M4A79XTD EVO

Motherboard

E4805

First Edition V1
July 2009

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Notices

Federal Communications Commission Statement

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

* This device may not cause harmful interference, and
* This device must accept any interference received including interference that may cause undesired operation.

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 manufacturer's 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 following measures:

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

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

REACH

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at http://green.asus.com/english/REACH.htm.

> **DO NOT** throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

> **DO NOT** throw the mercury-containing button cell battery in municipal waste. This symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.

- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.

- Ensure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.

- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

- The optical S/PDIF is an optional component (may or may not be included in your motherboard) and is defined as a CLASS 1 LASER PRODUCT.

> ⚠ INVISIBLE LASER RADIATION, AVOID EXPOSURE TO BEAM.

- Never dispose of the battery in fire. It could explode and release harmful substances into the environment.

- Never dispose of the battery with your regular household waste. Take it to a hazardous material collection point.

- Never replace the battery with an incorrect battery type.

> ⚡ - RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
> - DISPOSE OF USED BATTERIES ACCORDING TO THE ABOVE BATTERY-RELATED INSTRUCTIONS.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.

- Before using the product, ensure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.

- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.

- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.

> ⚠ This motherboard should only be used in environments with ambient temperatures between 5°C (41°F) and 40°C (104°F).

- Place the product on a stable surface.

- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**

    This chapter describes the features of the motherboard and the new technology it supports.

- **Chapter 2: Hardware information**

    This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the switches, jumpers, and connectors on the motherboard.

- **Chapter 3: BIOS setup**

    This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

- **Chapter 4: Software support**

    This chapter describes the contents of the support DVD that comes with the motherboard package and the software.

- **Chapter 5: ATI® CrossFireX™ technology support**

    This chapter describes ATI® CrossFireX™ feature and shows the graphics card installation procedures.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS websites**

    The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.

2. **Optional documentation**

    Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To ensure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key. Example: <Enter> means that you must press the Enter or Return key.
<Key1> + <Key2> + <Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+). Example: <Ctrl> + <Alt> + <Del>

M4A79XTD EVO specifications summary

CPU	AMD® Socket AM3 for AMD® Phenom™ II / Athlon™ II / Sempron™ 100 series processors Supports 45nm CPU AMD Cool 'n' Quiet™ Technology * Refer to www.asus.com for the AMD® CPU support list
Chipset	AMD® 790X / SB750
System bus	Up to 5200MT/s HyperTransport™ 3.0 interface
Memory	Dual-channel memory architecture 4 x 240-pin DIMM slots support maximum 16GB unbuffered ECC and non-ECC DDR3 1800 (O.C.) / 1600 / 1333 / 1066 MHz memory modules * Refer to www.asus.com for the latest Memory QVL (Qualified Vendors List). ** When you install a total memory of 4GB or more, Windows® 32-bit operating system may only recognize less than 3GB. We recommend a maximum of 3GB system memory if you are using a Windows® 32-bit operating system.
Expansion slots	2 x PCIe 2.0 x16 slots with ATI CrossFireX™ support (@ full x16 or dual x8 link) 2 x PCIe x1 slots 2 x PCI 2.2 slots
Storage	AMD® SB750 southbridge: - 1 x Ultra DMA 133/100/66 connector for up to 2 PATA devices - 6 x Serial ATA 3Gb/s connectors support RAID 0, RAID 1, RAID 5, RAID 10, and JBOD configurations Marvell 88SE6121 - 1 x SATA 3Gb/s port (black) - 1 x eSATA 3Gb/s port (SATA on-the-go)
LAN	Realtek® 8112L Gigabit LAN controller featuring AI NET2
Audio	VIA® VT1708S High Definition Audio 8-channel CODEC - DTS Surround Sensation Ultra-PC - Supports Jack-detection, Multi-streaming, and Front Panel Jack-Retasking technologies - Optical S/PDIF Out port at back I/O - ASUS Noise Filtering
USB	Supports up to 12 USB 2.0/1.1 ports (4 ports at mid-board, 8 ports at the back panel)
IEEE 1394	VIA® VT6315N controller supports 2 IEEE 1394a ports (1 port at mid-board, 1 port at the back panel)

(continued on the next page)

M4A79XTD EVO specifications summary

ASUS unique features	**ASUS Power Solutions:** - 8+2 Phase Power Design - ASUS Anti-Surge Protection **ASUS Green Design:** - ASUS EPU **ASUS Express Gate** **ASUS Quiet Thermal Solution:** - ASUS Fanless Design: Stylish heat sink solution - ASUS Q-Fan 2 **ASUS EZ DIY:** - ASUS Q-Shield - ASUS Q-Connector - ASUS CrashFree BIOS 3 - ASUS O.C. Profile - ASUS EZ Flash 2
Other features	100% All High-Quality Conductive Polymer Capacitors! ASUS MyLogo 2™ AMD® OverDrive Support* * Advanced cooling system is required when advanced overclocking functions of AMD OverDrive are enabled.
ASUS exclusive overclocking features	**Intelligent overclocking tools:** - AI Overclocking (Intelligent CPU Frequency Tuner) - TurboV - Turbo Key **Precision Tweaker 2:** - vCore: Adjustable CPU voltage at 0.0125V increment - vChipset (N.B.): 16-step Chipset voltage control - vDIMM: 50-step DRAM voltage control **SFS (Stepless Frequency Selection):** - FSB tuning from 200MHz up to 600MHz at 1MHz increment - PCIe frequency tuning from 100MHz up to 150MHz at 1MHz increment **Overclocking Protection:** - ASUS C.P.R. (CPU Parameter Recall)
Back panel I/O ports	1 x PS/2 Keyboard port (purple) 1 x PS/2 Mouse port (green) 1 x Optical S/PDIF Out port 1 x External SATA port 1 x IEEE 1394a port 1 x LAN (RJ-45) port 8 x USB 2.0/1.1 ports 8-channel audio I/O ports

M4A79XTD EVO specifications summary

Internal I/O connectors	2 x USB connectors support additional 4 USB ports 1 x COM connector 1 x IDE connector 7 x SATA connectors 1 x Front panel audio connector 1 x System panel connector (Q-Connector) 1 x IEEE 1394a connector 1 x S/PDIF Out connector 1 x CPU fan connector 1 x Power fan connector 2 x Chassis fan connectors 1 x Chassis intrusion connector 1 x CD audio-in connector 1 x 24-pin EATX power connector 1 x 4-pin ATX 12V power connector
BIOS	8Mb Flash ROM, AMI BIOS, PnP, DMI2.0, WfM2.0, SM BIOS 2.3, ACPI2.0a, ASUS EZ Flash 2, ASUS CrashFree BIOS 3
Manageability	WOL by PME, WOR by PME, WOR by Ring, PXE, Chassis intrusion
Accessories	1 x Ultra DMA 133/100/66 cable 4 x Serial ATA cables 1 x Q-Shield 1 x User Manual 2 in 1 Q-connector (USB, System panel; Retail version only)
Support DVD	Drivers ASUS Express Gate ASUS Update ASUS PC Probe II ASUS AI Suite AMD OverDrive Utility (AOD) Anti-Virus software (OEM version)
Form factor	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.4 cm)

*Specifications are subject to change without notice.

Chapter 1

1.1   Welcome!

Thank you for buying an ASUS® M4A79XTD EVO motherboard!

The motherboard delivers a host of new features and latest technologies, making it another standout in the long line of ASUS quality motherboards!

Before you start installing the motherboard, and hardware devices on it, check the items in your package with the list below.

1.2   Package contents

Check your motherboard package for the following items.
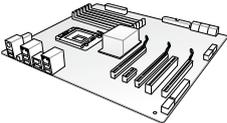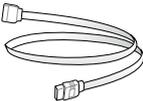
ASUS M4A79XTD EVO Motherboard	4 x Serial ATA signal cables
1 x Ultra DMA 133/100/66 cable	1 x ASUS Q-Shield (I/O shield)
2 in 1 Q-Connector (USB, system panel; Retail version only)	Support DVD
User Guide	
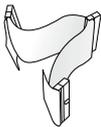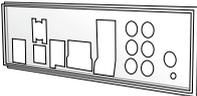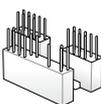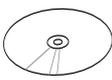
- •   If any of the above items is damaged or missing, contact your retailer.
- •   The illustrated items above are for reference only. Actual product specifications may vary with different models.

1.3 Special features

1.3.1 Product highlights

AMD® Phenom™ II / Athlon™ II / Sempron™ 100 series CPU support

This motherboard supports AMD® Socket AM3 multi-core processors with unique L3 cache and delivers better overclocking capabilities with less power consumption. It features dual-channel DDR3 1333 memory support and accelerates data transfer rate up to 5200MT/s via HyperTransport™ 3.0-based system bus. This motherboard also supports AMD® CPUs in the new 45nm manufacturing process.

AMD® 790X / SB750 Chipset

The AMD® 790X / SB750 Chipset is designed to support up to 5200MT/s HyperTransport™ 3.0 (HT 3.0) interface speed and PCI Express™ 2.0 x16 graphics. It is optimized with AMD's latest AM3 multi-core CPUs to provide excellent system performance and overclocking capabilities.

ATI CrossFireX™ Technology

ATI's CrossFireX™ boosts image quality along with rendering speed, eliminating the need to scale down screen resolution to get high quality images. CrossFireX™ allows higher antialiasing, anisotropic filtering, shading, and texture settings. Adjust your display configurations, experiment with the advanced 3D settings, and check the effects with a real-time 3D-rendered previews within ATI Catalyst™ Control Center.

Dual-Channel DDR3 1800 (O.C.)

The motherboard supports DDR3 memory that features data transfer rates of 1800 (O.C.)/1600/1333/1066 MHz to meet the higher bandwidth requirements of the latest operation system, 3D graphics, multimedia, and Internet applications. The dual-channel DDR3 architecture doubles the bandwidth of your system memory to boost system performance, eliminating bottlenecks with peak bandwidths of up to 25.6 GB/s. Furthermore, the supply voltage for the memory is reduced from 1.8 V for DDR2 to just 1.5 V for DDR3. This voltage reduction limits the power consumption and heat generation of DDR3 which makes it an ideal memory solution.

100% All High-quality Conductive Polymer Capacitors

This motherboard uses all high-quality conductive polymer capacitors for durability, improved lifespan, and enhanced thermal capacity.

Green ASUS

This motherboard and its packaging comply with the European Union's Restriction on the use of Hazardous Substances (RoHS). This is in line with the ASUS vision of creating environment-friendly and recyclable products/packaging to safeguard consumers' health while minimizing the impact on the environment.

1.3.2 ASUS unique features

ASUS Power Solution

ASUS Power solution intelligently and automatically provides balanced computing power and energy consumption.

8+2 Phase Power Design

To fully unleash the next-generation AM3 CPU's potential, the ASUS M4 Series motherboards have adopted the brand new 8-phase VRM power design, which delivers high power efficiency and supreme overclocking ability. This series' high quality power components effectively lowers system temperature to ensure longer component lifespan. This series also features an extra 2 phase power dedicated to integrated memory/HT controller.

ASUS Anti-Surge Protection

This special design prevents expensive devices and the motherboard from damage caused by power surges from switching power supply (PSU).

ASUS Green Design

This motherboard and its packaging comply with the European Union's Restriction on the use of Hazardous Substances (RoHS) to safeguard consumers' health while minimizing the impact of the environment.

ASUS EPU

The ASUS EPU (Energy Processing Unit) provides total system power management by detecting current PC loadings and intelligently moderating power usage for critical PC components in real-time - helping save power and money!

Express Gate

Express Gate is an ASUS exclusive OS that provides you with quick access to the Internet and key applications before entering the Windows® OS. Refer to pages 3-29, 3-30 and 4-10 for details.

ASUS Quiet Thermal Solution

ASUS Quiet Thermal solution makes system more stable and enhances the overclocking capability.

Fanless Design—Stylish Heatsink Design

The streamline-shaped heatsink features 0-dB thermal solution that offers users a noiseless PC environment. Not only the beautifully curved fins upgrade the visual enjoyment for motherboard users, but also the special Streamline Airflow Guiding design lowers the temperature of the north bridge chipset through high efficient heat-exchange. Combined with usability and aesthetics, the ASUS streamline-shaped heat-sink will give users an extremely silent and cooling experience with the elegant appearance!

Q-Fan 2

ASUS Q-Fan 2 technology intelligently adjusts both CPU fan and chassis fan speeds according to system loading to ensure quiet, cool and efficient operation.

ASUS Crystal Sound

This feature can enhance speech-centric applications like Skype, online game, video conference and recording.

Noise Filtering

This feature detects repetitive and stationary noises (non-voice signals) like computer fans, air conditioners, and other background noises then eliminates it in the incoming audio stream while recording.

ASUS EZ DIY

ASUS EZ DIY feature collection provides you easy ways to install computer components, update the BIOS or back up your favorite settings.

ASUS Q-Shield

ASUS Q-Shield's special design makes it convenient and easy to install on your motherboard. With better electric conductivity, it ideally protects your motherboard against static electricity and shields it against Electronic Magnetic Interference (EMI).

ASUS Q-Connector

ASUS Q-Connector allows you to easily connect or disconnect the chassis front panel cables to the motherboard. This unique module eliminates the trouble of connecting the system panel cables one at a time and avoiding wrong cable connections.

ASUS O.C. Profile

The motherboard features the ASUS O.C. Profile that allows you to conveniently store or load multiple BIOS settings. The BIOS settings can be stored in the CMOS or a separate file, giving you the freedom to share and distribute your favorite settings.

ASUS EZ Flash 2

ASUS EZ Flash 2 is a user-friendly BIOS update utility. Simply press the predefined hotkey to launch the utility and update the BIOS without entering the OS. Update your BIOS easily without preparing a bootable diskette or using an OS-based flash utility.

1.3.3 ASUS intelligent performance and overclocking features

TurboV

Feel the adrenaline rush of real-time OC—now a reality with the ASUS TurboV. This easy OC tool allows you to overclock without exiting or rebooting the OS; and its user-friendly interface makes overclock with just a few clicks away. Moreover, the ASUS OC profiles in TurboV provides the best O.C. settings in different scenarios.

Turbo Key

ASUS Turbo Key allows you to turn the PC power button into a physical overclocking button. After the easy setup, Turbo Key can boost performances without interrupting ongoing work or games—with just one touch!

Precision Tweaker 2

Allows you to adjust the CPU voltage in 0.0125v steps and NB/DRAM voltage in 0.02v steps to fine-tune voltage to achieve the most precise setting for the ultimate overclocking configuration.

