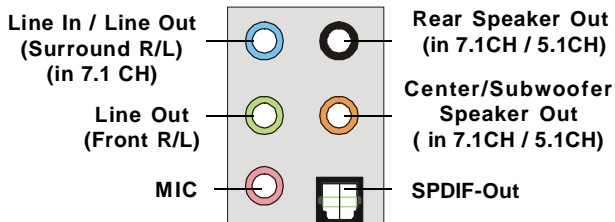
Pin Definition

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

Audio Port Connectors

The left 3 audio jacks are for 2-channel mode for stereo speaker output: **Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

However, there is an advanced audio application provided by Realtek ALC850 to offer support for **7.1-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/5.1-/7.1- channel audio.



MSI Reminds You...

*For the advanced functions of the audio codec, please refer to **Appendix A** for details.*

Connectors

Floppy Disk Drive Connector: FDD1

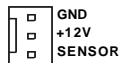
The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



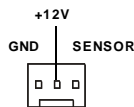
FDD1

Fan Power Connectors: CPU_FAN/NB_FAN/SYS_FAN

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_FAN/NB_FAN



SYS_FAN



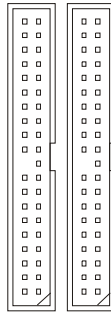
MSI Reminds You...

Please refer to the recommended CPU fans at AMD® 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.



IDE2 IDE1

IDE1 (Primary IDE Connector)

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

IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

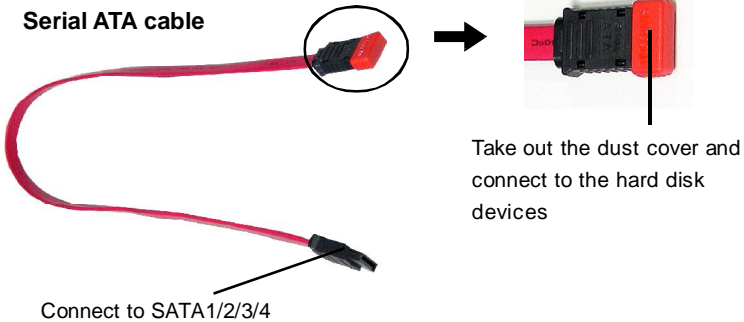
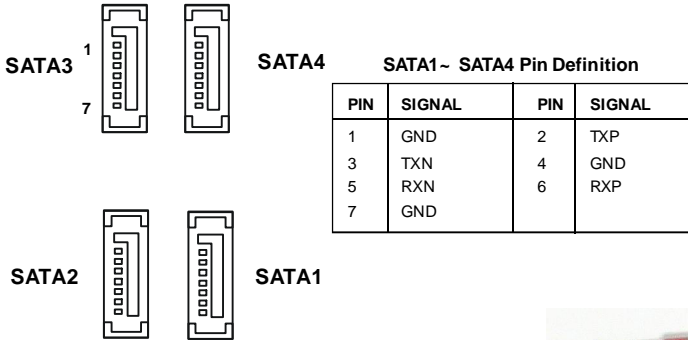


MSI Reminds You...

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

Serial ATA Connectors: SATA1~SATA4

The ATI SB400 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.



MSI Reminds You...

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

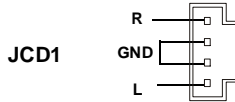
Chassis Intrusion Switch Connector: JCI1

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



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...

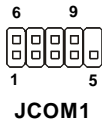
If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.



Serial Port Header: JCOM1 (Optional)

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

Pin Definition

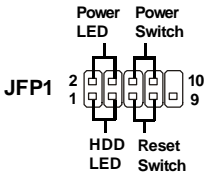


PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

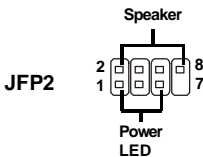
Front Panel Connectors: JFP1 / JFP2

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

JFP1 Pin Definition



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



JFP2 Pin Definition

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

IrDA Infrared Module Header: JIR1 (Optional)

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

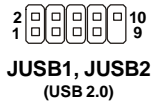


Pin Definition

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

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 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

Connected to JUSB1 or JUSB2



MSI Reminds You...

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

Jumpers

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

Clear CMOS Jumper: 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.



JCMOS1



Keep Data



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.

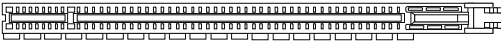
Slots

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

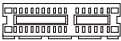
PCI Express Slots

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.



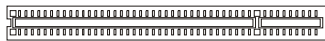
PCI Express x16 slot



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 Slots

PCI Interrupt Request Routing

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

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

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



MSI Reminds You...

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

2. *While booting up, the BIOS version is shown in the 1st line appearing after the memory count. It is usually in the format: example: A7151AMS V1.0BH 06/20/05*

where:

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

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

6th digit refers to the chipset vendor, MS=all standard customers.

V1.0BH refers to the BIOS version.

06/20/05 refers to the date this BIOS is released.

Entering Setup

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

DEL: Setup Menu **TAB:** Logo **F11:** Boot Menu **F10:** Flash Recovery

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.

Selecting the First Boot Device

You are allowed to select the 1st boot device without entering the BIOS setup utility by pressing <F11>. When the same message as listed above appears on the screen, press <F11> to trigger the boot menu.

The POST messages might pass by too quickly for you to respond in time. If so, restart the system and press <F11> after around 2 or 3 seconds to activate the boot menu similar to the following.

Select First Boot Device		
Floppy	:	1st Floppy
IDE-0	:	IBM-DTLA-307038
CDROM	:	ATAPI CD-ROM DRIVE 40X M
[Up/Dn] Select	[RETURN] Boot	[ESC] cancel

The boot menu will list all the bootable devices. Select the one you want to boot from by using arrow keys and then pressing <Enter>. The system will boot from the selected device. The selection will not make changes to the settings in the BIOS setup utility, so next time when you power on the system, it will still use the original first boot device to boot up.

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
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<F6>	Load Optimized Defaults
<F7>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

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

Main Menu

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

Default Settings

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

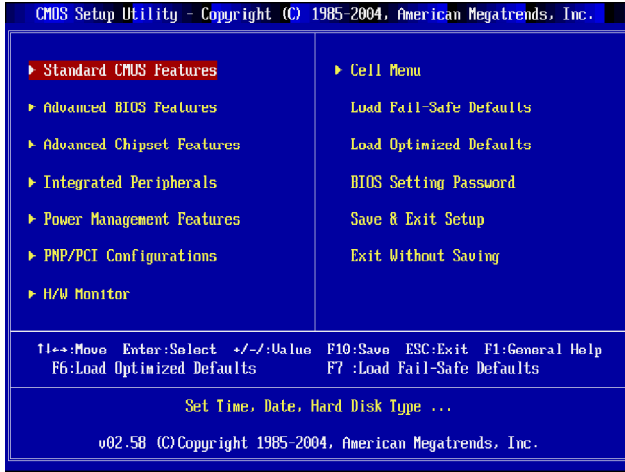


MSI Reminds You...

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

The Main Menu

Once you enter AMIBIOS NEW SETUP UTILITY, the Main Menu will appear on the screen. Use arrow keys to move among the items and press <Enter> to enter the sub-menu.



Standard CMOS Features

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

Advanced BIOS Features

Use this menu to setup the items of AMI® special enhanced features.

Advanced Chipset Features

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

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management 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 the status of your CPU, fan, warning for overall system status.

Cell Menu

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

Load Fail-Safe Defaults

Use this menu to load the default values set by the BIOS vendor for stable system performance.

Load Optimized Defaults

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

BIOS Setting Password

Use this menu to set the password for BIOS.

Save & Exit Setup

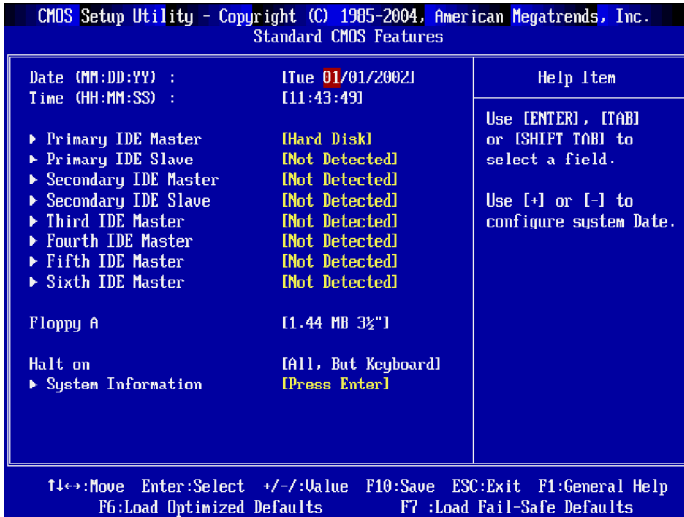
Save changes to CMOS and exit setup.

