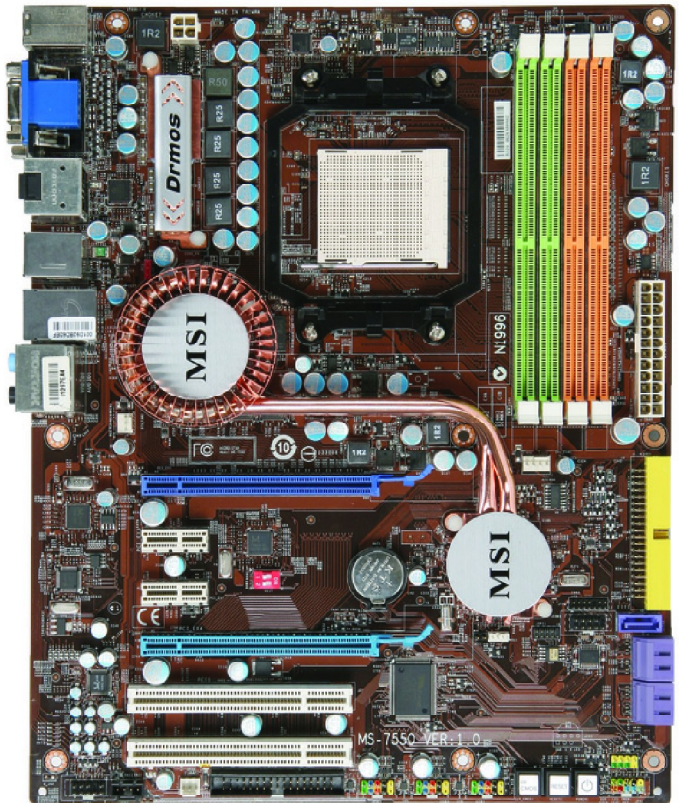# MSI

MICRO-STAR INTERNATIONAL

DKA790GX Platinum Series

MS-7550 (v1.X) Mainboard

G52-75501X1

Copyright Notice

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Revision History

Revision	Revision History	Date
V1.0	First Release	July 2008

Technical Support

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

- Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: *http://global.msi.com.tw/index.php?func=service*
- Contact our technical staff at: *http://ocss.msi.com.tw*

Safety Instructions

1. Always read the safety instructions carefully.

2. Keep this User's Manual for future reference.

3. Keep this equipment away from humidity.

4. Lay this equipment on a reliable flat surface before setting it up.

5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.

6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.

7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.

8. Always Unplug the Power Cord before inserting any add-on card or module.

9. All cautions and warnings on the equipment should be noted.

10. Never pour any liquid into the opening that could damage or cause electrical shock.

11. If any of the following situations arises, get the equipment checked by a service personnel:
    † The power cord or plug is damaged.
    † Liquid has penetrated into the equipment.
    † The equipment has been exposed to moisture.
    † The equipment has not work well or you can not get it work according to User's Manual.
    † The equipment has dropped and damaged.
    † The equipment has obvious sign of breakage.

12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^{0}C (140^{0}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.

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

廢電池請回收

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

FCC-B Radio Frequency Interference Statement

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

 † 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.

**Micro-Star International
MS-7550**

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.

iv

WEEE (Waste Electrical and Electronic Equipment) Statement

ENGLISH

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

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

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

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

FRANÇAIS

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

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

РУССКИЙ

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

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

ESPAÑOL

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

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

NEDERLANDS

Om het milieu te beschermen, wil MSI u eraan herinneren dat….

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling.

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

SRPSKI

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

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

POLSKI

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

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

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

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

ČESKY

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

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

MAGYAR

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

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

ITALIANO

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

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

CONTENTS

Chapter 1
Getting Started

Thank you for choosing the DKA790GX Platinum Series (MS-7550 v1.X) ATX mainboard. The DKA790GX Platinum Series mainboards are based on **AMD 790GX & SB750** chipset for optimal system efficiency. Designed to fit the advanced **AMD Athlon 64 / Phenom** processor, the DKA790GX Platinum Series deliver a high performance and professional desktop platform solution.

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Mainboard Specifications

Processor Support

- Supports AM2+ Phenom FX/X4/X3/X2 processor
- Supports Athlon 64/FX/X2 processor
  (For the latest information about CPU, please visit http://global.msi.com.tw/index.php?func=cpuform)

HyperTransport

- Supports HyperTransport 3.0

Chipset

- North Bridge: AMD® 790GX chipset
- South Bridge: AMD® SB750 chipset

Memory Support

- DDR2 667/800/1066 SDRAM (8GB Max)
- 4 DDR2 DIMMs (240pin / 1.8V)
- * (For more information on compatible components, please visit http://global.msi.com.tw/index.php?func=testreport)

LAN

- Supports LAN 10/100/1000 Fast Ethernet by RTL8111C

IEEE 1394

- Chip integrated by Jmicron JMB381
- Transfer rate is up to 400Mb/s
- Supports 1 port

Audio

- HD Audio ALC888
- Up to 8-channel audio with jack sensing

IDE

- 1 IDE port by SB750
- Supports Ultra DMA 66/100/133 mode
- Supports PIO, Bus Master operation mode

SATA

- SATA II ports by SB750
- Supports 5 SATA II devices
- Supports storage and data transfers at up to 3.0 Gb/s

eSATA

- Supports 1 e-SATA port by SB750
- Supports storage and data transfers at up to 3.0 Gb/s

RAID

- SATA1~5 supports RAID 0/ 1/ 0+1/ 5 or JBOD mode by SB750

Floppy

- 1 floppy port
- Supports 1 FDD with 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB

Connectors

● **Back panel**
- 1 PS/2 mouse or keyboard port
- 1 IEEE 1394 port
- 6 USB 2.0 Ports
- 1 LAN jack
- 6 flexible audio jacks
- 1 Optical SPDIF out jack
- 1 e-SATA port
- 1 DVI-D port
- 1 VGA port
- 1 HDMI port
● **On-Board Pinheaders/ Connectors**
- 3 USB 2.0 pinheaders
- 1 COM port pinheader
- 1 CD-in pinheader
- 1 TPM Module pinheader
- 1 Chassis Intrusion
- 1 Front Panel Audio pinheader
- 1 Wake on LAN connector

Slots

- 2 PCI Express x16 slots
  (support into two x 8 ports when Gross-Fire Enabled)
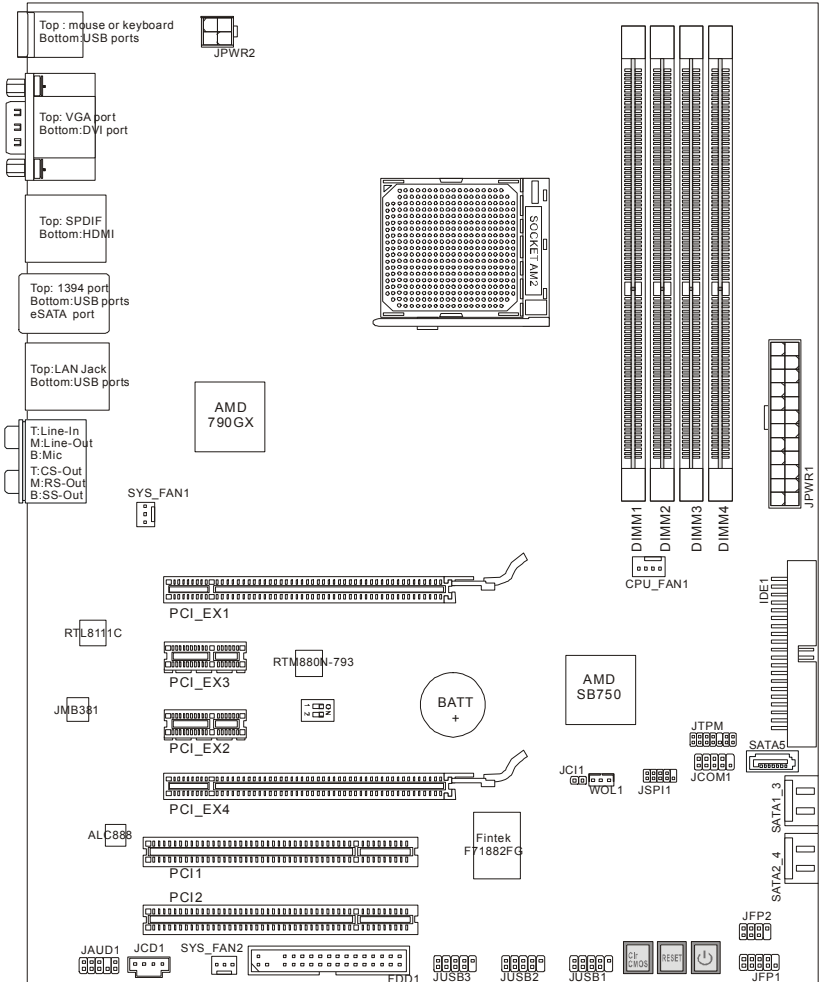- 2 PCI Express x1 slot
- 2 PCI slots

Form Factor

- ATX (30.4cm X 24.5 cm)

Mounting

- 9 mounting holes
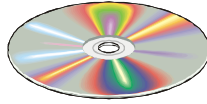
Mainboard Layout

DKA790GX Platinum Series
(MS-7550 v1.X) ATX Mainboard

Packing Checklist

MSI motherboard

MSI Driver/Utility CD

Back IO Shield

Power Cable

SATA Cable

IDE Cable

Floppy Cable

external SATA Cable
(Optional)

User's Guide
and Quick Guide

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

Chapter 2
Hardware Setup

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

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

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Quick Components Guide

JCI1,
p.2-13

WOL1,
p.2-16

JPWR2,
p.2-8

CPU,
p.2-3

DDR2,
p.2-6

Back Panel,
p.2-9

JPWR1,
p.2-8

CPU_FAN1,
p.2-13

SYS_FAN1,
p.2-13

IDE1,
p.2-11

PCI_E,
p.2-20

JTPM,
p.2-14

SATA1~5,
p.2-12

U117,
p.2-18

PCI,
p.2-21

JCOM1,
p.2-14

JFP2,
p.2-16

SYS_FAN2, FDD1,
p.2-13   *p.2-11*

JUSB1~3,
p.2-17

JFP1,
p.2-16

JCD1,
p.2-15

POWER1,
p.2-19

JAUD1,
p.2-15

RESET1,
p.2-19

CLR_CMOS1,
p.2-19
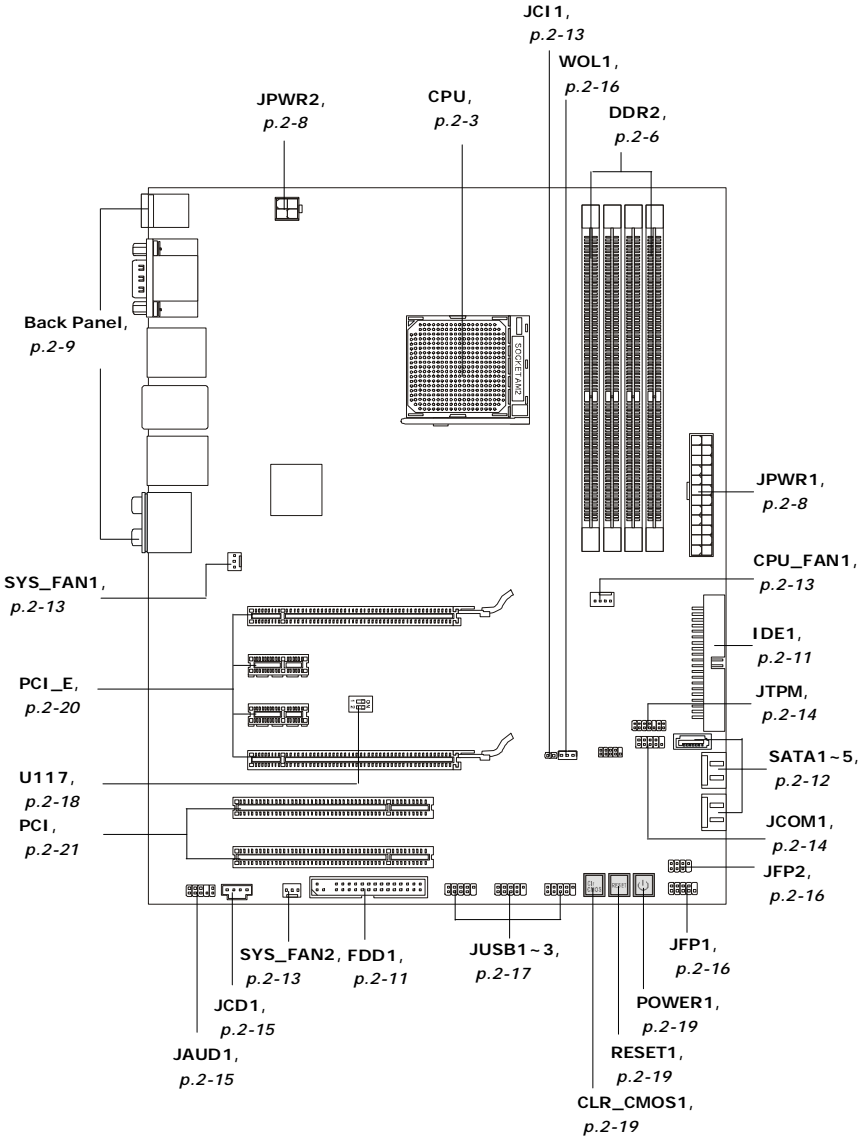
CPU (Central Processing Unit)

When you are installing the CPU, **make sure to install the cooler to prevent overheating.** If you do not have the CPU cooler, consult your dealer before turning on the computer.

