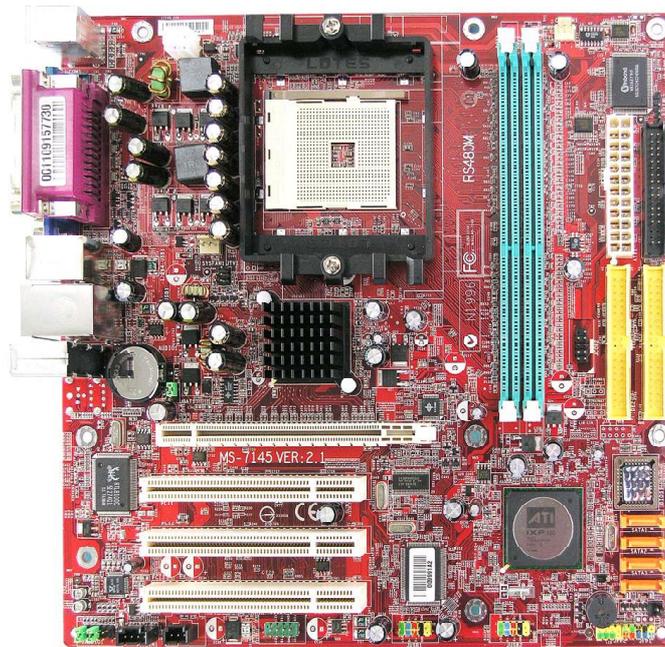




**RS480M/ RS482M  
MS-7145 (v2.X) M-ATX Mainboard**



**G52-M7145X2**

Manual Rev: 2.1  
Release Date: Aug. 2005

### **FCC-B Radio Frequency Interference Statement**

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This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed



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

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

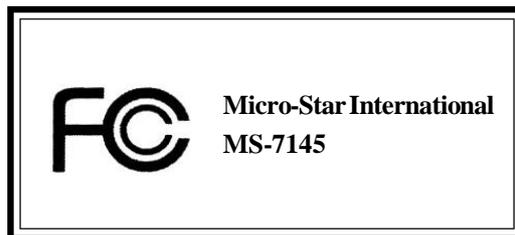
#### **Notice 1**

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

#### **Notice 2**

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

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



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

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

### **Copyright Notice**

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The material in this document is the intellectual property of **MICRO-STAR INTERNATIONAL**. We take every care in the preparation of this document, but no guarantee is given as to the correctness of its contents. Our products are under continual improvement and we reserve the right to make changes without notice.

### **Trademarks**

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### **Revision History**

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<b>Revision</b>	<b>Revision History</b>	<b>Date</b>
V2.1	Update for PCB 2.X with RS480/ RS482 & SB400	Aug. 2005

## Technical Support

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

† Visit the MSI homepage & FAQ site for technical guide, BIOS updates, driver updates, and other information: <http://www.msi.com.tw> & [http://www.msi.com.tw/program/service/faq/faq/esc\\_faq\\_list.php](http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php)

† Contact our technical staff at: [support@msi.com.tw](mailto:support@msi.com.tw)

## Safety Instructions

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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

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### 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 équipements 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 вышеназванного 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 podestiti da...

Po Direktivi Evropske unije ("EU") o odbačenoj elektronskoj 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 cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır. Avrupa Birliği'ne satılan MSI markalı ürünlerin kullanım süreleri bittiğinde MSI ürünlerin geri alınması isteği ile işbirliği içerisinde olacaktır. Ürünlerinizi yerel toplama noktalarına bırakabilirsiniz.

## **ČESKY**

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

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektrických výrobků, na které se tato směrnice vztahuje, budou povinni odebrat takové výrobky zpět po skončení jejich životnosti. Společnost MSI splní požadavky na odebrání 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 környezetvédként 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 del 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 adoguerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

## CONTENTS

FCC-B Radio Frequency Interference Statement .....	ii
Copyright Notice .....	iii
Revision History .....	iii
Technical Support .....	iv
Safety Instructions .....	iv
WEEE Statement.....	v
<b>Chapter 1. Getting Started .....</b>	<b>1-1</b>
Mainboard Specifications .....	1-2
Mainboard Layout .....	1-5
Packing Checklist.....	1-6
MSI Special Feature .....	1-7
PC Alert™ 4 .....	1-7
Live Update .....	1-8
<b>Chapter 2. Hardware Setup .....</b>	<b>2-1</b>
Quick Components Guide .....	2-2
Central Processing Unit: CPU .....	2-3
CPU Installation Procedures for Socket 754 .....	2-4
Installing AMD Athlon64 CPU Cooler Set .....	2-5
Memory.....	2-7
DIMM Module Combination .....	2-7
Installing DDR Modules .....	2-8
Power Supply .....	2-9
ATX 24-Pin Power Connector: ATX1 .....	2-9
ATX 12V Power Connector: JPW1 .....	2-9
Back Panel .....	2-10
Mouse/Keyboard Connector .....	2-10
Serial Port Connector .....	2-11
VGA Connector .....	2-11
IEEE 1394 Port .....	2-12
USB Connectors .....	2-12
Audio Port Connectors .....	2-12
RJ-45 LAN Jack: 10/100 LAN (8100C) /Giga-bit LAN (8110S)(Optional).....	2-13
Parallel Port Connector: LPT1 .....	2-14
Connectors .....	2-15
Floppy Disk Drive Connector: FDD1 .....	2-15
Fan Power Connectors: CPUFAN1 / SYSFAN1 .....	2-15

ATA133 Hard Disk Connectors: IDE1 & IDE2 .....	2-16
Serial ATA Connectors: SATA1~SATA4 .....	2-17
Front Panel Audio Connector: JAUDIO1 .....	2-18
Serial Port Header: JCOM2 (Optional) .....	2-18
CD-In Connector: JCD_IN1 .....	2-19
SPDIF-Out Connector: JSP1 (Optional) .....	2-19
IrDA Infrared Module Header: JIR1 .....	2-19
Front Panel Connectors: JFP1/ JFP2 .....	2-20
Front USB Connectors: JUSB1 / JUSB2 .....	2-20
IEEE 1394 Connectors: J1394_1 (Optional) .....	2-21
Chassis Intrusion Switch Connector: JCASE1 .....	2-21
TV-Out Connector: JTV1 (Optional) .....	2-22
Jumpers .....	2-23
Clear CMOS Jumper: JBAT1 .....	2-23
BIOS Write Protect Jumper: JBIOS_WP1 (Optional) .....	2-23
Slots .....	2-24
PCI Express Slots .....	2-24
PCI (Peripheral Component Interconnect) Slots .....	2-24
PCI Interrupt Request Routing .....	2-24
<b>Chapter 3. BIOS Setup .....</b>	<b>3-1</b>
Entering Setup .....	3-2
Selecting the First Boot Device .....	3-2
Control Keys .....	3-3
Getting Help .....	3-3
Main Menu .....	3-3
Default Settings .....	3-3
The Main Menu .....	3-4
Standard CMOS Features .....	3-6
Advanced BIOS Features .....	3-8
Advanced Chipset Features .....	3-11
Integrated Peripherals .....	3-13
Power Management Setup .....	3-16
PNP/PCI Configurations .....	3-19
H/W Monitor .....	3-21
Cell Menu .....	3-23
Load Fail-Safe/Optimized Defaults .....	3-25
BIOS Setting Password .....	3-26
<b>Chapter 4. ATI SATA RAID Setup Guide .....</b>	<b>4-1</b>

SATA RAID Features .....	4-2
Disk Striping (RAID 0) .....	4-2
Disk Mirroring (RAID 1) .....	4-3
Creating RAID Sets .....	4-4
BIOS RAID Utility Screen Description .....	4-5
Description of RAID Setup Operations .....	4-5
Installing RAID Drivers (for Windows 2000/XP only) .....	4-8
Installing RAID Drivers during OS Install .....	4-8
Updating Previously Installed RAID Drivers .....	4-8
Configuring RAID 0 Set(s) with Windows Disk Manager .....	4-11
<b>Chapter 5. Introduction to Realtek ALC655 .....</b>	<b>5-1</b>
Installing the Audio Driver .....	5-2
Installation for Windows 98SE/ME/2000/XP .....	5-2
Using 4- or 6-Channel Audio Function .....	5-4
Using the Back Panel .....	5-4
Testing the Connected Speakers .....	5-9
Testing Each Speaker .....	5-9
Playing KaraOK .....	5-11
<b>Chapter 6. Introduction to ATI SURROUNDVIEW™ .....</b>	<b>6-1</b>
Getting Started .....	6-2
System Requirements .....	6-3
Installing a Graphics Card .....	6-4
Before You Begin .....	6-4
Basic Graphics Card Installation .....	6-4
Enabling SURROUNDVIEW™ .....	6-6
Enabling SURROUNDVIEW™ .....	6-6
Frequently Asked Questions .....	6-7
Using Multiple Displays .....	6-8
Setting Up Multiple Displays .....	6-8
Using SURROUNDVIEW™ .....	6-10
Business Applications .....	6-10
Games .....	6-12



# ***Getting Started***

Thank you for choosing the RS480M/ RS482M Series (MS-7145 v2.X) Micro ATX mainboard. The RS480M/ RS482M Series mainboards are based on **ATI® RS480/ RS482 & ATI® SB400** chipsets for optimal system efficiency. Designed to fit the advanced **AMD® K8 Athlon 64** processor, the RS480/ RS482M Series deliver a high performance and professional desktop platform solution.