C.P.R. (CPU Parameter Recall)

The BIOS C.P.R. feature automatically restores the CPU default settings when the system hangs due to overclocking failure. C.P.R. eliminates the need to open the system chassis and clear the RTC data. Simply shut down and reboot the system, and the BIOS automatically restores the CPU parameters to their default settings.

Chapter 2

2.1   Before you proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

- Unplug the power cord from the wall socket before touching any component.
- Before handling components, use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, to avoid damaging them due to static electricity.
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

Onboard LED

The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.

SB_PWR

ON
Standby Power

OFF
Powered Off
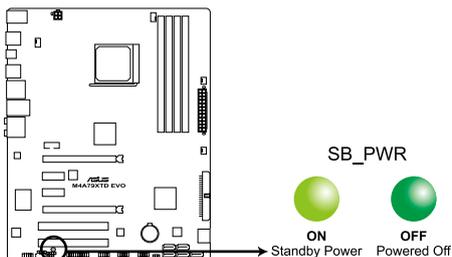
M4A79XTD EVO Onboard LED

2.2 Motherboard overview

2.2.1 Motherboard layout
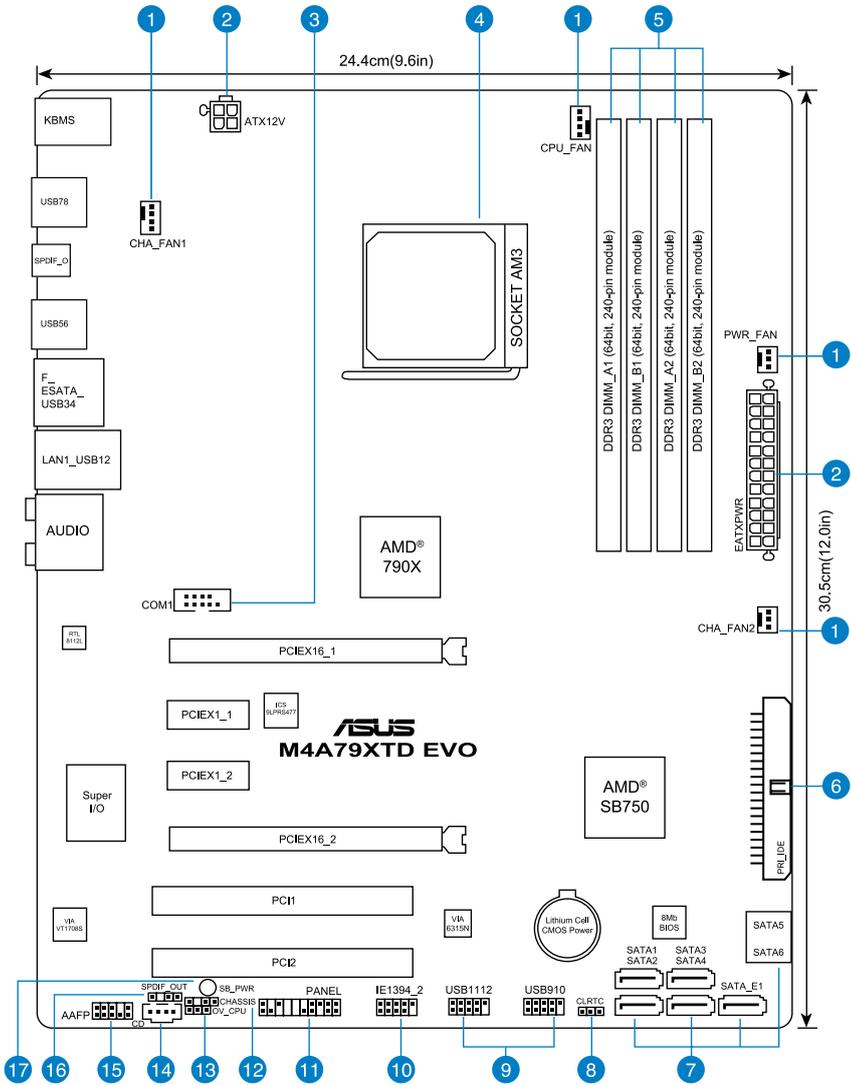
Refer to **2.7 Connectors** for more information about rear panel connectors and internal connectors.

2.2.2   Layout contents

Connectors/Jumpers/Slots/LED		Page
1.	CPU, chassis, and power fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN1, 3-pin CHA_FAN2, 3-pin PWR_FAN)	2-27
2.	ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)	2-31
3.	Serial port connector (10-1 pin COM1)	2-33
4.	AM3 CPU socket	2-5
5.	DDR3 DIMM slots	2-10
6.	IDE connector (40-1 pin PRI_IDE)	2-25
7.	Serial ATA connectors (7-pin SATA1–6, SATA_E1)	2-26
8.	Clear RTC RAM (3-pin CLRTC)	2-19
9.	USB connectors (10-1 pin USB910, USB1112)	2-28
10.	IEEE 1394a port connector (10-1 pin IE1394_2)	2-29
11.	System panel connector (20-8 pin PANEL)	2-32
12.	Chassis intrusion connector (4-1 pin CHASSIS)	2-29
13.	CPU overvoltage setting (3-pin OV_CPU)	2-20
14.	Optical drive audio connector (4-pin CD)	2-33
15.	Front panel audio connector (10-1 pin AAFP)	2-30
16.	Digital audio connector (4-1 pin SPDIF_OUT)	2-30
17.	Onboard power LED (SB_PWR)	2-1

Chapter 2

2.2.3 Placement direction

When installing the motherboard, ensure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.2.4 Screw holes

Place nine screws into the holes indicated by circles to secure the motherboard to the chassis.

DO NOT overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis
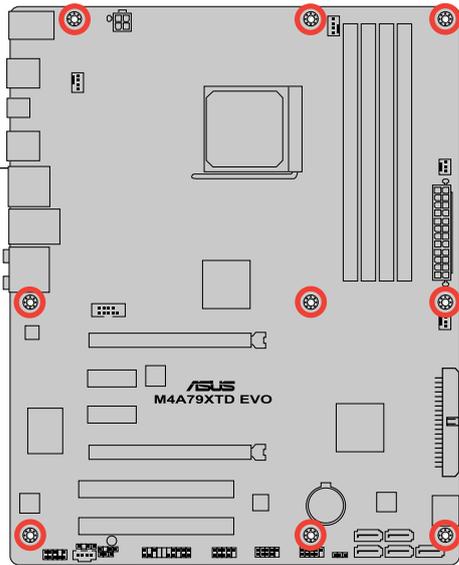
2.3   Central Processing Unit (CPU)

The motherboard comes with an AMD® AM3 socket for AMD® Phenom™ II / Athlon™ II / Sempron™ 100 series processors.

> ⚠ The AM3 socket has a different pinout from the AM2+/AM2 socket. Make sure you use a CPU designed for the AM3 socket. The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

2.3.1   Installing the CPU

To install a CPU:

1.   Locate the CPU socket on the motherboard.
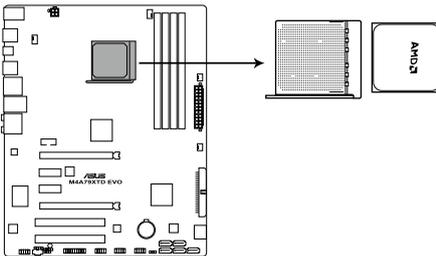
M4A79XTD EVO CPU Socket AM3

2.   Press the lever sideways to unlock the socket, then lift it up to a 90˚ angle.

> ✎ Make sure that the socket lever is lifted up to a 90˚ angle. Otherwise, the CPU will not fit in completely.
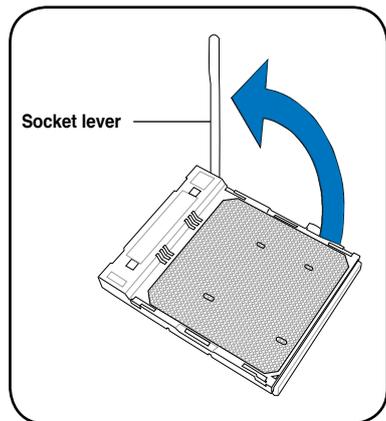
Socket lever

3. Position the CPU above the socket such that the CPU corner with the gold triangle matches the socket corner with a small triangle.

4. Carefully insert the CPU into the socket until it fits in place.

Gold triangle

Small triangle
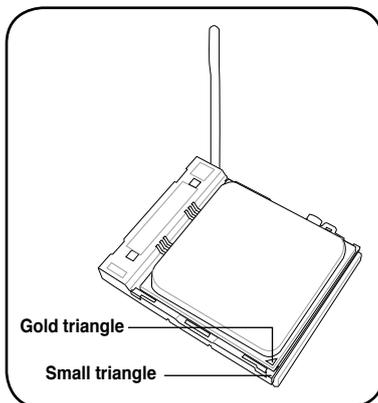
5. When the CPU is in place, push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.
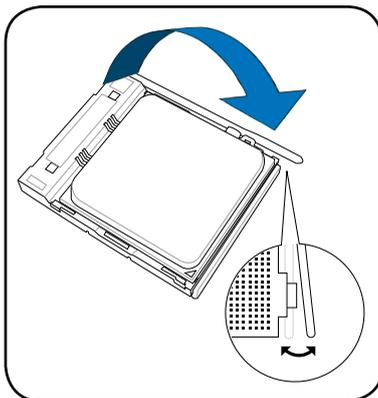
6. Apply some Thermal Interface Material to the exposed area of the CPU that the heatsink will be in contact with, ensuring that it is spread in an even thin layer.

Some heatsinks come with pre-applied thermal paste. If so, skip this step.

The Thermal Interface Material is toxic and inedible. DO NOT eat it. If it gets into your eyes or touches your skin, wash it off immediately, and seek professional medical help.

To prevent contaminating the paste, DO NOT spread the paste with your finger.
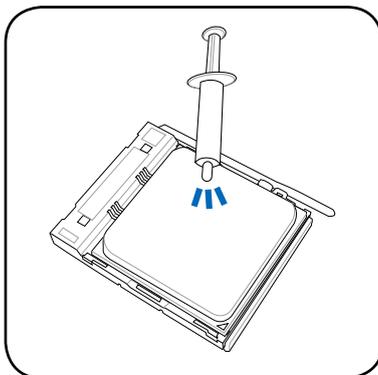
2.3.2 Installing the CPU heatsink and fan

The AMD® AM3 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

> • The retention module base is already installed on the motherboard upon purchase.
> • You do not have to remove the retention module base when installing the CPU or installing other motherboard components.
> • Ensure that you use only AMD-certified heatsink and fan assembly.

> If you purchased a separate CPU heatsink and fan assembly, ensure that the Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly.

> Ensure that you have installed the motherboard to the chassis before you install the CPU fan and heatsink assembly.

To install the CPU heatsink and fan

1. Place the heatsink on top of the installed CPU, ensuring that the heatsink fits properly on the retention module base.

CPU fan

Retention bracket lock

Retention bracket

CPU heatsink

Retention module base
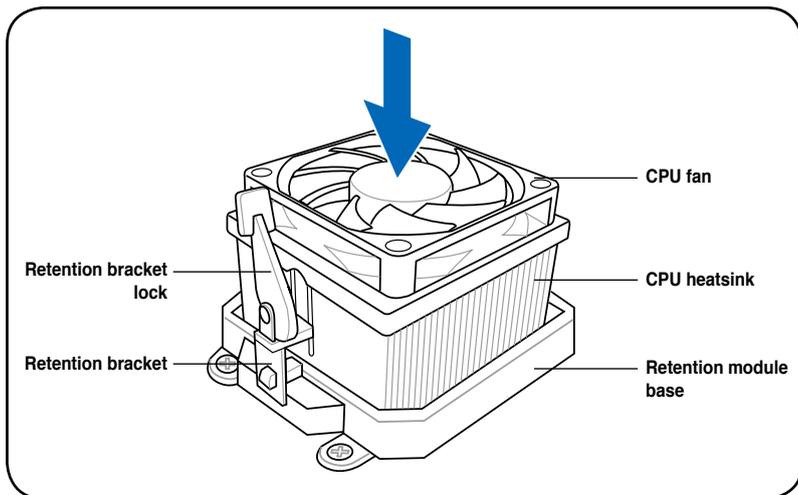
> Your boxed CPU heatsink and fan assembly should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

2. Attach one end of the retention bracket to the retention module base.
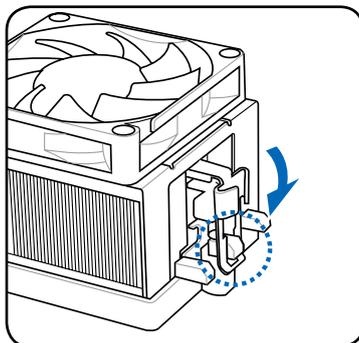
3. Align the other end of the retention bracket (near the retention bracket lock) to the retention module base. A clicking sound denotes that the retention bracket is in place.

Ensure that the fan and heatsink assembly perfectly fits the retention mechanism module base, otherwise you cannot snap the retention bracket in place.
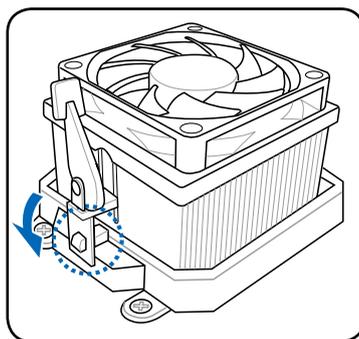
4. Push down the retention bracket lock on the retention mechanism to secure the heatsink and fan to the module base.
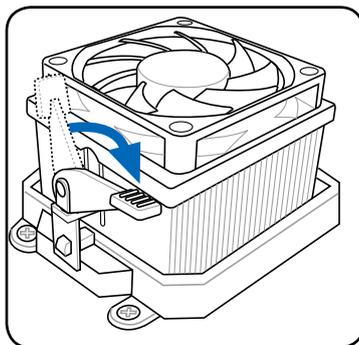
5.   When the fan and heatsink assembly is in place, connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.
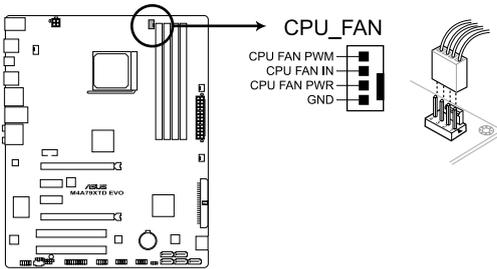
M4A79XTD EVO CPU fan connector

•   Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

•   This connector is backward compatible with old 3-pin CPU fan.

2.4 System memory

2.4.1 Overview

The motherboard comes with four Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.