For the latest information about CPU, please visit *http://global.msi.com.tw/index.php?func=cpuform*

Important

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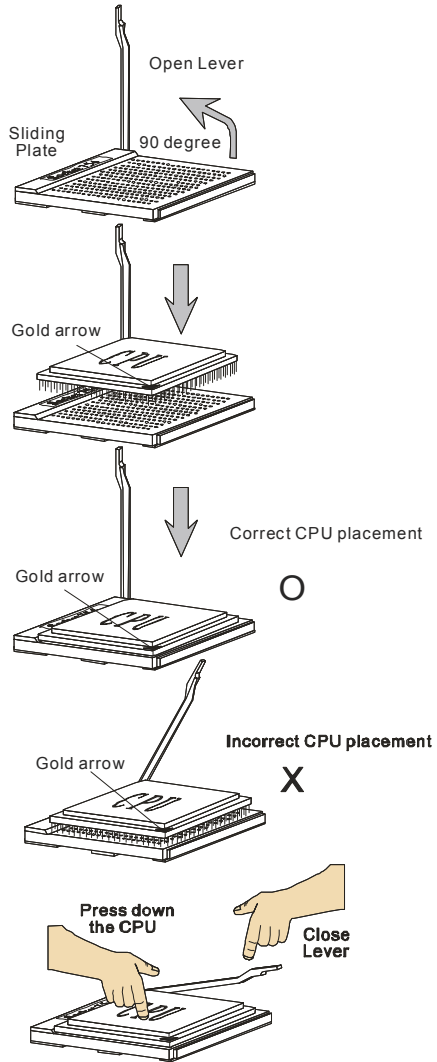
Replaceing the CPU
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.

Overclocking
*This mainboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

CPU Installation Procedures for Socket AM2+

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.

Open Lever

Sliding Plate   90 degree

Gold arrow

Correct CPU placement

Gold arrow

O

Incorrect CPU placement

Gold arrow

X

Press down the CPU

Close Lever

Installing AMD Socket AM2+ 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.
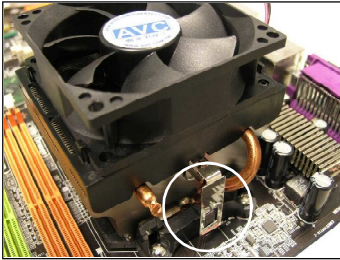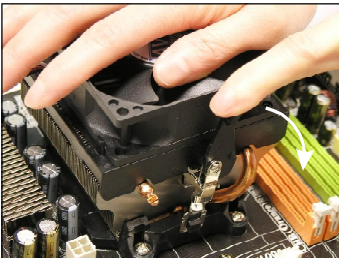
Important

Mainboard photos shown in this section are for demonstration of the cooler installation for Socket AM2+ CPUs only. The appearance of your mainboard may vary depending on the model you purchase.

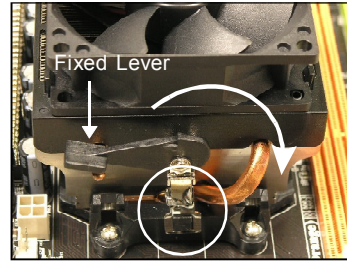1. Position the cooling set onto the re-tention mechanism.

   Hook one end of the clip to hook first.

2. Then press down the other end of the clip to fasten the cooling set on the top of the retention mechanism. Locate the Fix Lever and lift up it .

Fixed Lever

3. Fasten down the lever.

4. Attach the CPU Fan cable to the CPU fan connector on the mainboard.
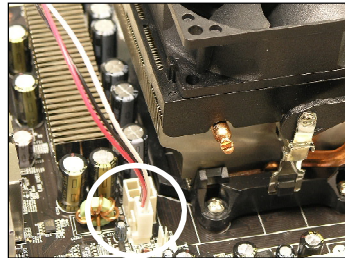
* While disconnecting the Safety Hook from the fixed bolt, it is necessary to keep an eye on your fingers, because once the Safety Hook is disconnected from the fixed bolt, the fixed lever will spring back instantly.

Memory

These DIMM slots are used for installing memory modules.
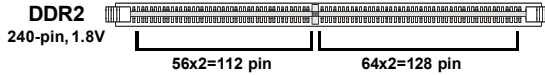For more information on compatible components, please visit *http://global.msi.com. tw/index.php?func=testreport*

DDR2
240-pin, 1.8V

56x2=112 pin   64x2=128 pin

Dual-Channel Memory Population Rules

In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Enabling Dual-Channel mode can enhance the system performance. Please refer to the following illustrations for population rules under Dual-Channel mode.

1
DIMM1
DIMM2
DIMM3
DIMM4

2
DIMM1
DIMM2
DIMM3
DIMM4

3
DIMM1
DIMM2
DIMM3
DIMM4
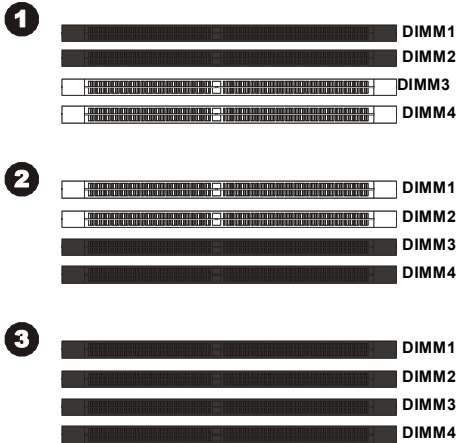
Installed
Empty

Installing Memory Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.

2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot. The plastic clip at each side of the DIMM slot will automatically close when the memory module is properly seated.

Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

3. Manually check if the memory module has been locked in place by the DIMM slot clips at the sides.

Volt   **Notch**
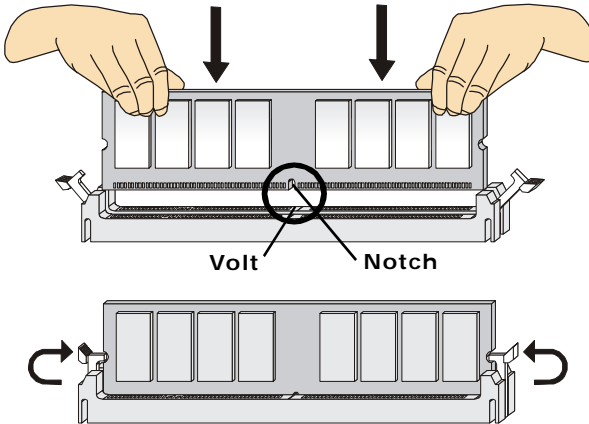
Important

- *DDR2 memory modules are not interchangeable with DDR and the DDR2 standard is not backwards compatible. You should always install DDR2 memory modules in the DDR2 DIMM slots.*
- *In Dual-Channel mode, make sure that you install memory modules of **the same type and density** in different channel DIMM slots.*
- *To enable successful system boot-up, always insert the memory modules into the **DIMM1 first.***

Power Supply

ATX 24-Pin Power Connector: JPWR1

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

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).

pin 13

pin 12

JPWR1

13   1

24   12

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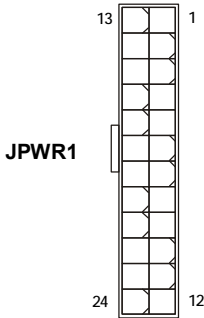
PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS-ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWROK	20	Res
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

ATX 12V Power Connector: JPWR2

This 12V power connector JPW1 is used to provide power to the CPU.

JPWR2

1   3

2   4
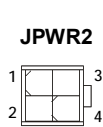
Pin Definition

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

Important

1. Maker sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.
2. Power supply of 450 watts (and above) is highly recommended for system stability.

Back Panel

▶ Keyboard / Mouse
The standard PS/2® keyboard / mouse DIN connector is for a PS/2® keyboard / mouse.
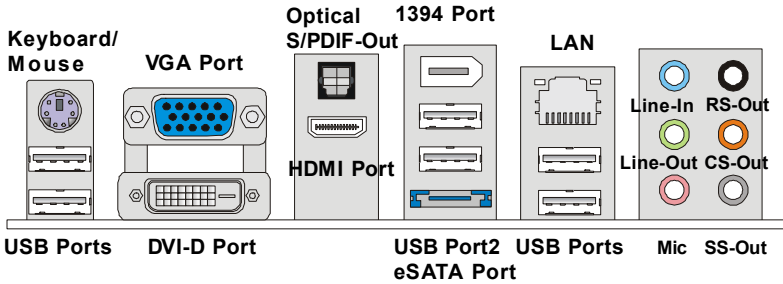
▶ USB Port
The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

▶ VGA Port
The DB15-pin female connector is provided for monitor.

▶ DVI-D Port
The DVI (Digital Visual Interface-Digital) connector allows you to connect a LCD monitor. It provides a high-speed digital interconnection between the computer and its display device. To connect an LCD monitor, simply plug your monitor cable into the DVI connector, and make sure that the other end of the cable is properly connected to your monitor (refer to your monitor manual for more information.)

▶ Optical S/PDIF-Out
This SPDIF (Sony & Philips Digital Interconnect Format) connector is provided for digital audio transmission to external speakers through an optical fiber cable.

▶ HDMI Port
The High-Definition Multimedia Interface (HDMI) is an all-digital audio/video interface capable of transmitting uncompressed streams. HDMI supports all TV format, including standard, enhanced, or high-definition video, plus multi-channel digital audio on a single cable.
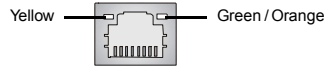
▶ 1394 Port
The IEEE1394 port on the back panel provides connection to IEEE1394 devices.

▶ eSATA Port
The eSATA port is for attaching the eSATA external hard drive.

► LAN

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

Yellow ———— Green / Orange

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

► Audio Ports

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

- **Line-In (Blue)** - Line In is used for external CD player, tapeplayer or other audio devices.
- **Line-Out (Green)** - Line Out, is a connector for speakers or headphones.
- **Mic (Pink)** - Mic, is a connector for microphones.
- **RS-Out (Black)** - Rear-Surround Out in 4/ 5.1/ 7.1 channel mode.
- **CS-Out (Orange)** - Center/ Subwoofer Out in 5.1/ 7.1 channel mode.
- **SS-Out (Gray)** - Side-Surround Out 7.1 channel mode.

Connectors

Floppy Disk Drive Connector: FDD1

This connector supports 360KB, 720KB, 1.2MB, 1.44MB or 2.88MB floppy disk drive.

FDD1
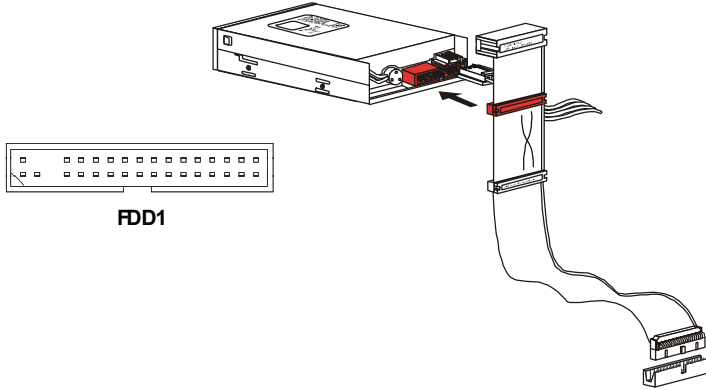
IDE Connector: IDE1

This connector supports IDE hard disk drives, optical disk drives and other IDE devices.

