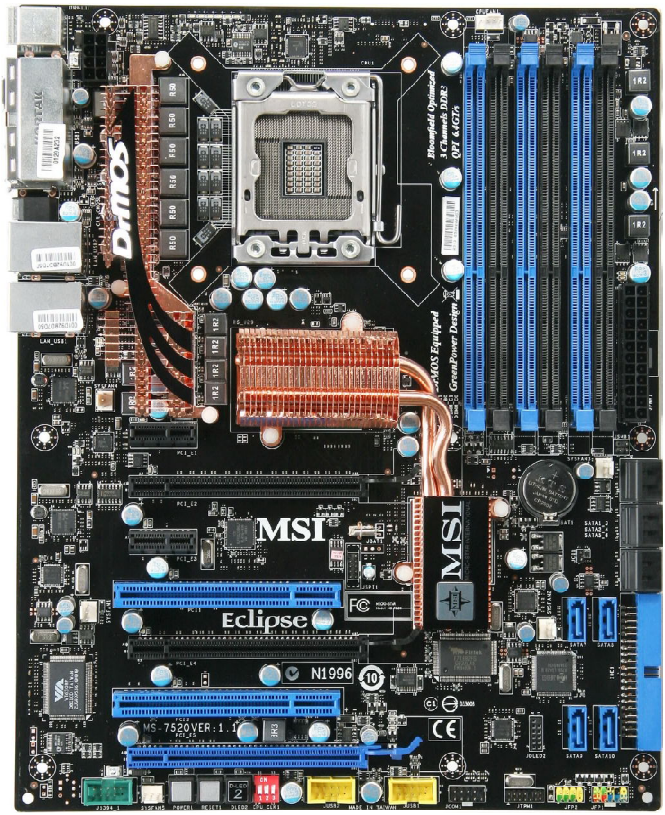
MSI
MICRO-STAR INTERNATIONAL

ECLIPSE Series

MS-7520 (v1.X) Mainboard



Copyright Notice

Trademarks

Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X	October 2008

Technical Support

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

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

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - † The power cord or plug is damaged.
    - † Liquid has penetrated into the equipment.
    - † The equipment has been exposed to moisture.
    - † The equipment has not work well or you can not get it work according to User's Manual.
    - † The equipment has dropped and damaged.
    - † The equipment has obvious sign of breakage.
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^0C (140^0F), IT MAY DAMAGE THE EQUIPMENT.

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

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

廢電池請回收

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

FCC-B Radio Frequency Interference Statement

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

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

Notice 1

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

Notice 2

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

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

Micro-Star International
MS-7520

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.

CONTENTS

Chapter 1
Getting Started

Thank you for choosing the **Eclipse** (MS-7520 v1.X) ATX mainboard. The **Eclipse** mainboard is based on **Intel® X58 & ICH10R** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® i7 LGA1366** processor, the **Eclipse** delivers a high performance and professional desktop platform solution.

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Mainboard Specifications

Processor Support

- Intel® i7 processors in the LGA1366 package
  (For the latest information about CPU, please visit
  http://global.msi.com.tw/index.php?func=cpuform2)

Supported QPI

- Up to 6.4 GT/s

Chipset

- IOH: Intel® X58 chipset
- ICH: Intel® ICH10R chipset

Memory Support

- 6 DDR3 DIMMs support DDR3 1333/ 1066/ 800 DRAM speed
  (Memory size 24GB Max)
- Supports 1Gb/ 2Gb/ 4Gb DRAM size
- Supports x8/ x16 data lines per DIMM
- Supports up to 3 channels mode
  (For more information on compatible components, please visit
  http://global.msi.com.tw/index.php?func=testreport)

LAN

- Supports 2 PCIE LAN 10/100/1000 Fast Ethernet by Realtek 8111C

Audio

- X-Fi Xtreme Audio Card
- 24-bit/ 96 KHz audio quality
- 100dB SNR clarity
- Up to 7.1 ch EAX 5.0 Surround Sound

IDE

- 1 IDE port by JMicron JMB363
- Supports Ultra DMA 66/100/133 mode
- Supports PIO, Bus Master operation mode

SATA

- 6 SATA ports (SATA1~6) by ICH10R
- 4 SATA ports (SATA7~10 for storage devices only) by JMicron JMB322
- 2 E-SATA ports by JMicron JMB362
- Supports storage and data transfers at up to 3 Gb/s

RAID

- SATA1~6 support Intel Matrix Storage Technology (AHCI/ RAID 0/1/ 5/10) by ICH10R
- Two E-SATA ports on back panel support RAID 0/ 1 & JBOD mode by JMicron JMB362

Hardware RAID

- SATA7 & SATA8 support RAID 0/ 1 & JBOD mode by 1st JMicron JMB322
- SATA9 & SATA10 support RAID 0/ 1 & JBOD mode by 2nd JMicron JMB322

1394

- Supports 2 1394 ports (rear*1, front*1) by VIA VT6308P

Connectors

- **Back panel**
  - 1 PS/2 mouse port
  - 1 PS/2 keyboard port
  - 1 1394 port
  - 2 eSATA ports
  - 8 USB 2.0 Ports
  - 2 LAN jacks
  - 1 Clear CMOS button
- **On-Board Pinheaders / Connectors**
  - 2 USB 2.0 connectors
  - 1 1394 connector
  - 1 chassis intrusion pinheader
  - 1 serial port pinheader
  - 1 TPM Module pinheader
  - 1 D-LED2 panel pinheader

TPM

- Supports TPM

Slots

- 3 PCI Express gen2 x16 slots, two **Black** PCIE x16 slots (PCI_E2 & PCI_E4) support up to PCIE x16 speed, one **Blue** PCIE x16 slot (PCI_ E5) supports up to PCIE x4 speed)
- 2 Black PCI Express x1 slots
- 2 PCI slot, support 3.3V/ 5V PCI bus Interface

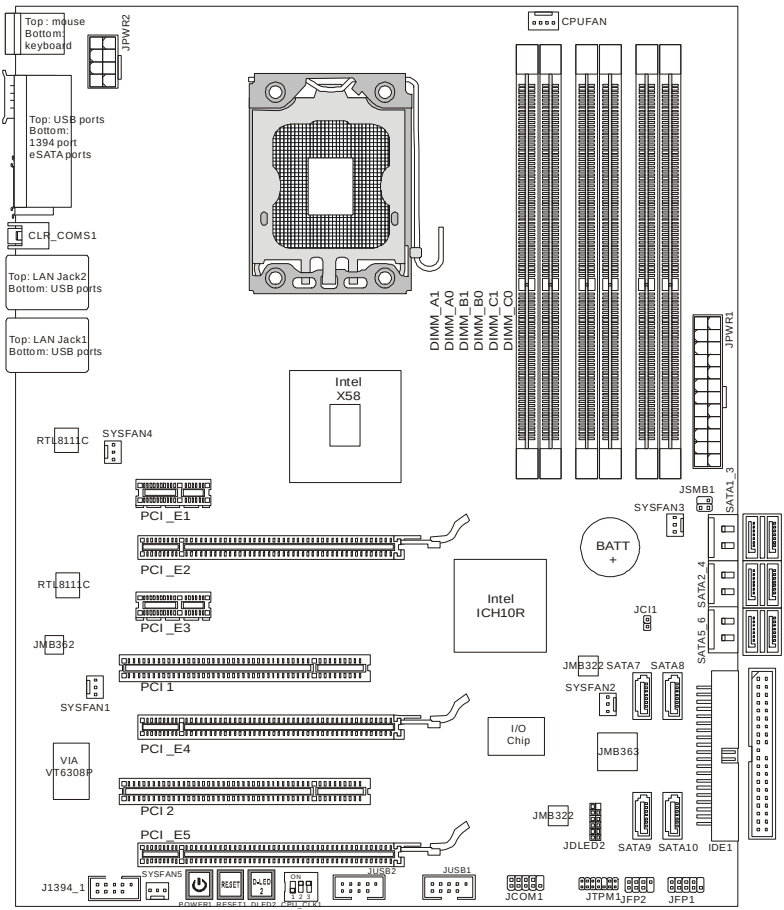
Form Factor

- ATX (30.5cm X 24.5cm)

Mounting

- 9 mounting holes

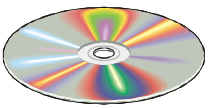
Mainboard Layout



Eclipse (MS-7520 v1.X) ATX Mainboard

Packing Checklist


MSI motherboard


MSI Driver/Utility CD


Back IO Shield


Power Cable


SATA Cable

IDE Cable


CrossFire
Video Link Cable


external SATA Cable


USB Bracket

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

X-Fi Xtreme Audio Card Set (Card and Driver CD)

D-LED2 Panel Set (1 panel & 1 cable)

User's Guide and Quick Guide

GreenPower Genie Set (1 GreenPower genie & 1 power cable & 1 (2x2 pin) cable)

Chapter 2
Hardware Setup

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

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

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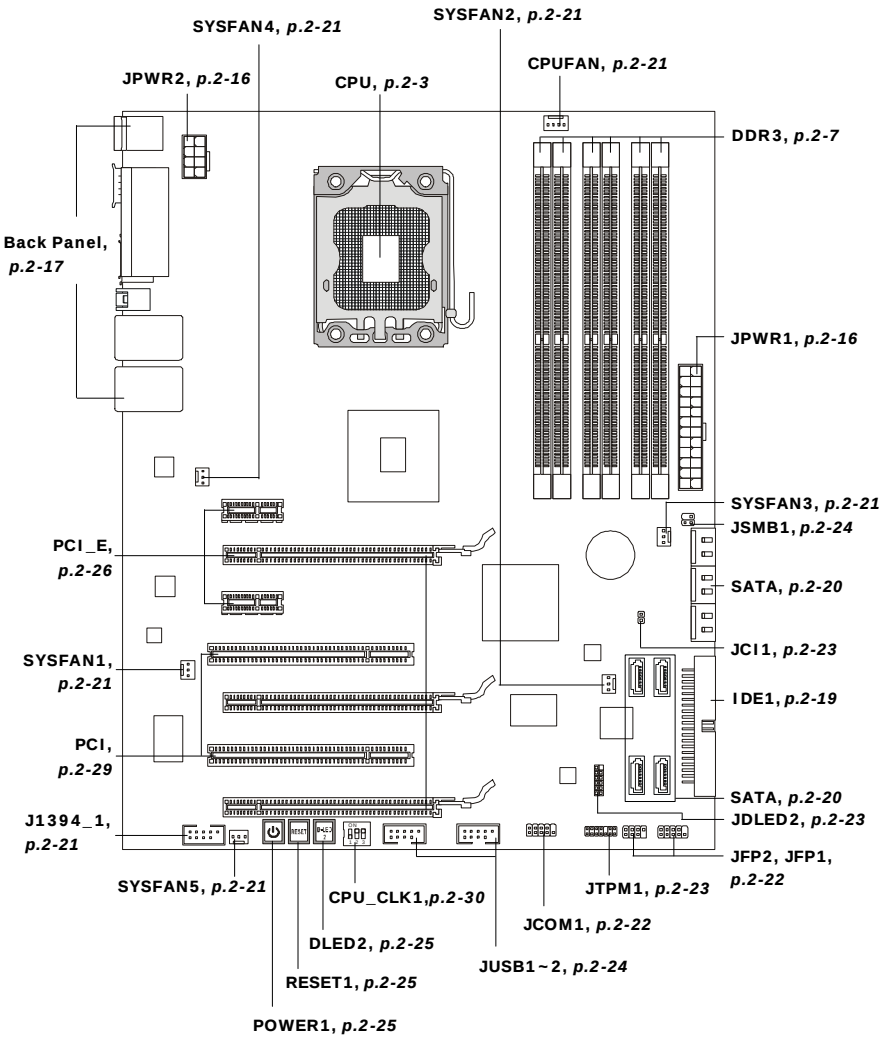
Quick Components Guide



CPU (Central Processing Unit)

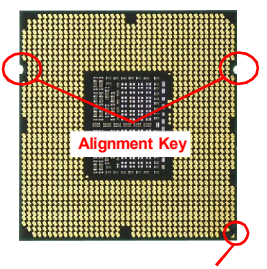
When you are installing the CPU, **make sure to install the cooler to prevent overheating.** If you do not have the CPU cooler, consult your dealer before turning on the computer.
For the latest information about CPU, please visit *http://global.msi.com.tw/index.php?func=cpuform2*

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.
Replaceing the CPU
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.
Overclocking
This mainboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

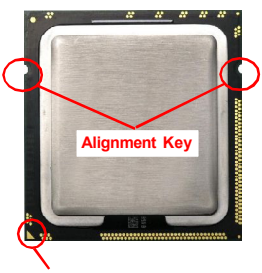
Introduction to LGA 1366 CPU

The pin-pad side of LGA 1366 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 1366 CPU. Remember to apply some thermal paste on it for better heat dispersion.

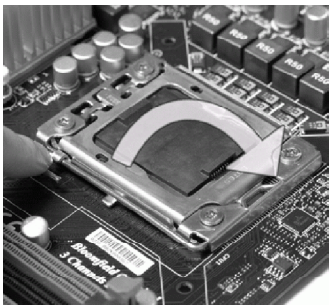


Yellow triangle is the Pin 1 indicator

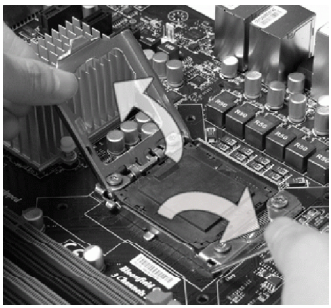
CPU & Cooler Installation

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.

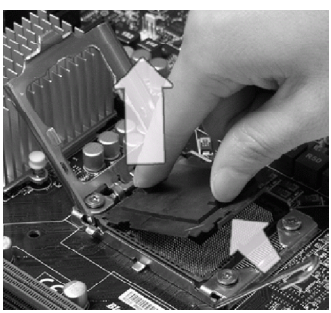
1. Open the load level.



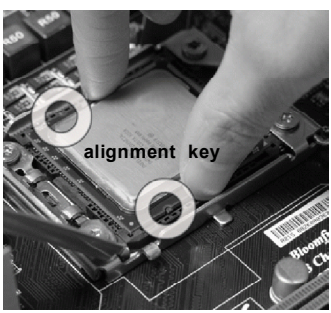
2. Lift the load lever up and open the load plate.



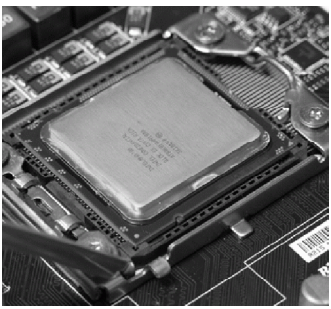
3. The CPU socket has a plastic cap on it to protect the contack from damage. Before you install CPU, always cover it to protect the socket pin. Romove the cap from the lever hinge side (as the arrow shows).



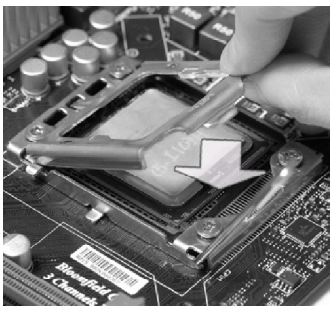
4. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.



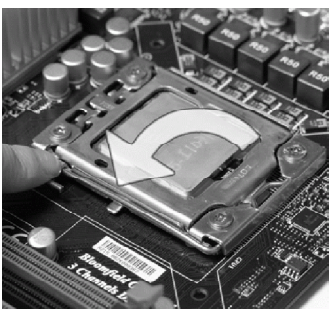
5. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.



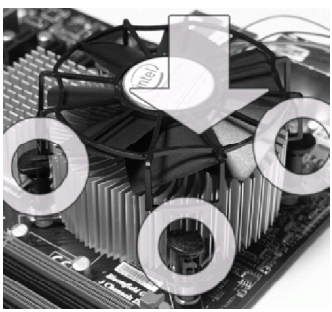
6. Cover the load plate onto the package.



7. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



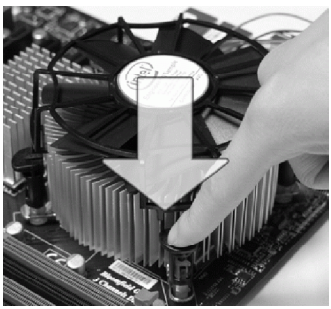
8. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.



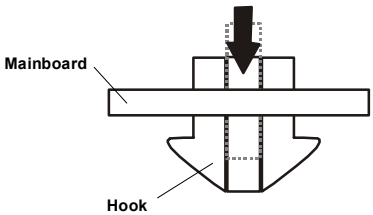
Important

1. Confirm if your CPU cooler is firmly installed before turning on your system.
2. Do not touch the CPU socket pins to avoid damaging.

9. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.



10. Turn over the mainboard to confirm that the clip-ends are correctly inserted.

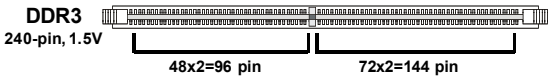


Important

1. Read the CPU status in BIOS.
2. Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.
3. Mainboard photos shown in this section are for demonstration of the CPU/ cooler installation only. The appearance of your mainboard may vary depending on the model you purchase.

Memory

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



Memory Population Rules

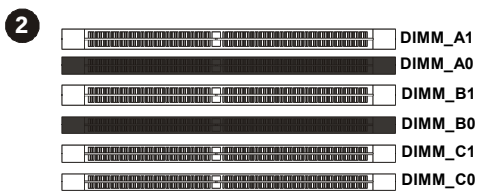
Please refer to the following illustrations for memory population rules.

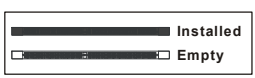
Single-Channel mode

When you have only **one** memory module, please always insert it into the **DIMM_A0 first** (as way 1 shown in below).

Dual-Channel mode

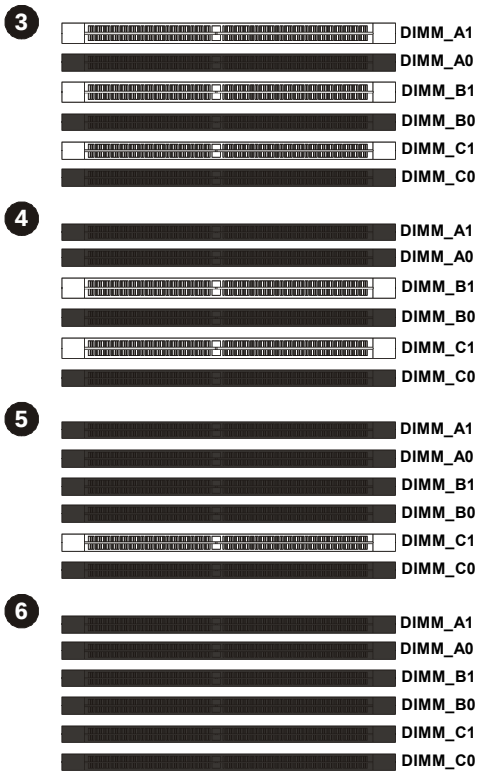
In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Enabling Dual-Channel mode can enhance the system performance. When you have **two** memory modules, please always insert them into the DIMM_A0 & DIMMB0 (as way 2 shown in below).





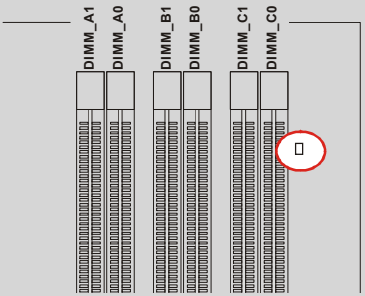
Three-Channel mode

In Three-Channel mode, the memory modules can transmit and receive data with three data bus lines simultaneously. Enabling Three-Channel mode can enhance the **best** system performance. When you have **three** or **more** memory modules, please always insert them as the **way 3/ 4/ 5/ 6** (shown in below) to get the **best** system performance.



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 Three-/ Dual- channel mode, make sure that you install memory modules of **the same type and density** in different channel DIMM slots. If the speeds of installed memeory modules are different (ex. 1066 & 1333), the system will detect and operate the lower speed (1066) with all installed memory modules.*
- *Please always install **the same type and density** memory modules in DIMM slots to avoid the damage of memory.*
- *To enable successful system boot-up, always insert the memory modules into the **DIMM_A0 first.***
- *Due to the chipset resource deployment, the system density will only be detected up to 23+GB (not full 24GB) when each DIMM is installed with a 4GB memory module.*
- *When you install incorrect memory module (the SA2-pin of the memory module connects to **Ground**) in the **DIMM_C0/C1**, the LED beside DIMM_C0 will light **red** color to remind you. The position of the LED is shown as below. Double confirm with your memory module vender for the third channelsupports.*



Installing Memory Modules

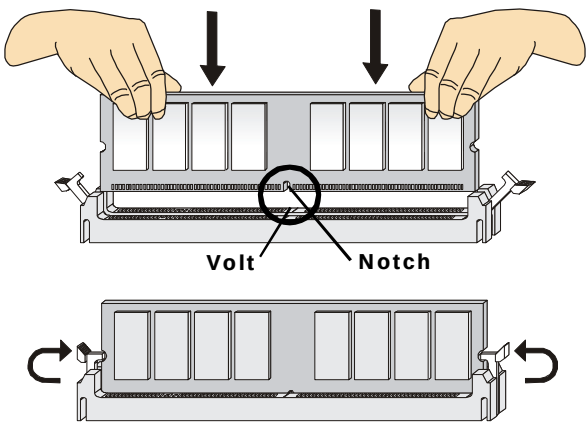
1. The memory module has only one notch on the center and will only fit in the right orientation.

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

Important

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

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



Compatible DDR3 800 memory list

Please refer to the following list to find the available DDR3 800 memory modules.

Vendor	Model	Size	Memory slot					
			A1	A0	B1	B0	C1	C0
Qimonda	IMSH51U03A1F1C-08E(Qimonda IDSH51-03A1F1C-08E)	512MB		V		V		
SEC	M378B6573EZ0-CF-7(SEC K4B510846E-ZCF7)	512MB		V		V		
			V	V	V	V		

Compatible DDR3 1066 memory list

Please refer to the following list to find the available DDR3 1066 memory modules.

