

## MS-7504 (V1.X) Mainboard



## Copyright Notice

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## Trademarks

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## Revision History

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Revision	Revision History	Date
V1.0	First release	November 2007

## Technical Support

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

🔍 Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: **<http://global.msi.com.tw/index.php?func=faqIndex>**

🔍 Contact our technical staff at: **<http://support.msi.com.tw/>**

## Safety Instructions

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



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



警告使用者:

這是甲類的資訊產品，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

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part



15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the 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 LANOTICE D'INSTALLATIONAVANT DE RACCORDERAU RESEAU.



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

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

# WEEE (Waste Electrical and Electronic Equipment) Statement

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## ENGLISH

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

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

## DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

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

## FRANÇAIS

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

Au sujet de la directive européenne (EU) relative aux déchets des 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 término de su período de vida. MSI estará comprometido con los términos de recogida de sus productos vendidos en la Unión Europea al final de su período de vida. Usted debe depositar estos productos en el punto limpio establecido por el ayuntamiento de su localidad o entregar a una empresa autorizada para la recogida de estos residuos.

## NEDERLANDS

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

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

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

## SRPSKI

Da bi zaštitili prirodnu sredinu, i kao proizvođač koji vodi računa o okolini i prirodnoj sredini, MSI mora da vas podestiti da...

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

## POLSKI

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

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

## TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

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

## ČESKY

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

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

## MAGYAR

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

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

## ITALIANO

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

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento 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 adegnerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

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# Chapter 1

## Getting Started

Thank you for choosing the MS-7504 (V1.X) Micro-ATX mainboard. This mainboard is based on NVIDIA® MCP730 single chipset for optimal system efficiency. Designed to fit the advanced Intel® Core™2 Quad, Core™2 Duo, Pentium® and Celeron® LGA775 processors, this mainboard delivers a high performance and professional desktop platform solution.

## Mainboard Specifications

### Processor Support

- Intel® Core™2 Quad, Core™2 Duo, Pentium® and Celeron® processors in the LGA775 package.

### Supported FSB

- 1333 MHz

### Chipset

- NVIDIA® MCP730 single chipset

### Memory Support

- DDR2 533/ 667 SDRAM (240pin/ 1.8V)
- 2 DDR2 DIMMs (4GB Max)

### LAN

- Supports LAN 10/ 100/ 1000 Fast Ethernet by Realtek® RTL 8211BL

### IEEE 1394

- Chip integrated by VIA® VT6308P
- Transfer rate is up to 400Mbps

### Audio

- Chip integrated by Realtek® ALC888S
- Flexible 8-channel audio with jack sensing
- Compliant with Azalia 1.0 Spec

### SATA

- 4 SATA ports by NVIDIA® MCP730
- Supports four SATA devices
- Supports storage and data transfers at up to 300 MB/s

### RAID

- SATA1~4 support RAID 0/ 1/ 5/ 0+1 mode by NVIDIA® MCP730

## Connectors

### ● Back Panel

- 1 Coaxial S/PDIF-Out jack
- 1 Optical S/PDIF-Out jack
- 6 USB 2.0 ports
- 1 VGA port
- 1 LAN jack
- 1 IEEE 1394 port
- 6 flexible audio jacks

### ● On-Board Pinheaders

- 2 USB 2.0 pinheaders
- 1 IEEE 1394 pinheader
- 1 S/PDIF-Out pinheader
- 1 Front Panel Audio pinheader

