790X-G45 series

MS-7622 (v1.x) Mainboard



G52-76221X1

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Revision History

Revision	Revision History	Date
V1.0	First Release	September 2009

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 and adjust properly 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 could 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 dropped and damaged.
  - The equipment has obvious sign of breakage.

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

CAUTION: Danger of explosion if battery is incorrectly replaced.

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

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 waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

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

FRANÇAIS

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

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

РУССКИЙ

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

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

ESPAÑOL

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

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

NEDERLANDS

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

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

SRPSKI

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

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

POLSKI

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

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

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

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

ČESKY

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

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

MAGYAR

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

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

ITALIANO

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

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

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Chapter 1
Getting Started

Thank you for choosing the **790X-G45** Series (MS-7622 v1.X) ATX mainboard. The **790X-G45** Series mainboards are based on **AMD® 790X** & **SB710/ SB750** chipsets for optimal system efficiency. Designed to fit the advanced **AMD®** processor in **AM3** package processor, the **790X-G45** Series deliver a high performance and professional desktop platform solution.

MAINBOARD SPECIFICATIONS

Processor Support

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

HyperTransport

- Supports Hyper Transport(HT) 3.0 Technology

Chipset

- North Bridge: AMD® 790X chipset
- South Bridge: AMD® SB710/ SB750 chipset

Memory Support

- DDR3 800/ 1066/ 1200*(OC) SDRAM (8GB Max)
- Supports Dual-Channel mode
  *(For more information on compatible components, please visit
  http://www.msi.com/index.php?func=testreport)

LAN

- Supports LAN 10/100/1000 Fast Ethernet by Atheros® AR8131M

Audio

- Chip integrated by VIA® VT1828S
- Flexible 8-channel audio with jack sensing
- Compliant with Azalia 1.0 Spec

IDE

- 1 IDE port by AMD® SB710/ SB750
- Supports Ultra DMA 33/66/100/133, PIO & Bus Master operation mode

SATA

- 6 SATAII ports by AMD® SB710/ SB750
- Supports storage and data transfers at up to 3.0 Gb/s

RAID

- Supports RAID 0/ 1/ 0+1/ JBOD mode by AMD® SB710
- Supports RAID 0/ 1/ 0+1/ 5/ JBOD mode by AMD® SB750 (optional)

Floppy

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

Connectors

- Back panel
  - 1 PS/2 mouse port
  - 1 PS/2 keyboard port
  - 1 Serial port
  - 6 USB 2.0 Ports
  - 1 LAN jack
  - 6 flexible audio jacks

- On-Board Connectors
  - 3 USB 2.0 connectors
  - 1 Chassis Intrusion connector
  - 1 CD-In connector
  - 1 Front Panel Audio connector
  - 1 SPDIF-Out connector
  - 1 TPM connector
  - 1 OC switch

Slots

- 2 PCI Express x16 slot
- 2 PCI Express x1 slot
- 2 PCI slots, support 3.3V/ 5V PCI bus Interface

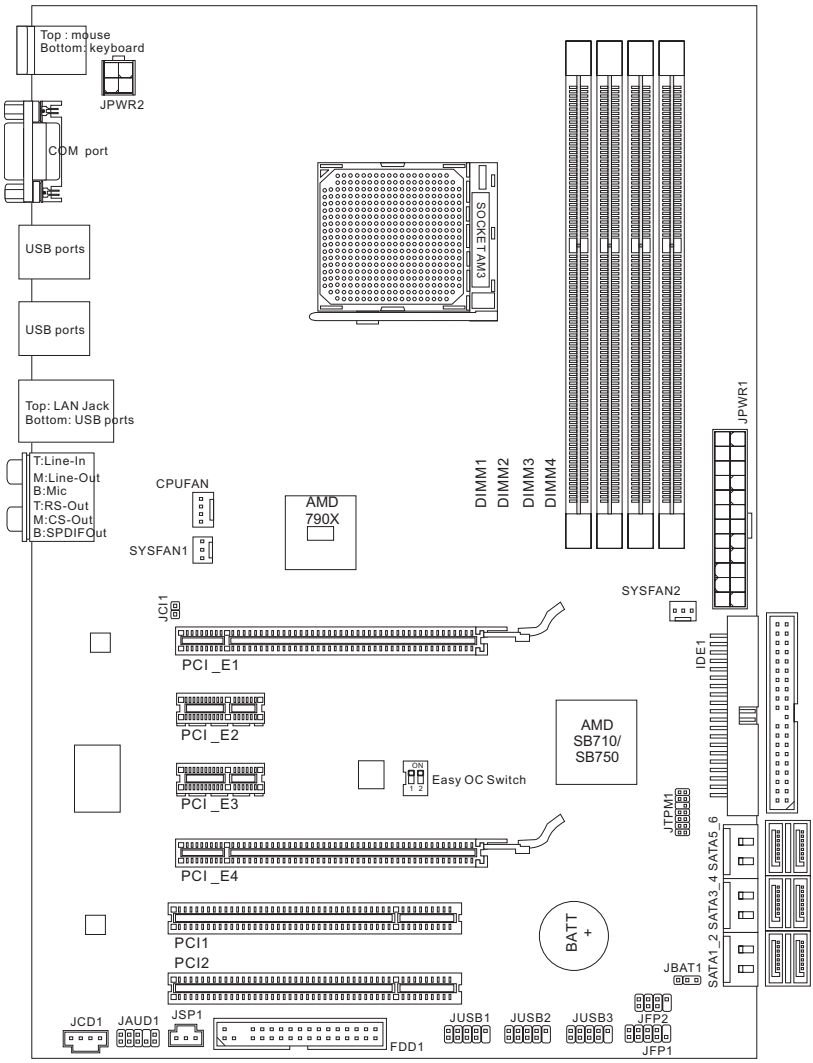
Form Factor

- ATX (30.5cm X 21.0 cm)

Mounting

- 6 mounting holes

MAINBOARD LAYOUT



790X-G45 Series (MS-7622 v1.X) Mainboard

Packing Checklist



MSI mainboard



MSI Driver/Utility DVD



SATA Cable (Optional)



Power Cable



USB Bracket (Optional)



Standard Cable for IDE Devices



Back IO Shield



User's Guide

* 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 below

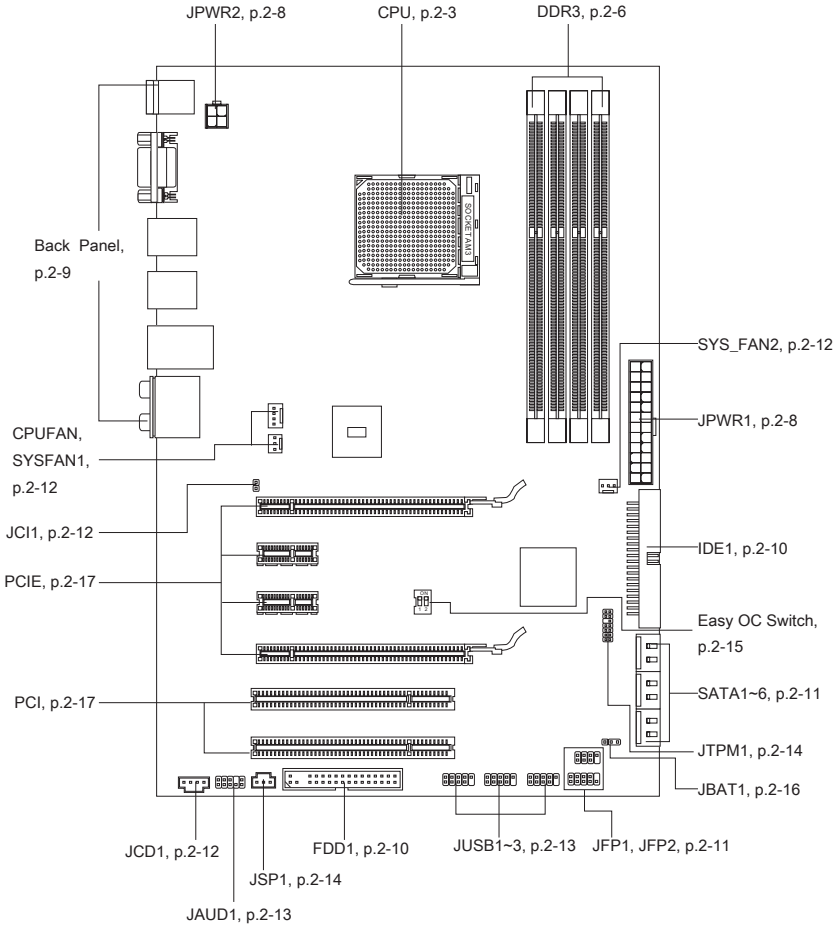
http://www.msi.com/index.php

Chapter 2
Hardware Setup

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

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

Quick Components Guide



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

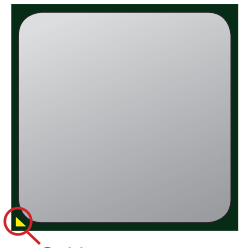
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.

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.

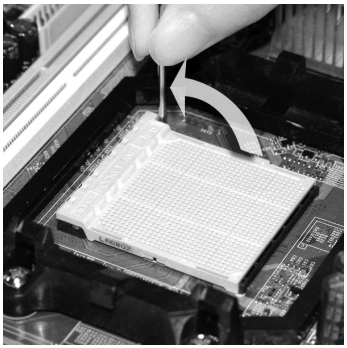


CPU & Cooler Installation

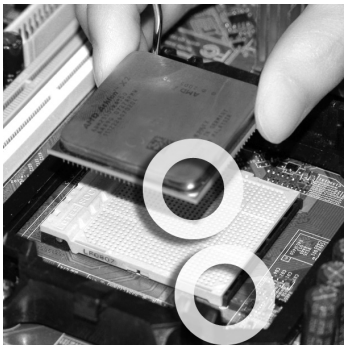
When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating**. Meanwhile, do not forget to apply some thermal paste on CPU before installing the heat sink/cooler fan for better heat dispersion.

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

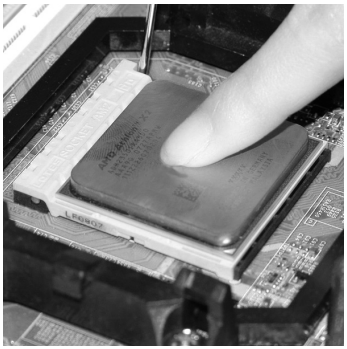
1. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.



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.



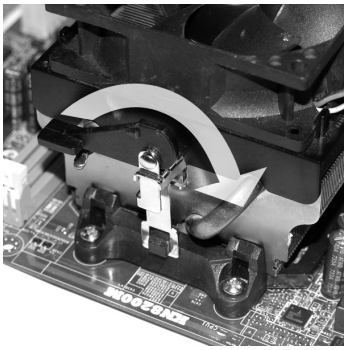
4. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



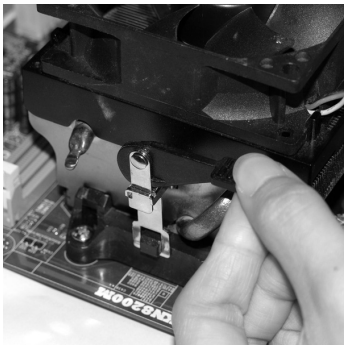
5. Position the cooling set onto the retention mechanism.
   Hook one end of the clip to hook first.



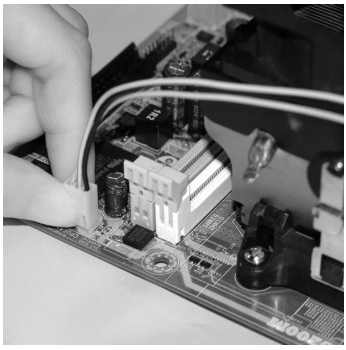
6. Then press down the other end of the clip to fasten the cooling set on the top of the retention mechanism.
   Locate the Fix Lever and lift up it .