A DDR3 module has the same physical dimensions as a DDR2 DIMM but is notched differently to prevent installation on a DDR2 DIMM socket. DDR3 modules are developed for better performance with less power consumption.

The figure illustrates the location of the DDR3 DIMM sockets:
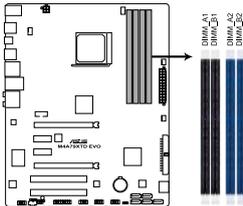
M4A79XTD EVO 240-pin DDR3 DIMM sockets

Recommended memory configurations

One DIMM:

You may install one memory module in any slot as a single-channel operation.

Two DIMMs (dual-channel operation):
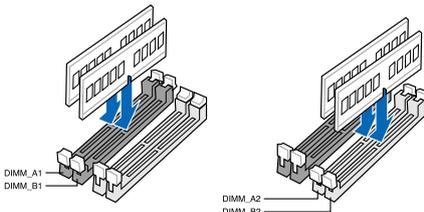
Four DIMMs (dual-channel operation):
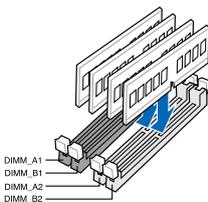
2.4.2 Memory configurations

You may install 512MB, 1GB, 2GB and 4GB unbuffered ECC and non-ECC DDR3 DIMMs into the DIMM sockets.

- • You may install varying memory sizes in Channel A and Channel B. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.

- • We recommend that you install the memory modules from the blue slots for better overclocking capability.

- • Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.

- • Due to the memory address limitation on 32-bit Windows OS, when you install 4GB or more memory on the motherboard, the actual usable memory for the OS can be about 3GB or less. For effective use of memory, we recommend that you do any of the following:
  - Use a maximum of 3GB system memory if you are using a 32-bit Windows OS.
  - Install a 64-bit Windows OS when you want to install 4GB or more on the motherboard.
    For more details, refer to the Microsoft® support site at
    http://support.microsoft.com/kb/929605/en-us.

- • This motherboard does not support DIMMs made up of 256 Mb (32MB) chips or less (Memory chip capacity counts in Megabit, 8 Megabit/Mb = 1 Megabyte/MB).

- • The default memory operation frequency is dependent on its Serial Presence Detect (SPD), which is the standard way of accessing information from a memory module. Under the default state, some memory modules for overclocking may operate at a lower frequency than the vendor-marked value. To operate at the vendor-marked or at a higher frequency, refer to section **3.5 Advanced menu** for manual memory frequency adjustment.

- • For system stability, use a more efficient memory cooling system to support a full memory load (4 DIMMs) or overclocking condition.

M4A79XTD EVO Motherboard Qualified Vendors Lists (QVL)
DDR3-2000 (O.C.) MHz capability*

Vendor	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing DIMM (BIOS)	Voltage	DIMM socket support (optional)		
								A*	B*	C*
Kingston	KHX16000D3K2/2GN(EPP)	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	9-9-9-27	1.5V	•	•	

DDR3-1800 (O.C.) MHz capability*

Vendor	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing DIMM (BIOS)	Voltage	DIMM socket support (optional)		
								A*	B*	C*
Corsair	CM3X2G1800C8D	2048MB	DS	N/A	Heat-Sink Package				•	
Kingston	KHX14400D3K2/2G	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	8-8-8-24	1.5V	•	•	
Kingston	KHX14400D3K3/3GX(XMP)	3072MB(kit of 3)	SS	N/A	Heat-Sink Package	9-9-9-27	1.65V	•	•	
Transcend	TX1800KLU-2GK	1024MB	SS	N/A	Heat-Sink Package			•	•	

DDR3-1600 MHz capability

Vendor	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing DIMM (BIOS)	Voltage	DIMM socket support (optional)		
								A*	B*	C*
Kingston	KHX13000D3LLK2/2G	1024MB	SS	N/A	Heat-Sink Package	7-7-7-20	1.5V	•		
Kingston	KHX13000D3LLK2/2GN(Epp)	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	8-7-7-20	1.8V	•	•	•
Kingston	KHX13000D3LLK2/2GX(XMP)	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	7-7-7-20	1.9V	•		•
A-Data	AD31600X002GMU	4096MB(Kit of 2)	DS	N/A	Heat-Sink Package	7-7-7-20	1.75-1.85V	•		
Corsair	CM3X1G1600C9DHX	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	9-9-9-24	1.8V	•	•	•
Corsair	CM3X2G1600C9DHX	2048MB	DS	N/A	Heat-Sink Package			•	•	•
Crucial	BL12864BA1608.8SFB(XMP)	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	8-8-8-24	1.8V	•	•	•
Crucial	BL12864BE2009.8SFB3(XMP)	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	9-9-9-28	2.0V	•	•	•
Crucial	BL25664TB1608.K16SF(XMP)	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	8-8-8-24		•	•	•
Crucial	BL25664TG1608.K16SF(XMP)	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	8-8-8-24		•	•	•
Crucial	BL25664TR1608.K16SF(XMP)	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	8-8-8-24		•	•	•
G.SKILL	F3-12800CL9D-2GBNQ	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	9-9-9-24	1.5V~1.6V	•	•	•
G.SKILL	F3-12800CL8T-6GBHK	2048MB	DS	N/A	Heat-Sink Package	8-8-8-21	1.6~1.65	•	•	•
G.SKILL	F3-12800CL9T-6GBNQ	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	9-9-9-24	1.5V~1.6V	•	•	•
kingmax	FLGD45F-B8KG9	1024MB	SS	kingmax	KFB8FNGXF-ANX-12A			•	•	•
kingmax	FLGE85F-B8KG9	2048MB	DS	kingmax	KFB8FNGXF-ANX-12A			•	•	•
Kingston	KHX12800D3LLK3/3GX(XMP)	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	8-8-8-24	1.65V	•	•	•
Kingston	KHX12800D3K2/4G	4096MB(Kit of 2)	DS	N/A	Heat-Sink Package	9-9-9-27	1.5V	•	•	•
Kingston	KHX12800D3LLK3/6GX(XMP)	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	8-8-8-24	1.65V	•	•	•
Super Talent	WA160UX6G9	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	9		•		

Chapter 2

DDR3-1333 MHz capability

Vendor	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing DIMM (BIOS)	Voltage	DIMM socket support (optional) A*	B*	C*
Kingston	KHX11000D3LLK2/2GX(XMP)	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	N/A	1.7V	•	•	•
Kingston	KHX11000D3LLK3/3GX(XMP)	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	N/A	1.65V	•	•	•
A-Data	AD31333001GOU	1024MB	SS	A-Data	AD30908C8D-151C E0906			•	•	
A-Data	AD31333G001GOU	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	8-8-8-24	1.65-1.85V	•	•	
A-Data	AD31333002GOU	2048MB	DS	A-Data	AD30908C8D-151C E0903			•	•	
A-Data	AD31333G002GMU	2048MB	DS	N/A	Heat-Sink Package	8-8-8-24	1.65-1.85V	•	•	•
Apacer	78.01GC6.9L0	1024MB	SS	Apacer	AM5D5808AEWSBG0914E	9		•	•	•
Apacer	78.A1GC6.9L1	2048MB	DS	Apacer	AM5D5808AEWSBG0908D	9		•	•	•
Corsair	CM3X1024-1333C9DHX	1024MB	SS	N/A	Heat-Sink Package			•	•	•
Corsair	CM3X1024-1333C9	1024MB	SS	N/A	Heat-Sink Package			•	•	•
Corsair	TR3X3G1333C9	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	9	1.5V	•	•	•
Corsair	CM3X1024-1333C9DHX	1024MB	DS	Corsair	Heat-Sink Package			•	•	•
Corsair	CM3X2048-1333C9DHX	2048MB	DS	N/A	Heat-Sink Package			•	•	•
Crucial	CT12872BA1339.9FF	1024MB	SS	Micron	91F22D9KPT(ECC)	9		•	•	•
Crucial	BL12864TA1336.8SFB1	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	6-6-6-20	1.8V	•	•	•
Crucial	CT12864BA1339.8SFD	3072MB(Kit of 3)	SS	Micron	8XD22D9JNM	9		•	•	•
Crucial	CT25672BA1339.18FF	2048MB	DS	Micron	91F22D9KPT(ECC)	9		•	•	•
CRUCIAL	BL25664BA1336.16SFB1	4096MB(Kit of 2)	DS	N/A	Heat-Sink Package	6-6-6-20	1.8V	•	•	•
Crucial	CT25664BA1339.16SFD	6144MB(Kit of 3)	DS	Micron	8UD22D9JNM	9		•	•	•
G.SKILL	F3-10600CL8D-2GBHK	1024MB	SS	G.SKILL	Heat-Sink Package			•	•	•
G.SKILL	F3-10600CL9D-2GBPK	1024MB	SS	G.SKILL	Heat-Sink Package			•	•	•
G.SKILL	F3-10666CL7T-3GBPK	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	7-7-7-18	1.5~1.6V	•	•	•
G.SKILL	F3-10666CL9T-3GBNQ	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package	9-9-9-24	1.5~1.6V	•	•	•
G.SKILL	F3-10600CL7D-2GBPI	1024MB	DS	G.SKILL	Heat-Sink Package			•	•	•
G.SKILL	F3-10600CL9D-2GBNQ	1024MB	DS	G.SKILL	Heat-Sink Package			•	•	•
G.SkiLL	F3-10666CL8D-4GBHK	4096MB(Kit of 2)	DS	N/A	Heat-Sink Package	8-8-8-21	1.5-1.6V	•	•	•
G.SKILL	F3-10666CL7T-6GBPK	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	7-7-7-18	1.5-1.6V	•	•	•
G.SKILL	F3-10666CL9T-6GBNQ	6144MB(Kit of 3)	DS	N/A	Heat-Sink Package	9-9-9-24	1.5V~1.6V	•	•	•
GEIL	DDR3-1333 CL9-9-9-24	1024MB	SS	N/A	Heat-Sink Package	9		•	•	•
GEIL	GV34GB1333C7DC	2048MB	DS	N/A	Heat-Sink Package	7-7-7-24	1.5V	•	•	•
GEIL	DDR3-1333 CL9-9-9-24	4096MB(Kit of 3)	DS	N/A	Heat-Sink Package	9	1.5V	•	•	•
kingmax	FLFD45F-B8MF9	1024MB	SS	Micron	8HD22D9JNM			•	•	
kingmax	FLFE85F-B8MF9	2048MB	DS	Micron	8HD22D9JNM			•	•	
Kingston	KVR1333D3N9/1G	1024MB	SS	elpida	J1108BABG-DJ-E	9	1.5V ± 0.075V	•	•	•
Micron	MT8JTF12864AY-1G4D1	1024MB	SS	Micron	8LD22D9JNM			•	•	•
Micron	MT9JSF 12872AZ-1G4F1	1024MB	SS	Micron	91F22D9KPT(ECC)	9		•	•	•
Micron	MT8JTF12864AY-1G4D1	3072MB(Kit of 3)	SS	Micron	8XD22D9JNM	9		•	•	•
Micron	MT12JSF25672AZ-1G4F1	2048MB	DS	Micron	91F22D9KPT(ECC)	9		•	•	•
Micron	MT16JTF25664AY-1G1D1	2048MB	DS	Micron	8LD22 D9JNM			•	•	•
Micron	MT16JTF25664AY-1G4D1	6144MB(Kit of 3)	DS	Micron	8UD22D9JNM	9		•	•	•
OCZ	OCZ3P13332GK	2048MB(Kit of 2)	SS	N/A	Heat-Sink Package	7-7-7-20	1.8V	•		
OCZ	OCZ3X1333LV3GK(XMP)	3072MB(Kit of 3)	SS	N/A	Heat-Sink Package		1.6V	•		
OCZ	OCZ3P13334GK	4096MB(Kit of 2)	DS	N/A	Heat-Sink Package	7-7-7-20	1.8V	•	•	
OCZ	OCZ3P13334GK	4096MB(Kit of 2)	DS	N/A	Heat-Sink Package	7-7-7-20	1.95V	•	•	
SAMSUNG	M378B2873DZ1-CH9	1024MB	SS	Samsung	K4B1G0846D-HCH9			•	•	
SAMSUNG	M378B2873DZ1-CH9	1024MB	SS	SAMSUNG	SEC 846 HCH9 K4B1G08460			•	•	•
SAMSUNG	M378B2873EH1-CH9	1024MB	SS	Samsung	SEC 913 HCH9 K4B1G0846E			•	•	•
SAMSUNG	M378B5673DZ1-CH9	2048MB	DS	Samsung	K4B1G0846D-HCH9			•	•	
SAMSUNG	M378B5673EH1-CH9	2048MB	DS	Samsung	SEC 913 HCH9 K4B1G0846E			•	•	•
SAMSUNG	M391B5673DZ1-CH9	2048MB	DS	Samsung	K4B1G0846D-HCH9(ECC)			•	•	•
Super Talent	W1333X2GB8	1024MB	SS	N/A	Heat-Sink Package			•	•	•
Transcend	TS128MLK64V3U	1024MB	SS	N/A	SEC 813HCH9 K4B1G0846D			•	•	•
Transcend	TS128MLK72V3U	1024MB	SS	N/A	K4B1G0846D(ECC)			•	•	•
Transcend	TS256MLK64V3U	2048MB	DS	N/A	SEC816HCH9K4B1G0846D			•	•	•

DDR3-1066 MHz capability

Vendor	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing DIMM (BIOS)	Voltage	DIMM socket support (optional)		
								A*	B*	C*
CRUCIAL	CT25664BA1067.16FF	2048MB	DS	Micron	9HF22D9KPT	7		•	•	•
Elpida	EBJ51UD8BAFA-AC-E	512MB	SS	elpida	J5308BASE-AC-E			•	•	•
Elpida	EBJ51UD8BAFA-AE-E	512MB	SS	elpida	J5308BASE-AC-E			•	•	•
Kingston	KVR1066D3N7/1G	1024MB	SS	elpida	J1108BABG-DJ-E	7	1.5V ± 0.075V	•		
Kingston	KVR1066D3N7/1G	1024MB	SS	elpida	J5308BASE-AE-E S	7	1.5V	•	•	
Kingston	KVR1066D3N7/2G	2048MB	DS	elpida	J1108BABG-DJ-E	7	1.5V	•	•	•
Micron	MT8JTF12864AY-1G1D1	1024MB	SS	Micron	8ED22D9JNL			•	•	•
Micron	MT16JTF25664AY-1G1D1	2048MB	DS	Micron	8LD22D9JNL			•	•	•
Micron	MT16JTF25664AZ-1G1F1	2048MB	DS	Micron	9HF22D9KPT	7		•	•	•
OCZ	OCZ3SOE10662GK	2048MB(Kit of 2)	DS	N/A	Heat-Sink Package	7-7-7-16	1.75V	•	•	•
SAMSUNG	M378B2873EH1-CF8	1024MB	SS	Samsung	SEC 901 HCF8 K4B1G0846E			•	•	•
SAMSUNG	M378B5273BH1-CF8	4096MB	DS	SAMSUNG	846 K4B2G0846B-HCF8			•	•	•

SS - Single-sided   DS - Double-sided
DIMM support:

- **A*:** Supports one module inserted in any slot as single-channel memory configuration.

