



870A-G55 / 870U-G55 series

MS-7599 (v5.x) Mainboard

G52-75991XQ

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Revision History

Revision	Revision History	Date
V5.1	Update BIOS for PCB 5.X	August 2010

Technical Support

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

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

Safety Instructions

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- Keep this equipment away from humidity.
- Lay this equipment on a reliable flat surface before setting it up.
- The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
- Make sure the voltage of the power source is at 110/220V before connecting the equipment to the power inlet.
- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
- Always Unplug the Power Cord before inserting any add-on card or module.
- All cautions and warnings on the equipment should be noted.
- Never pour any liquid into the opening that can cause damage or cause electrical shock.
- If any of the following situations arises, get the equipment checked by service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well or you can not get it work according to User's Manual.
  - The equipment has been dropped and damaged.
  - The equipment has obvious sign of breakage.

  DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

警告使用者:

這是甲類資訊產品，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 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.



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

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

WEEE (Waste Electrical and Electronic Equipment) Statement

ENGLISH



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

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

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

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

FRANÇAIS

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

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

РУССКИЙ

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

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

ESPAÑOL

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

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

NEDERLANDS

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

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling. Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

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

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

POLSKI

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

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

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

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

ČESKY

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

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

MAGYAR

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

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

ITALIANO

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

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

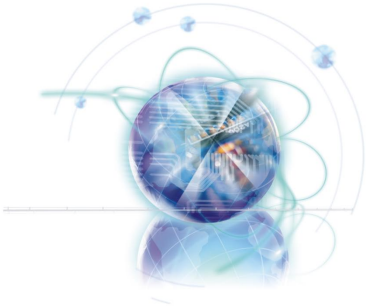
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Chapter 1

Getting Started

Thank you for choosing the **870A-G55/ 870U-G55** Series (MS-7599 v5.X) ATX mainboard. The **870A-G55/ 870U-G55** Series mainboards are based on **AMD® RX780** & **SB710** chipsets for optimal system efficiency. Designed to fit the advanced **AMD®** 64 bits **Phenom™ II, Athlon™ II** and **Sempron™** processor, the **870A-G55/ 870U-G55** Series deliver a high performance and professional desktop platform solution.

Mainboard Specifications

Processor Support

- AMD® Phenom™ II series, Athlon™ II series and Sempron™ series processor in the AM3 package.
  (For the latest information about CPU, please visit http://www.msi.com/index.php?func=cpuform2)

HyperTransport

- HyperTransport™ 3.0, supports up to 5.2 GT/s

Chipset

- North Bridge: AMD® RX780 chipset
- South Bridge: AMD® SB710 chipset

Memory Support

- DDR3 1600 *(OC)/ 1333/ 1066/ 800 DRAM (total 16GB Max)
- 4 DDR3 DIMMs, support Dual-Channel mode
  (* OC= overclocking, for more information on compatible components, please visit http://www.msi.com/index.php?func=testreport)

LAN

- Supports Gb LAN (10/100/1000) by Realtek® RTL8111E

IEEE 1394

- Chip integrated by VIA® VT6308P
- Supports 1 IEEE 1394 port (back panel) & 1 IEEE 1394 connector

Audio

- HD audio codec integrated by Realtek® ALC892/ ALC887 (optional)
- Flexible 8-channel audio with jack sensing

SATA

- 6 SATA 3Gb/s (SATA1~6) ports by AMD® SB710
- 2 SATA 6Gb/s (SATA7~8) ports by Marvell® 88SE9128 (for 870A-G55)
- Supports hot plug & asynchronous notification

Important

Please note that setting the "PCI Express x4/x1 Slot" as [x4] under "Integrated Peripherals" in BIOS will disable the SATA 6 Gb/s ports (SATA7~8) and PCIE x1 slot (PCI_E1).

USB 3.0

- 2 USB 3.0 ports by NEC uPD720200F1

RAID

- SATA1~6 ports support RAID 0/ 1/ 10 mode by AMD® SB710
- SATA7~8 ports support RAID 0/ 1 mode by Marvell® 88SE9128 (for 870A-G55)

Floppy

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

Connectors

- Back panel
  - 1 PS/2 keyboard port
  - 1 PS/2 mouse port
  - 1 Clear CMOS button
  - 1 Coaxial S/PDIF-Out port
  - 1 Optical S/PDIF-Out port
  - 6 USB 2.0 ports
  - 1 USB 3.0 port
  - 1 IEEE 1394 port
  - 1 LAN port
  - 6 flexible audio ports
- On-Board
  - 2 USB 2.0 connectors
  - 1 USB 3.0 connector
  - 1 IEEE 1394 connector
  - 1 Chassis Intrusion connector
  - 1 S/PDIF-Out connector
  - 1 Front Panel Audio connector
  - 1 Serial Port connector
  - 1 TPM Module connector
  - 1 CD-In connector
  - 1 OC Genie button

Slots

- 2 PCIE x16 slots
  - PCI_E2 supports up to PCIE x16 speed, PCI_E3 supports up to PCIE x4 speed
  - Supports ATI CrossFireX™ Technology
- 1 PCIE x1 slot
- 3 PCI slot, supports 3.3V/ 5V PCI bus Interface

Important

Please note that setting the "PCI Express x4/x1 Slot" as [x4] under "Integrated Peripherals" in BIOS will disable the SATA 6 Gb/s ports (SATA7~8) and PCIE x1 slot (PCI_E1).

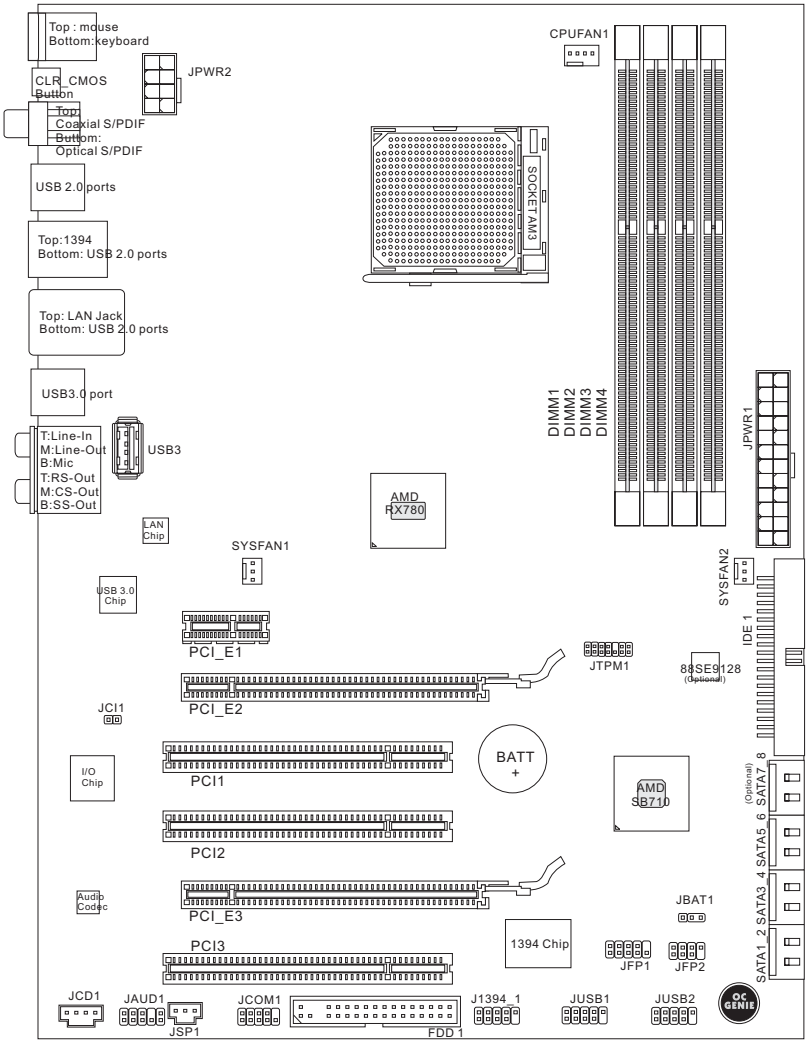
Form Factor

- ATX (22.5 cm X 30.5 cm)

Mounting

- 6 mounting holes

Mainboard Layout



870A-G55/ 870U-G55 Series (MS-7599 v5.X) ATX Mainboard

Packing Checklist


MSI mainboard


MSI Driver/Utility DVD


SATA Cable (Optional)


Power Cable


USB Bracket (Optional)


SATA Cable (Optional)

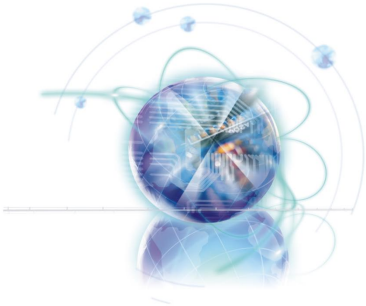

Standard Cable for IDE Devices (Optional)



User's Guide


Back IO Shield

The pictures are for reference only and may vary from the packing contents of the product you purchased. If you need to purchase accessories and request the part numbers, you could search the product web page and find details on our web address http://www.msi.com/index.php



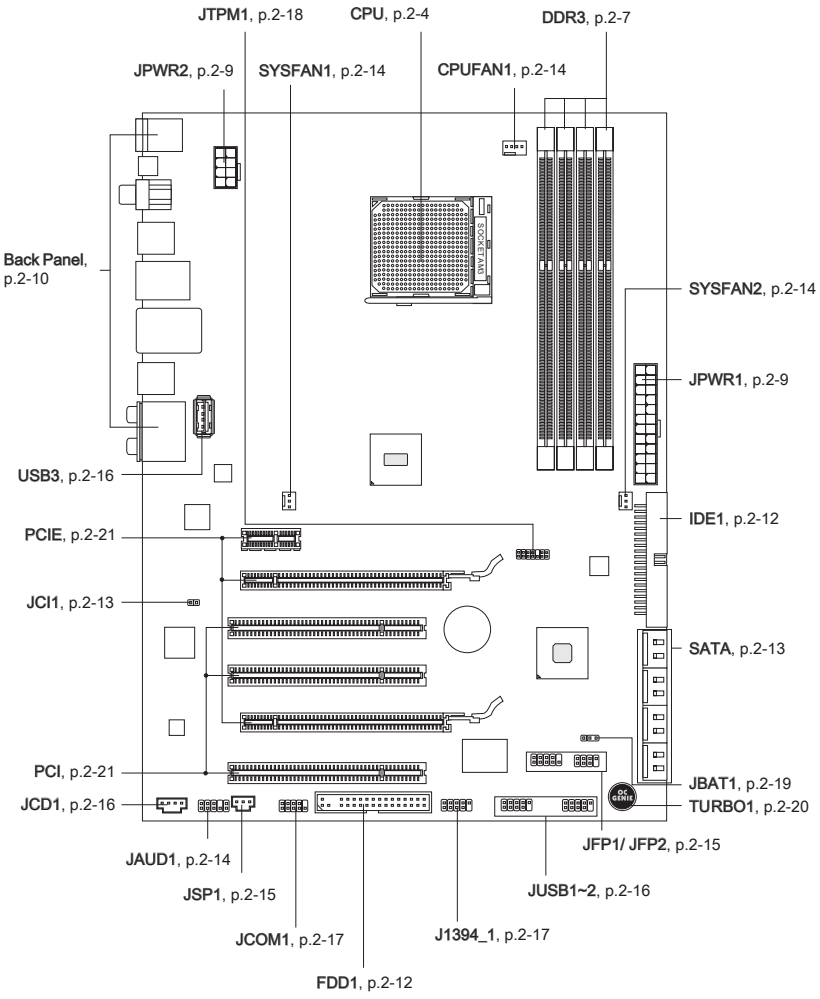
Chapter 2

Hardware Setup

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

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

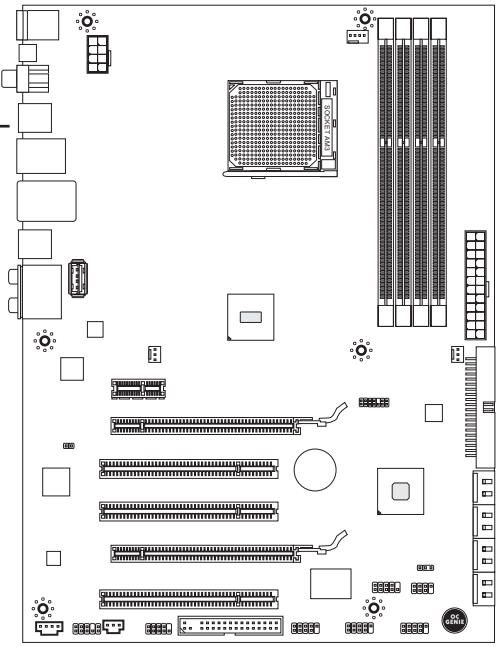
Quick Components Guide



Screw Holes

When you install the mainboard, you have to place the mainboard into the chassis in the correct direction. The locations of screws holes on the mainboard are shown as below.

The side has to toward the rear, the position for the I/O shield of the chassis.



Screw holes

Refer above picture to install standoffs in the appropriate locations on chassis and then screw through the mainboard screw holes into the standoffs.

Important

- *To prevent damage to the mainboard, any contact between the mainboard circuit and chassis or unnecessary standoffs mounted on the chassis is prohibited.*
- *Please make sure there are no metal components placed on the mainboard or within the chassis that may cause short circuit of the mainboard.*

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://www.msi.com/index.php?func=cpuform2

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.

Replacing 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.

Introduction to AM3 CPU

The surface of CPU. Remember to apply some thermal paste on it for better heat dispersion.