## Slots

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

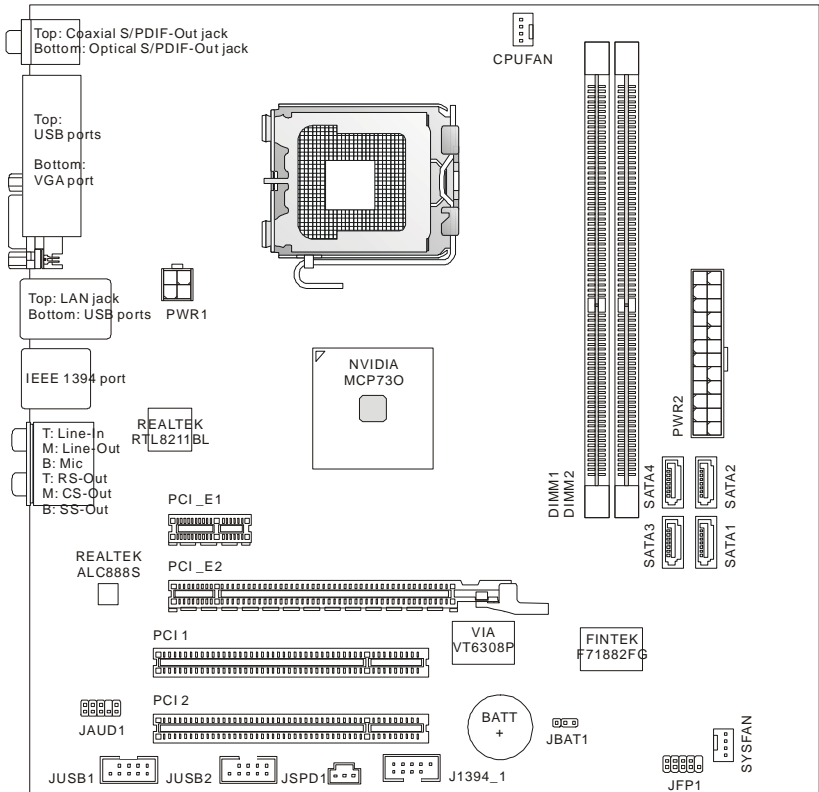
## Form Factor

- Micro-ATX (24.4cm X 24.4cm)

## Mounting

- 8 mounting holes

## Mainboard Layout



MS-7504 (V1.X) Micro-ATX mainboard



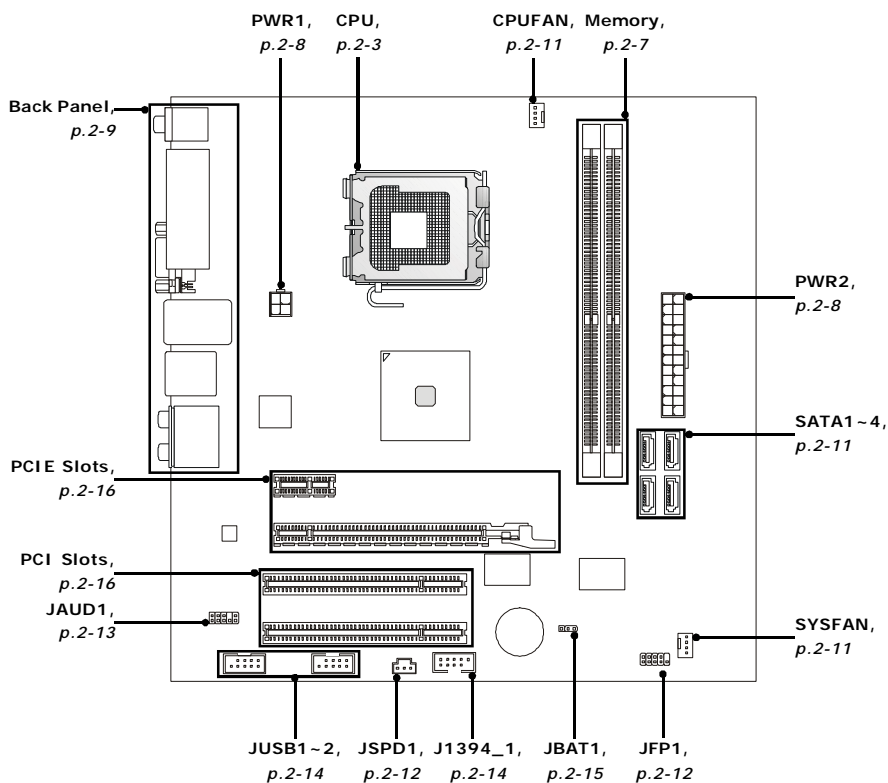
## Chapter 2

# Hardware Setup

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

## Quick Components Guide



## CPU (Central Processing Unit)

This mainboard supports Intel® Core™2 Quad, Core™2 Duo, Pentium® and Celeron® processors in the LGA775 package. 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.



### Important

#### **Overheating**

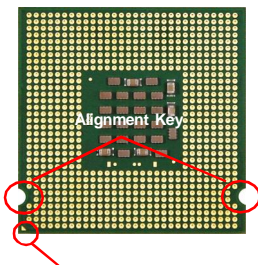
*Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*

#### **Replacing the CPU**

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

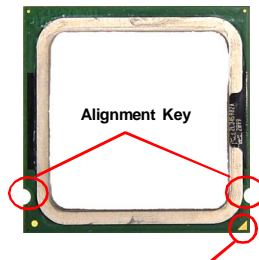
### Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 775 CPU. Remember to apply some thermal paste on it for better heat dispersion.