7. Fasten down the lever.



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

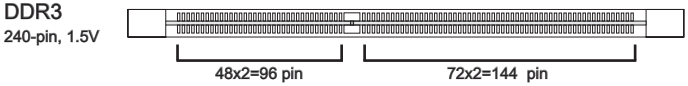


Important

- *Mainboard photos shown in this section are for demonstration of the cooler installation for Socket AM3 CPUs 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.*

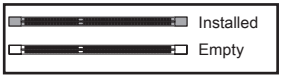
MEMORY

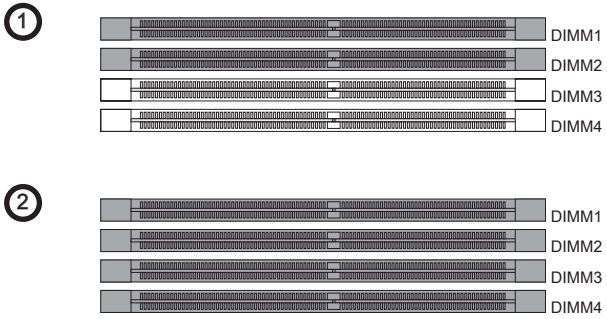
These DIMM slots are used for installing memory modules.
For more information on compatible components, please visit
http://www.msi.com/index.php?func=testreport



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

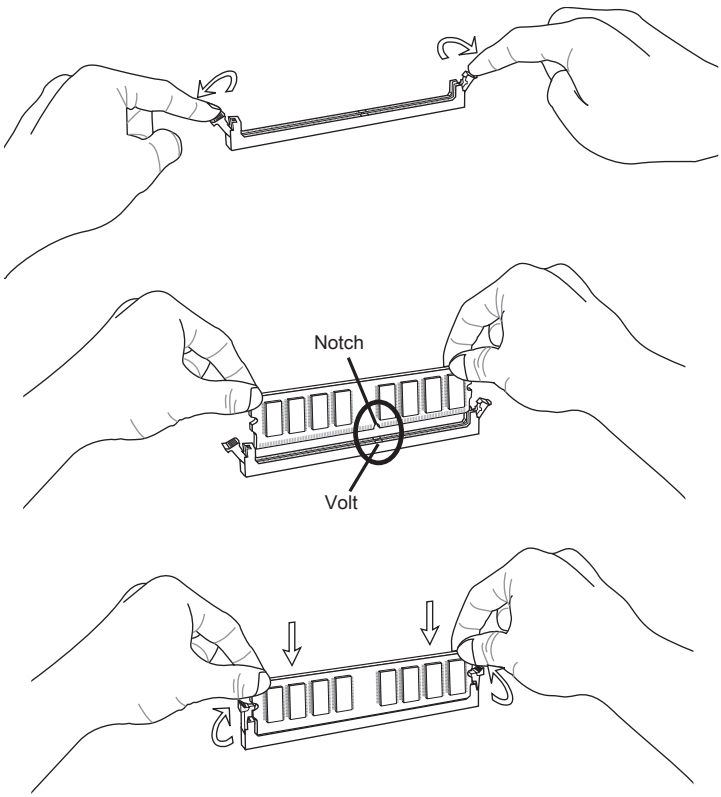
- *DDR3 memory modules are not interchangeable with DDR2 and the DDR3 standard is not backwards compatible. You should always install DDR3 memory modules in the DDR3 DIMM slots.*
- *In Dual-Channel mode, make sure that you install memory modules of the **same type and density** in different channel DIMM slots.*
- *To enable successful system boot-up, always insert the memory modules into the **DIMM1 first**.*

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.

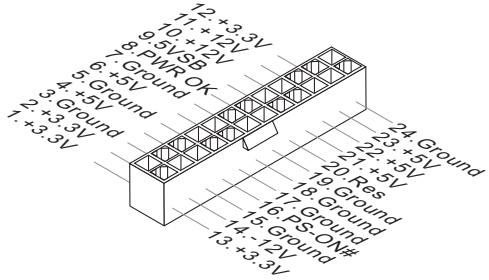


Power Supply

ATX 24-pin Power Connector: JPWR1

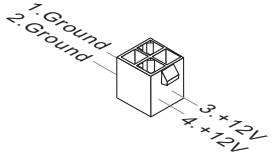
This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

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 4-pin Power Connector: JPWR2

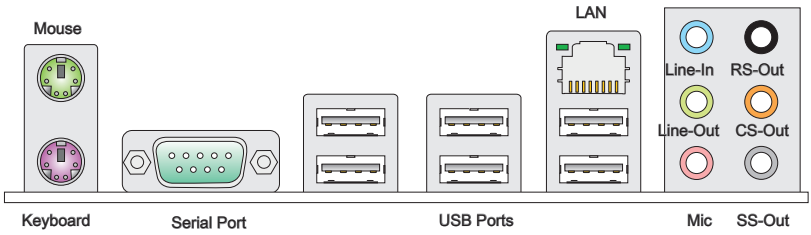
This power connector is used to provide power to the CPU.



Important

- *Make sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.*
- *Power supply of 400 watts (and above) is highly recommended for system stability.*

Back Panel



▸ **Mouse/Keyboard**

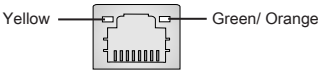
The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

▸ **Serial Port**

The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

▸ **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.

▸ **USB Ports**

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

▸ **Audio Ports**

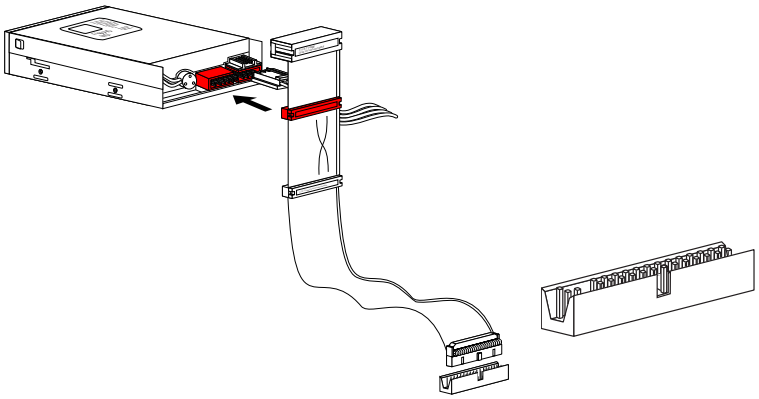
These audio connectors are used for audio devices. It is easy to differentiate between audio effects according to the color of audio jacks.

- 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

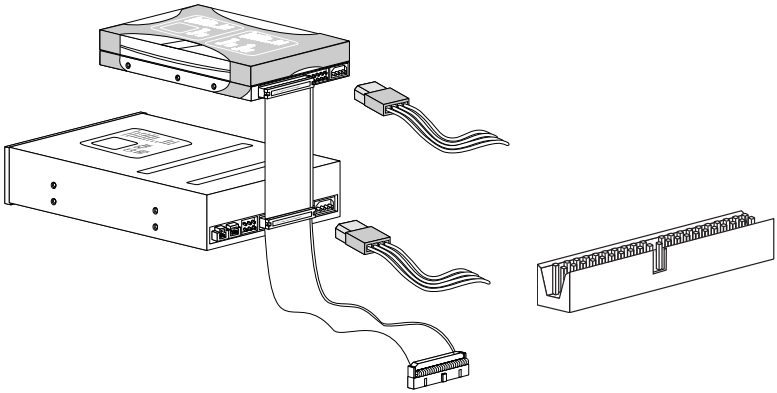
Floppy Disk Drive Connector: FDD1

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



IDE Connector: IDE1

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

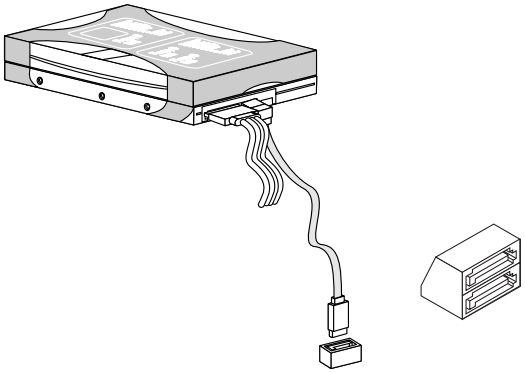


Important

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: SATA1~6

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

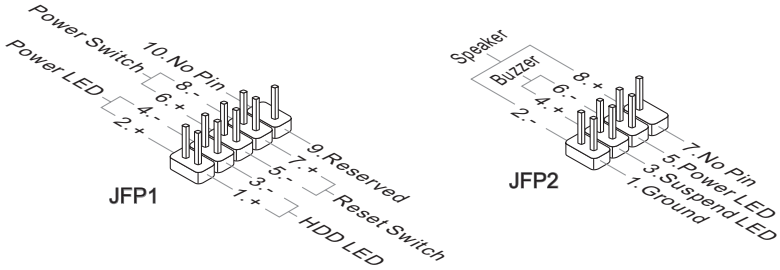


Important

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

Front Panel Connector: JFP1, JFP2

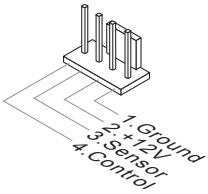
This connector is for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



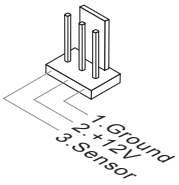
Fan Power Connectors: CPUFAN, SYSFAN1, SYSFAN2

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.

CPUFAN



SYSFAN1/ SYSFAN2

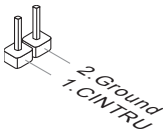


Important

- *Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.*
- *CPUFAN supports fan control. You can install* ***Overclocking 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 CPUFAN*

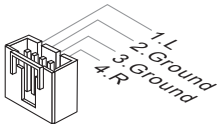
Chassis Intrusion Connector: JCI1

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.



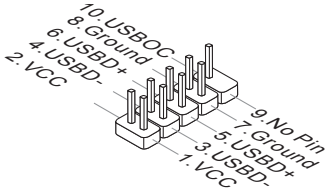
CD-In Connector: JCD1

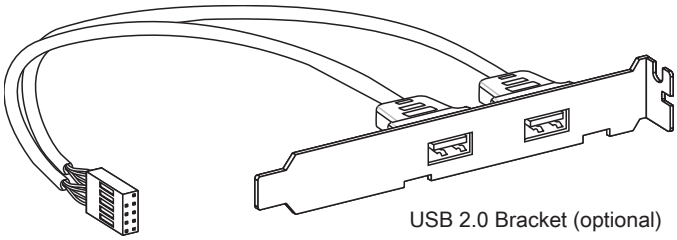
This connector is provided for external audio input.



Front USB Connector: JUSB1/ JUSB2/ JUSB3

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





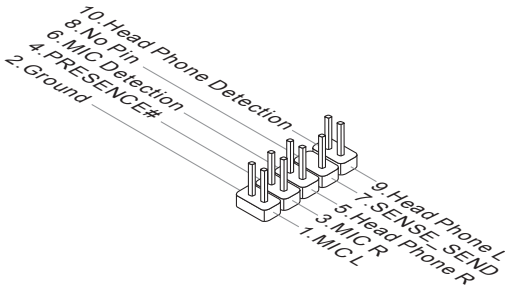
USB 2.0 Bracket (optional)

Important

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

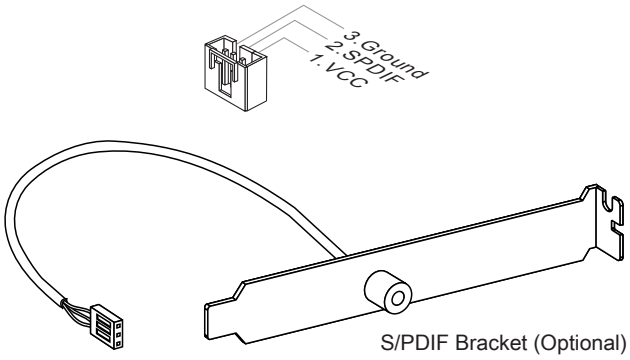
Front Panel Audio Connector: JAUD1

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



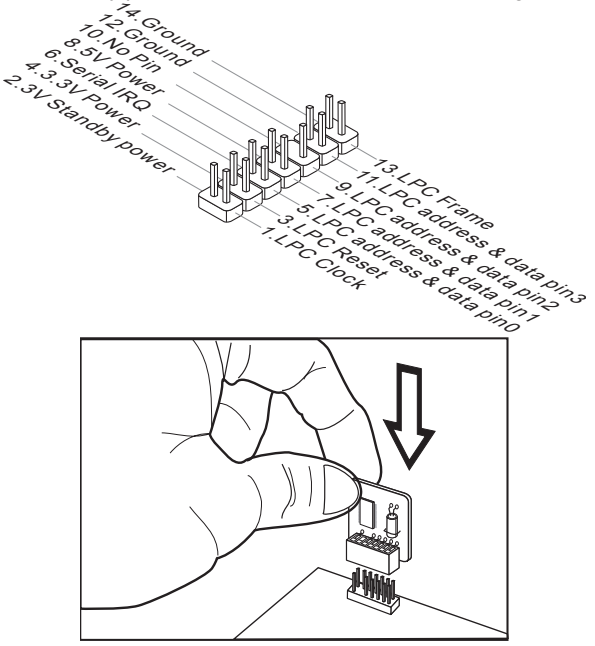
S/PDIF-Out Connector: JSP1

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



TPM Module connector: JTPM1

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



Switch

Overclock FSB Switch: Easy OC Switch

You can overclock the FSB to increase the processor frequency by changing the switch. Follow the instructions below to set the FSB.



Default



Increase 10% speed of FSB



Increase 15% speed of FSB



Increase 20% speed of FSB

Important

- *Make sure that you power off the system before setting the switch.*
- *When overclocking cause system instability or crash during boot, please set the switch to default setting.*

JUMPERS

Clear CMOS Jumper: JBAT1

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



JBAT1



Keep Data



Clear Data

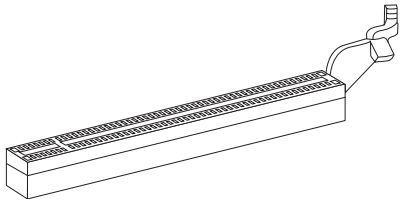
Important

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.

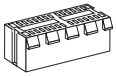
Slots

PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports the PCI Express interface expansion card.