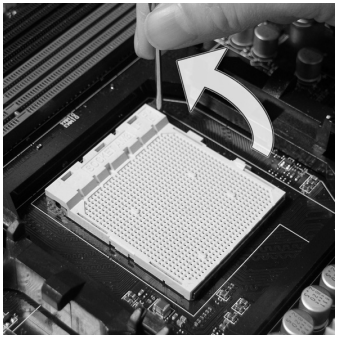


CPU & Cooler Installation

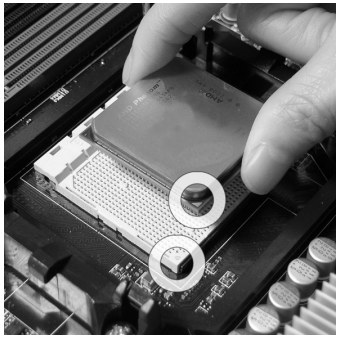
When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating**. Meanwhile, do not forget to apply some thermal paste on CPU before installing the heat sink/cooler fan for better heat dispersion.

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

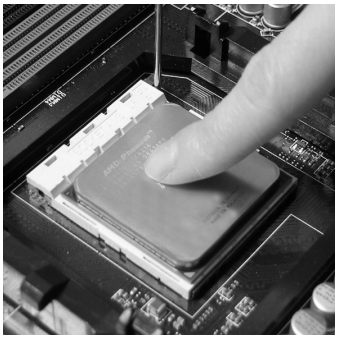
1. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.



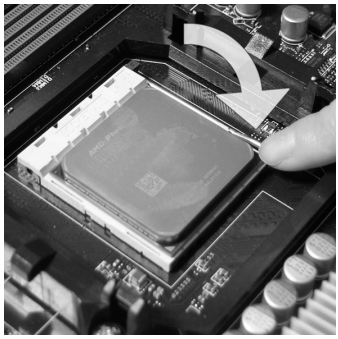
2. Look for the gold arrow of the CPU. The gold arrow should point as shown in the picture. The CPU can only fit in the correct orientation.



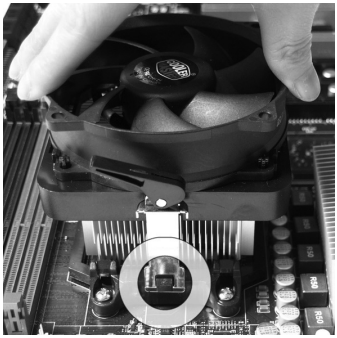
3. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.



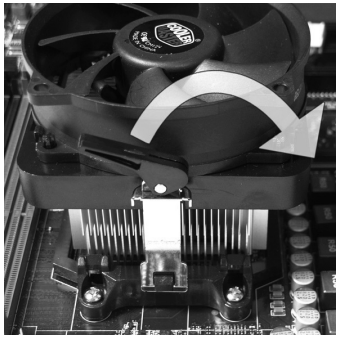
4. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



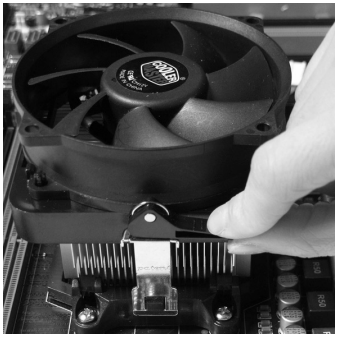
5. Position the cooling set onto the retention mechanism.
   Hook one end of the clip to hook first.



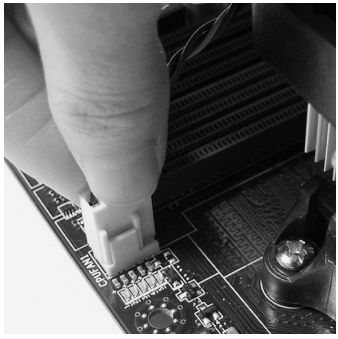
6. Then press down the other end of the clip to fasten the cooling set on the top of the retention mechanism.
   Locate the Fix Lever and lift up it.



7. Fasten down the lever.



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

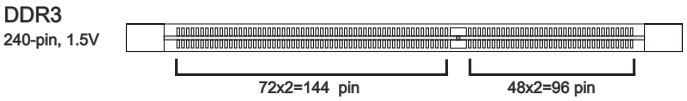


Important

- *Mainboard photos shown in this section are for demonstration only. The appearance of your mainboard may vary depending on the model you purchase.*
- *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.*

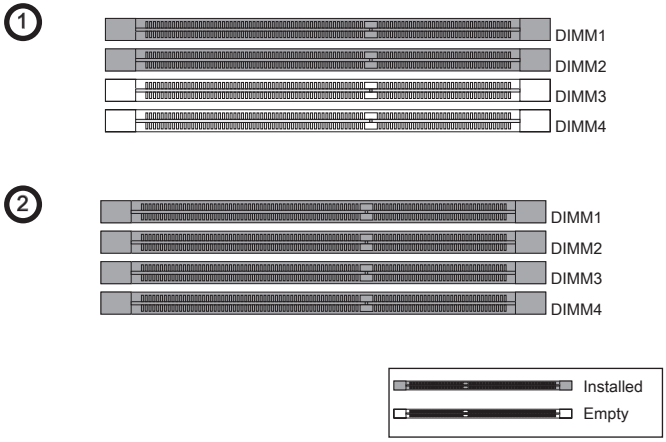
Memory

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



Dual-Channel mode Population Rule

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. The following illustrations explain the population rules for Dual-Channel mode.

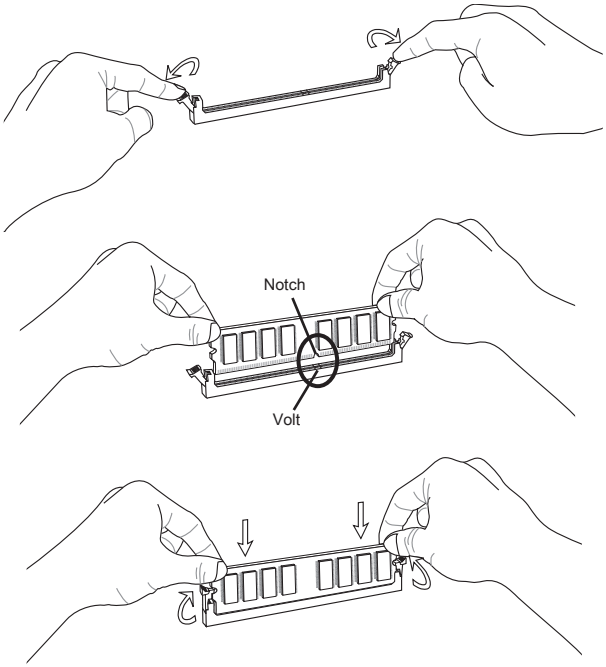


Important

- *DDR3 memory modules are not interchangeable with DDR2 and the DDR3 standard is not backwards compatible. You should always install DDR3 memory modules in the DDR3 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 ensure a successful system boot-up, always insert the memory modules into the* ***DIMM1 first****.*
- *Due to the chipset resource deployment, the system density will only be detected up to 15+GB (not full 16GB) when each DIMM is installed with a 4GB memory module.*

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



Important

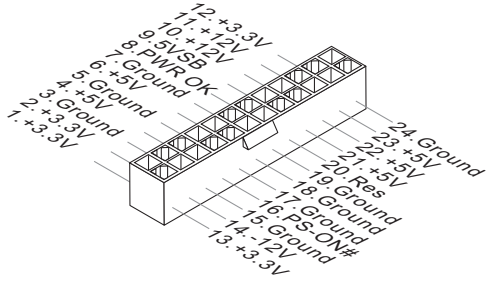
You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

Power Supply

ATX 24-pin Power Connector: JPWR1

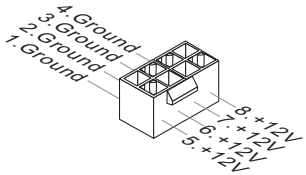
This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

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.



ATX 8-pin Power Connector: JPWR2

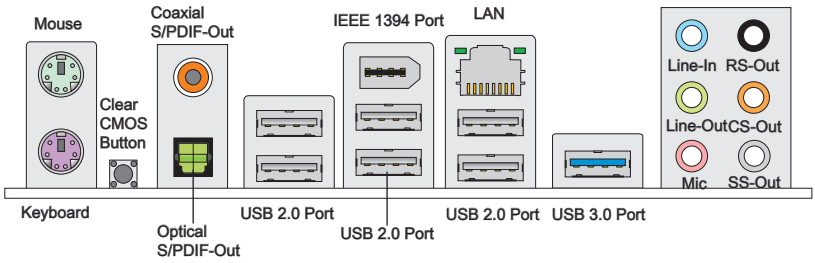
This connector provides 12V power output to the CPU.



Important

- *Make sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.*

Back Panel



▸ **Mouse/Keyboard**

The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

▸ **Clear CMOS Button**

There is a CMOS RAM on board with an external battery power supply to preserve 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.

Important

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

After pressing this button to clear CMOS data in power off (G3) state, the system will boot automatically.

▸ **Coaxial S/PDIF-Out**

This S/PDIF (Sony & Philips Digital Interconnect Format) connector is provided for digital audio transmission to external speakers through a coaxial cable.

▸ **Optical S/PDIF-Out**

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

▸ **USB 2.0 Port**

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices. Supports data transfer rate up to 480Mbit/s (Hi-Speed).

▸**IEEE 1394 Port (optional)**

The IEEE 1394 port on the back panel provides connection to IEEE 1394 devices.

▸**USB 3.0 Port**

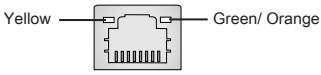
USB 3.0 port is backward-compatible with USB 2.0 devices. It supports data transfer rate up to 5 Gbit/s (SuperSpeed).

Important

If you want to use a USB 3.0 device, you must use the USB 3.0 cable to connect to the USB 3.0 port.

▸**LAN**

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



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 Mbits/sec data rate is selected.
		On	100 Mbits/sec data rate is selected.
	Orange	On	1000 Mbits/sec data rate is selected.

▸**Audio Ports**

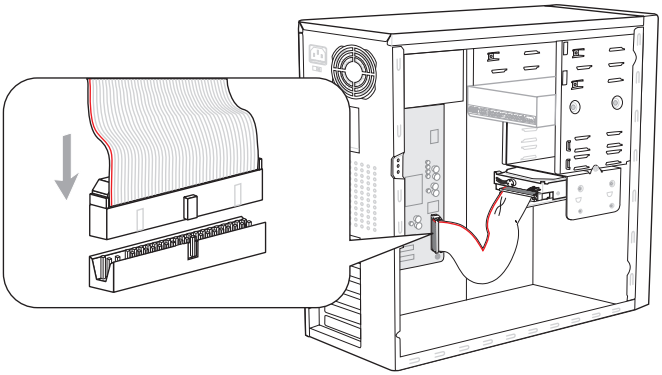
These audio connectors are used for audio devices. It is easy to differentiate between audio effects according to the color of audio jacks.

- Line-In (Blue) - Line In, is used for external CD player, tape-player 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

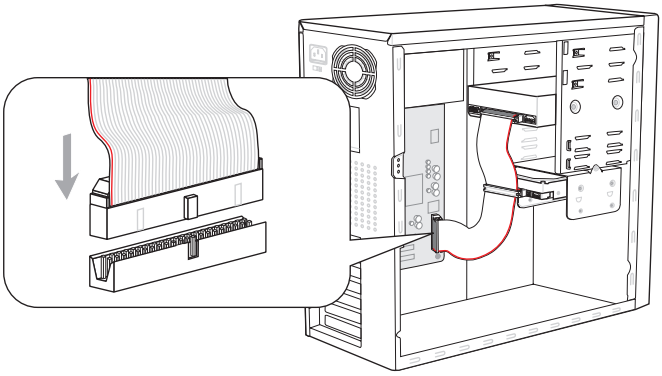
This connector supports 360 KB, 720 KB, 1.2 MB, 1.44 MB or 2.88 MB floppy disk drive.



* The MB layout in this figure is for reference only.

IDE Connector: IDE1

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



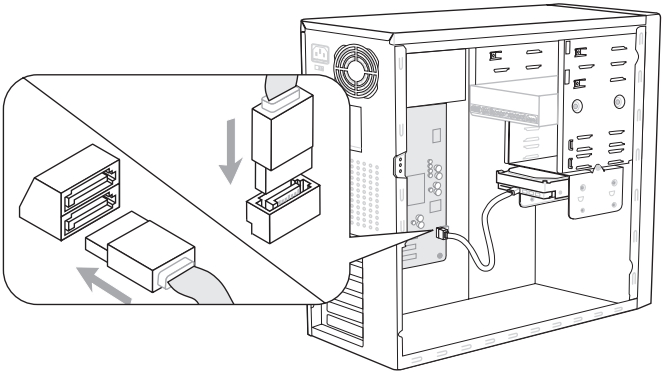
* The MB layout in this figure is for reference only.

Important

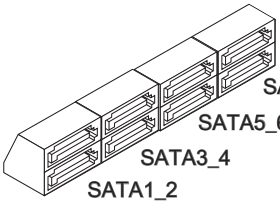
If you install two IDE devices on the same cable, you must configure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

Serial ATA Connector: SATA1~8

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



* The MB layout in this figure is for reference only.



SATA7/ SATA8 (6Gb/s)
supported by Marvell® 88SE9128 (optional)

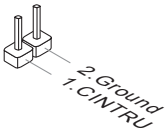
SATA1~6 (3Gb/s)
supported by AMD® SB710

Important

- *Please do not fold the Serial ATA cable into a 90-degree angle. Otherwise, data loss may occur during transmission.*
- *Please note that setting the "PCI Express x4/x1 Slot" as [x4] under "Integrated Peripherals" in BIOS will disable the SATA 6 Gb/s ports (SATA7~8) and PCIE x1 slot (PCI_E1).*

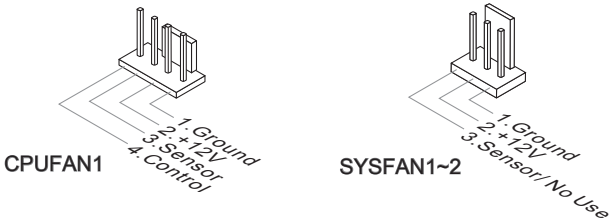
Chassis Intrusion Connector: JCI1

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.