## Mainboard Specifications

### CPU

- † Supports 64-bit AMD® Athlon 64 and Sempron processor (Socket 754)
- † Supports up to 3700+ Athlon 64, 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](http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php))

### Chipset

- † ATI® RS480/ RS482 Chipset
  - HyperTransport™ connection to AMD K8 Athlon64 processor
  - 8 or 16 bit control/address/data transfer both directions
  - 800 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)
  - Graphic integrated
- † ATI® SB400 Chipset
  - Supports SATA controller up to 150MB/s with RAID 0 or RAID 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 four memory banks DDR 333/400, using four 184-pin DDR DIMMs
- † 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](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)
- † Three 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
- † Can connect up to 4 IDE devices

### Onboard Serial ATA

- † Supports 4 SATA ports with up to 150MB/s transfer rate
- † Supports RAID 0 and RAID 1



**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**

- † Realtek® 8100C (10/100 Mb/s) or 8110S (10/100/1000 Mb/s) chip
  - Integrated Fast Ethernet MAC and PHY in one chip
  - Supports 10Mb/s, 100Mb/s and the 8110S supports up to 1000Mb/s
  - Compliance with PCI v2.2
  - Supports ACPI Power Management

**IEEE 1394 (Optional)**

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

**Audio**

- † AC97 link controller integrated in ATi SB400.
- † 6 channels S/W audio codec Realtek ALC655 codec
  - Compliance with AC97 2.3 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 port (rear\*1/ front\*1)
  - 1 VGA port
  - 1 parallel port supporting SPP/EPP/ECP mode
  - 8 USB2.0 ports (Rear\*4/Front\*4)

## MS-7145 M-ATX Mainboard

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- 1 Audio (Line-In/Line-Out/MIC) port
- 1 RJ-45 LAN Jack
- 2 IEEE1394s (Rear \* 1 / Front \* 1) (Optional)
- 1 SPDIF out header (optional)
- 1 TV-out header (optional)
- 1 IrDA header (optional)

### BIOS

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

### Dimension

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

### Mounting

- † 8 mounting holes



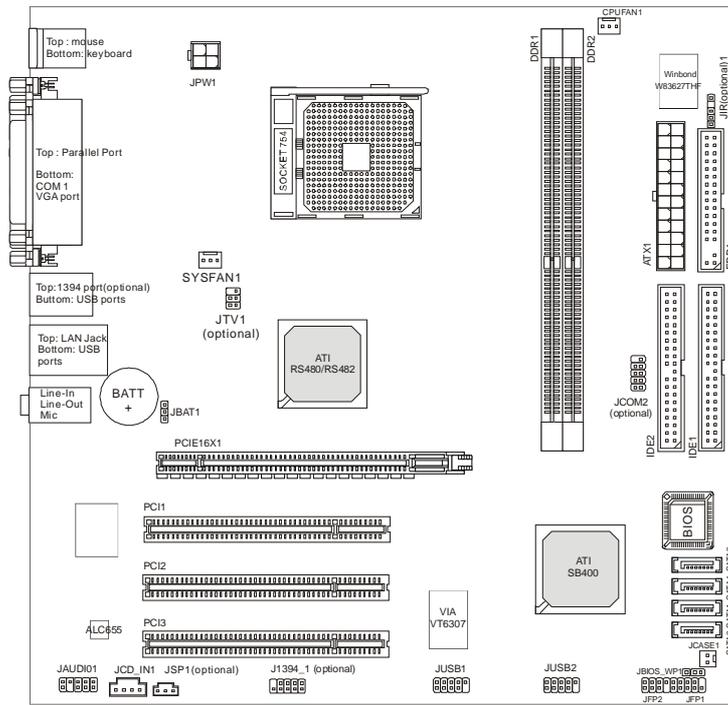
**1394 GUID address  
Label (optional)**



### MSI Reminds You...

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

## Mainboard Layout



RS480M/ RS482M Series (MS-7145 v2.X) M-ATX Mainboard

## Packing Checklist



MSI motherboard



MSI Driver/Utility CD



SATA Cable (Optional)



Power Cable



Round Cable of Floppy Disk



Round Cable of IDE Devices



1394 Bracket (Optional)



USB Bracket (Optional)



Back IO Shield



User's Guide



TV-out Bracket (Optional)

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

## MSI Special Feature

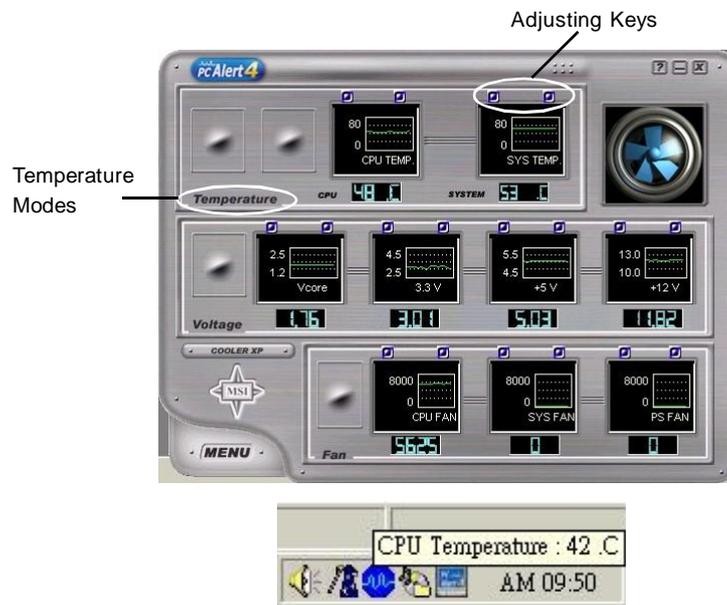
### PC Alert™ 4

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

- monitor CPU & system temperatures
- monitor fan speeds
- monitor system voltages



If one of the items above is abnormal, the program main screen will be immediately shown on the screen, with the abnormal item highlighted in red. This will continue to be shown until the condition returns to the normal status.

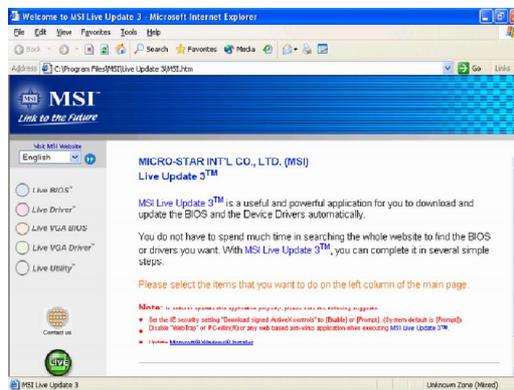


Users can use the Adjusting Keys to change the minimum and maximum threshold of each item for the system to send out a warning message. Click *Temperature* to select the temperature modes of either Fahrenheit (°F) or Celsius (°C). The PC Alert™ 4 icon on the Status Area will show the current CPU temperature.

## Live Update

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

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



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

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

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

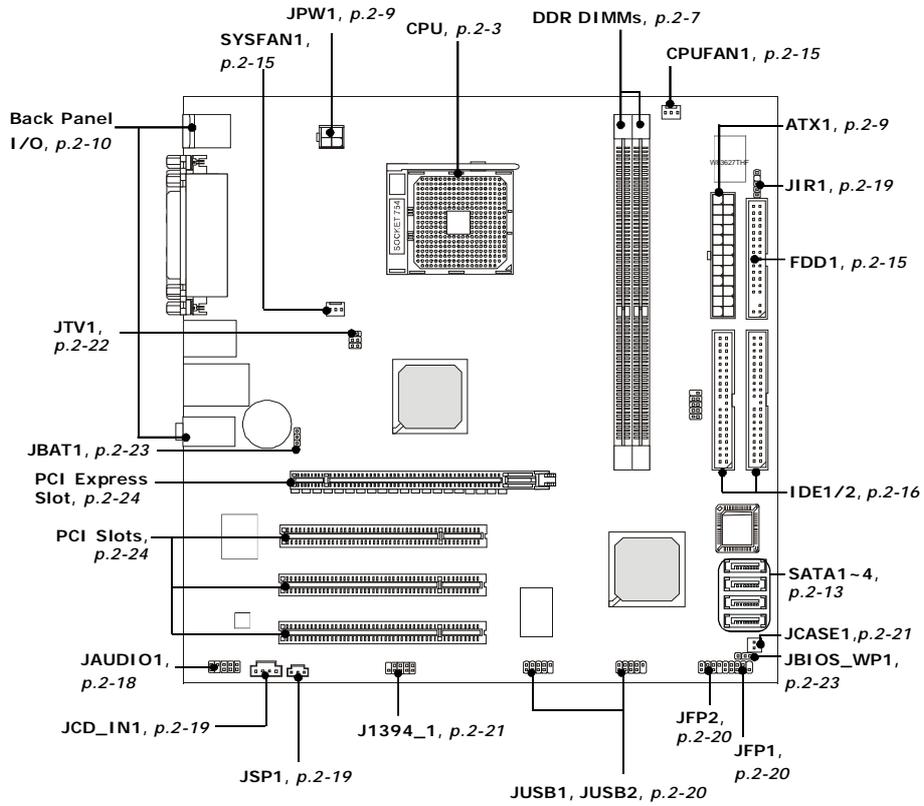
# 2

## ***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/ Sempron processor. The mainboard uses a CPU socket called Socket-754 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](http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php).