Exit Without Saving

Abandon all changes and exit setup.

Standard CMOS Features

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



Date (MM:DD:YY)

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

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

month The month from Jan. through Dec.

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

year The year can be adjusted by users.

Time (HH:MM:SS)

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

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

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



Device

This item shows the information about the specified item. Read-only.

Type

This item defines the HDD parameters.

LBA/Large Mode

This item allows you to enable or disable the LBA (Logical Block Address, the logical block size in hard disk) mode. Setting options: [Auto], [Disabled].

DMA Mode

This item allows you to enable or disable the DMA (Direct Memory Access) mode. Setting options: [Auto], [SWDMA0], [SWDMA1], [SWDMA2], [MWDMA0], [MWDMA1], [MWDMA2], [UDMA0], [UDMA1], [UDMA2], [UDMA3], [UDMA4], [UDMA5].

Hard Disk S.M.A.R.T.

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

Floppy A

This item allows you to set the type of the floppy drives installed. Available options: [Disabled], [360 KB, 5¹/₄], [1.2 MB, 5¹/₄], [720 KB, 3¹/₂], [1.44 MB, 3¹/₂], [2.88MB, 3¹/₂].

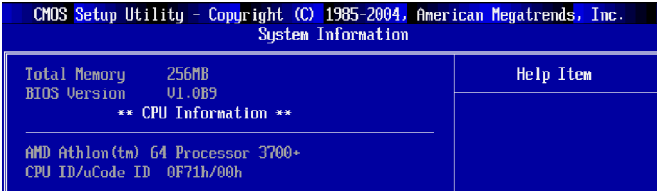
Halt On

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

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

System Information

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



Total System Memory/BIOS Version

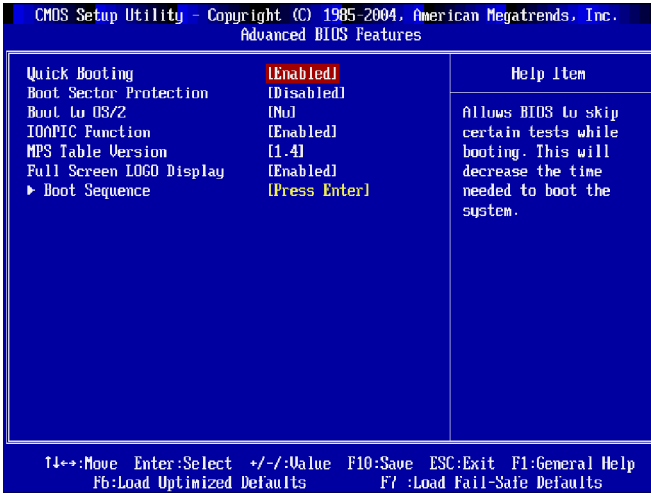
This item shows the memory status and BIOS version of your system (read only).

CPU Information

AMD Athlon(tm) 64 Processor/CPU ID/uCode ID

The two items show the CPU related information of your system (read only).

Advanced BIOS Features



Quick Booting

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 Boot Sector Protection function.

You should enable this function at all times. The only time when you need to disable it is when you want to update the BIOS. After updating the BIOS, you should immediately re-enable it to protect it against viruses. Setting options: [Enabled], [Disabled].

Boot to OS/2

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

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

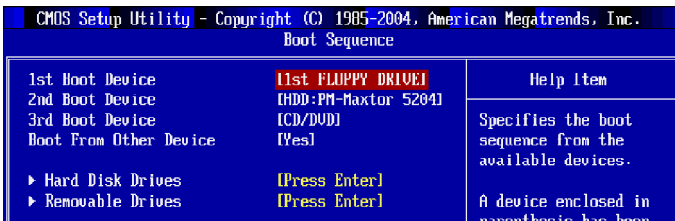
supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: [1.4], [1.1].

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> and the following sub-menu appears:



1st/2nd/3rd Boot Device

These items allow you to set the sequence of boot devices where BIOS attempts to load the operating system.

Boot From Other Devices

Setting the option to [Yes] allows the system to try to boot from other devices if the system fails to boot from the 1st/2nd/3rd boot device. Settings are: [Yes], [No].



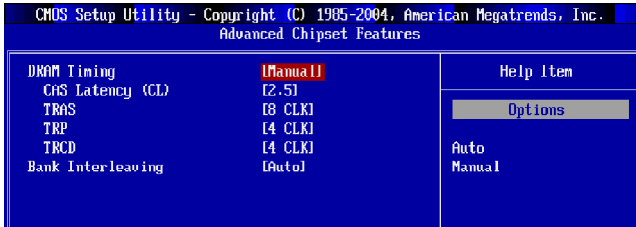
MSI Reminds You...

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

Hard Disk Drives/Removable Drives

These items allow you to specify the boot devices where BIOS attempts to load the operating system.

Advanced Chipset Features



MSI Reminds You...

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

DRAM Timing

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

CAS Latency (CL)

This controls the CAS latency, which determines the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: [2.0], [2.5], [3.0]. [2.0] increases the system performance the most while [3.0] provides the most stable performance.

TRAS

This setting determines the time RAS takes to read from and write to a memory cell. Setting options: [5CLK] to [15CLK].

TRP

This setting controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refresh may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Setting options: [2CLK] to [6CLK].

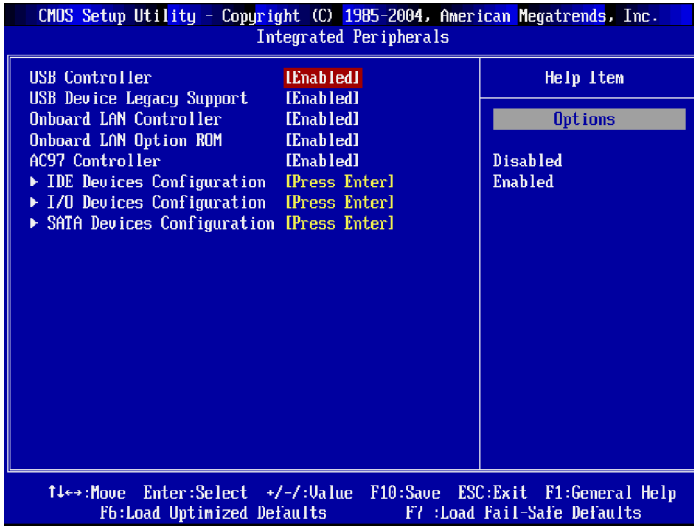
TRCD

When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance. Setting options: [2CLK] to [6CLK].

Bank Interleaving

This field selects 2-bank or 4-bank interleave for the installed SDRAM. Disable the function if 16MB SDRAM is installed. Settings: [Auto], [Disabled].

Integrated Peripherals



USB Controller

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

USB Device Legacy Support

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

Onboard LAN Controller

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

Onboard LAN Option ROM

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

AC97 Controller

This item is used to enable or disable the onboard AC97 (Audio Codec) controller. Selecting [Enabled] allows the mainboard to enable the onboard AC97 controller. Disable the function if you want to use other controller cards to connect an audio device. Settings: [Disabled] and [Enabled].

IDE Devices Configuration

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



On-Chip IDE Controller

The integrated peripheral controller contains a IDE interface with support for two IDE channels. Select [Enabled] to activate the IDE interface. Settings 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 Devices Configuration

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



COM Port 1/2

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

Parallel Port

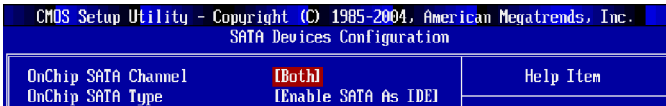
This field specifies the base I/O port address of the onboard parallel port. Selecting [Auto] allows BIOS to automatically determine the correct base I/O port address. Settings: [378], [278], [3BC] and [Disabled].

Parallel Port Mode

This item selects the operation mode for the onboard parallel port: [ECP], [Normal] or [Bi-Directional].