2.Ground
1.CINTRU

Fan Power Connectors: CPUFAN1, SYSFAN1~2

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.

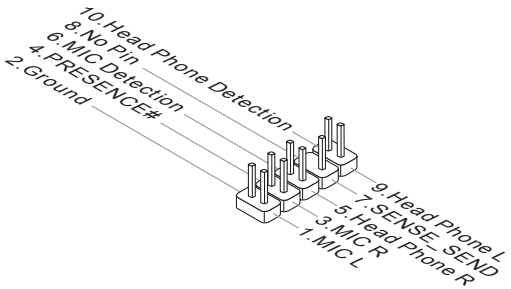


Important

- *Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.*
- *CPUFAN1 supports fan control. You can install* **Control Center** *utility that will automatically control the CPU fan speed according to the actual CPU temperature.*
- *Fan cooler set with 3 or 4 pins power connector are both available for CPUFAN1.*

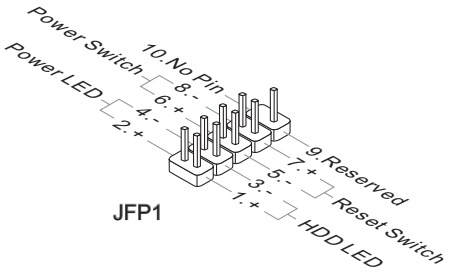
Front Panel Audio Connector: JAUD1

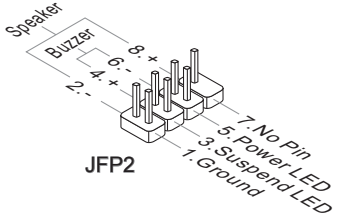
This connector allows you to connect the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



Front Panel Connectors: JFP1, JFP2

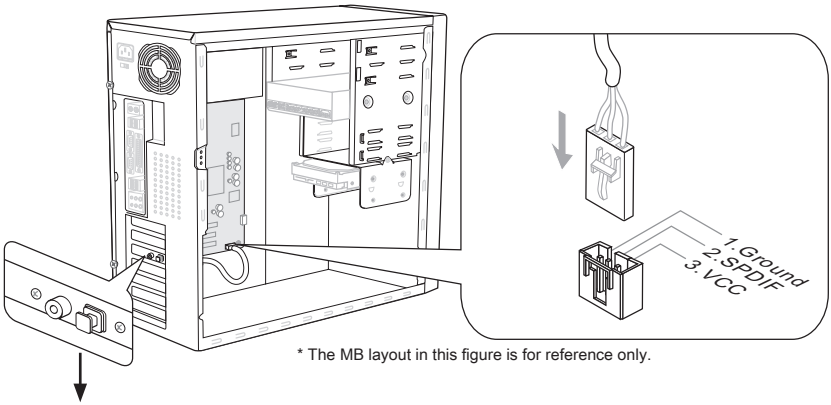
These connectors are for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.





S/PDIF-Out Connector: JSP1

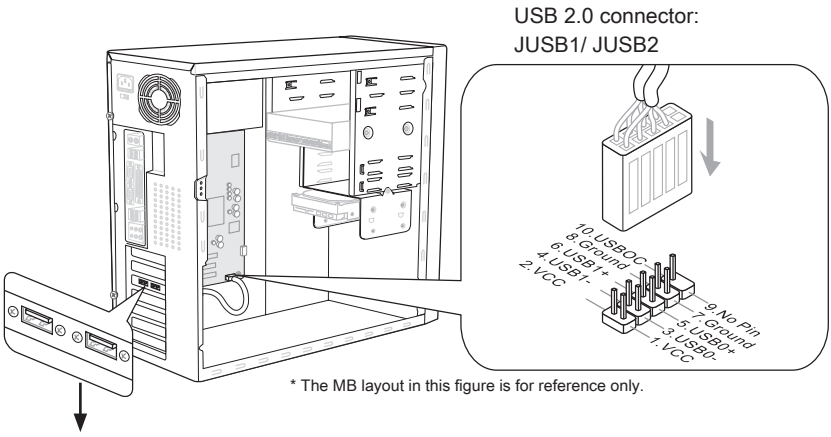
This connector is used to connect S/PDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.

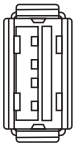


* The MB layout in this figure is for reference only.

Front USB Connector: JUSB1 / JUSB2 / USB3

In addition to being compliant with Intel® I/O Connectivity Design Guide, this connector is also ideal for connecting high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modems and the like.





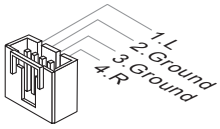
USB 3.0 connector: USB3

Important

- *Note that the pins of VCC and GND must be connected correctly to avoid possible damage.*
- *If you want to use a USB 3.0 device, you must use the USB 3.0 cable to connect to the USB 3.0 connector.*

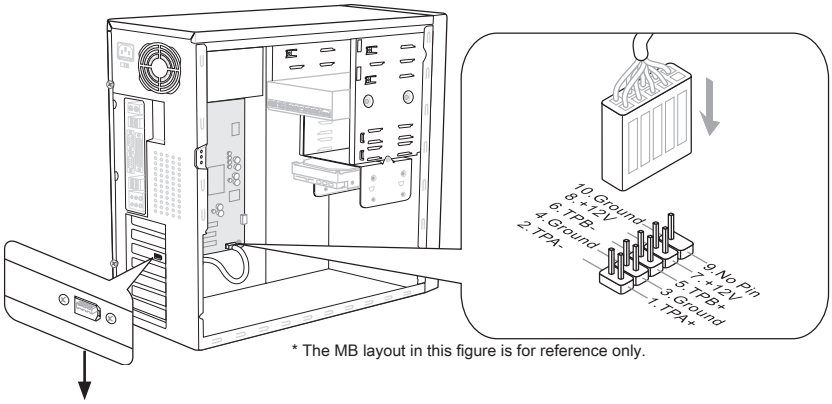
CD-In Connector: JCD1

This connector is provided for external audio input.



IEEE 1394 Connector: J1394_1

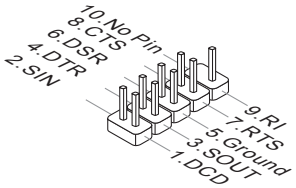
This connector allows you to connect the IEEE 1394 device via an optional IEEE1394 bracket.



* The MB layout in this figure is for reference only.

Serial Port Connector: JCOM1

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



Jumpers

Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board with an external battery power supply to preserve 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, set the jumper to clear data.



JBAT1 Keep Data Clear Data

Important

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

Button

This section will explain how to change your mainboard's function through the use of the OC Genie button.

OC Genie Button: TURBO1

This button is used to auto-overclock the system. When the system is in a power off state, pressing the button will enable OC Genie. The button will light up and lock into place. After booting up, the system will automatically detect the optimum values to overclock. To disable the OC Genie function, please press the button again after powering off the system. The button light will turn off, and the system will restore the default setting.



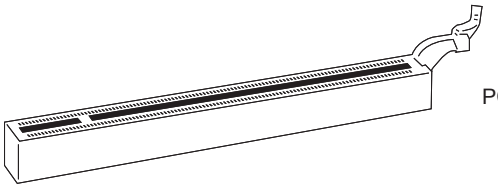
Important

- *When using OC Genie, installation of DDR3 1333 and up memory and a better CPU cooler is highly recommended.*
- *We do not guarantee the OC Genie overclocking range and the damages or risks caused by the OC Genie overclocking behavior.*
- *You can disable the OC Genie function in BIOS setup. And we suggest you to save the OC Genie configuration to overclocking profile in BIOS for future using.*
- *The usage of OC Genie is at your own risk. Overclocking is never guaranteed by MSI.*

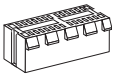
Slots

PCIE (Peripheral Component Interconnect Express) Slot

The PCIE slot supports the PCIE interface expansion card.



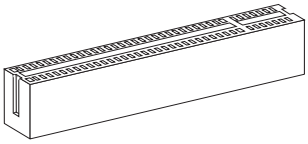
PCIE x16 Slot



PCIE x1 Slot

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

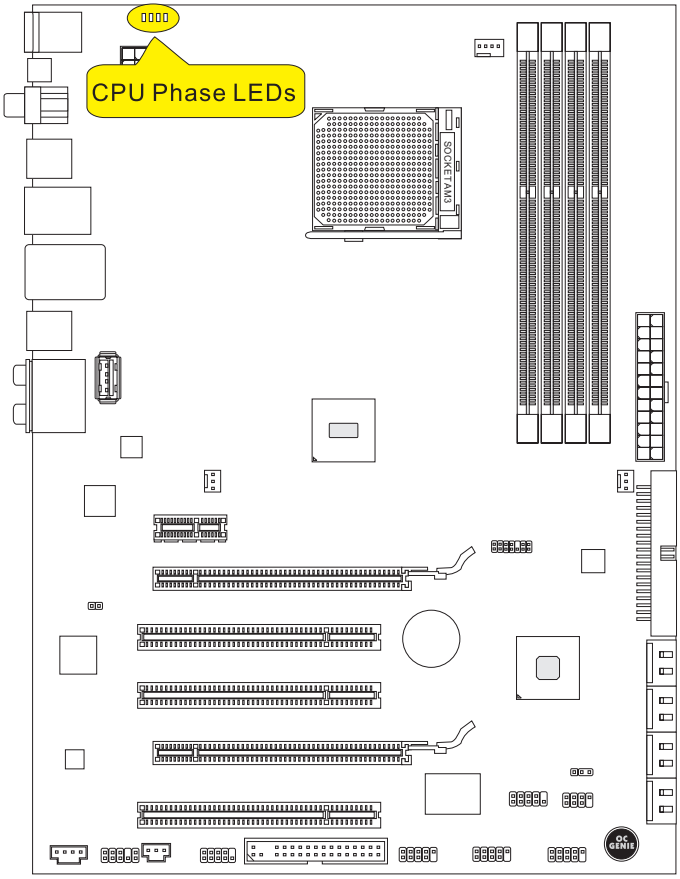
When adding or removing expansion cards, make sure that you unplug the power supply first. Read the documentation for the expansion card to configure any necessary hardware or software settings for it, such as jumpers, switches or BIOS configuration.

PCI Interrupt Request Routing

IRQ, or interrupt request line, 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:

	Order1	Order2	Order3	Order4
PCI Slot1	INT E#	INT F#	INT G#	INT H#
PCI Slot2	INT F#	INT G#	INT H#	INT E#
PCI Slot3	INT G#	INT H#	INT E#	INT F#

LED Status Indicators

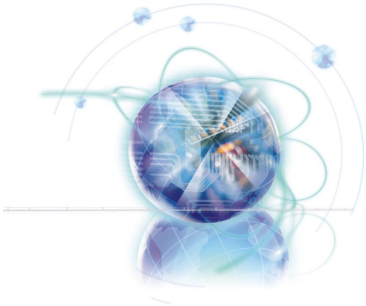


CPU Phase LEDs

These LEDs indicate the current CPU power phase mode. Follow the instructions below to read.

■ Lights □ Off

■□□□	CPU is in 1 phase power mode.
■■■■	CPU is in 4 phase power mode.



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:

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

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

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

A7599AMS V25.X 071010 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, A = AMD and V = VIA.

7th - 8th digit refers to the customer as MS = all standard customers.

V25.X refers to the BIOS version.

071010 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
<F1>	General Help
<F4>	CPU Spec Information
<F5>	Memory-Z Information
<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.



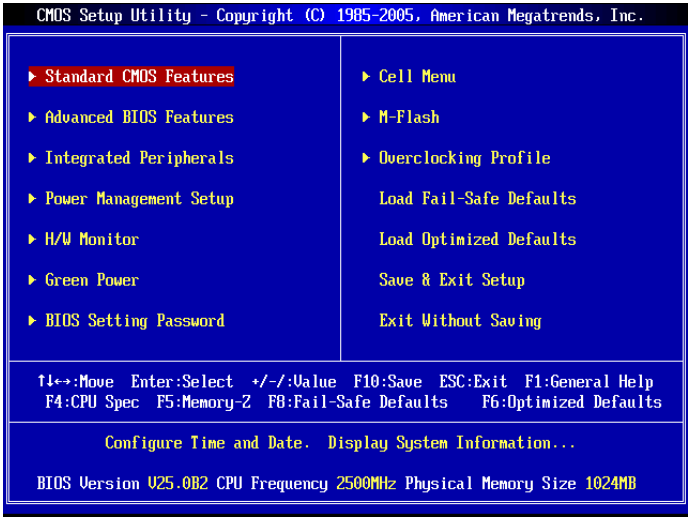
Sub-Menu

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 >.

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



▸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 the BIOS 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.

▸Green Power

Use this menu to specify the power phase.

▸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.

▸ **M-Flash**

Use this menu to read/ flash the BIOS from storage drive (FAT/ FAT32 format only).

▸ **Overclocking Profile**

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**

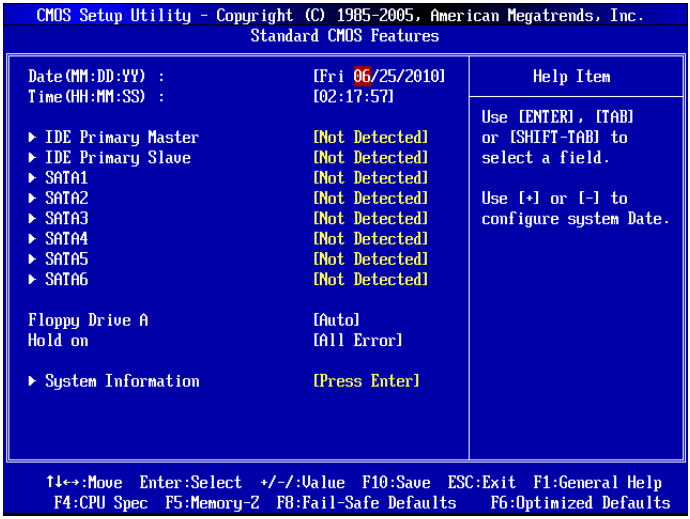
Save changes to CMOS and exit setup.