### MSI Reminds You...

#### **Overheating**

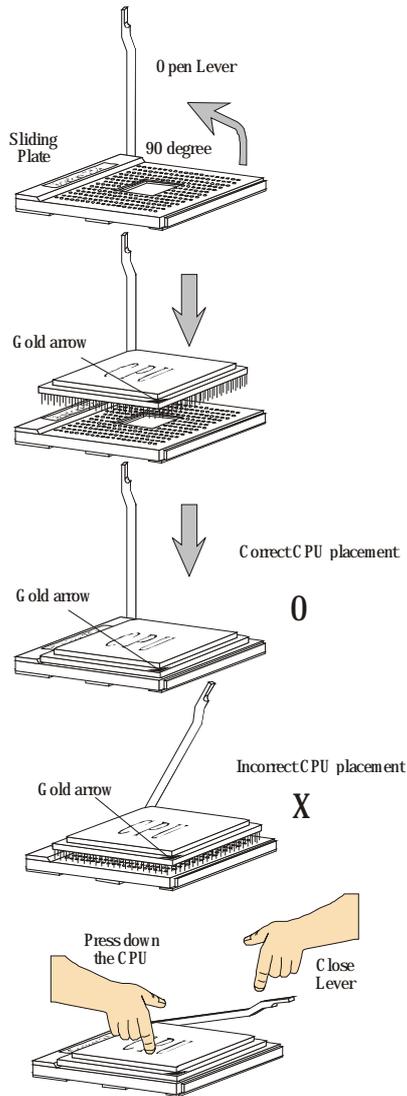
*Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.*

#### **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 754

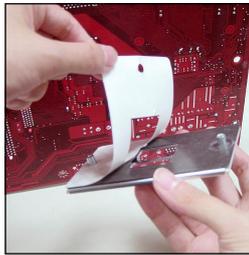
1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the gold arrow of the CPU. The gold arrow should point as shown in the picture. The CPU can only fit in 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.



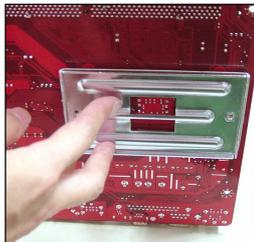
### Installing AMD Athlon64 CPU Cooler Set

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.

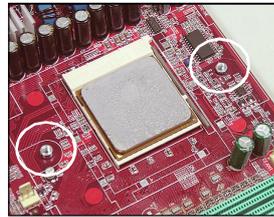
1. Detach the shield of the backplate's paster.



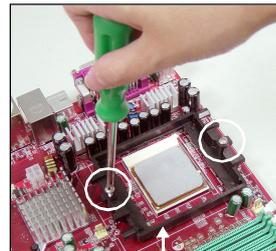
2. Turn over the mainboard, and install the backplate to the proper position.



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

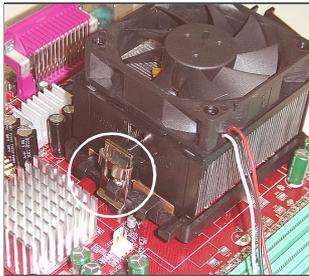


4. Align the retention mechanism and the backplate. Fix the retention mechanism and the backplate with two screws.

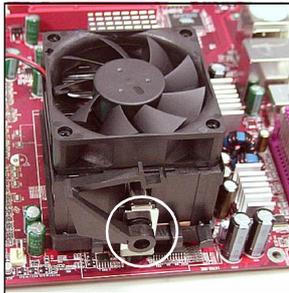


retention mechanism

5. Position the cooling set onto the retention mechanism. Hook one end of the clip to hook first.



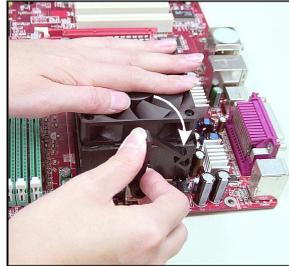
6. Press down the other end of the clip to fasten the cooling set on the top of the retention mechanism.



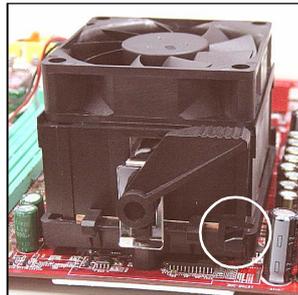
7. Locate the Fix Lever, Safety Hook and the Fixed Bolt. Lift up the intensive fixed lever.



8. Fasten down the lever.



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

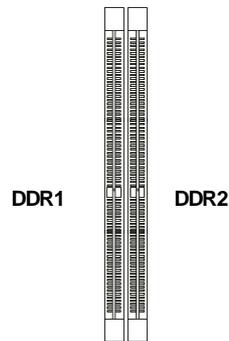


**MSI Reminds You...**

*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 (DDR1/DDR2).



### 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.

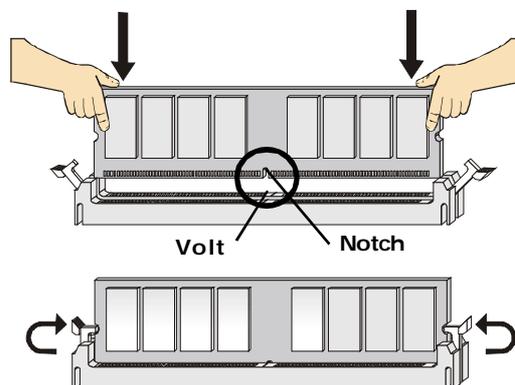


#### MSI Reminds You...

- 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: ATX1

This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

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

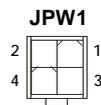


Pin Definition

ATX1		Pin Definition			
PIN	SIGNAL	PIN	SIGNAL		
1	+3.3V	13	+3.3V		
2	+3.3V	14	-12V		
3	GND	15	GND		
4	+5V	16	PS-ON#		
5	GND	17	GND		
6	+5V	18	GND		
7	GND	19	GND		
8	PWROK	20	Res		
9	5VSB	21	+5V		
10	+12V	22	+5V		
11	+12V	23	+5V		
12	+3.3V	24	GND		

### ATX 12V Power Connector: JPW1

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



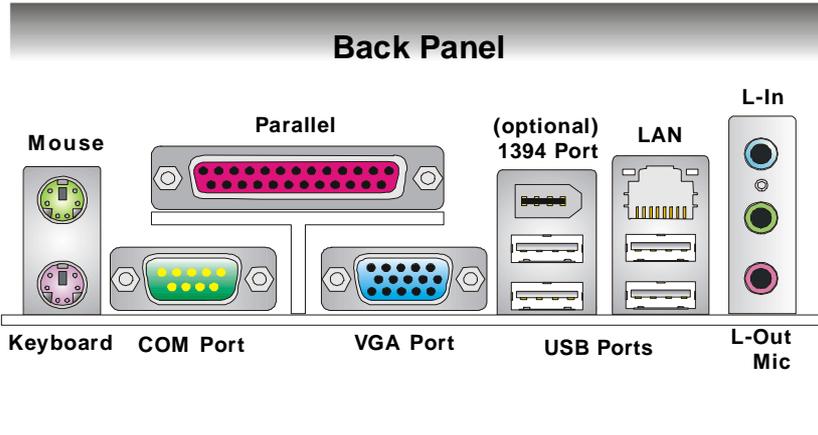
Pin Definition

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



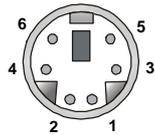
#### MSI Reminds You...

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



### Mouse/Keyboard Connector

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



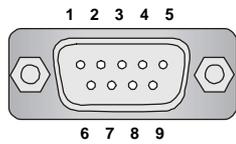
**PS/2 Mouse / Keyboard  
(6-pin Female)**

#### 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

### Serial Port Connector

The mainboard offers one 9-pin male DIN connector as the 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 devices directly to the connector.



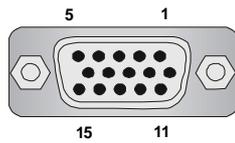
9-Pin Male DIN Connector

#### Pin Definition

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

### VGA Connector

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



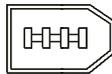
VGA Connector  
(DB 15-pin)

#### Pin Definition

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

### IEEE 1394 Port (Optional)

The back panel provides one standard IEEE 1394 port. The standard IEEE1394 port connects to IEEE1394 devices without external power. The IEEE1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.

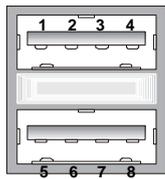


IEEE1394 Port

### 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 Port Definition

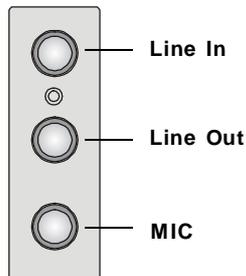


USB Ports

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

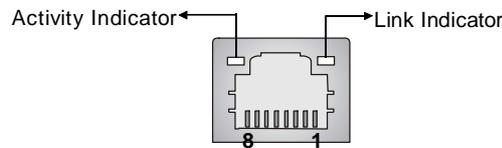
### Audio Port Connectors

**Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.



**RJ-45 LAN Jack: 10/100 LAN (8100C)/Giga-bit LAN (8110S) (Optional)**

The mainboard provides two standard RJ-45 jacks for connection to Local Area Network (LAN). Giga-bit LAN enables data to be transferred at 1000, 100 or 10Mbps. You can connect a network cable to either LAN jack.



**RJ-45 LAN Jack**

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

The pin assignments vary depending on the transfer rates: 10/100Mbps or 1000Mbps. Note that Pin 1/2, 3/6, 4/5, 7/8 must work in pairs. Please refer to the following for details:

**10/100 LAN Pin Definition**

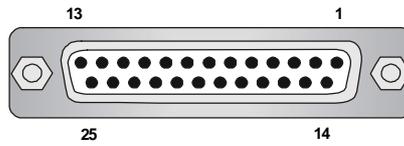
PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

**Giga-bit LAN Pin Definition**

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

### Parallel Port Connector: LPT1

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



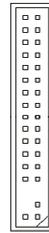
Pin Definition

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

## Connectors

### Floppy Disk Drive Connector: FDD1

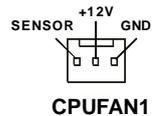
The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



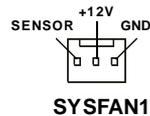
FDD1

### Fan Power Connectors: CPUFAN1 / SYSFAN1

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



CPUFAN1



SYSFAN1



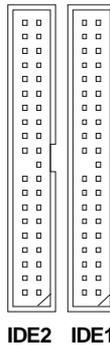
#### MSI Reminds You...

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.