SATA Devices Configuration

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



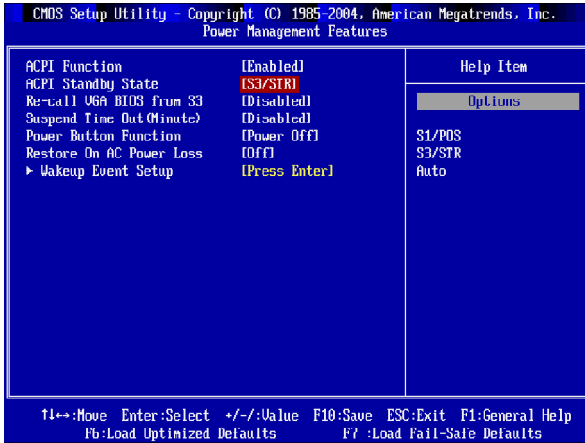
OnChip SATA Channel

Setting options: [Disabled], [Single], [Both].

OnChip SATA Type

Select **[Enable SATA As IDE]** if you want to have SATA as IDE function, and this device is able to install OS. Select **[Enable SATA As RAID]** if you want to have RAID function, you may install OS on this SATA device. Select **[Enable SATA As Storage]** if you want this SATA device for storage only. Setting options: [Enable SATA As IDE], [Enable SATA As RAID], [Enable SATA As Storage].

Power Management Features



MSI Reminds You...

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

ACPI Function

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/2000/ME/XP, 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, Windows 2000 and Windows XP, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

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

Re-Call VGA BIOS from S3

When **ACPI Standby State** is set to [S3/STR], users can select the options in this field. Selecting [Yes] allows BIOS to call VGABIOS to initialize the VGA

card when system wakes up (resumes) from S3 sleep state. The system resume time is shortened when you disable the function, but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3. Options: [Auto], [Yes], [No].

Suspend Time Out (Minute)

If system activity is not detected for the length of time specified in this field, all devices except CPU will be shut off. Settings: [Disabled], [1 minute], [2 minutes], [3 minutes], [4 minutes], [5 minutes], [10 minutes], [15 minutes], [32 minutes], [64 minutes].

Power Button Function

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

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

Restore on AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

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

Wakeup Event Setup

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



Resume From S3 By USB Device

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

Resume by PS/2 Keyboard

This controls how and whether the PS/2 keyboard is able to power on the system. If you choose [Password], you must type the password to power on the system. Settings: [Disabled], [Password] and [Any Key].

Keyboard Password

If **Resume by PS/2 Keyboard** is set to [Password], then you can set a password in the field for the PS/2 keyboard to power on the system.

Resume by PS/2 Mouse

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

Resume by PCI Device (PME#)

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

Resume by PCIe Device (PME#)

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

Resume by RTC Alarm

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

Date/Time (HH:MM:SS)

If **Resume By RTC Alarm** is set to [Enabled], the system will automatically resume (boot up) on a specific date/hour/minute/second specified in these fields (using the <+> and <-> to select the date & time settings). Available settings for each item are:

Date 01 ~ 31, Every Day
 Time (HH:MM:SS) 00 ~ 23 : 00 ~ 59 : 00 ~ 59

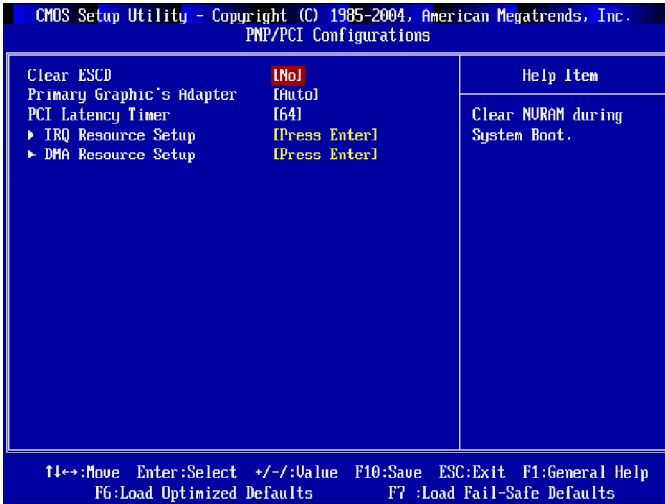


MSI Reminds You...

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.



Clear ESCD

The ESCD (Extended System Configuration Data) NVRAM (Non-volatile Random Access Memory) is where the BIOS stores resource information for both PNP and non-PNP devices in a bit string format. When the item is set to [Yes], the system will reset ESCD NVRAM right after the system is booted up and then set the setting of the item back to [No] automatically.

Primary Graphic's Adapter

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

- [Auto] The system initializes the graphic's adapter automatically.
- [PCI Mode] The system initializes the PCI Express graphic first. If a PCI Express graphic card is not available, it will initialize the internal graphic's adapter.

PCI Latency Timer

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

[32], [64], [96], [128].

IRQ Resource Setup

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



IRQ 3/4/5/7/9/10/11/14/15

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

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

DMA Resource Setup

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

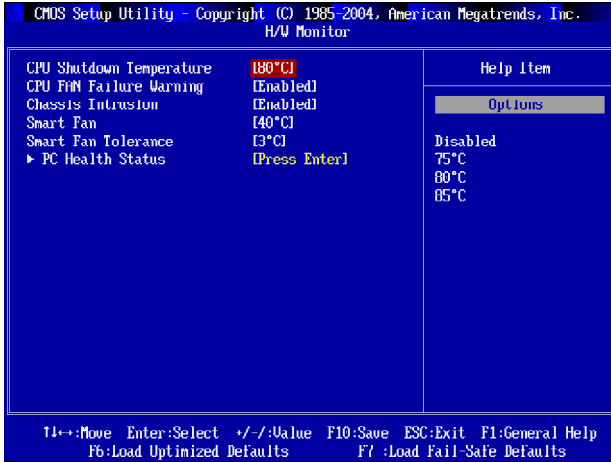


DMA Channel 0/1/3/5/6/7

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

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



CPU Shutdown Temperature

If the CPU temperature reaches the limit preset in the next setting, the system will shutdown automatically. This helps you to prevent the CPU overheating problem. This item is available only when your OS supports this function, such as Windows ME/XP. Setting options: [Disabled], [75°C], [80°C], [85°C].

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 (CPU_FAN) 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 this feature. Setting options: [Enabled], [Disabled].

Chassis Intrusion

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. This item is available only when your mainboard has JCl1 jumper. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later. Settings: [Enabled], [Reset], [Disabled].

Smart Fan

When the current temperature of the CPU fan reaches the value you specify here, the CPU fan will speed up for cooling down to avoid the CPU damage; on

the contrary, if the CPU fan current temperature is lower than the specified value, the CPU fan will slow down its speed to keep the temperature stable.

Smart FAN Tolerance

This item allows you to set the tolerance value of the smart fan.

PC Health Status

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

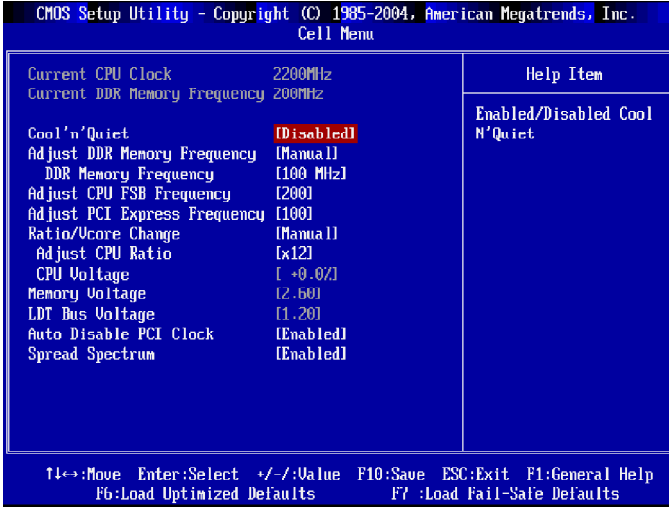
CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.	
PC Health Status	
	Help Item
CPU Temperature	: 42°C/107°F
System Temperature	: 35°C/95°F
SYSTEM FAN Speed	: 4115 RPM
CPU FAN Speed	: 3103 RPM
Vcore	: 1.358 V
+3.3V	: 3.338 V
+5.0V	: 5.000 V
+12.0V	: 11.706 V
+5VSB	: 5.026 V

CPU/System Temperature, SYSTEM FAN/CPU FAN Speed, Vcore, +3.3V, +5.0V, +12.0V, +5VSB

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

Cell Menu

The items in Cell Menu includes some important settings of CPU, AGP, DRAM and overclocking functions.