Vendor	Model	Size	Memory slot					
			A1	A0	B1	B0	C1	C0
Aeneon	Aeneon AEH660UD00-10FA98X(Aeneon AEH93R10F)	512MB		V		V		
				V		V		V
			V	V		V		V
ELPIDA	EBJ51UD8BAFA-AC-E(ELPIDA J5308BASE)	512MB		V		V		
			V	V	V	V		
Qimonda	IMSH51U03A1F1C-10F (Qimonda IDSH51-03A1F1C-10F)	512MB		V		V		
			V	V	V	V		
Qimonda	IMSH51U03A1F1C-10G(Qimonda IDSH51-03A1F1C-10G)	512MB		V		V		
			V	V	V	V		
ADATA	SC6YG1A08 (SEC K4B1G0846D-HCF8)	1GB		V		V		
				V		V		V
			V	V		V		V
Aeneon	Aeneon AEH760UD00-10FA98X (Aeneon AEH93R10F)	1GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V
Apacer	78.01GC4.331(Qimonda IDSH51-03A1F1C-10F)	1GB		V		V		
				V		V		V
			V	V		V		V
Bufaullo	D3/1066-1G (Micron D9GTR)	1GB		V		V		
				V		V		V
			V	V		V		V
Corsair	CM3X1024-1066C7B (with iron case)	1GB		V		V		
				V		V		V
			V	V		V		V
Crucial	CT12864BA1067.8SFD (Micron D9JNL)	1GB		V		V		
				V		V		V
			V	V		V		V
ELPIDA	EBJ11UD8BAFA-AC-E (ELPIDA J5308BASE)	1GB		V		V		
			V	V	V	V		
HYNIX	HMT112U6AFP8C-G7N0 (Hynix H5TQ1G83AFP-G7C)	1GB		V		V		
				V		V		V
			V	V		V		V
KINGSTON	KVR1066D3N7/1G (ELPIDA J5308BASE-DG-E S)	1GB		V		V		
				V		V		V

Vendor	Model	Size	Memory slot					
			A1	A0	B1	B0	C1	C0
Micron	MT8JTF12864AY-1G1D1(Micron D9JNL)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU03A1F1C-10G(Qimonda IDSH1G-03A1F1C-10G)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU03A1F1C-10F (Qimonda IDSH1G-03A1F1C-10F)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU13A1F1C-10F (Qimonda IDSH51-03A1F1C-10F)	1GB		V		V		
			V	V	V	V		
Qimonda	IMSH1GU13A1F1C-10G (Qimonda IDSH51-03A1F1C-10G)	1GB		V		V		
			V	V	V	V		
SEC	M378B2873DZ1-CF8 (SEC K4B1G0846D-HCF8)	1GB		V		V		
				V		V		V
			V	V		V		V
Supertalent	W1066UA1GS (SEC K4B1G0846C-ZCF8)	1GB		V		V		
				V		V		V
			V	V		V		V
TAKEMS	TMS1GB364D081-107EQ (With iron case)	1GB		V		V		
				V		V		V
			V	V		V		V
Bufaullo	D3/1066-2G (Micron D9GTR)	2GB		V		V		
				V		V		V
			V	V		V		V
Crucial	CT25664BA1067.16SFD (Micron D9JNL)	2GB		V		V		
				V		V		V
			V	V		V		V
HYNIX	HMT125U6AFP8C-G7N0 (Hynix H5TQ1G83AFP-G7C)	2GB		V		V		
				V		V		V
			V	V		V		V
KINGSTON	KVR1066D3N7/2G (SEC K4B1G0846C-ZCF8)	2GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V
Micron	MT16JTF25664AY-1G1D1(Micron D9JNL)	2GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH2GU13A1F1C-10F (Qimonda IDSH1G-03A1F1C-10F)	2GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH2GU13A1F1C-10G (Qimonda IDSH1G-03A1F1C-10G)	2GB		V		V		
				V		V		V
			V	V		V		V
SEC	M378B5673DZ1-CF8 (SEC K4B1G0846D-HCF8)	2GB		V		V		
				V		V		V
			V	V		V		V
Supertalent	W1066UB2GS (SEC K4B1G0846C-ZCF8)	2GB		V		V		
				V		V		V
			V	V		V		V
TAKEMS	TMS2GB364D081-107EQ (With iron case)	2GB		V		V		
				V		V		V
			V	V		V		V

Vendor	Model	Size	Memory slot					
			A1	A0	B1	B0	C1	C0
Aeneon	Aeneon AEH660UD00-10FA98X (Aeneon AEH93R10F)	512MB		V		V		
				V		V		V
			V	V		V		V
ELPIDA	EBJ51UD8BAFA-AC-E (ELPIDA J5308BASE)	512MB		V		V		
			V	V	V	V		
Qimonda	IMSH51U03A1F1C-10F (Qimonda IDSH51-03A1F1C-10F)	512MB		V		V		
			V	V	V	V		
Qimonda	IMSH51U03A1F1C-10G (Qimonda IDSH51-03A1F1C-10G)	512MB		V		V		
			V	V	V	V		
ADATA	SC6YG1A08 (SEC K4B1G0846D-HCF8)	1GB		V		V		
				V		V		V
			V	V		V		V
Aeneon	Aeneon AEH760UD00-10FA98X (Aeneon AEH93R10F)	1GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V
Apacer	78.01GC4.331 (Qimonda IDSH51-03A1F1C-10F)	1GB		V		V		
				V		V		V
			V	V		V		V
Bufaullo	D3/1066-1G (Micron D9GTR)	1GB		V		V		
				V		V		V
			V	V		V		V
Corsair	CM3X1024-1066C7 (With iron case)	1GB		V		V		
				V		V		V
			V	V		V		V
Crucial	CT12864BA1067.8SFD (Micron D9JNL)	1GB		V		V		
				V		V		V
			V	V		V		V
ELPIDA	EBJ11UD8BAFA-AC-E (ELPIDA J5308BASE)	1GB		V		V		
			V	V	V	V		
HYNIX	HMT112U6AFP8C-G7N0 (Hynix H5TQ1G83AFP-G7C)	1GB		V		V		
				V		V		V
			V	V		V		V
KINGSTON	KVR1066D3N7/1G (ELPIDA J5308BASE-DG-E S)	1GB		V		V		
Micron	MT8JTF12864AY-1G1D1 (Micron D9JNL)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU03A1F1C-10G (Qimonda IDSH1G-03A1F1C-10G)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU03A1F1C-10F (Qimonda IDSH1G-03A1F1C-10F)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU13A1F1C-10F (Qimonda IDSH51-03A1F1C-10F)	1GB		V		V		
			V	V	V	V		
Qimonda	IMSH1GU13A1F1C-10G (Qimonda IDSH51-03A1F1C-10G)	1GB		V		V		
			V	V	V	V		
SEC	M378B2873DZ1-CF8 (SEC K4B1G0846D-HCF8)	1GB		V		V		
				V		V		V
			V	V		V		V
Supertalent	W1066UA1GS (SEC K4B1G0846C-ZCF8)	1GB		V		V		
				V		V		V
			V	V		V		V

Vendor	Model	Size	Memory slot					
			A1	A0	B1	B0	C1	C0
TAKEMS	TMS1GB364D081-107EQ (With iron case)	1GB		V		V		
				V		V		V
			V	V		V		V
Bufaullo	D3/1066-2G (Micron D9GTR)	2GB		V		V		
				V		V		V
			V	V		V		V
Crucial	CT25664BA1067.16SFD (Micron D9JNL)	2GB		V		V		
				V		V		V
			V	V		V		V
HYNIX	HMT125U6AFP8C-G7N0 (Hynix H5TQ1G83AFP-G7C)	2GB		V		V		
				V		V		V
			V	V		V		V
KINGSTON	KVR1066D3N7/2G (SEC K4B1G0846C-ZCF8)	2GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V
Micron	MT16JTF25664AY-1G1D1 (Micron D9JNL)	2GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH2GU13A1F1C-10F (Qimonda IDSH1G-03A1F1C-10F)	2GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH2GU13A1F1C-10G (Qimonda IDSH1G-03A1F1C-10G)	2GB		V		V		
				V		V		V
			V	V		V		V
SEC	M378B5673DZ1-CF8 (SEC K4B1G0846D-HCF8)	2GB		V		V		
				V		V		V
			V	V		V		V
Supertalent	W1066UB2GS (SEC K4B1G0846C-ZCF8)	2GB		V		V		
				V		V		V
			V	V		V		V
TAKEMS	TMS2GB364D081-107EQ (With iron case)	2GB		V		V		
				V		V		V
			V	V		V		V

Compatible DDR3 1333 memory list

Please refer to the following list to find the available DDR3 1066 memory modules.

Vendor	Model	Size	Memory slot					
			A1	A0	B1	B0	C1	C0
Qimonda	IMNH51U03A1F1C-13G (With iron case)	512MB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH51U03A1F1C-13H (Qimonda IDSH51-03A1F1C-13H)	512MB		V		V		
				V		V		V
			V	V		V		V
Geil	Geil GV32GB1333C7DC (With iron case)	1GB		V		V		
Kingmax	FLFD45F-B8EE9 [EAES] (ELPIDA J1108BASE-DJ-E)	1GB		V		V		
				V		V		V
			V	V		V		V
KINGSTON	KVR1333D3N9/1G (Elpida J1108BASE-DJ-E)	1GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V

Vendor	Model	Size	Memory slot					
			A1	A0	B1	B0	C1	C0
Micron	MT8JTF12864AY-1G4D1 (Micron D9JNM)	1GB		V		V		
				V		V		V
			V	V		V		V
NANYA	NT1GC64B88A0NF-CF (Nanya NT5CB128H8AN-CF)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU03A1F1C-13H (Qimonda IDSH1G-03A1F1C-13H)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMNH1GU13A1F1C-13G (With iron case)	1GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH1GU13A1F1C-13H (Qimonda IDSH51-03A1F1C-13H)	1GB		V		V		
				V		V		V
			V	V		V		V
SEC	M378B2873DZ1-CH9 (SEC K4B1G0846D-HCH9)	1GB		V		V		
				V		V		V
			V	V		V		V
Supertalent	W1333UB1GQ (Qimonda IDSH51-03A1F1C-13H)	1GB		V		V		
				V		V		V
			V	V		V		V
ADATA	SC63I1B16 (SEC K4B1G0846D-HCH9)	2GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V
AENEON	AEH860UD00-13HA08X (Aeneon AEH03R13H)	2GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V
KINGSTON	KVR1333D3N9/2G (Elpida J1108BASE-DJ-E)	2GB		V		V		
				V		V		V
			V	V		V		V
			V	V	V	V	V	V
Micron	MT16JTF25664AY-1G4D1 (Micron D9JNM)	2GB		V		V		
				V		V		V
			V	V		V		V
Qimonda	IMSH2GU13A1F1C-13H (Qimonda IDSH1G-03A1F1C-13H)	2GB		V		V		
				V		V		V
			V	V		V		V
SEC	M378B5673CZ0-CH9 (SEC K4B1G0846C-ZCH9)	2GB		V		V		
				V		V		V
			V	V		V		V
SEC	M378B5673DZ1-CH9 (SEC K4B1G0846D-HCH9)	2GB		V		V		
				V		V		V
			V	V		V		V

Important

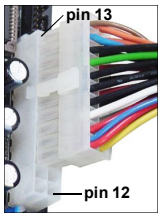
For more information on compatible components, please visit http://global.msi.com.tw/index.php?func=testreport.

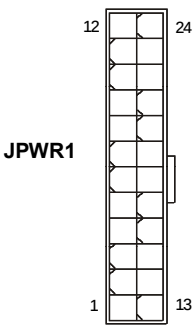
Power Supply

ATX 24-Pin Power Connector: JPWR1

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

You may use the 20-pin ATX power supply as you like. If you'd like to use the 20-pin ATX power supply, please plug your power supply along with pin 1 & pin 13 (refer to the image at the right hand).



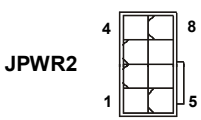


Pin Definition

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

ATX 12V Power Connector: JPWR2

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



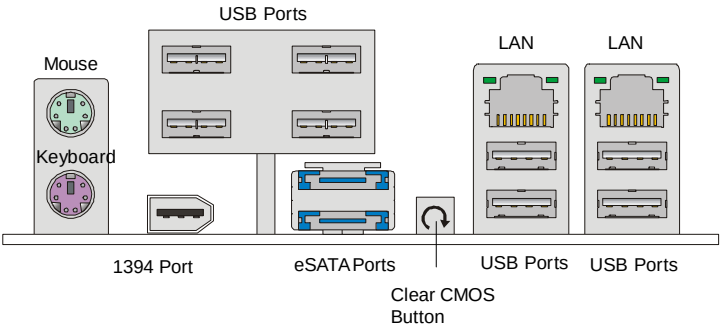
Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

Important

1. *Make sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.*
2. *Power supply of 450 watts (and above) is highly recommended for system stability.*
3. *ATX 12V power connection should be greater than 18A.*

Back Panel



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

▶ 1394 Port
The IEEE1394 port on the back panel provides connection to IEEE1394 devices.

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

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

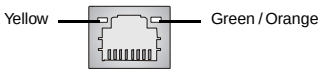
▶ Clear CMOS Button
There is a CMOS RAM on board that has a power supply from external battery to keep the system configuration data. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the button to clear data. Press the button to clear the data.

Important

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

▶ LAN

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

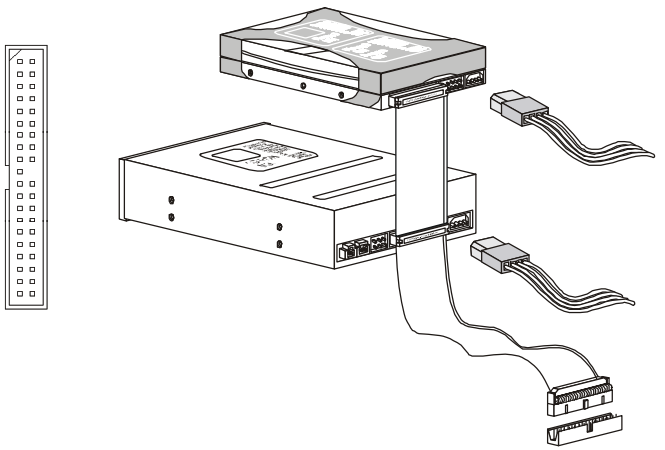


LED	Color	LED State	Condition
Left	Yellow	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.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

Connectors

IDE Connector: IDE1

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



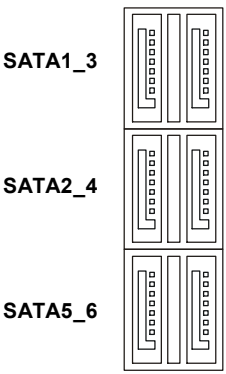
Important

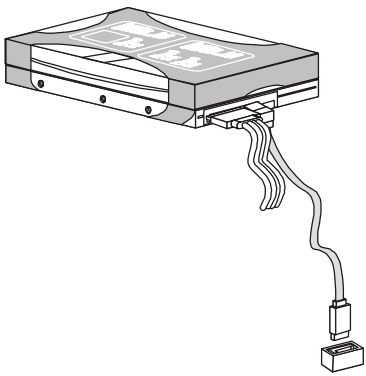
If you install two IDE devices on the same cable, you must configure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

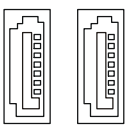
Serial ATA Connector: SATA1~10

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

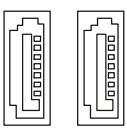
SATA1~6 stack SATA connectors are supported by ICH10R







SATA7 & 8 are controlled by 1st JMB322



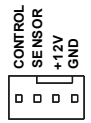
SATA9 & 10 are controlled by 2nd JMB322

Important

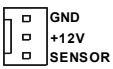
1. Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.
*2. Please always use the **Intel** default **Black** SATA connectors (SATA1~6) first.*
3. SATA7 & SATA8, SATA9 & SATA10, support RAID 0/ RAID 1/ JBOD function and you can set RAID mode in BIOS setup or in DRIVE BOOSTER MANAGER (refer to the BIOS section or Appendix section).

Fan Power Connectors: CPUFAN, SYSFAN1~5

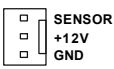
The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset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



CPUFAN



SYSFAN1



SYSFAN2/3

SYSFAN4

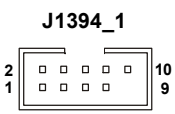
SYSFAN5

Important

1. *Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.*
2. *CPUFAN supports fan control. You can install **Overclocking Center** utility that will automatically control the CPU fan speed according to the actual CPU temperature.*
3. *SYSFAN1~3 support fan control, too. You may select how percentage of speed for the SYSFAN1/2/3 in BIOS.*

IEEE1394 Connector: J1394_1

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

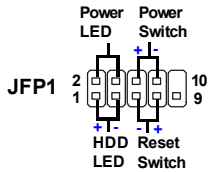


Pin Definition

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

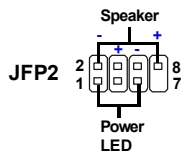
Front Panel Connectors: JFP1, JFP2

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



JFP1 Pin Definition

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

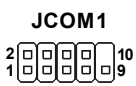


JFP2 Pin Definition

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

Serial Port Connector: JCOM1

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

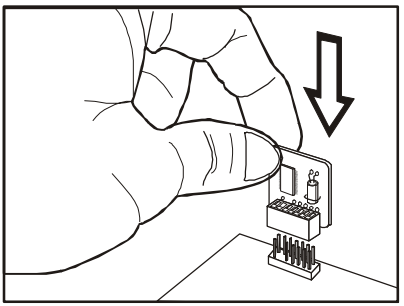


Pin Definition

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

TPM Module Connector: JTPM1

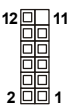
This connector connects to a TPM (Trusted Platform Module) module (optional). Please refer to the TPM security platform manual for more details and usages.



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

D-LED2 Panel Connector: JDLED2

This connector connects to a D-LED2 (Debug-LED2) panel (optional), which shows information on the panel for you and identify the current status or mode of the connected system. Please refer to the D-LED2 quick guide for more details and usages.



Chassis Intrusion Connector: JCI1

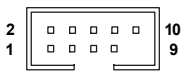
This connector connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

JCI1

Front USB Connector: JUSB1/ JUSB2

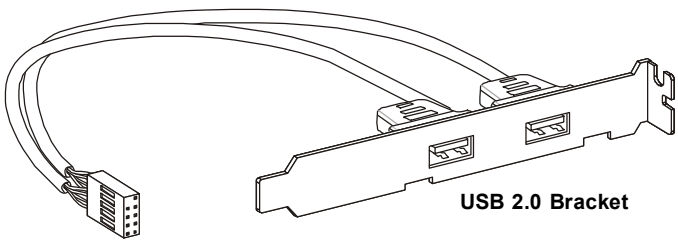
These connectors, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.

JUSB1/ JUSB2



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	NC



USB 2.0 Bracket

Important

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

GreenPower Genie Connector: JSMB1

This connector connects to GreenPower Genie (optional). Please refer to the GreenPower Genie manual for more details and usages.

JSMB1

Buttons

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

Power Button: POWER1

This power button is used to turn-on or turn-off the system. Press the button to turn-on or turn-off the system. This button will light after you power-on the system, and the light will turn-off when you power-off the system.

POWER1

Reset Button: RESET1

This reset button is used to reset the system. Press the button to reset the system. This button will light when the system is in S0 status.

RESET1

D-LED2 Change Menu Button: DLED2

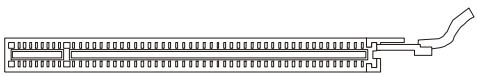
This button is used to change the menu on D-LED2 panel. Press the button to change the menu on D-LED2 panel. Please refer to the D-LED2 quick guide for more details and usages.

DLED2

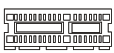
Slots

PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports the PCI Express interface expansion card.
The PCI Express 2.0 x16 supports up to 8.0 GB/s transfer rate.
The PCI Express 2.0 x4 supports up to 2.0 GB/s transfer rate.
The PCI Express x1 supports up to 250 MB/s transfer rate.



Black PCI Express x16 Slots support up to PCI Express 2.0 x16 speed (PCI_E2 & PCI_E4)



PCI Express x1 Slots supports up to PCI Express x1 speed (PCI_E1 & PCI_E3)

Blue PCI Express x 16 Slot supports up to PCI Express 2.0 x4 speed (PCI_E5)

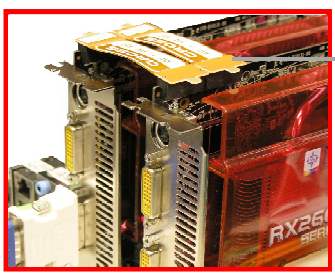
Important

The mainboard supports ATI CrossFireX™ technology with two Black PCIEx16 slots and 3-way CrossFireX™ with all the three PCIE x16 slots.

ATI CrossFireX™ (Multi-GPU) Technology

ATI CrossFireX™ (Multi-GPU) technology is an exciting new technology developed by ATI that allows the power of multiple Graphics. CrossFireX requires a CrossFireX Edition graphics card and the compatible standard (CrossFireX Ready) graphics card from the same series. To utilize this technology, always install the CrossFireX Edition graphics card in the **First black** PCIE x16 (PCI_E2) slot and install the CrossFireX Ready graphics card in the **Second black** PCIE x16 (PCI_E4) slot. The mainboard can auto detect the CrossFireX mode by software, therefore you don't have to enable the CrossFireX in BIOS by yourself. Following the process below to complete CrossFireX:

1. Install the CrossFire ***Edition*** graphics card in the **First black** PCIE x16 (PCI_E2) slot and install the CrossFire ***Ready*** graphics card in the **Second black** PCIE x16 (PCI_E4) slot.
2. With two cards installed, an CrossFire Video Link cable is required to connect the golden fingers on the top of these two graphics cards (refer to the picture below). Please note that although you have installed two graphics cards, only the video outputs on the CrossFire Edition graphics card will work. Hence, you only need to connect a monitor to the CrossFire Edition graphics card.



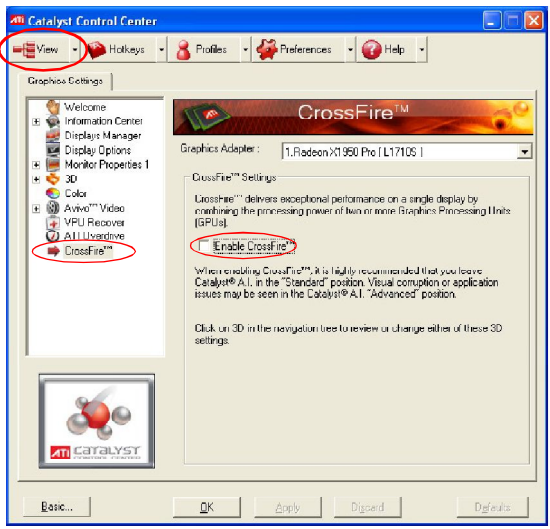
CrossFire Video Link cable

Important

1. Mainboard photos shown in this section are for demonstration only. The appearance of your mainboard may vary depending on the model you purchase.
*2. If you intend to install **TWO** graphics cards for CrossFireX mode, make sure that:*
a. these graphics cards are of the same brand and specifications;
*b. these cards are installed on both **black** PCIE x16 slots.*
*3. If you intend to install only **ONE** graphics card, make sure that: the graphics card is Installed on **first black** PCIE x16 (PCI_E2) slot;*
4. Only Windows® XP with Service Pack 2 (SP2)& Windows® XP Profes -sional x64 Edition & Windows® Vista support the CrossFire function.

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

Select the Advanced View from the view drop menu.



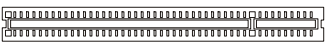
Important

A ATI 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.

PCI (Peripheral Component Interconnect) Slot

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



32-bit PCI Slot

Important

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

PCI Interrupt Request Routing

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

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

Switch

Hardware Overclock Base clock Switch: CPU_CLK1

You can overclock the Base clock to increase the processor frequency by changing this switch. Follow the instructions below to set the CPU clock.

133 MHz (default)

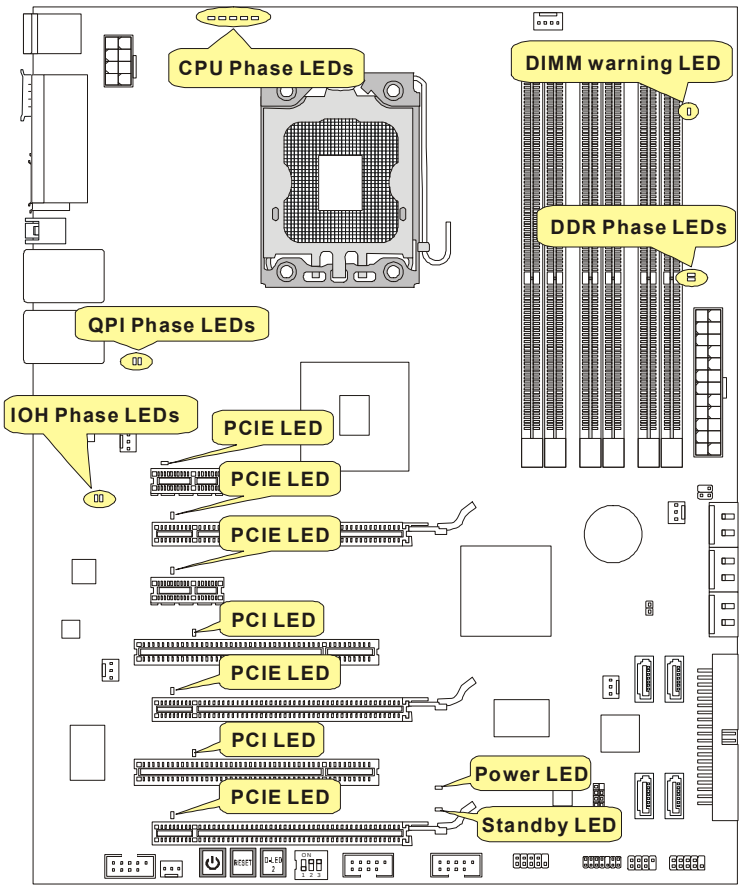
166 MHz

200 MHz

Important

1. Make sure that you power off the system before changing the switch.
2. This overclocking behavior depends on the system's configuration (memory capability, thermal solution...etc), and it is not guaranteed.
*3. HW overclocking may cause instability or crash during boot, then please re-set the switch to **default**.*
4. You can also overclock by setting BIOS. BIOS overclocking may also cause crash during boot and then please reboot the system 3 times to restore default BIOS settings. For more details, please refer to the BIOS chapter.