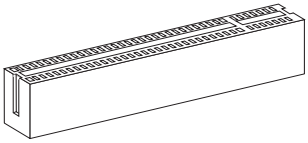
PCI Express x16 Slot



PCI Express 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. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

PCI Interrupt Request Routing

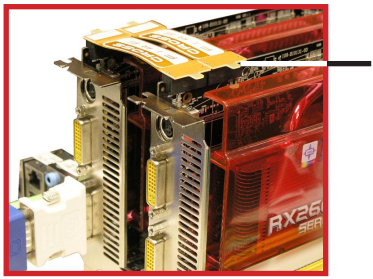
The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus pins as follows:

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

ATI CrossFireX™ (Multi-GPU) Technology

ATI CrossFireX™ is the ultimate multi-GPU performance gaming platform. Enabling game-dominating power, ATI CrossFireX™ technology enables two or more discrete graphics processors to work together to improve system performance. ATI CrossFireX™ technology allows you to expand your system's graphics capabilities. It allows you the ability to scale your system's graphics horsepower as you need it, supporting two or more ATI Radeon™ HD graphics cards, making this the most scalable gaming platform ever. The motherboard can auto detect the CrossFireX™ mode by software, therefore you don't have to enable the CrossFireX™ in BIOS by yourself. The following details the 2-way CrossFireX™ installation.

1. Install one ATI Radeon™ HD graphics card in the first PCIE x16 (PCI_E1) slot , then install one ATI Radeon™ HD graphics card in the third PCIE x16 (PCI_E4) slot.
2. With two cards installed, an CrossFireX™ Video Link cable is required to connect the golden fingers on the top of these two graphics cards (refer to the picture below). Please note that although you have installed two or more graphics cards, only the video outputs on the graphics card installed in PCI_E1 will work. Hence, you only need to connect a monitor to this graphics card.





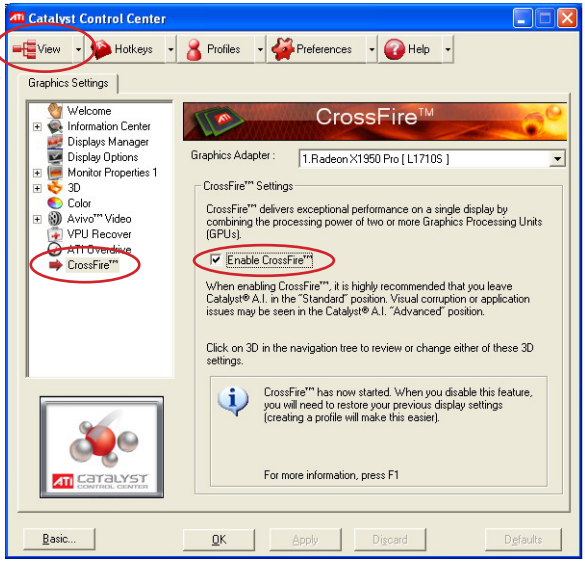
CrossFireX™ Video Link cable

Important

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

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

Select the Advanced View from the view drop menu.



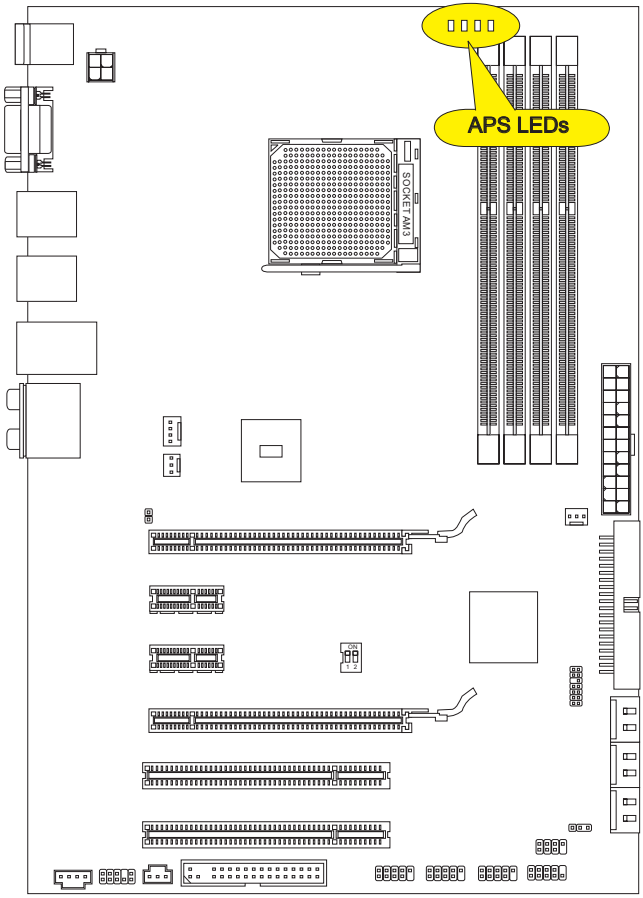
Important

A CrossFireX™ system has four possible display modes:

- *SuperTiling*
- *Scissor Mode*
- *Alternate Frame Rendering*
- *Super Anti-aliasing.*

for more details, please consult the graphics card manual from the manufacturer.

LED Status Indicators



APS LEDs

These APS (Active Phase Switching) LEDs indicate the current CPU power phase mode. Follow the instructions
below to read.

■ : ON, □ : OFF

■■■■ 4 of the LEDs will light blue when CPU is in 4 phase power mode.
■□□□ 1 of the LEDs will light blue when CPU is in 1 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:*

A7622AMS V1.0 090909 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.

V1.0 refers to the BIOS version.

090909 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>	Enter the CPU Spec. menu, and read the CPU information
<F5>	Enter the Memory-Z menu, and read the memory 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

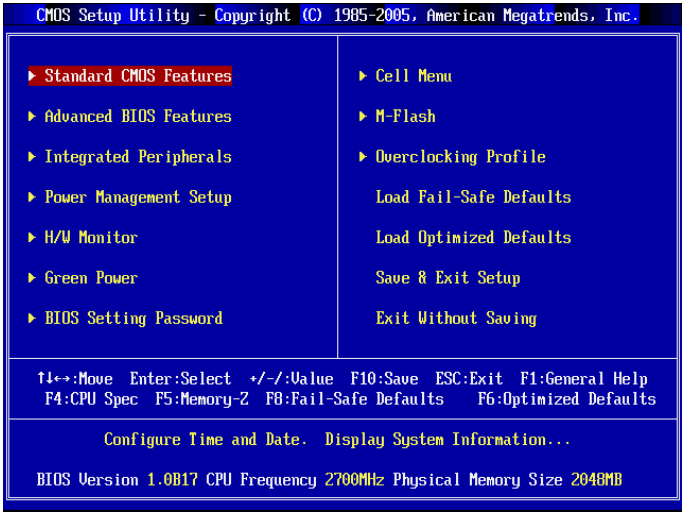


If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the 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**

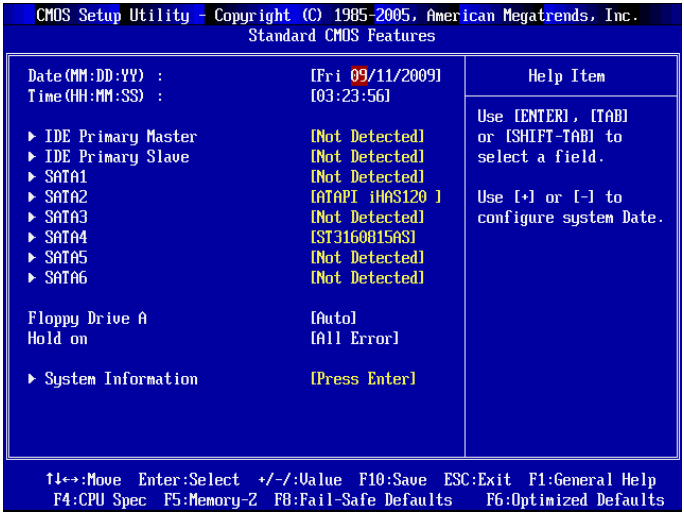
Save changes to CMOS and exit setup.

▸ **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>.

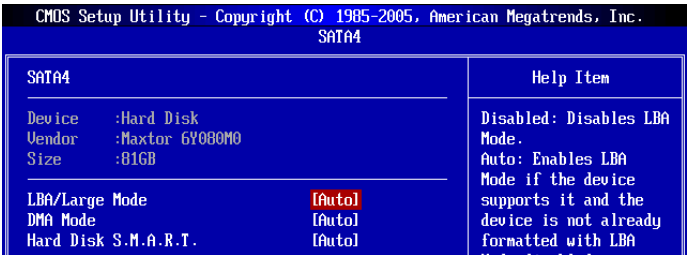
[day]	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
[month]	The month from Jan. through Dec.
[date]	The date from 1 to 31 can be keyed by numeric function keys.
[year]	The year can be adjusted by users.

▸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.



▸Device / Vendor / Size

It will show the device information that you connected to the SATA connector.

▸LBA/Large Mode

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

▸DMA Mode

Select DMA Mode.

▸Hard Disk S.M.A.R.T.

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

Important

IDE Primary Master/ Slave, SATA 1~6 are appearing when you connect the HD devices to the IDE/ SATA/ E-SATA connectors on the mainboard.

▸Floppy Drive A

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

▸Halt On

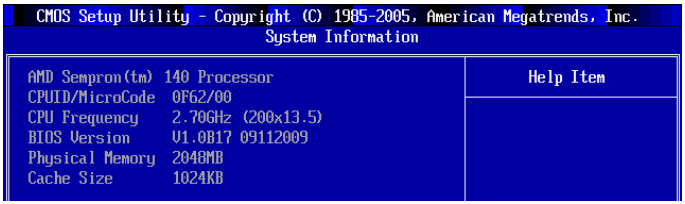
The setting determines whether the system will stop if an error is detected at boot. When the system stops for the errors preset, it will halt on for 15 seconds and then automatically resume its operation. Available options are:

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

[No Errors] The system doesn't stop for any detected error.

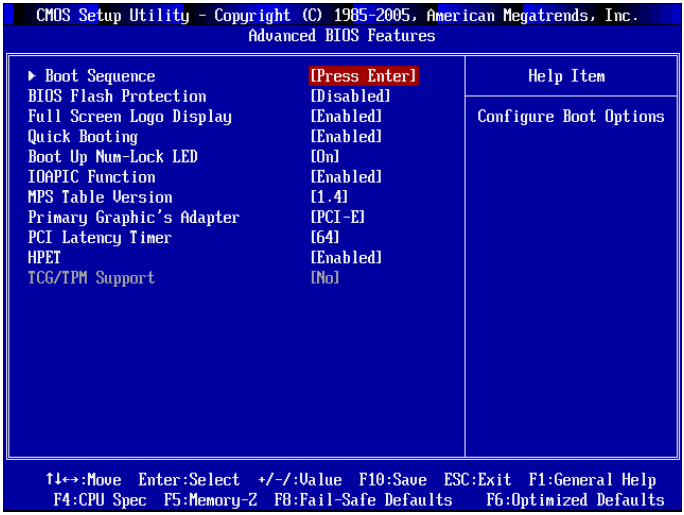
▸System Information

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



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

ADVANCED BIOS FEATURES



▸**Boot Sequence**

Press <Enter> to enter the sub-menu.

▸**--- Boot Device**

These items allow you to arrange the order that the BIOS uses to look for a boot device from which to load the operating system during the boot process.

▸**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 above devices.

▸**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.

▸Primary Graphic's Adapter

This setting specifies which graphic card is your primary graphics adapter.

▸PCI Latency Timer

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

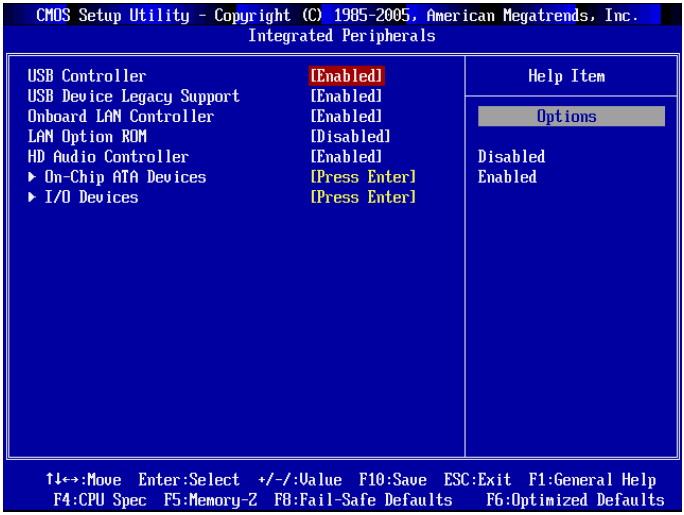
▸HPET

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) to 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

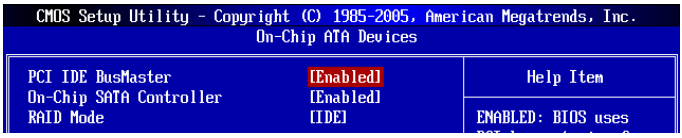
This item is used to decide whether to invoke the Boot ROM of the onboard LAN.

▸HD Audio Controller

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

▸On-Chip ATA Devices

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



▸PCI IDE BusMaster

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

▸ **OnChip SATA Controller**

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

▸ **RAID Mode**

This item is used to select mode for SATA connectors.