- **B*:** Supports one pair of modules inserted into either the blue slots or the black slots as one pair of dual-channel memory configuration.

- **C*:** Supports four modules inserted into both the blue and black slots as two pairs of dual-channel memory configuration.

- Ensure that you download and update to the latest BIOS at http://www.asus.com and purchase the memory modules listed in the ASUS official memory Qualified Vendors Lists (QVL).

- *We recommend that you install the DDR3 2000/1800 MHz memory modules on the blue slots for better performance.

- *We recommend that you install an optional fan facing the DIMM module for better cooling performance when using DDR3 2000/1800 MHz.

Visit the ASUS website at www.asus.com for the latest QVL.

2.4.3   Installing a DIMM

> Ensure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

To install a DIMM:

1. Press the retaining clips outward to unlock a DIMM socket.

2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

DIMM notch

Unlocked retaining clip
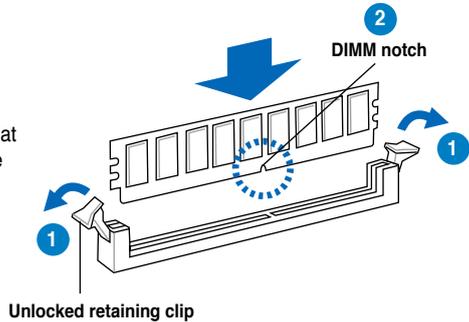
> A DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.

Locked Retaining Clip
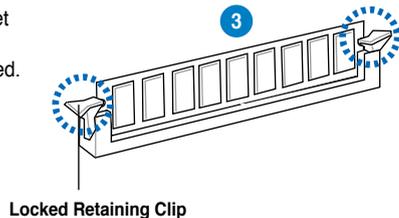
2.4.4   Removing a DIMM

To remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM.
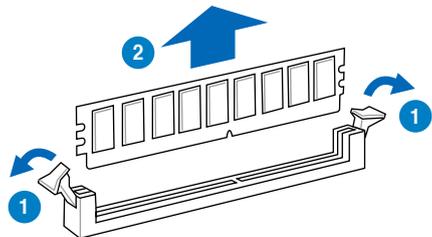
> Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

2.5 Expansion slots

In the future, you may need to install expansion cards. The following subsections describe the slots and the expansion cards that they support.

Ensure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

2.5.1 Installing an expansion card

To install an expansion card:

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

2.5.2 Configuring an expansion card

After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. Refer to Chapter 3 for information on BIOS setup.
2. Assign an IRQ to the card. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

When using PCI cards on shared slots, ensure that the drivers support "Share IRQ" or that the cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable. Refer to the table on the next page for details.

2.5.3   Interrupt assignments

Standard interrupt assignments

IRQ	Priority	Standard function
0	1	System Timer
1	2	Keyboard Controller
2	–	Redirect to IRQ#9
4	12	Communications Port (COM1)*
5	13	IRQ Holder for PCI Steering*
6	14	Floppy Disk Controller
7	15	Reserved
8	3	System CMOS/Real Time Clock
9	4	AMD ACPI-Compliant System
10	5	IRQ Holder for PCI Steering*
11	6	IRQ Holder for PCI Steering*
12	7	Reserved
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCIE x16_1	shared	shared	shared	shared	–	–	–	–
PCIE x16_2	shared	shared	shared	shared	–	–	–	–
PCIE x1_1	shared	shared	shared	shared	–	–	–	–
PCIE x1_2	shared	shared	shared	shared	–	–	–	–
PCI_1	shared	shared	shared	shared	–	–	–	–
PCI_2	shared	shared	shared	shared	–	–	–	–
USB controller 1	–	–	–	shared	–	–	–	–
USB controller 2	–	–	–	shared	–	–	–	–
USB controller 3	–	–	–	shared	–	–	–	–
USB controller 4	–	–	–	shared	–	–	–	–
USB 2.0 controller	–	–	–	shared	–	–	–	–
HD audio	shared	–	–	–	–	–	–	–
Onboard SATA	–	–	–	–	–	shared	–	–

2.5.4 PCI slots

The PCI slots support cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. Refer to the figure below for the location of the slots.

2.5.5 PCI Express x1 slots

This motherboard supports PCI Express x1 network cards, SCSI cards and other cards that comply with the PCI Express specifications. Refer to the figure below for the location of the slots.

2.5.6 Two PCI Express 2.0 x16 slots

This motherboard supports two ATI CrossFireX™ PCI Express 2.0 x16 graphics cards that comply with the PCI Express specifications. Refer to the figure below for the location of the slots.
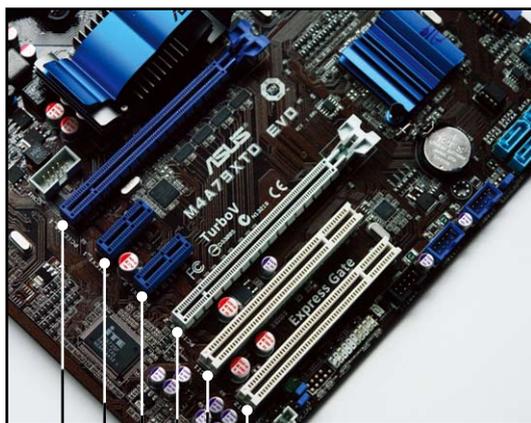
Primary PCI Express x16_1 slot
(blue, at max. x16 link)

PCI Express x1_1 slot

PCI Express x1_2 slot

PCI_2 slot

PCI_1 slot

PCI Express x 16_2 slot (gray, at max. x8 link)

Primary PCI Express x16 slot

The primary PCI Express x16 slot supports PCI Express x16 graphics cards that comply with the PCI Express specifications.

Universal PCI Express x16 slot (max. x8 mode)

This motherboard also supports a universal PCI Express x16 slot with a maximum speed of 8 GB/s. The operating frequency of this slot changes, depending on the type of PCI Express card you install.

> If you install multiple graphics cards, we recommend that you plug the rear chassis fan cable to the motherboard connector labeled CHA_FAN1/2 for better thermal environment. See page 2-27 for the connector location.

2.6 Jumpers

1. **Clear RTC RAM (3-pin CLRTC)**

   This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

   CLRTC

   Normal (Default)   Clear RTC

   M4A79XTD EVO Clear RTC RAM
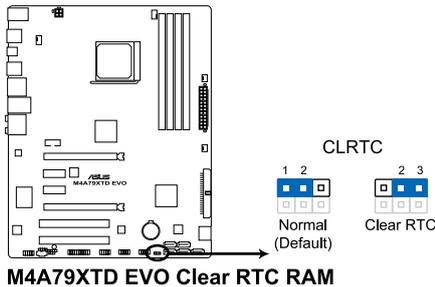
   To erase the RTC RAM

   1. Turn OFF the computer and unplug the power cord.

   2. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5–10 seconds, then move the cap back to pins 1-2.

   3. Plug the power cord and turn ON the computer.

   4. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

   > Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

   > • If the steps above do not help, remove the onboard battery and move the jumper again to clear the CMOS RTC RAM data. After the CMOS clearance, reinstall the battery.
   >
   > • You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.
   >
   > • Due to the chipset behavior, AC power off is required to enable C.P.R. function. You must turn off and on the power supply or unplug and plug the power cord before rebooting the system.

2. CPU overvoltage setting (3-pin OV_CPU)

This jumper allows you to enable or disable the advanced CPU overvoltage setting in BIOS. Read the following information before you change the jumper setting. Set to pins 1-2 to activate the advanced CPU overvoltage feature.
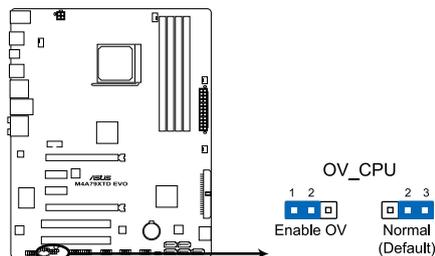
M4A79XTD EVO overvoltage setting

OV_CPU	
Pins 2-3 (Default)	up to 1.70V
Pins 1-2 (OV Enabled)	up to 1.90V

- Before you change the jumper setting for extra-high overvoltage ability, use the BIOS items introduced in **3.5 Advanced menu** first to adjust the desired CPU performance. Ensure that your system functions well under the highest BIOS voltage setting before you change the setting of this jumper.

- Refer to **3.5 Advanced menu** for more information about the CPU overvoltage setting.

- DO NOT set the OV_CPU jumper to pins 1-2 when you install a new CPU and have not booted for the first time. Doing so may cause the system to halt. For system failure due to the wrong setting of the OV_CPU jumper, shut down the computer and move the cap back to pins 2-3.

- The system may need a better cooling system (for example, a water-cooling system) to work stably under high voltage settings.

2.7 Connectors

2.7.1 Rear panel connectors

USB compatible devices
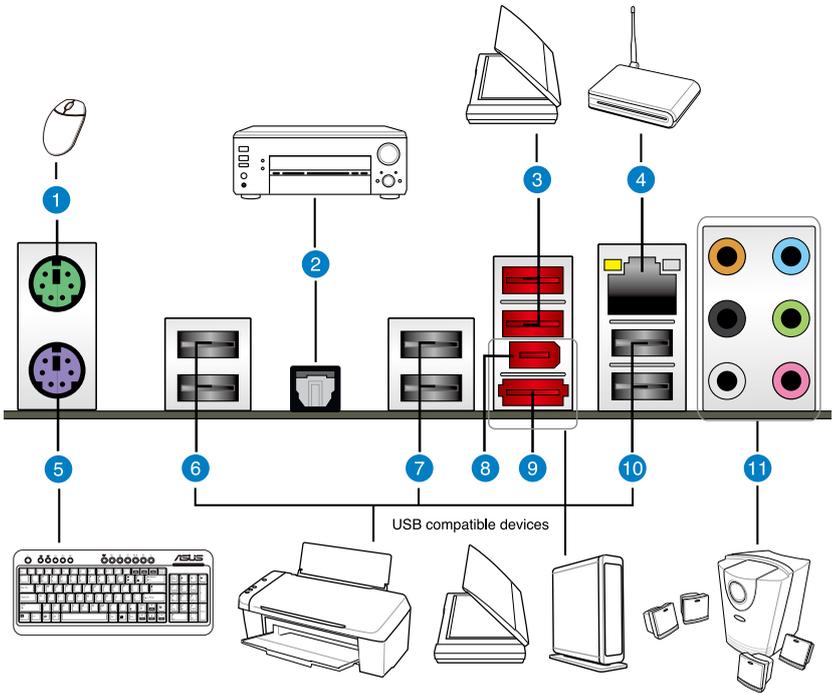
Rear panel connectors	
1. PS/2 mouse port (green)	7. USB 2.0 ports 5 and 6
2. Optical S/PDIF Out port	8. IEEE 1394a port
3. USB 2.0 ports 3 and 4	9. External SATA port
4. LAN (RJ-45) port*	10. USB 2.0 ports 1 and 2
5. PS/2 keyboard port (purple)	11. Audio I/O ports**
6. USB 2.0 ports 7 and 8	

*and **: Refer to the tables on the next page for LAN port and audio port definitions.

- DO NOT insert a different connector to the external SATA port.
- To enable external SATA device hot-plugging, set the **OnChip SATA Type** in the BIOS settings to [AHCI] mode, and then reboot the system. Refer to section **3.4.2 Storage Configuration** for details.

*LAN port LED indications

Activity Link LED		Speed LED	
Status	**Description**	**Status**	**Description**
OFF	No link	OFF	10 Mbps connection
ORANGE	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection

ACT/LINK SPEED
LED   LED

LAN port
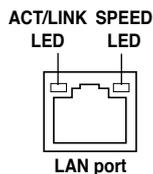
**Audio 2, 4, 6, or 8-channel configuration

Port	Headset 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Line In
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Orange	–	–	Center/Subwoofer	Center/Subwoofer
Black	–	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Gray	–	–	–	Side Speaker Out

2.7.2   Audio I/O connections

Audio I/O ports

orange   light blue
black   lime
gray   pink
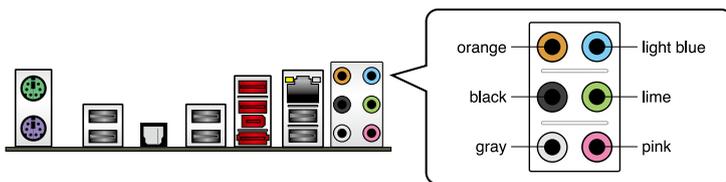
Connect to Headphone and Mic