#### 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.

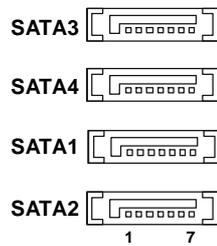


#### MSI Reminds You...

*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.*

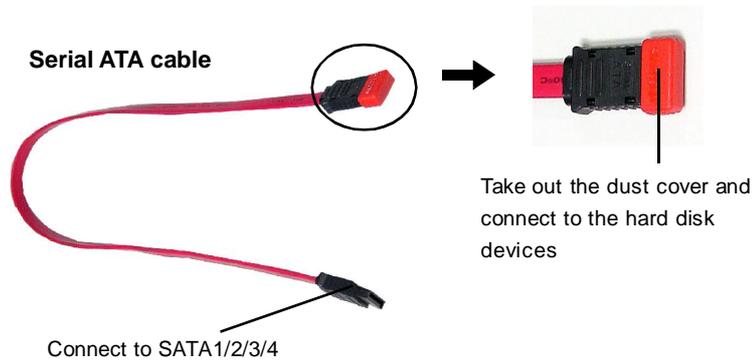
### Serial ATA Connectors: SATA1~SATA4

The ATI SB400 SouthBridge supports four serial ATA connectors SATA1~SATA4. SATA1~SATA4 are high-speed Serial ATA interface ports. Each supports 1<sup>st</sup> 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. The ATI SB400 also supports SATA RAID 0 or SATA RAID 1.



SATA1~ SATA4 Pin Definition

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



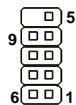
**MSI Reminds You...**

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

### Serial Port Header: JCOM2 (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.

JCOM2



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 Audio Connector: JAUDIO1

The JAUDIO1 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.

JAUDIO1



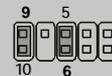
Pin Definition

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



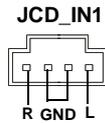
#### MSI Reminds You...

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.



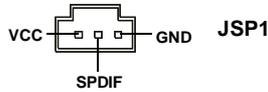
**CD-In Connector: JCD\_IN1**

This connector is provided for CD-ROM audio.



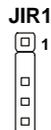
**SPDIF-Out Connector: JSP1 (Optional)**

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



**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.



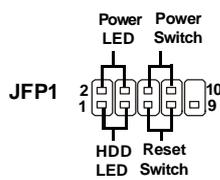
**JIR1 Pin Definition**

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

### Front Panel Connectors: JFP1/ JFP2

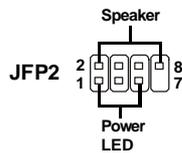
The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

JFP1 Pin Definition



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

JFP2 Pin Definition

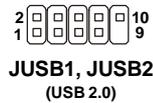


PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	NC
5	PLED	6	NC
7	NC	8	SPK+

### Front USB Connectors: JUSB1 / JUSB2

The mainboard provides two standard USB 2.0 pin headers *JUSB1* & *JUSB2*. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD, digital cameras, MP3 players, printers, modems and the like.**

JUSB1 & JUSB2 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...**

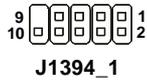
*Note that the pins of VCC and GND must be connected correctly to avoid possible damage.*

**IEEE 1394 Connectors: J1394\_1 (Optional)**

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

**Pin Definition**

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



Connected to J1394\_1



**Chassis Intrusion Switch Connector: JCASE1**

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.



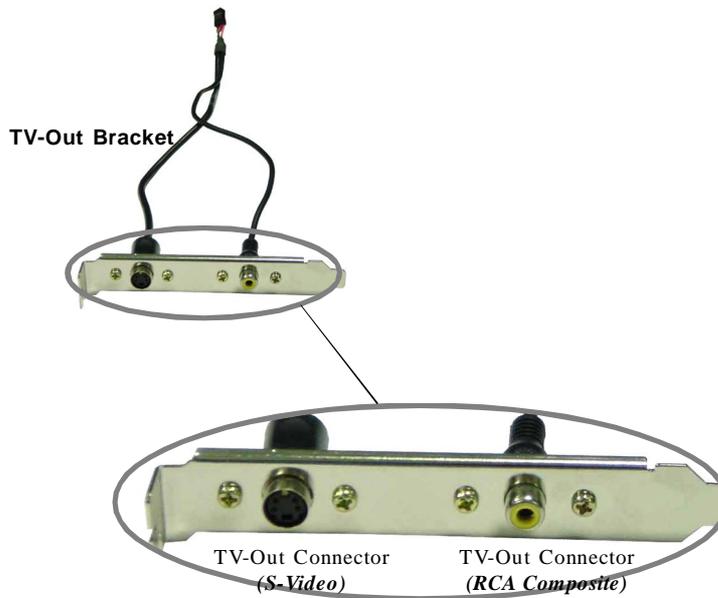
### TV-Out Connector: JTV1 (Optional)

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



JTV1 Pin Definition

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

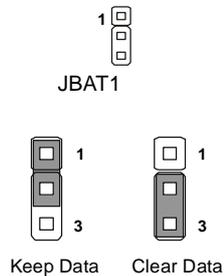


## Jumpers

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

### Clear CMOS Jumper: JBAT1

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

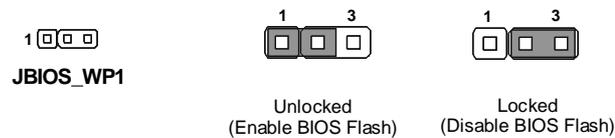


#### MSI Reminds You...

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

### BIOS Write Protect Jumper: JBIOS\_WP1 (Optional)

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



## Slots

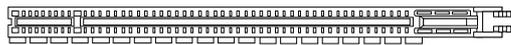
The motherboard provides one PCI Express x16 slot and three 32-bit PCI bus slots.

### PCI Express Slots

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

PCI Express architecture provides a high performance I/O infrastructure for Desktop Platforms with transfer rates starting at 2.5 Giga transfers per second over a PCI Express x1 lane for Gigabit Ethernet, TV Tuners, 1394 controllers, and general purpose I/O. Also, desktop platforms with PCI Express Architecture will be designed to deliver highest performance in video, graphics, multimedia and other sophisticated applications. Moreover, PCI Express architecture provides a high performance graphics infrastructure for Desktop Platforms doubling the capability of existing AGP8x designs with transfer rates of 4.0 GB/s over a PCI Express x16 lane for graphics controllers.

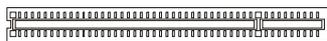
You can insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first.



PCI Express x16 slot

### PCI (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 pins as follows:

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

# 3

## BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

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



### MSI Reminds You...

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
2. *While booting up, the BIOS version is shown in the 1st line appearing after the memory counting. It is usually in the format: example: A7145AMS V1.0 032405*  
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 ATi chipset,*
  - MS=all standard customers.*
  - V1.0 refers to the BIOS version.*
  - 032405 refers to the date this BIOS is released.*

## Entering Setup

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

DEL: Setup Menu      TAB: Logo      F11: Boot Menu

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



### Standard CMOS Features

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

### Advanced BIOS Features

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

### Advanced Chipset Features

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

### Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

### Power Management Setup

Use this menu to specify your settings for power management.

### PNP/PCI Configurations

This entry appears if your system supports PnP/PCI.

### H/W Monitor

This entry shows your PC health status.

### Cell Menu

This menu shows the frequency of CPU.

**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 <PgUp> or <PgDn> 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 IDE Master/Slave (for IDE Devices)

### Third/Fourth/Fifth/Sixth IDE Master (for SATA Devices)

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.

**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], [Disabled], [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**

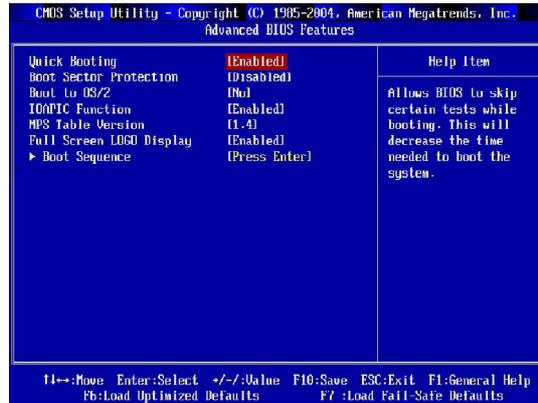
This item allows you to set the type of floppy drive installed. Available options: [None], [360K, 5.25 in.], [1.2M, 5.25 in.], [720K, 3.5 in.], [1.44M, 3.5 in.], [2.88M, 3.5 in.].

**Halt On**

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

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

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

### 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 AMIBIOS attempts to load the operating system.

**Boot From Other Device**

Setting the option to [Yes] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd/4th/5th/6th boot device. Setting options: [Yes], [No].

**Hard Disk/ Removable & CD/DVD Drives**

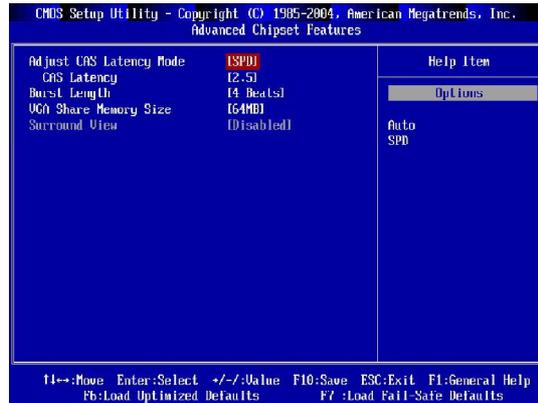
Press "Enter" and you will see the sub-menu that shows you the Hard Disk / Removable & CD/DVD devices information. Read-only.



**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.

## Advanced Chipset Features



### MCT Timing Mode

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

### CAS Latency (CL)

When the **MCT Timing Mode** is set to [Manual], the field is adjustable. This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Setting options: [2.0], [2.5], [3.0] (clocks). 2 (clocks) increases the system performance the most while 3 (clocks) provides the most stable performance.