▸ **I/O Devices**

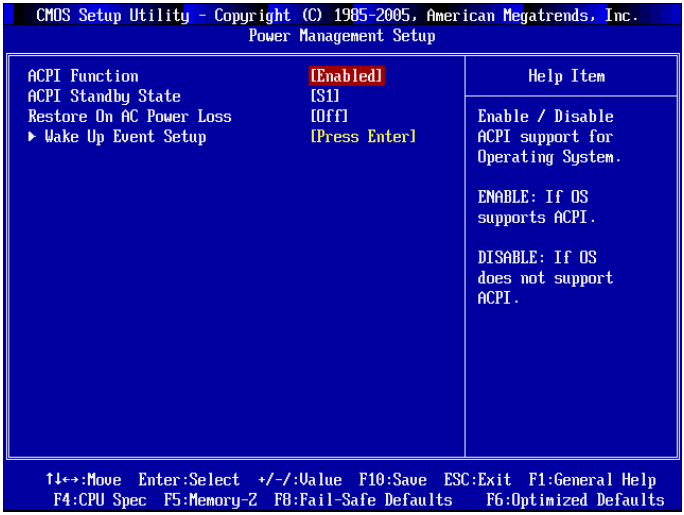
Press <Enter> to enter the sub-menu and the following screen appears:



▸ **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, such as Windows 98SE/ 2000/ ME/ XP, select [Enabled].

▸ACPI Standby State

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

[S1] The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system's context.

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

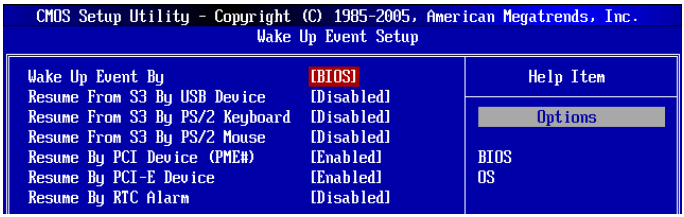
▸Restore On AC Power Loss

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> and the following sub-menu 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 From S3 By USB Device

The item allows the activity of the USB device to wake up the system from S3 (Suspend to RAM) sleep state.

▸Resume From S3 By PS/2 Keyboard/ Mouse

This setting determines whether the system will be awakened from what power saving modes when input signal of the PS/2 keyboard/ mouse is detected.

▸Resume By PCI Device (PME#)

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

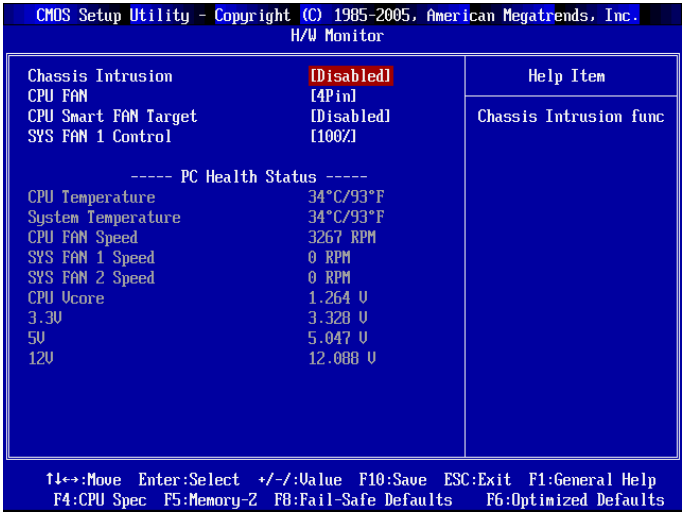
▸Resume By PCI-E Device

When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event on PCIE 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 issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later.

▸CPU FAN

This item allows you to select the CPU FAN type.

▸CPU Smart FAN Target

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

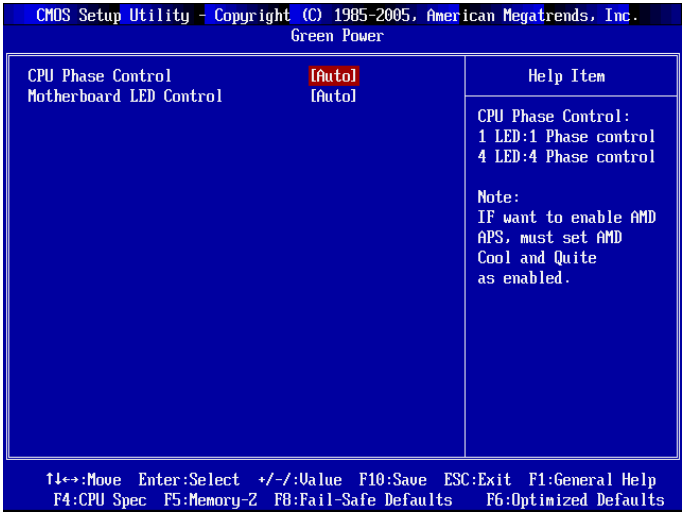
These items allow users to select how percentage of speed for the SYSFAN1.

▸PC Health Status

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



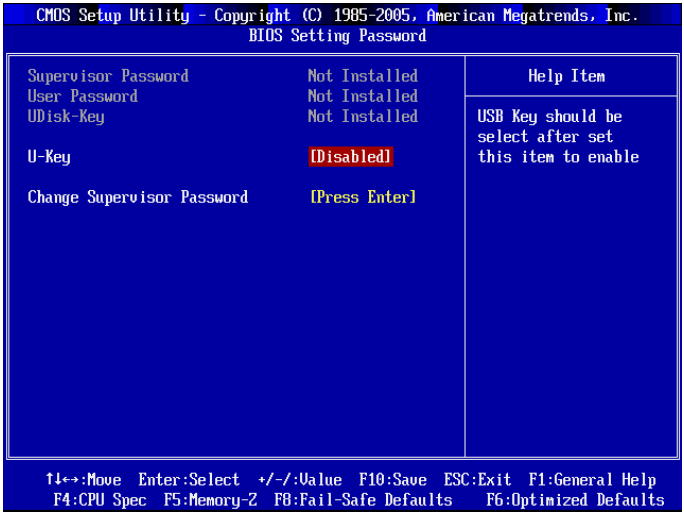
▸CPU Phase Control

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

▸Motherboard Power Control

This item is used to control the power phase LEDs of the motherboard.

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.

▸Change User Password

This item is used to set the user 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 & User Password:

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

***User password**: Can only enter but do not have the right to change the settings of the setup menu.*

▸User Access Level

This item is used to limit the user access level.

▸Passwrod Check

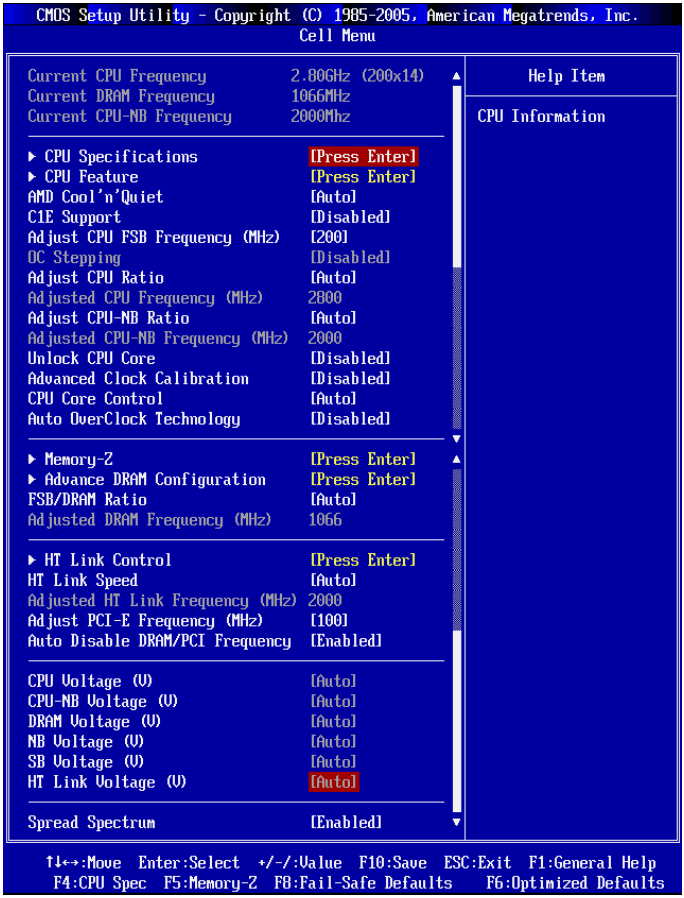
This specifies the type of BIOS password protection that is implemented. Settings are described below:

Option	Description
[BIOS]	The password prompt appears only when end users try to run Setup.
[System]	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

▸Save Supervisor Password to

This item is used to assign a place to save the supervisor password.

CELL MENU



Important

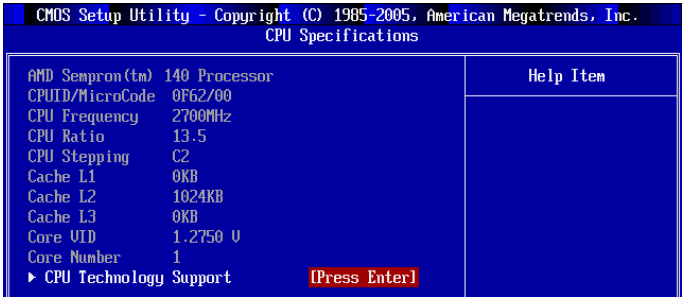
Change these settings only if you are familiar with the chipset.

▸Current CPU / DRAM / CPU-NB Frequency

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

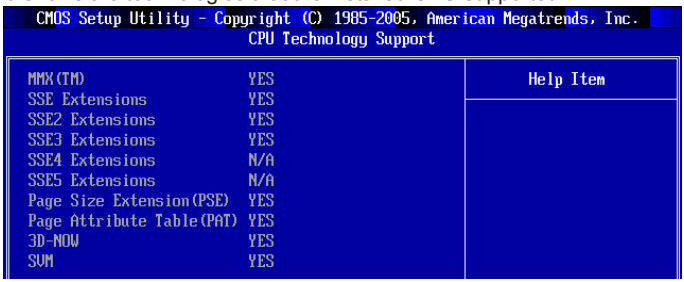
▸CPU Specifications

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



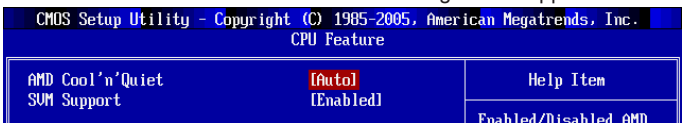
▸CPU Technology Support

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

▸SVM Support

This item allows you to enable/disable the AMD SVM (Secure Virtual Machine) Technology.

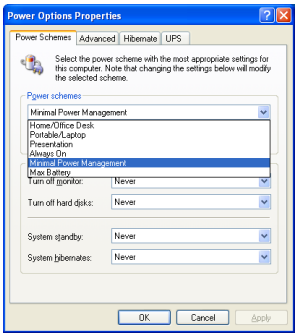
▸AMD Cool'n'Quiet

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****.*



▸**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 Base 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 base clock. The system will boot with the initial base clock, and start to overclock from initial base clock to set base clock that you set in "Adjust CPU Base Frequency (MHz)" step by step.

▸**OC Step**

This item is used to set how many steps for base 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 allows you to unlock the additional cores, you could set it [Enabled] and then set Advanced Clock Calibration [Auto] in order to be able to activate the processor cores.

▸**Advanced Clock Calibration**

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

▸CPU Core Control

This item is used to control number of CPU cores. When set to [Auto], the CPU will operate under the default number of cores. When set to [Manual], you will be able to enable/disable the specific CPU core.

▸Core 1/ 2/ 3/ 4

These items are used to enable/disable the core 1/ 2/ 3/ 4.

▸Auto OverClock Technology

Setting this item to [Max FSB] 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.

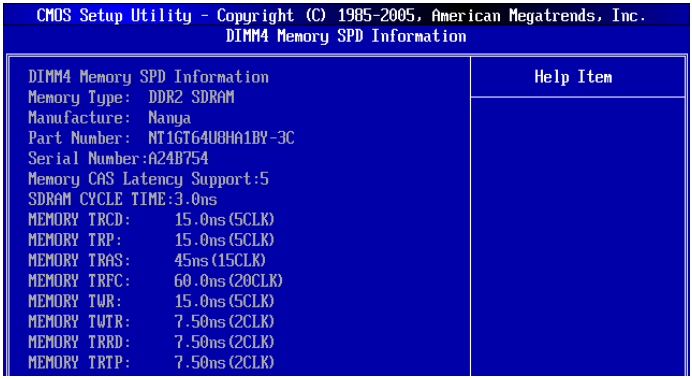
▸Memory-Z

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



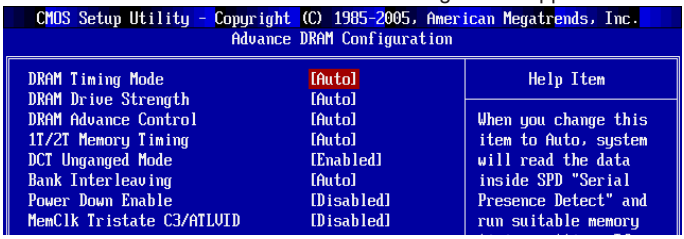
▸DIMM1~4 Memory SPD Information

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

Select whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to [Auto] enables DRAM timings and the following "Advance DRAM Configuration" sub-menu to be determined by BIOS based on the configurations on the SPD. Selecting [Manual] allows users to configure the DRAM timings and the following related "Advance DRAM Configuration" sub-menu manually.

▸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 [Manual], some fields will appear and selectable.