IDE1
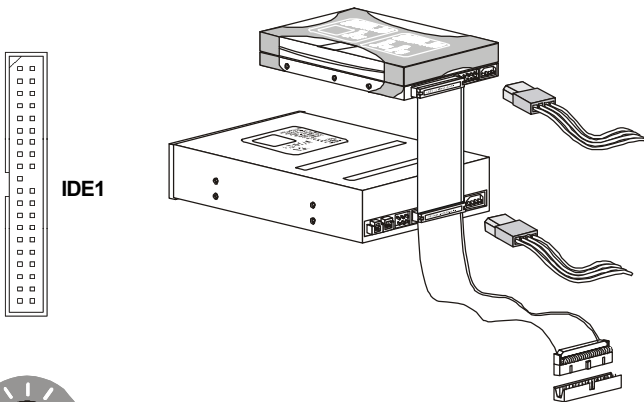
Important

If you install two IDE devices on the same cable, you must configure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

2-11

Serial ATA Connector: SATA1~ SATA5

This connector is a high-speed Serial ATA interface port. Each connector can connect to one Serial ATA device.

SATA5

SATA1-2

SATA3-4
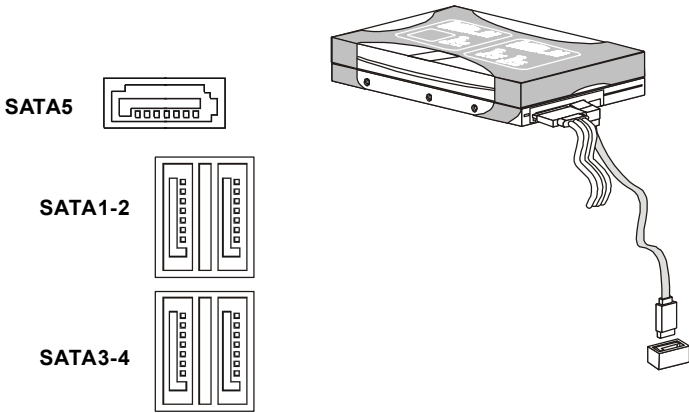
> **Important**
>
> *Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.*

Fan Power Connectors: CPU_FAN1, SYS_FAN1/2

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

CPU_FAN1
CONTROL
SENSOR
+12V
GND

SYS_FAN1
SENSOR
+12V
GND

SYS_FAN2
GND
+12V
NC

Important
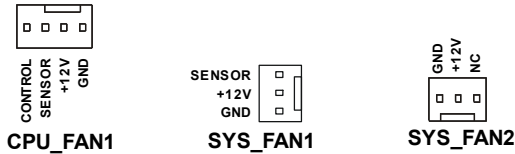
1. *Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.*
2. *CPUFAN supports fan control. You can install **Dual Core Center** utility that will automatically control the CPU fan speed according to the actual CPU temperature.*
3. *Fan cooler set with 3 or 4 pins power connector are both available for CPU_FAN1.*

Chassis Intrusion Connector: JCI1

This connector connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. 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.

CINTRU
GND
1   2
JCI1
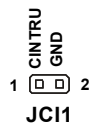
TPM Module Connector: JTPM

This connector connects to a TPM (Trusted Platform Module) module (optional). Please refer to the TPM security platform manual for more details and usages.

JTPM

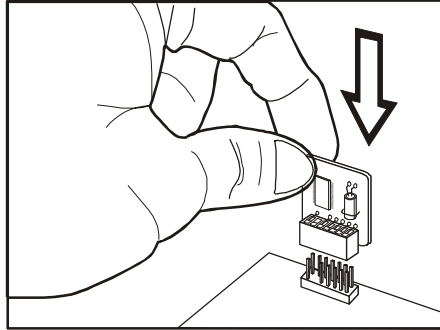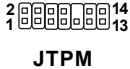| Pin	Signal	Description	Pin	Signal	Description
1	LCLK	LPC clock	2	3V_STB	3V standby power
3	LRST#	LPC reset	4	VCC3	3.3V power
5	LAD0	LPC address & data pin0	6	SIRQ	Serial IRQ
7	LAD1	LPC address & data pin1	8	VCC5	5V power
9	LAD2	LPC address & data pin2	10	KEY	No pin
11	LAD3	LPC address & data pin3	12	GND	Ground
13	LFRAME#	LPC Frame	14	GND	Ground

Serial Port Connector: JCOM 1

This connector is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial device.

JCOM1
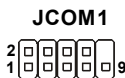
Pin Definition

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: JAUD1

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

2 ☐☐☐☐☐ 10
1 ☐☐☐☐☐ 9 **JAUD1**

HD Audio Pin Definition

PIN	SIGNAL	DESCRIPTION
1	MIC_L	Microphone - Left channel
2	GND	Ground
3	MIC_R	Microphone - Right channel
4	PRESENCE#	Active low signal-signals BIOS that a High Definition Audio dongle is connected to the analog header. PRESENCE# = 0 when a High Definition Audio dongle is connected
5	LINE out_R	Analog Port - Right channel
6	MIC_JD	Jack detection return from front panel microphone JACK1
7	Front_JD	Jack detection sense line from the High Definition Audio CODEC jack detection resistor network
8	NC	No control
9	LINE out_L	Analog Port - Left channel
10	LINEout_JD	Jack detection return from front panel JACK2

CD-In Connector: JCD1

This connector is provided for external audio input.

JCD1
R GND L
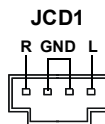
Front Panel Connectors: JFP1, JFP2

These connectors are for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
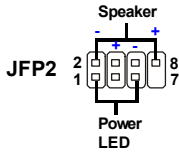
JFP2 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	GND	Ground
2	SPK-	Speaker-
3	SLED	Suspend LED
4	BUZ+	Buzzer+
5	PLED	Power LED
6	BUZ-	Buzzer-
7	NC	No connection
8	SPK+	Speaker+
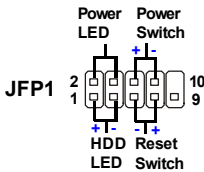
JFP1 Pin Definition

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

Wake-Up on LAN Connector: WOL1

This connector is for use with LAN add-on cards that supports Wake Up on LAN function. To use this function, you need to set the "Wake-Up on LAN" to enable at the BIOS.

WOL1
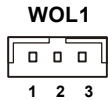
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

Note: LAN wake-up singal is active "high".

Important

To be able to use this function, you need a power supply that provide enough power for this feature. (Power supply with 750ma 5V Stand-by)

Front USB Connector: JUSB1 ~ 3

These connectors, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.

Pin Definition

JUSB1~3

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key(no pin)	10	USBOC
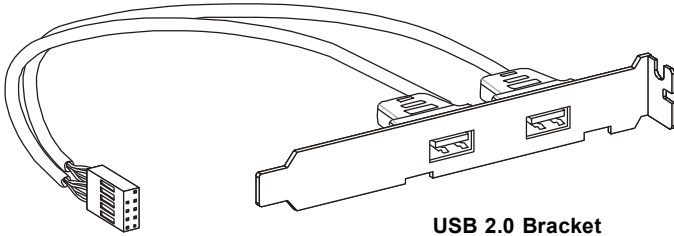
USB 2.0 Bracket
(Optional)

Important

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

2-17

Switch

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

Hardware Overclock FSB Switch: U117 (optional)

You can overclock the FSB to increase the processor frequency by changing the switch. Follow the instructions below to set the FSB.
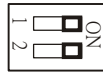
DOC1	DOC2	CPU Frequency
1:ON	2:ON	Default
1:ON	2:OFF	Increase 10% speed of FSB
1:OFF	2:ON	Increase 15% speed of FSB
1:OFF	2:OFF	Increase 20% speed of FSB

Important

1. *Make sure that you power off the system before setting the switch.*
2. *When hardware overclocking cause system instability or crash during boot, the following warning message will display during POST. And then, please set the switch to default setting.*

> Warning!!! OC switch overclocking had failed,
> Please shutdown and adjust oc switch to lower frequency.
> Try again!

Button

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

Power Button: POWER1

This power button is used to turn-on or turn-off the system. Press the button to turn-on or turn-off the system.

POWER1

Reset Button: RESET1

This reset button is used to reset the system. Press the button to reset the system.

RESET

RESET1

Clear CMOS Button: CLR_CMOS1

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 button to clear data. Press the button to clear the data.

clr
CMOS

CLR_CMOS1

Important

Make sure that you power off the system before clearing CMOS data.

2-19

Slots

PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports the PCI Express interface expansion card.
The PCI Express x16 supports up to 4.0 GB/s transfer rate.
The PCI Express x1 supports up to 250 MB/s transfer rate.
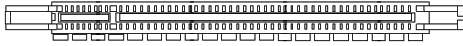
**PCI Express x16 Slots support up to
PCI Express x16 speed (PCI_E1 & PCI_E4)**
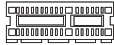
**White PCI Express x 1 Slot supports
PCI Express x1 speed (PCI_E2 & PCI_E3)**

Important

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

PCI (Peripheral Component Interconnect) Slot

The PCI slot supports LAN card, SCSI card, USB card, and other add-on cards that comply with PCI specifications.
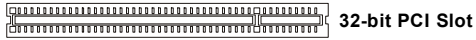
 32-bit PCI Slot

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

PCI Interrupt Request Routing

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

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

ATi CrossFire (Multi-GPU) Technology

ATi CrossFire (Multi-GPU) technology is an exciting new technology developed by ATI that allows the power of multiple Graphics. CrossFire requires a CrossFire Edition graphics card and a compatible standard Radeon (CrossFire Ready) graphics card from the same series. To utilize this technology, always install the CrossFire Edition graphics card in the **First** mazarine PCIE x16 (PCI_EX1) slot and install the CrossFire Ready graphics card in the **Second** blue PCIE x16 (PCI_EX4) slot. The mainboard can auto detect the CrossFire mode by software, therefore you don't have to enable the CrossFire in BIOS by yourself. Following the process below to complete CrossFire:

1. Install the CrossFire *Edition* graphics card in the **mazarine** PCIE x16 (PCI_EX1) slot and install the CrossFire *Ready* graphics card in the **blue** PCIE x16 (PCI_EX4) slot.

2. With two cards installed, an CrossFire Video Link cable is required to connect the golden fingers on the top of these two graphics cards (refer to the picture below). Please note that although you have installed two graphics cards, only the video outputs on the CrossFire Edition graphics card will work. Hence, you only need to connect a monitor to the CrossFire Edition graphics card.
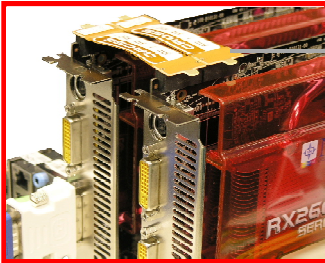
CrossFire Video Link cable

Important

1. Mainboard photos shown in this section are for demonstration only. The appearance of your mainboard may vary depending on the model you purchase.
2. If you intend to install **TWO** graphics cards for CrossFire mode, make sure that:
   a. these two graphics cards are of the same brand and specifications;
   b. these two cards are installed on both PCIE x16 slots.
3. Make sure that you connect an adequate power supply to the power connector on the graphics card to ensure stable operation of the graphics card.
4. Only Windows® XP with Service Pack 2 (SP2)& Windows® XP Profes -sional x64 Edition & Windows® Vista support the CrossFire function.

3.When all of the hardware and software has been properly set up and installed, reboot the system. After entering the O.S., click the "Catalyst™ Control Center" icon 🔴ATI on the desktop. There is a setting in the Catalyst™ Control Center that needs to be enabled for CrossFire™ to operate. The following aspect appears in Catalyst™ Control Center:

Select the Advanced View from the view drop menu.
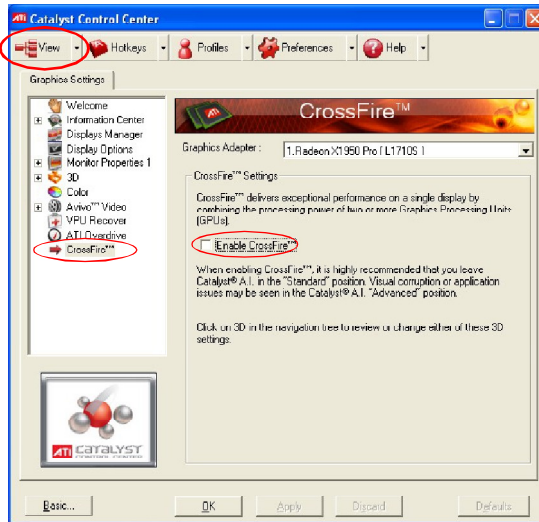
Important

A CrossFire™ system has four possible display modes:
* *SuperTiling*
* *Scissor Mode*
* *Alternate Frame Rendering*
* *Super Anti-aliasing.*
for more details, please consult the graphics card manual from the manufacturer.

Chapter 3
BIOS Setup

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

² An error message appears on the screen during the system booting up, and requests you to run SETUP.

² You want to change the default settings for customized features.