### Burst Length

This setting allows you to set the size of Burst-Length for DRAM. Bursting feature is a technique that DRAM itself predicts the address of the next memory location to be accessed after the first address is accessed. To use the feature, you need to define the burst length, which is the actual length of burst plus the starting address and allows internal address counter to properly generate the next memory location. The bigger the size, the faster the DRAM performance. Setting options: [2/ 4/ 8 Beats]

### VGA Share Memory Size

The system shares memory to the onboard VGA card. This setting controls the exact memory size shared to the VGA card. Setting options: [16MB], [32MB], [64MB], [128MB], [256MB].

### Surround View

This setting allows you to enable or disable the Surround View function. Setting options: [Disabled], [Enabled].

## Integrated Peripherals



### USB Controller

The field is used to enable/disable the onboard USB 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], [Auto].

### Onboard LAN Controller

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

### Onboard LAN Option ROM

This setting is used to enable/disable the onboard LAN option ROM. Setting options: [Enabled], [Disabled].

### Onboard IEEE1394 Controller

The field enables or disables the onboard IEEE1394 controller. Setting options: [Enabled], [Disabled].

### AC97 Controller

The field enables or disables the AC97 controller. Setting options: [Enabled], [Disabled].

### IDE Devices Configuration

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



**On-Chip IDE Controller**

This field allows you to enable or disable on-chip IDE Controller. 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/ Port2**

Select an address and corresponding interrupt for these two serial ports. The settings are: [3F8/IRQ4], [2E8/IRQ3], [3E8/IRQ4], [2F8/IRQ3], [Disabled], [Auto].

**COM Port 2 Mode**

This setting allows you to specify the operation mode for serial port 2. Setting options:

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

**Parallel Port**

This field specifies the base I/O port address of the onboard parallel port. Selecting [Auto] allows AMIBIOS 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. Setting options: [ECP], [Normal] or [Bi-Directional].

**SATA Devices Configuration**

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



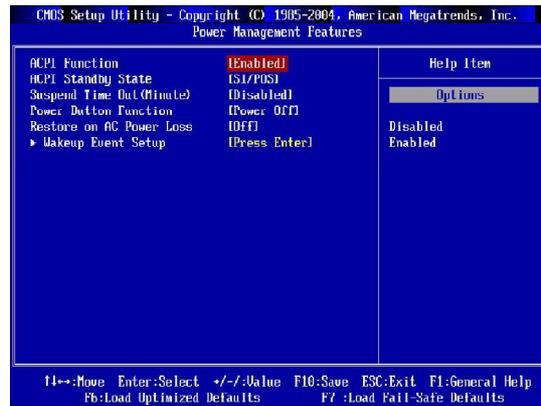
**OnChip SATA Channel**

This field allows you to enable or disabled the SATA controllers. Settings options: [Both], [Disabled], [Single].

**OnChip SATA Type**

This allows you to specify the function type for SATA devices. Settings options: [SATA As RAID], [SATA As Storage], [Enable SATA As IDE].

## Power Management Setup



### MSI Reminds You...

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

### ACPI Function

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

**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. Setting options: [Disabled], [1], [2], [3], [4], [5], [10], [15], [32], [64].

**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. Setting options:

- [Off] Leaves the computer in the power off state.
- [On] Leaves the computer in the power on state.
- [Last State]

**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 setting specifies how the system will be awakened from power saving mode when input signal of the keyboard is detected. Setting options: [Any Key], [Specific Key], [Disabled].

**Keyboard Password**

If **Resume by PS/2 Keyboard** is set to **Specific Key**, 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 what power saving modes when input signal of the PS/2 mouse is detected. Setting options: [Disabled], [Enabled].

**Resume by PCI Device (PME#)**

This controls how and whether the system can be powered on by the devices installed on PCI/PCI-E slots. 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].

## 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 Display

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

- [Auto]            The system initializes the PCIe VGA card first.
- [Internal GFX]    The system initializes the internal GFX port first.
- [PCI Mode]        The system initializes the installed PCI VGA card first.

### 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.

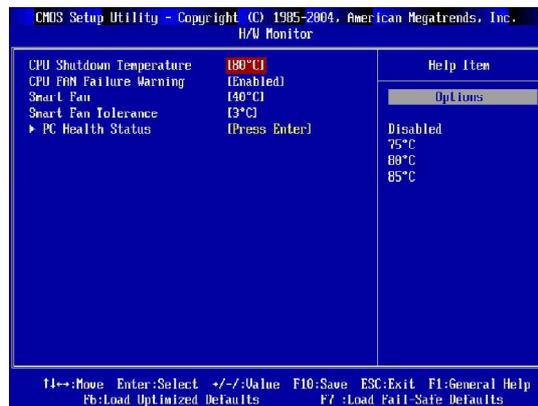


#### DMA Channel 0/1/3/5/6/7

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 onboard.



### CPU Shutdown Temperature

If the CPU temperature reaches the upper limit preset in this setting, the system will be shut down automatically. This helps you to prevent the CPU overheating problem. Setting options: [75°C], [80°C], [85°C], [Disabled].

### CPU Fan Failure Warning

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

### Smart Fan

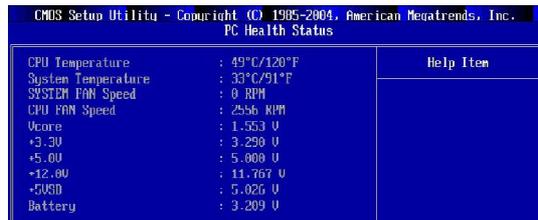
When the current temperature of the CPU fan reaches the value you specify here, the CPU fan will speed up for cooling down to avoid the CPU damage; on the contrary, if the CPU fan current temperature is lower than the specified value, the CPU fan will slow down its speed to keep the temperature stable. Setting options: [Disabled], [40°C], [50°C], [60°C].

### Smart Fan Tolerance

You can select a fan tolerance value here for the specific range for the **Smart Fan** item. If the current temperatures of CPU fan reach to the maximum threshold (the temperatures set in the **Smart Fan** plus the tolerance values you set here), the fans will speed up for cooling down. On the contrary if the current temperatures reach to the minimum threshold (the set temperatures minus the tolerance values), the fans will slow down to keep the temperatures stable. Setting options: [1°C ~ 5°C].

**PC Health Status**

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



The screenshot shows a BIOS utility window titled "CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc." with a sub-menu "PC Health Status". The menu is divided into two columns. The left column lists hardware metrics and their current values, while the right column is labeled "Help Item" and is currently empty.

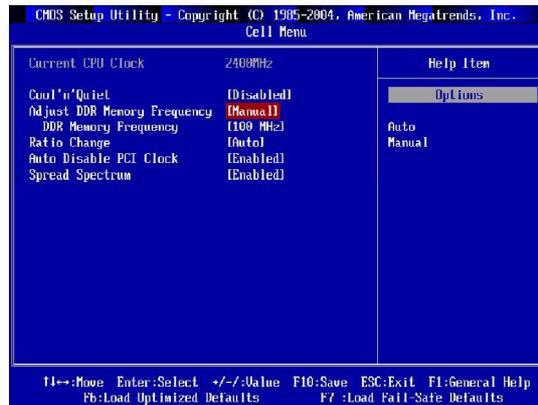
		Help Item
CPU Temperature	: 49°C/120°F	
System Temperature	: 33°C/91°F	
SYSTEM FAN Speed	: 0 RPM	
CPU FAN Speed	: 2556 RPM	
Vcore	: 1.553 V	
+3.3V	: 3.298 V	
+5.0V	: 5.008 V	
+12.0V	: 11.767 V	
+5VSB	: 5.026 V	
Battery	: 3.209 V	

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

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, PCIE, DRAM.



### MSI Reminds You...

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

#### Current CPU Clock

This field shows the current clocks of CPU. 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], [Auto].



### 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

Setting to **Auto**, the system will auto detect the memory clock. Setting to **Manual**, the "DDR Memory Frequency" item will appear and allows you to select the memory clock. Setting options: [Auto], [Manual].

#### DDR Memory Frequency

When the Adjust DDR Memory Frequency is set to **Limit**, this field is selectable. Setting options: [100], [133], [166], [200].

#### Ratio 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

When the **Ratio Change** is set to [Manual], the field is adjustable. This item allows you to adjust the CPU ratio. It is available only when the processor supports this function.

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



#### MSI Reminds You...

1. *If you do not have any EMI problem, leave the setting at [Disabled] for optimal system stability and performance. But if you are plagued by EMI, select the Enabled of Spread Spectrum for EMI reduction.*
2. *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.*

## 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:



Load Fail-Safe Defaults (Y/N)? N

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:



Load Optimized Defaults (Y/N)? N

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

## BIOS Setting Password

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

Enter Password:

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.