▸1T/2T Memory Timing

When the DRAM Timing Mode sets to [Manual], the field is adjustable. This field controls the SDRAM command rate. Selecting [1T] makes SDRAM signal controller to run at 1T (T=clock cycles) rate. Selecting [2T] makes SDRAM signal controller run at 2T rate.

▸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.



▸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 Voltage (V)/ CPU-NB Voltage (V)/ DRAM Voltage (V)/ NB 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. If you do not have any EMI problem, leave the setting at Disabled for optimal system stability and performance. But if you are plagued by EMI, set to Enabled for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.

Important

- *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.*

Important

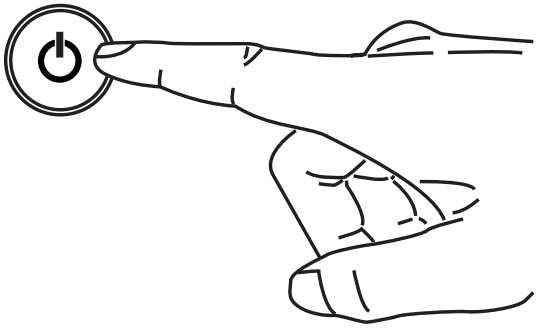
Failed Overclocking Resolution

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

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

- *Reboot*

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



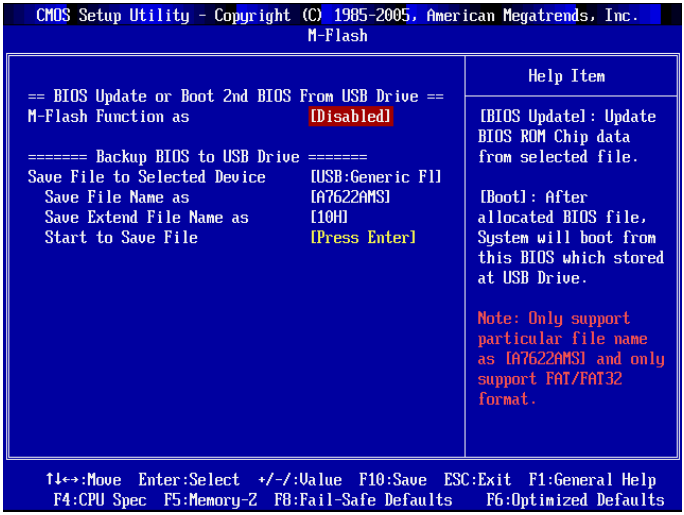
At the fourth reboot, BIOS will determine that the previous overclocking is failed and restore the default settings automatically. Please press any key to boot the system normally when the following message appears on screen.

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

- *Clear CMOS*

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

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).

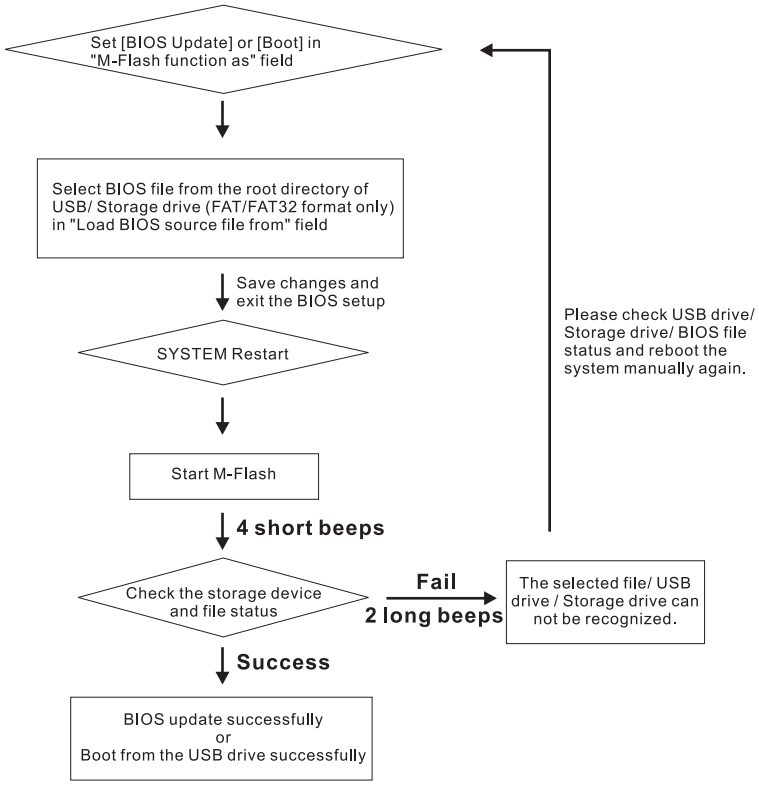
[Disabled] Disable M-Flash function.

[BIOS Update] Flash BIOS via the USB/ Storage drive directly. Update BIOS ROM chip data from selected file, which was be download from official website and must be saved in the root directory of the USB/ Storage drive. It only supports particular file name, which is the official BIOS file name from us.

[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.*



- *Due to the special design of some graphics cards will cause dark screen during M-flash operation, and you may refer the beeps from the system to confirm the current M-flash process.*

▸Load BIOS source file from

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

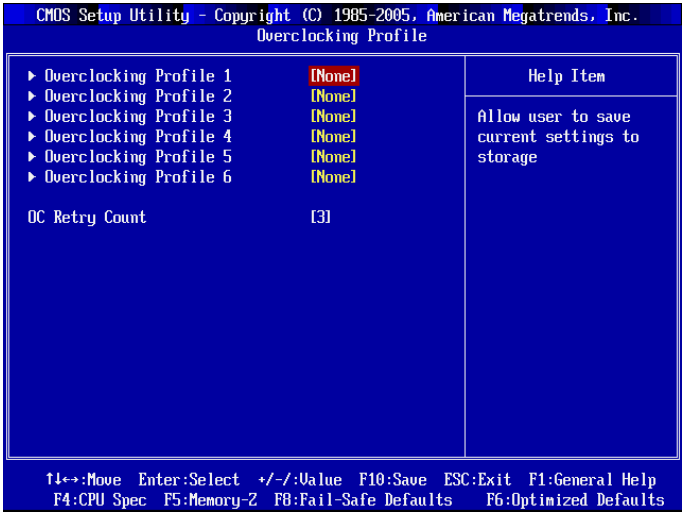
▸Save Extend File name as

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 currect settings to selected profile, and they are also used to load the settings from the selected profile.

▸OC Retry Count

When the overclocking is failed, setting this item to [1, 3, 5] will allow system to reboot 1/ 3/ 5 times with the overclocking configuration. If the overclocking was 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
VIA HD Audio

The VIA HD audio provides 10-channel DAC that simultaneously supports 7.1 sound playback and 2 channels of independent stereo sound output through the Front-Out-Left and Front-Out-Right channels.

Installing the VIA Audio Driver

You need to install the audio driver for VIA 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® XP

For Windows® XP, you must install Windows® XP Service Pack 2 or later before installing the driver.

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

1. Insert the application DVD into the DVD-ROM drive. The setup screen will automatically appear.
2. Click VIA Audio Drivers button.
3. Click Next to install the VIA Audio Driver.



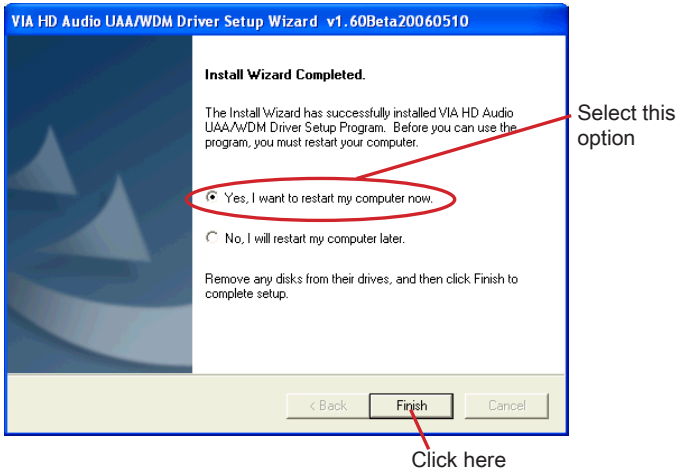
Important

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.

4. Click Next and follow the Install Wizard to install the VIA audio driver.



5. After the installation is completed, click Finish to restart the system.



After installing the audio driver, you are able to use the 2-, 4-, 6- or 8- channel audio feature now. Click the audio icon from the system tray at the lower-right corner of the screen to activate the HD Audio Deck.



Software Introduction

HD Audio Deck: Adeck

Audio Deck (Adeck) is a Windows based program which co-works with the VIA HD Audio driver and the VIA HD Audio chip. With the advanced audio control interface, users can make the best use of the VIA Audio chip and create powerful customized sound environments.

The main features of Adeck include:

- Supports various sound enhancement settings with detailed user customization
- Supports active jack detection
- Supports jack Function configuration
- Supports configurations for independent headphone and re-direct headphone
- Supports set sampling rate of S/PDIF input/output device
- Supports hot Keys
- Supports multi-language
- Supports speaker testing
- Supports multi-device selection for playback and recording

Important

Adeck only supports the VIA HD audio chip series with VIA HD audio driver installed.

Display Mode

The VIA Adeck has two basic display modes: “Simple Mode” and “Full Mode”.

Simple Mode

Once Adeck has been launched, the panel will be displayed in the center of windows desktop. The Adeck system is initialized using the simple mode. In this mode, the user only has limited control and audio information. The basic controls include: master volume and mute. The basic audio information includes: peak meter, number of channels, S/PDIF out status or sound effect status, etc.



If you want to control the sound effects in detail, you can click on the buttons located on the lower portion of the panel. These buttons are labeled: Speaker, Mixer, Effect, Jack, S/PDIF and Info. When any of the buttons are activated, the Adeck system will go into full mode for detailed control.

To exit Adeck, simply click the Power button on the Adeck panel.

Full Mode

In the full mode, the bottom portion of Adeck expands. Depending upon the button that was selected, different panels will be displayed in the expanded portion.

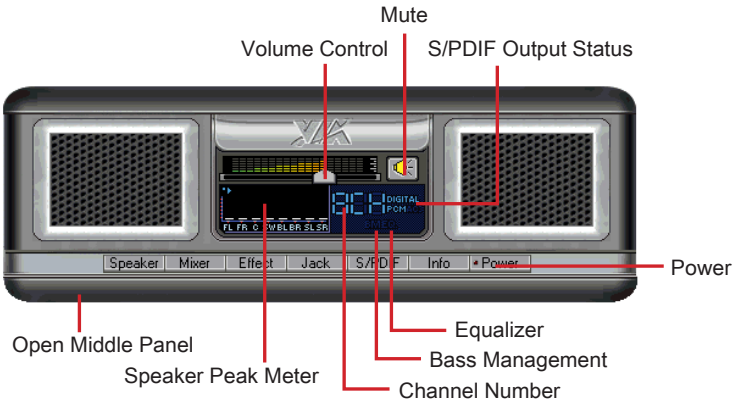


Panel Detail

Adeck consists of two parts; A top and bottom panel. In the simple mode, only the top panel will be fully shown. In the full mode, both the top and bottom panel will be fully expanded.

Top Panel

The top panel consists of several parts as shown below.



Volume control: This is the global volume control. The global volume is controlled using a slider. Scrolling the slider to the left decreases the volume. Scrolling the slider to the right increases the volume.

Mute button: This is the global mute control. When the mute button is activated, all speakers connected to the system will be silenced.

Channels Display: On the right of the peak meter, there is a display showing the number of audio channels that is being used in the system. The number of channels can be changed in the speaker configuration panel.

Peak Meter: The volume peak meter is located to the left of the channel display. The number of peak meters changes according to the number of channels used in the system.

S/PDIF Output Status: The S/PDIF output status is located to the right of the Channel Display. If “Digital PCM” is shown, that indicates the audio system will allow a PCM music stream output from the S/PDIF output jack.

Bass Management Indicator: The Bass Management Indicator is located below the Channel Display. If it is enabled, “BM” will be visible. Notice that the “Bass Management” and “Equalizer” functions can not be enabled at the same time.

Equalizer Indicator: The Equalizer Indicator is located to the right of the Bass Management Indicator. If it is enabled, “EQ” will be visible. As mentioned earlier, the Equalizer

and Bass Management functions can not be enabled at the same time.

Configuration Panels: On the bottom of the top panel, there is a row of buttons. When any of the buttons are activated (except the "Power" button), the bottom panel expands to show the selected panel.

Power Button: When the Power button is activated, Adeck will hide itself in the system tray.

Bottom Panel

The Bottom Panel is beneath the top panel. The contents of the Bottom Panel are dependent upon the button that activated to it. Even if the Bottom Panel is already expanded, the contents can still be changed by selecting another button from the bottom of the Top Panel.

Speaker Configuration Panel: As Page A-8 shows, it contains the channel configuration and output volume control. To test a speaker to see if it is connected, single-click on the desired speaker. To test all speakers, just click the Test button.

Mixer Configuration Panel: As Page A-10 shows, it contains the basic Playback Mixer and Recording Mixer volume controls. Additionally, the user can select which playback or recording device to be active.

Effects Configuration Panel: As Page A-11 shows, there are two sound enhancement functions that can be selected: “Equalizer” or “Bass Management”.