▸ **Exit Without Saving**

Abandon all changes and exit setup.

Standard CMOS Features

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



▸Date (MM:DD:YY)

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

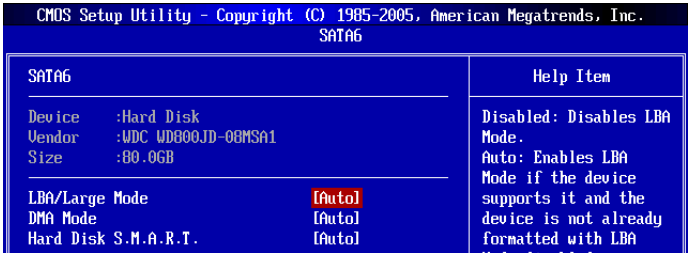
[day]	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
[month]	The month from Jan. through Dec.
[date]	The date from 1 to 31 can be keyed by numeric function keys.
[year]	The year can be adjusted by users.

▸Time (HH:MM:SS)

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

▸IDE Primary Master/ Slave & SATA1~6

Press <Enter> to enter the sub-menu, and the following screen appears. This sub-menu shows the information of installed IDE/ SATA device.



▸Device / Vendor / Size

It will show the device information that you connected to the IDE/ 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 & SATA1~6 are appearing when you connect the HD devices to the SATA connectors on the mainboard.

▸Floppy Drive A

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

▸Hold on

The setting determines whether the system will stop if an error is detected at boot. When the system stops for the errors preset, it will halt on for 15 seconds and then automatically resume its operation.

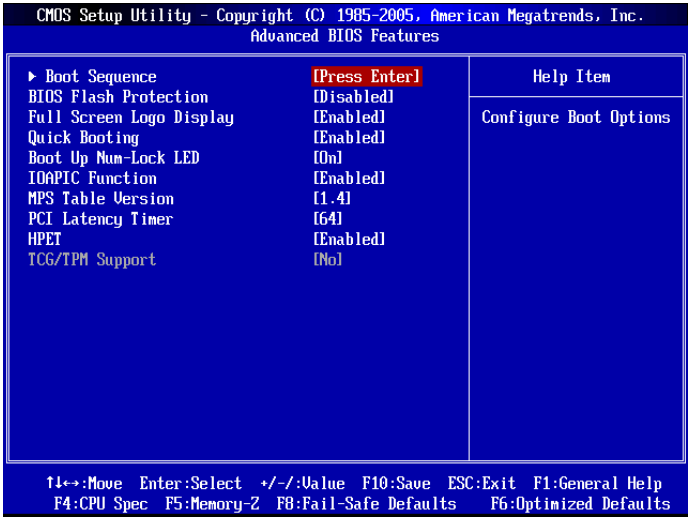
[All Error] The system stops when any error is detected.

[No Error] The system does not stop for any detected error.

▸System Information

Press <Enter> to enter the sub-menu. This sub-menu shows the CPU information, BIOS version and memory status of your system (read only).

Advanced BIOS Features



▸Boot Sequence

Press <Enter> to enter the sub-menu.

▸1st/ 2nd Boot Device

This item allows 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 1st boot device.

▸BIOS Flash Protection

This function protects the BIOS from accidental corruption by unauthorized users or computer viruses. When enabled, the BIOS' data cannot be changed when attempting to update the BIOS with a Flash utility. To successfully update the BIOS, you will need to disable this Flash BIOS Protection function. You should enable this function at all times. The only time when you need to disable it is when you want to update the BIOS. After updating the BIOS, you should immediately re-enable it to protect it against viruses.

▸Full Screen Logo Display

This item enables this system to show the company logo on the boot-up 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.

▸ **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.

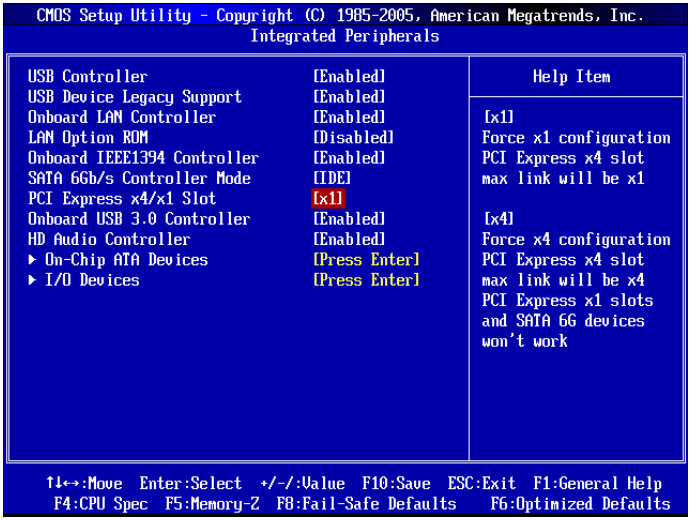
▸ **HPET**

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.

▸ **TCG/TPM Support**

Setting the option to [Yes] enables TPM (Trusted Platform Module) for the system.

Integrated Peripherals



▸USB Controller

This setting allows you to enable/disable the onboard USB 1.1/ 2.0 controller.

▸USB Device Legacy Support

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

▸Onboard LAN Controller

This setting allows you to enable/disable the onboard LAN controller.

▸LAN Option ROM

This item is used to decide whether to invoke the Boot ROM of the onboard LAN.

▸Onboard IEEE1394 Controller

This setting is used to enable/disable the onboard 1394 controller.

▸SATA 6Gb/s Controller Mode

This item is used to select mode for SATA 6Gb/s devices. When you set "Disabled" in this field, the 6Gb/s controller will be disabled.

▸PCI Express x4/x1 Slot

This item is used to select mode for PCI_E3 slot. *Please note that setting the "PCI Express x4/x1 Slot" as [x4] under "Integrated Peripherals" in BIOS will disable the SATA 6 Gb/s ports (SATA7~8) and PCIE x1 slot (PCI_E1).*

▸Onboard USB 3.0 Controller

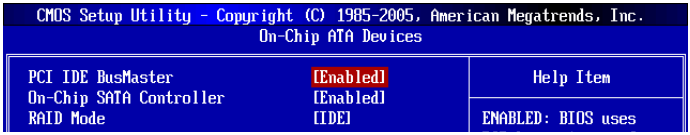
This setting is used to enable/disable the onboard USB 3.0 controller.

▸HD Audio Controller

This setting is used to enable/disable the onboard HD audio controller.

▸On-Chip ATA Devices

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



▸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

This item allows users to enable or disable the SATA controller.

▸RAID Mode

This item is used to select operation mode for SATA 3Gb/s connectors.

▸I/O Devices

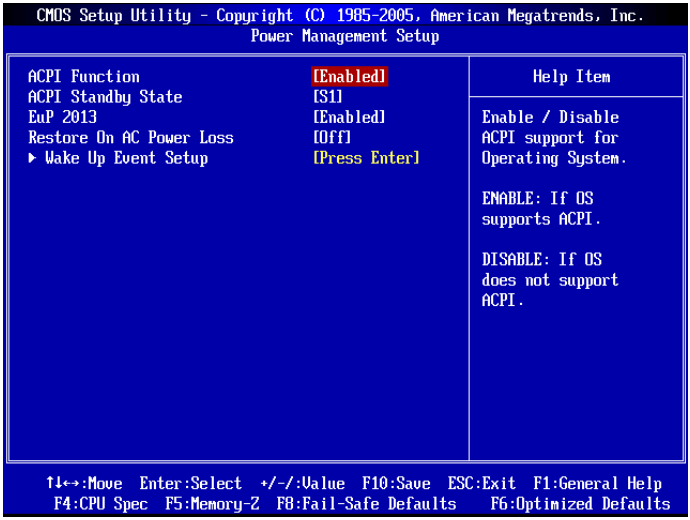
Press <Enter> to enter the sub-menu and the following screen appears:



▸COM Port 1

Select an address and corresponding interrupt for the serial port.

Power Management Setup



Important

S3-related functions described in this section are available only when the 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, select [Enabled].

▸**ACPI Standby State**

This item specifies the power saving modes for ACPI function.

▸**EuP 2013**

This item is designed for energy using products lot 6 2013 (EuP) aka energy related products (ErP); to reduce power consumption during system off or standby mode.

Note: Enabling EuP 2013 will disable support for RTC Wake Up Event.

▸**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]	Restore the system to the status before power failure or interrupt occurred.

▸Wake Up Event Setup

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



▸Wake up Event By

Setting to [BIOS] activates the following fields, and use the following fields to set the wake up events. Setting to [OS], the wake up events will be defined by OS.

▸Resume 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 S3/S5 By PS/2 Keyboard / Mouse

These items determine whether the system will be awakened from what power saving modes when input signal of the PS/2 keyboard/ mouse is detected.

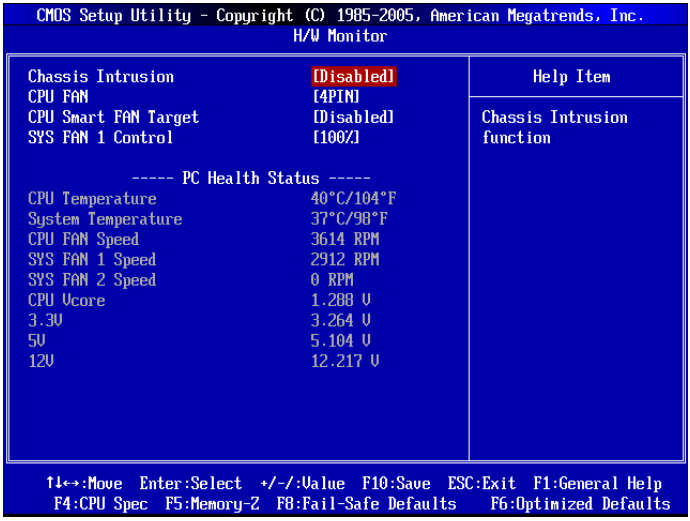
▸Resume By PCI or PCI-E Device

When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event on PCIE or PCI device.

▸Resume By RTC Alarm

The field is used to enable or disable the feature of booting up the system on a scheduled time/date.

H/W Monitor



▸Chassis Intrusion

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

▸CPU FAN

This item is used to select the type of installed CPU FAN.

▸CPU Smart Fan Target

The Smart Fan function controls the CPU fan speed automatically depending on the current temperature to keep it with in a specific range. You can enable 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 automatically.

▸SYS FAN 1 Control

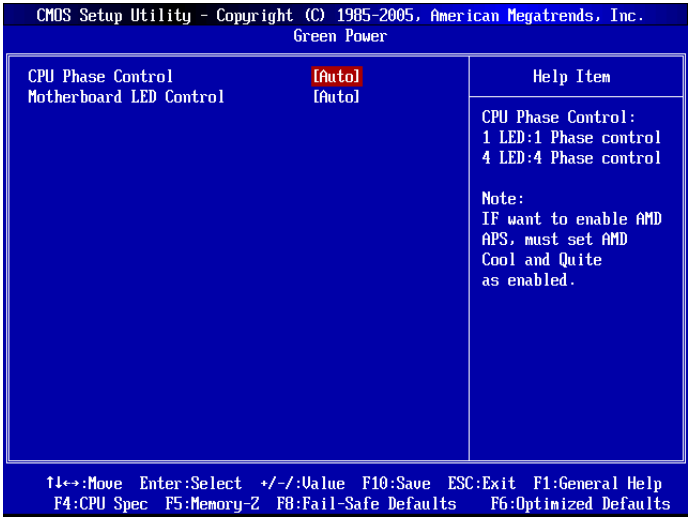
These items allow users to select how percentage of speed for the SYSFAN1.

▸PC Health Status

▸CPU/ System Temperature, CPU FAN/ SYS FAN 1/ SYS FAN 2 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.

Green Power



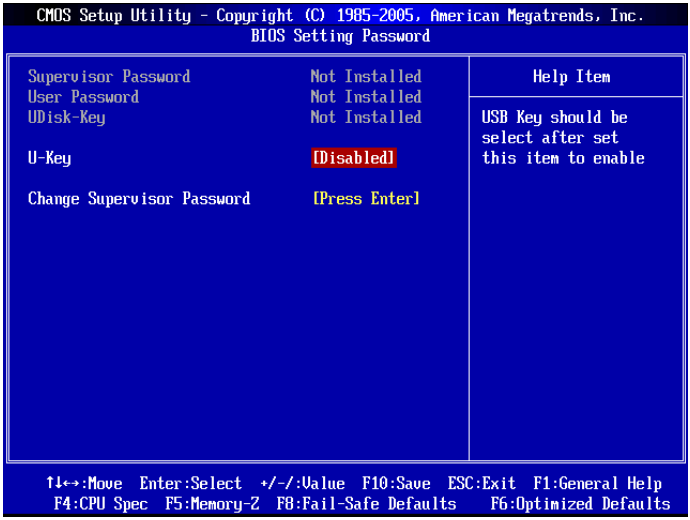
▸CPU Phase Control

When set to [Auto], the hardware will auto adjust the CPU power phase according to the loading of CPU to reach the best power saving function.

▸Motherboard LED Control

This item is used to turn on (Auto)/ turn off (Disabled) the power phase LEDs of the mainboard.

BIOS Setting Password



▸U-Key

This item is used to enable/ disable USB driver device as a key.

▸Make U-Key at

This item is used to specify the USB driver device as a key.