LED Status Indicators



Name	Status
CPU Phase LEDs	6/ 5/ 4/ 3/ 2/ 1 of the LEDs will light blue when CPU is in 6/ 5/ 4/ 3/ 2/ 1 phase power mode.
QPI Phase LEDs	2/ 1 of the LEDs will light blue when QPI is in 2/ 1 phase power mode.
IOH Phase LEDs	2/ 1 of the LEDs will light blue when IOH (north bridge) is in 2/ 1 phase power mode.
DDR Phase LEDs	2/ 1 of the LEDs will light blue when the memory is in 2/ 1 phase power mode.
PCI E LEDs	Lights blue when the PCIE Slot is functional.
PCI LEDs	Lights blue when the PCI Slot is functional.
Power LED	Lights green when the system is in power-on (S0/S1) status.
Standby LED	Lights orange when the system is in standby (S3/S4/S5) status.
DIMM Warning LED	Lights red when the incorrect memory installed into DIMM_C0/ DIMM_C1 (the DIMMs of 3rd channel).

Important

You can install the Green Power Center utility, that allows you to disable these LEDs separetely or all together. Or you may disable all the LEDs in BIOS setup (Green Power menu).

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.

MSI
MICRO-STAR INTERNATIONAL

Entering Setup

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

Press DEL to enter SETUP

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

Important

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
2. *Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:*

A7520IMS V1.0 090108 where:

1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.
2nd - 5th digit refers to the model number.
6th digit refers to the chipset as I = Intel, N = nVidia, and V = VIA.
7th - 8th digit refers to the customer as MS = all standard customers.
V1.0 refers to the BIOS version.
090108 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
<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

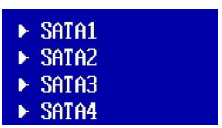
Getting Help

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

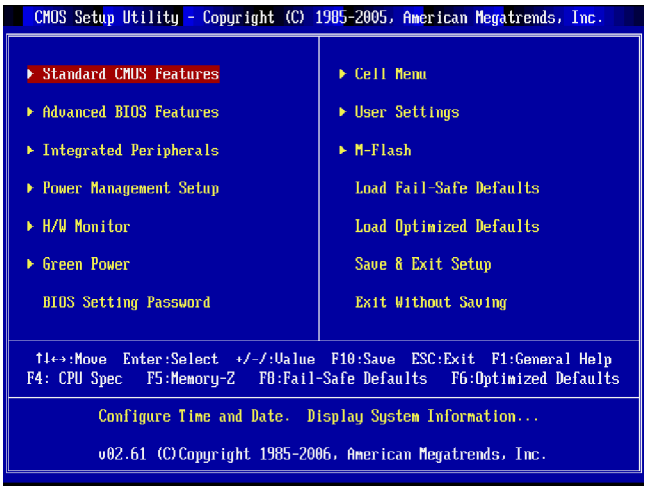


If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the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

▶ Integrated Peripherals
Use this menu to specify your settings for integrated peripherals.

▶ Power Management Setup
Use this menu to specify your settings for power management.

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

▶ 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.

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

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

▶ Load Fail-Safe Defaults
Use this menu to load the default values set by the BIOS vendor for stable system performance.

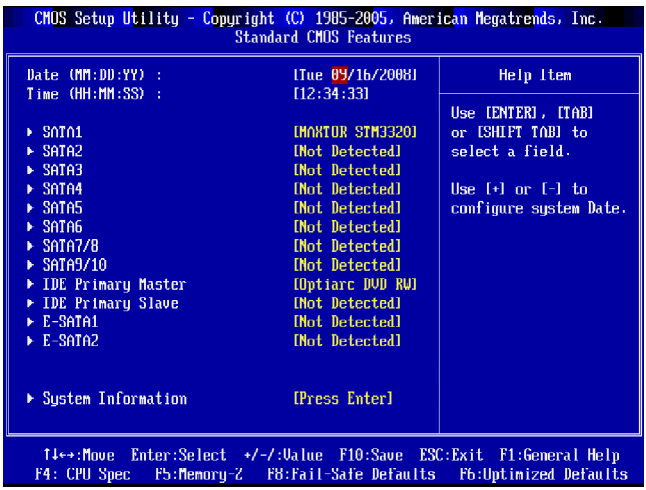
▶ Load Optimized Defaults
Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

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

▶ Exit Without Saving
Abandon all changes and exit setup.

Standard CMOS Features

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



▶ 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>.

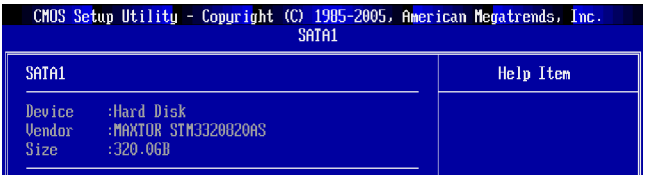
day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.

▶ 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>.

▶ SATA1~6 & 7/8 & 9/10 & IDE Primary Master/ Slave & E-SATA1/2

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



▶ Device / Vendor / Size

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

Important

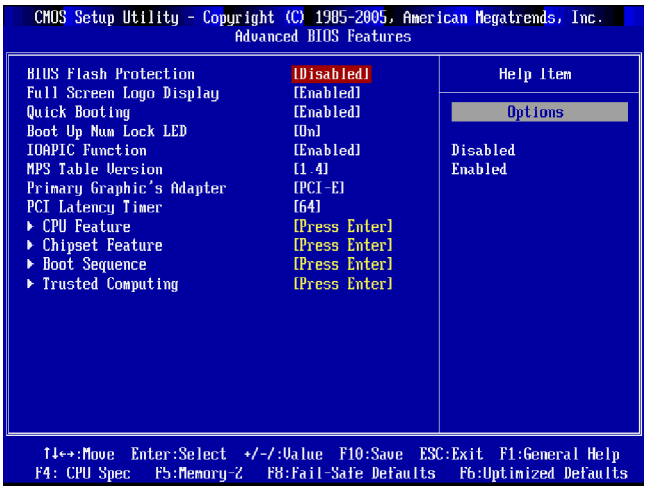
IDE Primary Master/ Slave, SATA1~6 & 7/8 & 9/10 & E-SATA1/2 *are appearing when you connect the HD devices to the IDE/ SATA connector on the mainboard.*

▶ 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



▶ BIOS Flash Protection

When enabled, the BIOS' data cannot be changed when attempting to update the BIOS with a Flash utility. To successfully update the BIOS, you'll need to disable this Flash BIOS Protection function. You should enable this function at all times. The only time when you need to disable it is when you want to update the BIOS. After updating the BIOS, you should immediately re-enable it to protect it against viruses.

▶ Full Screen Logo Display

This item enables you to show the company logo on the bootup screen. Options 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

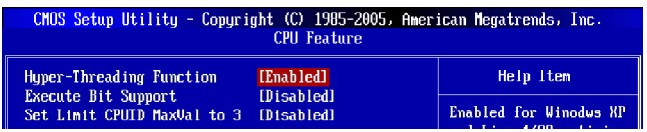
This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance with PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQ resources for the system.

▶ 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 graphics card is your primary graphics adapter.

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

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



▶ Hyper-Threading Function
The processor uses Hyper-Threading technology to increase transaction rates and reduces end-user response times. The technology treats the two cores inside the processor as two logical processors that can execute instructions simultaneously. In this way, the system performance is highly improved. If you disable the function, the processor will use only one core to execute the instructions. ***Please disable this item if your operating system doesn't support HT Function, or unreliability and instability may occur.***

▶ Execute Bit Support
Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

▶ Set Limit CPUID MaxVal to 3
The Max CPUID Value Limit is designed to limit the listed speed of the processor to older operating systems.

▶ Chipset Feature

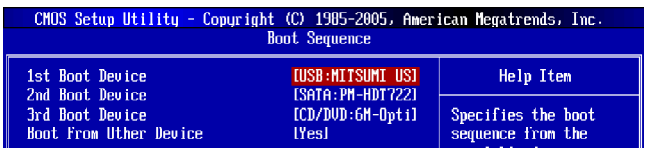
Press <Enter> to enter the sub-menu and the following screen appears:

▶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.

▶ Boot Sequence

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



▶ 1st/ 2nd/ 3rd Boot Device

The items allow you to set the first/ second/ third boot device where BIOS attempts to load the disk operating system.

▶ Trusted Computing

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

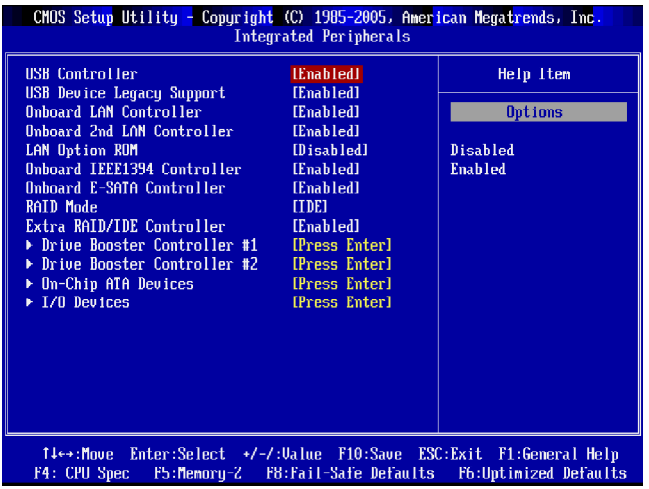
▶ TCG/TPM SUPPORT

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

▶ Clearing the TPM

Press Enter to clear the TPM status.

Integrated Peripherals



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

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

▶ Onboard LAN/ 2nd LAN Controller
This item is used to enable/disable the onboard 1st/ 2nd LAN controller.

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

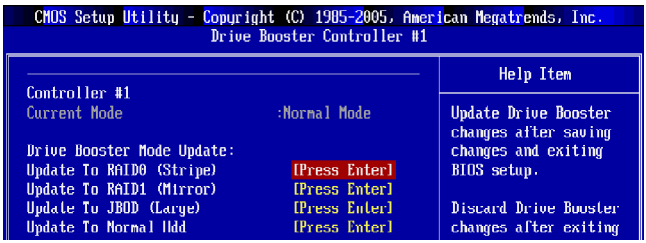
▶ Onboard IEEE1394 Controller
This item allows you to enable/disable the onboard IEEE1394 controller.

▶ Onboard E-SATA Controller
This item allows you to enable/disable the onboard E-SATA controller.

▶ RAID Mode (for E-SATA)
This item allows you to configure SATA RAID mode. Setting options: [RAID], [AHCI] or [IDE].

▶ Extra RAID/ IDE Controller (Two JMB322 controllers for SATA7/8 & SATA 9/10)
This item allows you to enable/disable the onboard extra RAID/ IDE controller.

▶ Drive Booster Controller #1 (for SATA7 & 8)/ #2(for SATA9 & 10)
Press <Enter> to enter the sub-menu, and the following screen appears.



▶ Current Mode
This item shows the current SATA mode. Read only.

Drive Booster Mode Update:

▶ Update To RAID0 (Stripe)/ RAID1(Mirror)/ JBOD(Large)/ Normal Hdd
These items are used to enable the RAID0/ RAID1/ JBOD/ Normal (non-RAID) mode for the SATA devices.

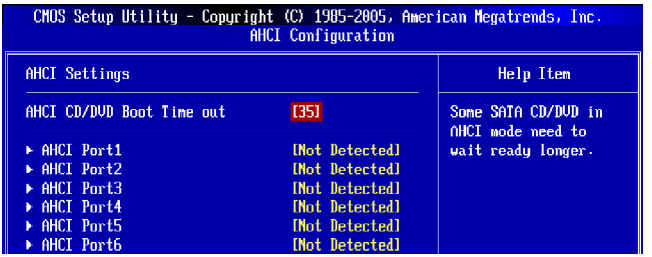
▶ On-Chip ATA Devices (for ICH10R)
Press <Enter> to enter the sub-menu and the following screen appears:

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

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

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

▶ AHCI Configuration
When the “RAID Mode” sets to [AHCI], this field is available. Press <Enter> to enter the sub-menu and the following screen appears:



▶ AHCI CD/DVD Boot Time out
Select the waiting time for the AHCI CD/ DVD when booting.

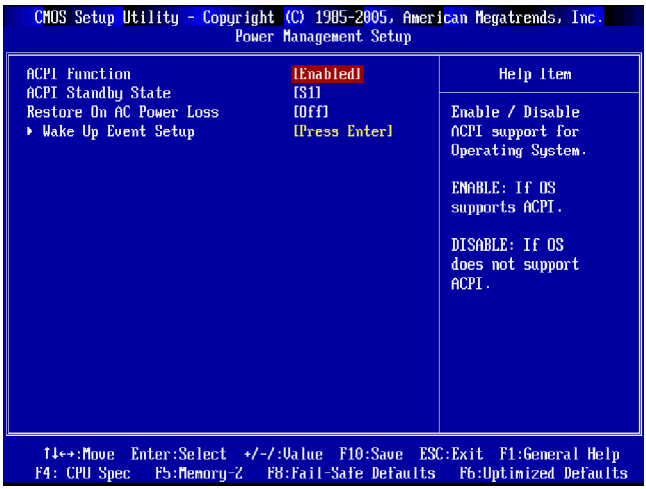
▶ AHCI Port 1/2/3/4/5/6
Press <Enter> to enter the sub-menu.

▶ AHCI Port 1/2/3/4/5/6
Select the type of device.

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

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

Power Management Setup



Important

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

▶ ACPI Function

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 2000/ XP, select [Enabled].

▶ ACPI Standby State

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

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

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

▶ Re-Call VGA BIOS From S3

When ***ACPI Standby State*** is set to [S3], users can select the options in this field. Selecting [Yes] allows BIOS to call VGABIOS to initialize the VGA card when system wakes up (resumes) from S3 sleep state. The system resume time is shortened when you disable the function, but system will need an VGA driver to initialize the VGA card. Therefore, if the VGA driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3.

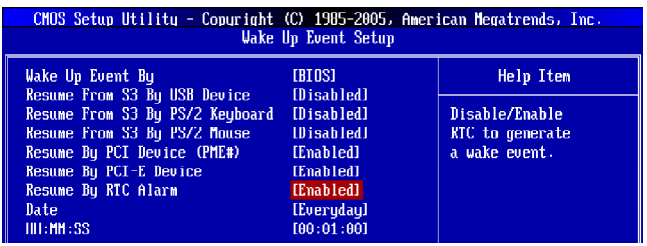
▶ Restore On AC Power Loss

This item specifies whether your system will reboot after a power failure or interrupt occurs. Settings are:

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

▶ Wake Up Event Setup

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



▶ Wake Up Event By

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

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

▶ Resume From S3 By PS/2 Mouse

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

▶ Resume by PCI Device (PME#)

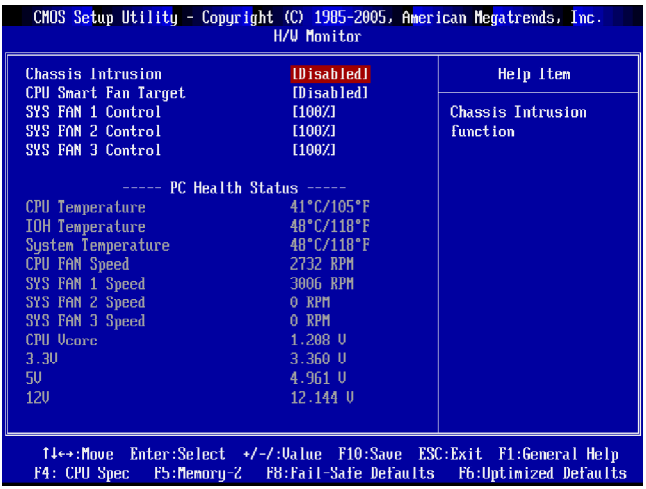
When set to [Enabled], the feature allows your system to be awakened from the power saving modes through any event on PME (Power Management Event).

▶ 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 PCI-E 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.

▶ Date / HH:MM:SS
These two fields can specify the date/ time for power-on by alarm.

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 Smart Fan Target

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

▶ SYS FAN1/2/3 Control

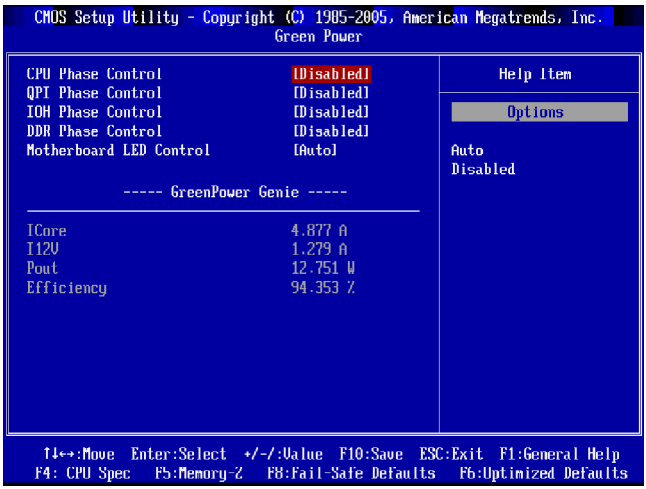
This item allows users to select how percentage of speed for the SYS FAN1/2/3.

▶ PC Health Status

▶ CPU/ IOH/ System Temperature, CPU FAN/ SYS FAN1/ SYS FAN2/ SYSFAN3 Speed, CPU Vcore, 3.3V, 5V, 12V

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

Green Power



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

▶ QPI Phase Control
When set to [Auto], the hardware will auto adjust the QPI power phase to reach the best power saving function.

▶ IOH Phase Control
When set to [Auto], the hardware will auto adjust the IOH chipset power phase according to the loading of it to reach the best power saving function.

▶ DDR Phase Control
When set to [Auto], the hardware will auto adjust the memory power phase according to the loading of memory to reach the best power saving function.

▶ Motherboard LED Control
This item is used to enable/ disable the power phase LEDs of the motherboard.

----- GreenPower Genie-----

▶ ICore/ I12V
These items show the amperage of Core/ 12V. Read only.

▶ Pout/ Efficiency
These items show the power consumption & efficiency of the system. Read only.

BIOS Setting Password

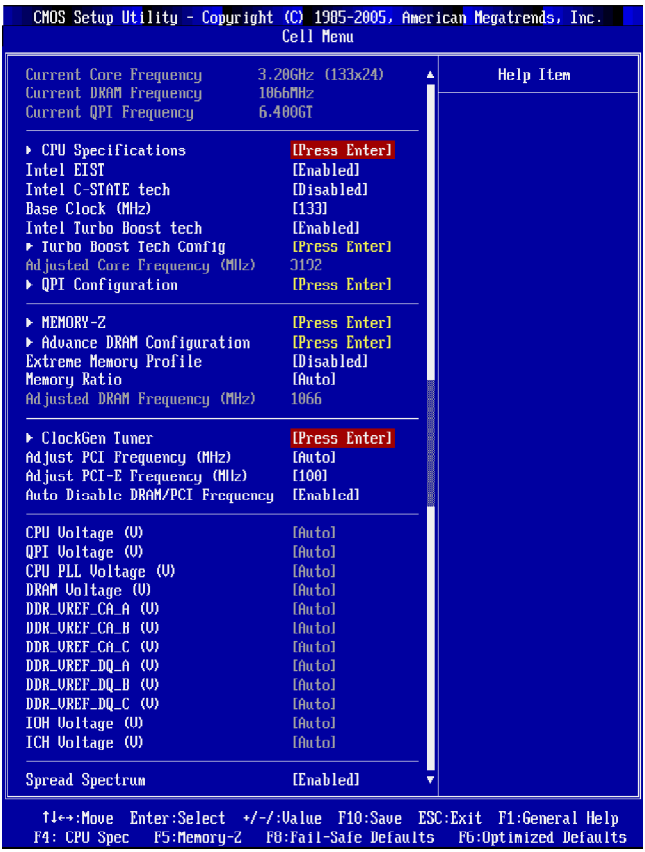
When you select this function, a message as below will appear on the screen:

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

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

When a password has been set, the "**Password Check**" item will be appear in Advanced BIOS Features menu. Setting [BIOS] in "**Password Check**" item, and you will be prompted to enter it every time you try to enter Setup. Setting [System] in "**Password Check**" item, and you will be prompted to enter it every time you try to enter System and Setup.This prevents an unauthorized person from changing any part of your system configuration.

Cell Menu



Important

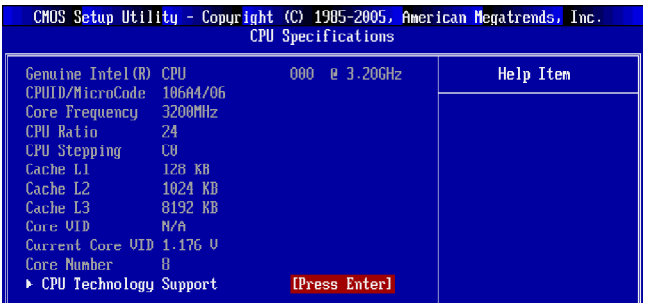
Change these settings only if you are familiar with the chipset.

► Current Core / DRAM / QPI Frequency

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

▶ CPU Specifications

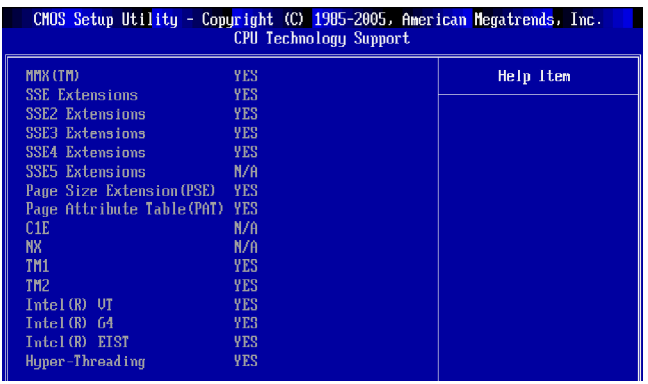
Press <Enter> to enter the sub-menu and the following screen appears.



This sub-menu displays the informations of installed CPU.

▶ CPU Technology Support

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



This sub-menu displays the technologies that the installed CPU supported.

▶ Intel EIST

The Enhanced Intel SpeedStep technology allows you to set the performance level of the microprocessor whether the computer is running on battery or AC power. This field will appear after you installed the CPU which support speedstep technology.

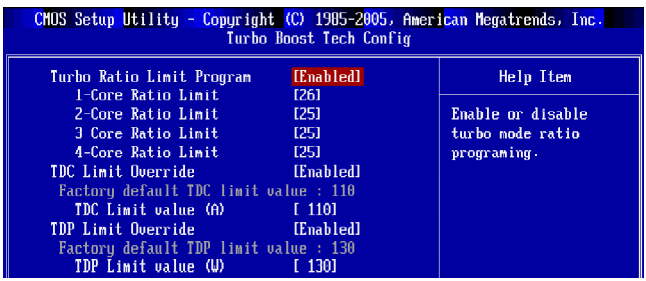
▶ Intel C-STATE tech

C-state is a power management state that significantly reduces the power of the processor during idle. This field will appear after you installed the CPU which support c-state technology.

▶ Base Clock (MHz)
This item allows you to set the CPU Base clock (in MHz). You may overclock the CPU by adjusting this value. Please note the overclocking behavior is not guaranteed.

▶ Intel Turbo Boost tech
This item will appear when you install a CPU with Intel Turbo Boost technology. This item is used to enable/ disable Intel Turbo Boost technology. It can scale processor frequency higher dynamically when applications demand more performance and TDP headroom exists. It also can deliver seamless power scalability (Dynamically scale up, Speed-Step Down). It is the Intel newly technology within i7 CPU.

▶ Turbo Boost Tech Config
This sub-menu will appear when you install a CPU include Intel Turbo Boost technology. Press <Enter> to enter the sub-menu and the following screen appears.



▶ Turbo Ratio Limit Program
This item is used to enable/ disable the turbo ratio limit program. Setting to [Enable] activates the following fields, and use the following fields to set each CPU core ratio.

▶ 1/2/3/4-Core Ratio Limit
These items allow you to select the CPU core ratio.

▶ TDC Limit Override
Setting to [Enable] activates the **TDC Limit value** field, and use the **TDC Limit value** field to set the CPU TDC value.

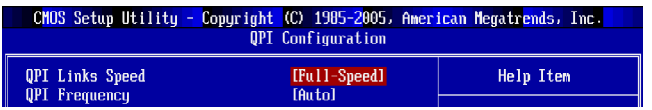
▶ TDC Limit value (A)
This item allows you to select the CPU TDC value (ampere).

▶ TDP Limit Override
Setting to [Enable] activates the **TDP Limit value** field, and use the **TDP Limit value** field to set the CPU TDP value.

▶ TDP Limit value (W)
This item allows you to select the CPU TDP value (watt).

▶ Adjusted CPU Frequency (MHz)
It shows the adjusted CPU frequency (Base clock x Ratio). Read-only.