Connect to Stereo Speakers
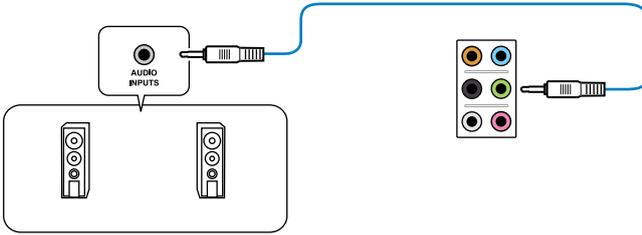
Connect to 2.1 channel Speakers
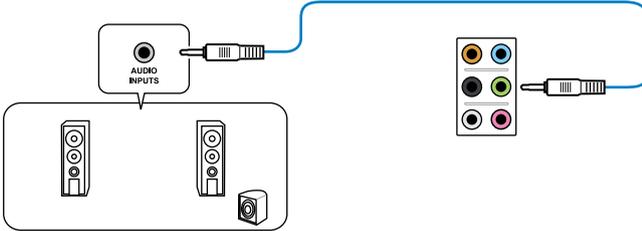
Connect to 4.1 channel Speakers
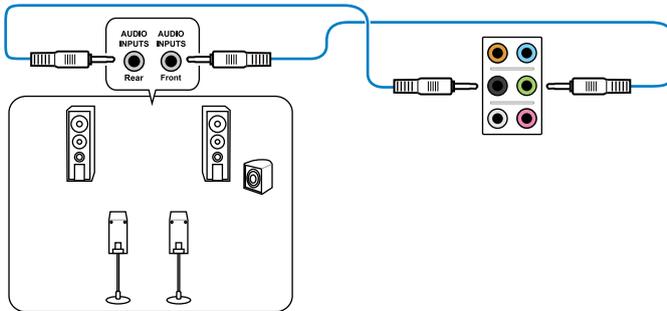
Connect to 5.1 channel Speakers
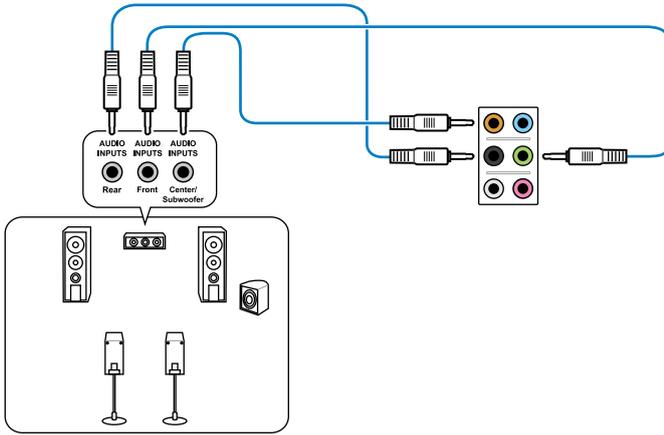
Connect to 7.1 channel Speakers
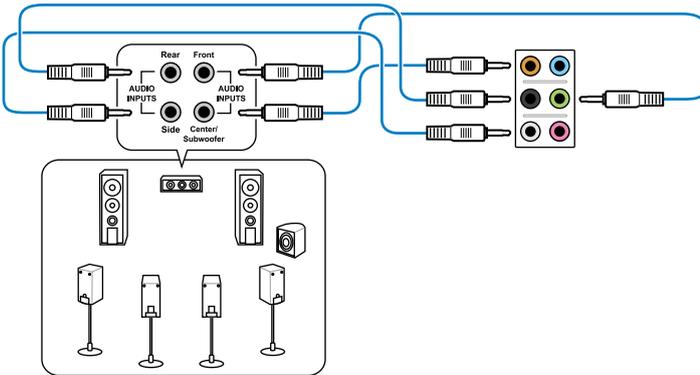
2.7.3   Internal connectors

1.   IDE connector (40-1 pin PRI_IDE)

The onboard IDE connector is for the Ultra DMA 133/100/66 signal cable. There are three connectors on each Ultra DMA 133/100/66 signal cable: blue, black, and gray. Connect the blue connector to the motherboard's IDE connector, then select one of the following modes to configure your device.

M4A79XTD EVO IDE connector
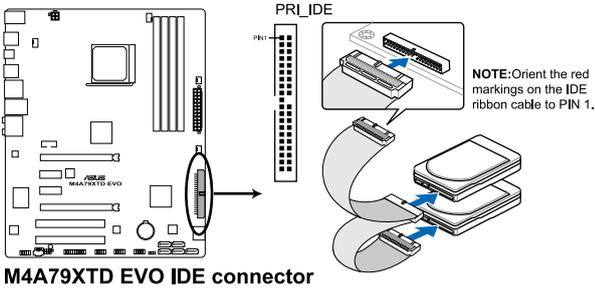
	Drive jumper setting	Mode of device(s)	Cable connector
Single device	Cable-Select or Master	-	Black
Two devices	Cable-Select	Master	Black
		Slave	Gray
	Master	Master	Black or gray
	Slave	Slave	

•   Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.

•   Use the 80-conductor IDE cable for Ultra DMA 133/100/66 IDE devices.

If any device jumper is set as "Cable-Select", ensure that all other device jumpers have the same setting.

Chapter 2

2. Serial ATA connectors (7-pin SATA1–6, SATA_E1)

These connectors are for the Serial ATA signal cables for Serial ATA hard disk and optical disk drives.

If you install SATA hard disk drives to the SATA1–6 connectors, you can create a RAID 0, RAID 1, RAID 5, RAID 10 or JBOD configuration through the onboard AMD® SB750 controller.

M4A79XTD EVO SATA connectors
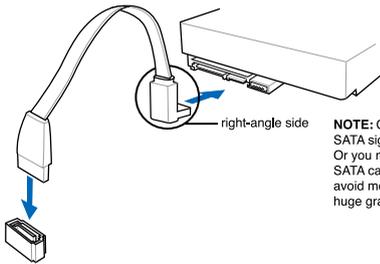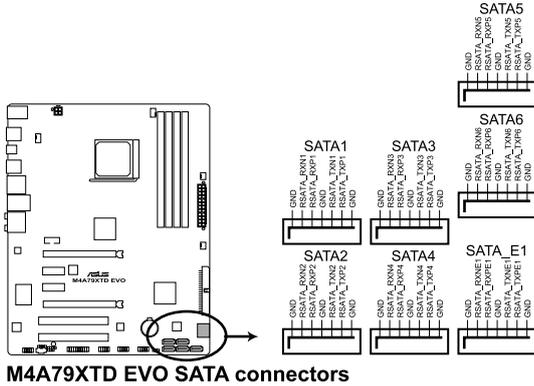
right-angle side

NOTE: Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with huge graphics cards.

- These connectors are set to [IDE] by default. If you intend to create a Serial ATA RAID set using these connectors, set the **OnChip SATA Type** item in the BIOS to [RAID]. Refer to section **3.4.2 Storage Configuration** for details.

- Before creating a RAID set, refer to section **4.4 RAID configurations** or the manual bundled in the motherboard support DVD.

- Due to chipset limitation, when you set any of the SATA ports to RAID mode, all SATA ports run at RAID mode simultaneously.

- You must install Windows® XP Service Pack 2 or later versions before using Serial ATA hard disk drives. The Serial ATA RAID feature is available only if you are using Windows® XP SP2 or later versions.

Chapter 2

3. **CPU, chassis, and power fan connectors**
   (4-pin CPU_FAN; 4-pin CHA_FAN1; 3-pin CHA_FAN2; 3-pin PWR_FAN)

   The fan connectors support cooling fans of 350 mA~2000 mA (24 W max.) or a total of 1 A~7 A (84 W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

   CPU_FAN
   CPU FAN PWM
   CPU FAN IN
   CPU FAN PWR
   GND

   PWR_FAN
   GND
   +12V
   Rotation

   CHA_FAN2
   GND
   +12V
   Rotation

   CHA_FAN1
   GND
   CHA FAN PWR
   CHA FAN IN
   CHA FAN PWM
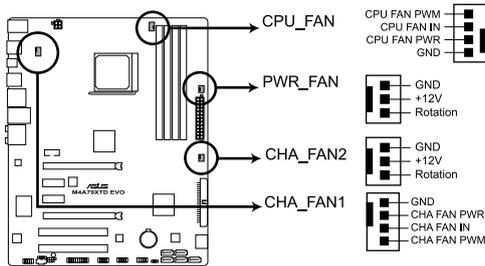
   M4A79XTD EVO

   M4A79XTD EVO fan connectors

   ⚠ Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!

   ✎ • Only the 4-pin CPU_FAN and 4-pin CHA_FAN 1 connectors support the ASUS Q-FAN 2 feature.

   • If you install two VGA cards, we recommend that you plug the rear chassis fan cable to the motherboard connector labled CHA_FAN1 or CHA_FAN2 for better themal environment.

Chapter 2

4.   USB connectors (10-1 pin USB910; USB1112)

These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.

M4A79XTD EVO USB2.0 connectors
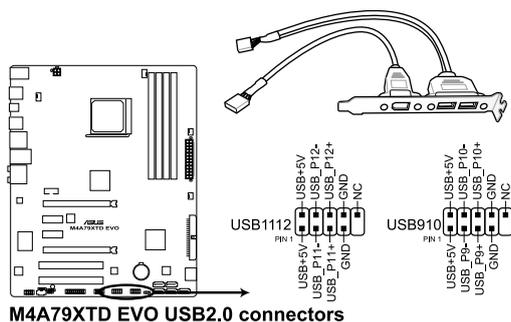
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

You can connect the front panel USB cable to the ASUS Q-Connector (USB, blue) first, and then install the Q-Connector (USB) to the USB connector onboard if your chassis supports front panel USB ports.

The USB module is purchased separately.

5. IEEE 1394a port connector (10-1 pin IE1394_2)

This connector is for an IEEE 1394a port. Connect the IEEE 1394a module cable to this connector, then install the module to a slot opening at the back of the system chassis.

M4A79XTD EVO IEEE 1394a Connector
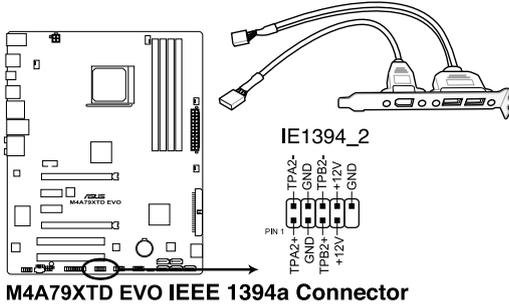
Never connect a USB cable to the IEEE 1394a connector. Doing so will damage the motherboard!

The IEEE 1394a module is purchased separately.

6. Chassis intrusion connector (4-1 pin CHASSIS)

This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

By default , the pin labeled "Chassis Signal" and "Ground" are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.

M4A79XTD EVO Chassis intrusion connector

Chapter 2
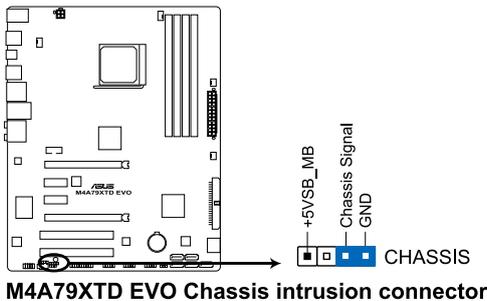
7.   **Digital audio connector (4-1 pin SPDIF_OUT)**

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port. Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.

+5V
SPDIFOUT
GND

SPDIF_OUT
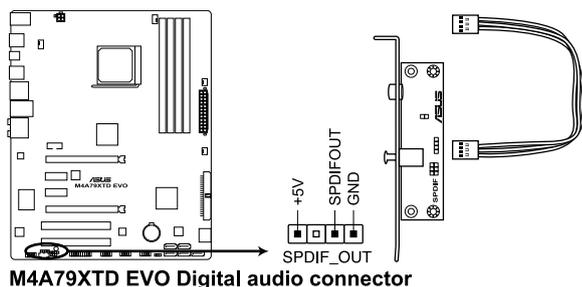
M4A79XTD EVO Digital audio connector

The S/PDIF module is purchased separately.

8.   **Front panel audio connector (10-1 pin AAFP)**

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC`97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.

AAFP

PIN 1

GND
PRESENCE#
SENSE1_RETUR
SENSE2_RETUR

PORT1 L
PORT1 R
PORT2 R
SENSE_SEND
PORT2 L

AGND
NC
NC
NC

MIC2
MICPWR
Line out_R
NC
Line out_L

HD-audio-compliant pin definition

Legacy AC'97 compliant definition
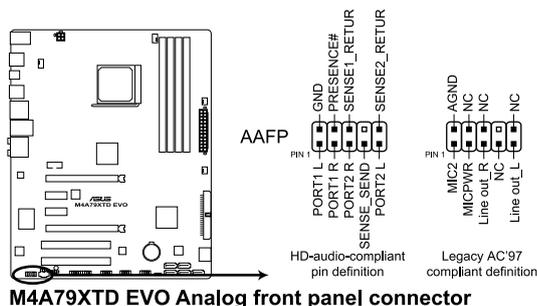
M4A79XTD EVO Analog front panel connector

•   We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

•   If you want to connect a high-definition front panel audio module to this connector, set the **Front Panel Type** item in the BIOS setup to [HD]; if you want to connect an AC'97 front panel audio module to this connector, set the item to [AC97]. By default, this connector is set to [HD]. Refer to section **3.5.4 Onboard Devices Configuration** for details.

9. **ATX power connectors (24-pin EATXPWR; 4-pin ATX12V)**

These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.
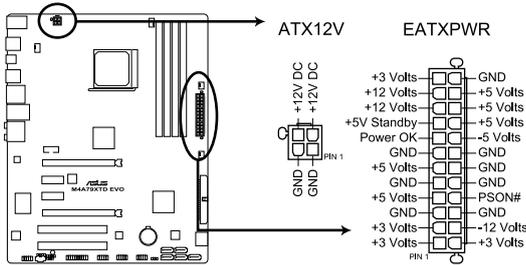
M4A79XTD EVO ATX power connectors

• For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 600 W.

• Do not forget to connect the 4-pin ATX +12 V power plug. Otherwise, the system will not boot.

• We recommend that you use a PSU with higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.

• If you want to use two high-end PCI Express x16 cards, use a PSU with 1000W power or above to ensure the system stability.

• If you are uncertain about the minimum power supply requirement for your system, refer to the Recommended Power Supply Wattage Calculator at **http://support.asus. com/PowerSupplyCalculator/PSCalculator.aspx?SLanguage=en-us** for details.

Chapter 2

10. **System panel connector (20-8 pin PANEL)**

This connector supports several chassis-mounted functions.

M4A79XTD EVO System panel connector

* Requires an ATX power supply
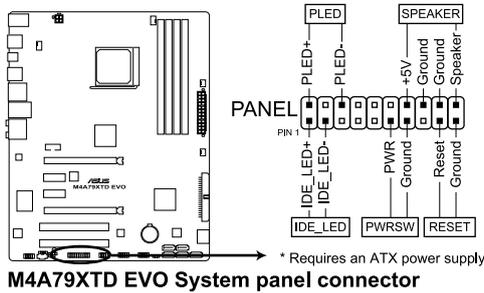
- **System power LED (2-pin PLED)**

  This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (2-pin IDE_LED)**

  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **System warning speaker (4-pin SPEAKER)**

  This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

- **ATX power button/soft-off button (2-pin PWRSW)**

  This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Reset button (2-pin RESET)**

  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

Chapter 2

11. Optical drive audio connector (4-pin CD)

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.

CD

Left Audio Channel
GND
GND
Right Audio Channel
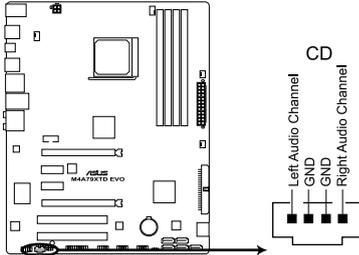
M4A79XTD EVO Internal audio connector

12. Serial port connector (10-1 pin COM1)

This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

COM1

PIN 1
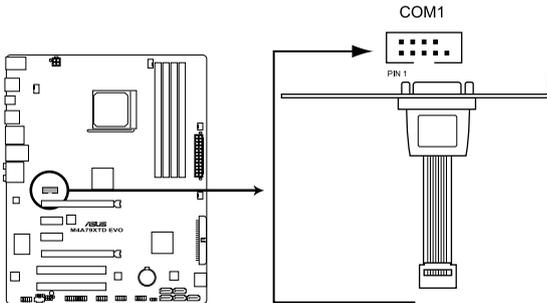
M4A79XTD EVO Serial port (COM1) connector

The COM module is purchased separately.