▸Change Supervisor Password

This item is used to set the supervisor password.

Important

Type the password, up to eight characters in length, and press <Enter>. The password typed now will replace any previously set password. 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.

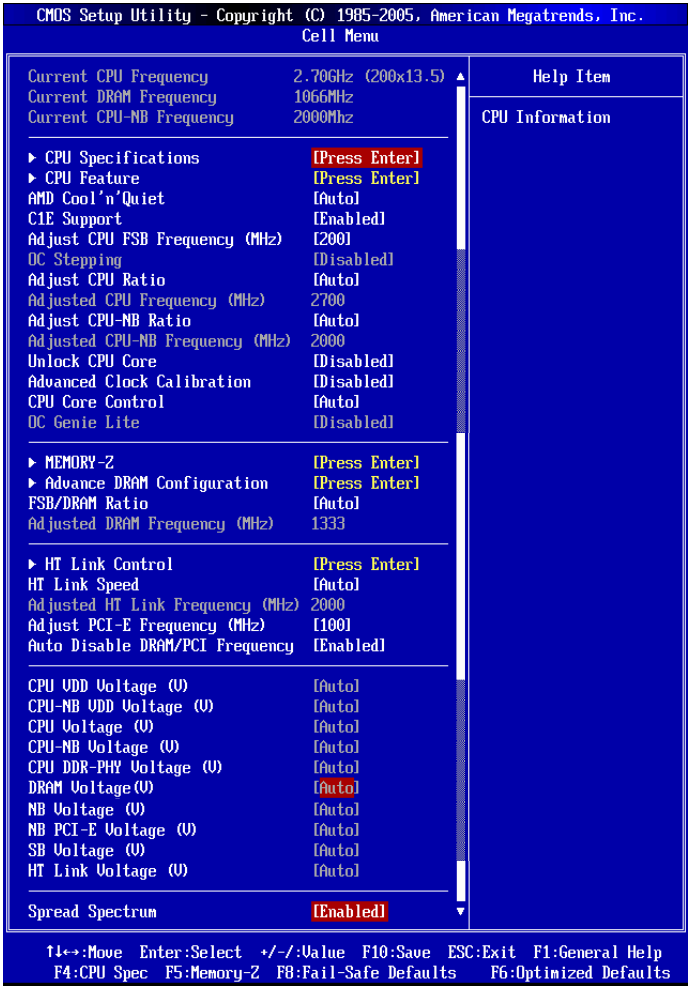
To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

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

About Supervisor Password:

***Supervisor password**: Can enter and change the settings of the setup menu.*

Cell Menu



Important

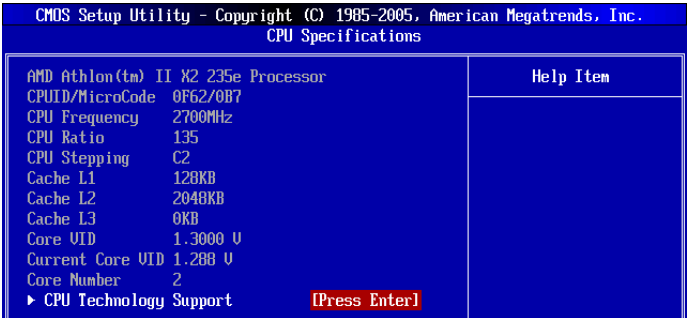
Change these settings only if you are familiar with the chipset.

▸Current CPU / DRAM / CPU-NB Frequency

These items show the current clocks of CPU, Memory and CPU-NB speed. Read-only.

▸CPU Specifications

Press <Enter> to enter the sub-menu and the following screen appears. This submenu shows the information of installed CPU.

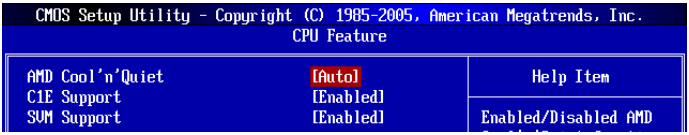


▸CPU Technology Support

Press <Enter> to enter the sub-menu. This sub-menu shows the technologies that the installed CPU supported.

▸CPU Feature

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



▸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:

- *Run BIOS Setup, and select Cell Menu. Under* ***Cell Menu****, find* ***AMD Cool'n'Quiet****, and set this item to "Enabled".*
- *Enter Windows, and select [Start]->[Settings]->[Control Panel]->[Power Options]. Enter* ***Power Options Properties*** *tag, and select* ***Minimal Power Management*** *under* ***Power schemes****.*

▸C1E Support

To enable this item to read the CPU power consumption while idle. Not all processors support Enhanced Halt state (C1E).

▸ SVM Support

This item is used to enable/ disable SVM.

▸ AMD Cool'n'Quiet

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

▸ C1E Support

To enable this item to read the CPU power consumption while idle. Not all processors support Enhanced Halt state (C1E).

▸ Adjust CPU FSB Frequency (MHz)

This item allows you to select the CPU Front Side Bus clock frequency (in MHz).

▸ OC Stepping

This item will be enabled after you set the overclocking frequency in the "Adjust CPU FSB Frequency (MHz)". And the following items will appear. This items will help the system to overclock step by step after system booting up.

▸ Start OC Stepping From (MHz)

This item is used to set the initial FSB clock. The system will boot with the initial FSB clock, and start to overclock from initial FSB clock to set FSB clock that you set in "Adjust CPU FSB Frequency (MHz)" step by step.

▸ OC Step

This item is used to set how many steps for FSB colck overclocking.

▸ OC Step Count Timer

This item is used to set the buffer time for every step.

▸ Adjust CPU Ratio

This item is used to adjust CPU clock multiplier (ratio). It is available only when the processor supports this function.

▸ Adjusted CPU Frequency (MHz)

It shows the adjusted CPU frequency. Read-only.

▸ Adjust CPU-NB Ratio

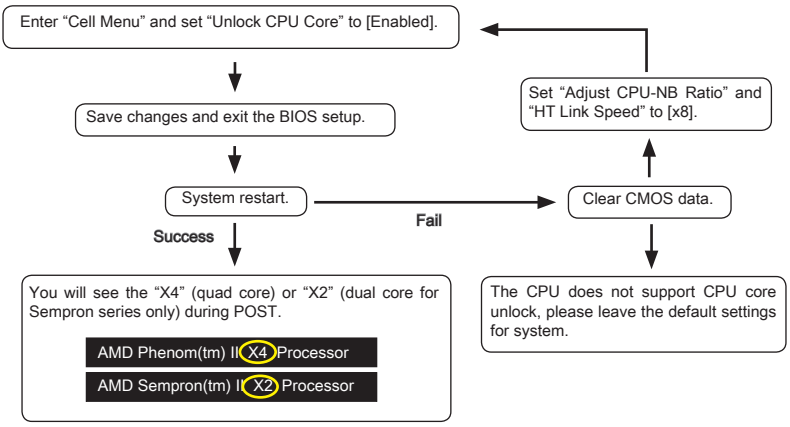
This item is used to adjust CPU-NB ratio.

▸ Adjusted CPU-NB Frequency (MHz)

It shows the adjusted CPU NB frequency. Read-only.

▸Unlock CPU Core

This item is used to unlock the CPU core. Please refer to the procedures below for CPU core unlocked in BIOS setup.



Important

- *This CPU core unlocked behavior depends on the CPU ability/ characteristic, and it is not guaranteed.*
- *Depend on CPU’s characteristic, once you get instable scenario, please restore the default settings for system.*
- *You can also check the core numbers in performance tab of Windows task manager.*

▸Advanced Clock Calibration

This item is for overclock. Setting to [Enabled] allows you to set the CPU Ratio higher. It is available only when the processor supports this function.

▸CPU Core Control

This item allows you to select the number of active processor cores.

▸OC Genie Lite

Setting this item to [Enabled] allows the system to detect the maximum FSB clock and to overclock automatically. If overclocking fails to run, you can try the lower FSB clock for overclocking successfully.

▸MEMORY-Z

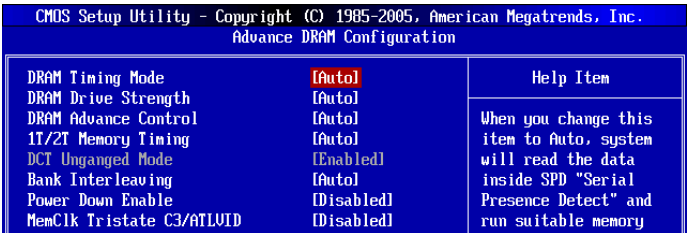
Press <Enter> to enter the sub-menu.

▸DIMM1~4 Memory SPD Information

Press <Enter> to enter the sub-menu. The sub-menu displays the information of installed memory.

▸Advance DRAM Configuration

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



▸DRAM Timing Mode

This field has the capacity to automatically detect all of the DRAM timing.

▸DRAM Drive Strength

This item allows you to control the memory data bus' signal strength. Increasing the drive strength of the memory bus can increase stability during overclocking.

▸DRAM Advance Control

This field has the capacity to automatically detect the advanced DRAM timing. If you set this field to [DCT 0], [DCT 1] or [Auto], some fields will appear and selectable.

▸1T/2T Memory Timing

This item controls the SDRAM command rate. Select [1T] makes SDRAM signal controller to run at 1T (T=clock cycles) rate. Selecting [2T] makes SDRAM signal controller run at 2T rate.

▸DCT Unganged Mode

This feature is used to Integrate two 64-bit DCTs into a 128-bit interface.

▸Bank Interleaving

Bank Interleaving is an important parameter for improving overclocking capability of memory. It allows system to access multiple banks simultaneously.

▸Power Down Enable

This is a memory power-saving technology. When the system does not access memory over a period of time, it will automatically reduce the memory power supply.

▸MemClk Tristate C3/ATLVID

This setting allows you to enable/disable the MemClk Tristating during C3 and ATLVID.

▸FSB/DRAM Ratio

This item allows you to select the ratio of FSB/ DRAM.

▸Adjusted DRAM Frequency (MHz)

It shows the adjusted Memory frequency. Read-only.

▸HT Link Control

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



▸HT Incoming/ Outgoing Link Width

These items allow you to set the Hyper-Transport Link width. Setting to [Auto], the system will detect the HT link width automatically.

▸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.

▸Adjusted HT Link Frequency (MHz)

It shows the adjusted HT Link frequency. Read-only.

▸Adjust PCI-E Frequency (MHz)

This field allows you to select the PCIE frequency (in MHz).

▸Auto Disable DRAM/PCI Frequency

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

▸CPU VDD Voltage (V)/ CPU-NB VDD Voltage (V)/ CPU Voltage (V)/ CPU-NB Voltage (V)/ CPU DDR-PHY Voltage (V)/ DRAM Voltage (V)/ NB Voltage (V)/ NB PCI-E Voltage (V)/ SB Voltage (V)/ HT Link Voltage (V)

These items are used to adjust the voltage of CPU, Memory and chipset.

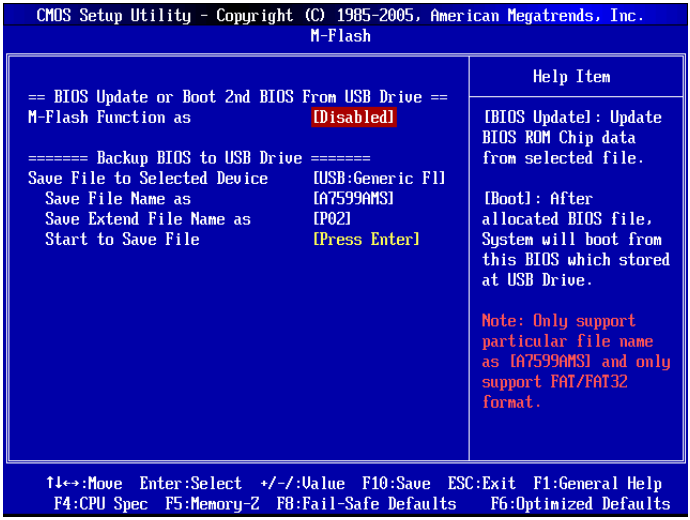
▸Spread Spectrum

When the mainboard'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.

Important

- *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.*
- *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.*
- *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.*

M-Flash



== BIOS Update or Boot 2nd BIOS From USB drive==

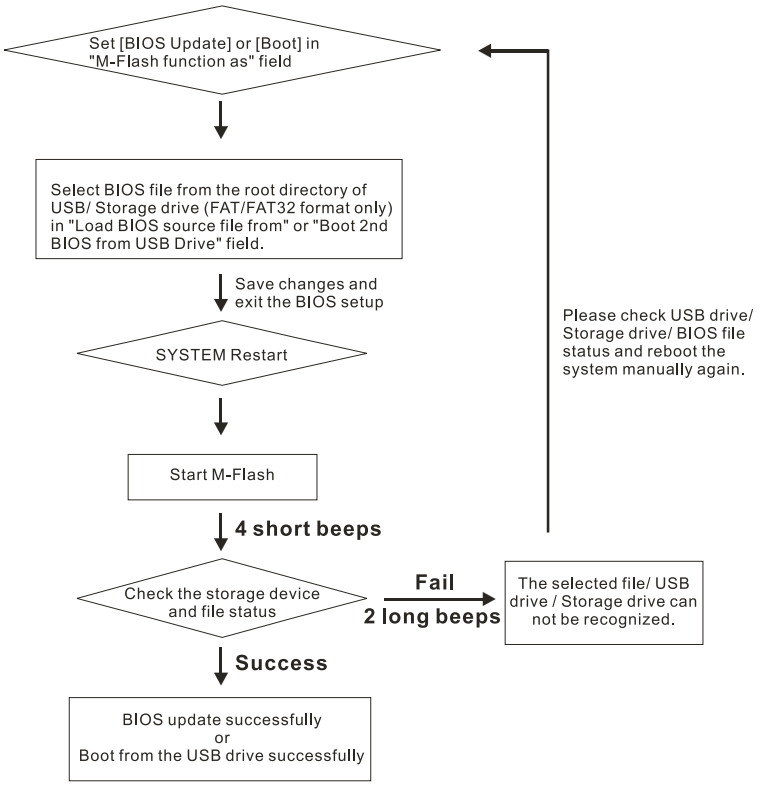
▸M-Flash function as

M-Flash function allows you to flash BIOS from USB drive/ storage drive (FAT/ FAT32 format only), or allows the system to boot from the BIOS file inside USB drive (FAT/ FAT32 format only).