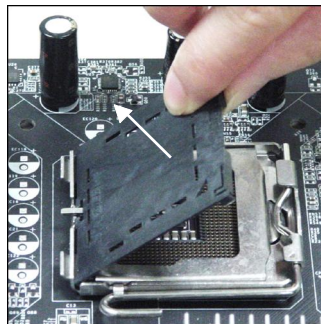
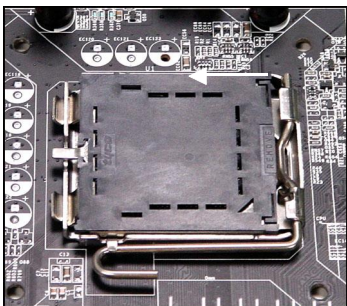


Yellow triangle is the Pin 1 indicator

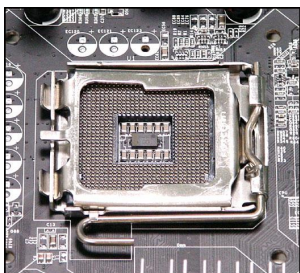
## CPU & Cooler Installation

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.

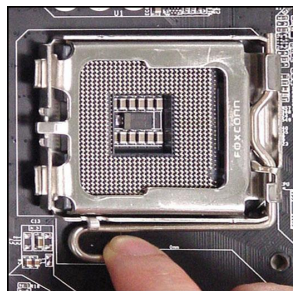
1. The CPU socket has a plastic cap on it to protect the contact from damage. Before you install the CPU, always cover it to protect the socket pin.
2. Remove the cap from lever hinge side (as the arrow shows).



3. The pins of socket reveal.



4. Open the load lever.

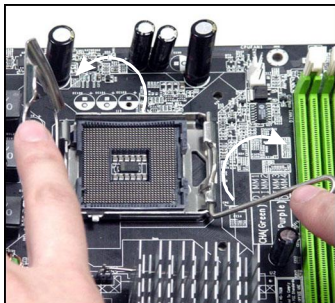


### Important

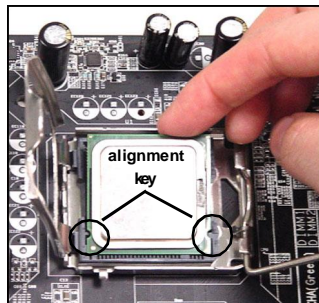
1. Confirm if your CPU cooler is firmly installed before turning on your system.
2. Do not touch the CPU socket pins to avoid damaging.
3. The availability of the CPU land side cover depends on your CPU packing.



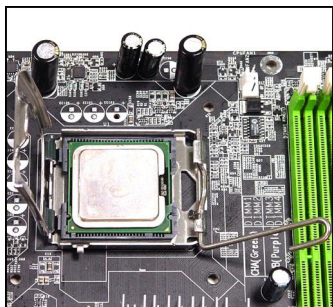
5. Lift the load lever up and open the load plate.



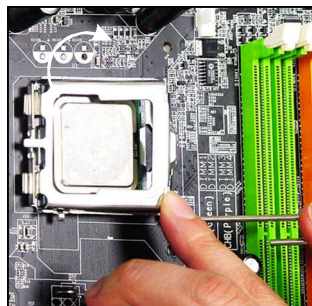
6. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.



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



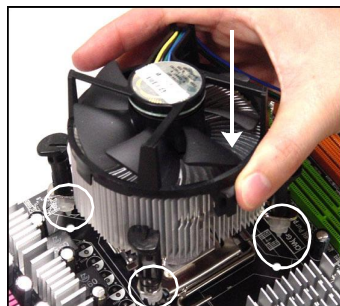
8. Cover the load plate onto the package.



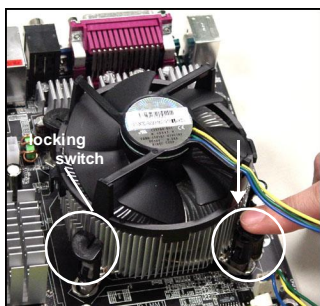
9. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



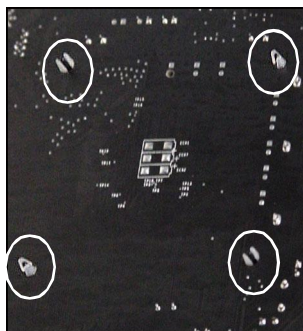
10. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.



11. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.



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



### Important

1. Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.
2. 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.



### Installing Memory Modules

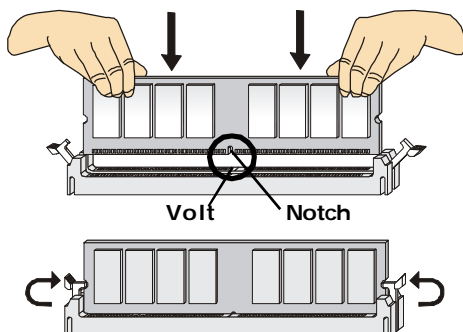
1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.



#### Important

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

3. The plastic clip at each side of the DIMM slot will automatically close.



#### Important

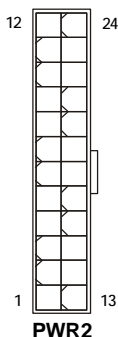
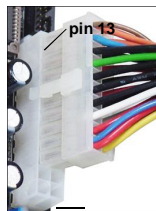
1. *DDR2 memory modules are not interchangeable with DDR and the DDR2 standard is not backwards compatible. You should always install DDR2 memory modules in the DDR2 DIMM slots.*
2. *To enable successful system boot-up, always insert the memory modules into the **DIMM1** first.*

## Power Supply

### ATX 24-Pin Power Connector: PWR2

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).



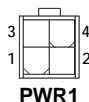
Pin Definition

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	NC
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

pin 12

### ATX 12V Power Connector: PWR1

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



Pin Definition

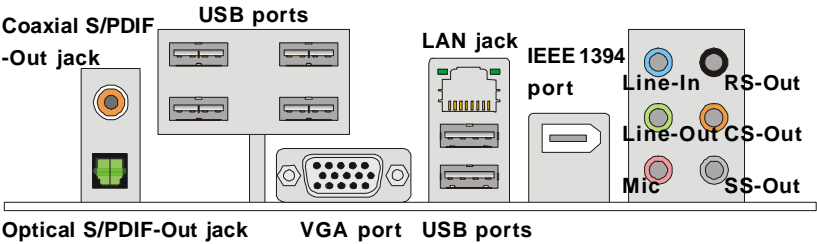
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V



### 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 350 watts (and above) is highly recommended for system stability.
3. ATX 12V power connection should be greater than 18A.

## Back Panel



### ► Coaxial S/PDIF-Out jack

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

### ► Optical S/PDIF-Out jack

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

### ► USB ports

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

### ► VGA port

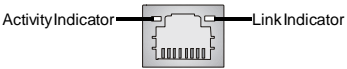
The DB15-pin female connector is provided for monitor.

### ► IEEE 1394 port

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

### ► LAN jack

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

### ► Audio Ports

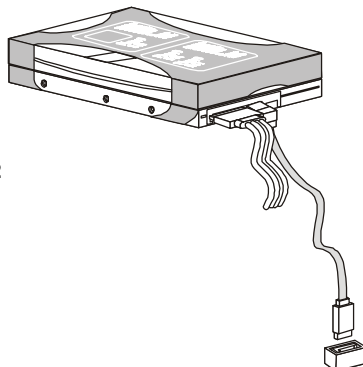
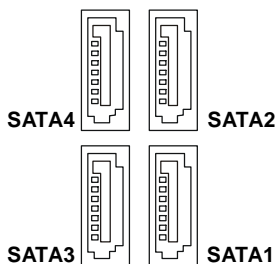
These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

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

## Connectors

### Serial ATA Connector: SATA1/ SATA2/ SATA3/ SATA4

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

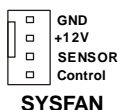
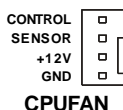


### Important

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

### Fan Power Connectors: CPUFAN, SYSFAN

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

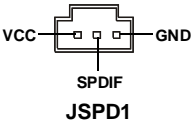


### Important

1. Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.
2. Fan cooler set with 3 or 4 pins power connector are both available for CPUFAN.

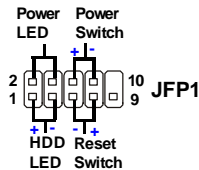
S/PDIF-Out Connector: JSPD1

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



Front Panel Connectors: JFP1

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



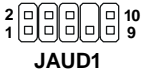
Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED +	Hard disk LED pull-up
2	FPPWR/SLP	MSG LED pull-up
3	HD_LED -	Hard disk active LED
4	FPPWR/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.