Jack Configuration Panel: As Page A-13 shows, the user can re-task every jack’s usage and active jack detection. The user can also configure the headphone to receive the same audio signals as the front speakers.

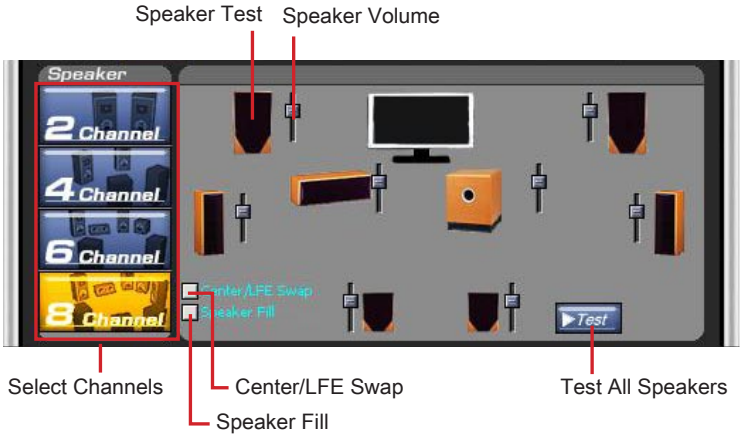
S/PDIF Configuration Panel: As Page A-15 shows, the user can configure the S/PDIF related control.

System Information Panel: As Page A-16 shows, the user can view the system information and set the preferred language. Additionally, the user can program the hot keys.

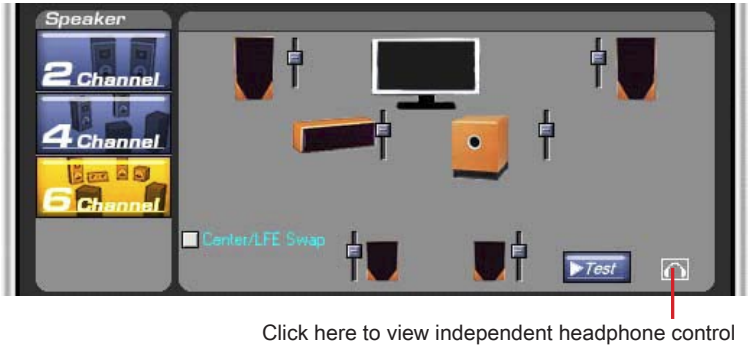
Configuration Panels

Speaker Configuration Panel

As shown below, the Speaker Configuration Panel is divided into two parts. On the left side, the user can select the number of audio channels. There are up to 8 channels available. Once a channel configuration is selected the right side of the panel will change accordingly. On the right side of Speaker Configuration Panel, the user can adjust the volume level for each speaker separately. Speaker positions can also be changed. To test a speaker, single-click on the speaker to hear the test audio clip. A Test button is also provided through which a user can test all the speakers accordingly. Below side of the speaker configuration on the right side, there is a check box for Center/LFE Swapping. This function is used to swap the center speaker and LFE speaker audio streams.



If the “Independent Headphone” feature has been enabled, the maximum number of channels will be six as shown below. To control the headphone volume, click on the headphone icon at the bottom-right corner.

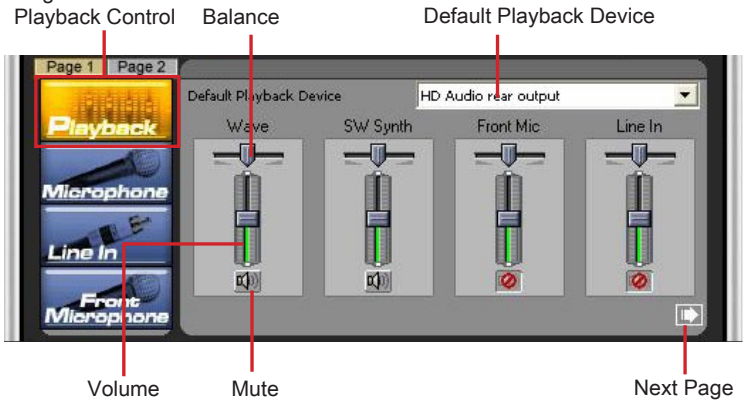


The headphone volume controls are as shown below. To switch back to the speaker volume controls, click on the speaker icon at the bottom-right corner.

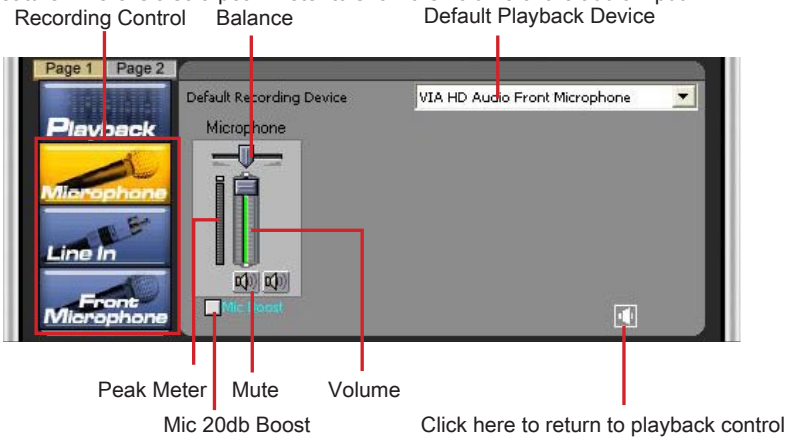


Mixer Configuration Panel

On the Mixer Configuration Panel, there are four mixer devices that can be selected: playback, microphone, line in and front microphone. Below shows the Playback Mixer. Each of the Playback items has a volume, balance and mute control. The user can also select the default playback device from a drop-down menu. User could redirect the analog input sources (Microphone, Line In, Front Microphone etc.) to line out by checking this feature.

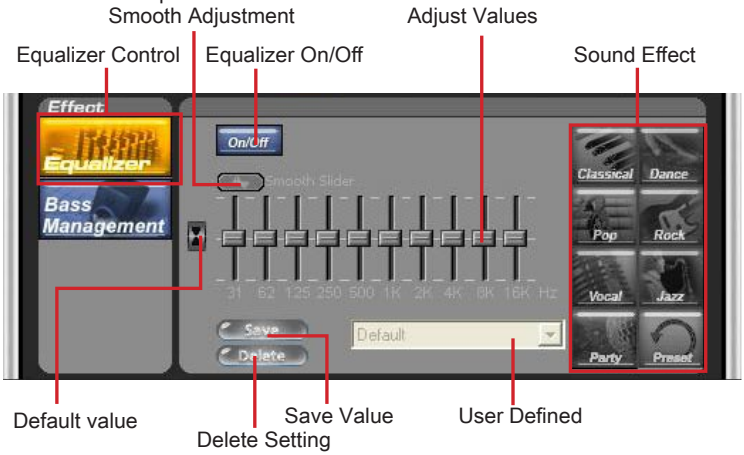


On the Recording Control, all possible input devices are shown. Below shows the Microphone. Each of the Recording Control items has a volume, balance and item select. On the bottom-left side of this page, there are Mic 20db boost control and Front Mic 20db boost control check boxes. User could enlarge the recording sound by checking on this feature. There is also a peak meter to show the volume of the audio input.



Effects Configuration Panel

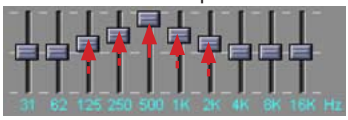
There are two sound enhancement controls in Adeck: “Equalizer” and “Bass Management”. When the Equalizer is selected, the user will see the 10 bands from 31Hz to 16kHz. The equalizer settings will only take effect after the user enables it by pressing the “On/Off” button above the equalizer. There are seven preset equalizer settings that can be selected: Classical, Dance, Pop, Rock, Vocal, Jazz and Party. Additionally, the user can create custom settings and save them for later use. To save the current equalizer setting, click on the “Save” button. To delete a setting, select the setting to be deleted from the drop-down menu and click on the “Delete” button.



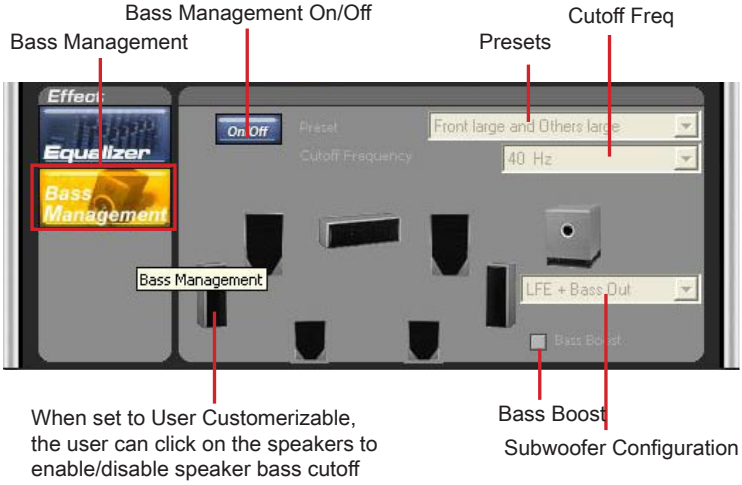
Below shows an example of an adjustment being made to the 500Hz band without the “Smooth Slider” enabled.



If “Smooth Slider” is enabled, any adjustment to any of the Equalizer bands will cause the surrounding bands to be affected so as to produce a smoother sound.



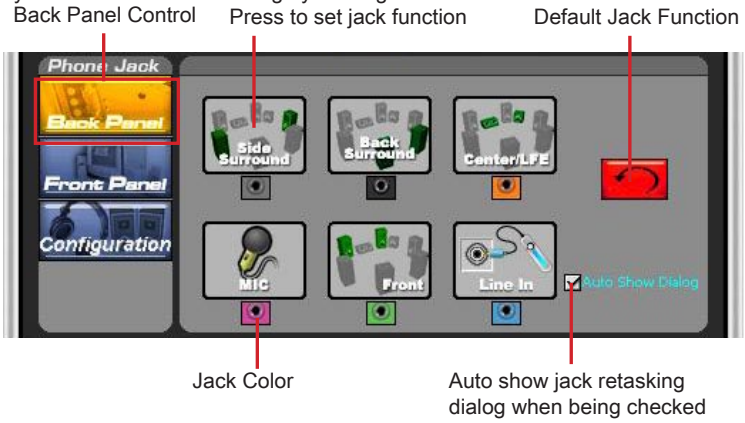
Below shows the “Bass Management” features. The user can enable the “Bass Management” features by clicking on the “On/Off” button at the top of the “Bass Management” controls. The “Bass Management” feature allows the user to control the low frequency limits for the speakers. When the low frequency limit is set for a speaker, any audio signal below the limit will be automatically channeled to the subwoofer. Each speaker (except for the subwoofer) can be configured to have a different low frequency limit. For example, if the user wants to set the low frequency limit for front-left speaker to 310Hz, then the user can click on the picture of the front-left speaker and change the “Cutoff Frequency” to 310Hz. Additionally, the user can enhance the bass by checking the “Bass Boost” checkbox.



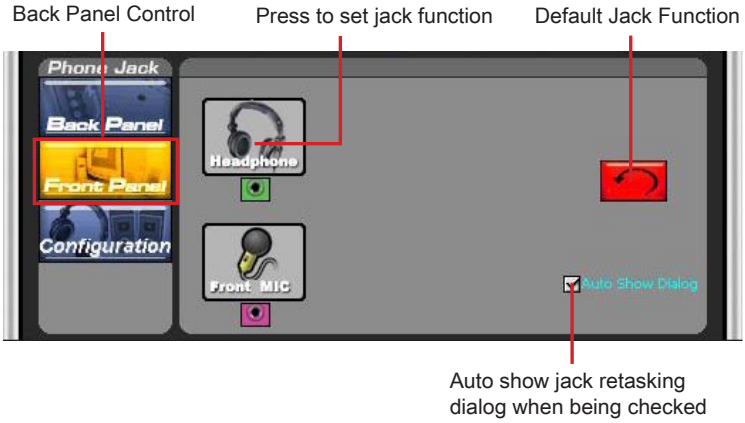
Jack Configuration Panel

The Jack Configuration Controls enable the user to configure all the audio jacks on the computer system. The “Back Panel” lists all the jacks at the rear side of the computer system. The “Front Panel” lists all the jacks at the front side of the computer system. In general, the multi-channel playback and recording jacks will be listed in the “Back Panel” controls. And the “Headphone” and “Front Mic” will be list on “Front Panel”.

In the “Back Panel” controls, as shown below, the jacks can be distinguished by the different colors used to identify each jack. The user should be able to find matching colors at the rear of the computer system. Each of the jacks can be re-assigned. The user can easily revert to the default setting by clicking on the “Default” button.



The “Front Panel” controls usually only has two jacks listed: “Headphone” and “Front Mic”.



The Headphone Configuration Panel is shown below. There are two headphone configurations that can be chosen: “Independent Headphone” or “Redirected Headphone”. The “Independent Headphone” feature enables the user to play separate music on the headphone and speaker. For example, the user can use a multi-channel device (such as 5.1 surround sound) to watch a movie while simultaneously using the independent headphone feature to make phone calls through a VoIP Internet phone.

The “Redirected Headphone” feature enables the user to hear the same audio that is being channeled to the front speakers. In this mode, once the headphone has been inserted the audio will be redirected from the speakers to the headphone.