MSI Reminds You...

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

Current CPU Clock, Current DDR Memory Frequency

These two items show the current clocks of CPU & DDR memory frequency. Read-only.

Cool'n'Quiet

This feature is especially designed for AMD Athlon processor, which provides a CPU temperature detecting function to prevent your CPU's from overheating due to the heavy working loading. Setting options: [Disabled], [Enabled].



MSI Reminds You...

For the purpose of ensuring the stability of Cool'n'Quiet function, it is always recommended to have the memories plugged in DIMM1.

Adjust DDR Memory Frequency

User can place an artificial memory clock limit on the system. Please note that memory is prevented from running faster than this frequency. Setting options: [Manual], [Auto].

DDR Memory Frequency

This read-only item shows the DDR Memory Frequency you like to use, which

will automatically change in accordance with the setting of **Adjust DDR Memory Frequency**. Please note you must reboot the system to let the change take effect. Setting options: [100 MHz], [133MHz], [166MHz], [200MHz].

Adjust CPU FSB Frequency

This item allows you to select the CPU Front Side Bus clock frequency (in MHz) and overclock the processor by adjusting the FSB clock to a higher frequency. Setting options: [200]~[320]

Adjust PCI Express Frequency

User can place an artificial PCI Express clock limit on the system. Setting options: [100]~[200].

Ratio/Vcore Change

This field allows you to select the CPU Ratio. Setting to [Auto] enables CPU Ratio automatically to be determined by SPD. Setting options: [Auto], [Manual].

Adjust CPU Ratio

This item allows you to adjust the CPU ratio. Setting to [Startup] enables the CPU running at the fastest speed which is detected by system. Setting options are: [Startup], [x4]~[x25].

CPU Voltage

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

Memory Voltage

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

LDT Bus Voltage

This item specifies the maximum operating frequency of the link's transmitter clock. Setting options: [1.20], [1.25], [1.30], [1.35], [1.40], [1.45], [1.50].

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].

Spread Spectrum

When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The **Spread Spectrum** function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at [Disabled] for optimal system stability and performance. But if you are plagued by EMI, activate the **Spread Spectrum** for EMI reduction. 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. Options: [Disabled], [Enabled].



MSI Reminds You...

The settings shown in different color in CPU Voltage, DDR Voltage and NB Voltage help to verify if your setting is proper for your system.

Gray: Default setting.

White: Safe setting.

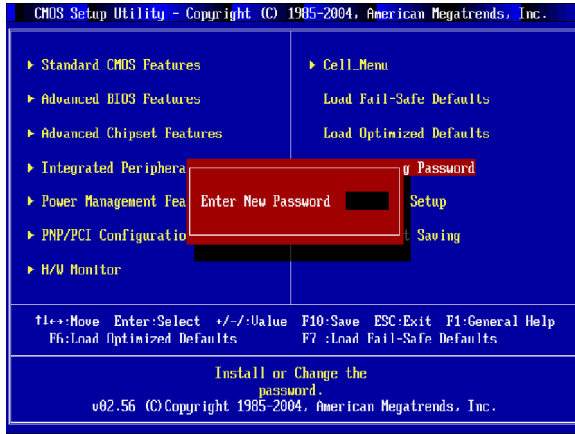
Yellow: High performance setting.

Red: Not recommended setting and the system may be unstable.

*Changing CPU Voltage, DDR Voltage and NB Voltage may result in the instability of the system; therefore, it is **NOT** recommended to change the default setting for long-term usage.*

BIOS Setting Password

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



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

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

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

Load Fail-Safe/Optimized Defaults

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

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



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

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



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

Appendix A: Using 2-, 4-, 6- or 8- Channel Audio Function

The mainboard is equipped with Realtek ALC850 chip, which provides support for 8-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC850 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 Audio Driver

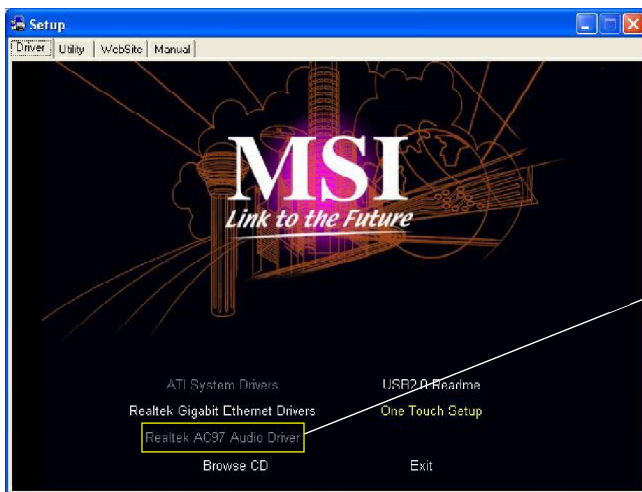
You need to install the driver for Realtek ALC850 codec to function properly before you can get access to 2-, 4-, 6- or 8- channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 98SE/ME/2000/XP

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

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


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



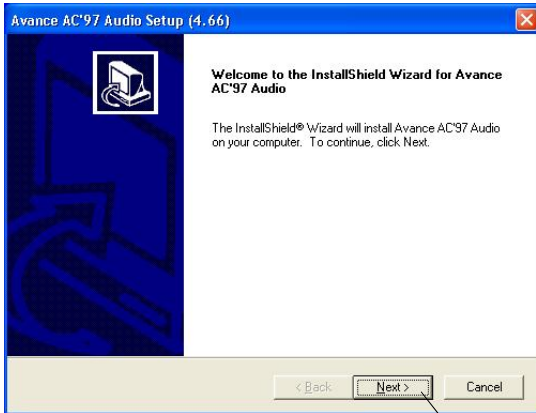
Click here



MSI Reminds You...

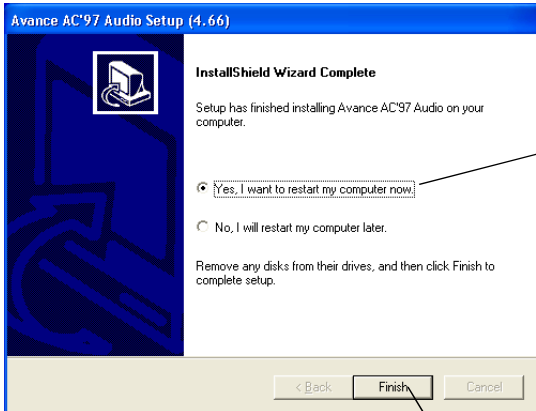
The **AC97 Audio Configuration**  software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.

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



Click here


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

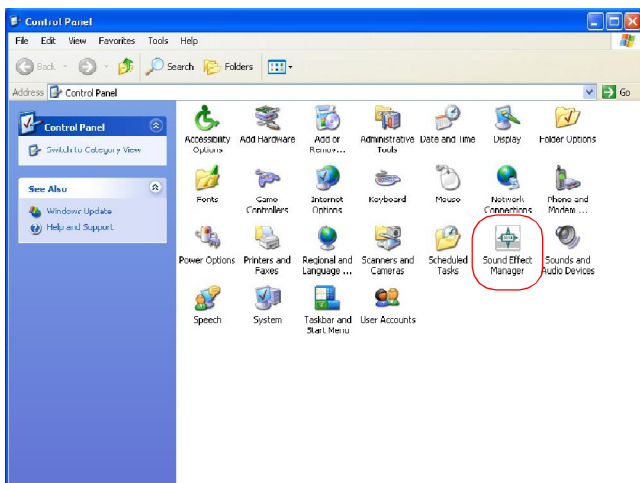


Select this option

Click here

Software Configuration

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

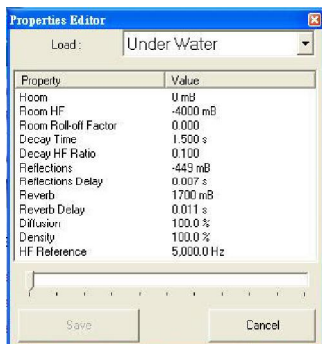


Sound Effect

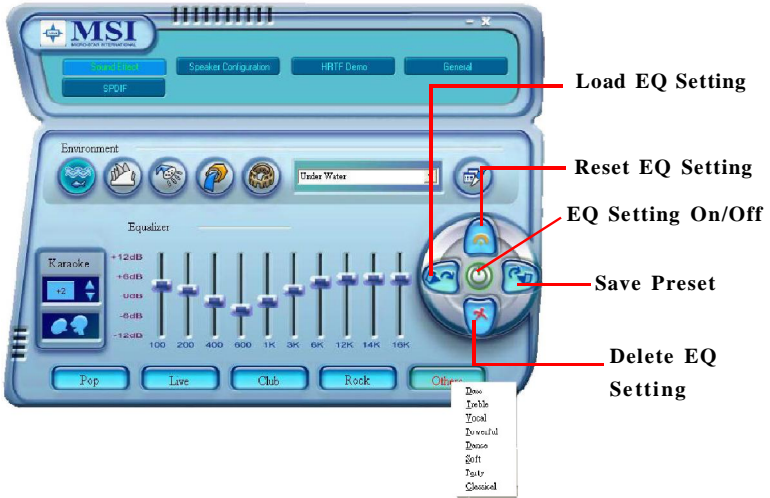
Here you can select a sound effect you like from the **Environment** list.