# 4

## ***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

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

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

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

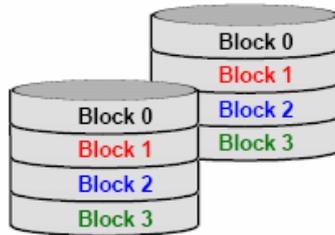
### Disk Striping (RAID 0)

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



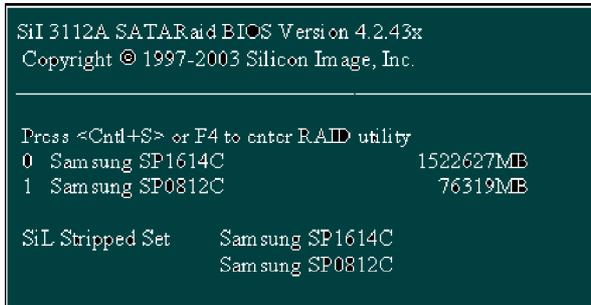
### Disk Mirroring (RAID 1)

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

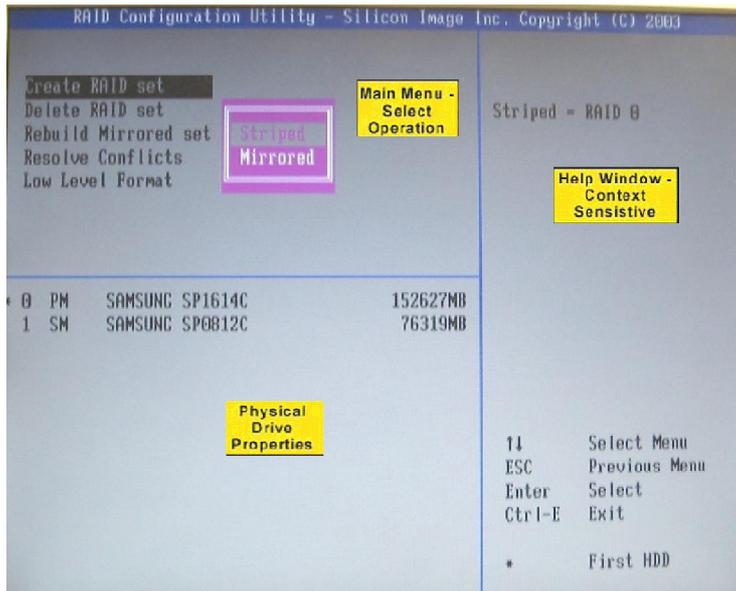


## Creating RAID Sets

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



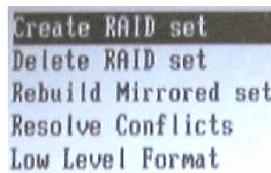
The BIOS RAID Utility menu screen will appear. A brief description of each item on the screen is given on the next page.



## BIOS RAID Utility Screen Description

### u Main Menu

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



The selections are:

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

These operations are described in the pages that follow.

### u Help Window

This window displays context-sensitive help and status messages.

### u Physical Drive Properties

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

## Description of RAID Setup Operations

### u Creating RAID Sets

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

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

#### **U Deleting RAID Sets**

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

#### **U Rebuild RAID 1 Set**

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

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

#### **U Resolving Conflicts**

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

1. Select "Resolve Conflicts"
2. Select the "Invalid RAID drive" entry in the Logical Drive Status window and press Enter.

3. Follow the prompts to resolve the conflict.

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

#### **u Low Level Formatting**

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

## **Installing RAID Drivers (for Windows 2000/XP only)**

### **Installing RAID Drivers during OS Install**

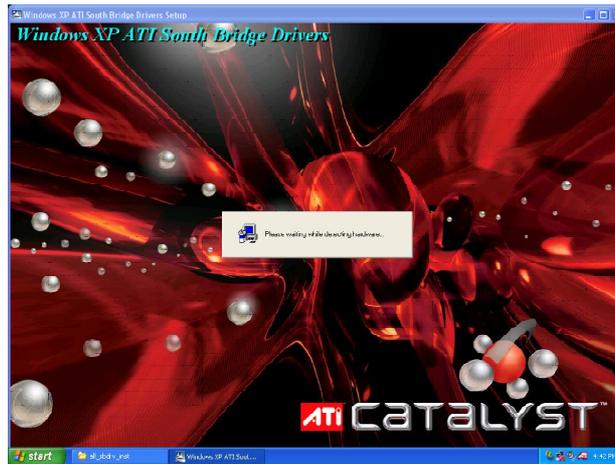
Follow the instructions in this section if you are performing a new installation of the OS (Windows 2000/XP), and wish to boot from a RAID drive connected to the SATA controller.

1. Install the new SATA drives
  - a. Power off the system.
  - b. Connect the hard drives to the SATA 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**

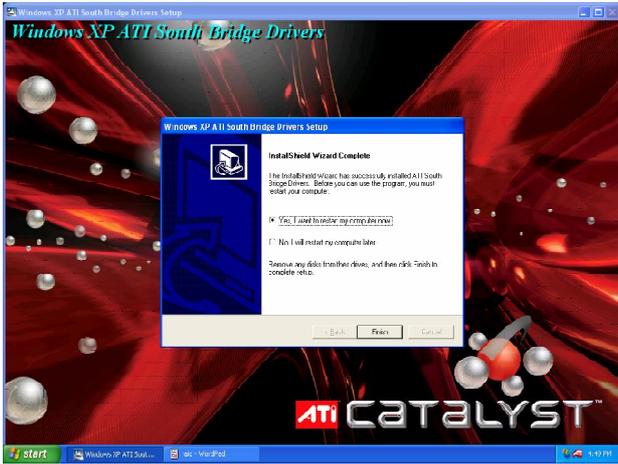
1. Insert your Windows 2000/XP ATI driver CD into the CD-ROM/DVD drive. The ATI driver installation Wizard will start.
2. Follow the setup instructions to complete the driver installation.

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



**MS-7145 M-ATX Mainboard**

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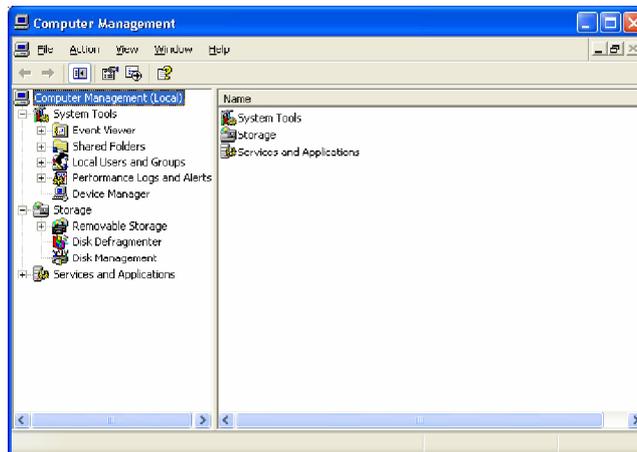
## Configuring RAID 0 Set(s) with Windows Disk Manager

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.

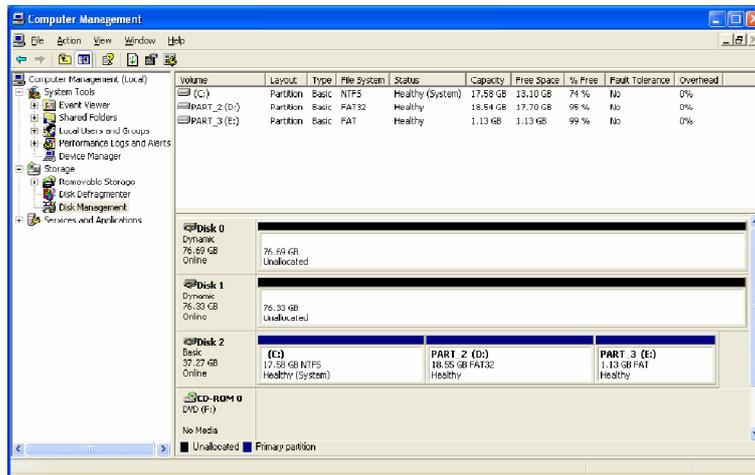
The Windows XP built-in Disk Manager can be used to set up installed SATA drives in Disk Striping (RAID 0) configuration.

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.

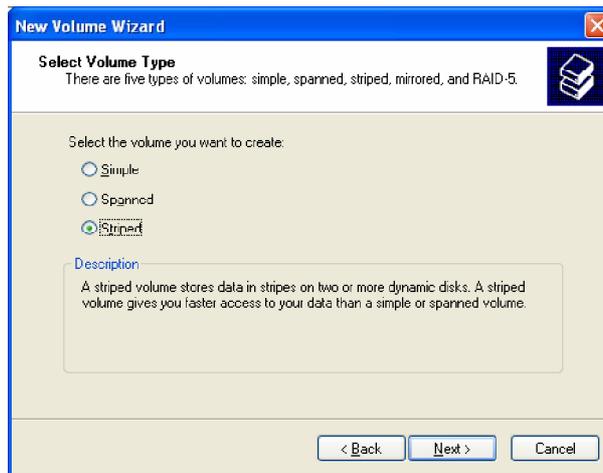
Right clicking on the My Computer icon will access Computer Management. The following screen will appear when Computer Management is started. Select Disk Management under the Storage tree.



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

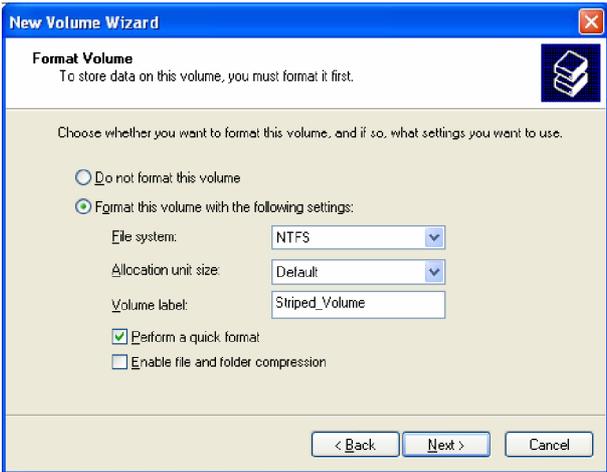


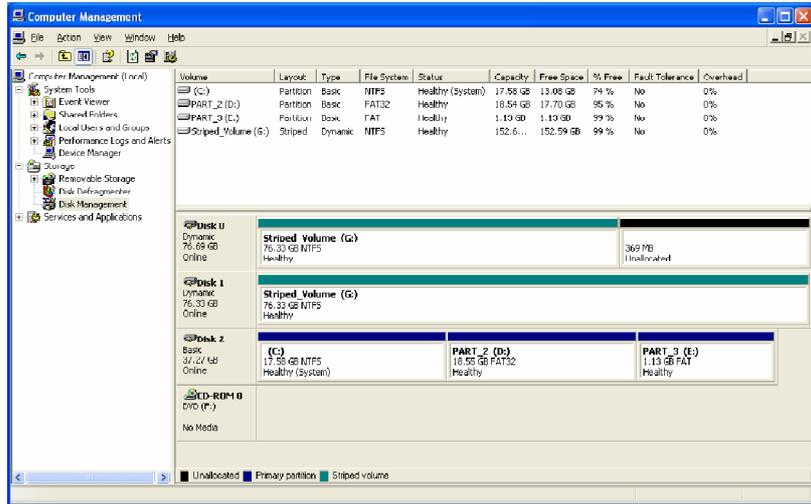
Right click on Disk 0 and select 'New Volume'. At 'New Volume Wizard' select Striped for type of volume.