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

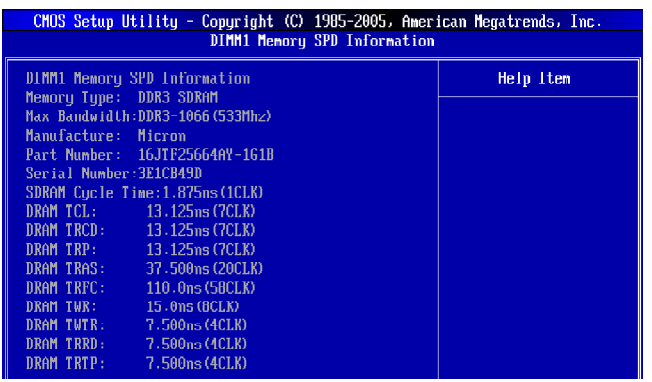


▶ QPI Links Speed
This item allows you to select the QPI links speed type.

▶ QPI Frequency
This item allows you to select the QPI frequency.

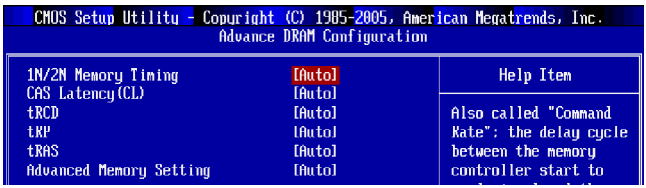
▶ Memory-Z
Press <Enter> to enter the sub-menu and the following screen appears.

▶ DIMM1~6 Memory SPD Information
Press <Enter> to enter the sub-menu and the following screen appears.



This sub-menu displays the informations of installed memory.

▶ Advance DRAM Configuration
Press <Enter> to enter the sub-menu and the following screen appears.



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

▶ CAS# Latency (CL)
This controls the CAS latency, which determines the timing delay (in clock cycles) before SDRAM starts a read command after receiving it.

▶ tRCD
When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance.

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

▶ tRAS
This setting determines the time RAS takes to read from and write to memory cell.

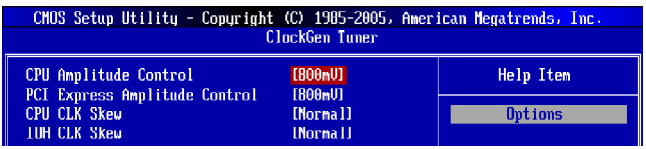
▶ Advance Memory Setting
Setting to [Auto] enables the advance memory timing automatically to be determined by BIOS. Setting to [Manual] allows you to set advanced memory timings.

▶ Extreme Memory Profile
This item is used to enable/disable the Intel Extreme Memory Profile (XMP). For further information please refer to Intel's official website.

▶ Memory Ratio
This item allows you to set the memory multiplier.

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

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



▶ CPU / PCI Express Amplitude Control
These items are used to select the CPU/ PCI Express clock amplitude.

▶ CPU CLK Skew/ IOH CLK Skew
These items are used to select the CPU/ IOH chipset clock skew. They can help CPU to reach the higher overclocking performace.

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

▶ 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 DIMM and PCI slots to minimize the electromagnetic interference (EMI).

▶ CPU Voltage (V)/ QPI Voltate (V))/ CPU PLL Voltage (V)/ DRAM Voltage (V)/ DDR_VREF_CA_A (V)/ DDR_VREF_CA_B (V)/ DDR_VREF_CA_C (V)/ DDR_VREF_DQ_A (V)/DDR_VREF_DQ_B (V), DDR_VREF_DQ_C (V)/ IOH Voltage (V), ICH Voltage (V)
These items are used to asjust the voltage of CPU, Memory, QPI and chipset.

For CPU Voltage:
The value here is the offset for you to adjust/add based on the current CPU voltage. Please read the real-time CPU voltage in “CPU Vcore” in the “H/W monitor” page. Please note the based CPU Voltage will vary depending on the different CPU you install.

For QPI Voltage:
The value here is the offset for you to adjust/add based on the current QPI voltage. The default based QPI Voltage is from 1.1V to 1.22V, and it will vary depending on the different CPU you install. You can read the QPI voltage in GreenPower Center.

For DRAM Voltage:
According to the Inte CPU spec, DRAM Voltage setting 1.65V may damage the CPU permanently. It is strongly recommended that you install the DRAM with the voltage setting below 1.65V. You can read the DRAM voltage in GreenPower Center.

► Spread Spectrum

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

Important

1. *If you do not have any EMI problem, leave the setting at [Disabled] for optimal system stability and performance. But if you are plagued by EMI, select the value of Spread Spectrum for EMI reduction.*
2. *The greater the Spread Spectrum value is, the greater the EMI is reduced, and the system will become less stable. For the most suitable Spread Spectrum value, please consult your local EMI regulation.*
3. *Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up.*

CPU and Memory Clock Overclocking

The **D.O.T Control, Base Clock, Memory Ratio** items for you to overclock the CPU and the Memory. Please refer to the descriptions of these fields for more information.

Important

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

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

Reboot

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

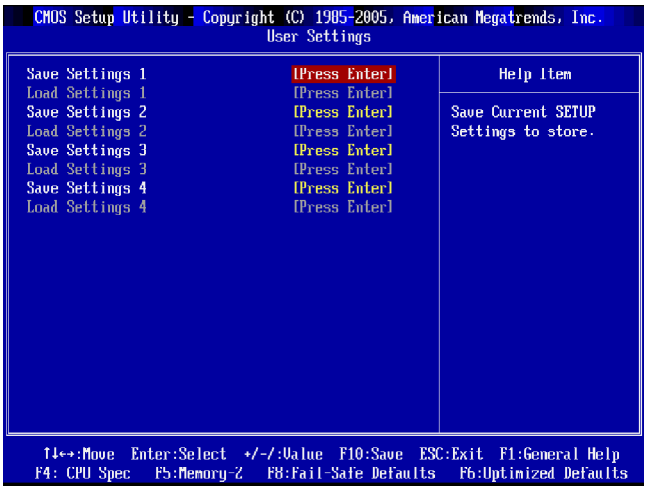
2. At the fourth reboot, BIOS will determine that the previous overclocking is failed and restore the default settings automatically. Please press any key to boot the system normally when the following message appears on screen.

```
Warning !!! The previous performance of overclocking is failed,
and the system is restored to the defaults setting,
Press any key exclude "DEL" to enter SETUP.....
```

Clear CMOS

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

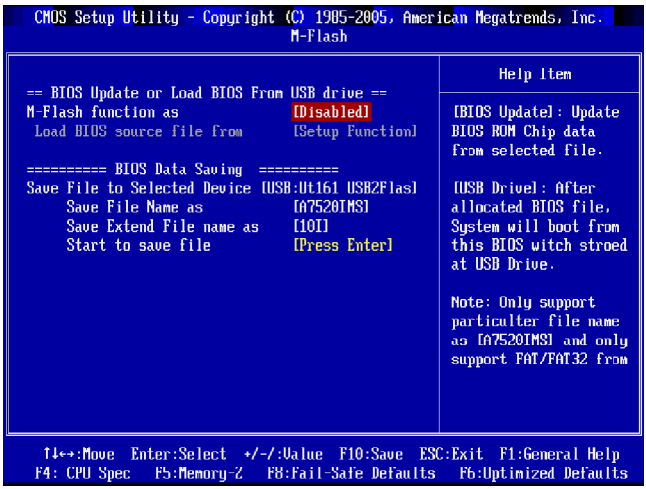
User Settings



► Save Settings 1/ 2/ 3/ 4
These items are used to save the settings set by yourself to CMOS.

► Load Settings 1/ 2/ 3/ 4
These items are available after you save your settings in **Save Settings 1/ 2/ 3/ 4** items , and are used to load the settings from CMOS.

M-Flash



== BIOS Update or Load BIOS From USB drive==

► M-Flash function as

M-Flash funcion 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**).

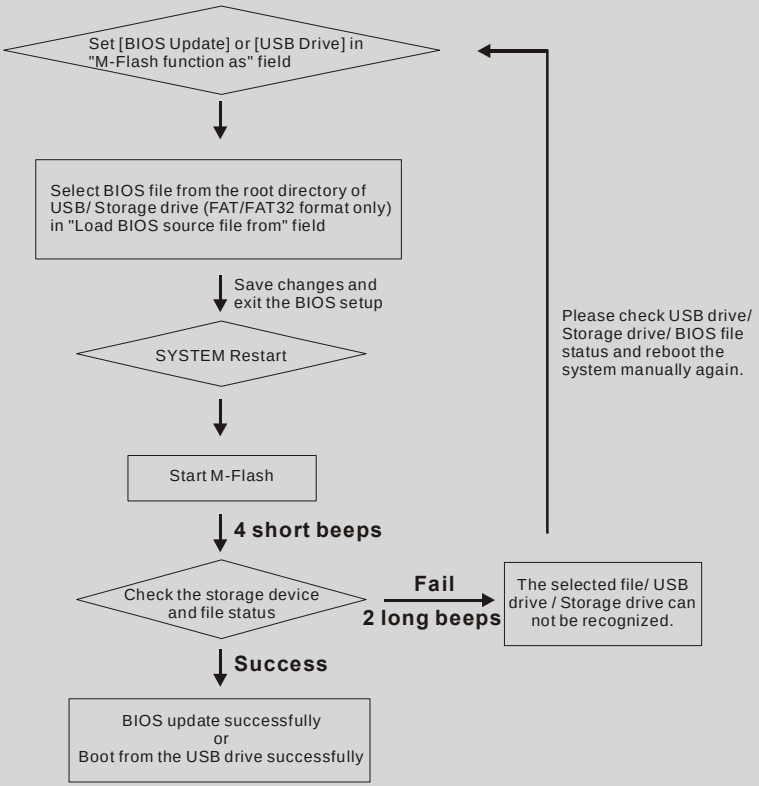
[Disabled] Disable M-Flash function.

[BIOS Update] Flash BIOS via the **USB/ Storage** drive directly. Update BIOS ROM chip data from selected file, which is 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.

[USB Drive] 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

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



2. 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 [USB Drive] or [BIOS Update], this item is selectable. Using this item to select particular BIOS file from the USB/ Storage (FAT/32 format only) drive.

== BIOS Data Saving ==
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 drvie.

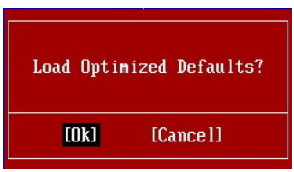
Load Fail-Safe/ Optimized Defaults

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
X-Fi Xtreme Audio Card

The X-Fi Xtreme Audio card is powered by Creative CA0110 Audio chip. It supports up to 8-channel & SPDIF audio effect and allows users to attach 2, 4, 6, or 8 speakers for better surround sound effect. This manual will tell you about the specifications of the card, how to install it to a mainboard, how to connect 2, 4, 6, or 8 speakers to it, and to operate 2-, 4-, 6-, or 8-channel audio function.

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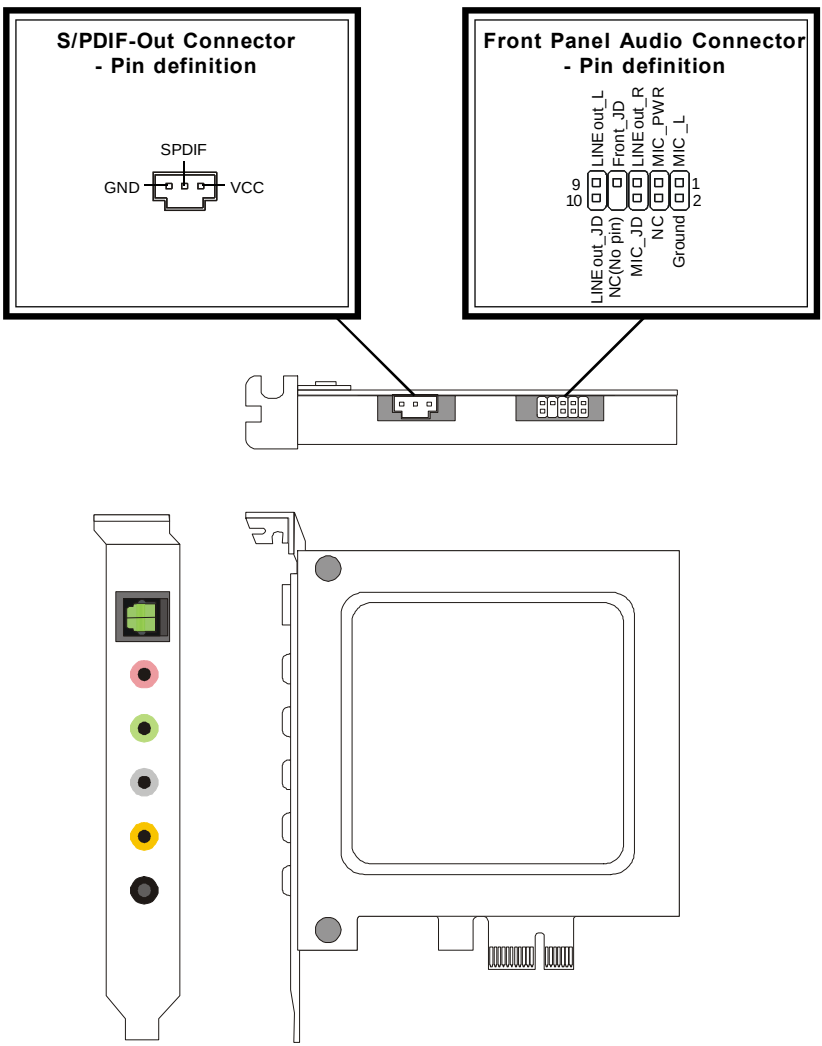
Introduction

X-Fi Xtreme Audio Card is powered by Creative CA0110 Digital Audio Controller. This card provides advanced audio functions by offering a comprehensive suite of software applications. The advanced tools and amazing features provided will allow you to experience a full array of exciting activities, such as listening to effects enhanced music, watching a multi-channel movie, playing the latest game or recording a high quality audio track.



Features

High Definition Audio Quality

- 144-pin LQFP ASIC with 64 audio channel playback at independent sample rates
- 24-bit Analog-to-Digital conversion of analog inputs at 96kHz sample rate
- 24-bit Digital-to-Analog conversion of digital sources at 96kHz to analog 7.1 speaker output
- 16-bit and 24-bit recording with sampling rates of 8, 11.025, 16, 22.05, 24, 32, 44.1, 48 and 96kHz
- SPDIF output up to 24-bit resolution at selectable sampling rate of 44.1, 48 or 96kHz

EAX® ADVANCED HD™ Audio Technology

- User-selectable EAX ADVANCED HD MUSIC presets, pre-configurable modes simulating various acoustic environments
- Optimized settings for headphones, stereo, 4.1, 5.1, 6.1 or 7.1 speakers
- Creative Multi-Speaker Surround™ (CMSS®) technology transforms all stereo audio into 7.1 multi-channel playback

Realistic Wave-Table Synthesis

- 64-Voice polyphony and multi-timbral capability
- 128 GM & GS compatible instruments and 10 drum kits
- 2MB or 4MB GM SoundFont Bank included

Sound Blaster Live! 24-bit Input/Output

- Line level out (Front/ Side/ Rear/ Centre/ Subwoofer) or Headphone out
- Line In / Microphone In
- S/PDIF In and S/PDIF Out
- Auxiliary Audio in

Works with the Following Standards

- Windows® XP SP2 and Vista
- Sound Blaster MIDI and General MIDI
- Microsoft® DirectSound®, DirectSound 3D & derivatives
- Plug and Play
- Sound Blaster PCI
- EAX® ADVANCED HD™
- EAX
- PCI 2.3 compliant
- AC97 compliant

Sound Blaster Live! 24-bit Audio Performance

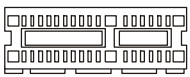
- Signal-to-Noise Ratio (A-Weighted) = 100 dB (2V)
- Frequency Response at -3 dBr = <10 Hz to 40 kHz

Hardware Installation

Installing the Card

The interface of X-Fi Xtreme Audio Card is PCI-E x1. You can install it to the PCI-E slot. Follow the steps below to install the card, then you can activate the advanced function and enjoy the audio effect.

1. Turn off your computer and disconnect the power cord.
2. Open and remove the case of the computer.
3. Find an empty PCI-E x1 slot. Or you can also install it to PCI-E x4, or x16 slot, only the speed remains x1.

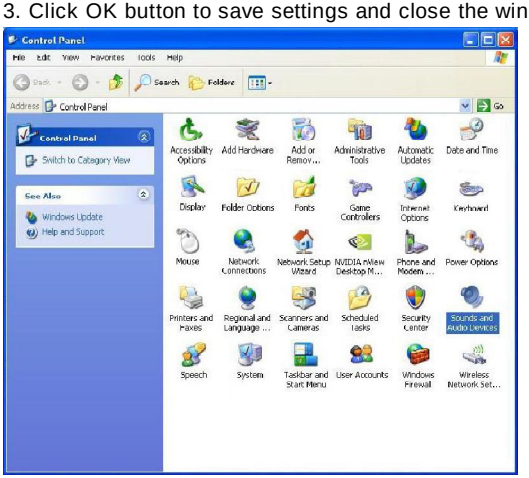


4. Remove the bracket which may obstruct the PCI-E x1 slot.
5. Gently but firmly install the X-Fi Xtreme Audio Card to the PCI-E slot and secure the card bracket with a screw.
6. Replace and secure the case. Reconnect the power cord to the computer.

Select Audio Controller

If your mainboard integrates audio function or an audio card installed, after installing the X-Fi Xtreme Audio Card and its driver, there will be two audio controllers available on your system. Either one can be selected and used at a time. Please follow the steps below to select and operate.

1. Go to **Control Panel**, double click on the **Sound and Audio Devices**.
2. Select **Sound Blaster X-Fi Xtreme Audio** in the **Default Device** drop-down menus of **Audio** and **Voice** tags.
3. Click OK button to save settings and close the window.



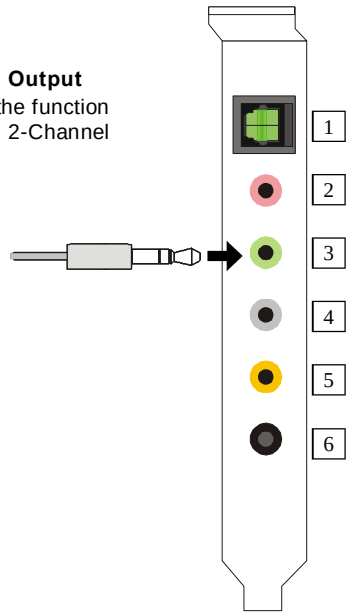
4. If you need to use the function of another audio controller, select the corresponding option.

Connecting the Speakers

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

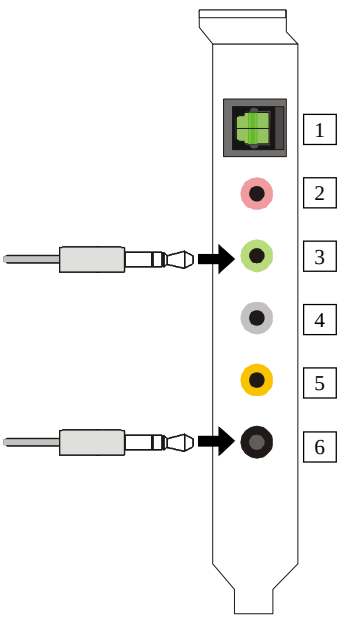
n 2-Channel Mode for 2-Speaker Output

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



2-Channel Analog Audio Output

1. S/PDIF Out-Optical
2. MIC & Line-In
3. Line Out *(Front channels)*
4. No function
5. No function
6. No function



n 4-Channel Mode for 4-Speaker Output

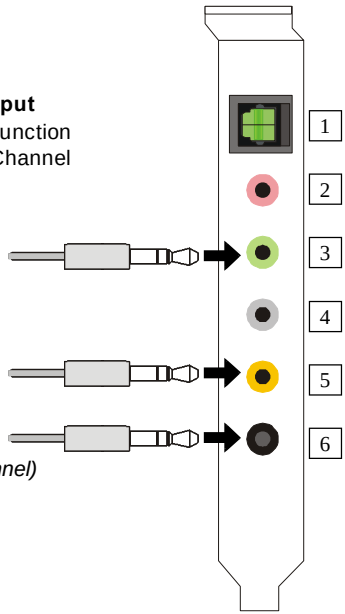
Refer to the diagram and caption for the function of each jack on the back panel when 4-Channel Mode is selected.

4-Channel Analog Audio Output

1. S/PDIF Out-Optical
2. MIC & Line-In
3. Line Out *(Front channels)*
4. No function
5. No function
6. Line Out *(Rear channels)*

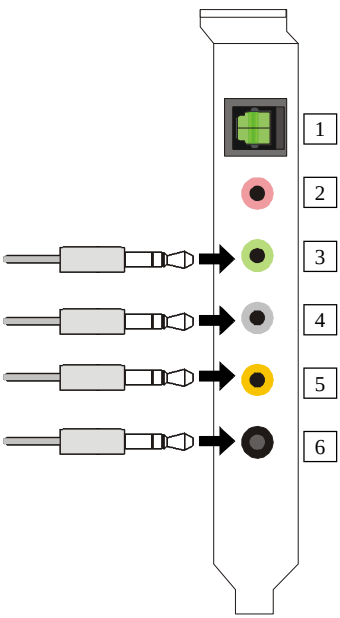
n 6-Channel Mode for 6-Speaker Output

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



6-Channel Analog Audio Output

1. S/PDIF Out-Optical
2. MIC & Line-In
3. Line Out *(Front channels)*
4. No function
5. Line Out *(Center and Subwoofer channel)*
6. Line Out *(Rear channels)*



n 8-Channel Mode for 8-Speaker Output

Refer to the diagram and caption for the function of each jack on the back panel when 8-Channel Mode is selected.

8-Channel Analog Audio Output

1. S/PDIF Out-Optical
2. MIC & Line-In
3. Line Out *(Front channels)*
4. Line Out *(Side channels)*
5. Line Out *(Center and Subwoofer channel)*
6. Line Out *(Rear channels)*

Installing the Creative Audio Driver

You need to install the driver for Creative CA0110 to function properly before you can get access to 2-, 4-, 6- or 8- channel and SPDIF audio operations. Follow the procedures below to install the drivers for Windows 2000/ XP/ VISTA operating system.

Installation for Windows XP/ VISTA

Install Windows® XP Service Pack 1 for Windows® XP before installing the driver.

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

1. Insert the Creative audio driver CD into the CD-ROM drive. The setup screen will automatically show on the screen as below.
2. Click **Next** to go to next page.

Important

The screens shown in this chapter may be slightly different from the latest software utility and shall be held for reference only.

3. Select your region from the list .

4. Select the language that you need from the list .

5. On the next page, click **Install** to start the installation and follow the setup instructions to complete.

6. Finally, you have to **restart** the system after the installation is done .

Software Configuration

After installing the creative audio driver, you are able to use the 2-, 4-, 6- or 8-channel and the SPDIF audio features. Double click on the creative volume control audio icon from the system tray at the lower-right corner of the screen to activate the Sound Blaster X-Fi Xtreme Audio Applications, simply click on each icon to enter the configuration screen. Or you can move the mouse cursor to the top of screen and a **Creative MediaSource Go** quick start bar will float on the desktop, simply click on each icon to enter the configuration screen.

Creative MediaSource Go quick start bar

Creative volume control icon

Creative MediaSource Go! Launcher

Click on the **Creative MediaSource Go! Launcher** icon to enter its configuraton screen.

Creatvie MediaSource Go! Launcher consists of various tabs such as **Programs, Product Settings, Product Support and Companion Products**. In each tab, you can access different applications, called Tasks. For more information and usage details on each Task, please refer to its online Help (simply click on the "?" button to get the online help information).

Soundfont Bank Manager

Click on the **SOUNDFONT® BANK MANAGER** icon to enter its configuraton screen.

With SoundFont Bank Manager (SFBM), you can:

- Load SoundFont banks
Replace the default sounds on your computer with the high-quality sound of a SoundFont bank.

- Adjust SoundFont cache memory
Allocate SoundFont cache memory according to your needs, to better utilize the memory resources of yout computer.

- Audition presets on your computer
The virtual keyboard in SFBM allows you to audition presets quickly on your computer. You can also audition presets from an external MIDI device, such as a MIDI keyboard.

- Edit SoundFont banks
Perfrom simple editing tasks like creating new SoundFont banks, and copying presets from one SoundFont to another.

For more information and usage details on each Task, please refer to its online Help (simply click on the “?” button to get the online help information).