### Front Panel Audio Connector: JAUD1

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



**Pin Definition**

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



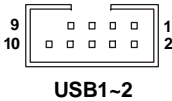
#### Important

*If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.*



Front USB Connector: JUSB1, JUSB2

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



Pin Definition

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

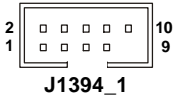


Important

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

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

## Jumpers

### Clear CMOS Jumper: JBAT1

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



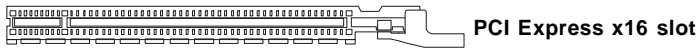
### Important

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

## Slots

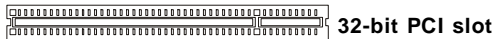
### PCI (Peripheral Component Interconnect) Express Slots

The PCI Express slot supports the PCI Express interface expansion card.  
The PCI Express x 16 supports up to 4.0 GB/s transfer rate.  
The PCI Express x 1 supports up to 250 MB/s transfer rate.



### PCI (Peripheral Component Interconnect) Slots

The PCI slots support LAN cards, SCSI cards, USB cards, and other add-on cards that comply with PCI specifications. At 32 bits and 33 MHz, it yields a throughput rate of 133 MBps.



### 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 W#	INT X#	INT Y#	INT Z#
PCI Slot 2	INT X#	INT Y#	INT Z#	INT W#

## Chapter 3

# BIOS Setup

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

You may need to run the Setup program when:

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

## Entering Setup

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

### Press DEL to enter SETUP

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



#### Important

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:*

*A7504NMS V1.0 102507 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.*

*102507 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
<F6>	Load Optimized Defaults
<F8>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

## Getting Help

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

### Main Menu

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

### Sub-Menu

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

▶ Primary IDE Master  
▶ Primary IDE Slave  
▶ Secondary IDE Master  
▶ Secondary IDE Slave

## General Help <F1>

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

## The Main Menu



### ► 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.

### ► PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

### ► H/W Monitor

This entry shows your PC health status.

### ► Frequency/Voltage Control

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



► **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.

► **Set Supervisor Password**

Use this menu to set the supervisor password for BIOS.

► **Set User Password**

Use this menu to set the user password for BIOS.

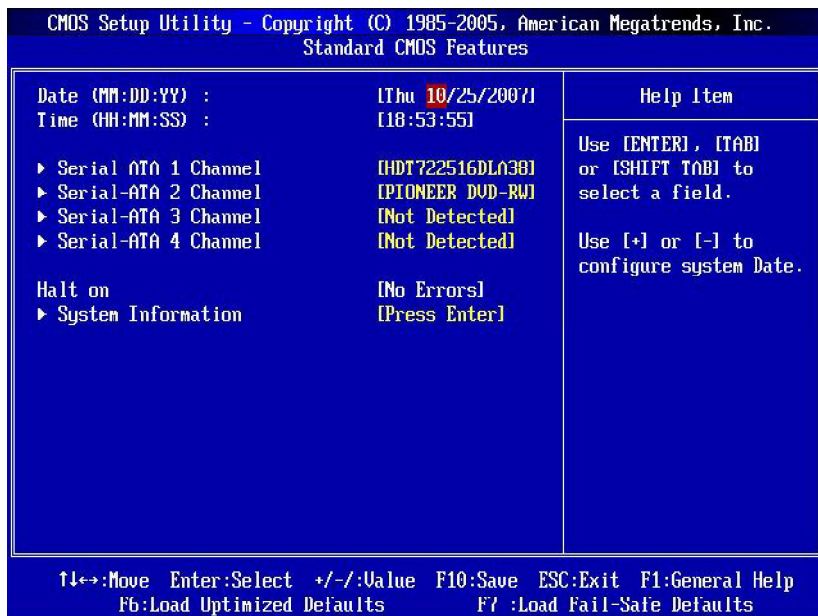
► **Save & Exit Setup**

Save changes to CMOS and exit setup.

► **Exit Without Saving**

Abandon all changes and exit setup.