MSI
MICRO-STAR INTERNATIONAL

Entering Setup

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

Press DEL to enter SETUP

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

Important

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

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

A7550AMS V1.0 010108 where:

1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.
2nd - 5th digit refers to the model number.
6th digit refers to the chipset as I = Intel, N = nVidia, and A = AMD.
7th - 8th digit refers to the customer as MS = all standard customers.
V1.0 refers to the BIOS version.
010108 refers to the date this BIOS was released.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F5>	Memory-Z
<F6>	Load Optimized Defaults
<F8>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

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

Main Menu

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

Sub-Menu

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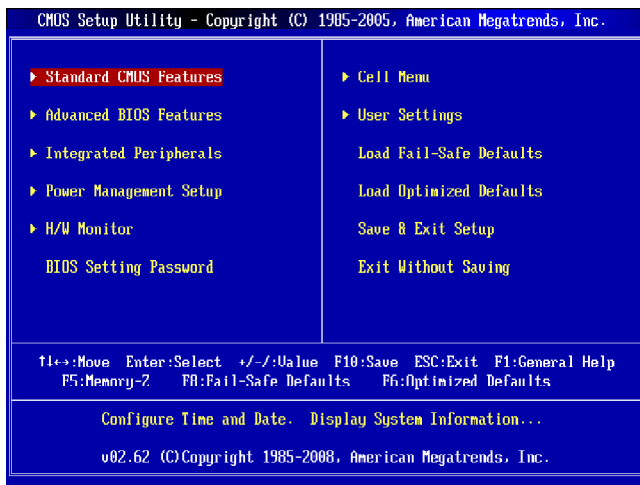
▶ Primary IDE Master
▶ Primary IDE Slave
▶ Secondary IDE Master
▶ Secondary IDE Slave

General Help <F1>

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

The Main Menu

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.

 ▶ Standard CMOS Features         ▶ Cell Menu

 ▶ Advanced BIOS Features         ▶ User Settings

 ▶ Integrated Peripherals           Load Fail-Safe Defaults

 ▶ Power Management Setup           Load Optimized Defaults

 ▶ H/W Monitor                      Save & Exit Setup

   BIOS Setting Password            Exit Without Saving



 ↑↓←→:Move  Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
   F5:Memory-Z    FA:Fail-Safe Defaults    F6:Optimized Defaults

       Configure Time and Date.  Display System Information...

       v02.62 (C)Copyright 1985-2008, American Megatrends, Inc.
```

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

► Advanced BIOS Features
Use this menu to setup the items of AMI® special enhanced features.

► 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.

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

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

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

► User Settings
Use this menu to save/ load your settings to/ from CMOS for BIOS.

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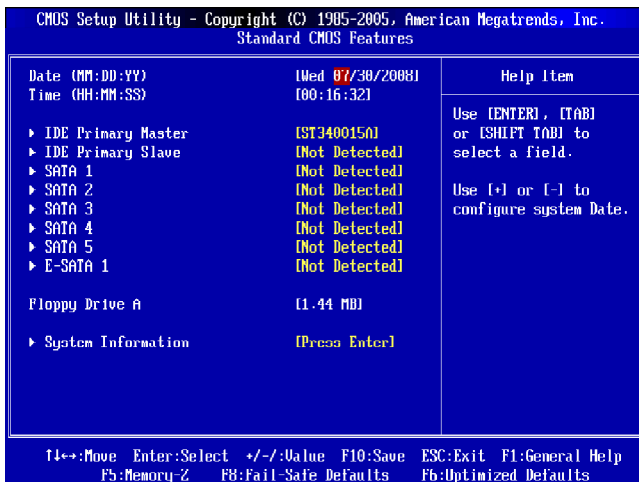
► Save & Exit Setup
Save changes to CMOS and exit setup.

► 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.

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                        Standard CMOS Features

  Date (MM:DD:YY)              [Wed 07/30/2008]          Help Item
  Time (HH:MM:SS)              [00:16:32]
                                                   Use [ENTER], [TAB]
  ▶ IDE Primary Master         [ST340015A]          or [SHIFT TAB] to
  ▶ IDE Primary Slave          [Not Detected]       select a field.
  ▶ SATA 1                     [Not Detected]
  ▶ SATA 2                     [Not Detected]       Use [+] or [-] to
  ▶ SATA 3                     [Not Detected]       configure system Date.
  ▶ SATA 4                     [Not Detected]
  ▶ SATA 5                     [Not Detected]
  ▶ E-SATA 1                   [Not Detected]

  Floppy Drive A               [1.44 MB]

  ▶ System Information         [Press Enter]




  ↑↓←→:Move  Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
         F5:Memory-Z    F8:Fail-Safe Defaults    F6:Optimized Defaults
```

▶ Date (MM:DD:YY)
This allows you to set the system to the date that you want (usually the current date). The format is <day><month> <date> <year>.
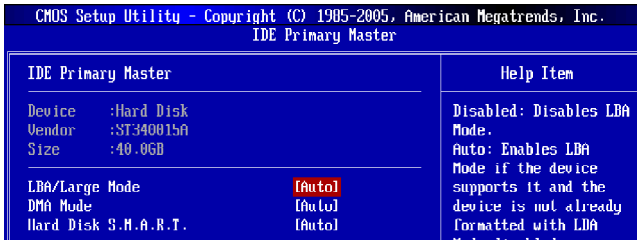
day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.

▶ Time (HH:MM:SS)
This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

▶ IDE Primary Master/ Slave, SATA1~5, E-SATA1
Press <Enter> to enter the sub-menu, and the following screen appears.

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                         IDE Primary Master

  IDE Primary Master                              Help Item

  Device    :Hard Disk                    Disabled: Disables LBA
  Vendor    :ST340015A                    Mode.
  Size      :40.0GB                       Auto: Enables LBA
                                          Mode if the device
  LBA/Large Mode              [Auto]      supports it and the
  DMA Mode                    [Auto]      device is not already
  Hard Disk S.M.A.R.T.        [Auto]      formatted with LBA
```

► Device / Vender / Size
It will showing the device information that you connected to the SATA connector.

► LBA/Large Mode
This allows you to enable or disable the LBA Mode. Setting to Auto enables LBA mode if the device supports it and the devices is not already formatted with LBA mode disabled.

► DMA Mode
Select DMA Mode.

► 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.

Important

IDE Primary Master/ Slave, SATA 1/2/3/4/5 Channel & E-SATA1 are appearing when you connect the HD devices to the IDE/ SATA/ ESATA connector on the mainboard.

► Floppy Drive A
This item allows you to set the type of floppy drives installed.
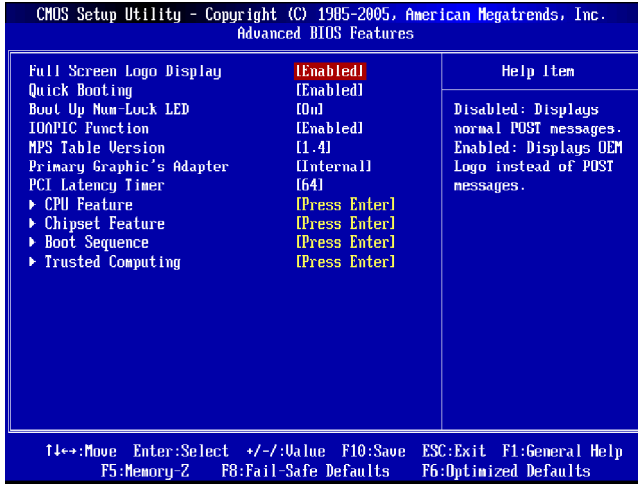
► **System Information**
Press <Enter> to enter the sub-menu, and the following screen appears.

This sub-menu shows the CPU information, BIOS version and memory status of your system (read only).

Advanced BIOS Features

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                         Advanced BIOS Features

Full Screen Logo Display      [Enabled]              Help Item
Quick Booting                 [Enabled]
Boot Up Num-Lock LED          [On]             Disabled: Displays
IOAPIC Function               [Enabled]        normal POST messages.
MPS Table Version             [1.4]            Enabled: Displays OEM
Primary Graphic's Adapter     [Internal]       Logo instead of POST
PCI Latency Timer             [64]             messages.
▶ CPU Feature                 [Press Enter]
▶ Chipset Feature             [Press Enter]
▶ Boot Sequence               [Press Enter]
▶ Trusted Computing           [Press Enter]




      ↑↓←→:Move  Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
               F5:Memory-Z    F8:Fail-Safe Defaults   F6:Optimized Defaults
```

▶ **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.

▶ **Quick Booting**
Setting the item to [Enabled] allows the system to boot within 10 seconds since it will skip some check items.

▶ **Boot Up Num-Lock LED**
This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

▶ **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.

▶ **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.
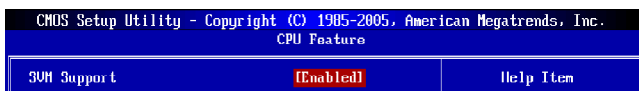
► **Primary Graphic's Adapter**
This setting specifies which graphic card is your primary graphics adapter.

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

► **CPU Feature**
Press <Enter> to enter the sub-menu and the following screen appears:

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                          CPU Feature

SVM Support                   [Enabled]            Help Item
```

► **SVM Support**
This item is used to enable/ disable SVM.

► **Chipset Feature**
Press <Enter> to enter the sub-menu and the following screen appears:

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                        Chipset Feature

HPET                 [Disabled]           Help Item
On-chip VGA          [UMA+SIDEPORT]
VGA Share Memory     [Auto]                   Options
```

► **HPET**
The HPET (High Precision Event Timers) is a component that is part of the chipset. You can to enable it, and will provide you with the means to get to it via the various ACPI methods.

► **On-chip VGA**
This item specifies whether to allocate the memory for onboard VGA from the system memory or sideport memory. Setting to [UMA], allocates the system share memory for onboard VGA. Setting to [UMA+SIDEPORT], allocates both system memory and sideport memory for onbaord VGA.

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

▶ **Boot Sequence**
Press <Enter> to enter the sub-menu and the following screen appears:

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                            Boot Sequence

1st Boot Device              [1st FLOPPY DRI]        Help Item
2nd Boot Device              [HDD:PM-ST34001]
Boot From Other Device       [Yes]               Specifies the boot
```

▶ **1st/ 2nd Boot Device**
The items allow you to set the first/ second boot device where BIOS attempts to load the disk 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 boot device.

▶ **Trusted Computing**
Press <Enter> to enter the sub-menu and the following screen appears:

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                          Trusted Computing

TCG/TPM SUPPORT              [No]                    Help Item
```

▶ **TCG/TPM SUPPORT**
This field is used to enable or disable TPM (Trusted Platform Module).

Integrated Peripherals

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                        Integrated Peripherals

 USB Controller                 [Enabled]              Help Item
 USB Device Legacy Support      [Enabled]
 Onboard LAN Controller         [Enabled]               Options
 LAN Option ROM                 [Disabled]
 Onboard IEEE 1394 Controller   [Enabled]         Disabled
 Onboard Audio Controller       [Enabled]         Enabled
 ▶ On-Chip ATA Devices          [Press Enter]
 ▶ I/O Devices                  [Press Enter]




 ↑↓←→:Move  Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
         F5:Memory-Z    F8:Fail-Safe Defaults    F6:Optimized Defaults
```

► USB Controller
This setting allows you to enable/disable the onboard USB controller.

► USB Device Legacy Support
Select [Enabled] if you need to use a USB-interfaced device in the operating system.

► Onboard LAN Controller
This item is used to enable/disable the onboard LAN controller.

► LAN Option ROM
This item is used to decide whether to invoke the Boot ROM of the LAN controller.

► Onboard IEEE1394 Controller
This item allows you to enable/disable the onboard IEEE1394 controller.

► Onboard Audio Controller
This setting is used to enable/disable the onboard audio controller.

▶ **On-Chip ATA Devices**
Press <Enter> to enter the sub-menu and the following screen appears:

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                        On-Chip ATA Devices

PCI IDE BusMaster        [Enabled]          Help Item
On-Chip SATA Controller  [Enabled]
RAID Mode                [IDE]          ENABLED: BIOS uses
```

▶ **PCI IDE BusMaster**
This item allows you to enable/ disable BIOS to used PCI busmastering for reading/ writing to IDE drives.

▶ **On-Chip SATA Controller**
These items allow users to enable or disable the SATA controller.

▶ **RAID Mode**
This item allows you to configure SATA mode. Setting options: [RAID],[AHCI] or [IDE].

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

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                        I/O Devices

COM Port 1              [3F8/IRQ4]         Help Item
PS2 device select      [Auto]
```

▶ **COM Port 1**
Select an address and corresponding interrupt for the first serial port.

▶ **PS2 device select**
Select the PS/2 device which be pluged to the PS/2 connector of mainbaord. Set to [Auto], the system will auto detect the type of PS/2 device.

Power Management Setup

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                        Power Management Setup

ACPI Function                [Enabled]              Help Item
ACPI Standby State           [S1]
Power Button Function        [Power Off]      Enable / Disable
Restore On AC Power Loss     [Off]            ACPI support for
▶ Wake Up Event Setup         [Press Enter]    Operating System.

                                              ENABLE: If OS
                                              supports ACPI.

                                              DISABLE: If OS
                                              does not support
                                              ACPI.


↑↓←→:Move  Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Memory-Z    F8:Fail-Safe Defaults    F6:Optimized Defaults
```

Important

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 2000/ XP, select [Enabled].