Total size of disk set for striping is set next.









## ***Introduction to Realtek ALC655***

The motherboard is equipped with Realtek ALC655 chip, which provides support for 6-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC655 allows the board to attach 4 or 6 speakers for better surround sound effect. The section will tell you how to install and use 4-/6-channel audio function on the board.

## Installing the Audio Driver

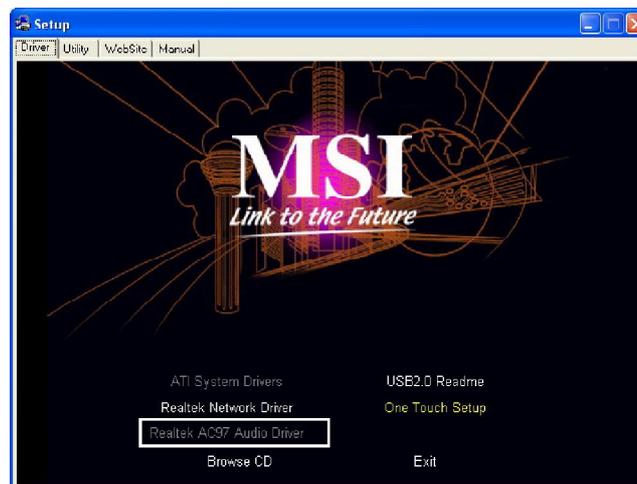
You need to install the driver for Realtek ALC655 chip to function properly before you can get access to 4-/6-channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

### Installation for Windows 98SE/ME/2000/XP

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

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

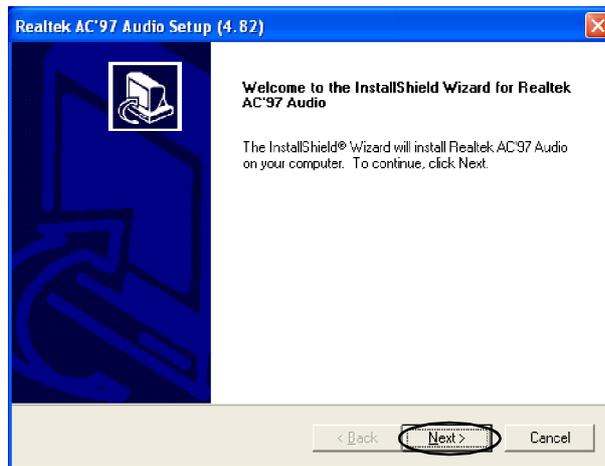
1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear. (**Please note the screen below might be different depending on the different mainboard you purchased.**)
2. Click **Realtek AC97 Audio Drivers**.



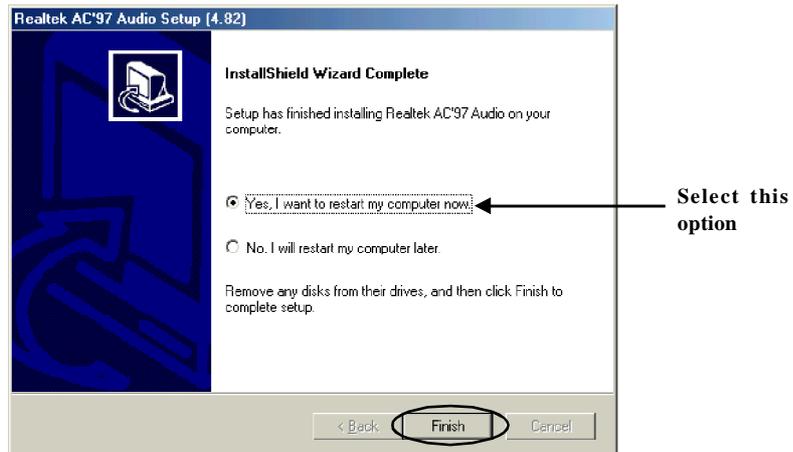
#### MSI Reminds You...

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 start installing files into the system.



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



## Using 4- or 6-Channel Audio Function

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

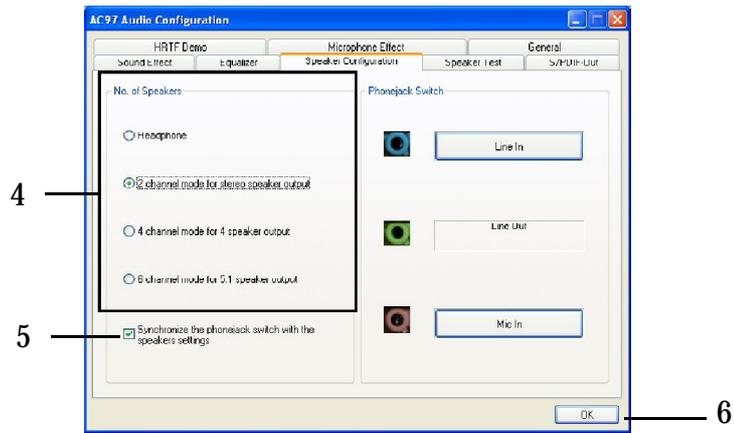
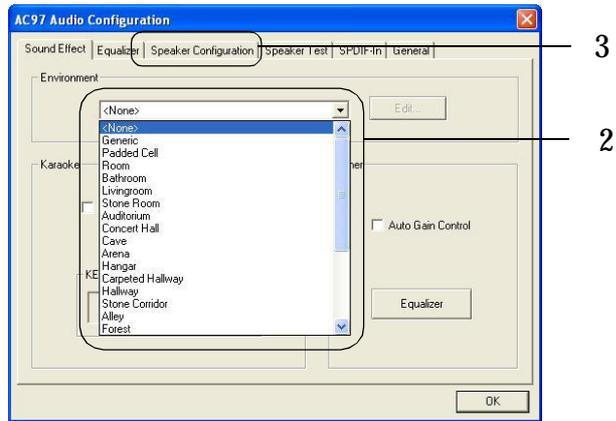
## Using the Back Panel

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

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

### Configuration in the Software Utility

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



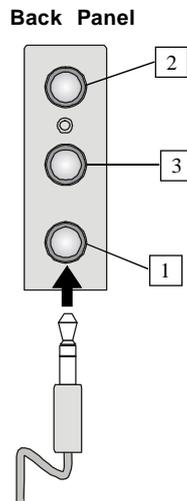
**Connecting the Speakers**

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

**n 2-Channel Mode for Stereo-Speaker Output**

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

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

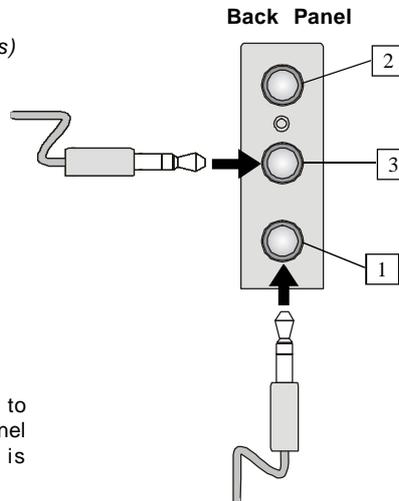


**n 4-Channel Mode for 4-Speaker Output**

The audio jacks on the back panel always provide 2-channel analog audio output function, however these audio jacks can be transformed to 4- or 6- channel analog audio jacks by selecting the corresponding multi-channel operation from **No. of Speakers**.

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

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



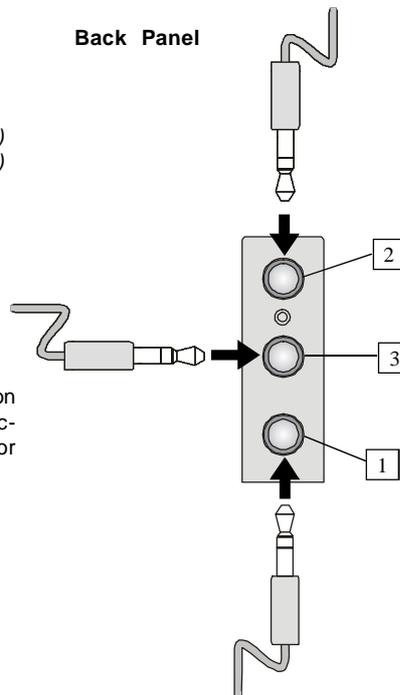
\* Line In function is converted to Line Out function when 4-Channel Mode for 4-Speaker Output is selected.

### n 6-Channel Mode for 6-Speaker Output

Refer to the following diagram and caption for the function of each jack on the back panel when 6-Channel Mode is selected.