## Standard CMOS Features



### ► 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>.

### ► Serial-ATA 1~4 Channel

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc. Serial ATA 1 Channel	
Third IDE Master	Help Item
Device :Hard Disk	Disabled: Disables LBA Mode. Auto: Enables LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.
Vendor :HDT722516DLn380	
Size :164.7GB	
LBA Mode :Supported	
Block Mode:16Sectors	
PIO Mode :4	
Async DMA :MultiWord DMA-2	
Ultra DMA :Ultra DMA-6	
S.M.A.R.T.:Supported	
LBA/Large Mode [Auto]	
DMA Mode [Auto]	
Hard Disk S.M.A.R.T. [Auto]	

#### Device/ Vendor/ Size/ LBA Mode/ Block Mode/ PIO Mode/ Async DMA/ Ultra DMA/ S.M.A.R.T.

These will be showing the device information that you connected to the IDE/ SATA connector. Read-only.

#### LBA/Large Mode

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

#### DMA Mode

Select DMA Mode.

#### Hard Disk S.M.A.R.T.

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



### Important

**Serial-ATA 1~4 Channel** are appearing when you connect the HD devices to the SATA connector on the mainboard.

► **Halt On**

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

[All Errors]	The system stops when any error is detected.
[No Errors]	The system doesn't stop for any detected error.
[All, But Keyboard]	The system doesn't stop for a keyboard error.
[All, But Diskette]	The system doesn't stop for a disk error.
[All, But Disk/Key]	The system doesn't stop for either a disk or a keyboard error.

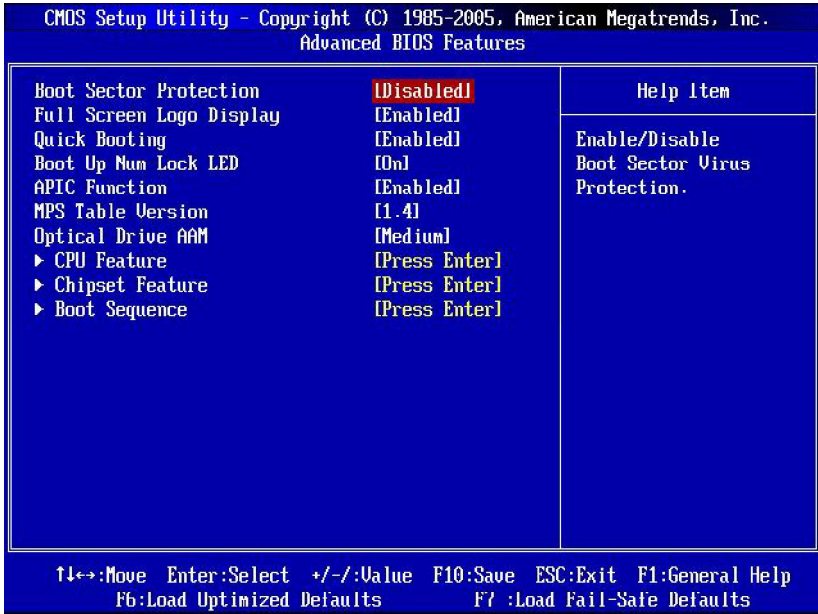
► **System Information**

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.	
System Information	
Intel(R) Core(TM)2 CPU            6700 @ 2.66GHz	Help Item
CPUID/MicroCode        : 06F5h/00h	
CPU Frequency            : 3.816GHz (381x10)	
BIOS Version            : V1.07 101907	
Physical Memory        : 384MB	
Usage Memory            : 384MB	
Cache Size              : 4096 KB	

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

## Advanced BIOS Features



### ▶ Boot Sector Protection

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

### ▶ Full Screen Logo Display

This item enables you to show the company logo on the bootup screen. Settings are:

[Enabled]	Shows a still image (logo) on the full screen at boot.
[Disabled]	Shows the POST messages at boot.

### ▶ Quick Booting

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

### ► Boot Up Num-Lock LED

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

### ► APIC 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.

### ► Optical Drive AAM

Use this field to configure the AAM (Automatic Acoustic Management) mode.

### ► CPU Feature

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.		
CPU Feature		
Execute Bit Support	[Enabled]	Help Item
Set Limit CPUID MaxVal to 3	[Disabled]	When disabled, force the XD feature flag to always return 0.

#### 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 item allows you to enable and disable the CPU ID maximum value.

[Enabled]	Set to [Enabled] only when you have Prescott CPU and NT4.0 operating system.
[Disabled]	Set to [Disabled] if you have operating system other than NT4.0.