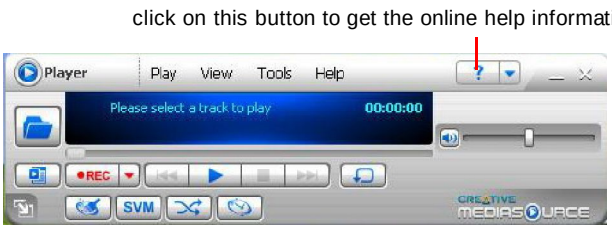
Important

SFBM is compatible with SoundFont 1.0, 2.0, and 2.1 file formats.

Creative MediaSource™ Play/ Organizer

Click on the **Creative MediaSource™ Play/ Organizer** icon to enter its configuraton screen.

Creative MediaSource™ Player/ Oraganizer is your digital music center for playing , creating, organizing and transferring digital music. This is your ultimate all-in-one digital entertainment software.
With Creative MediaSource™ Player/ Oraganizer, you can:



- Clean up and convert your vinyl records and cassette tapes to digital formats with the integrated recorder.
- Rip CDs and create high quality digital audio files (up to 320 kbps for WMA).
- Use the Super Rip feature on your audio CDs to get superior quality audio tracks enhanced with X-Fi Cystalizer, X-Fi CMSS-3D Surround and X-Fi CMSS-3D Headphone effects.
- Burn personalized MP3 and audio CDs with a CD-writer, and print your own CD covers.
- Organize your digital music collection with a powerful, easy to use music library.
- Search for tracks with an advanced Find feature that searches as your type.
- Transfer tracks and files seamlessly to and from your digital audio players with AudioSync and SmartFit.
- Automatically generate playlists from your music library, based on your preferences, with Smart Playlist.
- Rate each track (up to 5 stars) to automatically generate playlists of songs you like/ dislike, with Smart Playlist.
- Play Copy Control™ CDs.
- Use Smart Crossfade to enjoy continuous audio. Smart Crossfade uses crossfading and beatmatching to link tracks together.
- Add cover art to audio files.

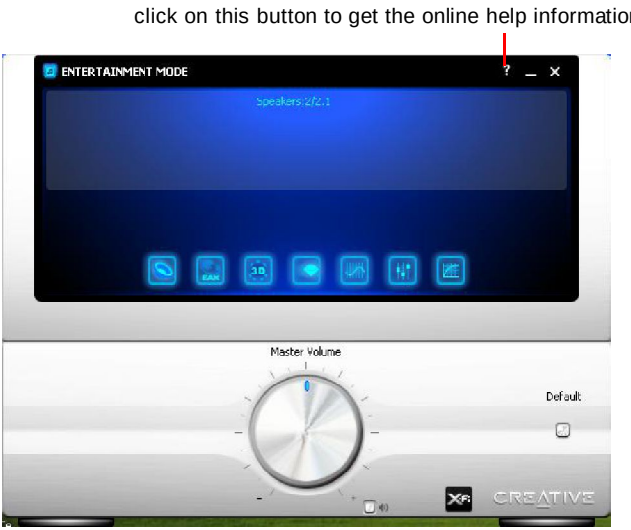
Some features and options are available only with selected products.

For more information and usage details on each Task, please refer to its online Help (simply click on the “?” button to get the online help information).

Entertainment Mode Console

Click on the **Entertainment Mode** icon to enter its configuraton screen.

In Entertainment Mode, you audio device is optimized for movie soundtrack and music playback.
You can configure Entertainment Mode settings in the Entertainment Mode consloe. With the Entertainment Mode console, you can:



- Adjust master volume or speaker volume, bass and treble levels.
- Adjust volume mixer settings.
- Configure playback settings for your speakers or headphones.
- Adjust equalizer settings.
- Enable environment effects.
- Enable multichannel upmixing.
- Enable virtual surround sound.
- Enhance detail and impact of audio with X-Fi™ Crystalizer™.

Some choices are different for selected audio devices.

For more information and usage details on each Task, please refer to its online Help (simply click on the “?” button to get the online help information).

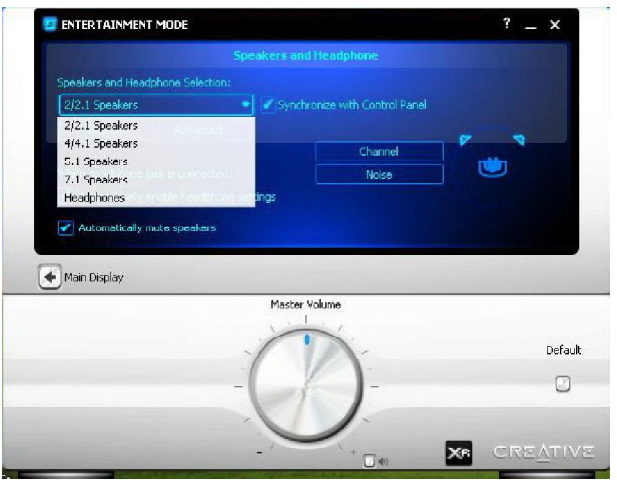
The following table lists the function of each control on the main interface.

	Close button - Click on this button to close the Entertainment Mode console.
	Minimize button - Click on this button to minimize the Entertainment Mode window to the task bar.
	Help button - Click on this button to read information about the Entertainment Mode console. Select Help Contents to display the online Help. Click the Contents tab and select a topic, or click on the Search tab and search for a specific topic by entering a keyword.
	Volume control - Turn this knob to adjust master volume or speaker volume.
	Mute button - Click on this button to mute the master volume or speaker volume.
	Default button - Click on this button to revert all the settings in Entertainment Mode to the default.
	Main Display button - Click on this button to revert to the main display. This button disappears when you are in the main display.
	Speaker button - Click on this button to show speaker settings.
	Jack Sensing button - Click on this button to show the jacks connected. (Available only in Windows Vista.)
	EAX Effects button - Click on this button to display EAX Effects settings.
	X-Fi CMSS-3D button - Click on this button to show X-Fi CMSS-3D settings.
	X-Fi Crystalizer button - Click on this button to show X-Fi Crystalizer settings.
	EQ button - Click on this button to show EQ settings.
	Mixer button - Click on this button to show volume mixer settings.
	Performance button - Click on this button to show sampling rate and bit depth settings. (Available in Windows XP and Windows 2000.)

Speaker & Headphone

Click on the speaker button to enter its configuration screen.

Here you can adjust your speakers configuration. Select the type of your speaker system, and adjust the volume and cuff frequency for your subwoofer.



This is the main application to use for the following tasks:

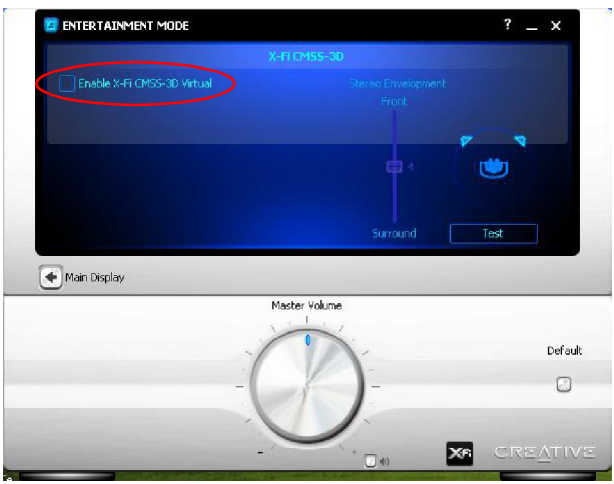
- Designating the number and configuration of speakers to use => select the speakers type that you connected.
- Testing your speakers => click on the Channel or Noise button to test the speakers.

For more information and usage details on MIXER, refer to its online Help (click on the "?" button).

X-Fi CMSS-3D

Click on the X-Fi CMSS-3D button to enter its configuration screen.

Creative MultiSpeaker Surround (CMSS) 3D makes ordinary two-channel (Left and Right Stereo) sound seem to surround you, even through only two speakers. For users with 5.1, 6.1, 7.1 multichannel speaker systems, CMSS can also simulate surround sound from ordinary stereo. This is useful for watching DVDs and VCDs, which contain only stereo soundtracks, or listening to CDs with two-channel audio. To enable the CMSS 3D configuration mean by check the **Enable X-Fi CMSS-3D Virtual** item. Then you can select CMSS for multichannel audio enhancement on 4/4. 1, 5.1, 6.1 or 7.1 speaker systems.



Important

*To enable the **X-Fi CMSS-3D Virtual** item when you want to use 4/ 5.1/ 7. 1 channel audio-out.*
The multichannel upmix depends on your speakers and the speaker settings. For example, if you want to upmix to 5.1 channels, make sure you have connected 5.1-channel speakers to audio jacks, and have selected the 5.1 speaker option in your speakers & headphone setup.

Appendix B
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. CD-ROM drive for software installation.
3. Operation system: Windows XP or up.
4. DotNet Frame Work 2.0

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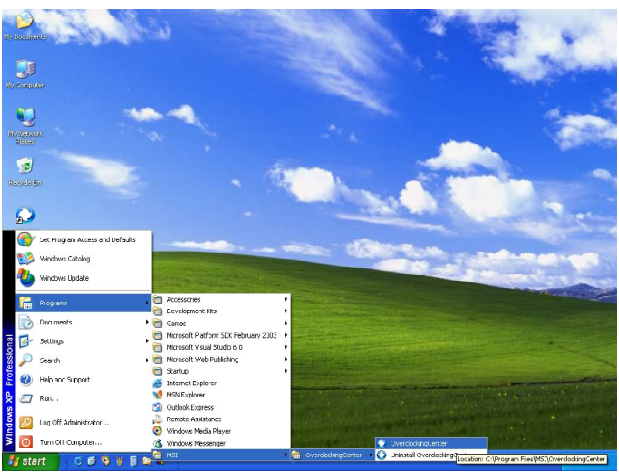
Activating Overclocking Center

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 informations of mainboard/ memory/ PCI.

Motherboard

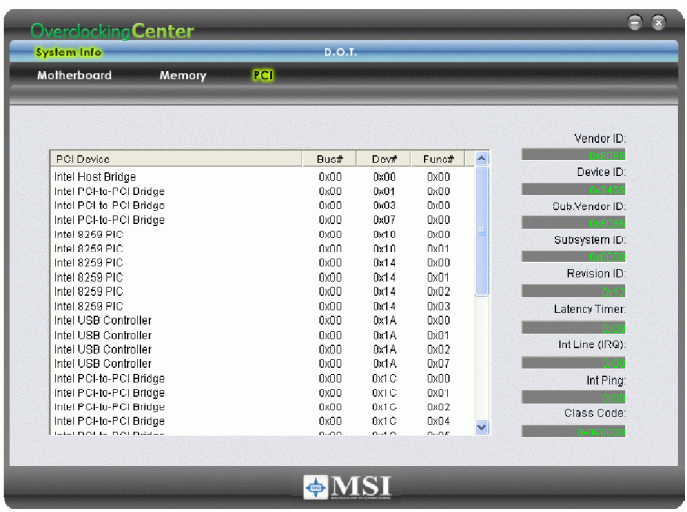
Click **Motherboard** to read the informations of mainboard, mainboard BIOS, installed CPU and installed graphics card.

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.

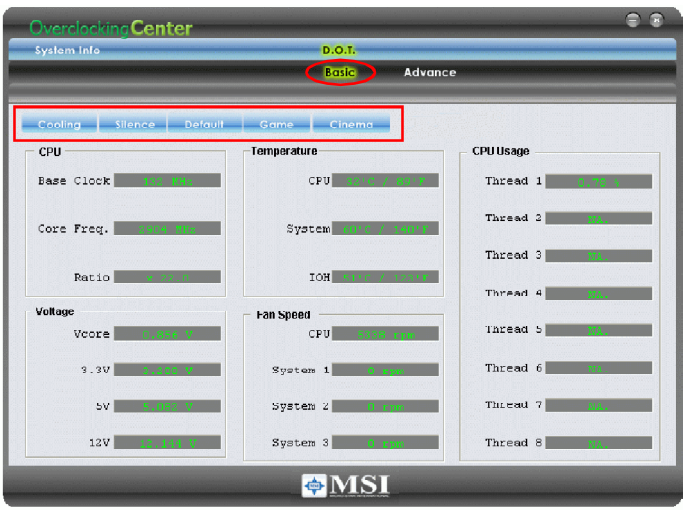


DOT

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

Basic

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



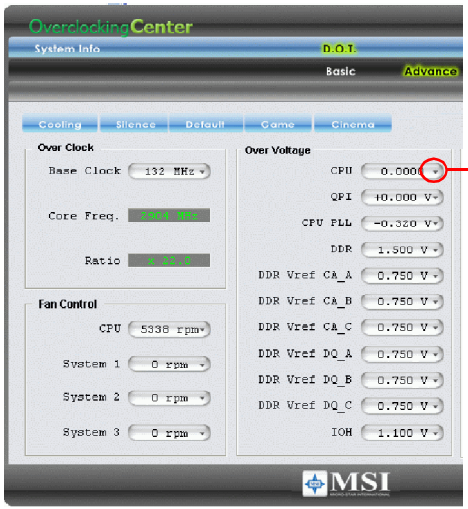
Important

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

Advance

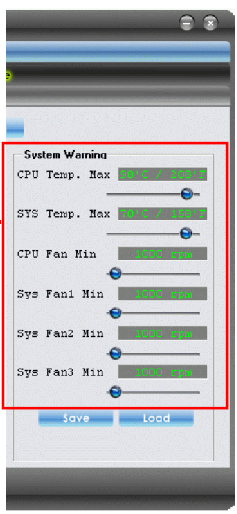
In the Advance menu, you can adjust the values for each environment setting/ default setting. Click the Cooling/ Silence/ Default/ Game/ Cinema button to enter it's setting menu. Please refer to the following descriptions to adjust the values and save them.

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.



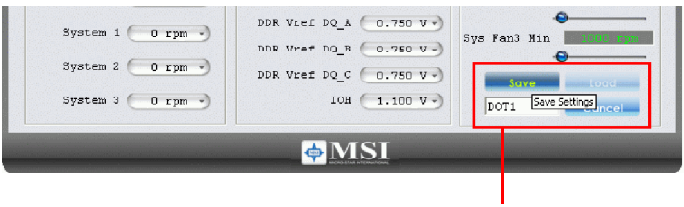
Click the arrow sign and the drop-down menu will appear.

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 temperture & CPU FAN speed.

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

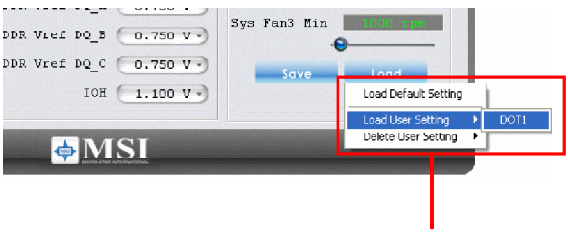


Click the **Save** button, and enter a name in the empty box. Then, click **Save** button again to save the settings.

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.

Appendix C
Intel ICH10R SATA RAID

This appendix will assist users in configuring and enabling RAID functionality on platforms

MSI
MICRO-STAR INTERNATIONAL

Introduction

The ICH10R provides a hybrid solution that combines 6 independent SATAII ports for support of up to 6 Serial ATAII (Serial ATAII RAID) drives.

Serial ATAII (SATAII) is the latest generation of the ATA interface. SATA hard drives deliver blistering transfer speeds up to 3 Gb/s. Serial ATA uses long, thin cables, making it easier to connect your drive and improving the airflow inside your PC. The most outstanding features are:

1. Supports 3 Gb/s transfers with CRC error checking.
2. Supports Hot-plug-n-play feature.
3. Data handling optimizations including tagged command queuing, elevator seek and packet chain command.

Intel® ICH10R offers RAID level 0 (Striping), RAID level 1 (Mirroring and Duplexing), RAID level 5 (Block Interleaved Distributed Parity), RAID level 10 (A Stripe of Mirrors) , Intel® Martix Storage Technology and Intel® Rapid Recover Technology.

RAID 0 breaks the data into blocks which are written to separate hard drives. Spreading the hard drive I/O load across independent channels greatly improves I/O performance.

RAID 1 provides data redundancy by mirroring data between the hard drives and provides enhanced read performance.

RAID 5 Provides data striping at the byte level and also stripe error correction information. This results in excellent performance and good fault tolerance. Level 5 is one of the most popular implementations of RAID.

RAID 10 Not one of the original RAID levels, multiple RAID 1 mirrors are created, and a RAID 0 stripe is created over these.

Intel Matrix RAID Technology is the advanced ability for two RAID volumes to share the combined space of two hard drives being used in unison.

Intel Rapid Recover Technology utilizes RAID 1 functionality to copy data from a designated Master drive to a designated Recovery drive. The size of the Master drive must be less than or equal to the size of the Recovery drive. When a Recovery volume is created, complete capacity of the Master drive will be used as the Master volume. Only one Recovery Volume can exist on a system. There are 2 methods of updating the data on the Master to the Recovery drive. They are Continuous Update Policy and On Request Update Policy.

Important

The least number of hard drives for RAID 0, RAID 1, Recovery or Matrix mode is 2. The least number of hard drives for RAID 10 mode is 4. And the least number of hard drives for RAID 5 mode is 3.
All the information/ volumes/ pictures listed in your system might differ from the illustrations in this appendix.

BIOS Configuration

The Intel Matrix Storage Manager Option ROM should be integrated with the system BIOS on all motherboards with a supported Intel chipset. The Intel Matrix Stroage Manager Option ROM is the Intel RAID implementation and provides BIOS and DOS disk services. Please use <Ctrl> + <I> keys to enter the "Intel(R) RAID for Serial ATA" status screen, which should appear early in system boot-up, during the POST (Power-On Self Test). Also, you need to enable the RAID function in BIOS to create, delete and reset RAID volumes.

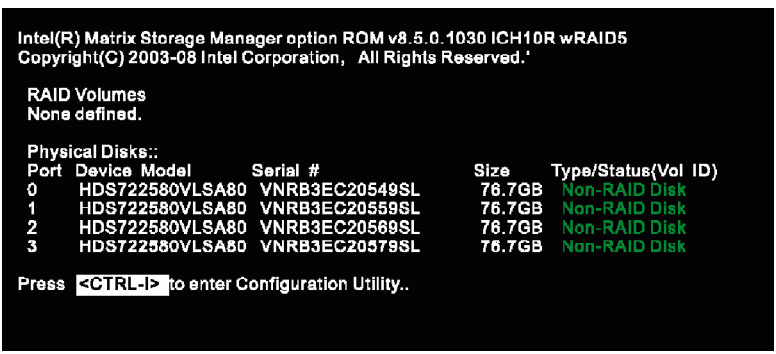
Using the Intel Matrix Stroage Manager Option ROM

1. Creating, Deleting and Resetting RAID Volumes:

The Serial ATA RAID volume may be configured using the RAID Configuration utility stored within the Intel RAID Option ROM. During the Power-On Self Test (POST), the following message will appear for a few seconds:

Important

The "Drvice Model", "Serial #" and "Size" in the following example might be different from your system.

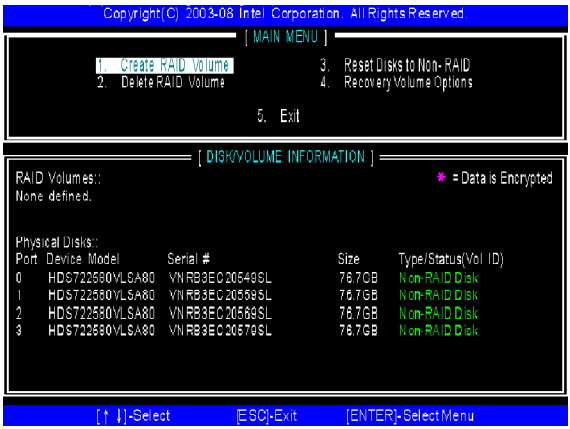


After the above message shows, press <Ctrl> and <I> keys simultaneously to enter the RAID Configuration Utility.

Important

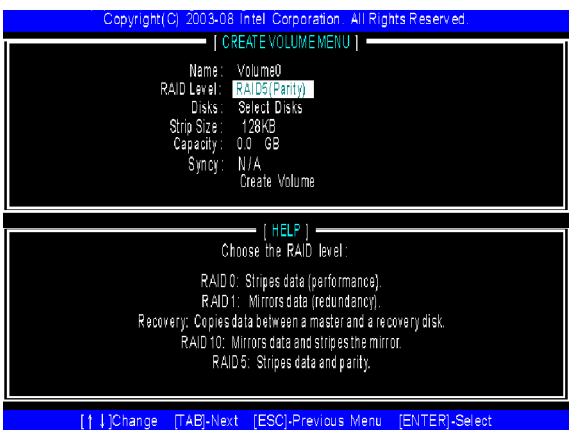
The following procedure is only available with a newly-built system or if you are reinstalling your OS. It should not be used to migrate an existing system to RAID.

After pressing the <Ctrl> and <I> keys simultaneously, the following window will appear:

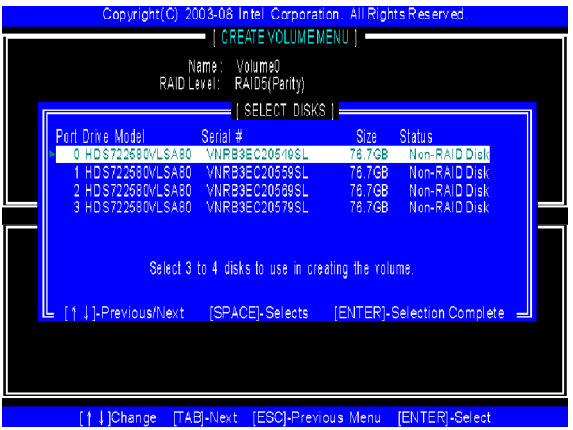


(1) Create RAID Volume

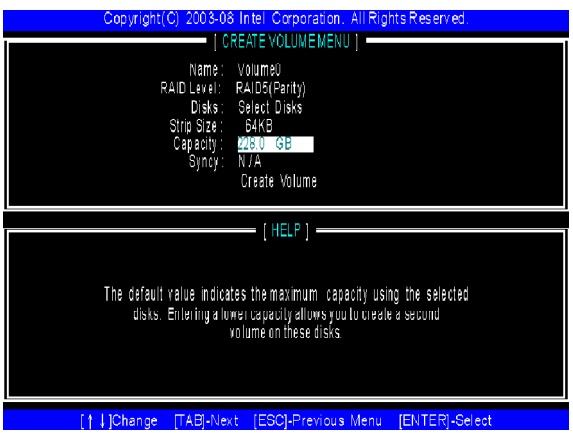
1. Select option 1 “Create RAID Volume” and press <Enter> key. The following screen appears. Then in the **Name** field, specify a RAID Volume name and then press the <TAB> or <Enter> key to go to the next field.
2. Use the arrow keys to select the RAID level best suited to your usage model in **RAID Level**.



3. In the **Disk** field, press <Enter> key and the following screen appears. Use <Space> key to select the disks you want to create for the RAID volume, then click <Enter> key to finish selection.



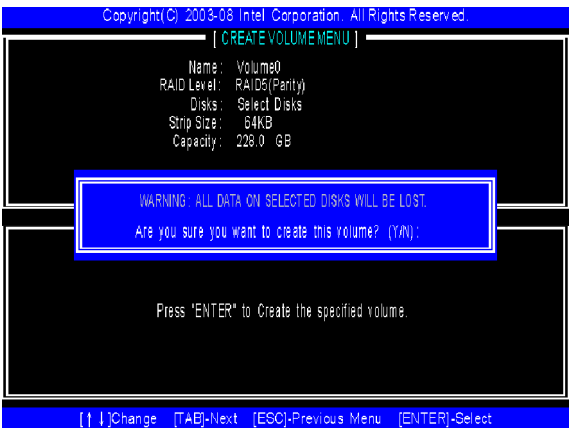
4. Then select the strip value for the RAID array by using the “upper arrow” or “down arrow” keys to scroll through the available values, and pressing the <Enter> key to select and advance to the next field. The available values range from 4KB to 128 KB in power of 2 increments. The strip value should be chosen based on the planned drive usage. Here are some typical values:
   RAID0 – 128KB
   RAID10 – 64KB
   RAID5 – 64KB
5. Then select the capacity of the volume in the **Capacity** field. The default value is the maximum volume capacity of the selected disks.