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



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



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

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



Speaker Configuration

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

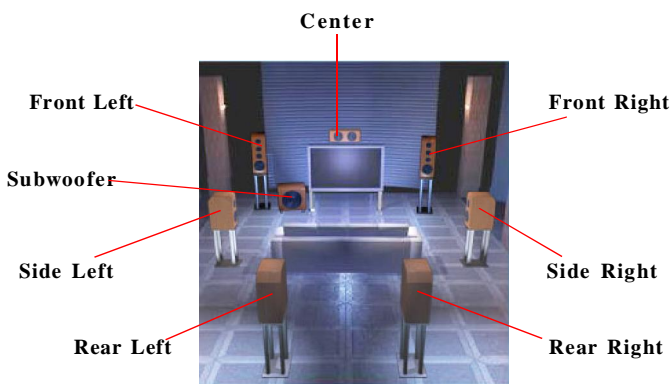
1. First you have to select the audio configuration below which is identical to the audio jack on your mainboard. In this model it uses Realtek ALC850 codec which supports 8-channel S/PDIF, therefore you should choose **8CH-S/PDIF (Optical & Coaxial)**.



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



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



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

HRTF Demo


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



General

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



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



SPDIF

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



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

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

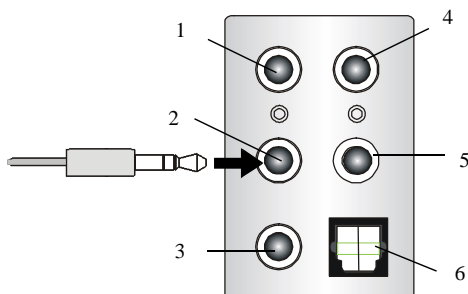
Connecting the Speakers

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

n 2-Channel Mode for Stereo-Speaker Output

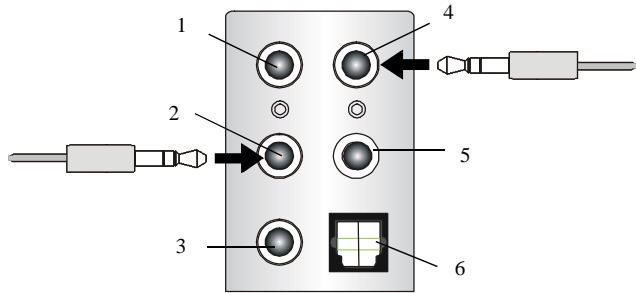
Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

Back Panel



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

n 4-Channel Mode for 4-Speaker Output



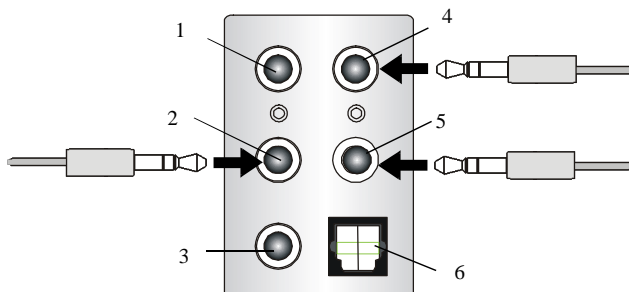
Description:

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

4-Channel Analog Audio Output

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

n 6-Channel Mode for 6-Speaker Output



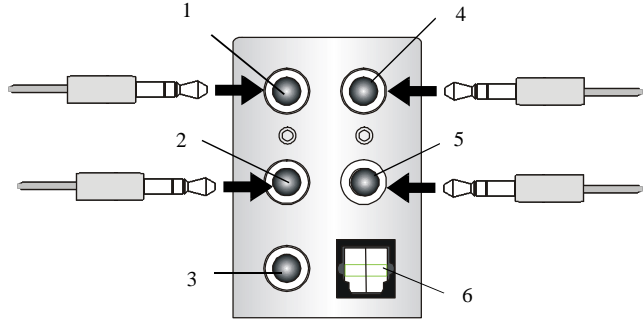
Description:

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

6-Channel Analog Audio Output

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

8-Channel Mode for 8-Speaker Output



8-Channel Analog Audio Output

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

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.

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 Sil 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

- u RAID 0 and RAID 1
- u On-line Mirror Rebuilding
- u RAID GUI Monitoring Utility:
 - Displays/Logs/Alerts Users to Vital RAID Set Information
 - Manages RAID Set Functions (configures, rebuilds, etc.)
- u RAID Set accommodates multiple size HDDs
- u HDDs function normally when not in RAID Sets
- u Adjustable stripe size for RAID 0
- u Automatically selects highest available transfer speed for all ATA and ATAPI devices
- u 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).

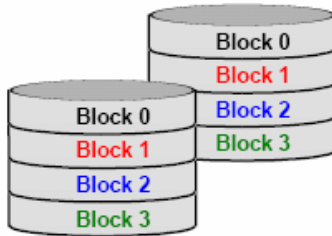
Disk Striping (RAID 0)

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.



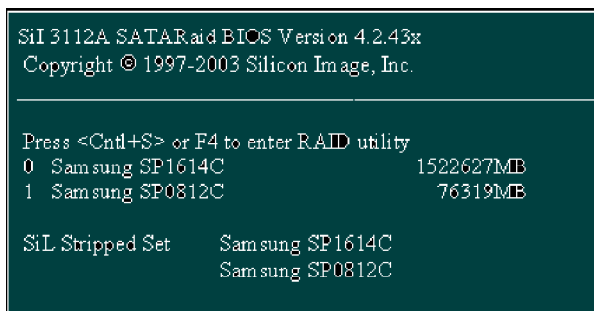
Disk Mirroring (RAID 1)

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.

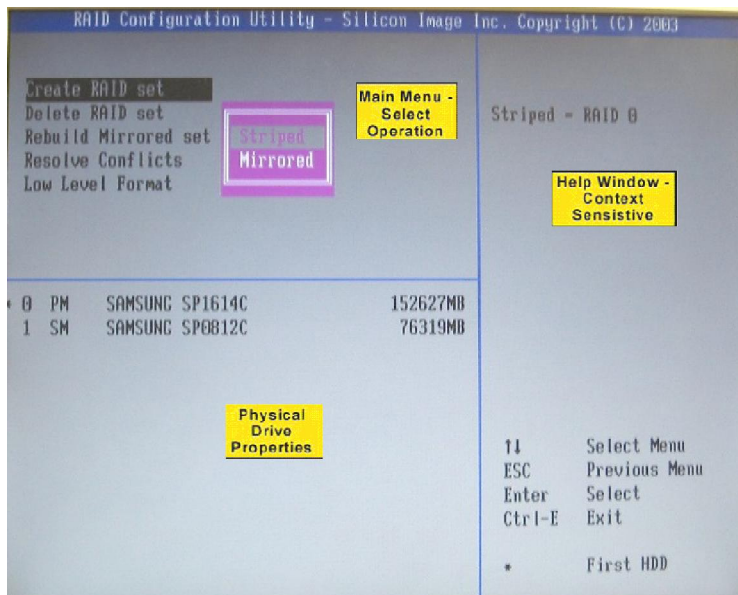


Creating RAID Sets

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.



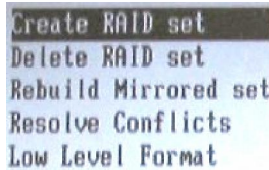
The BIOS RAID Utility menu screen will appear. A brief description of each item on the screen is given on the next page.