### ► Chipset Feature

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.		
Chipset Feature		
HPET	[Enabled]	Help Item
OnChip & PCIe VGA selection	[Both exist and]	
iGPU Frame Buffer Size	[128MB]	Options
		Disabled
		Enabled

### 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.

### OnChip & PCIe VGA selection

This item allows you to select OnChip or PCI Express VGA display. Available setting options are:

[Auto] Display only OnChip or PCI Express VGA.

[Both] Display both OnChip and PCI Express VGA.

### iGPU Frame Buffer Size

This field is used to detect the onboard VGA Frame Buffer Size.

## ► Boot Sequence

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

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.		
Boot Sequence		
1st Boot Device	[CD/DVD:3S-PIOM]	Help Item
2nd Boot Device	[USB:Apacer Ham]	
3rd Boot Device	[SATA:3M-HDT722]	Specifies the boot sequence from the available devices.
► Hard Disk Drives	[Press Enter]	
► CD/DVD Drives	[Press Enter]	A device enclosed in parenthesis has been disabled in the corresponding type menu.
► Removable Drives	[Press Enter]	
Boot From Other Device	[No]	

### 1st/ 2nd/ 3rd Boot Device

The items allow you to set the 1st/ 2nd/ 3rd boot device where BIOS attempts to load the disk operating system.

### Boot From Other Device

Setting the option to [Yes] allows the system to try to boot from other device. if the system fails to boot from the 1st/ 2nd/ 3rd boot device.

## 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 Controller

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

### ▶ LAN Boot

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

### ▶ Onboard IEEE 1394 Controller

This setting allows you to enable/ disable the onboard IEEE 1394 controller.

### ▶ HD Audio Controller

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

### ▶ On-Chip ATA Devices

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



**On-Chip SATA Controller**

This item allows you to enable/ disable the SATA controller.

**RAID mode**

This item is used to enable/ disable the RAID function for SATA devices.

## Power Management Setup

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

Power Management Setup

ACPI Function	[Enabled]	Help Item
ACPI Standby State	[S3]	
Re-call VGA BIOS From S3	[Disabled]	
Soft off by PWR BTN	[Instant off]	
Restore On AC Power Loss	[Last State]	
▶ Wake Up Event Setup	[Press Enter]	
		Options
		Disabled
		Enabled

↑↓←→:Move Enter:Select +/-:Value F10:Save ESC:Exit F1:General Help  
F6:Load Optimized Defaults F7 :Load Fail-Safe Defaults



### Important

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

#### ▶ ACPI Function

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

### ► ACPI Standby State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 2000/ XP , you can choose to enter the Standby mode in S1 or S3 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 compo nents 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

Selecting [Enabled] allows BIOS to call VGA BIOS 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 AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3.

### ► Soft off by PWR BTTN

When [Enabled], turning the system off with the on/ off button places the system in avery low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

### ► Restore On AC Power Loss

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

- [Power 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> to enter the sub-menu, and the following screen appears.



### Resume From S3 By USB Device

This setting determines whether the system will be awakened from what power saving modes when input signal of USB devices are detected.

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

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

### **Resume By PCI-E Device**

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

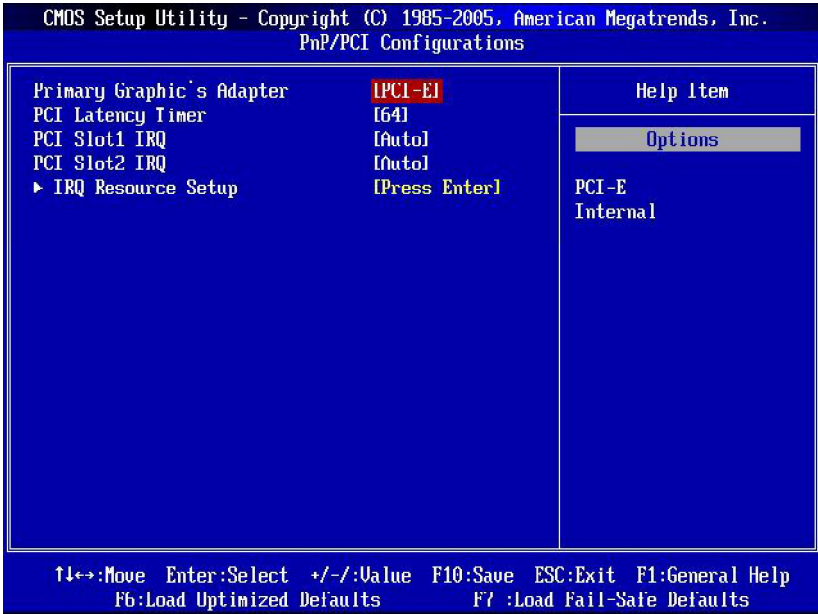
### **Resume By Onboard LAN**

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

### **Resume By RTC Alarm**

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

## PnP/PCI Configurations



### ► 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.

### ► PCI Slot1/ 2 IRQ

These items specify the IRQ line for each PCI slot.