[Disabled]	Disable M-Flash function.
[BIOS Update]	Flash BIOS via the USB/ Storage drive directly. Update BIOS ROM chip data from selected file, which can be downloaded from official website and must be saved in the root directory of the USB/ Storage drive. The filename must be left in its original state in order to be recognized.
[Boot]	After allocated particular BIOS file, system will boot from this BIOS file which saved in the root directory of USB drive. System will skip MB ROM chip data and boot with this particular BIOS inside USB drive. Note: this option is for USB drive only.

Important

- *Please refer to the block diagram below about the M-Flash function.*



- *The monitor may go dark during the M-flash operation due the special design of some graphics cards. The beeping noise signals that the M-flash operation is still in progress.*

▸ **Load BIOS source File from**

When the M-Flash function set as [BIOS Update], this item is selectable. Use this item to select particular BIOS file from the USB/ Storage (FAT/32 format only) drive.

▸ **Boot 2nd BIOS from USB Drive**

When the M-Flash function as sets to [Boot]], this item is selectable. Use this item to select particular BIOS file from the USB drive.

== Backup BIOS to USB Drive ==

The following fields are used to read the onboard BIOS ROM data, and save it to USB drive/ storage drive.

▸ **Save File to Selected Device**

Please setup a specific folder in specific USB drive/ storage drive to save BIOS file from BIOS ROM chip data. Note: it only supports FAT/ FAT32 file system drive.

▸ **Save File Name as**

Please setup a specific name for the BIOS file, which will be saved into the USB drive/ storage drive. Note: we suggest you using the official name as the default name.

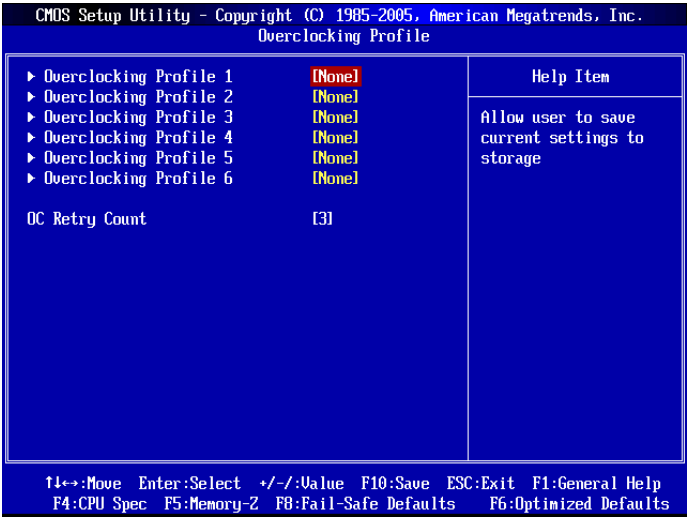
▸ **Save Extend File Name as**

Please setup a specific extend name for the BIOS file, which will be saved into the USB drive/ storage drive. Note: we suggest you using [ROM] as default name.

▸ **Start to Save File**

Press “Enter” and select “OK” the system will stare to save the onboard ROM chip data to the selected USB drive/ storage drive.

Overclocking Profile



▸Overclocking Profile 1/ 2/ 3/ 4/ 5/ 6

These items are used to save the current settings to selected profile, and they are also used to load the settings from the selected profile.

▸OC Retry Count

When overclocking has failed, setting this item to [3,5] will allow system to reboot 3/ 5 times with the same overclocked configuration. If overclocking has failed every time, the system will restore the defaults.

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:

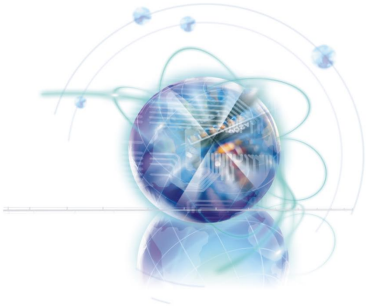


Selecting Ok and pressing Enter loads the BIOS default values for the most stable, minimal system performance.

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



Selecting Ok and pressing Enter loads the default factory settings for optimal system performance.



Appendix A

Realtek Audio

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

Installing the Realtek HD Audio Driver

You need to install the HD audio driver for Realtek audio 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®

For Windows® XP, you must install Windows® XP Service Pack3 or later before installing the driver.

The following illustrations are based on Windows® 7 environment and could look slightly different if you install the drivers in different operating systems.

1. Insert the application DVD into the DVD-ROM drive. The setup screen will automatically appear.
2. Click Driver tab.
3. Click Audio button.



4. Select Realtek HD Audio Drivers to start installing the drivers.
5. Click Next to install the Realtek High Definition Audio Driver.
6. Follow the on-screen instructions to install drivers.
7. Click Finish to restart the system.

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.

Software Configuration

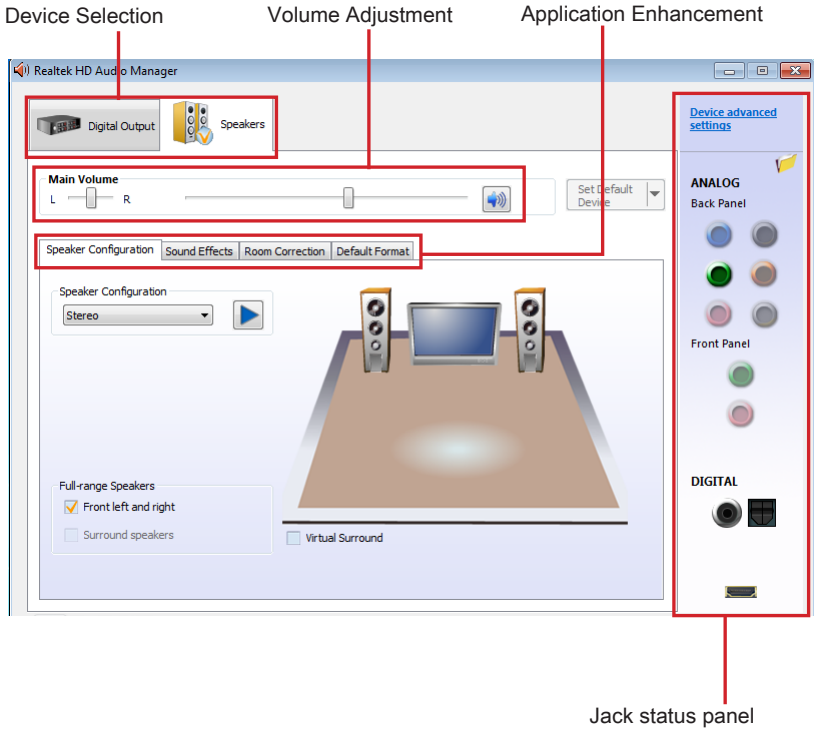
After installing the audio driver, the “Realtek HD Audio Manager” icon will appear at the notification area (lower right of the screen). You may double click the icon and the GUI will pop up accordingly.



It is also available to enable the audio driver by clicking the **Realtek HD Audio Manager** from the **Control Panel**.

Software panel overview

The following figure describes the function of the Realtek HD Audio Manager panel.



■ Device Selection

Here you can select a audio output source to change the related options. the “check” sign (in orange) indicates the devices as default.

■ Volume Adjustment

You can control the volume or balance the right/left side of the speakers that you plugged in front or rear panel by adjust the bar.

■ Application Enhancement

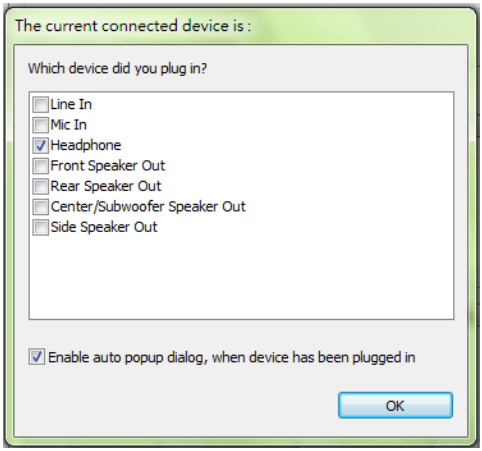
The array of options will provide you a complete guidance of anticipated sound effect for both output and input device.

■ Jack status panel

This panel depicts all render and capture devices currently connected with your computer. Additionally, more applications can be found at the option of “Device Advanced Settings” option.

Auto popup dialog

When you plug into the device at the jack, a dialogue window will pop up asking you which device is current connected.

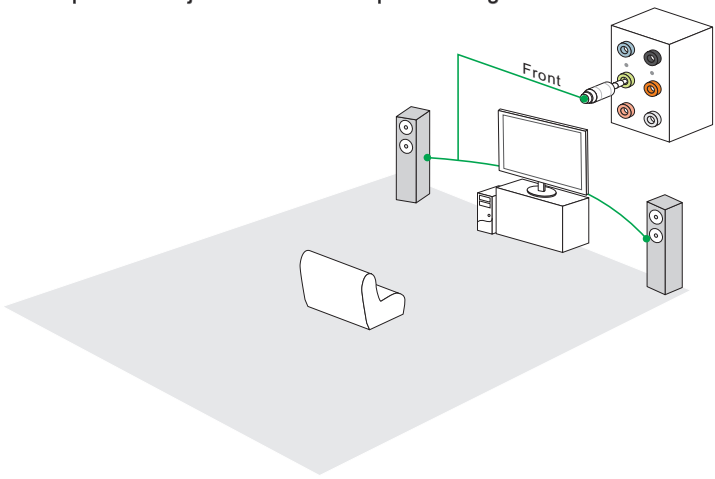


Each jack corresponds to its default setting, you can refer to the next section “Hardware Default Setting”.

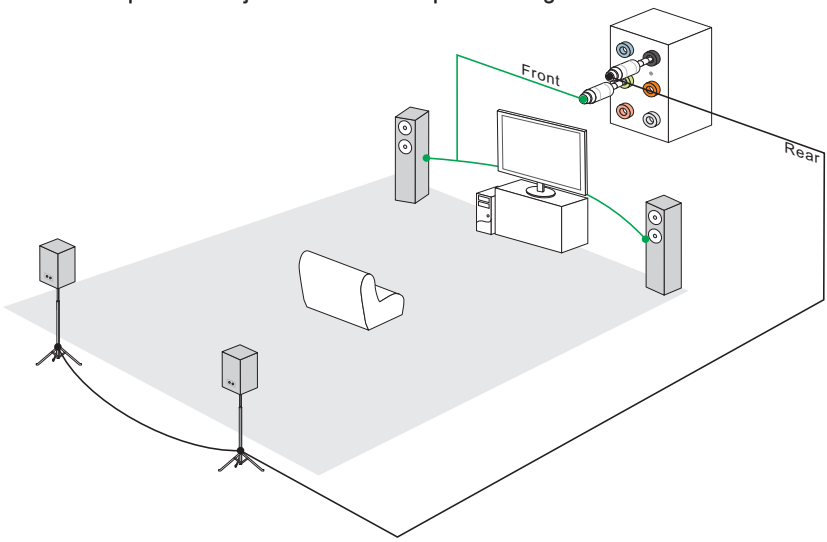
Hardware Default Setting

The following diagrams are audio back panel default setting.

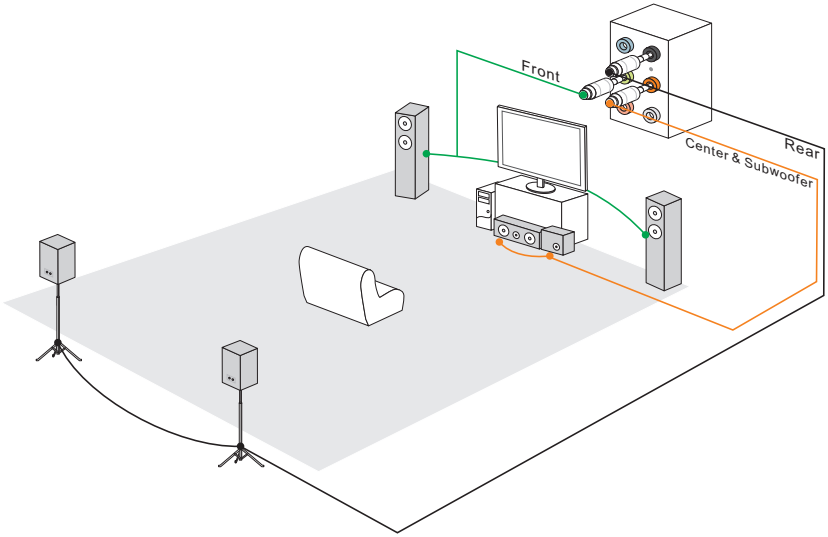
- **Backpanel audio jacks to 2-channel speakers diagram**



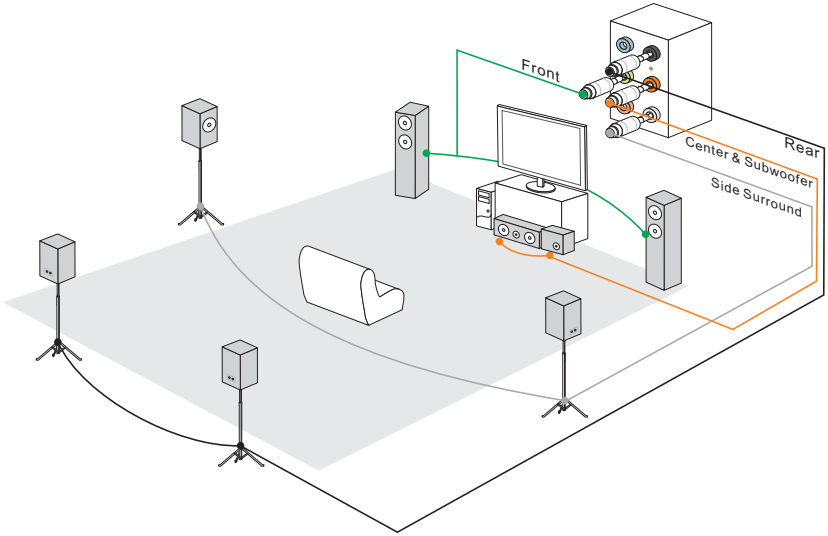
- **Backpanel audio jacks to 4-channel speakers diagram**

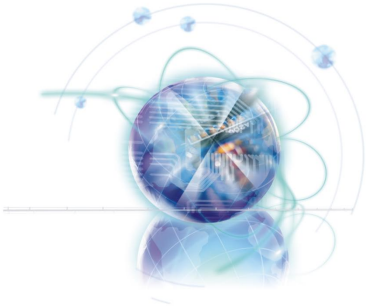


- Backpanel audio jacks to 6-channel speakers diagram



- Backpanel audio jacks to 8-channel speakers diagram





Appendix B

AMD RAID

AMD SATA RAID provides support for RAID 0 (Striping), RAID 1 (Mirroring), RAID 10 (Striping & Mirroring) & RAID 5 (striping with parity) (optional). 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 10 is implemented as a mirrored array whose segments are RAID 0 arrays. RAID 10 has same fault tolerance as mirroring and reduces overhead by striping. It needs at least four drives to form a RAID 10. RAID 5 defines techniques for parity data.