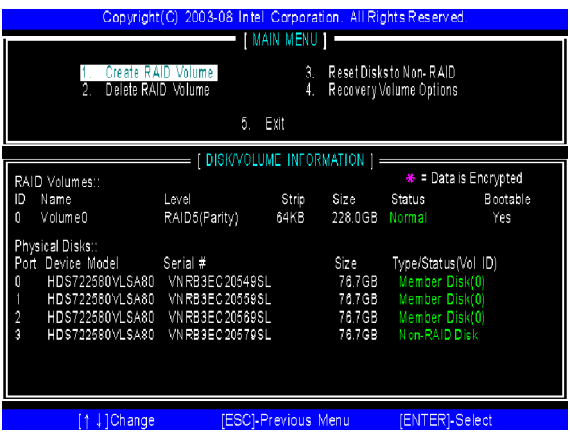
Important

Since you want to create two volumes (Intel Matrix RAID Technology), this default size (maximum) needs to be reduced. Type in a new size for the first volume. As an example: if you want the first volume to span the first half of the two disks, re-type the size to be half of what is shown by default. The second volume, when created, will automatically span the remainder of two hard drives.

6. Then the following screen appears for you to confirm if you are sure to create the RAID volume. Press <Y> to continue.



7. Then the following screen appears to indicate that the creation is finished.



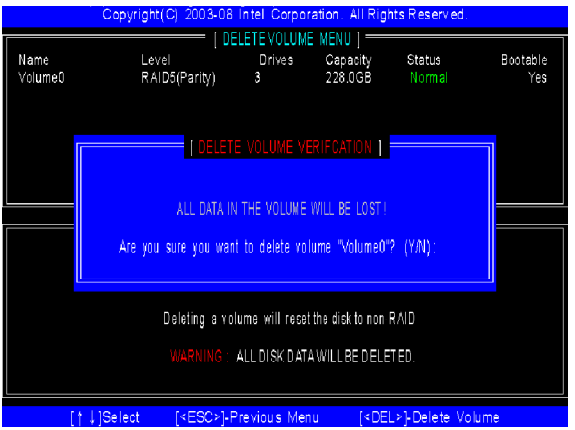
(2) Delete RAID Volume

Here you can delete the RAID volume, but please be noted that all data on RAID drives will be lost.

Important

If your system currently boots to RAID and you delete the RAID volume in the Intel RAID Option ROM, your system will become unbootable.

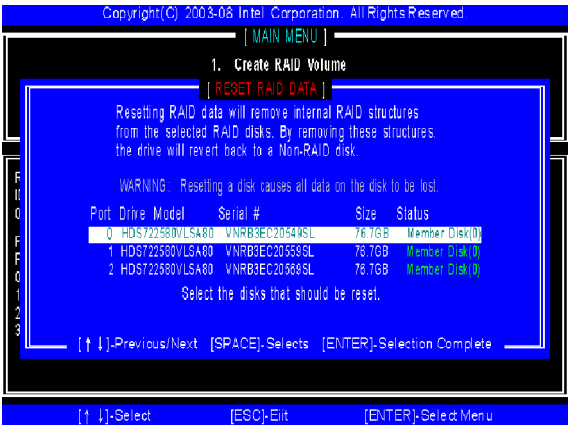
Select option 2 **Delete RAID Volume** from the main menu window and press <Enter> key to select a RAID volume for deletion. Then press <Delete> key to delete the selected RAID volume. The following screen appears.



Press <Y> key to accept the volume deletion.

(3) Reset Disks to Non-RAID

Select option 3 **Reset Disks to Non-RAID** and press <Enter> to delete the RAID volume and remove any RAID structures from the drives. The following screen appears:



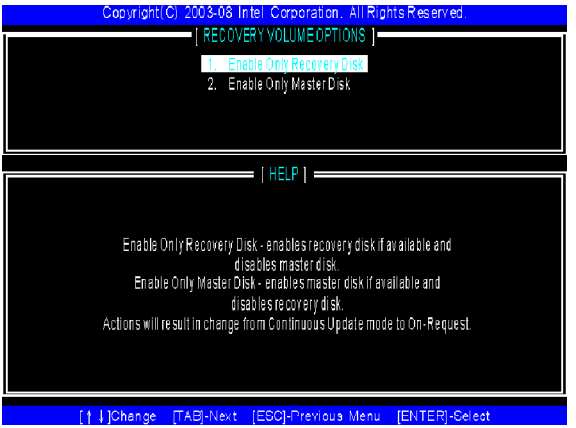
Press <Y> key to accept the selection.

Important

1. *You will lose all data on the RAID drives and any internal RAID structures when you perform this operation.*
2. *Possible reasons to 'Reset Disks to Non-RAID' could include issues such as incompatible RAID configurations or a failed volume or failed disk.*

(4) Recovery Volume Options

Select option 4 **Recovery Volume Options** and press <Enter> to change recovery volume mode. The following screen appears:



Recovery mode will change from Continuous Update to On-Request after you enable “Only Recovery Disk” or “Only Master Disk”.

Installing Driver

Install Driver in Windows Vista / XP

† **New Windows Vista / XP Installation**

The following details the installation of the drivers while installing operating system.

1. When you start installing Windows XP, you may encounter a message stating, "Setup could not determine the type of one or more mass storage devices installed in your system". If this is the case, then you are already in the right place and are ready to supply the driver. If this is not the case, then press F6 when prompted at the beginning of Windows setup.
2. Press the "S" key to select "Specify Additional Device".
3. You should be prompted to insert a floppy disk containing the Intel® RAID driver into the A: drive.
   Note: For Windows XP, you can use the USB floppy drive only.
   For Windows Vista you can use CD/ DVD/ USB drive.

Important

*Please follow the instruction below to make an **"Intel® RAID Driver"** for yourself.*

1. Insert the MSI CD into the CD-ROM drive.
2. Click the "Browse CD" on the Setup screen.
*3. Copy all the contents in **\\IDE\Intel\ICH10R\Floppy** to a formatted floppy diskette.*
*4. The driver diskette for **Intel® ICH10R RAID Controller** is done.*

4. For Windows Vista:
   During the Operating system installation, after selecting the location to install Vista click on "Load Driver" button to install a third party SCSI or RAID driver.
5. When prompted, insert the floppy disk or media (CD/DVD or USB) you created in step 3 and press Enter.
6. You should be shown a list of available SCSI Adapters.
7. Select the appropriate Intel RAID controller and press ENTER.
8. The next screen should confirm that you have selected the Intel® RAID controller. Press ENTER again to continue.
9. You have successfully installed the Intel® Matrix Storage Manager driver, and Windows setup should continue.
10. 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.\

† **Existing Windows Vista/XP Driver Installation**

1. Insert the MSI CD into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the Driver tab, click on ***Intel IAA RAID Edition***.
4. The drivers will be automatically installed.

† **Confirming Windows Vista/XP Driver Installation**

1. From Windows Vista/XP, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "**+**" in front of the **SCSI and RAID Controllers** hardware type. The driver ***Intel(R) ICH10R SATA RAID Controller*** should appear.

Installing Software

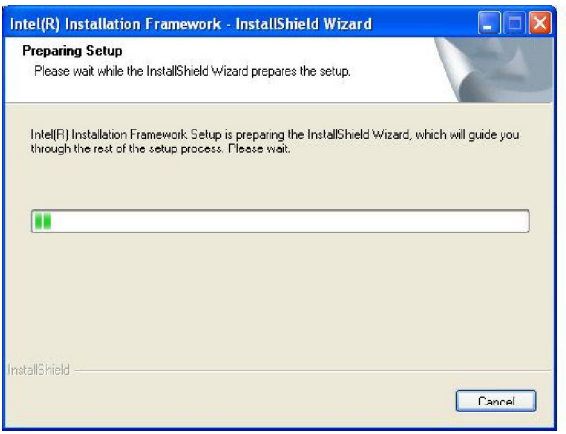
Install Intel Matrix Storage Console

The Intel Application Accelerator RAID Edition driver may be used to operate the hard drive from which the system is booting or a hard drive that contains important data. For this reason, you cannot remove or un-install this driver from the system after installation; however, you will have the ability to un-install all other non-driver components.

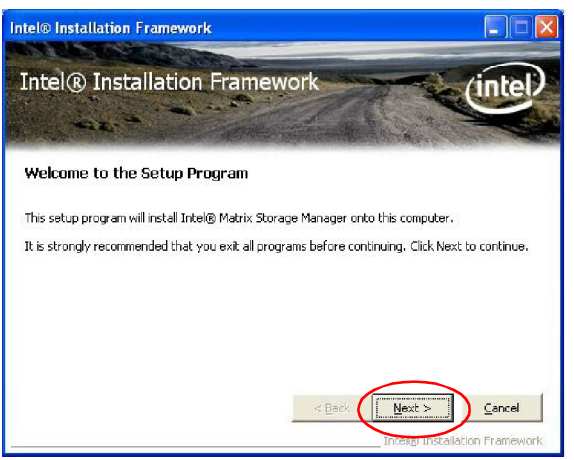
Insert the MSI CD and click on the **Intel IAA RAID Editor** to install the software.

Click on this item

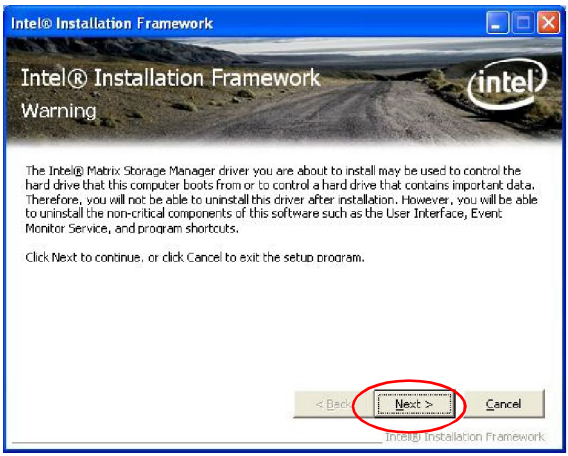
The **InstallShield Wizard** will begin automatically for installation showed as following:



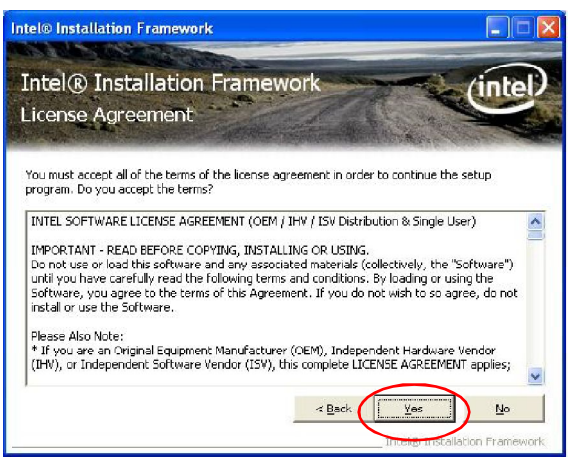
Click on the **Next** button to proceed the installation in the welcoming window.



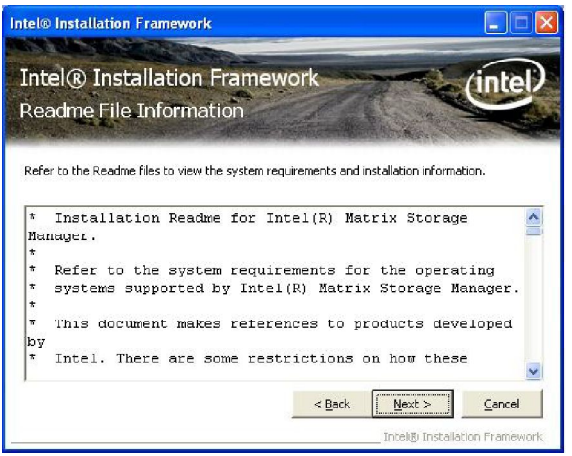
The window shows the components to be installed. Click **Next** button to continue.



After reading the license agreement in the following window, click **Yes** button to continue.



The following window appears to show the Readme File Information. It shows the system requirements and installation information.



Once the installation is complete, the following window appears.

RAID Migration Instructions

The Intel Matrix Storage Console offers the flexibility to upgrade from a single Serial ATA (SATA) hard drive to RAID configuration when an additional SATA hard drive is added to the system. This process will create a new RAID volume from an existing disk. However, several important steps must be followed at the time the system is first configured in order to take advantage of RAID when upgrading to a second SATA hard drive:

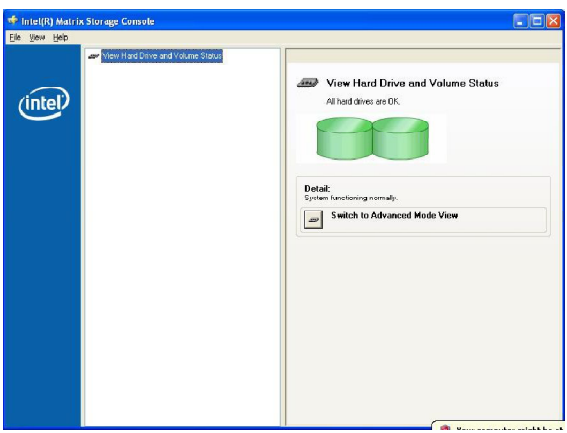
1. BIOS must be configured for RAID before installing Windows on the single SATA hard drive. Refer to **BIOS section** properly setting.
2. Install the Intel Application Accelerator RAID Driver during Windows Setup. Refer to **Installing Software** for instructions on installing the driver during Windows Setup.
3. Install the Intel Matrix Storage Console after the operating system is installed.

To create a volume from an existing disk, complete the following steps:

Important

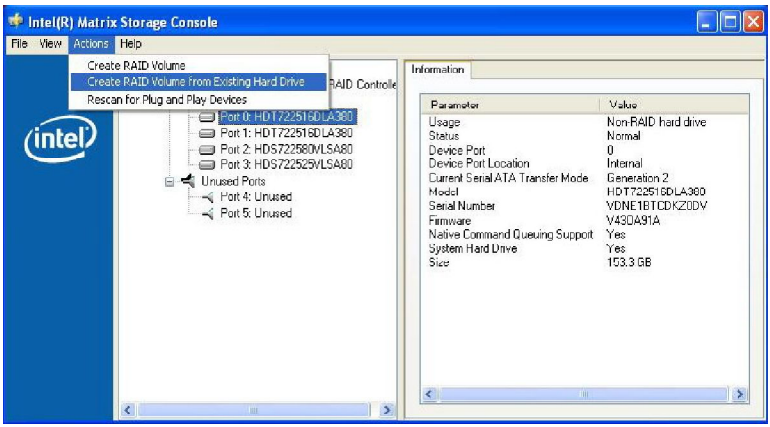
*A **Create from Existing Disk** operation will delete all existing data from the added disk and the data cannot be recovered. It is critical to backup all important data on the added disk before proceeding. However, during the migration process, the data on the source disk is preserved.*

After the Intel Matrix Storage Console has been successfully installed and the system has rebooted, click on the Intel Application Accelerator shortcut link (**Start --> All Programs --> Intel Matrix Storage Manager --> Intel Matrix Storage Console**) and the following window will appear:

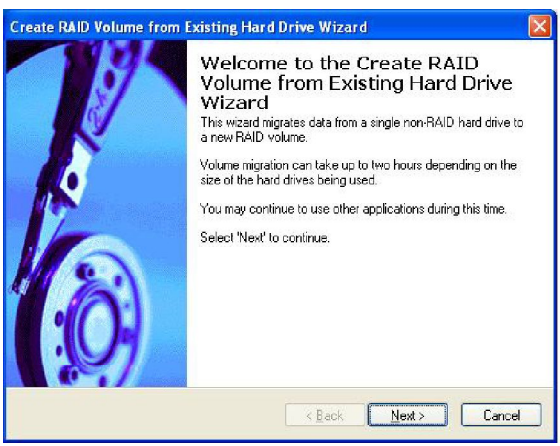


Create RAID Volume from Existing Disk

To create a RAID volume from an existing disk, choose **Action --> Create RAID Volume from Existing Hard Drive**.

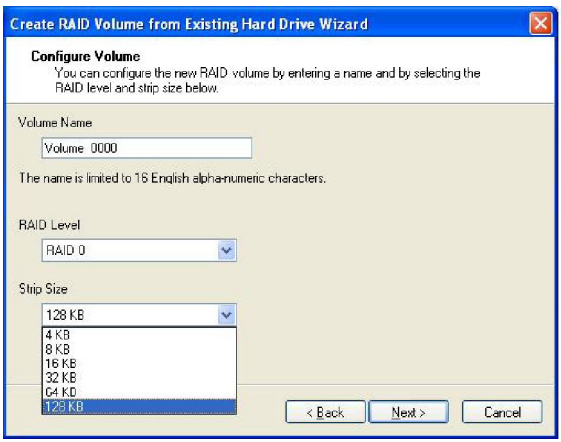


The **Create RAID Volume from Existing Hard Drive Wizard** pops up to lead you for the following procedure. Click **Next** to continue.



(1) Configure Volume

Here you can configure the new RAID volume by entering the volume name, selecting the RAID level and strip size.



† **RAID Volume Name:**

A desired RAID volume name needs to be typed in where the 'Volume_0000' text currently appears above. The RAID volume name has a maximum limit of 16 characters. The RAID volume name must also be in English alphanumeric ASCII characters.

† **RAID Level:**

Select the desired RAID level:

RAID 0 (Performance) – A volume optimized for performance will allow you to access your data more quickly.

RAID 1 (Redundancy) – A volume optimized for data redundancy will provide you with a realtime duplicate copy of your data. Note: Only half of the available volume space will be available for data storage.

RAID 5 (Useful) – RAID 5 can be used on three or more disks, with zero or more spare-disks. The resulting RAID-5 device size will be (N-1)*S, where N is the how many drive, S is the size of the smallest drive in the array. If one of the disks fail, all data are still intact. It can rebuild the disk from the parity information. If spare disks are available, reconstruction will begin immediately after the device failure. If two disks fail simultaneously, all data are lost. RAID-5 can survive one disk failure, but not two or more. Both read and write performance usually increase, but can be hard to predict how much. Reads are similar to RAID-0 reads, writes can be either rather

expensive (requiring read-in prior to write, in order to be able to calculate the correct parity information), or similar to RAID-1 writes. The write efficiency depends heavily on the amount of memory in the machine, and the usage pattern of the array. Heavily scattered writes are bound to be more expensive.

RAID 10 (Mirrored Stripes) – A RAID 1 array of two RAID 0 arrays.

† **Strip Sizes:**

Select the desired strip size setting. As indicated, the optimal setting is 128KB. Selecting any other option may result in performance degradation. Even though 128KB is the recommended setting for most users, you should choose the strip size value which is best suited to your specific RAID usage model. The most typical strip size settings are:

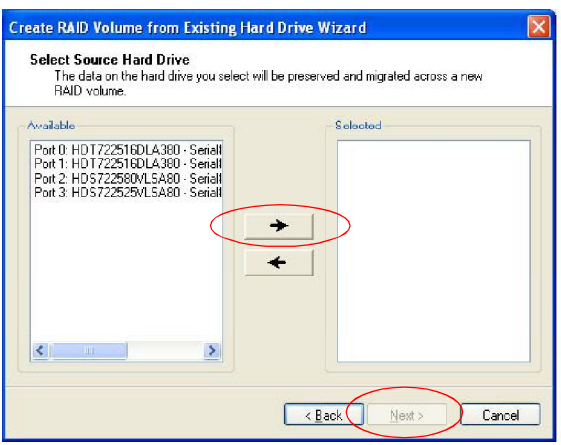
4KB: For specialized usage models requiring 4KB strips
8KB: For specialized usage models requiring 8KB strips
16KB: Best for sequential transfers
32KB: Good for sequential transfers
64KB: Good general purpose strip size
128KB: Best performance for most desktops and workstations

(2) Select the source disk

Then select the source disk that you wish to use and then click **"--->"** to move it to the **Selected** field. Then click **Next** to continue.

It is very important to note which disk is the source disk (the one containing all of the information to be migrated) and which one is the target disk. On a RAID Ready system, this can be determined by making a note during POST of which port the single disk is attached to.

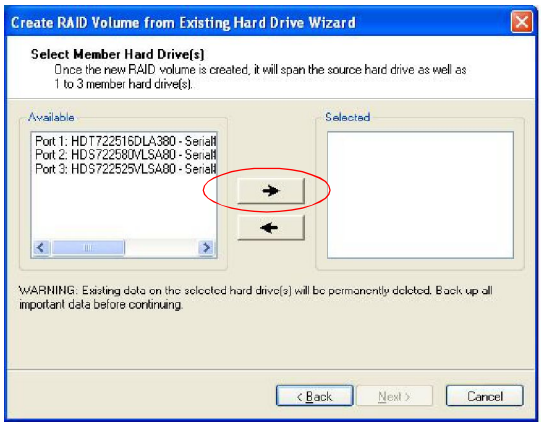
You can also use the Intel Application Accelerator RAID Edition utility before the second disk is installed to verify the Port and serial number of the drive that contains all the data.

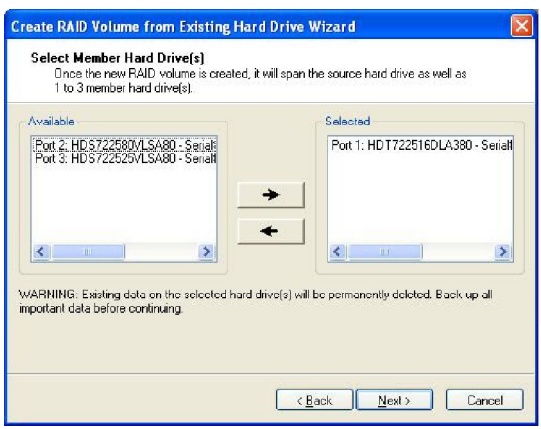


(3) Select Member Hard Drive(s)

Then select the member disk (the target disk) that you wish to use and then click **"-->"** to move it to the **Selected** field. Then click **Next** to continue.

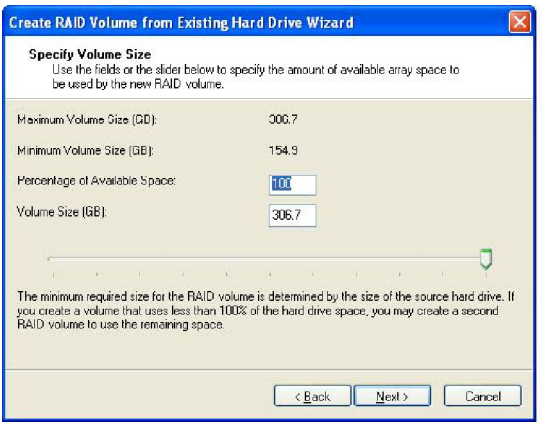
Please note that the existing data on the selected hard drive(s) will be deleted permanently. Do not forget to back up all the important data before continuing.





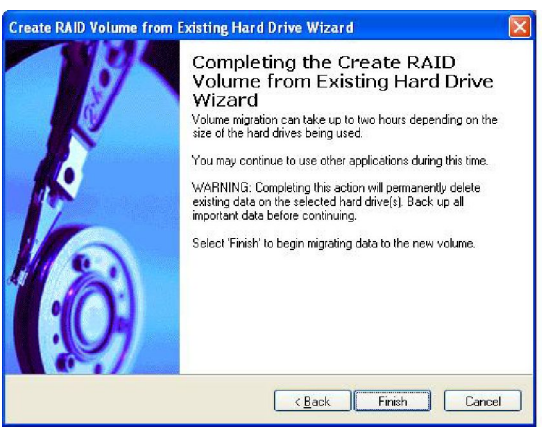
(4) Specify Volume Size

Specify the amount of available array space to be used by the new RAID volume. You may enter the amount in the space or use the slider to specify. It is recommended you use 100% of the available space for the optimized usage. For RAID 0 volume, if you do not specify 100% of the hard drive space, the rest hard drive space will be worked as RAID 1 volume, which is the new technology called Intel Matrix RAID. Then click **Next** to continue.



(5) Start Creating RAID Volume from Existing Hard Drive Wizard

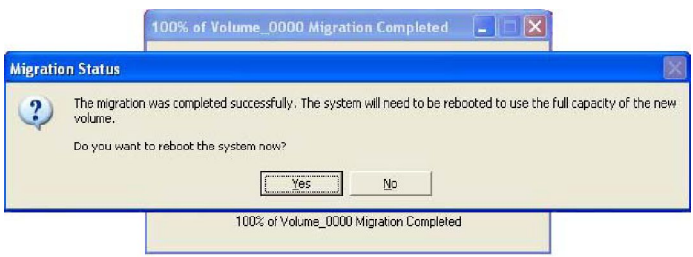
Before you continue the procedure of RAID volume creation from existing hard drive, read the dialogue box below carefully. Please note that once you click **Finish**, the existing data on the selected hard drive(s) will be deleted permanently and this operation cannot be undone. It is critical that you backup all important data before selecting **Finish** to start the migration process.