2.7.4. ASUS Q-Connector (system panel)

Use the ASUS Q-Connector to connect/disconnect the chassis front panel cables.

1. Connect the front panel cables to the ASUS Q-Connector.

   Refer to the labels on the Q-Connector to know the detailed pin definitions, and then match them to their respective front panel cable labels.

   The labels on the front panel cables may vary depending on the chassis model.
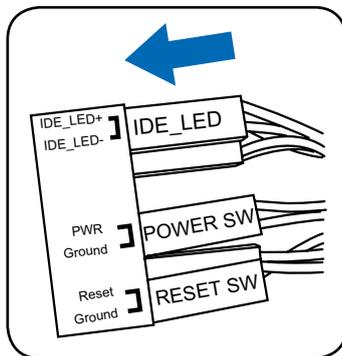
2. Install the ASUS Q-Connector to the system panel connector, ensuring the orientation matches the labels on the motherboard.
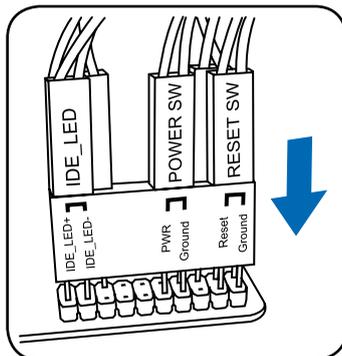
3. The front panel functions are now enabled. The figure shows the Q-Connector is properly installed on the motherboard.
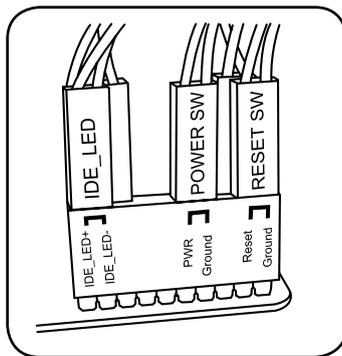
2.8   Starting up for the first time

1.   After making all the connections, replace the system case cover.

2.   Be sure that all switches are off.

3.   Connect the power cord to the power connector at the back of the system chassis.

4.   Connect the power cord to a power outlet that is equipped with a surge protector.

5.   Turn on the devices in the following order:

    a.   Monitor

    b.   External SCSI devices (starting with the last device on the chain)

    c.   System power

6.   After applying power, the system power LED on the system front panel case lights up. For systems with ATX power supplies, the system LED lights up when you press the ATX power button. If your monitor complies with the "green" standards or if it has a "power standby" feature, the monitor LED may light up or change from orange to green after the system LED turns on.

    The system then runs the power-on self tests or POST. While the tests are running, the BIOS beeps (refer to the BIOS beep codes table below) or additional messages appear on the screen. If you do not see anything within 30 seconds from the time you turned on the power, the system may have failed a power-on test. Check the jumper settings and connections or call your retailer for assistance.

BIOS Beep	Description
One short beep	VGA detected Quick boot set to disabled No keyboard detected
One continuous beep followed by two short beeps then a pause (repeated)	No memory detected
One continuous beep followed by three short beeps	No VGA detected
One continuous beep followed by four short beeps	Hardware component failure

7.   At power on, hold down the <Delete> key to enter the BIOS Setup. Follow the instructions in Chapter 3.

2.9   Turning off the computer

While the system is ON, pressing the power switch for less than four seconds puts the system on sleep mode or soft-off mode, depending on the BIOS setting. Pressing the power switch for more than four seconds lets the system enter the soft-off mode regardless of the BIOS setting. Refer to section **3.6 Power Menu** for details.

Chapter 3

3.1   Knowing BIOS

BIOS (Basic Input and Output System) stores system hardware settings such as storage device configuration, overclocking settings, advanced power management, and boot device configuration that are needed for system startup in the motherboard CMOS. In normal circumstances, the default BIOS settings apply to most conditions to ensure optimum performance. **We recommend that you not change the default BIOS settings** except in the following circumstances:

- An error message appears on the screen during the system bootup and requests you to run the BIOS Setup.
- You have installed a new system component that requires further BIOS settings or update.

> Inappropriate settings of the BIOS may result to instability or failure to boot. **We strongly recommend that you change the BIOS settings only with the help of a trained service personnel**.

3.2   Updating BIOS

The ASUS website publishes the latest BIOS versions to provide enhancements on system stability, compatibility, or performance. However, BIOS updating is potentially risky. If there is no problem using the current version of BIOS, **DO NOT manually update the BIOS**. Inappropriate BIOS updating may result in the system's failure to boot. Carefully follow the instructions of this chapter to update your BIOS if necessary.

> Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard.

The following utilities allow you to manage and update the motherboard BIOS setup program.

1. **ASUS Update:** Updates the BIOS in Windows® environment.
2. **ASUS EZ Flash 2:** Updates the BIOS using a USB flash drive.
3. **ASUS CrashFree BIOS 3**: Restores the BIOS using the motherboard support DVD or a USB flash drive when the BIOS file fails or gets corrupted.

Refer to the corresponding sections for details on these utilities.

> Save a copy of the original motherboard BIOS file to a USB flash drive in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the **ASUS Update** utility.

3.2.1 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- Save the current BIOS file
- Download the latest BIOS file from the Internet
- Update the BIOS from an updated BIOS file
- Update the BIOS directly from the Internet
- View the BIOS version information

This utility is available in the support DVD that comes with the motherboard package.

> ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

Installing ASUS Update

To install ASUS Update:

1. Place the support DVD in the optical drive.
2. From the **Main** menu, click the **Utilities** tab, and then click **ASUS Update VX.XX.XX**.
3. The ASUS Update utility is copied to your system.

Updating the BIOS through the Internet

> Quit all Windows® applications before you update the BIOS using this utility.

To update the BIOS through the Internet

1. From the Windows® desktop, click **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate.** The ASUS Update main window appears.

2. Select **Update BIOS from the Internet** from the drop-down menu, and then click **Next**.
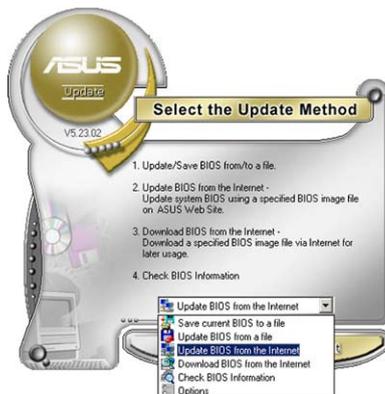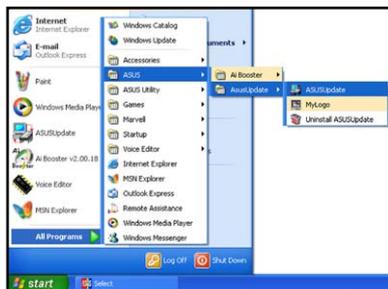
3. Select the ASUS FTP site nearest you to avoid network traffic, or click **Auto Select**. Click **Next**.

4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.
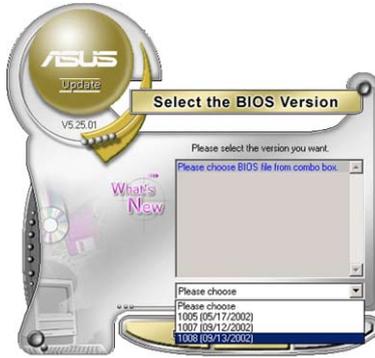
5. Follow the onscreen instructions to complete the update process.

The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.

Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file

1. Fom the Windows® desktop, click **Start** > **Programs** > **ASUS** > **ASUSUpdate** > **ASUSUpdate**. The ASUS Update main window appears.

2. Select **Update BIOS from a file** from the dropdown menu, then click **Next**.

3. Locate the BIOS file from the Open window, then click **Open**.

4. Follow the onscreen instructions to complete the update process.
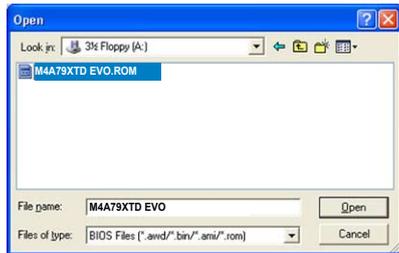
Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the **Load Setup Defaults** item under the **Exit** menu. Refer to section **3.9 Exit Menu** for details.

3.2.2   ASUS EZ Flash 2 utility

The ASUS EZ Flash 2 feature allows you to update the BIOS without having to use a bootable floppy disk or an OS-based utility.

> Before you start using this utility, download the latest BIOS from the ASUS website at www.asus.com.

To update the BIOS using EZ Flash 2

1.   Insert the USB flash drive that contains the latest BIOS file to the USB port, and then launch EZ Flash 2 in any of these two ways:

    •   Press <Alt> + <F2> during POST to display the following.

    •   Enter the BIOS setup program. Go to the **Tools** menu to select **EZ Flash 2** and press <Enter> to enable it.

```
            ASUSTek EZ Flash 2 BIOS ROM Utility V3.36
 FLASH TYPE: MXIC 25L8005
         Current ROM                           Update ROM
   BOARD: M4A79XTD-EVO                    BOARD: Unknown
   VER: 0202 (H:00 B:01)                 VER: Unknown
   DATE: 06/22/2009                      DATE: Unknown

 PATH: A:\

  A:




   Note
  [Enter] Select or Load      [Tab] Switch      [V] Drive Info
  [Up/Down/Home/End] Move     [B] Backup        [Esc] Exit
```
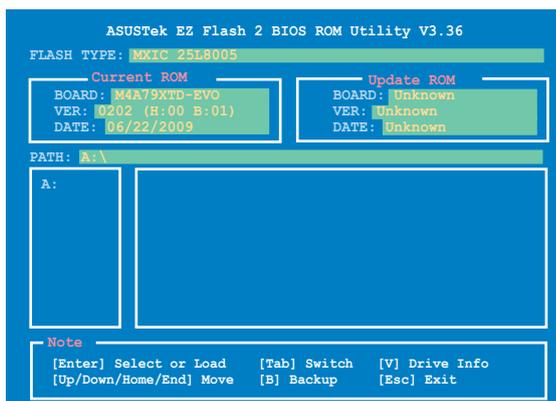
2.   Press <Tab> to switch between drives until the correct BIOS file is found. When found, EZ Flash 2 performs the BIOS update process and automatically reboots the system when done.

> •   This function can support devices such as a USB flash drive with FAT 32/16 format and single partition only.
>
> •   DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!

> Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the **Load Setup Defaults** item under the **Exit** menu. Refer to section **3.9 Exit Menu** for details.

3.2.3   ASUS CrashFree BIOS 3 utility

The ASUS CrashFree BIOS 3 utility is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can restore a corrupted BIOS file using the motherboard support DVD or a USB flash drive that contains the BIOS file.

> The BIOS file in the motherboard support DVD may be older than the BIOS file published on the ASUS official website. If you want to use the newer BIOS file, download the file at support.asus.com and save it to a USB flash drive.

Recovering the BIOS

To recover the BIOS

1.   Turn on the system.

2.   Insert the motherboard support DVD to the optical drive, or the USB flash drive containing the BIOS file to the USB port.

3.   The utility automatically checks the devices for the BIOS file. When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

4.   Turn off the system after the utility completes the updating process and power on again.

5.   The system requires you to enter BIOS Setup to recover BIOS setting. To ensure system compatibility and stability, we recommend that you press <F2> to load default BIOS values.

> DO NOT shut down or reset the system while recovering the BIOS! Doing so can cause system boot failure!

Chapter 3

3.3 BIOS setup program

A BIOS Setup program is provided for BIOS item modification. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On Self-Test (POST) to enter the Setup utility. Otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various submenus and select from the available options using the navigation keys.

- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

- If the system becomes unstable after changing any BIOS setting, load the default settings to ensure system compatibility and stability. Select the **Load Setup Defaults** item under the **Exit** menu. Refer to section **3.9 Exit Menu** for details.

- If the system fails to boot after changing any BIOS setting, try to clear the CMOS and reset the motherboard to the default value. Refer to section **2.6 Jumpers** for details.

3.3.1 BIOS menu screen

Menu items　　**Menu bar**　　**Configuration fields**　　　　**General help**

```
                            BIOS SETUP UTILITY
    Main    Advanced    Power    Boot    Tools    Exit

 System Time            [13:51:25]              Use [ENTER], [TAB]
 System Date            [Mon 01/07/2002]        or [SHIFT-TAB] to
                                                select a field.
 ▶ Primary IDE Master   [Not Detected]
 ▶ Primary IDE Slave    [Not Detected]          Use [+] or [-] to
 ▶ SATA1                [Not Detected]          configure system Date.
 ▶ SATA2                [Not Detected]
 ▶ SATA3                [Not Detected]
 ▶ SATA4                [Not Detected]
 ▶ SATA5                [Not Detected]
 ▶ SATA6                [Not Detected]
 ▶ Storage Configuration                        ←→    Select Screen
                                                ↑↓    Select Item
 ▶ System Information                           +-    Change Field
                                                Tab   Select Field
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit

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```

Sub-menu items　　　　　　　　　　　　　　　　　　**Navigation keys**

3.3.2 Menu bar

The menu bar on top of the screen has the following main items:

Main	For changing the basic system configuration
Advanced	For changing the advanced system settings
Power	For changing the advanced power management (APM) configuration
Boot	For changing the system boot configuration
Tools	For configuring options for special functions
Exit	For selecting the exit options and loading default settings

3.3.3 Navigation keys

At the bottom right corner of a menu screen are the navigation keys for that particular menu. Use the navigation keys to select items in the menu and change the settings.

> The navigation keys may differ from one screen to another.

3.3.4 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.

The other items (Advanced, Power, Boot, Tools, and Exit) on the menu bar have their respective menu items.

3.3.5 Submenu items

A solid triangle before each item on any menu screen means that the item has a submenu. To display the submenu, select the item and press <Enter>.

3.3.6 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options. Refer to **3.3.7 Pop-up window.**

3.3.7 Pop-up window

Select a menu item and press <Enter> to display a pop-up window with the configuration options for that item.

3.3.8 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> / <Page Down> keys to display the other items on the screen.
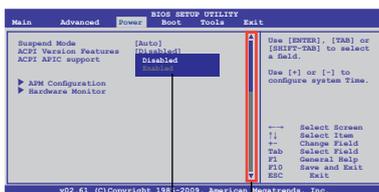
Scroll bar

Pop-up window

3.3.9 General help

At the top right corner of the menu screen is a brief description of the selected item.

3.4   Main menu

When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information.

Refer to **3.3.1 BIOS menu screen** for information on the menu screen items and how to navigate through them.

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Tools    Exit

  System Time              [13:51:25]               Use [ENTER], [TAB]
  System Date              [Mon 01/07/2002]         or [SHIFT-TAB] to
                                                    select a field.
  ▶ Primary IDE Master     :[Not Detected]
  ▶ Primary IDE Slave      :[Not Detected]          Use [+] or [-] to
  ▶ SATA1                  :[Not Detected]          configure system Date.
  ▶ SATA2                  :[Not Detected]
  ▶ SATA3                  :[Not Detected]
  ▶ SATA4                  :[Not Detected]
  ▶ SATA5                  :[Not Detected]
  ▶ SATA6                  :[Not Detected]          ←→    Select Screen
  ▶ Storage Configuration                           ↑↓    Select Item
                                                    +-    Change Field
  ▶ System Information                              Tab   Select Field
                                                    F1    General Help
                                                    F10   Save and Exit
                                                    ESC   Exit

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```

3.4.1   Primary IDE Master/Slave; SATA 1-6

While entering Setup, the BIOS automatically detects the presence of IDE/SATA devices. There is a separate submenu for each IDE/SATA device. Select a device item then press <Enter> to display the IDE/SATA device information.