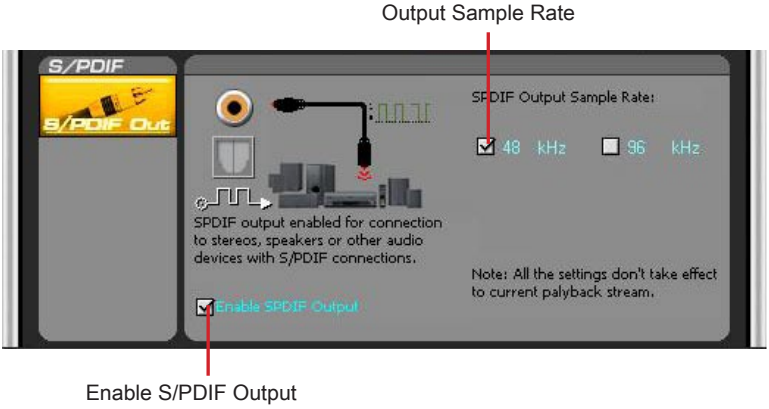
Please note that the “Independent Headphone” function requires two channels. Therefore, only six channels will be available if “Independent Headphone” is being used.



S/PDIF Configuration Panel

The S/PDIF Configuration Panel enables the user to configure S/PDIF related control.

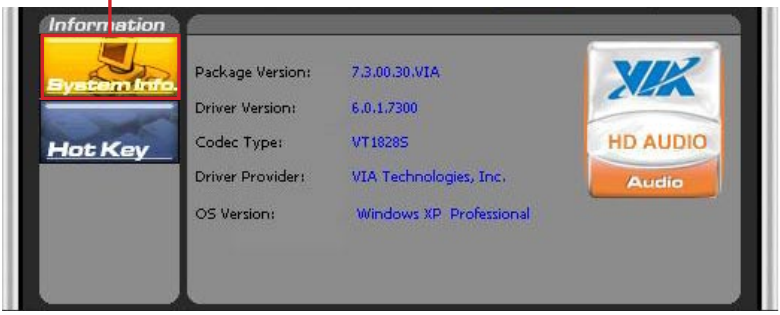
The “S/PDIF Out” panel allows the user to enable S/PDIF output support and select the S/PDIF output sampling rate. Please note that some S/PDIF decoders do not support 176.4 and 192kHz. Before enabling these higher sampling rates, please checking the external S/PDIF decoder first.



System Information Panel

The System Information Panel displays the current system information.

System Information

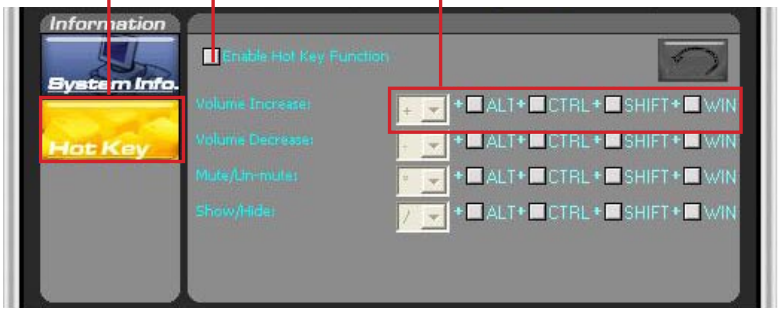


The “Hot Key” Configuration Panel allows the user to set hot keys for controlling the volume and muting. To use the hot keys, “Enable Hot Key Function” must first be checked.

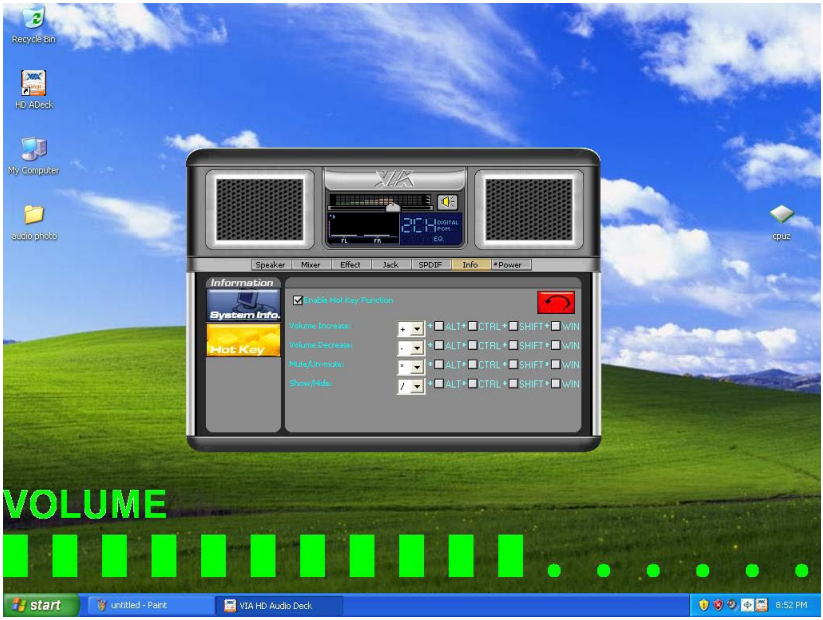
Enable Hot Key Function

Hot Key Setting

Set Hot Key



When a hot key is pressed, the screen will show a green volume control bar at the bottom of the screen and a mute/un-mute icon at the top-right corner of the screen. The on-screen display can be hidden by pressing the “Show/Hide” hot key.

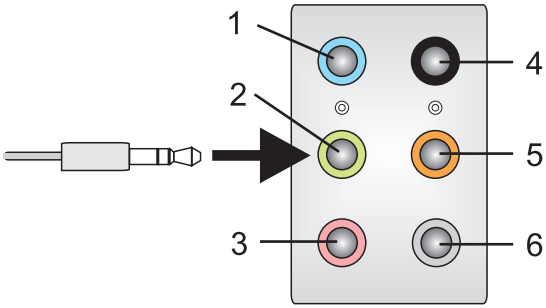


Hardware Setup

Connecting the Speakers

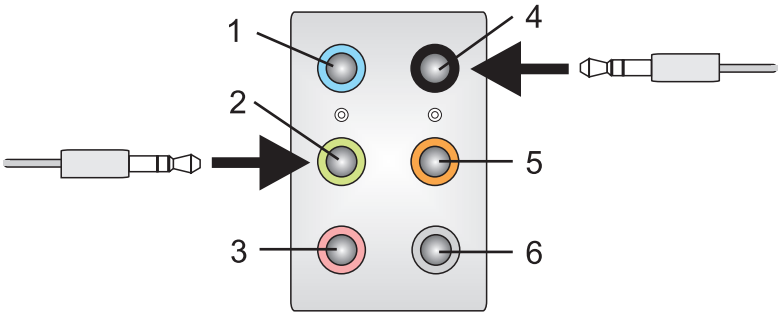
When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software utility.

- 2-Channel Mode for Stereo-Speaker Output



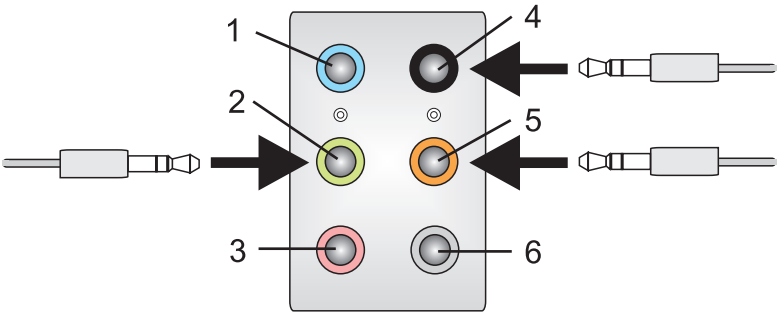
1] Line In
2] Line Out (Front channels)
3] MIC
4] No function
5] No function
6] No function

- 4-Channel Mode for Stereo-Speaker Output



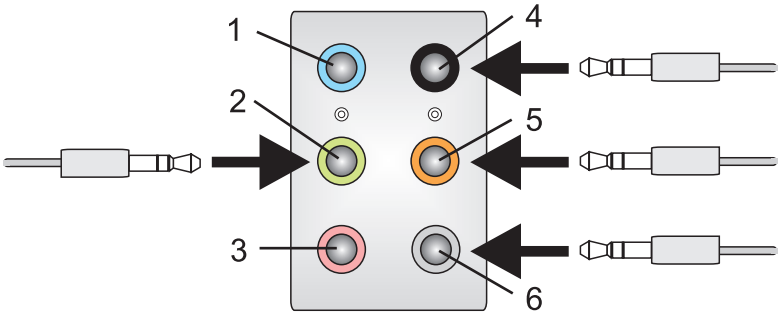
1] Line In
2] Line Out (Front channels)
3] MIC
4] Line Out (Rear channels)
5] No function
6] No function

- 6-Channel Mode for Stereo-Speaker Output



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

- 8-Channel Mode for Stereo-Speaker Output



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

Appendix B
AMD RAID

The integrate one SATA host controller separately, and support RAID function for performance and reliability.

SATA RAID (SATA1~6) provides support for RAID 0 (Striping), RAID 1 (Mirroring), RAID 10 (Striping & Mirroring) & RAID 5 (striping with parity), please note that the RAID 5 is only supported by SB750. 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

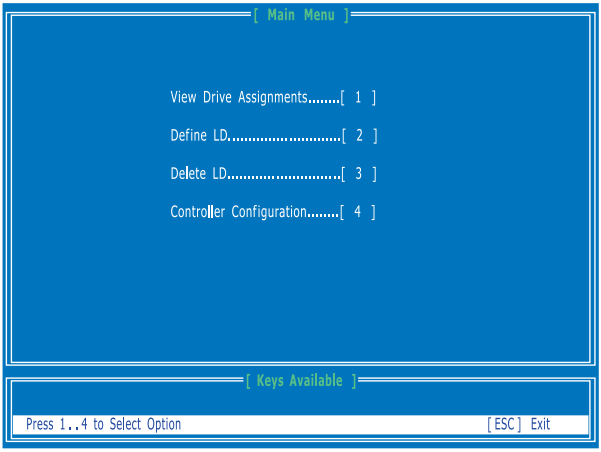
Creating and deleting RAID set and performing other RAID setting up operations are done in the RAID BIOS. During bootup, a screen similar to the one below will appear for about few seconds. Press <Ctrl-F> to enter FastBuild utility.



Important

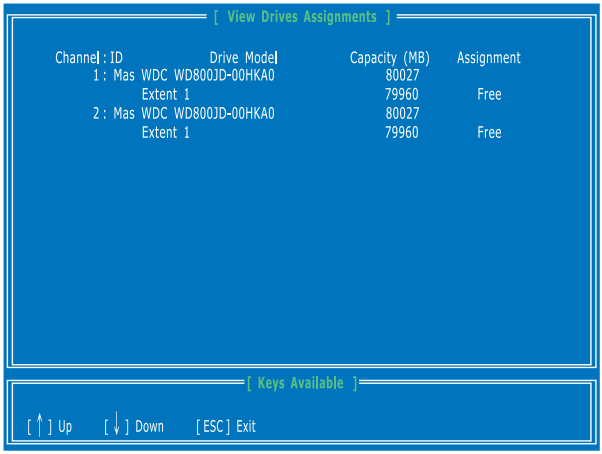
Be sure to enable the RAID function for SATA device in BIOS before configuring the Fastbuild Utility.

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



View Drives Assignments

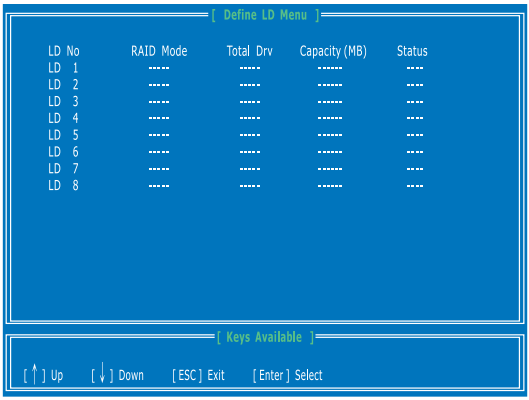
This window displays the model number, capacities and assignment of the drives physically attached to the SATA host adapter.



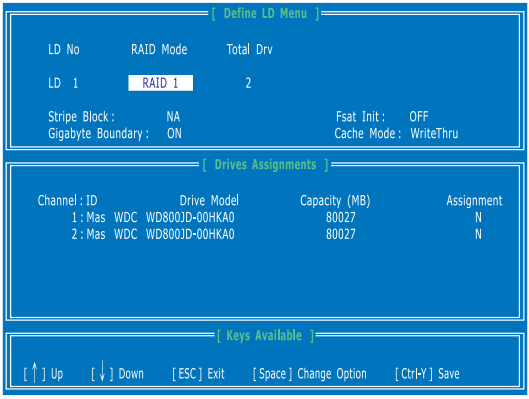
Define LD (Creating RAID)

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

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

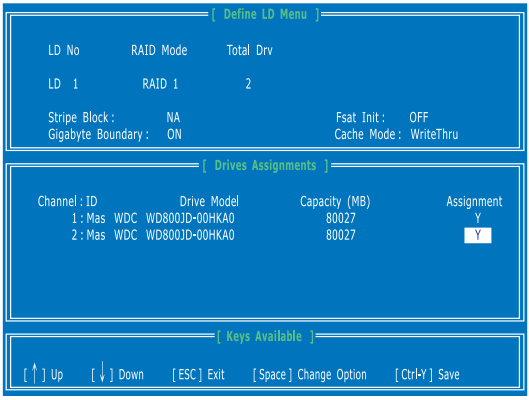


3. On the next screen, use the space key to choose a RAID mode (RAID 0/ 1/ 10/ 5) and use the arrow key to move to the “Drives Assignments” window.