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

[S1]   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]   The S3 sleep mode is a lower power state where the in formation of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a "wake up" event occurs.

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

      [Power On/ Off] The power button functions as normal power off button.

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

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

      [Off]   Always leaves the computer in the power off state.

      [On]   Always leaves the computer in the power on state.

      [Last State]   Restores the system to the status before power failure or interrupt occurred.

▶ **Wake Up Event Setup**
Press <Enter> and the following sub-menu appears.

   ▶ **Wake Up Event By**
   The item allows you to wake up event by BIOS or OS.

   ▶ **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.

   ▶ **Resume From S3 By PS/2 Keyboard/ Mouse**
   This setting determines whether the system will be awakened from what power saving modes when input signal of the PS/2 keyboard/ mouse is detected.

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

   ▶ **Resume By PCI-E Device**
   When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event by PCI-E device.

► Resume By Onboard LAN
When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event by onboard LAN.

► 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 state.

H/W Monitor

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                              H/W Monitor

Chassis Intrusion              [Disabled]            Help Item
CPU Smart FAN Target           [Disabled]
SYS FAN 1 Control              [100%]          Chassis Intrusion func

              ----- PC Health Status -----
CPU Temperature                59°C/138°F
System Temperature             38°C/100°F
CPU FAN Speed                  4477 RPM
SYS FAN 1 Speed                N/A
SYS FAN 2 Speed                N/A
CPU Vcore                      1.248 V
3.3V                           3.296 V
5V                             4.540 V
12V                            12.232 V




↑↓←→:Move  Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
        F5:Memory-Z    F8:Fail-Safe Defaults    F6:Optimized Defaults
```

▶ **Chassis Intrusion**
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later.

▶ **CPU Smart FAN Target**
The mainboard provides the Smart Fan function which can control the CPU fan speed automatically depending on the current temperature to keep it with in a specific range. You can select a fan target value here. If the current CPU fan temperature reaches to the target value, the smart fan function will be activated. It provides several sections to speed up for cooling down automaticlly.

▶ **SYS FAN1 Control**
This item allows users to select how percentage of speed for the SYS FAN1.

▶ **PC Health Status**

　▶ **CPU/ System Temperature, CPU FAN/ SYS FAN1/ SYS FAN2 Speed, CPU Vcore, 3.3V, 5V, 12V**
　These items display the current status of all of the monitored hardware devices/ components such as CPU voltage, temperatures and all fans' speeds.

BIOS Setting Password

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

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

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

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

Cell Menu


```
       CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                                    Cell Menu

   Current CPU Frequency            2400MHz          ▲        Help Item
   Current DRAM Frequency           667MHz

   AMD Cool'n'Quiet                 [Disabled]              Enabled/Disabled AMD
   Adjust CPU FSB Frequency (MHz)   [200]                   Cool'n'Quiet function
   Adjust CPU Ratio                 [Auto]
   Adjust CPU-NB Ratio              [Auto]
   Adjusted CPU Frequency (MHz)     [2400]
   Advanced Clock Calibration       [Disabled]

   Onboard VGA Core Overclock       [Disabled]

 ▶ Advance DRAM Configuration       [Press Enter]
   FSB/DRAM Ratio                   [Auto]
   Adjusted DRAM Frequency (MHz)    [667]

   HT Link Speed                    [Auto]
   Adjust PCI-E Frequency (MHz)     [100]
   Auto Disable PCI Frequency       [Enabled]

   CPU VDD Voltage (V)              [Auto]
   CPU-NB VDD Voltage (V)           [Auto]
   CPU Voltage (V)                  [Auto]
   DRAM Voltage (V)                 [Auto]
   NB Voltage (V)                   [Auto]
   HT Link Voltage (V)              [Auto]
   MCT Voltage (V)                  [Auto]

   Spread Spectrum                  [Enabled]        ▼

      ↑↓←→:Move   Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
              F5:Memory-Z    F8:Fail-Safe Defaults   F6:Optimized Defaults
```

Important

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

► Current CPU / DRAM Frequency
These items show the current clocks of CPU and Memory speed. Read-only.

▶ AMD Cool'n'Quiet

The Cool'n' Quiet technology can effectively and dynamically lower CPU speed and power consumption.

> **Important**
>
> *To ensure that Cool'n'Quiet function is activated and will be working properly, it is required to double confirm that:*
>
> 1. *Run BIOS Setup, and select **Cell Menu**. Under **Cell Menu**, find **AMD Cool'n'Quiet**, and set this item to "Enable."*
>
> 2. *Enter Windows, and select [Start]-> [Settings]->[Control Pannel]->[Power Options]. Enter **Power Options Properties** tag, and select **Minimal Power Management** under **Power schemes**.*
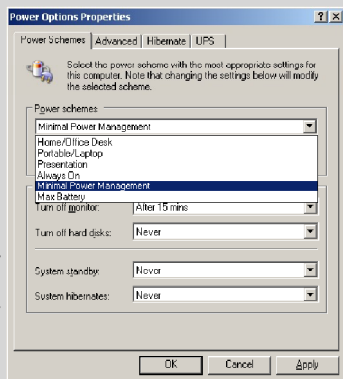
▶ Adjust CPU FSB Frequency (MHz)

This item allows you to adjust the CPU FSB frequency.

▶ Adjust CPU Ratio

This item lets you to adjust the CPU ratio. It is available only when the processor supports this function.

▶ Adjust CPU-NB Ratio (for AM2+ CPU only)

This item lets you to adjust the NB ratio of the CPU. It is available only when the processor supports this function.

▶ Adjusted CPU Frequency (MHz)

It shows the adjusted CPU frequency (FSB x Ratio). Read-only.

▶ Advanced Clock Calibration (for AM2+ CPU only)

This item is for overclock. Setting to [Enabled] allows you to set the CPU Ratio higher.

▶ Onboard VGA Core Overclock

This item is used to enable/ disable the onboard VGA core overclock.

▶ Advance DRAM Configuration

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

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

► DIMM1/2/3/4 Memory SPD Information
Press <Enter> to enter the sub-menu and the following screen appears.

► E.P.P SUPPORT Information
Press <Enter> to enter the sub-menu and the following screen appears.

▶ DRAM Timing Mode
Setting to [Auto] enables DRAM CAS# Latency automatically to be determined by BIOS based on the configurations on the SPD (Serial Presence Detect) EEPROM on the DRAM module.

▶ 1T/2T Memory Timing
This field controls the SDRAM command rate. Selecting [1T] makes SDRAM signal controller to run at 1T (T=clock cycles) rate. Selecting [2T] makes SDRAM signal controller run at 2T rate.

▶ Bank Interleaving
This field selects 2-bank or 4-bank interleave for the installed SDRAM. Disable the function if 16MB SDRAM is installed.

▶ DCT Unganged Mode
This is used to enable/ disable the DCT Unganged Mode (for Phenom only).

▶ EPP Technology Support
This is used to enable/ disable the EPP technology.

▶ FSB/DRAM Ratio
This item will allow you to adjust the ratio of FSB to memory.

▶ Adjusted DRAM Frequency (MHz)
It shows the adjusted DRAM frequency. Read-only.

▶ HT Link Speed
This item allows you to set the Hyper-Transport Link speed. Setting to [Auto], the system will detect the HT link speed automatically.

▶ Adjust PCI-E Frequency (MHz)
This field allows you to select the PCIE frequency (in MHz).

▶ Auto Disable PCI Frequency
When set to [Enabled], the system will remove (turn off) clocks from empty PCI slots to minimize the electromagnetic interference (EMI).

▶ CPU VDD Voltage (V) / CPU-NB VDD Voltage (V)/ CPU Voltage (V) / CPU-NB Voltage (V)/ DRAM Voltage (V)/ NB Voltage (V)/ HT Link Voltage (V)/ MCT Voltage (V)
These items are used to asjust the voltage of CPU, Memory, FSB and chipset.

▶ Spread Spectrum
When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses create EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at Disabled for optimal system stability and performance. But if you are plagued by EMI, set to Enabled for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.

Important

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

2. The greater the Spread Spectrum value is, the greater the EMI is reduced, and the system will become less stable. For the most suitable Spread Spectrum value, please consult your local EMI regulation.

3. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.

CPU and Memory Clock Overclocking

The **Adjust CPU FSB Frequency, Adjust CPU Ratio, FSB/Memory Ratio** are the items for you to overclock the CPU and the Memory. Please refer to the descriptions of these fields for more information.

Important

*1. CPU Speed = CPU Frequency * CPU Ratio*
2. This motherboard supports overclocking greatly. However, please make sure your peripherals and components are bearable for some special settings. Any operation that exceeds product specification is not recommended. Any risk or damge resulting from improper operation will not be under our product warranty.

Two ways to save your system from failed overclocking...

Reboot

1. Press the Power button to reboot the system three times. Please note that, to avoid electric current to affect other devices or components, we suggest an interval of more than 10 seconds among the reboot actions.

2. At the fourth reboot, BIOS will determine that the previous overclocking is failed and restore the default settings automatically. Please press any key to boot the system normally when the following message appears on screen.

Warning !!! The previous overclocking had failed,
and system will restore its defaults setting,
Press any key to continue.......

Clear CMOS

- Please refer to "chapter 2" for more information about how to clear CMOS data.

User Setting

```
CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
                              User Settings

   Save Settings 1           [Press Enter]        Help Item
   Load Settings 1           [Press Enter]
   Save Settings 2           [Press Enter]     Save Current SETUP
   Load Settings 2           [Press Enter]     Settings to store.