```
                        BIOS SETUP UTILITY
  Main

  Primary Master                               Select the type of
                                               device connected to
  Device         : Not Detected                the system.


  Type                      [Auto]
  LBA/Large Mode            [Auto]
  Block(Multi-sector Transfer)M[Auto]
  PIO Mode                  [Auto]
  DMA Mode                  [Auto]
  SMART Monitoring          [Auto]
  32Bit Data Transfer       [Enabled]
                                               ←→    Select Screen
                                               ↑↓    Select Item
                                               +-    Change Field
                                               F1    General Help
                                               F10   Save and Exit
                                               ESC   Exit

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```

The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show Not Detected if no IDE/SATA device is installed in the system.

Type [Auto]

Allows you to select the type of IDE/SATA drive installed.

[Not Installed]   Select this option if no IDE/SATA drive is installed.

[Auto]   Allows automatic selection of the appropriate IDE/SATA device type.

[CDROM]   Select this option if you are specifically configuring a CD-ROM drive.

[ARMD]   Select [ARMD] (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive.

This item only appears in **Primary IDE Master/Slave** and **SATA5/6** menus.

LBA/Large Mode [Auto]

Enables or disables the LBA (Logical Block Addressing) mode.

[Auto]   Select [Auto] to enable the LBA mode (Logical Block Addressing mode) if the device supports this mode, and if the device was not previously formatted with LBA mode disabled.

[Disabled]   Disables this function.

Block (Multi-Sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers.

[Auto]   When set to [Auto], the data transfer from and to the device occurs in multiple sectors at a time if the device supports multi-sector transfer feature.

[Disabled]   When set to [Disabled], the data transfer from and to the device occurs one sector at a time.

PIO Mode [Auto]

[Auto]   Allows automatic selection of the PIO (Programmed input/output) modes, which correspond to different data transfer rates.

[0] [1] [2] [3] [4]   Set the PIO mode to Mode 0, 1, 2, 3, or 4.

DMA Mode [Auto]

DMA (Direct Memory Access) allows your computer to transfer data to and from the hardware devices installed with much less CPU overhead.

The DMA mode consists of SDMA (single-word DMA), MDMA (multi-word DMA), and UDMA (Ultra DMA). Setting to [Auto] allows automatic selection of the DMA mode.

SMART Monitoring [Auto]

[Auto]   Allows automatic selection of the S.M.A.R.T (Smart Monitoring, Analysis, and Reporting Technology).

[Enabled]   Enables the S.M.A.R.T feature.

[Disabled]   Disables the S.M.A.R.T feature.

Chapter 3

32Bit Data Transfer [Enabled]

[Enabled]   Sets the IDE/SATA controller to combine two 16-bit reads from the hard
                 disk into a single 32-bit double word transfer to the processor. This makes
                 more efficient use of the PCI bus as fewer transactions are needed for the
                 transfer of a particular amount of data.

[Disabled]   Disables this function.

3.4.2   Storage Configuration

The Storage Configuration menu allows you to configure your storage devices. Select an item
then press <Enter> to display the submenu.

```
                          BIOS SETUP UTILITY
   Main

   Storage Configuration                                    Options

   OnChip SATA channel          [Enabled]         Disabled
   OnChip SATA Type             [IDE]             Enabled
```
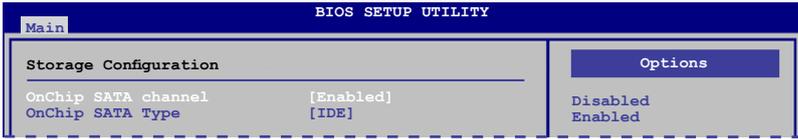
OnChip SATA Channel [Enabled]

[Enabled]   Enables the onboard channel SATA port.

[Disabled]   Disables the onboard channel SATA port.

The following item appears only when you enable **OnChip SATA Channel**.

OnChip SATA Type [IDE]

Allows you to set the SATA configuration. This item appears only when you enable the
OnChip SATA Channel item.

[IDE]   Set to [IDE] when you want to use the Serial ATA hard disk drives as
                 Parallel ATA physical storage devices.

[RAID]   Set to [RAID] when you want to create a RAID configuration from the SATA
                 hard disk drives.

[AHCI]   Set to [AHCI] mode when you want the SATA hard disk drives to use the
                 AHCI (Advanced Host Controller Interface). The AHCI allows the onboard
                 storage driver to enable advanced Serial ATA features that increases
                 storage performance on random workloads by allowing the drive to
                 internally optimize the order of commands.

When this item is set to [AHCI], only SATA connectors 1–4 can be detected. Ensure that
you've installed the AHCI driver, so that you could use SATA connectors 1–6 in AHCI mode
under OS.

3.4.3 System Information

This menu gives you an overview of the general system specifications. The BIOS automatically detects the BIOS information, CPU specification, and system memory in this menu.

```
                          BIOS SETUP UTILITY
 ┌──────┐
 │ Main │
 ┴──────┴─────────────────────────────────────────────────────────────────

  BIOS Information
  Version    : 0202
  Build Date: 06/22/09

  Processor
  Type     : AMD Phenom(tm) II X4 945 Processor
  Speed    : 3000MHz

  System Memory
  Installed Size : 1024MB
  Usable Size    : 1023MB
```

3.5 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

⚠ Be cautious when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

```
                          BIOS SETUP UTILITY
 ┌──────┬──────────┬───────┬──────┬───────┬──────┐
 │ Main │ Advanced │ Power │ Boot │ Tools │ Exit │
 ┴──────┴──────────┴───────┴──────┴───────┴──────┴──────────────────────────

   ▶  JumperFree Configuration            Adjust system
   ▶  CPU Configuration                   frequency/voltage
   ▶  Chipset
   ▶  Onboard Devices Configuration
   ▶  USB Configuration
   ▶  PCIPnP



                                          ←→    Select Screen
                                          ↑↓    Select Item
                                          Enter Go to Sub Screen
                                          F1    General Help
                                          F10   Save and Exit
                                          ESC   Exit

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```
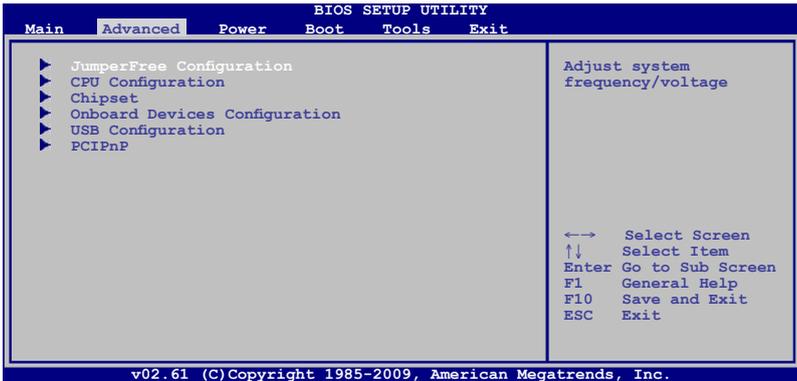
3.5.1 JumperFree Configuration

The items shown in this screen may be different due to the CPU you installed.

```
                        BIOS SETUP UTILITY
   Main   Advanced    Power    Boot    Tools    Exit
 ────────────────────────────────────────────────────────────────────────
  Configure System Frequency/Voltage              Select  the  target CPU
                                                   frequency,  and  the
  Ai Overclock Tuner         [Auto]                relevant  parameters
                                                   will  be  auto-adjusted.
  CPU Ratio and Voltage:
  CPU Ratio                  [Auto]
  CPU Over Voltage           [Auto]
  VDDNB Over Voltage         [Auto]

  HT Connector Info
  HT Link Speed              [Auto]
  HT Link Width              [Auto]
  HT Voltage                 [Auto]                ←→   Select Screen
                                                   ↑↓   Select Item
  Memory Timming and Voltage:                      +-   Change Field
  DRAM Frequency             [Auto]                F1   General Help
  DDR3 Memory Profile        [Disabled]            F10  Save and Exit
  DRAM Voltage               [Auto]                ESC  Exit
  ▶  DRAM Timing/Driving Configuration
 ────────────────────────────────────────────────────────────────────────
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```

Scroll down to display the following items:

```
  Chipset Voltage
  NB Voltage                           [Auto]
  NB 1.8V Voltage                      [Auto]
  SB Voltage                           [Auto]
 ────────────────────────────────────────────────────────────────────────
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```

Ai Overclock Tuner [Auto]

Allows you to select the CPU overclocking options to achieve the desired CPU internal frequency. Select any of these preset overclocking configuration options:

Manual	Allows you to individually set overclocking parameters.
Auto	Loads the optimal settings for the system.
Overclock Profile	Loads overclocking profiles with optimal parameters for stability when overclocking.
Test Mode	Allows you to set the overclocking parameter to 5%.

*The following two items appear only when you set the **Ai Overclock Tuner** item to [Manual].*

CPU Bus Frequency [200]
Displays the frequency sent by the clock generator to the system bus and PCI bus. Use the <+> and <-> keys to adjust the FSB frequency. You can also key in the desired FSB frequency using the numeric keypad. The values range from 200 to 600.

PCIE Frequency [100]
Use the <+> and <-> keys to adjust the PCIE frequency. You can also key in the desired FSB frequency using the numeric keypad. The values range from 100 to 150.

CPU Ratio [Auto]

Allows you to set the ratio between the CPU Core Clock and the FSB Frequency. Use <+> and <-> to adjust the ratio. The valid value ranges vary according to your CPU model.

CPU Over Voltage [Auto]

Allows you to set the CPU over voltage. Configuration options: [Auto] [Normal] [+50mv] [+100mv] [+150mv]

VDDNB Over Voltage [Auto]

Allows you to set the VDDNB over voltage. Configuration options: [Auto] [Normal] [+33mv] [+66mv] [+100mv]

HT Link Speed [Auto]

Allows you to select the HyperTransport link speed.
Configuration options: [Auto] [200MHz] [400MHz] [600MHz] [800MHz] [1000MHz] [1200MHz] [1400MHz] [1600MHz] [1800MHz] [2000MHz]

HT Link Width [Auto]

Allows you to select the HyperTransport link width.
Configuration options: [Auto] [4 Bit] [8 Bit] [16 Bit]

HT Voltage [Auto]

Allows you to set the HyperTransport voltage. The values range from 1.20V to 1.50V with a 0.02V interval. Use the <+> and <-> keys to adjust the value.

DRAM Frequency [Auto]

Allows you to set the DDR3 operating frequency.
Configuration options: [Auto] [800MHz] [1067MHz] [1333MHz] [1600MHz]

DDR3 Memory Profile [Disabled]

Allows you to enable or disable the DDR3 memory profile function.
Configuration options: [Disabled] [Enabled]

DRAM Voltage [Auto]

Allows you to set the DRAM voltage. The values range from 1.50V to 2.50V with a 0.02V interval. Use the <+> and <-> keys to adjust the value.

Chapter 3

DRAM Timing/Driving Configuration