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

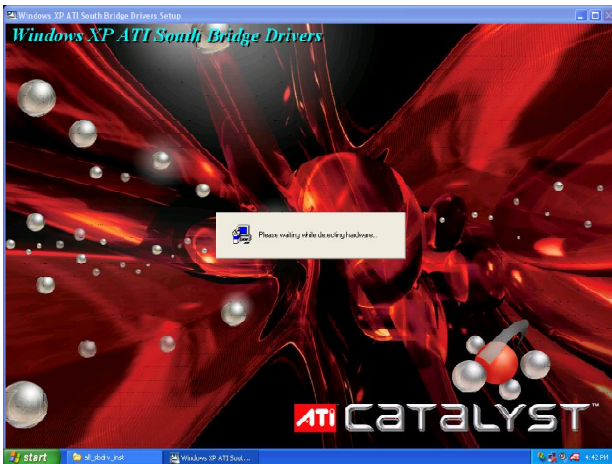
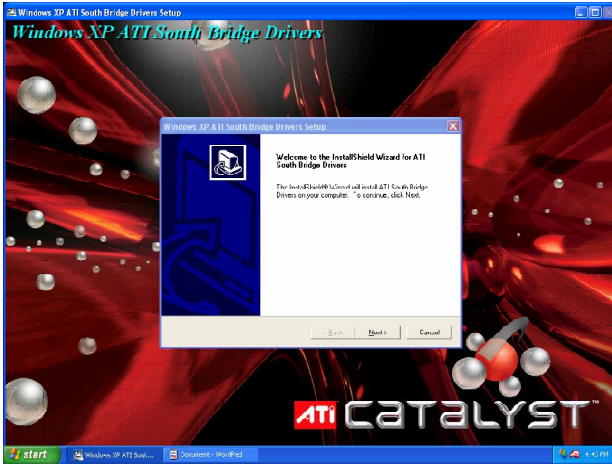
Follow the instructions in this section if you are performing a new installation of the OS (Windows 2000/XP), and wish to boot from a RAID drive connected to the SATA controller.

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.

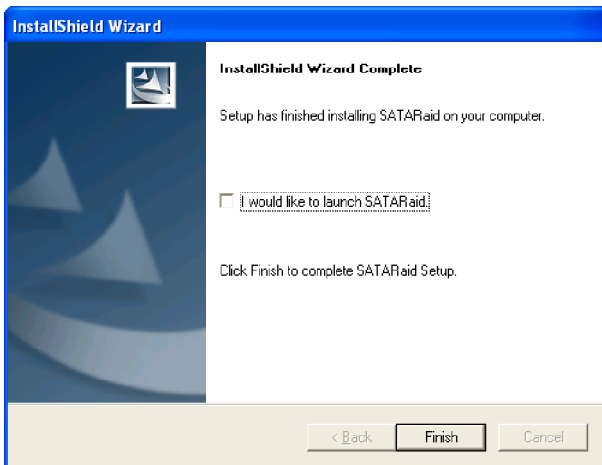
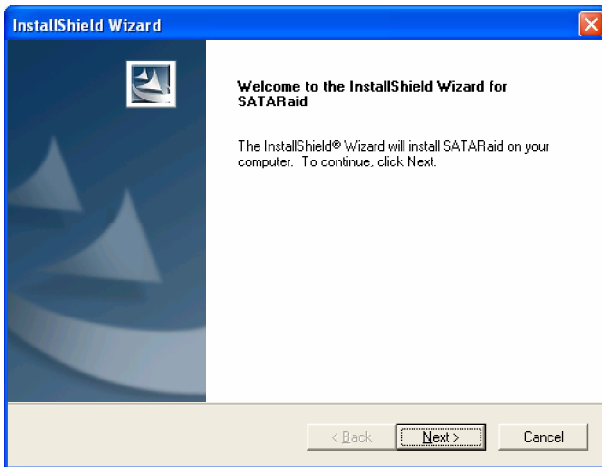




Installing SATORaid Utility

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 SATORaid.



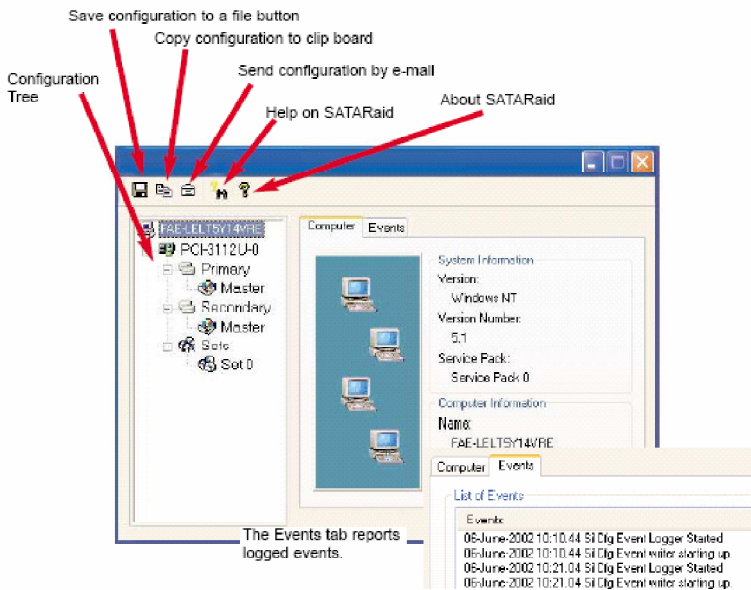


SATARaid GUI can be launched from the Task Bar

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:

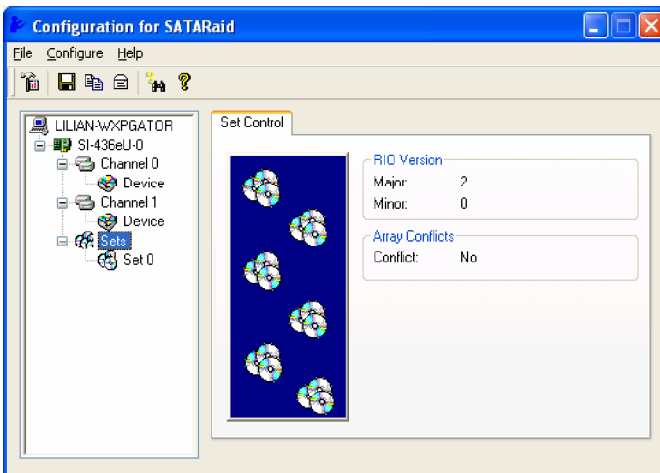
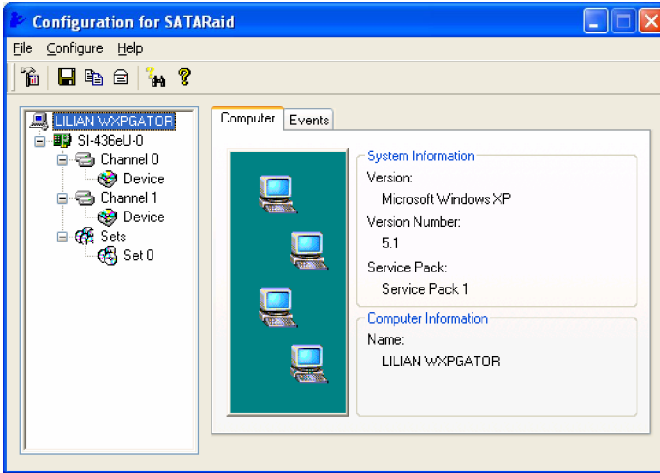
Note: You must have created RAID set(s) in the BIOS as described earlier before you can see the set(s) in the GUI.