   ↑↓←→:Move  Enter:Select  +/-/:Value  F10:Save  ESC:Exit  F1:General Help
            F5:Memory-Z    F8:Fail-Safe Defaults    F6:Optimized Defaults
```
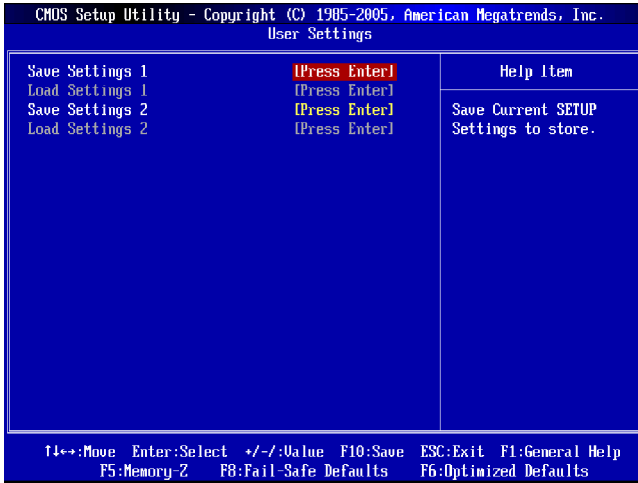
▶ **Save Settings 1/ 2**
These items are used to save the settings set by yourself to CMOS.

▶ **Load Settings 1/ 2**
These items are available after you save your settings in **Save Settings 1/ 2** items , and are used to load the settings from CMOS.

Load Fail-Safe/ Optimized Defaults

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

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

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

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

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

Appendix A
Realtek Audio

The Realtek ALC888 provides 10-channel DAC that si-
multaneously supports 7.1 sound playback and 2 chan-
nels of independent stereo sound output (multiple
streaming) through the Front-Out-Left and Front-Out-
Right channels.

MSI
MICRO-STAR INTERNATIONAL

Installing the Realtek HD Audio Driver

You need to install the driver for Realtek ALC888 codec to function properly before you can get access to 2-, 4-, 6-, 8- channel or 7.1+2 channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows XP/Vista

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

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

    1.   Insert the application CD into the CD-ROM drive. The setup screen will automatically appear.

    2.   Click **Realtek HD Audio Driver**.

Click here

Important

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

3. Click **Next** to install the Realtek High Definition Audio Driver.
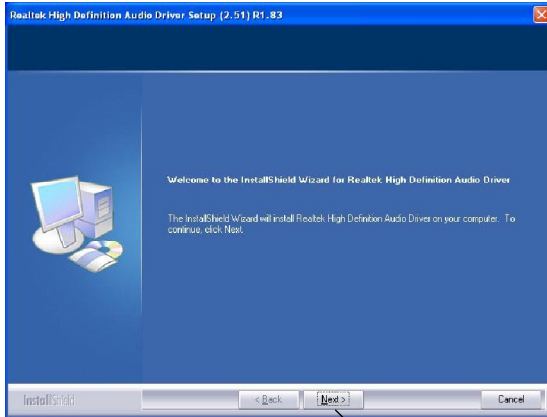
Click here

4. Click **Finish** to restart the system.
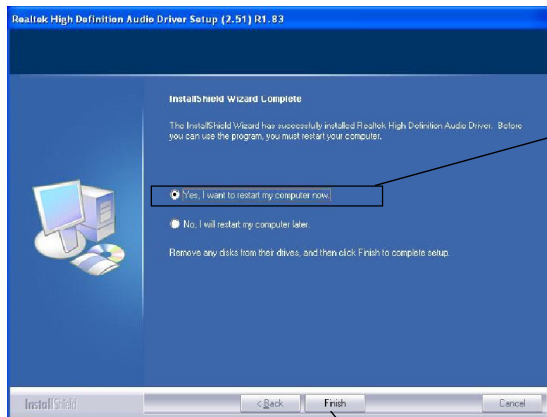
Select this option

Click here

Software Configuration

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

Double click
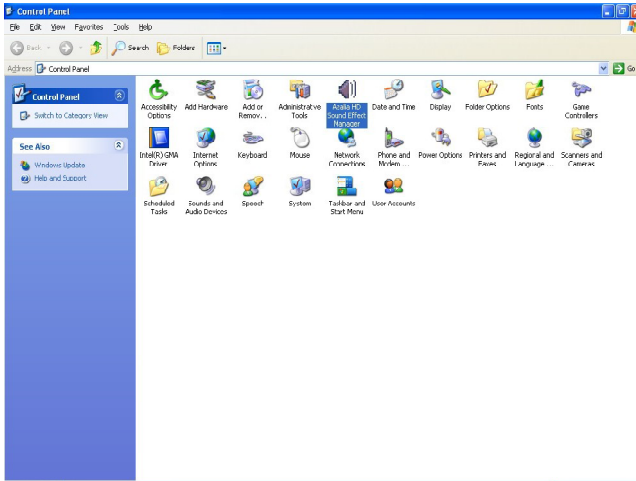
Sound Effect

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

Environment Simulation

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

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

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

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

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

Save
The settings are saved permanently for future use

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

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

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

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

Frequently Used Equalizer Setting
Realtek recognizes the needs that you might have. By leveraging our long experience at audio field, Realtek HD Audio Sound Manager provides you certain optimized equalizer settings that are frequently used for your quick enjoyment.

[How to Use It]
Other than the buttons "Pop" "Live" "Club" & "Rock" shown on the page, to pull down the arrow in "Others", you will find more optimized settings available to you.

Karaoke Mode
Karaoke mode brings Karaoke fun back home. Simply using the music you usually play, Karaoke mode can help you eliminate the vocal of the song or adjust the key to accommodate your range.
1.Vocal Cancellation: Single click on "Voice Cancellation", the vocal of the song would be eliminated, while the background music is still in place, and you can be that singer!
2.Key Adjustment: Using "Up / Down Arrow" to find a key which better fits your vocal range.

Remove the human voice

Raise the key

Lower the key
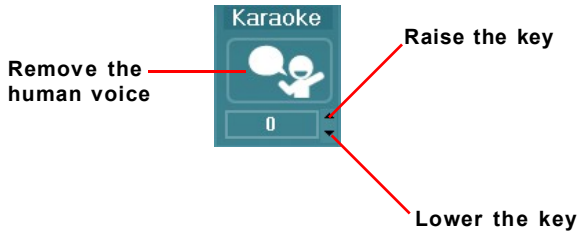
Mixer

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

1. Adjust Volume

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

Important

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

2. Multi-Stream Function

ALC888 supports an outstanding feature called Multi-Stream, which means you may play different audio sources simultaneously and let them output respectively from the indicated real panel or front panel. This feature is very helpful when 2 people are using the same computer together for different purposes.

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

Important

You have to plug audio device into the jacks on the rear and front panel first before enable the multi-stream function.
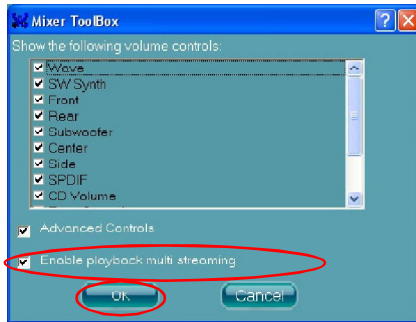
When you are playing the first audio source (for example: use Windows Media Player to play DVD/VCD), the output will be played from the rear panel, which is the default setting.

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

3. Playback control

Tool   **Mute**

Playback device
This function is to let you freely decide which ports to output the sound. And this is essential when multi-streaming playback enabled.
- *Realtek HD Audio Rear Output*
- *Realtek HD Audio Front Output*

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

Tool
- *Show the following volume controls*
This is to let you freely decide which volume control items to be displayed.
- Advanced controls
- Enable playback multi-streaming
With this function, you will be able to have an audio chat with your friends via headphone (stream 1 from front panel) while still have music (stream 2 from back panel) in play. At any given period, you can have maximum 2 streams operating simultaneously.
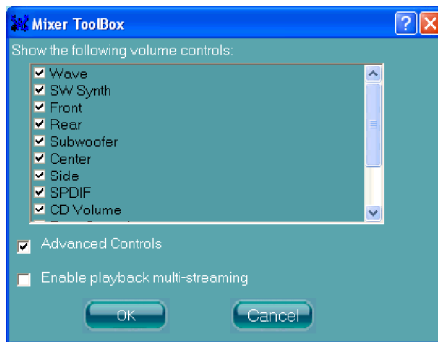
4. Recording control

Tool   Mute

Recording device
-Back Line in/Mic, Front Lin in
-Realtek HD Audio Input
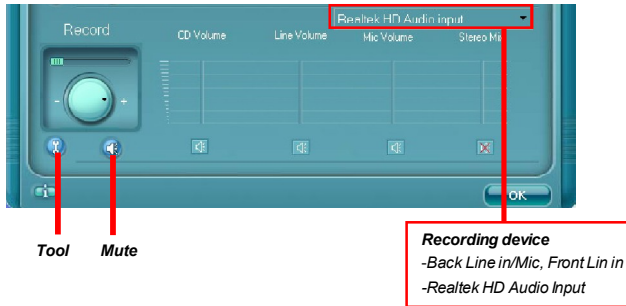
Mute
You may choose to mute single or multiple volume controls or to completely mute sound input.
Tool
- Show the following volume controls
This is to let you freely decide which volume control items to be displayed.
- Enable recording multi-streaming
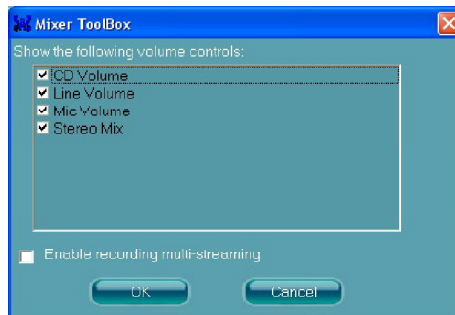
 Important

ALC888 allows you to record the CD, Line, Mic and Stereo Mix channels simultaneously, frees you from mixing efforts. At any given period, you may choose 1 of the following 4 channels to record.

Audio I/O

In this tab, you can easily configure your multi-channel audio function and speakers. You can choose a desired multi-channel operation here.

        a. **Headphone** for the common headphone

        b. **2CH Speaker** for Stereo-Speaker Output

        c. **4CH Speaker** for 4-Speaker Output

        d. **6CH Speaker** for 5.1-Speaker Output

        e. **8CH Speaker** for 7.1-Speaker Output
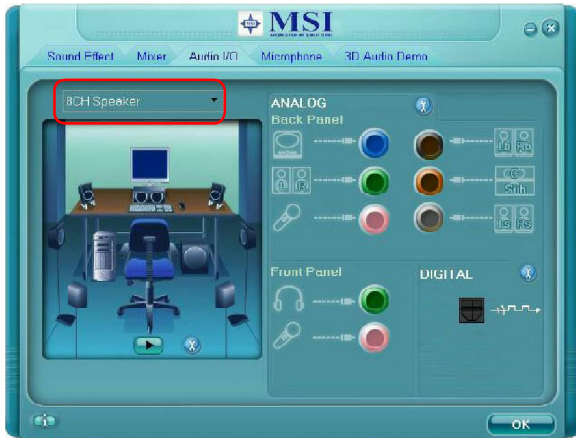
Speaker Configuration:

1. Plug the speakers in the corresponding jack.

2. Dialogue "connected device" will pop up for your selection. Please select the device you have plugged in.
   - If the device is being plugged into the correct jack, you will be able to find the icon beside the jack changed to the one that is same as your device.
   - If not correct, Realtek HD Audio Manager will guide you to plug the device into the correct jack.

Connector Settings

Click 🔧 to access connector settings.

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

Mute rear panel output when front headphone plugged in.

Enable auto popup dialogue, when device has been plugged in
Once this item checked, the dialog "Connected device" would automatically pop up when device plugged in.

S/PDIF

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

S/PDIF Settings

Output Sampling Rate

- 44.1K Hz
- 48K Hz
- 96K Hz
- 192K Hz

Output Source

- No S/PDIF output
- Output digital audio source

OK   Cancel
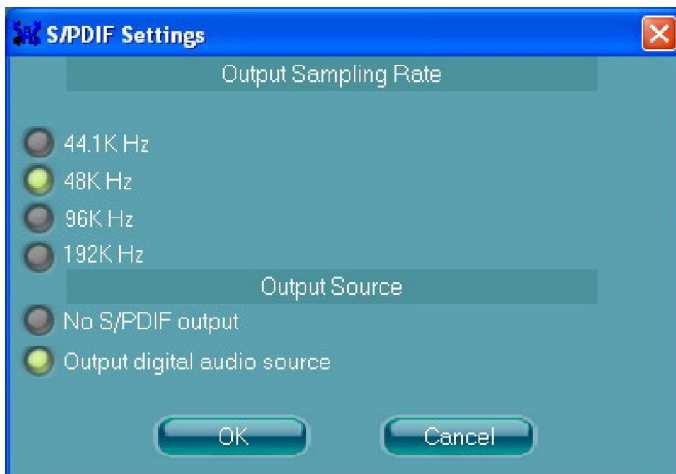
Output Sampling Rate

44.1KHz: This is recommend while playing CD.
48KHz: This is recommended while playing DVD or Dolby.
96KHz: This is recommended while playing DVD-Audio.
192KHz: This is recommended while playing High quality Audio.

Output Source

Output digital audio source: The digital audio format (such as .wav, .mp3,.midi etc) will come out through S/PDIF-Out.
S/PDIF-in to S/PDIF -out pass though mode: The data from S/PDIF-In can be real-time played from S/PDIF-Out.

Test Speakers

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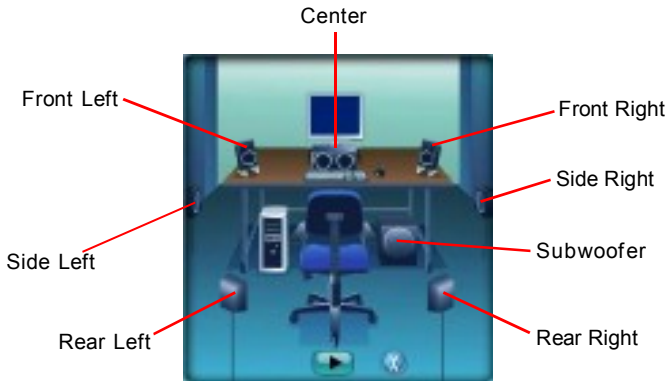
Microphone

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

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

3D Audio Demo

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

Information

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

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

Hardware Setup

Connecting the Speakers

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

n 2-Channel Mode for Stereo-Speaker Output

Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.
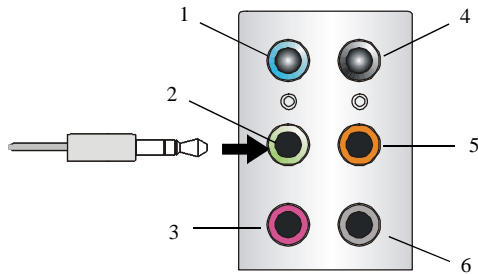
|1| Line In
|2| Line Out *(Front channels)*
|3| MIC
|4| No function
|5| No function
|6| No function

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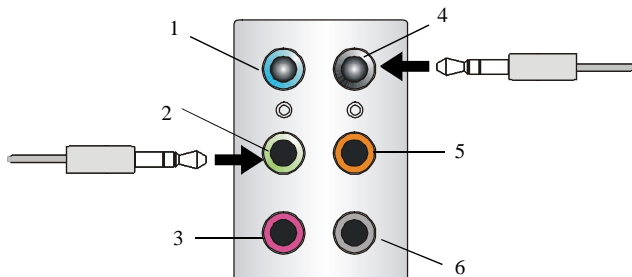
4-Channel Analog Audio Output

1 Line In
2 Line Out *(Front channels)*
3 MIC
4 Line Out *(Rear channels)*
5 No function
6 No function

▣ 6-Channel Mode for 6-Speaker Output
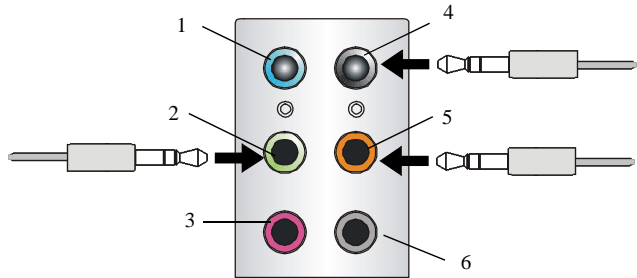
6-Channel Analog Audio Output

1   Line In
2   Line Out *(Front channels)*
3   MIC
4   Line Out *(Rear channels)*
5   Line Out *(Center and Subwoofer channel)*
6   No function

n 8-Channel Mode for 8-Speaker Output
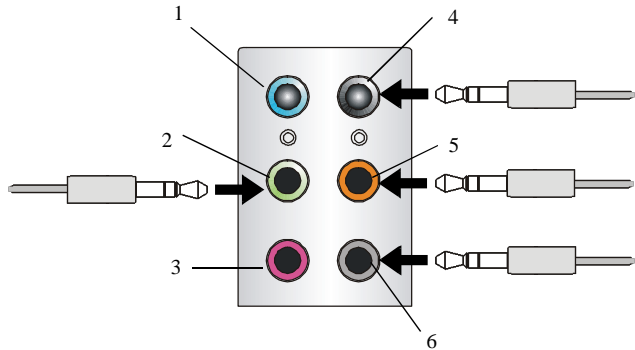
8-Channel Analog Audio Output

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

> **Important**
>
> *To enable 7.1 channel audio-out function on Vista operating system, you have to install the Realtek Audio Driver. Or, the mainboard will support 5.1 channel audio-out only.*

Appendix B
Dual Core Center

Dual CoreCenter, the most useful and powerful utility that MSI has spent much research and efforts to develop, helps users to monitor or configure the hardware status of MSI Mainboard & MSI Graphics card in windows, such as CPU/GPU clock, voltage, fan speed and temperature.

Before you install the Dual CoreCenter, please make sure the system has meet the following requirements:

1. Intel Core 2 Duo / Celeron or newer CPU.
2. 256MB system memory.
3. CD-ROM drive for software installation.
4. Operation system: Windows XP.
5. DotNet Frame Work 2.0

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Activating Dual Core Center

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