- 1 Line Out (Center and Subwoofer channel)
- 2 \* Line Out (Rear channels)
- 3 \* Line Out (Front channels)

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



#### MSI Reminds You...

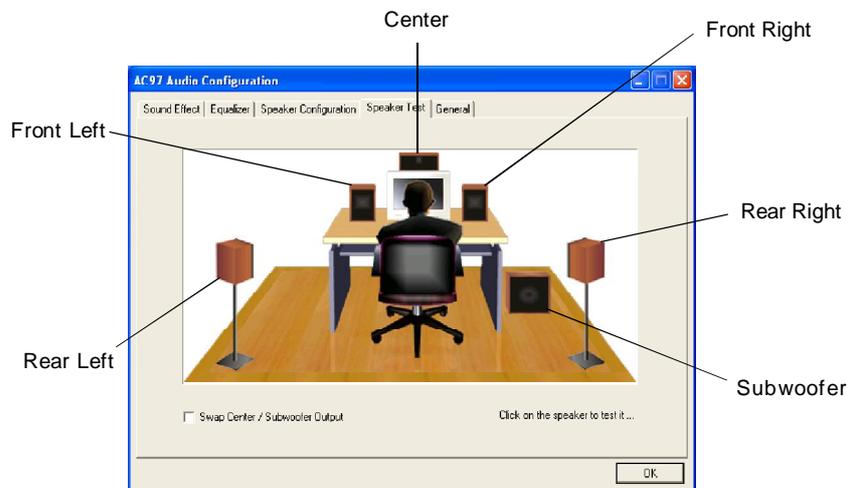
*If the Center and Subwoofer speaker exchange their audio channels when you play video or music on the computer, a converter may be required to exchange center and subwoofer audio signals. You can purchase the converter from a speaker store.*

## Testing the Connected Speakers

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

### Testing Each Speaker

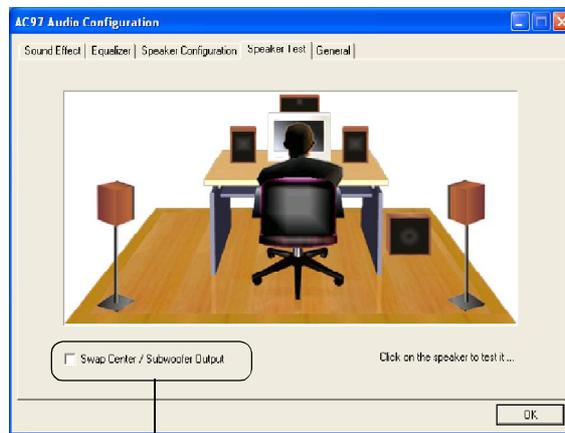
1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. Click the **Speaker Test** tab.
3. The following window appears. Select the speaker which you want to test by clicking it.



#### MSI Reminds You...

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

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



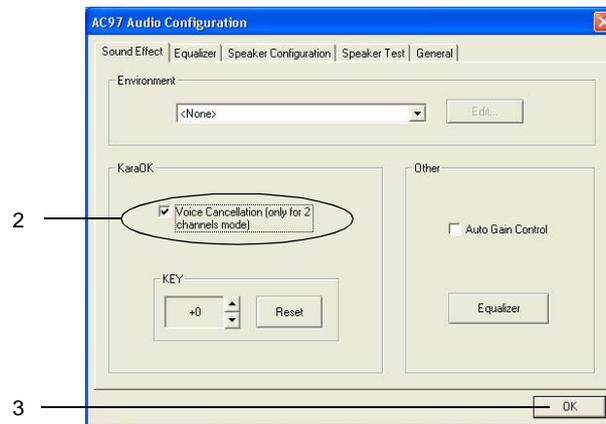
Select this function

## Playing KaraOK

The KaraOK function will automatically remove human voice (lyrics) and leave melody for you to sing the song. Note that this function applies only for 2-channel audio operation.

### Playing KaraOK

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





## ***Introduction to ATI SURROUNDVIEW™***

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

## Getting Started

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

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

SURROUNDVIEW™ enables support for up to three independent monitors.

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

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

Enabling the SURROUNDVIEW™ feature requires only a few steps:

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

## System Requirements

<b>Supported ATI Products</b>	<p>Integrated graphics processors (enabled by system BIOS):</p> <ul style="list-style-type: none"><li>• RADEON® XPRESS 200</li><li>• RADEON® 9100 Pro</li><li>• RADEON® 9100 IGP</li><li>• RADEON® 9000 IGP</li></ul> <p>AGP/PCIe™ graphics cards:</p> <ul style="list-style-type: none"><li>• RADEON® X800 series</li><li>• RADEON® X700 series</li><li>• RADEON® X600 series</li><li>• RADEON® X300 series</li><li>• RADEON® 9800 SE / PRO / XT</li><li>• RADEON® 9600 Series</li><li>• RADEON® 9500 / PRO</li><li>• RADEON® 9200 / SE / PRO</li><li>• RADEON® 9000 Series</li><li>• All All-in-Wonder® cards</li></ul>
<b>Expansion Slot</b>	<ul style="list-style-type: none"><li>• AGP 2X, 8X, or 2X/4X/8X</li><li>• PCIe™ X16</li></ul>
<b>Operating System</b>	<ul style="list-style-type: none"><li>• Windows® 2000</li><li>• Windows® XP (Home or Pro)</li></ul>
<b>CPU</b>	Pentium® 4 2.0 GHz or equivalent; 3.0 GHz recommended.
<b>System Memory</b>	256 MB minimum; 512 MB recommended.
<b>AGP Aperture (for AGP-based cards)</b>	128 MB minimum; 256 MB recommended.
<b>UMA Frame Buffer</b>	64 MB minimum; 128 MB recommended.

## Installing a Graphics Card



### MSI Reminds You...

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

### Before You Begin

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

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



### MSI Reminds You...

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

### Basic Graphics Card Installation

□ To install a graphics card

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



### MSI Reminds You...

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

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



### MSI Reminds You...

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

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

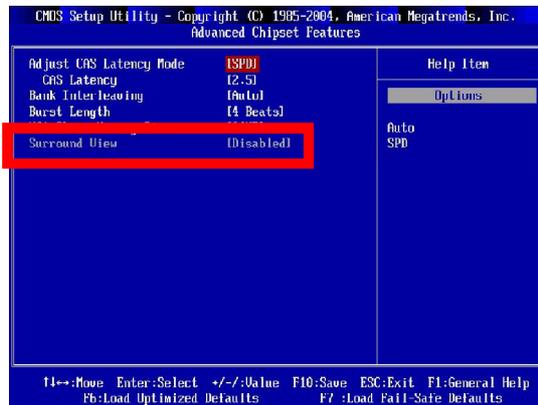
Your monitor will be running in a basic video mode. Higher refresh rates are not available at this stage of the installation. Once you have installed the proper drivers and software, you can use the Display Properties control panel to adjust the video settings and configure multiple monitors.

## Enabling SURROUNDVIEW™

### Enabling SURROUNDVIEW™

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

1. Restart your system, and enter CMOS setup. CMOS is part of your system's BIOS (Basic Input/Output System). When restarting, press **DEL** key to enter Setup. The CMOS Setup screen appears.
2. Use the arrow keys to navigate to **Advanced Chipset Features**, and then press Enter. The Advanced Chipset Features screen appears.
3. Use the arrow keys to navigate to **Surround View** and set it to **Enabled**.
4. Press **F10** to Save your changes. When the **Save to CMOS and Exit** prompt appears, press **Y**.



### Frequently Asked Questions

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

## Using Multiple Displays

### Setting Up Multiple Displays

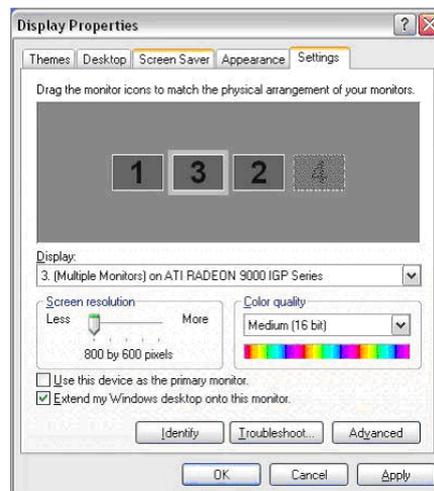
To use SURROUNDVIEW™, connect display devices to the output connections of both your integrated graphics processor (IGP) and your PCI Express® graphics card.

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

#### U To connect your monitors

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

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



Windows® Display Properties Dialog with Multiple Monitors

u **To set up a multi-monitor display**

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

Note: When you use multiple monitors with your card, one monitor will always be Primary. All additional monitors will be designated as Secondary.

5. Select the display icon identified by the number **2**.
6. Click **Extend my Windows desktop onto this monitor**.
7. Right-click the display icon and choose **Attached**, if necessary.
8. Set the **Screen Resolution** and **Color Quality** as appropriate for the second monitor. Click **Apply** or **OK** to apply these new values.

u Refer to your Windows® online help and documentation for further information on using the **Settings** tab.

Note: Each display can use a different screen resolution. For games, it is recommended that you use the same resolution on all displays.

9. Repeat steps 5 through 7 for the display icon identified by the number three.
10. Click and drag the display icons to positions that represent the physical setup of your monitors that you wish to use. The placement of display icons determines how you move items from one monitor to another.
  - u To move items by dragging left and right, place the display icons side by side.
  - u To move items by dragging up and down, place the display icons one above the other.

## Using SURROUNDVIEW™

### Business Applications

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

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



*Identifying your screens*

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



*Launching a spreadsheet in your primary monitor*

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



*Web browser displayed on monitor 2*

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



*Another Web browser displayed on monitor 3*

## Games

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

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



### MSI Reminds You...

*For best results, in the **Flight Simulator Settings Display** dialog, set the full screen resolution for each video adapter to match the desktop resolution for the corresponding display.*

*Because the simulation creates additional information that is sent to the video hardware and monitors, running multiple displays always affects performance compared to a single-display configuration.*

### U To enable SURROUNDVIEW™ for Microsoft® Flight Simulator

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

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

Your displays will look like the following:



*Initial Start Up Screen for Microsoft® Flight Simulator*

- U** Monitor 2
- V** Monitor 1 (Primary)
- W** Monitor 3

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



*“Flying” in Microsoft® Flight Simulator using primary monitor only*

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



*Microsoft® Flight Simulator with both Primary and Monitor 2 running*



**MSI Reminds You...**

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

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



*Microsoft® Flight Simulator using all three monitors*