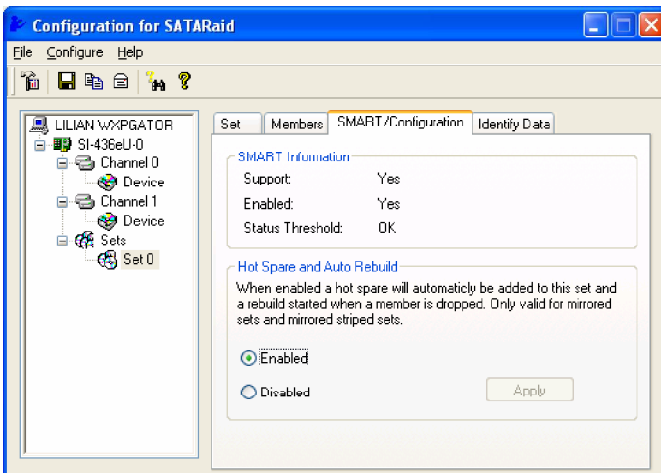
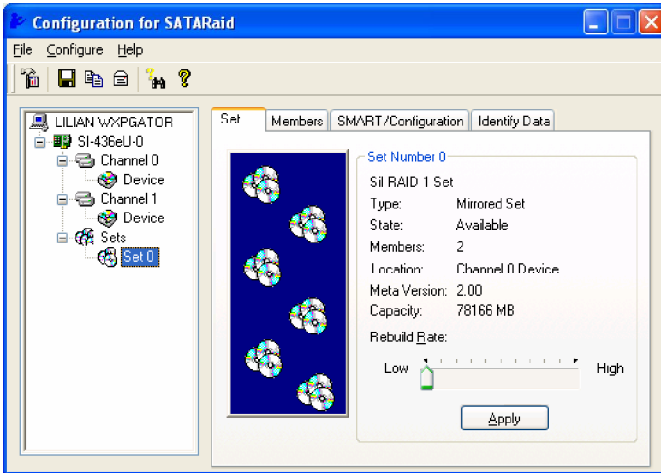


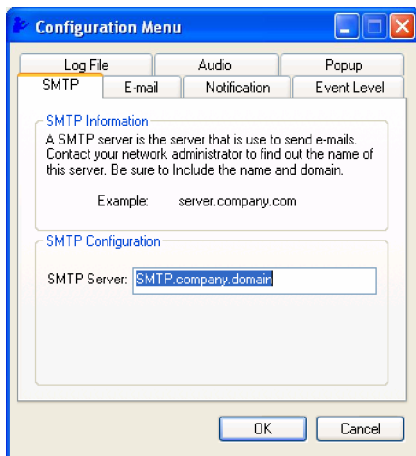
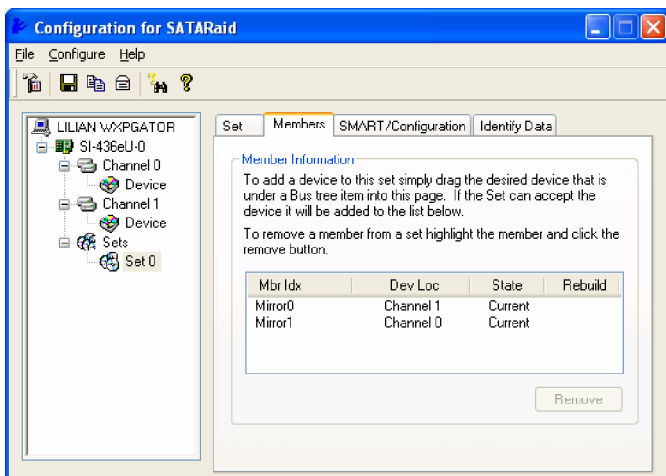
Use Help to find out about the features offered by SATARaid.

The main function of SATARaid is to monitor and report activities of RAID devices. The settings for monitoring and reporting are performed under the item SATARaid Configuration. The following screen shots show some of the settings performed through SATARaid GUI.

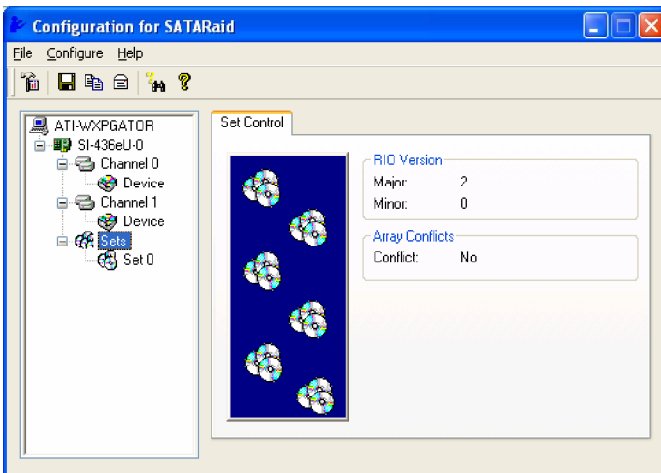
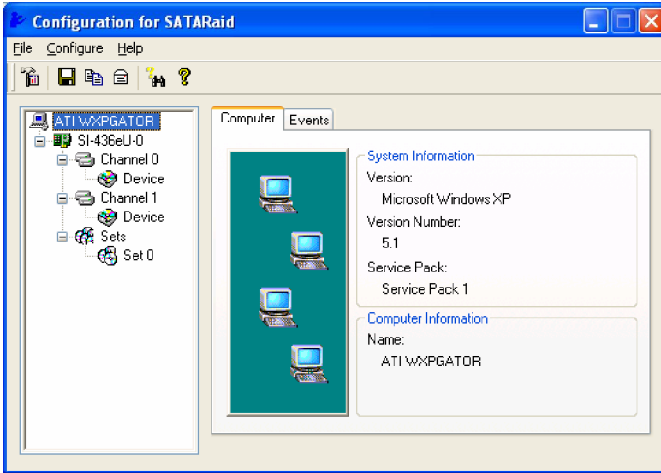
A RAID 1 Set Monitoring Example

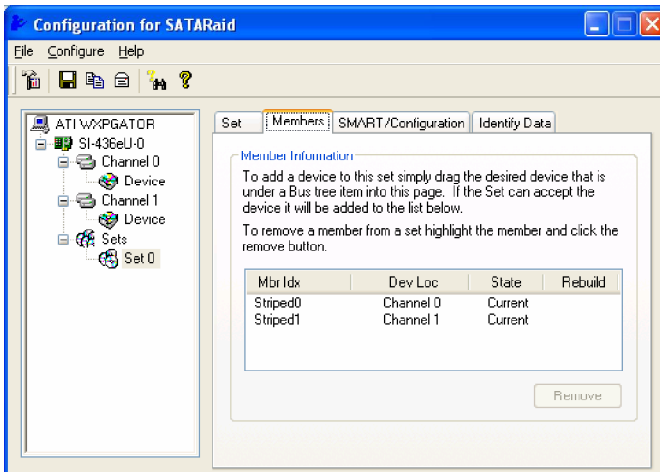
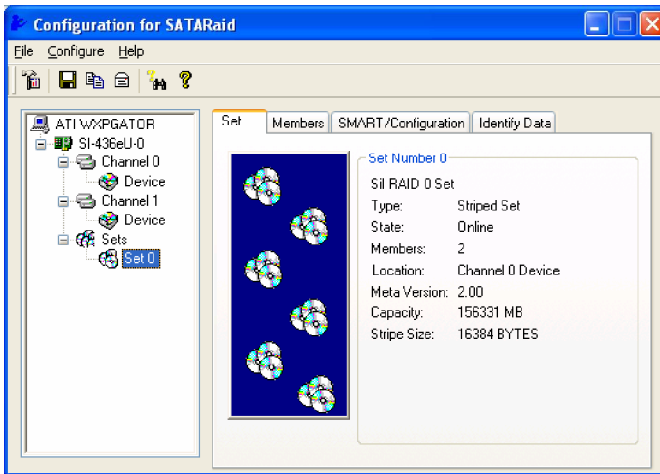


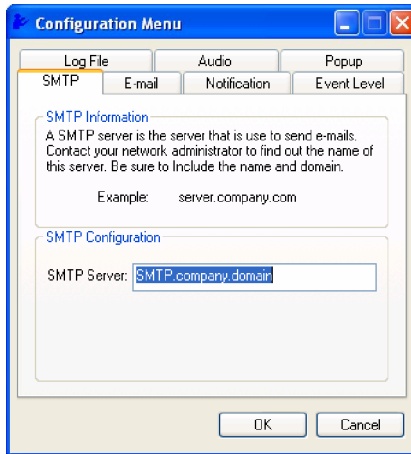
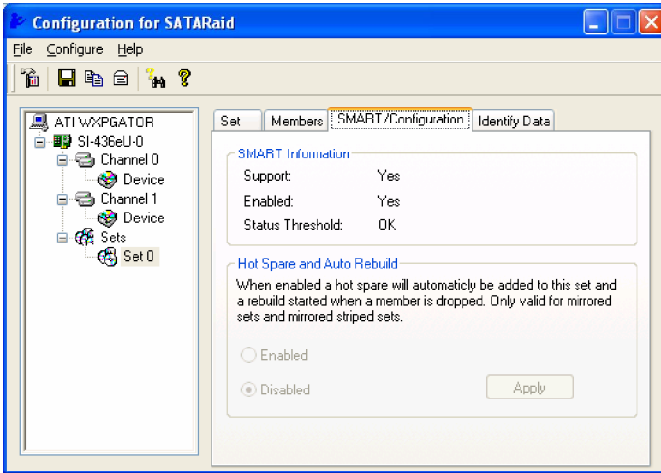