short-cut icon in the system tray
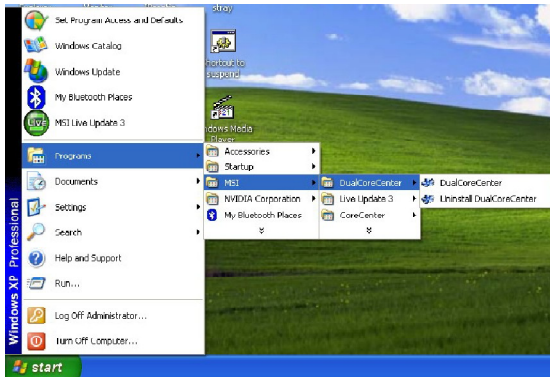
short-cut path in the start-up menu
(path: Start-->Programs-->MSI-->
DualCoreCenter-->DualCoreCenter)

Main

Before using this utility, we have to remind you: only when installing the MSI V044 (V044 has to install with the version 8.26 or newer driver)/ V046 or V060 graphics card can activate the full function of this utility. If you install a graphics card of other brand, only hardware status of the MSI mainboard would be available.

Introduction:

Click each button appearing above to enter sub-menu to make further configuration or to execute the function.

_M B_
Click MB button to read current CPU temperature, FSB and CPU clock of mainboard will show below.

VGA
Click VGA button to read current GPU temperature, GPU clock and memory clock of graphics card will show below.

DOT
Click DOT button to enable or disable the Dynamic Overclocking Technology.

_E_
Click E button to read the CPU power efficiency.

AV/ Game/ Office/ Silence/ Cool

MSI provides five common settings for different environments. The settings had been set to optimal values to reach better performance in each environment. Click the button you need.

Important

Before clicking the AV/ Game/ Office/ Silence or Cool button, select Smooth mode or Sharp mode to decide whether you want the system to reach the optimal values smoothly or quickly.

Sharp mode _Smooth mode_

Clock

In this sub-menu, you can adjust and monitor the clocks of MB and graphics card.

Voltage

In this sub-menu, you can adjust and monitor the voltages of MB and graphics card.

FAN Speed

In this sub-menu, you can adjust and monitor the fan speeds of MB and graphics card.

Temperature

In this sub-menu, you can monitor the temperatures of MB and graphics card.

User Profile

In this sub-menu, you can set the values of clock, voltage and fan speed by your need and save them in a profile. You can save 3 profiles for further use.

Important

Click on the icon _, the clock, voltage, fan, and temperature buttons will appear beside the icon._

DOT (Dynamic OverClocking)

Dynamic Overclocking Technology is an automatic overclocking function, included in the MSI™'s newly developed Dual CoreCenter Technology. It is designed to detect the loading of CPU/ GPU while running programs, and to over-clock automatically. When the motherboard detects that the loading of CPU is exceed the default threshold for a time, it will speed up the CPU and fan automatically to make the system run smoother and faster. When the graphics card detects that the loading of GPU is exceed the default threshold for a time, it will speed up the GPU, memory, fan and voltage automatically to make the system run smoother and faster. When the CPU/ GPU is temporarily suspending or staying in low loading balance, it will restore the default settings instead. Usually the Dynamic Overclocking Technology will be powered only when users' PC runs huge amount of data, like 3D games or video process, and the motherboard/ graphicd card need to be boosted up to enhance the overall performance. There will be several selections when you click the DOT rate button (include increase rate ![icon] and decrease ![icon] rate buttons), to select the DOT level, then you have to click the DOT button ![D.O.T] to apply the DOT function.

DOT FSB-UP
Rate button

DOT FSB-DOWN
Rate button
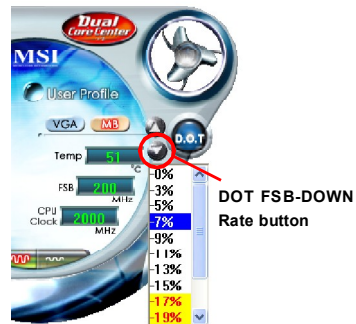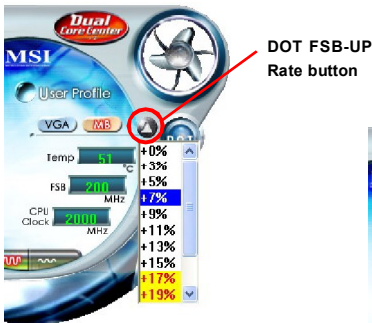
![Important icon] **Important**

Even though the Dynamic Overclocking Technology is more stable than manual overclocking, basically, it is still risky. We suggest user to make sure that your CPU can afford to overclock regularly first. If you find the PC appears to be unstable or reboot incidentally, it's better to lower the level of overclocking options. By the way, if you need to conduct overclocking manually, please do not to apply the DOT function.

E (Efficiency)

The revolutionary PWM (Pulse Width Modulation) design created by MSI is called Dual-Channel PWM. It is designed to create better power converting based on 4-phase power. Through the Dual-Channel PWM, power loss can be reduced, which allows CPU to receive higher power efficiency in higher loading condition. In the Efficiency Monitor menu, you can read the real-time CPU power efficiency.
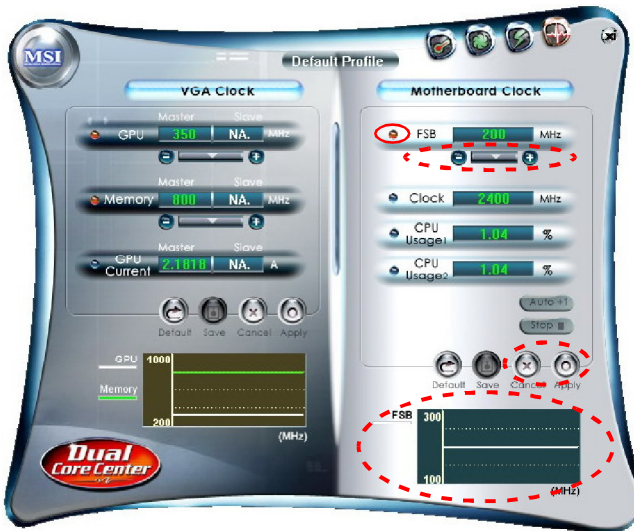

Important

1. Efficiency = Pout / Pin (%)
2. The Efficiency is in direct proportion to the loading of CPU. That is to say, the Efficiency becomes higher when CPU has more loading.

Clock

In the **Clock** sub-menu, you can see clock status (including FSB/ CPU clock of mainboard and GPU/ memory clock of graphics card) of your system. And you can select desired value for overclocking. There will be several items for you to select for overclocking after you click [   ] button. You can click the plus sign button [+] to increase the clock, or click the minus sign button [-] to decrease the clock. And finally, click the Apply button to apply the values adjusted. If you do not want to apply the adjustments, click the Cancel button to cancel. Or click the Default button to restore the default values.

On the underside, it shows the graphs of the clocks. Only the curves of the item which the button is lit up with red color will be shown.

Important

*In the user profile, clicking the **Save** button can save the changes to it. In the default profile, the Save button is not available.*

Voltage

In the **Voltage** sub-menu, you can see voltage status (including Vcore, memory, GPU voltage... etc.) of your system, and you can select desired value for overclocking. It will show several items to select for overclocking after you click the ▼ button. You can click the plus sign button ⊕ to increase the voltage, or click the minus sign button ⊖ to decrease. And finally, click the Apply button to apply the adjustments. If you do not want to apply the adjustments, click the Cancel button to cancel. Or click the Default button to restore the default values.

On the underside, it shows the graphs of the voltages. Only the curves of the item which the button is lit up with red color will be shown.
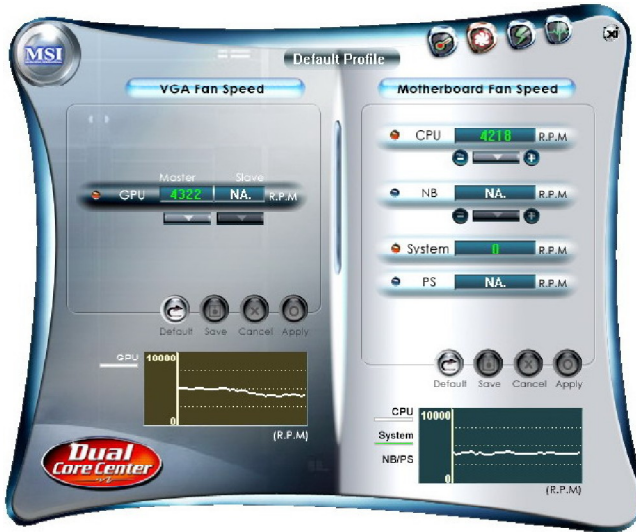
Important

*In the user profile, clicking the **Save** button can save the changes to it. In the default profile, the Save button is not available.*

FAN Speed

In the **FAN Speed** sub-menu, you can read fan status of your system. Select higher speed for better cooling effect. There are several sections for you to change the fan speed to a section after clicking [   ] button. Click the plus sign button [+] to increase the fan speed to a section, or click the minus sign button [–] to decrease. Or click the Default button to restore the default values.

On the underside, it shows the graphs of the fan speed. Only the curves of the item which the button is lit up with red color will be shown.
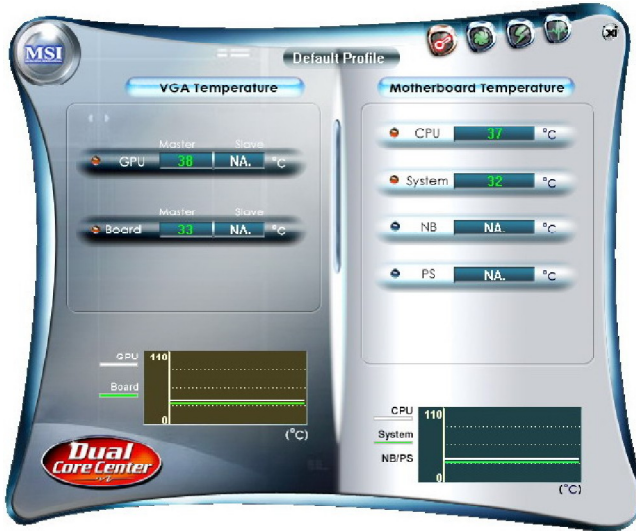
Important

1. When you set the fan speed manually, please make sure to disabled the "CPU Smart FAN Target" item in the BIOS.
2. In the user profile, clicking the **Save** button can save the changes to it. In the default profile, the Save button is not available.

Temperature

In the **Temperature** sub-menu, you can see temperature status of your system.

On the underside, it shows the graphs of the temperatures. Only the curves of the item which the button is lit up with red color will be shown.

User Profile

In the **User Profile** sub-menu, click the setting button that besides the user profile bar, and the next screen will appear.

Here you can define the clock/ fan speed/ voltage by your need, click the [▼] button to choose a value quickly, or click the plus [+] / minus sign [–] button to increase/ decrease the value.

Use the draw bar to set the max system temperature. When the system temperature exceeds the threshold you defined, the system will pop up a warning message and shut down the system.
Use the draw bar to set the minimal fan speed. When the fan speed is lower than the threshold you defined, the system will pop up a warning message.

After setting all values you need, you can change the user profile name in the box then click the save button to save all changes in a profile.
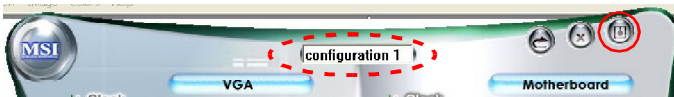
Finally, you can choose the user profile by click the button in the left side and click the Apply button to load the user profile.

Appendix C
SATA RAID

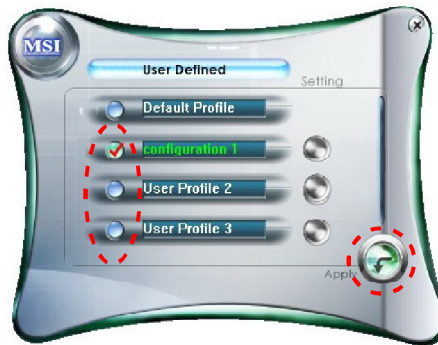The integrate one SATA host controller separately, and support RAID function for performance and reliability. SATA RAID provides support for RAID 0 (Striping), RAID 1 (Mirroring), RAID 0+1 (Striping & Mirroring) & RAID 5 (striping with parity). RAID 0 greatly improves hard disk I/O performance by concurrently striping data across multiple drives. RAID 1 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. RAID 0+1 is implemented as a mirrored array whose segments are RAID 0 arrays. RAID 0+1 has same fault tolerance as mirroring and reduces overhead by striping. It needs at least four drives to form a RAID 0+1. RAID 5 defines techniques for parity data.

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RAID Configuration

Creating and deleting RAID set and performing other RAID setting up operations are done in the RAID BIOS. During bootup, a screen similar to the one below will appear for about few seconds. Press <Ctrl-F> to enter FastBuild utility.

No Array is defined...

Press <Ctrl-F> to enter Fastbuild (tm) Utility

Important

*Be sure to enable the **RAID** function for SATA device in BIOS before configuring the Fastbuild Utility.*

The FastBuild menu screen will appear. The Main Menu is used to choose the operation to be performed.

[Main Menu]

View Drive Assignments........[1]

Define LD...........................[2]

Delete LD...........................[3]

Controller Configuration........[4]

[Keys Available]

Press 1...4 to Select Option   [ESC] Exit

View Drives Assignments

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

Define LD (Creating RAID)

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. Press **2** on the Main Menu screen to enter the Define LD Menu.
2. Press the arrow keys to highlight an logical drive number you want to define and press Enter to select it.