RAID Configuration

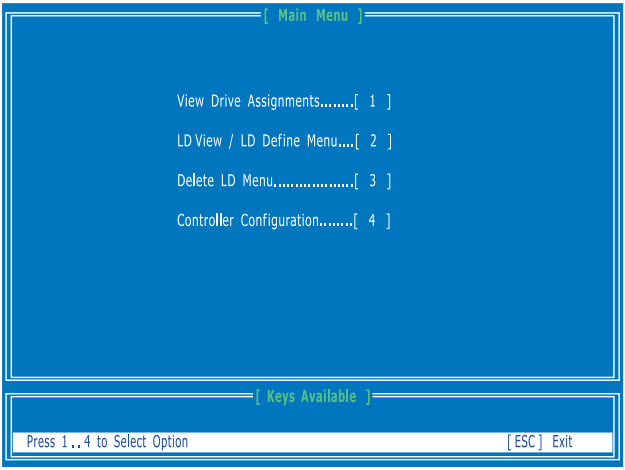
Creating and deleting RAID set and performing other RAID setting up operations are done in the RAID BIOS. During bootup, a screen similar to the one below will appear for about few seconds. Press <Ctrl-F> to enter RAID Option ROM utility.



Important

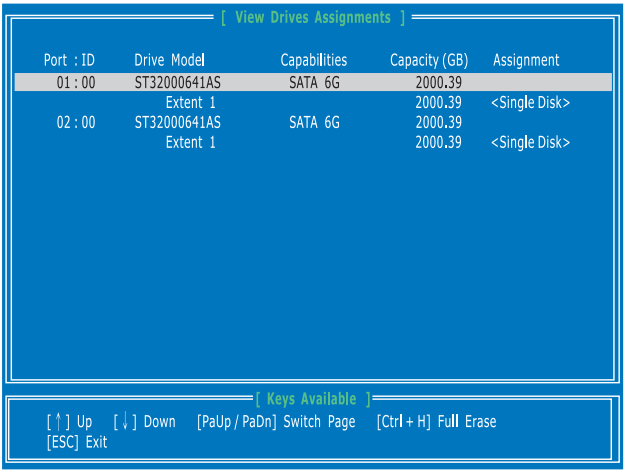
Be sure to enable the RAID function for SATA device in BIOS before configuring the RAID Option ROM Utility.

The RAID Option ROM utility menu screen will appear. The Main Menu is used to choose the operation to be performed.



View Drives Assignments

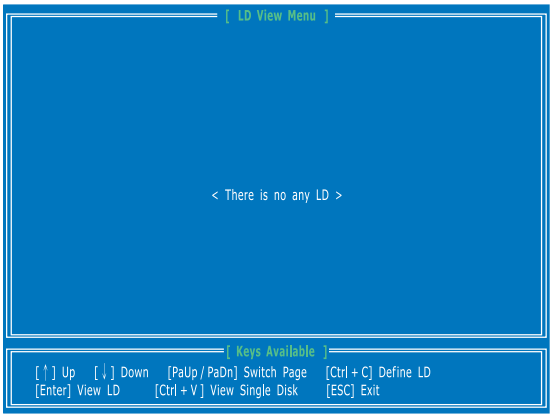
This window displays the model number, capacities and assignment of the drives physically attached to the SATA host adapter.



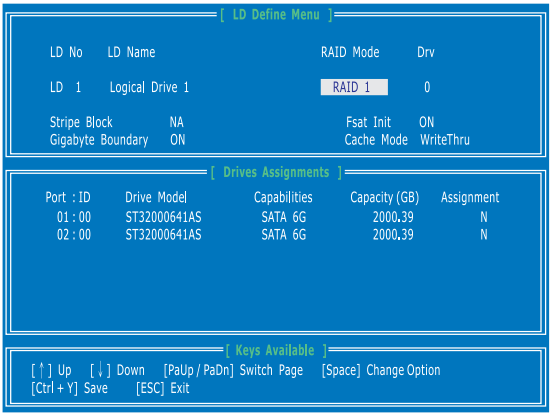
LD View / LD Define Menu (Creating RAID)

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 LD View Menu.

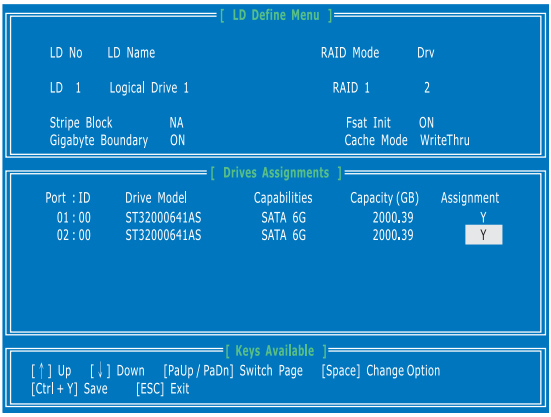


2. And then press [Ctrl + C] keys to enter the LD Define Menu. Use the space key to choose a RAID mode (RAID 0/ 1/ 10/ 5) and use the arrow key to move to the "Drives Assignments" window.

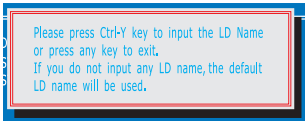


- Stripe Block Size, the default 64KB is best for most applications. RAID 0 or 10 only.
- Gigabyte Boundary, allows use of slightly smaller replacement drives.

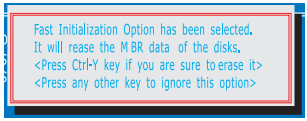
3. On the Drives Assignments window, use the arrow key to choose the hard drives which you want to make part of the LD, use the space key to change the assignment to “Y”. Then press [Ctrl+Y] to save the configuration.



4. A message will show, press [Ctrl + Y] to input a LD name as your desire or press any key to save default LD name.



5. Another message will show, press [Ctrl-Y] if you are sure to erase the MBR data of the disk. Or press any key to ignore this option.



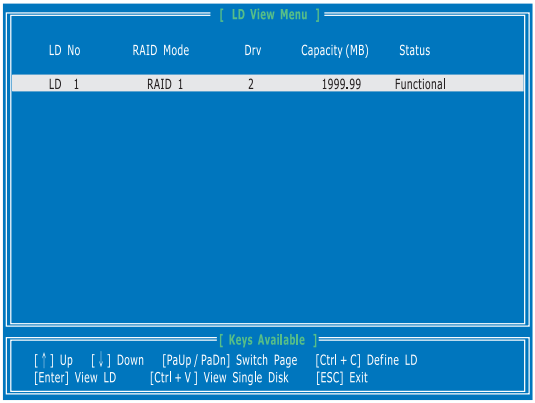
6. The message will show up on the bottom, press any key to use maximum capacity or press [Ctrl-Y] to modify array capacity manually.



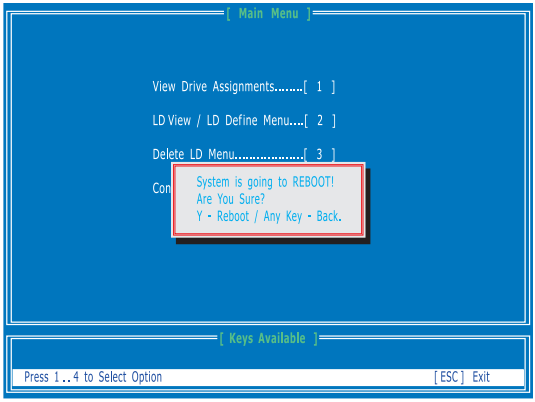
Important

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

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

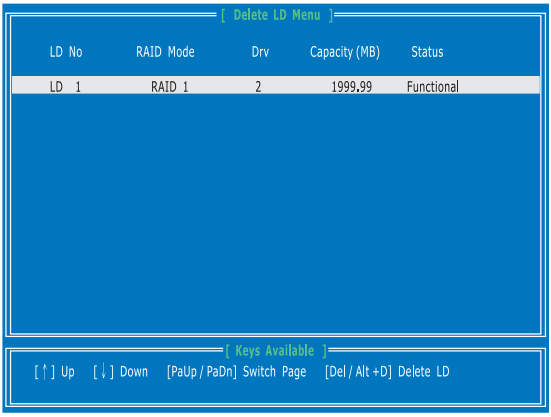


8. Press ESC key to exit the utility, a message “System is going to REBOOT! Are You Sure?” will display, answer “Y” to exit it and the system will reboot.

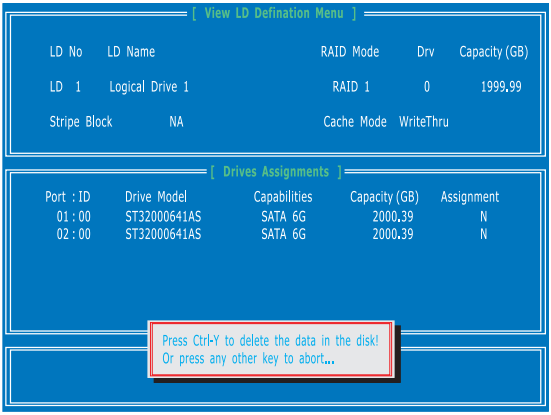


Delete LD Menu (Deleting RAID)

1. Press “3” on the main to enter the Delete LD Menu.
2. Choose a LD No. you want to delete and press [Del] or [Alt+D] delete the RAID set.



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.



Installing the RAID Driver (for bootable RAID Array)

1. After you complete the RAID BIOS setup, boot from the Windows CD, and the Windows 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”.

   Note: for Windows Vista/ Windows 7, you can copy the files to a medium (floppy/ CD/ DVD or USB)

Important

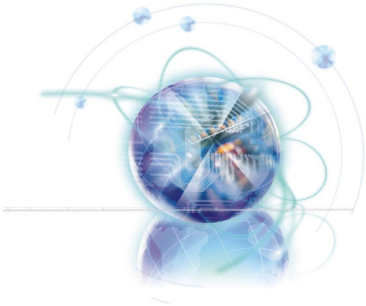
Please follow the instruction below to make a SATA RAID driver for yourself.

- *Insert the MSI DVD into the DVD-ROM drive.*
- *Click the “Browse CD” on the Setup screen.*
- *Copy all the contents in the : \\ChipSet\AMD\Packages\Drivers\SBDrv\SB7xx\RAID\ (and then, please select a folder which was classified according to OS.)*
- *The driver disk for RAID controller is done.*

4. When prompted, insert the medium disk and press Enter.
   For Windows Vista/ Windows 7:
   During the Operating system installation, after selecting the location to install Vista/ Windows 7 click on “Load Driver” button to load RAID drive.
5. You should be shown a list of available RAID controller(s).
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 medium until the system reboots itself. Windows setup will need to copy the files from the medium again after the RAID volume is formatted, and Windows setup starts copying files.

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

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



Appendix C

Marvell RAID

This chapter provides an overview of the Marvell RAID Driver and Utility, also describes the installation procedure.

RAID Configuration

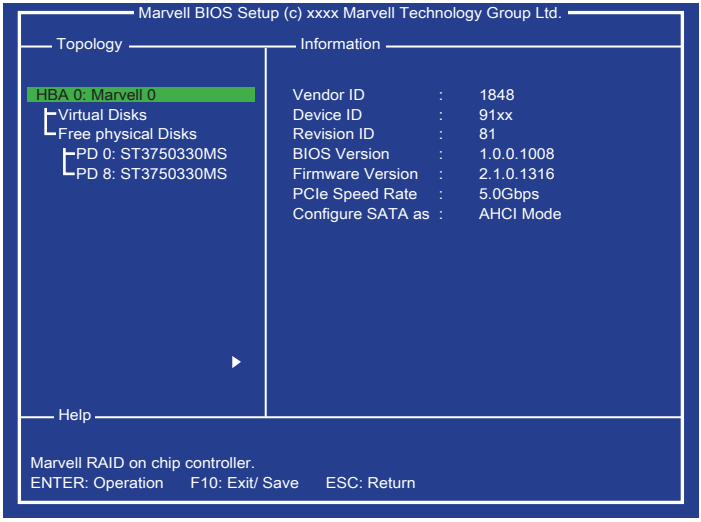
During bootup, a screen similar to the one below will appear for about few seconds. Press <Ctrl>+<M> to enter Marvell BIOS setup utility.

```
Press <Ctrl>+<M> to enter BIOS Setup or <Space> to continue
```

Important

Be sure to enable the RAID function for SATA device in mainboard BIOS before configuring the Marvell BIOS setup utility.