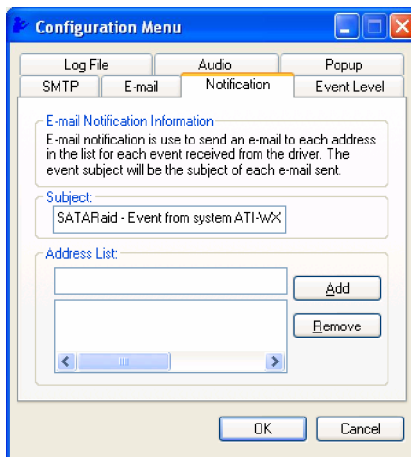
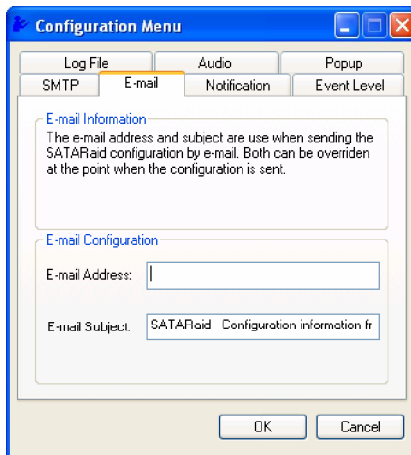


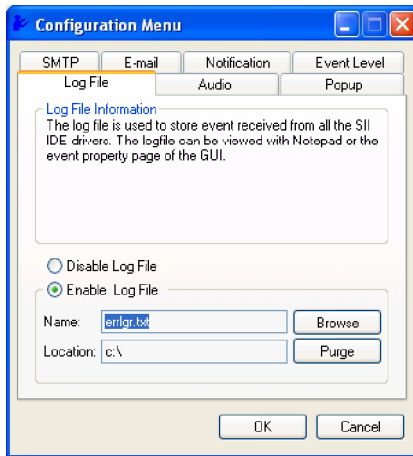
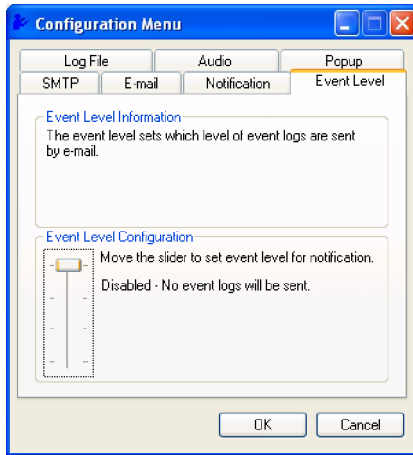
A RAID 0 Set Monitoring Example

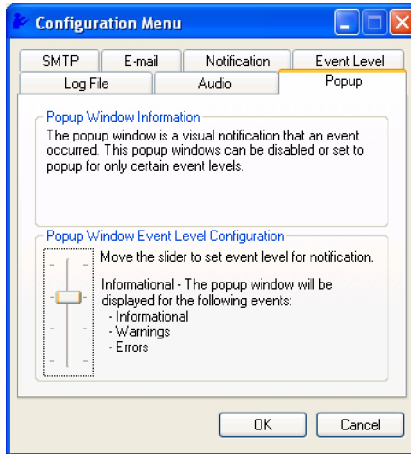
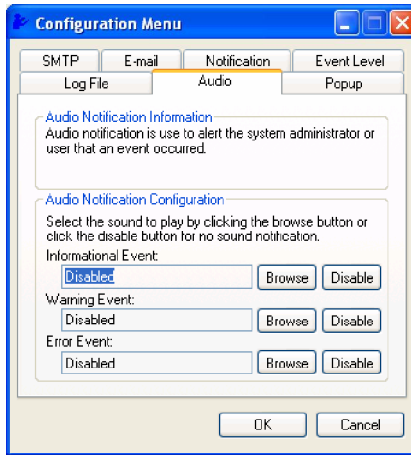


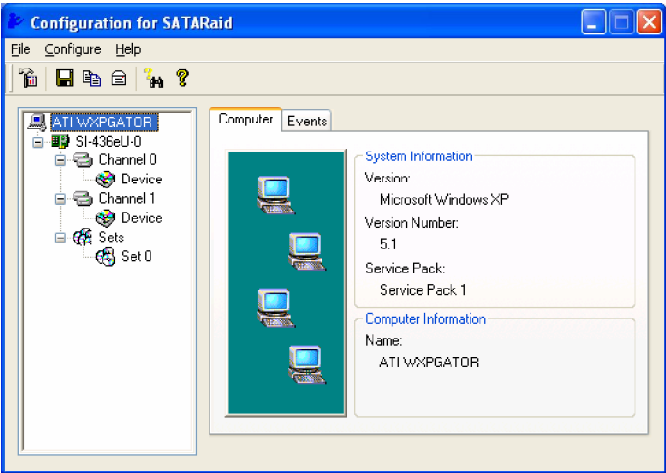












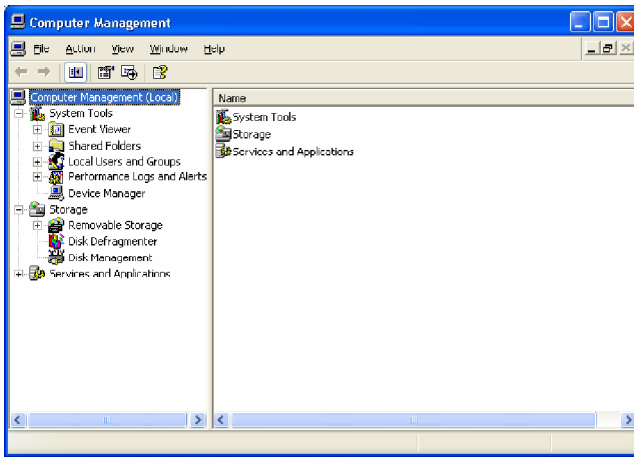
Configuring RAID 0 Set(s) with Windows Disk Manager

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.

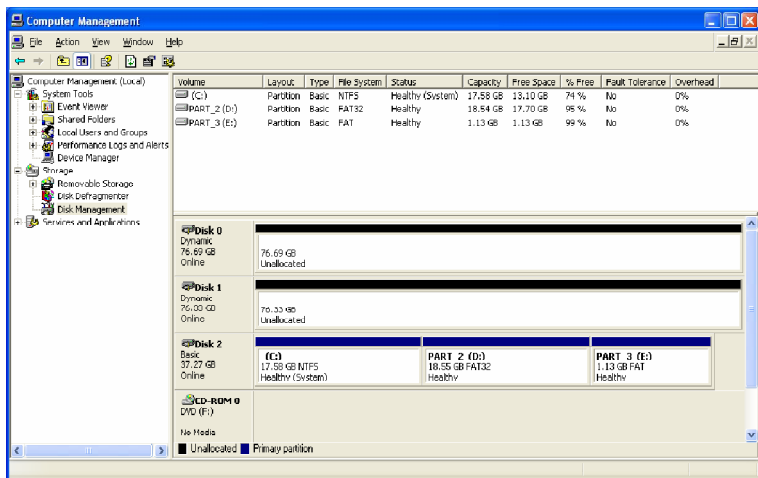
The Windows XP built-in Disk Manager can be used to set up installed SATA drives in Disk Striping (RAID 0) configuration.

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.

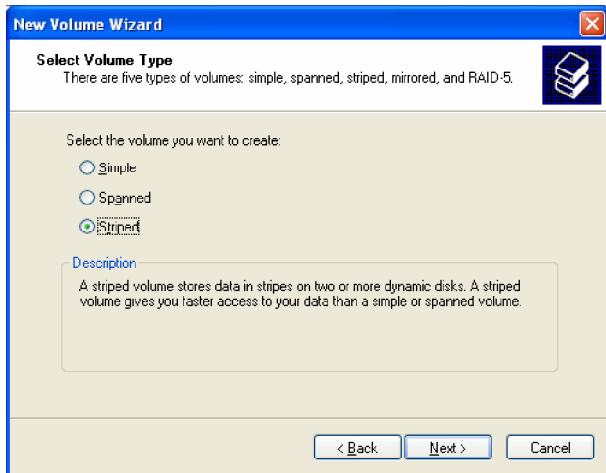
Right clicking on the My Computer icon will access Computer Management. The following screen will appear when Computer Management is started. Select Disk Management under the Storage tree.



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.