(6) Start Migration

The migration process may take up to two hours to complete depending on the size of the disks being used and the strip size selected. A dialogue window will appear stating that the migration process may take considerable time to complete, meanwhile a popup dialogue at the taskbar will also show the migration status. While you can still continue using your computer during the migration process, once the migration process starts, it cannot be stopped. If the migration process gets interrupted and your system is rebooted for any reason, it will pick up the migration process where it left off. You will be provided with an estimated completion time (the remaining time will depend on your system) once the migration process starts.

The following screen appears if the migration process is completed successfully. Then you have to reboot your system to use the full capacity of the new volume.



Recovery Volume Creation

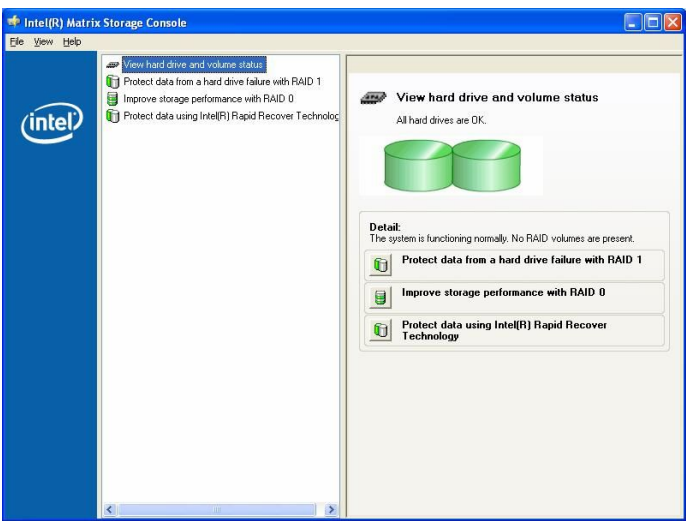
A recovery volume can be created using either Basic mode or Advanced mode in the Intel Matrix Storage Console.

Recovery Volume in Basic Mode Creation

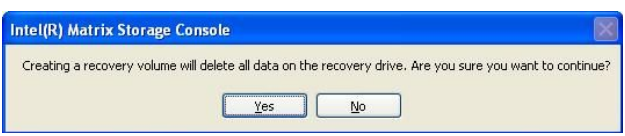
Important

Creating a recovery volume will permanently delete any existing data on the drive selected as the recovery drive. Back up all important data before beginning these steps.
This option may or may not be available depending on your system configuration. If you do not see the option listed, refer to Recovery Volume Creation in Advanced Mode.

To create a recovery volume in Basic mode, use the following steps:
(1) Open the Intel Matrix Storage Console. **(Start --> All Programs --> Intel Matrix Storage Manager --> Intel Matrix Storage Console)**
(2) Select Protect data using IntelR Rapid Recover Technology.



(3) Select **Yes** to confirm volume creation.

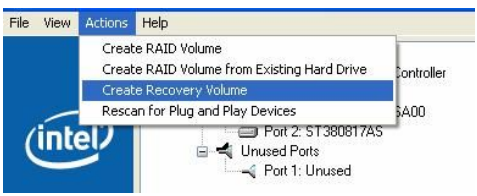


Recovery Volume in Advanced Mode Creation

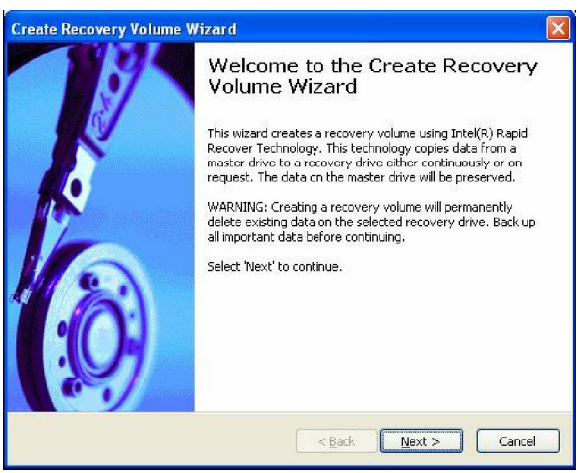
Important

Creating a recovery volume will permanently delete any existing data on the drive selected as the recovery drive. Back up all important data before beginning these steps.

To create a recovery volume in Advanced mode, use the following steps:
(1) Open the Intel Matrix Storage Console. **(Start --> All Programs --> Intel Matrix Storage Manager --> Intel Matrix Storage Console)**
(2) Select Advanced Mode in the View menu.
(3) Select **Create Recovery Volume** in the Actions menu.

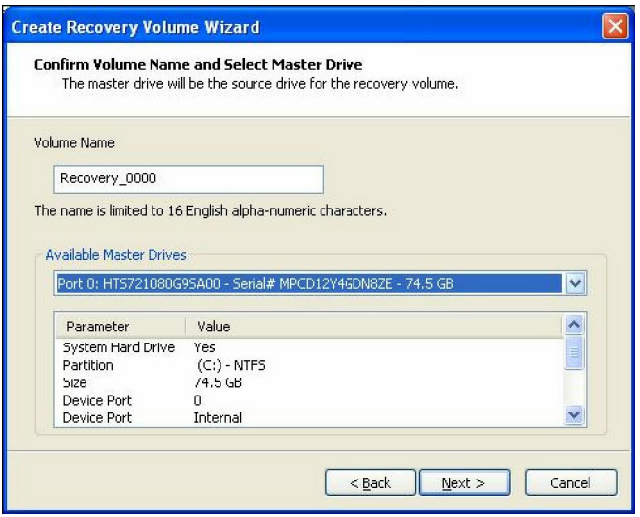


(4) Select **Next** to continue.

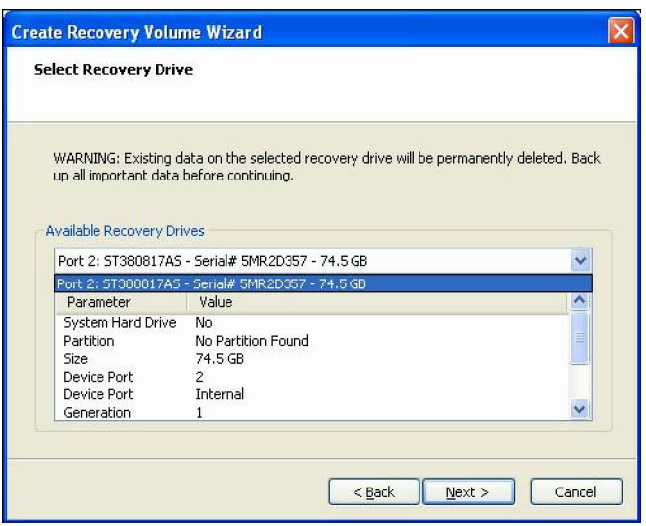


(5) Modify the recovery volume name if you wish.

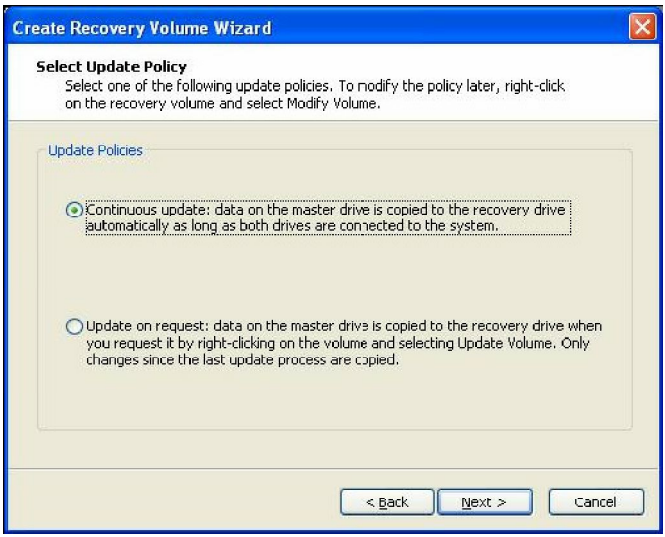
(6) Select a hard drive to be used as the master hard drive for the recovery volume.



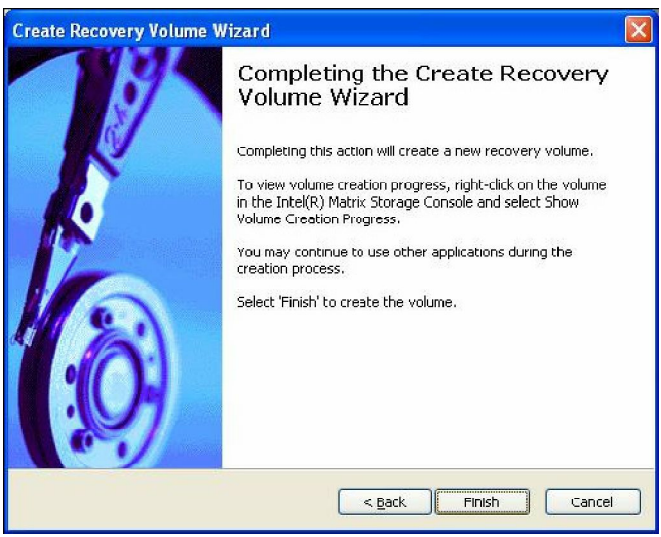
(7) Select a hard drive to be used as the recovery hard drive for the recovery volume.



(8) Select an update policy.



(9) Select **Finish** to begin recovery volume creation.



Degraded RAID Array

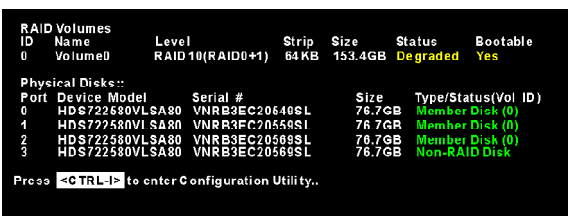
A RAID 1, RAID 5 or RAID 10 volume is reported as degraded when one of its hard drive members fails or is temporarily disconnected, and data mirroring is lost. As a result, the system can only utilize the remaining functional hard drive member. To re-establish data mirroring and restore data redundancy, refer to the procedure below that corresponds to the current situation.

Missing Hard Drive Member

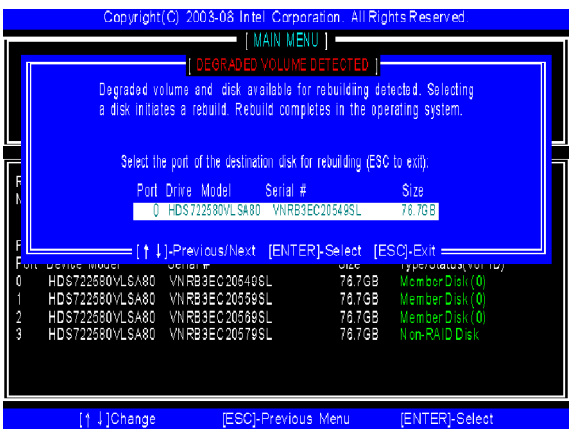
1. Make sure the system is powered off.
2. Reconnect the hard drive.
3. Reboot the system to Windows; the rebuild will occur automatically.

Failed Hard Drive Member

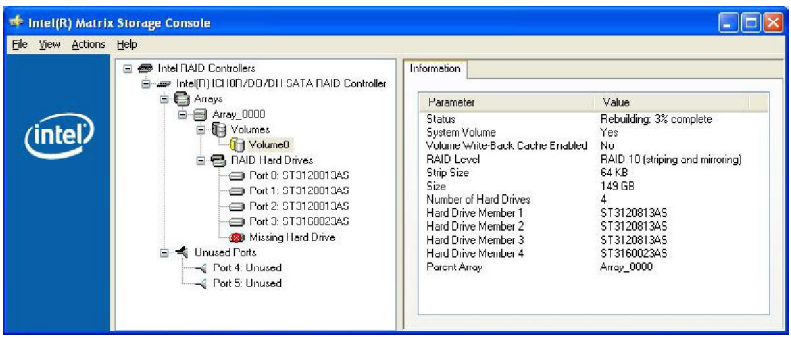
1. Make sure the system is powered off.
2. Replace the failed hard drive with a new one that is of equal or greater capacity.
3. Reboot the system to Intel RAID Option ROM by press <Ctrl> and <I> keys simultaneously during the Power-On Self Test (POST).



4. Select the port of the destination disk for rebuilding, and then press ENTER.



5. Exit Intel RAID Option ROM, and then reboot to Windows system.
6. When prompted to rebuild the RAID volume, click 'Yes'.
7. The Intel(R) Storage Utility will be launched. Right-click the new hard drive and select 'Rebuild to this Disk'. The 'Rebuild Wizard' will be launched which will guide you through the process of rebuilding to the new hard drive.



Appendix D
JMicron 362 RAID

This appendix will assist users in configuring and enabling RAID functionality on platforms.
The JMicron RAID solution supports RAID level 0 (striping), RAID level 1 (mirroring) and JBOD (Concatenate).

MSI
MICRO-STAR INTERNATIONAL

Introduction

JMicron JMB362 offers RAID level 0 (Striping), RAID level 1 (Mirroring and Duplexing) and JBOD (Concatenate) for **E-SATA** ports on this mainboard.

RAID 0 breaks the data into blocks which are written to separate hard drives. Spreading the hard drive I/O load across independent channels greatly improves I/O performance. RAID 1 provides data redundancy by mirroring data between the hard drives and provides enhanced read performance. JBOD provides a method for combining drives of different sizes into one large disk.

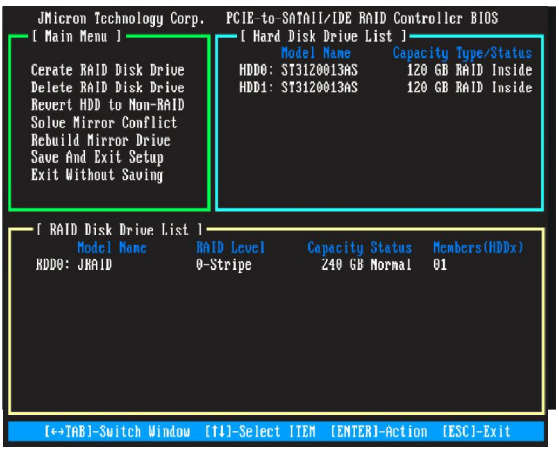
Important

The least number of hard drives for RAID 0, RAID 1 or JBOD mode is 2. All the information/ volumes/ pictures listed in your system might differ from the illustrations in this appendix.

JMicron RAID BIOS Utility

Be sure to set **RAID** mode for the ***JMicron 36x ATA Controller*** in BIOS before configuring the JMicron BIOS utility. After that, save the configuration and exit. During boot up (POST), press CTRL+J to enter the JMicron BIOS RAID utility.

The RAID Utility menu screen will be displayed. A brief description of each section is presented below.



Main Menu

Cerate RAID Disk Drive - Create a new legacy RAID set.
Delete RAID Disk Drive - Delete a legacy RAID set.
Revert HDD to Non-RAID - Revert an existed-RAID HDD to non-RAID.
Solve Mirror Conflict - Sovle a mirror conflict.
Rebuild Mirror Drive - Rebuild data, when RAID 1 data mirroring is lost.
Save And Exit Setup - Save all settings and exit the BIOS utility.
Exit Without Saving - Exit the BIOS utiltiy without any saving.

Hard Disk Driver List

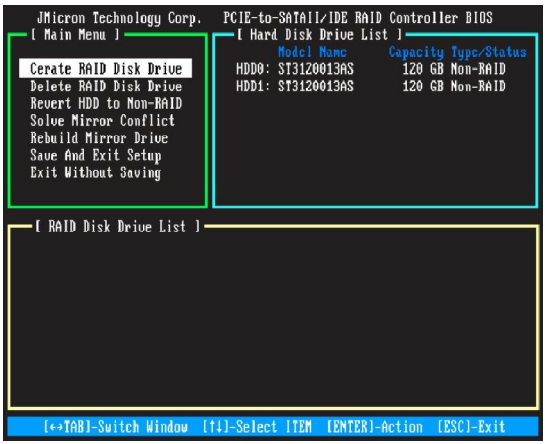
The menu shows the model number and capacities of the drives physically attached to the SATAII & PATA ports.

RAID Disk Driver List

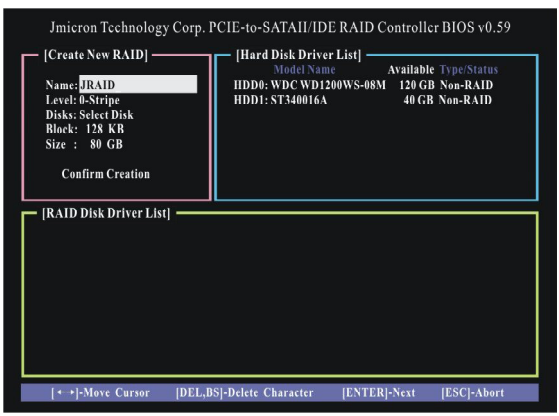
The menu shows the current configuration of RAID set.

Creating RAID set

1. Select “Create RAID Disk Drive”. Then press <Enter>.

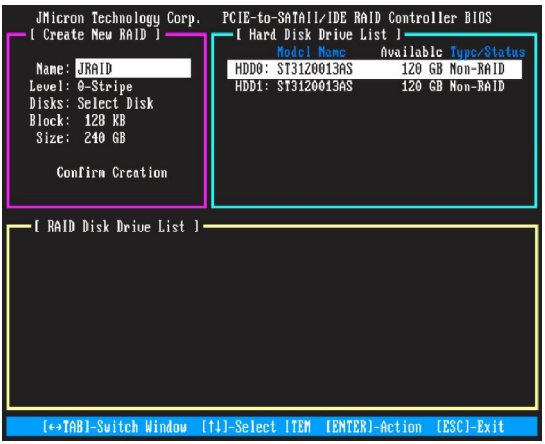


2. Then in the **Name** field, specify a RAID set name and then press the <Enter> to go to the next field.

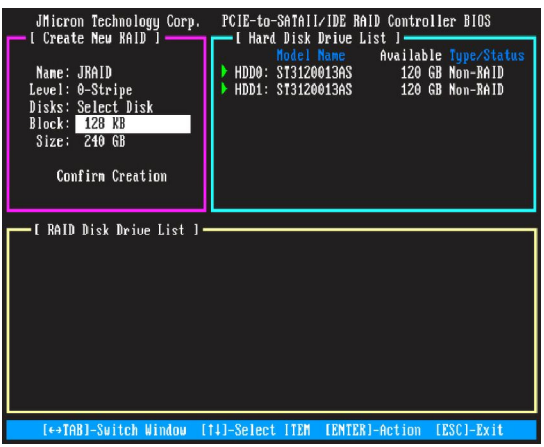


3. Choose a 0-Striped, a 1-Mirror, or a JBOD-Concatenate combination set and then press <Enter> to go to the next step.

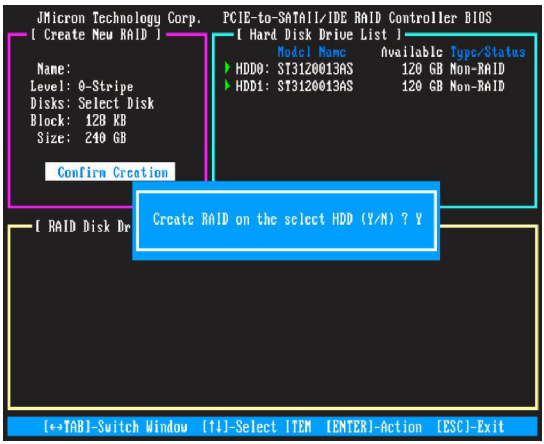
4. In the **Hard Disk Disk List** menu, use <Space> key to select the disks you want to create for the RAID set, then click <Enter> key to finish selection.



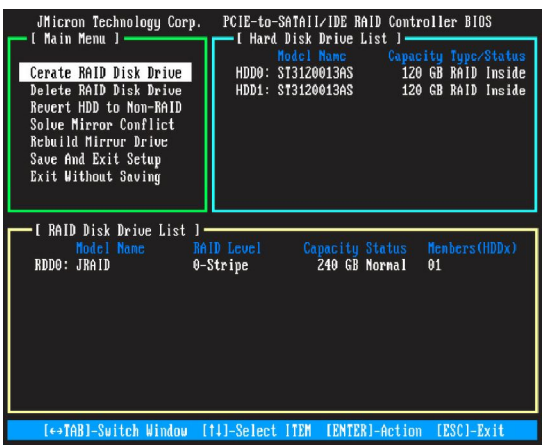
5. Then select the block value (stripe value) for the RAID array by using the “upper arrow” or “down arrow” keys to scroll through the available values, and pressing the <Enter> key to select and advance to the next field. The available values range from 4KB to 128 KB. The default and typical value for RAID 0 is 128KB. (This field only available for RAID 0 mode.)



6. Then select the capacity of the RAID set in the **Size** field. The default value is the maximum capacity of the selected disks. Then press <Enter> to the Confirm Creation field.
7. The Creation field will display a message to ask you to confirm the creation. Then press <Y> key to proceed with the RAID set creation.



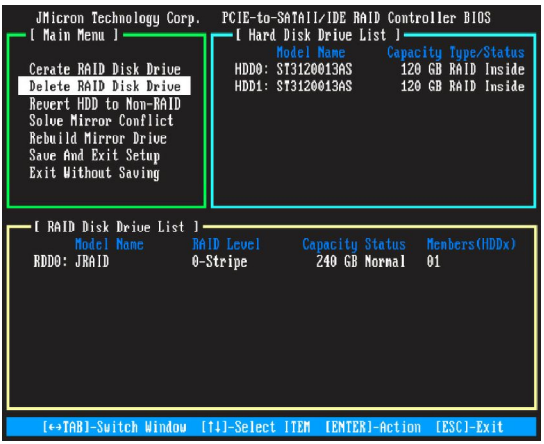
8. Then the following screen appears to indicate that the creation is finished.



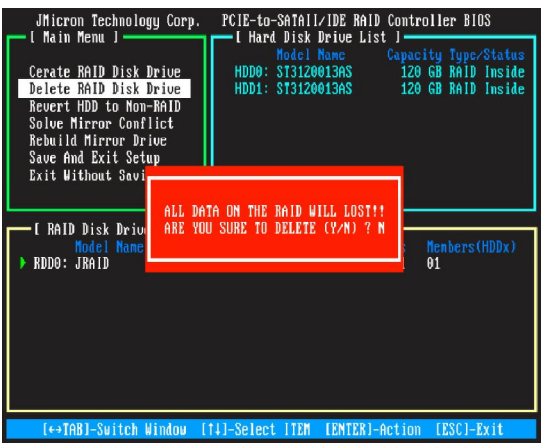
9. Go to the Save And Exit Setup field and press <Enter>, a message will display to ask you to confirm the setup. Then press <Y> key to save the setting and exit the BIOS utility.

Deleting RAID set

1. Select “Delete RAID Disk Drive”. Then press <Enter>.

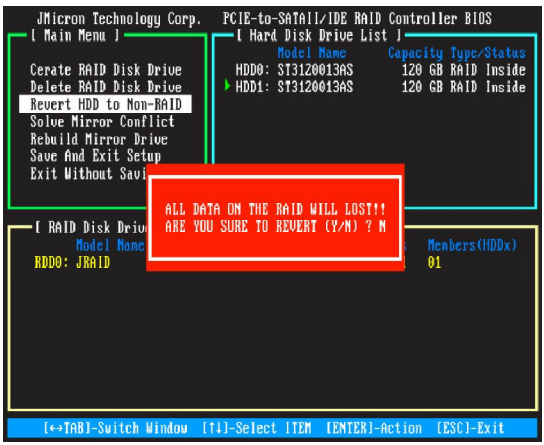


2. In the RAID Disk Driver List menu, use <Space> key to select the RAID set you want to delete. Then press <Del> key.
3. Press “Y” to accept the deletion when a deletion message is appeared.



Revert HDD to non-RAID

Select **Revert HDD to non-RAID** and press <Enter>. In the Hard Disk Driver List menu use <Space> key to select the disks you want to revert then click <Enter> key. The following screen appears, press <Y> key to remove any RAID structures from the drives.