The RAID setup utility menu screen will appear. The Main Menu shows as below.

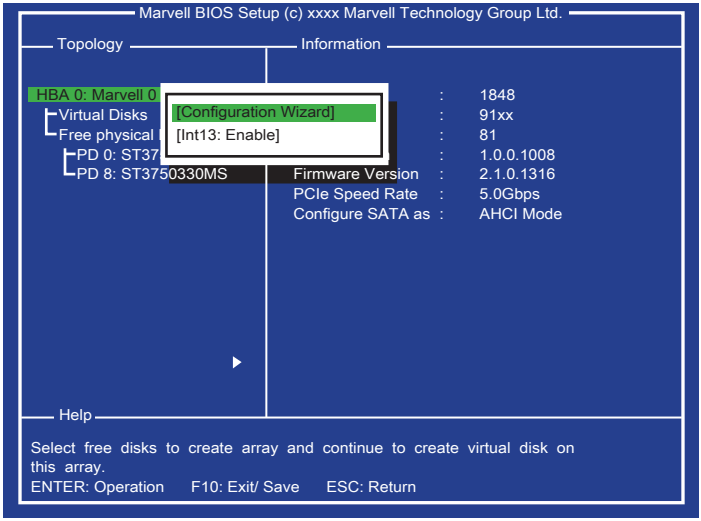


- **Topology** - this pane used a tree view to list and show the relationships between the various physical/ virtual devices attached to system.
- **Information** - this pane is populated based on the selection in the Topology pane.
- **Help** - this pane is used to display important information relevant to the selection. It may contain short descriptions on selections, messages on setting list items, default values for settings, among others.

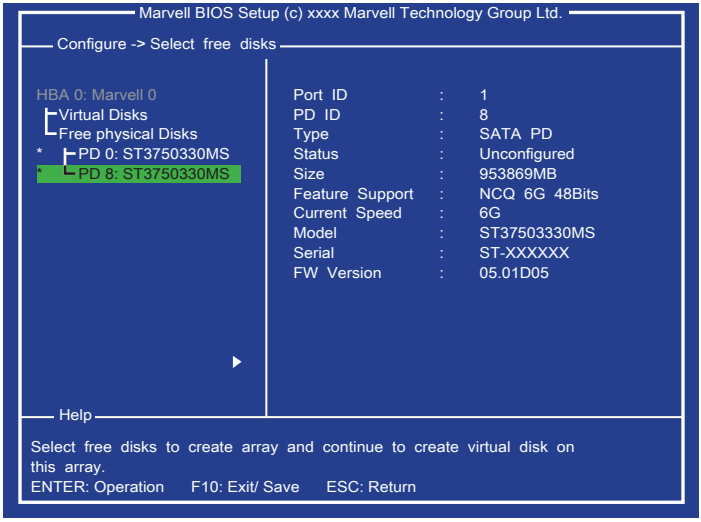
Creating Virtual Disks

This topic describes the procedure for creating virtual disks by using the Marvell BIOS setup utility.

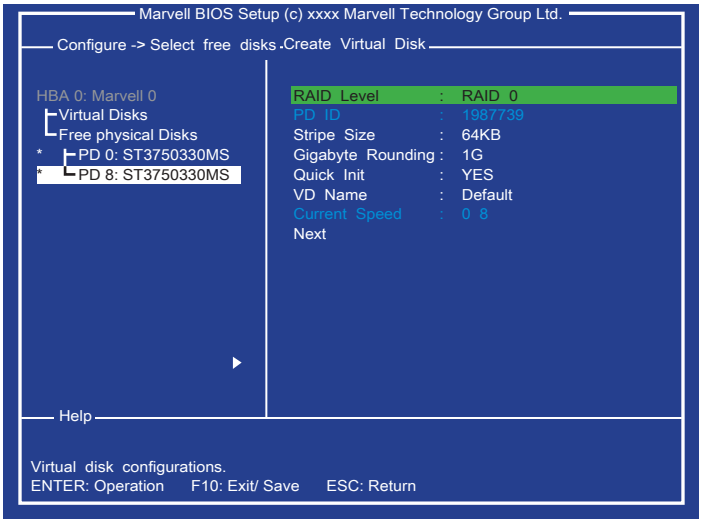
1. In the Topology pane, scroll to [HBA 0: Marvell 0] and press Enter. A menu pops-up as shown below. Select “Configuration Wizard” and press Enter to begin creating the virtual disk.



2. Press Space to select the disk, use the arrow keys to scroll the list of free disks. After select the required disks as shown below, press Enter to continue.

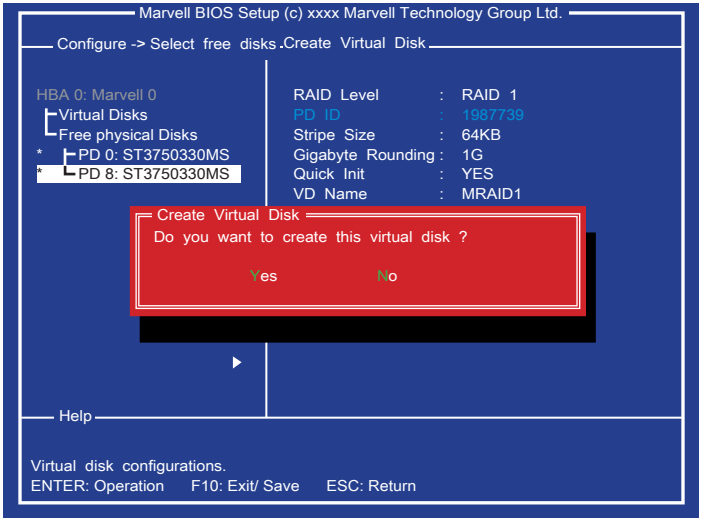


3. Create virtual disk by configuring its settings in the “Information” pane. as shown below. And refer the description below to configure the virtual disk settings.

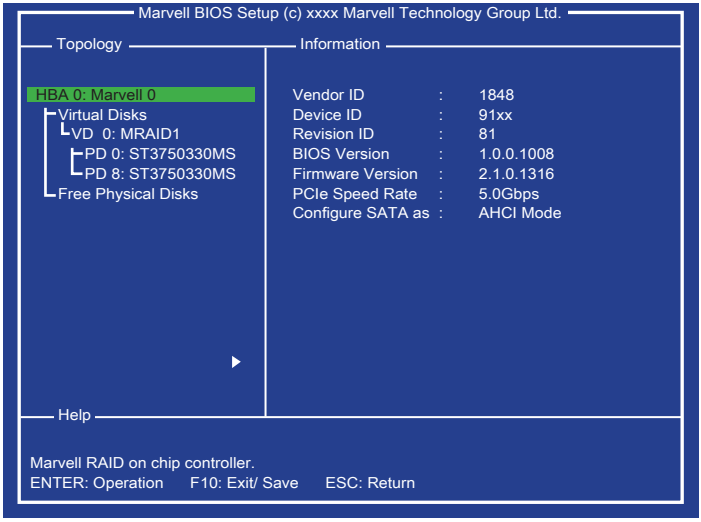


- RAID Level, select a RAID level (RAID 0, RAID 1).
- Max Size (MB), is the size of the RAID virtual disk as determined by the selected RAID level. It is property of the virtual disk that cannot be edited.
- Stripe Size, specifies the size (32K, 64K) of single data block on the virtual disk. The larger the stripe size, the longer it takes for the controller to read from and write to data blocks on the physical disks. In general, a larger stripe size is recommended for most applications. The default size is 64K.
- Gigabyte Rounding, define the flexibility in size for a replacement physical disk that is used to rebuild a degraded virtual disk. It is applicable to RAID 1 level only. Although the selection remains available for RAID 0, it only affects the size of the RAID 0 virtual disk (because RAID 0 does not offer redundancy).
- Quick Init, enable or disable quick initialization of the virtual disk. The default setting for [Quick Init] is “Yes”.
- VD Name, type a new virtual disk name.
- Disk ID, lists the IDs of the physical disks comprising the virtual disk. It is property of the virtual disk that cannot be edited.

4. After configure all settings for the virtual disk, scroll to the [Next] and press Enter to continue. And the screen shows as below, press Y to confirm the creation for the virtual disk.



5. The creation is done. The virtual disk is now listed in [Topology] pane, as shown below.



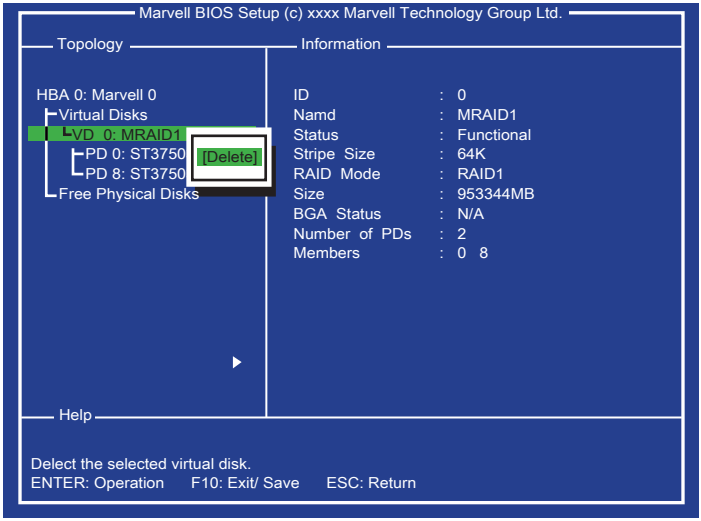
Deleting Virtual Disk

This topic describes the procedure to delete a virtual disk by using the Marvell BIOS setup utility.

Important

Using "Delete" permanently erases all data on the virtual disk.

1. In the [Topology] pane, select "Virtual Disk" (VD 0: MRAID1, shown as below) and press Enter.
2. Select "Delete" to delete the virtual disk, shown as below.
3. Press Y to confirm the request when prompted **Do you want to delete this virtual disk?**.
4. Press Y to confirm the request when prompted **Do you want to delete MBR from this virtual disk?**.



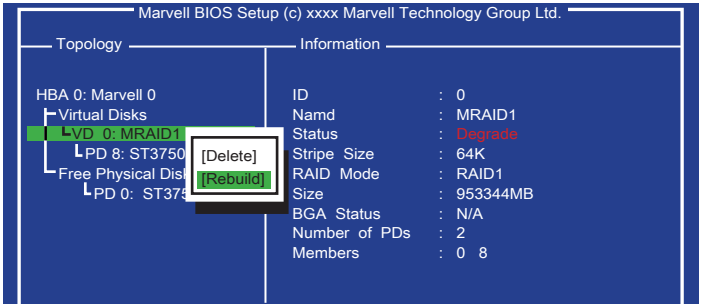
Rebuilding Virtual Disk

This topic describes the procedure to manually rebuild a degraded virtual disk by using the Marvell BIOS setup utility. This is applicable to the RAID 1 virtual disk.

Important

The rebuild process is both initiated and completed in the Marvell BIOS setup. The Marvell RAID Utility (MRU), which runs in as OS environment, cannot be used to either initiate, resume, or complete the rebuild process Spare physical disks are not supported.

1. When a virtual disk is degraded, the "Status" of a virtual disk is changed from **Functional** to **Degrade**.
2. Replace the faulty physical disk with an identical physical disk. (Note: If an identical disk is unavailable, use a replacement physical disk of larger size or one with a slightly smaller size as determined the Gigabyte Rounding setting for the virtual disk.) The BIOS detects the new physical disk and lists the device under "Free Physical Disks" in the [Topology] pane.
3. In the [Topology] pane, scroll to "Virtual Disk" (VD 0: XXXX), and press Enter to select. A menu pops-up as shown below. Scroll to "Rebuild" and press Enter to configure the rebuild process.



4. Scroll through the list of free disks, and press Space to select a replacement physical disk. Press Enter to continue.
5. Press Y to confirm the request when prompted **Do you want to rebuild with selected physical disk on this vd?**.
6. The status of the rebuild process is reflected in the properties of the virtual disk.

Installing the RAID Driver (for bootable RAID Array)

Important

Only when you set the "AHCI" mode in Integrated Peripherals menu (the default is IDE mode) of mainboard BIOS setup, you have to install the RAID Driver for the SATA devices.

1. After you complete the RAID BIOS setup, boot from the Windows CD, and the Windows 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".

   Note: for Windows Vista/ Windows 7, you can copy the files to a medium (floppy/ CD/ DVD or USB)

Important

Please follow the instruction below to make a SATA RAID driver for yourself.

- *Insert the MSI DVD into the DVD-ROM drive.*
- *Click the "Browse CD" on the Setup screen.*
- *Copy all the contents in the : \\RAID\Marvell9128 sp1116\miniport\Floppy32 or Floppy 64*
- *The driver disk for RAID controller is done.*

4. When prompted, insert the medium disk and press Enter.
   For Windows Vista/ Windows 7:
   During the Operating system installation, after selecting the location to install Vista/ Windows 7 click on "Load Driver" button to load RAID drive.
5. You should be shown a list of available RAID controller(s).
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 medium until the system reboots itself. Windows setup will need to copy the files from the medium again after the RAID volume is formatted, and Windows setup starts copying files.

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

1. Insert the MSI DVD into the DVD-ROM drive.
2. The DVD will auto-run and the setup screen will appear.
3. Under the Driver tab, click on Marvell 91XX SATA Driver.
4. The driver will be automatically installed.