### ► IRQ Resource Setup

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



### IRQ 3/ 4/ 5/ 7/ 9/ 10/ 11/ 14/ 15

These items specify the bus where the specified IRQ line is used. The settings determine if AMI BIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the IRQ pool, the end user can use these settings to reserve the IRQ by assigning an [Reserved] setting to it. Onboard I/O is configured by AMI BIOS. All IRQs used by onboard I/O are configured as [Available]. If all IRQs are set to [Reserved], and IRQ 14/15 are allocated to the onboard PCI IDE, IRQ 9 will still be available for PCI and PnP devices.



### Important

*IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the I/O device.*

## H/W Monitor

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H/W Monitor

CPU Smart FAN Control <span style="color: red;">[55°C/131°F]</span> CPU Min. FAN Speed (%) <span style="color: red;">[50.0%]</span>		Help Item <div style="border: 1px solid black; padding: 2px; text-align: center;">Options</div> Disabled 40°C/104°F 45°C/113°F 50°C/122°F 55°C/131°F 60°C/140°F 65°C/149°F 70°C/158°F
PC Health Status		
CPU Temperature	: 40°C/104°F	
System Temperature	: 27°C/80°F	
CPU FAN Speed	: 3685 RPM	
SYS FAN Speed	: 0 RPM	
CPU Vcore	: 1.296 V	
3.3V	: 3.392 V	
5V	: 5.213 V	
12V	: 12.232 V	
5V SB	: 5.224 V	

↑↓←→:Move Enter:Select +/-:Value F10:Save ESC:Exit F1:General Help  
 F6:Load Optimized Defaults F7 :Load Fail-Safe Defaults

### ► CPU Smart FAN Control

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 automatically.

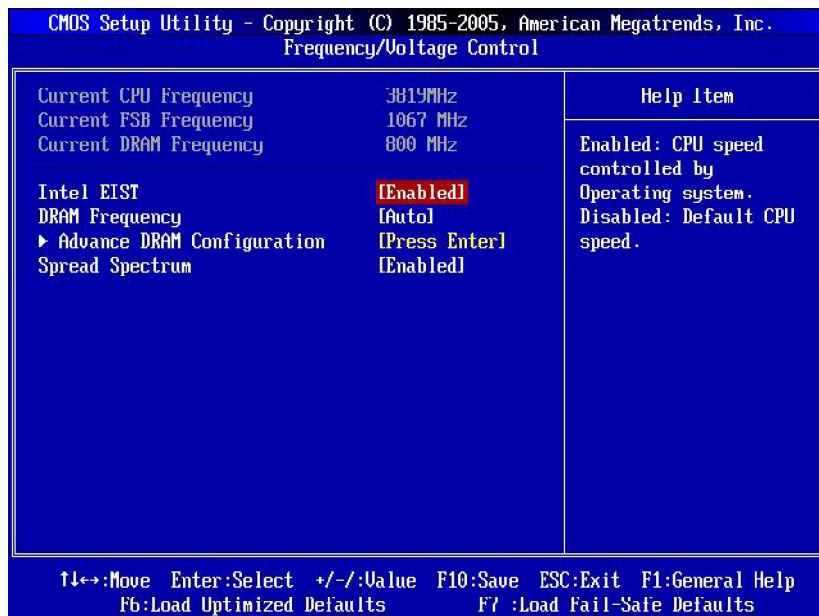
### ► CPU Min. FAN Speed (%)

This item allows users to select how percentage of minimum speed limit for the CPU fan.

### ► CPU/ System Temperature, CPU/ SYS FAN Speed, CPU Vcore, 3.3V, 5V, 12V, 5V SB

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

## Frequency/Voltage Control



### Important

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

#### ► Current CPU/ FSB/ DRAM Frequency

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

#### ► 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.

#### ► DRAM Frequency

This setting allows you to set the bus frequency for installed DRAM.

#### ► Advance DRAM Configuration

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





### DDR Memory Timing By SPD

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

### ► 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.

## **Load Fail-Safe/ Optimized Defaults**

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

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



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

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



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