Important

1. *You will lose all data on the RAID drives and any internal RAID structures when you perform this operation.*
2. *Possible reasons to 'Revert HDD to non-RAID' could include issues such as incompatible RAID configurations or a failed volume or failed disk.*

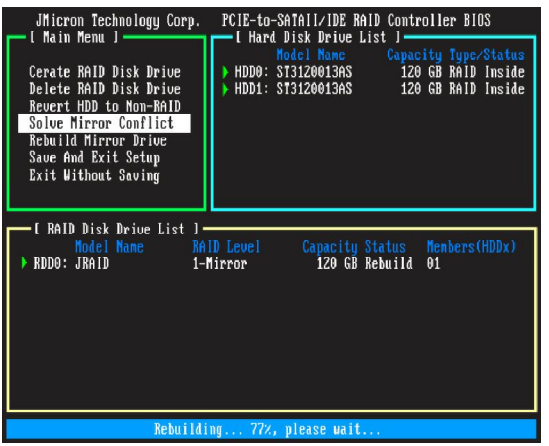
Solving a Mirror Conflict

A Mirror conflict occurs when both disks in a RAID 1 (Mirror) configuration are unplugged from the system in turn, then plugged in again. Since both disks contain exactly the same data, the system will be unable to determine which of the two is the source drive. This option allows you to set the source drive and rebuild the Mirror drive according to the contents of the source drive.

To solving a Mirror conflict:

Select **Solving a Mirror Conflict** and press <Enter>. In the Hard Disk Driver List menu use <Space> key to select the disks you want to set as source drive. Using the <TAB>, move to the RAID Disk Drive List menu and highlight the RAID set that you want to rebuild. Press <Del> to begin rebuilding the Mirror configuration.

A status bar at the bottom of the screen shows the progress of the rebuilding.



Rebuilding a Mirror drive

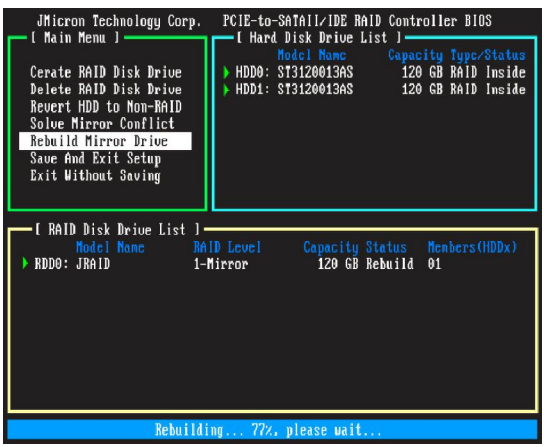
When one of the disk in a RAID 1 (Mirror) configuration is unplugged from the system, then plugged in again, a dialogue box appears to ask you to rebuild the Mirror drive. Press <Y> to confirm; otherwise, press <N>.

This option allows you to rebuild the Mirror drive later and synchronize the data between two hard disks.

To rebuild a Mirror drive:

Select **Rebuild Mirror Drive** and press <Enter>. Using the <TAB>, move to the RAID Disk Drive List menu and highlight the RAID set that you want to rebuild. Press <Del> to begin rebuilding the Mirror configuration.

A status bar at the bottom of the screen shows the progress of the rebuilding.



Installing Driver

Install Driver in Windows Vista / XP

† **New Windows Vista / XP Installation**

The following details the installation of the drivers while installing Windows XP.

1. When you start installing Windows XP and older operating systems, you may encounter a message stating, "Setup could not determine the type of one or more mass storage devices installed in your system". If this is the case, then you are already in the right place and are ready to supply the driver. If this is not the case, then press F6 when prompted at the beginning of Windows setup.
2. Press the "S" key to select "Specify Additional Device".
3. You should be prompted to insert a floppy disk containing the JMicron RAID driver into the A: drive.
   Note: For Windows XP, you can use the USB floppy drive only.
   For Windows Vista you can use CD/ DVD/ USB drive.

Important

*Please follow the instruction below to make an **"JMicron RAID Driver"** for yourself.*

1. Insert the MSI CD into the CD-ROM drive.
2. Click the "Browse CD" on the Setup screen.
*3. Copy all the contents in the **\\IDE\JMicron\Floppy32** (for 32-bit OS) or **\\IDE\JMicron\Floppy64** (for 64-bit OS) to a formatted floppy drive.*
*4. The driver diskette for **JMicron RAID Controller** is done.*

4. When prompted, insert the floppy disk you created in step 3 and press Enter.
5. You should be shown a list of available SCSI Adapters.
6. Select the appropriate JMicron RAID controller and press ENTER.
7. The next screen should confirm that you have selected the JMicron RAID controller. Press ENTER again to continue.
8. You have successfully installed the JMicron RAID driver, and Windows setup should continue.
9. Leave the disk in the floppy drive until the system reboots itself. Windows setup will need to copy the files from the floppy again after the RAID volume is formatted, and Windows setup starts copying files.

For Windows Vista:

After selecting the location to install Windows Vista, please click on the "Load Driver" button to install the RAID driver. Please refer the **Important** notice above to make a RAID Driver medium. And then, follow the instructions to complete the RAID drive installation and the Windows Vista installation.

† **Existing Windows Vista/XP Driver Installation**

1. Insert the MSI CD into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the Driver tab, click on ***JMicron JMB362 Drivers***.
4. The drivers will be automatically installed.

† **Confirming Windows Vista/XP Driver Installation**

1. From Windows Vista/XP, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "**+**" in front of the **SCSI and RAID Controllers** hardware type. The driver ***JMicron JMB36X Controller*** should appear.

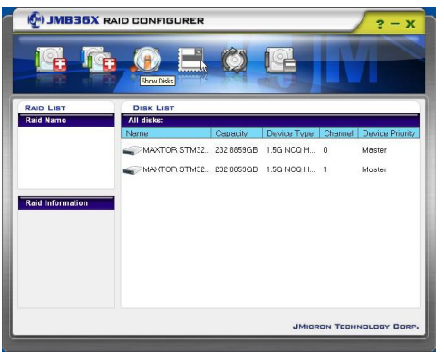
JMicron Raid Configurer

There is an application called JMRaidTool which helps you perform the following tasks of JMicron RAID.

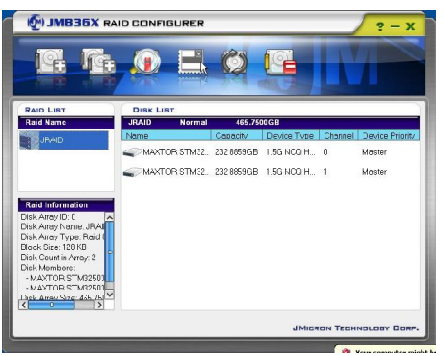
- **Viewing RAID Array Configurations**
  View an array configuration (mirrored, striped)
- **Creating RAID Arrays**
- **Deleting a RAID Array**
- **Rebuilding RAID Arrays**
- **Solving Mirror Conflict**

View RAID Array Configurations

Left-click the “Show Disks” button and the information of all hard disks will display on the right side of the window.



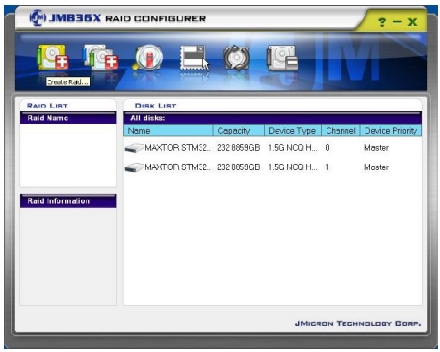
Left-click the name of the disk array and the information of all hard disks of the selected disk array will display on the right side of the window. The information of the disk array will also display on the lower-left part of the window.



Create RAID

JMRaidTool supports the creation of RAID 0, 1 and JBOD.

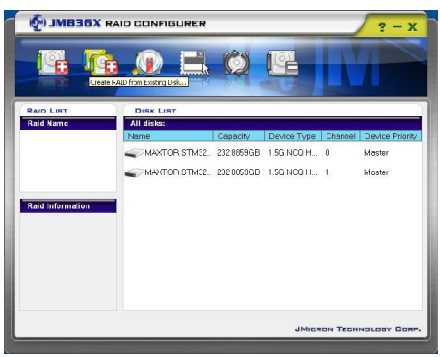
1. Left-click the “Create Raid” button.
2. A CREATE RAID WIZARD dialogue will display on the screen, following the description of every step to complete the creation.



Create RAID from Existing Disk

You can combine the Existing Disk (Source disk may content OS and Data) with other HD (must be larger than source Disk) to be RAID. The data on Source Disk will be reserved. After RAID is built, system will need to reboot.

1. Left-Click the “Create RAID from Existing Disk” icon on the toolbar.
2. A “CREATING RAID FROM EXISTING DISK” wizard dialogue will display on the screen, following the description of every step to complete the creation.

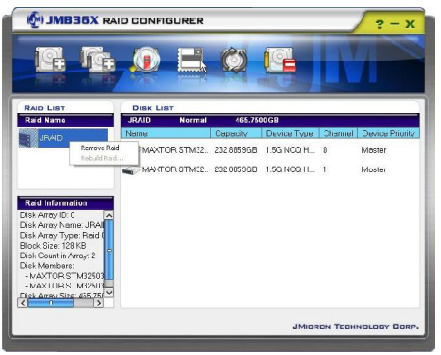


Remove RAID

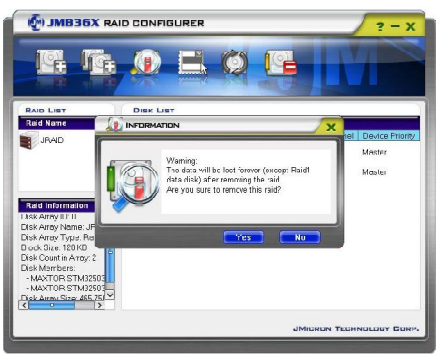
There are two ways you can choose to remove RAID.

Way 1

1. Right-click the name of the disk array you want to delete and the “Remove” menu will appear. Select the “Remove Raid” of the pop-up menu.

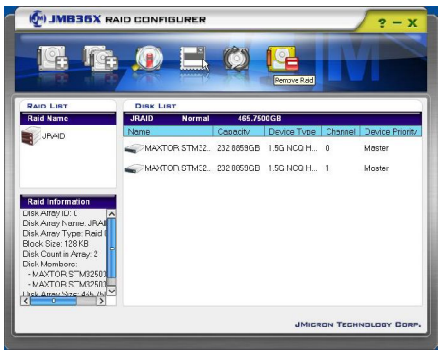


2. A warning message appears to remind you that the data will be lost. Press the “Yes” button if you really want to delete the disk array.



Way2

1. Left-Click the “Remove Raid” icon on the toolbar.
2. A “REMOVE RAID” wizard dialogue will display on the screen, following the description of every step to complete the deletion.

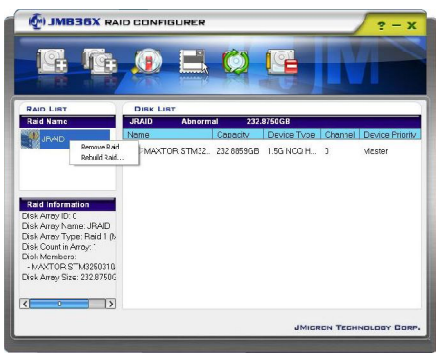


Rebuild RAID

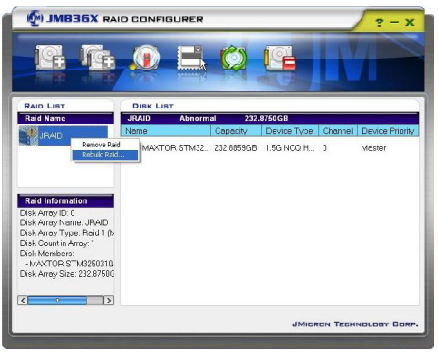
RAID 1 can be rebuild while RAID 0, JBOD cannot be rebuild. There are two ways you can choose to rebuild RAID.

Way 1

1. Right-click the name of the disk array you want to rebuild and the “Rebuild” menu will appear.

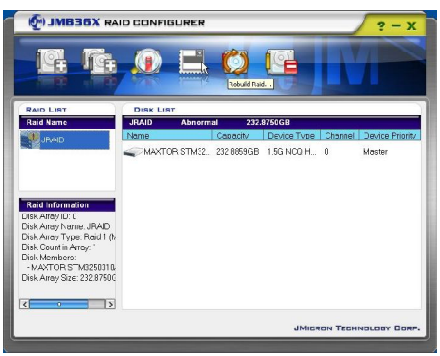


2. Select “Rebuild Raid”.
3. A “REBUILD RAID WIZARD” dialogue will display on the screen, following the description of every step to complete the rebuilding.

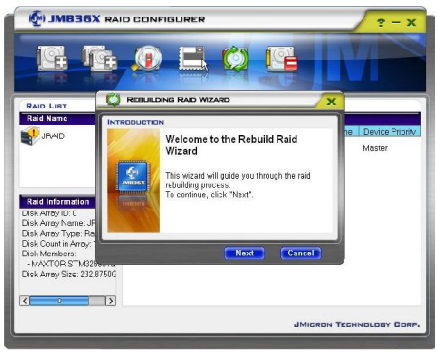


Way 2

1. If the disk array needs to rebuild then the rebuild button will be enabling on the toolbar.



2. Left-Click the “Rebuild Raid” button on the toolbar.
3. A “REBUILD RAID WIZARD” dialogue will display on the screen, following the description of every step to complete the rebuilding.



Solve Mirror Conflict

If the conflict occurs, it will show the “REBUILDING RAID WIZARD” dialogue to ask you if you want to rebuild RAID, following the description of every step to rebuild the RAID.

Appendix E
Drive Booster Manager

This appendix will assist users in configuring and enabling RAID functionality on platform.
The DRIVER BOOSTER MANAGER solution supports RAID level 0 (striping), RAID level 1 (mirroring) and JBOD (Concatenate).

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Introduction

DRIVER BOOSTER MANAGER offers RAID level 0 (Striping), RAID level 1 (Mirroring and Duplexing)and JBOD (Concatenate) for **SATA** ports (**SATA7/8** & **SATA9/10**) on this mainboard.

RAID 0 breaks the data into blocks which are written to separate hard drives. Spreading the hard drive I/O load across independent channels greatly improves I/O performance.

RAID 1 provides data redundancy by mirroring data between the hard drives and provides enhanced read performance.

JBOD provides a method for combining drives of different sizes into one large disk.

Important

1. *The least number of hard drives for RAID 0, RAID 1 or JBOD mode is 2. All the information/ volumes/ pictures listed in your system might differ from the illustrations in this appendix.*
2. *SATA7 & SATA8 support RAID 0/ RAID 1/ JBOD by 1st JMB322 (controller 1). And SATA9 & SATA10 support RAID 0/ RAID 1/ JBOD by 2nd JMB322 (controller 2).*

RAID Configuration

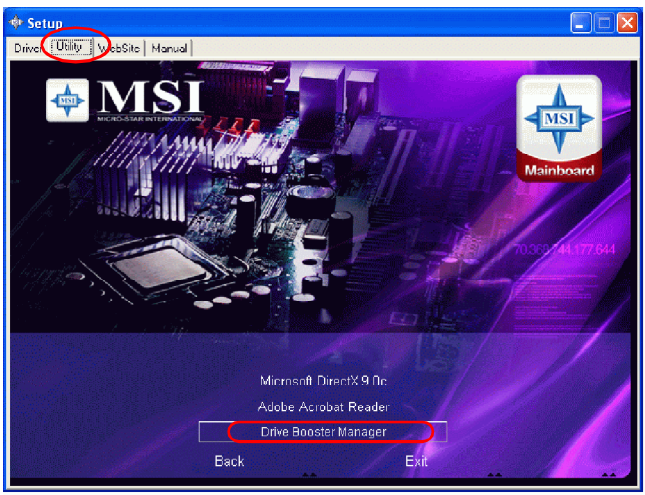
There is an application called DRIVE BOOSTER MANAGER which helps you perform the following tasks of JMicron RAID.

- **Viewing SATA Drive informations**
- **Creating RAID Arrays**
- **Deleting RAID**

Installing the DRIVE BOOSTER MANAGER

Follow the procedures described below to install the Drive Booster Manager.

1. Insert the application CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Utility**.
3. Click **Drive Booster Manager** to install it.



Activating DRIVE BOOSTER MANAGER

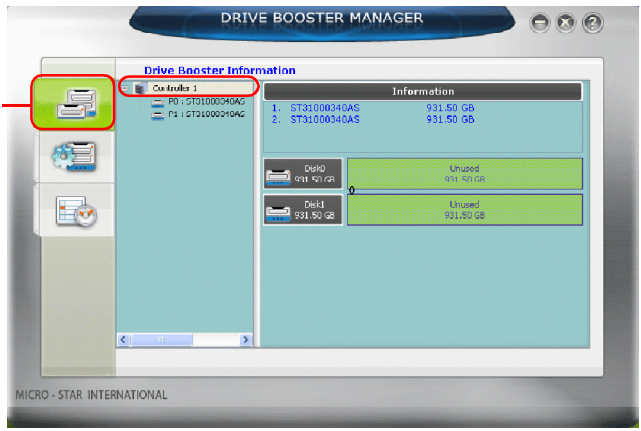
Once you have your Drive Booster Manager installed, it will have a short cut icon on the desktop. You may double-click on each icon to activate Drive Booster Manager.

short-cut icon in the system tray

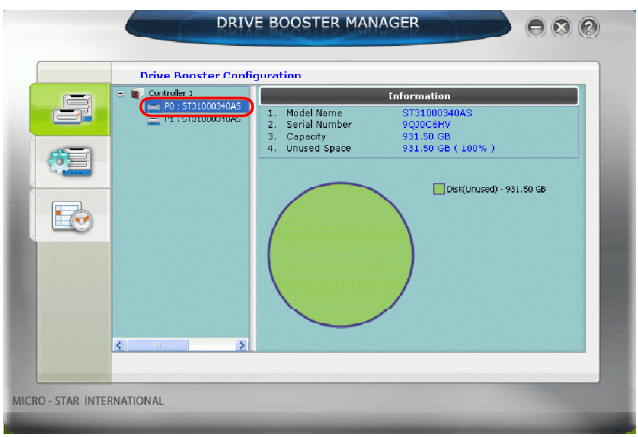
View SATA Drive Information

Click the “Drive Booster Information” button and the information of all hard disks will display on the right side of the window. You may click the item “Controller”, you will find controller information.

“Drive Booster Information” button



Or you may click the SATA drive item just below the item “Controller”, you will find SATA drive information.

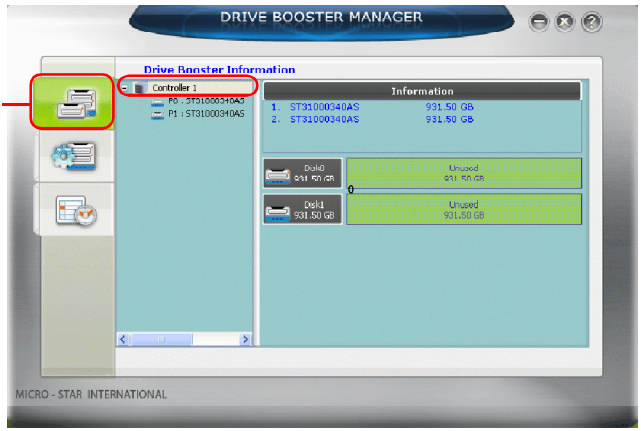


Create RAID

DRIVE BOOSTER MANAGER supports the creation of RAID 0, 1 and JBOD.

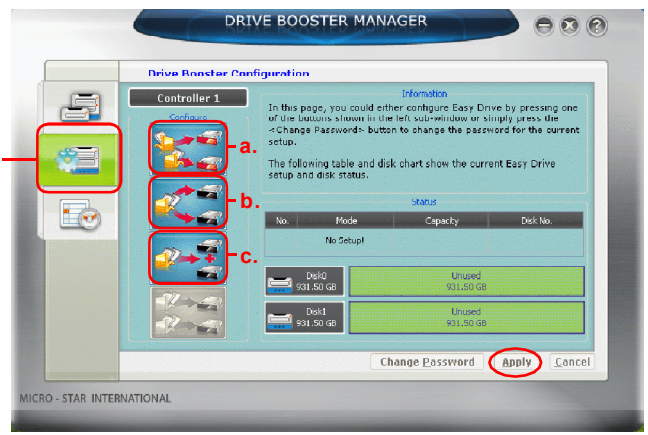
1. First, you have to choose a controller, that supports 2 SATA devices with RAID mode, in the **Drive Booster Information** screen.

"Drive Booster Information" button



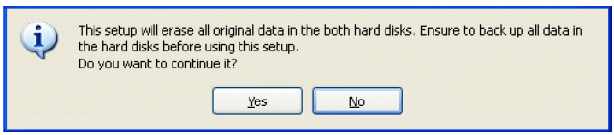
2.Click the "Drive Booster Configuration" button, and select a RAID mode you want to create. Then click the "Apply" to apply the RAID creation.

"Drive Booster Configuration" button



a. The speed mode corresponds to the RAID 0 mdoe.
b. The Backup mode corresponds to the RAID 1 mdoe.
c. The Large mode corresponds to the JBOD mdoe.

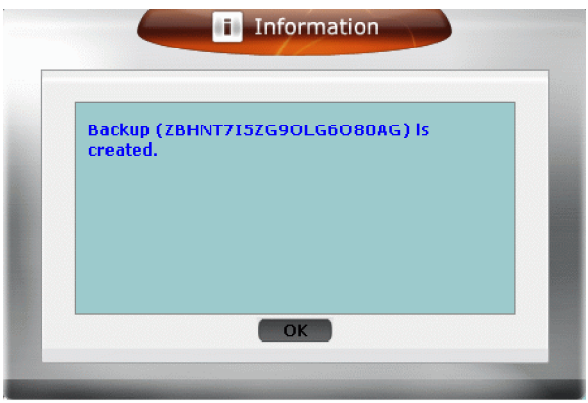
3. A warning message will appear to remind you that the data will be erased. Press the “Yes” if you really want to perform this creation.



Important

You will lose all data on the SATA drives when you perform this creation. Please ensure to back up all date in the SATA hard drives before performing this creation.

4. A information will appear to inform you that the creation is finished. Click “OK” to close the information window.



Setup Password

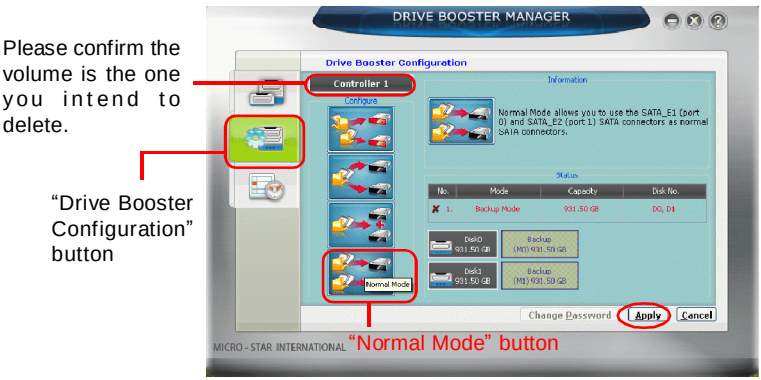
You may set a password for a volume. Click the “Change Password”, a screen will display. Please enter a new password in the “New Password” box,and enter the password again in the “confirm password” box to confirm the passsword. Then click OK.

Important

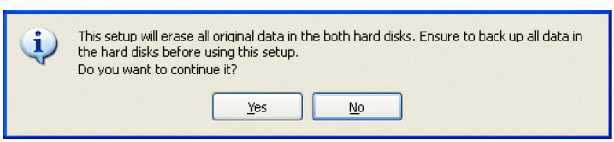
A password is available for a volume only. That is to say, if you set a password for a volume and you will be asked to enter the password when you intend to apply a configuration to the volume.

Delete RAID

1. First, you have to choose a volume that you intend to delete RAID mode in the **Drive Booster Information** screen.
2. Click the “Drive Booster Configuration” button, and click the “Normal Mode” button. And then, click “Apply” to remove the RAIID mode.



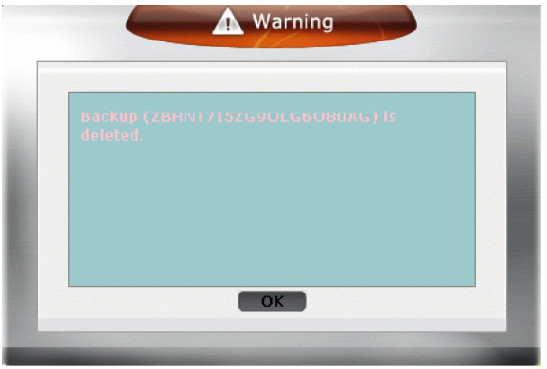
3. A warning message will appear to remind you that the data will be erased. Press the “Yes” if you really want to perform this task.



Important

You will lose all data on the SATA drives when you perform this task. Please ensure to back up all date in the SATA hard drives before performing this task.

4. A warning will appear to inform you that the deletion is finished. Click “OK” to close the window.



Event Log

Click the “Event Log” button, all of the significant events will be listed.