- Initialize logical drive, zero the disk drives. RAID 1 or 10 only.
- Stripe Block Size, the default 64KB is best for most applications. RAID 0 or 10 only.
- Gigabyte Boundary, allows use of slightly smaller replacement drives.
- Cache Mode, WriteThru or WriteBack.

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



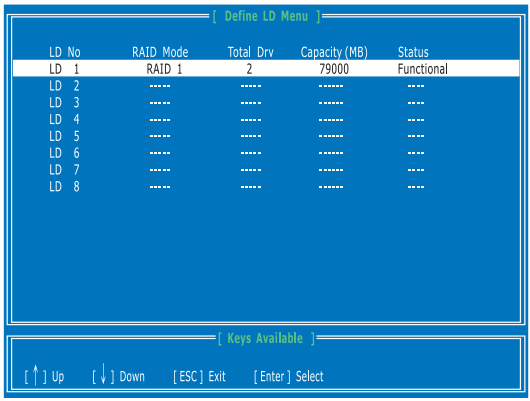
5. A message will show up on the bottom, press any key to save the configuration or press [Ctrl-Y] to allocate the RAID capacity manually.



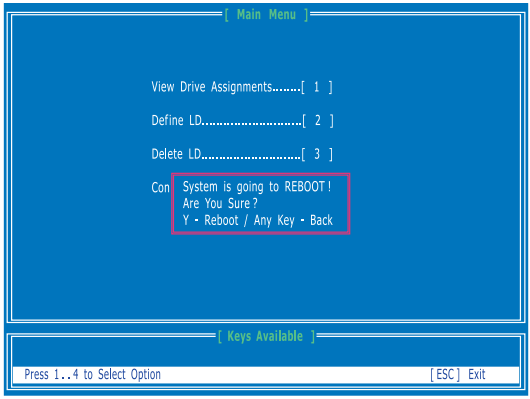
Important

- *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.*

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

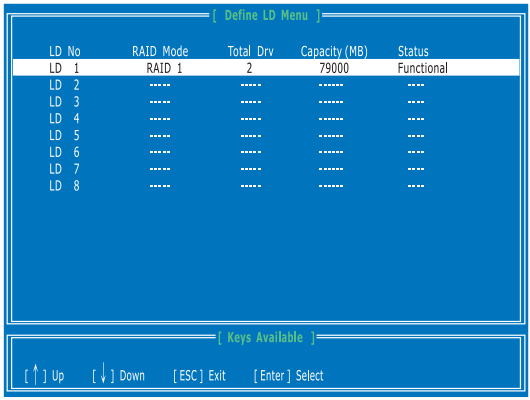


7. Press ESC key to exit the utility, a message “System is going to REBOOT! Are You Sure?” will display, answer “Y” to exit it and the system will reboot.

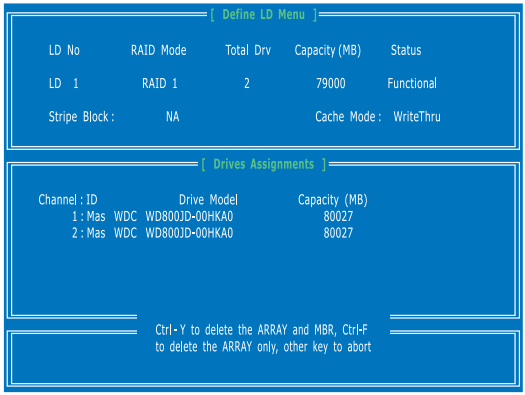


Delete LD (Deleting RAID)

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



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, 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 :*
  - *for Windows XP: \\ChipSet\AMD\XP\SBDrv\RAID7xx*
  - *for Windows Vista: \\ChipSet\AMD\VISTA\Packages\Drivers\SBDrv\SB7xx\RAID\x86 (for 32bit) or x64(for 64bit)*
- *The driver disk for RAID controller is done.*

4. When prompted, insert the floppy disk and press Enter.

   For Windows Vista:
   During the Operating system installation, after selecting the location to install Vista click on “Load Driver” button to load RAID drive.

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

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
Overclocking Center

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

Before you install the Overclocking Center, please make sure the system has meet the following requirements:

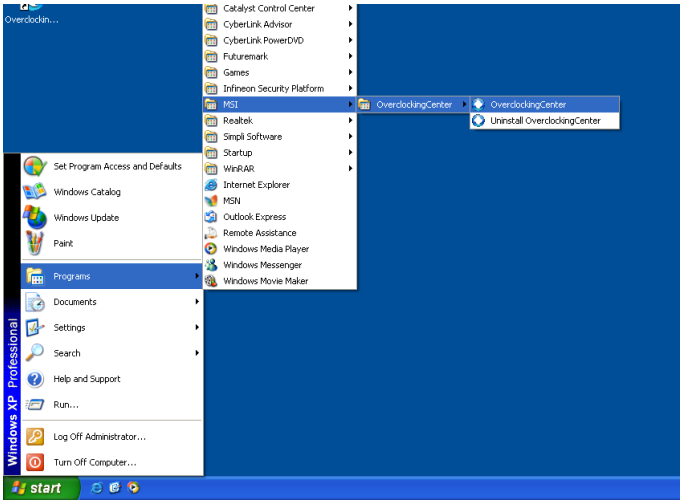
1. 256MB system memory.
2. DVD-ROM drive for software installation.
3. Operation system: Windows XP or up.
4. DotNet Frame Work 2.0

ACTIVATING OVERCLOCKING CENTER

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



short-cut icon on the desktop



short-cut path in the start-up menu
(path: Start-->Program Files-->MSI-->Overclocking Center-->Overclocking Center)

System Info

In the System Info screen, you can read the information of motherboard/ memory/ PCI.

Motherboard

Click Motherboard to read the information of motherboard, BIOS, installed CPU and installed graphics card.



Important

The pictures in this appendix are for reference only and may vary from the product you purchased. Please refer to the appearance of your system for detailed information.

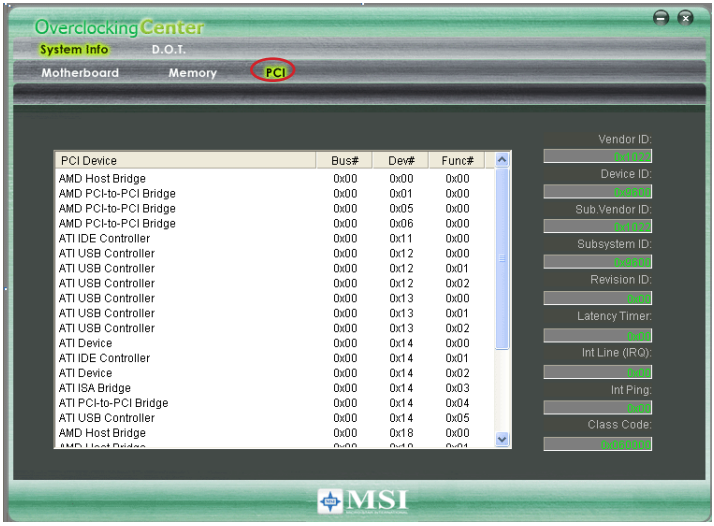
Memory

Click Memory to read the information of each memory DIMM slot. You can select a DIMM slot you want to read from the **SPD** list.



PCI

Click PCI to read the information of devices on the mainboard.

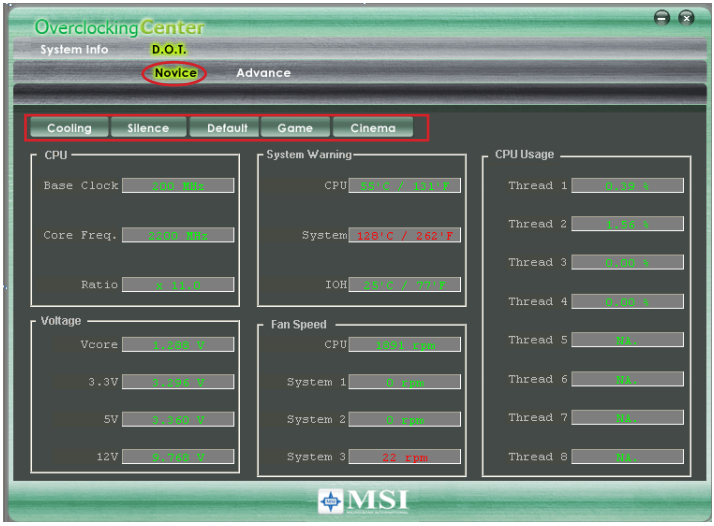


DOT

Click DOT to enter the DOT screen. In DOT, you can select the basic setting to reach optimal performance in Novice menu or you can adjust advanced values for overclocking in Advance menu.

Novice

In the Novice menu, it provides one default setting and several common settings for different environments. You may choose one of the settings that you need. The settings in Novice menu are not adjustable.

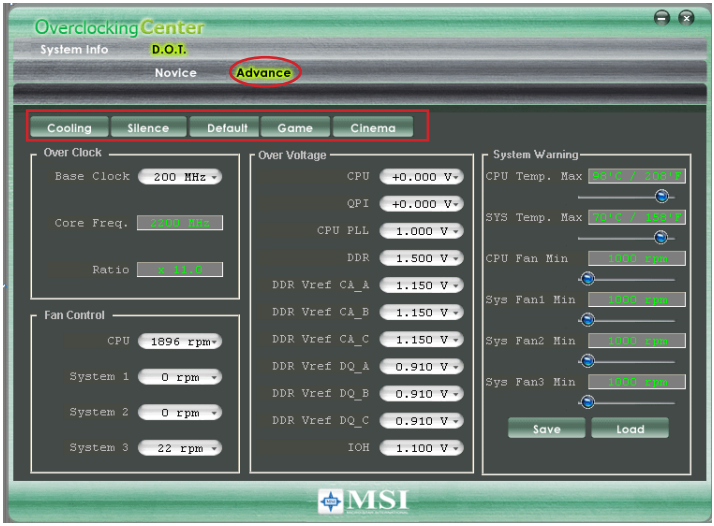


Important

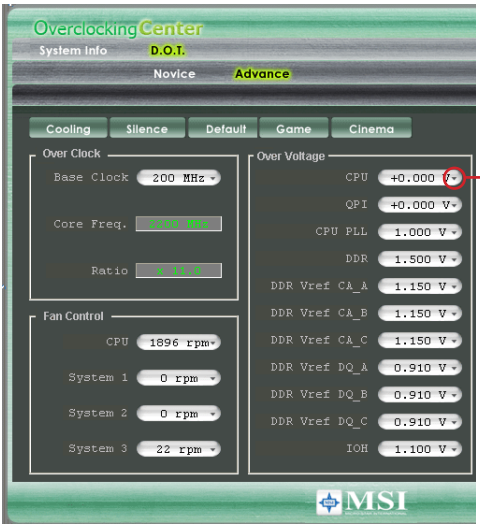
You may change the values of each environment setting/ default setting in Advance menu. Please refer the following section for more details.

Advance

In the Advance menu, you can adjust the values for each environment setting/ default setting. Click the Cooling/ Silence/ Default/ Game/ Cinema button to enter it's setting menu. Please refer to the following descriptions to adjust the values and save them.

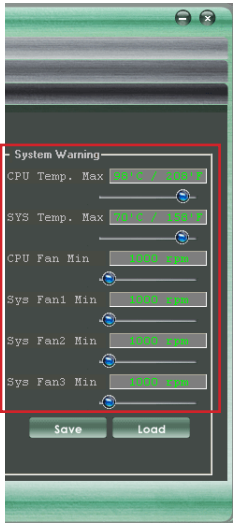


In each setting menu, you can select desired values for manual overclocking. Simply click the right side of the button which arranges an arrow sign, and a drop-down menu will appear below the button, then select a value.



Click the arrow sign and the drop-down menu will appear.

In the “System Warning” block, you can set the maximum CPU/ system temperature and the minimum CPU/ system fan speed by using the scroll bar. The system will pop-up a warning message to warning you when the temperature/ fan speed is over/ lower the values you set.



Set the thresholds of CPU temperature & CPU FAN speed.

After you adjust the values in setting menu, you can save it for future use.

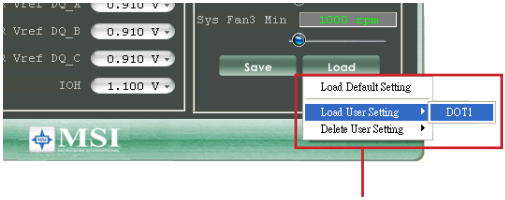


Click the Save button, and enter a name in the empty box. Then, click Save button again to save the settings.

Important

It provides you to save up to 20 user settings.

Click the Load button and choose a saved user setting to load the settings for the system.



Click the Load button, and choose a saved user setting.

Important

Every time you turn-off the system, the settings will be restored to the factory default. If you want to use the saved settings, you have to load it after entering the operating system every time.