```
══════════[ Define LD Menu ]══════════

  LD No      RAID Mode     Total Drv    Capacity (MB)    Status
  LD  1       -----          -----        -------          ----
  LD  2       -----          -----        -------          ----
  LD  3       -----          -----        -------          ----
  LD  4       -----          -----        -------          ----
  LD  5       -----          -----        -------          ----
  LD  6       -----          -----        -------          ----
  LD  7       -----          -----        -------          ----
  LD  8       -----          -----        -------          ----



═══════════[ Keys Available ]═══════════

 [ ↑ ] Up    [ ↓ ] Down    [ ESC ] Exit    [ Enter ] Select
```

3. On the next screen, use the space key to choose a RAID mode (RAID 0/ 1/ 0+1/ 5) and use the arrow key to move to the *Drives Assignments* window.
   • Initialize logical drive, zero the disk drives. RAID 1 or 10 only.

```
══════════[ Define LD Menu ]══════════

  LD No       RAID Mode      Total Drv

  LD  1      [ RAID 1 ]         2

  Stripe Block :       NA              Fsat Init :    OFF
  Gigabyte Boundary :  ON              Cache Mode :  WriteThru

═══════════[ Drives Assignments ]═══════════

  Channel : ID        Drive Model       Capacity (MB)      Assignment
      1 : Mas  WDC  WD800JD-00HKA0         80027              N
      2 : Mas  WDC  WD800JD-00HKA0         80027              N



═══════════[ Keys Available ]═══════════

 [ ↑ ] Up    [ ↓ ] Down    [ ESC ] Exit    [ Space ] Change Option    [ Ctrl-Y ] Save
```
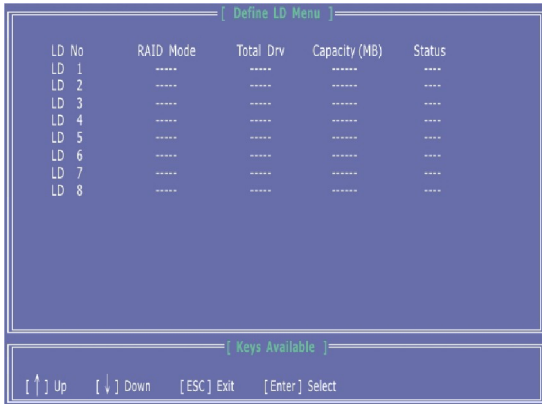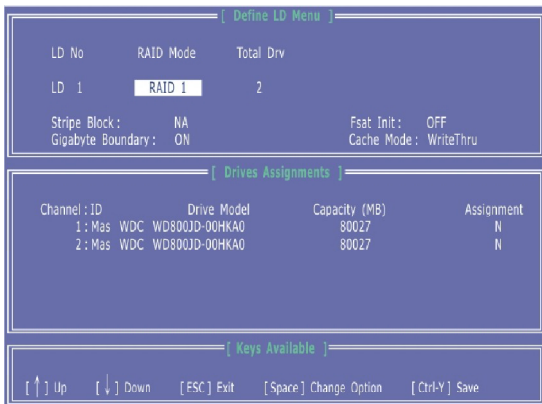
• Stripe Block Size, the default 64KB is best for most applications. RAID 0 or 10 only.
• Gigabyte Boundary, allows use of slightly smaller replacement drives.
• Cache Mode, WriteThru or WriteBack.

4. On the *Drives Assignments* window, use the arrow key to choose the hard drives which you want to make part of the LD, use the space key to change the assignment to "Y". Then press [Ctrl+Y] to save the configuration.

5. A message will show up on the bottom, press any key to save the configuration or press [Ctrl-Y] to allocate the RAID capacity manually.

Important

1. The default capacity is the full capacity of the selected hard drives.
2. If you allocate the first LD capacity manually, you can create second LD with remaining capacity of the selected hard drives.

6. The LD creation is done, the screen shows the LD information as below. Press ESC key to the main screen.

7. Press ESC key to exit the utility, a message "System is going to REBOOT! Are You Sure?" will display, answer "Y" to exit it and the system will reboot.
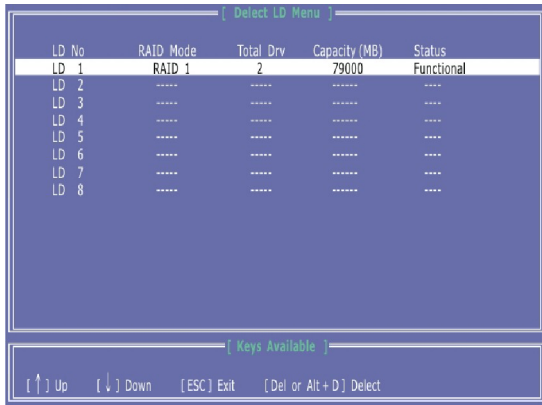
Delete LD (Deleting RAID)

1. Select "Delete LD" on the main screen.
2. Choose a LD No you want to delete and press "Del" or "Alt+D" delete the RAID set.

```
=========================[ Delect LD Menu ]=========================

   LD No        RAID Mode     Total Drv    Capacity (MB)    Status
   LD  1        RAID 1           2            79000         Functional
   LD  2        -----          -----        -------          ----
   LD  3        -----          -----        -------          ----
   LD  4        -----          -----        -------          ----
   LD  5        -----          -----        -------          ----
   LD  6        -----          -----        -------          ----
   LD  7        -----          -----        -------          ----
   LD  8        -----          -----        -------          ----




=========================[ Keys Available ]=========================

  [ ↑ ] Up    [ ↓ ] Down    [ESC] Exit    [Del or Alt+D] Delect
```

3. On the next screen, a message will display to inform you, press "Ctrl+Y" to delete the RAID set or other key to abort it. Press "Ctrl+Y" to complete the deletion.

```
=========================[ Define LD Menu ]=========================

   LD No        RAID Mode     Total Drv    Capacity (MB)    Status

   LD  1        RAID 1           2            79000         Functional

   Stripe Block :      NA                    Cache Mode :  WriteThru


=======================[ Drives Assignments ]=======================

 Channel : ID          Drive Model          Capacity (MB)
      1 : Mas  WDC  WD800JD-00HKA0              80027
      2 : Mas  WDC  WD800JD-00HKA0              80027




          Ctrl - Y to delete the ARRAY and MBR, Ctrl +
            to delete the ARRAY only, other key to abort
```
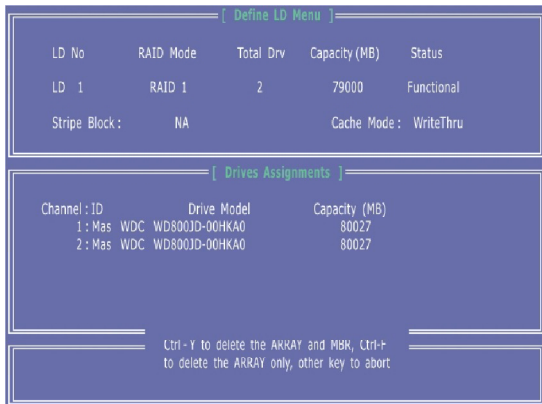
Installing the RAID Driver (for bootable RAID Array)

For Windows XP:
1. After you complete the RAID BIOS setup, boot from the Windows CD, and the Windows XP Setup program starts.
2. Press **F6** and wait for the Windows Setup screen to appear.
3. Insert the floppy that contains the RAID driver, press the "S" key to select "Specify Additional Device".

Important

Please follow the instruction below to make a SATA RAID driver for yourself.
1. *Insert the MSI CD into the CD-ROM drive.*
2. *Click the "Browse CD" on the Setup screen.*
3. *Copy all the contents in the :*
    * *Windows XP driver CD for SATA RAID:*
      \\ATI\ATIDrv\SBDrv\RAID7xx
    * *Windows Vista driver CD for SATA RAID:*
      \\Chipset\ATI\Packages\Drivers\SBDrv\SB7xx\RAID\x86 (for 32bit)
      \\Chipset\ATI\Packages\Drivers\SBDrv\SB7xx\RAID\x64 (for 64bit)
    Note: for Windows Vista, you can copy the files to a medium (floppy/ CD/ DVD or USB)
4. *The driver disk for RAID controller is done.*

4. When prompted, insert the floppy disk and press Enter.
5. You should be shown a list of available SCSI Adapters.
6. Select the compatible RAID controller for 32-bit/ 64-bit version system and then press ENTER.
7. The next screen should confirm that you have selected the RAID controller. Press ENTER again to continue.
8. You have successfully installed the RAID driver, and Windows setup should continue.
9. Leave the disk in the floppy drive until the system reboots itself. Windows setup will need to copy the files from the floppy again after the RAID volume is formatted, and Windows setup starts copying files.

For Windows Vista:
During the operating system installation, after selecting the location to install Windows Vista, please click on the "Load Driver" button to load RAID driver. Please refer the **Important** notice above to make a RAID Driver medium. And then, follow the instructions to complete the whole installation.

Installing the RAID Driver Under Windows
(for Non-bootable RAID Array)

1. Insert the MSI CD into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the Driver tab, click on *ATI System Driver by your need*. The ATI System Driver includes RAID Driver.
4. The driver will be automatically installed.

Important

*You **must** install the RAID driver to enable RAID.*