```
    Advanced

DRAM Timing/Driving Configuration                    DRAM Command Rate:
                                                     1T: DRAM address and
DRAM Command Rate              [Auto]                control signals are
DRAM 1st Information : 6-6-6-15-4-20-6-4             driven for one MEMCLK
                                                     cycle.
```

The configuration options for some of the following items vary depending on the DIMMs you install on the motherboard.

DRAM Command Rate [Auto]
Configuration options: [Auto] [1T] [2T]

TCL [Auto]
Configuration options: [Auto] [4 CLK] [5 CLK] [6 CLK] ~ [12 CLK]

TRCD [Auto]
Configuration options: [Auto] [5 CLK] [6 CLK] [7 CLK] ~ [12 CLK]

TRP [Auto]
Configuration options: [Auto] [5 CLK] [6 CLK] [7 CLK] ~ [12 CLK]

TRAS [Auto]
Configuration options: [Auto] [15 CLK] [16 CLK] [17 CLK] ~ [30 CLK]

TRTP [Auto]
Configuration options: [Auto] [4 CLK] [5 CLK] [6 CLK] [7 CLK]

TRC [Auto]
Configuration options: [Auto] [11 CLK] [12 CLK] ~ [40 CLK] [41 CLK]

TWR [Auto]
Configuration options: [Auto] [5 CLK] [6 CLK] [7 CLK] [8 CLK] [10 CLK] [12 CLK]

TRRD [Auto]
Configuration options: [Auto] [4 CLK] [5 CLK] [6 CLK] [7 CLK]

TRWTTO [Auto]
Configuration options: [Auto] [3 CLK] [4 CLK] [5 CLK] ~ [17 CLK]

TWRRD [Auto]
Configuration options: [Auto] [2 CLK] [3 CLK] [4 CLK] ~ [10 CLK]

TWTR [Auto]
Configuration options: [Auto] [4 CLK] [5 CLK] [6 CLK] [7 CLK]

TWRWR [Auto]
Configuration options: [Auto] [3 CLK] [4 CLK] [5 CLK] ~ [10 CLK]

TRDRD [Auto]
Configuration options: [Auto] [3 CLK] [4 CLK] [5 CLK] ~ [10 CLK]

TRFC0/TRFC01 [Auto]
Configuration options: [Auto] [90ns] [110ns] [160ns] [300ns] [350ns]

TREF [Auto]
Configuration options: [Auto] [Every 7.8ms] [Every 3.9ms]

DCT0:CKE drive strength [Auto]
DCT1:CKE drive strength [Auto]
Configuration options: [Auto] [1x] [1.25x] [1.5x] [2x]

DCT0:CS/ODT drive strength [Auto]
DCT1:CS/ODT drive strength [Auto]
Configuration options: [Auto] [1x] [1.25x] [1.5x] [2x]

DCT0:ADDR/CMD drive strength [Auto]
DCT1:ADDR/CMD drive strength [Auto]
Configuration options: [Auto] [1x] [1.25x] [1.5x] [2x]

DCT0:MEMCLK drive strength [Auto]
DCT1:MEMCLK drive strength [Auto]
Configuration options: [Auto] [0.75x] [1x] [1.25x] [1.5x]

DCT0:Data drive strength [Auto]
DCT1:Data drive strength [Auto]
Configuration options: [Auto] [0.75x] [1x] [1.25x] [1.5x]

DCT0:DQS drive strength [Auto]
DCT1:DQS drive strength [Auto]
Configuration options: [Auto] [0.75x] [1x] [1.25x] [1.5x]

DCT0:Processor ODT [Auto]
DCT1:Processor on-die terminat [Auto]
Configuration options: [Auto] [240 ohms +/- 20%] [120 ohms +/- 20%] [60 ohms +/- 20%]

NB Voltage [Auto]

Allows you to set the Northbridge voltage. The values range from 1.10V to 1.40V with a 0.02V interval. Use the <+> and <-> keys to adjust the value.

NB 1.8V Voltage [Auto]

Allows you to set the Northbridge 1.8V voltage. The values range from 1.80V to 2.00V with a 0.1V interval. Use the <+> and <-> keys to adjust the value.

SB Voltage [Auto]

Allows you to set the Southbridge voltage. The values range from 1.20V to 1.35V with a 0.15V interval. Use the <+> and <-> keys to adjust the value.

> • Setting the voltages to a high level may damage the CPU, memory module, and chipset permanently. Proceed with caution.
>
> • The system may require a better cooling system to work stably under high voltage settings.

3.5.2   CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

The items shown in this screen may be different due to the CPU you installed.

```
                              BIOS SETUP UTILITY
        Advanced

  CPU Configuration                                   This option should
                                                      remain disabled for
  AMD Phenom(tm) II X4 945 Processor                  the normal operation.
  Revision: C2                                        The driver developer
  Cache L1: 512KB                                     may enable it for
  Cache L2: 2048KB                                    testing purpose.
  Cache L3: 6MB
  Speed   : 3000MHz,    NB Clk: 2000MHz
  Able to Change Freq.  : Yes
  uCode Patch Level     : 0x1000086

  GART Error Reporting         [Disabled]
  Microcode Updation           [Enabled]
  Secure Virtual Machine Mode  [Enabled]
  Cool'n'Quiet                 [Disabled]             ←→   Select Screen
  ACPI SRAT Table              [Enabled]              ↑↓   Select Item
  C1E Support                  [Enabled]              +-   Change Field
  Advanced Clock Calibration   [Disabled]            F1   General Help
                                                     F10  Save and Exit
                                                     ESC  Exit


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```

GART Error Reporting [Disabled]

[Disabled]   Disables the GART Error Reporting function.

[Enabled]   Enables the GART Error Reporting function.

Microcode Updation [Enabled]

[Disabled]   Disables the Microcode Updation function.

[Enabled]   Allows the system to update the Microcode automatically, enhancing system performance.

Secure Virtual Machine Mode [Enabled]

[Disabled]   Disables the AMD Secure Virtual Machine mode.

[Enabled]   Enables the AMD Secure Virtual Machine mode.

Cool'n'Quiet [Disabled]

[Disabled]   Disables the AMD Cool'n'Quiet function.

[Enabled]   Enables the AMD Cool'n'Quiet function.

ACPI SRAT Table [Enabled]

[Disabled]   Disables the building of ACPI SRAT Table.

[Enabled]   Enables the building of ACPI SRAT Table.

C1E Support [Enabled]

[Disabled]   Disables the the Enhanced Halt State support.

[Enabled]   Enables the the Enhanced Halt State support.

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Advanced Clock Calibration [Disabled]

[Disabled]   Disables this function.

[Auto]   The BIOS automatically adjusts this function.

[All Cores]   Enables the processor to have the best overclocking performance.

[Per Core]   Enhances the processor's overclocking capability.

3.5.3   Chipset

The Chipset menu allows you to change the advanced chipset settings. Select an item then press <Enter> to display the submenu.

```
                        BIOS SETUP UTILITY
          Advanced
 Advanced Chipset Settings                        Options for NB

 ▶ NorthBridge Configuration

 Primary display Adapter           [GFX-GPP-PCI]
```

North Bridge Chipset Configuration

```
                        BIOS SETUP UTILITY
          Advanced
 NorthBridge Chipset Configuration               Set the ECC options
 ▶ ECC Configuration                             for cache and dram
                                                 scrubbing.
```

ECC Configuration

```
                        BIOS SETUP UTILITY
          Advanced
 ECC Configuration                               Set the level of ECC
                                                 protection. Note: The
 ECC Mode                 [Disabled]             'Super' ECC mode
   DRAM ECC Enable        [Disabled]             dynamically sets the
   DRAM SCRUB REDIRECT    [Disabled]             DRAM scrub rate so
   4-Bit ECC Mode         [Disabled]             all of memory is
   DRAM BG Scrub          [Disabled]             scrubbed in 8 hours.
   Data Cache BG Scrub    [Disabled]
   L2 Cache BG Scrub      [Disabled]
   L3 Cache BG Scrub      [Disabled]
```

ECC Mode [Disabled]
Disables or sets the DRAM ECC mode that allows the hardware to report and correct memory errors.

[Disabled]   Disables the DRAM ECC mode.

[Basic]   Set to [Basic] to adjust ECC mode automatically.

[Good]   Set to [Good] to adjust ECC mode automatically.

[Super]   Set to [Super] to adjust the **DRAM BG Scrub** sub-item manually.

[Max]   Set to [Max] to adjust ECC mode automatically.

[User]   Set to [User] to adjust the all sub-items manually.

DRAM ECC Enable [Disabled]

[Disabled]   Disables this function.

[Enabled]   Allows hardware to report and correct memory errors automatically, maintaining system integrity.

DRAM SCRUB REDIRECT [Disabled]

[Disabled]   Disables this function.

[Enabled]   Allows the system to correct the DRAM ECC errors immediately when they occur.

4-Bit ECC Mode [Disabled]

[Disabled]   Disables the CHIPKILL ECC mode.

[Enabled]   Enables the CHIPKILL ECC mode.

DRAM BG Scrub [Disabled]

Disables or sets the DRAM BG Scrub.
Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5us] [41.0us] [81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms] [5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

Data Cache BG Scrub [Disabled]

Disables or sets the Data Cache BG Scrub. This item allows the L1 Data Cache RAM to be corrected when idle.
Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5us] [41.0us] [81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms] [5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

L2/L3 Cache BG Scrub [Disabled]

Disables or sets the L2/L3 Cache BG Scrub. This item allows the L2/L3 Data Cache RAM to be corrected when idle.
Configuration options: [Disabled] [40ns] [80ns] [160ns] [320ns] [640ns] [1.28us] [2.56us] [5.12us] [10.2us] [20.5us] [41.0us] [81.9us] [163.8us] [327.7us] [655.4us] [1.31ms] [2.62ms] [5.24ms] [10.49ms] [20.97ms] [42.00ms] [84.00ms]

Primary Display Adapter [GFX-GPP-PCI]

Allows you to select which graphics controller to use as the primary boot device.
Configuration options: [GFX-GPP-PCI] [GPP-GFX-PCI] [PCI-GFX-GPP]

3.5.4   Onboard Devices Configuration

```
                         BIOS SETUP UTILITY
        Advanced

 OnBoard Devices Configuration                           Options

 Onboard HD Audio                     [Enabled]     Disabled
   Front Panel Type                   [HD]          Enabled
 Marvell IDE                          [Enabled]
   Marvell IDE Boot ROM               [Enabled]
 Onboard LAN                          [Enabled]
   Onboard LAN Boot ROM               [Disabled]
 Onboard 1394                         [Enabled]
 Serial Port1 Address                 [3F8/IRQ4]
```
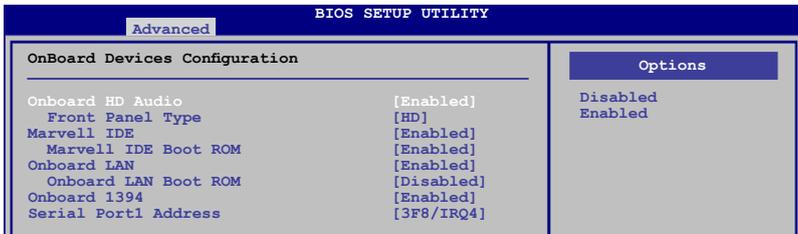
Onboard HD Audio [Enabled]

[Enabled]   Enables the onboard High Definition Audio Controller.

[Disabled]   Disables the controller.

> The following item appears only when you set the **Onboard HD Audio** item to [Enabled].

Front Panel Type [HD]
[AC97]   Sets the front panel audio connector (AAFP) mode to legacy AC'97.
[HD]   Sets the front panel audio connector (AAFP) mode to high definition audio.

Marvell IDE [Enabled]

[Enabled]   Enables the Marvell IDE controller.
[Disabled]   Disables the controller.

> The following item appears only when you set the **Marvell IDE** item to [Enabled].

Marvell IDE Boot ROM [Disabled]
[Enabled]   Enables the Marvell IDE Boot ROM.
[Disabled]   Disables the Marvell IDE Boot ROM.

Onboard LAN [Enabled]

[Enabled]   Enables the onboard LAN controller.
[Disabled]   Disables the onboard controller.

> The following item appears only when you set the **Onboard LAN** item to [Enabled].

Onboard LAN Boot ROM [Disabled]
[Enabled]   Enables the onboard LAN Boot ROM.
[Disabled]   Disables the onboard LAN Boot ROM.

Onboard 1394 [Enabled]

[Enabled]   Enables the onboard 1394 device support.
[Disabled]   Disables the onboard 1394 device support.

Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address.
Configuration options: [Disabled] [3F8/IRQ4] [2F8/IRQ3] [3E8/IRQ4] [2E8/IRQ3]

3.5.5   USB Configuration

The items in this menu allows you to change the USB-related features. Select an item then press <Enter> to display the configuration options.

```
                          BIOS SETUP UTILITY
         Advanced

  USB Configuration                                    Options

  Module Version - 2.24.5-13.4
                                                  Disabled
  USB Devices Enabled:                            Enabled
          None

  USB Support              [Enabled]
  Legacy USB Support       [Auto]
  USB 2.0 Controller       [Enabled]
  USB 2.0 Controller Mode  [HiSpeed]
```
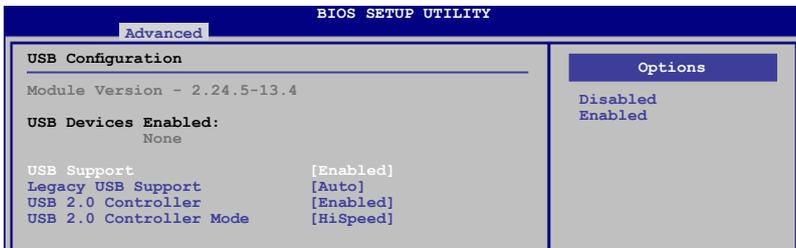
The **USB Devices Enabled** item shows the auto-detected values. If no USB device is detected, the item shows None.

USB Support   [Enabled]

[Enabled]   Enables the USB Host Controllers.

[Disabled]   Disables the controllers.

The following items appear only when you set **USB Support** to [Enabled].

Legacy USB Support [Enabled]

[Auto]   Allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

[Enabled]   Enables the support for USB devices on legacy operating systems (OS).

[Disabled]   Disables the function.

USB 2.0 Controller [Enabled]

[Enabled]   Enables the USB 2.0 controller.

[Disabled]   Disables the controller.

The following item appears only when you set the **USB 2.0 Controller** item to [Enabled].

USB 2.0 Controller Mode [HiSpeed]

[FullSpeed]   Sets the USB 2.0 controller mode to FullSpeed (12 Mbps).

[HiSpeed]   Sets the USB 2.0 controller mode to HiSpeed (480 Mbps).

3.5.6   PCIPnP

The PCIPnP menu items allow you to change the advanced settings for PCI/PnP devices.

```
                        BIOS SETUP UTILITY
        Advanced

 Advanced PCI/PnP Settings                          NO: lets the BIOS
                                                    configure all the
                                                    devices in the system.
 WARNING: Setting wrong values in below sections    YES: lets the
          may cause system to malfunction.          operating system
                                                    configure Plug and
 Plug And Play O/S              [No]                 Play (PnP) devices not
                                                    required for boot if
                                                    your system has a Plug
                                                    and Play operating
                                                    system.
```
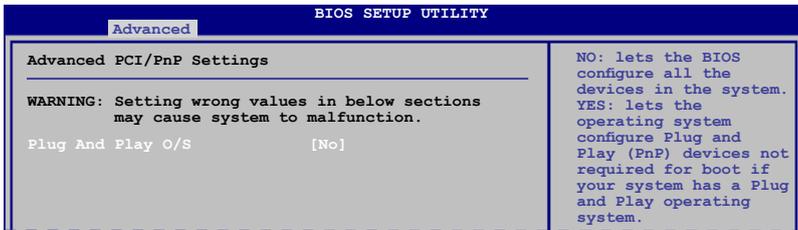
Plug And Play O/S [No]

[Yes]   When set to [Yes] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot.

[No]   When set to [No], BIOS configures all the devices in the system.

3.6 Power menu

The Power menu items allow you to change the settings for the Advanced Power Management (APM). Select an item then press <Enter> to display the configuration options.

```
                          BIOS SETUP UTILITY
   Main    Advanced   Power    Boot    Tools    Exit
 ────────────────────────────────────────────────────────────────────────
                                                 Select the ACPI state
   Suspend Mode              [Auto]              used for System
   ACPI 2.0 Support          [Enabled]           Suspend.
   ACPI APIC Support         [Enabled]

 ►  APM Configuration
 ►  Hardware Monitor

                                                 ←→    Select Screen
                                                 ↑↓    Select Item
                                                 +-    Change Field
                                                 F1    General Help
                                                 F10   Save and Exit
                                                 ESC   Exit

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```
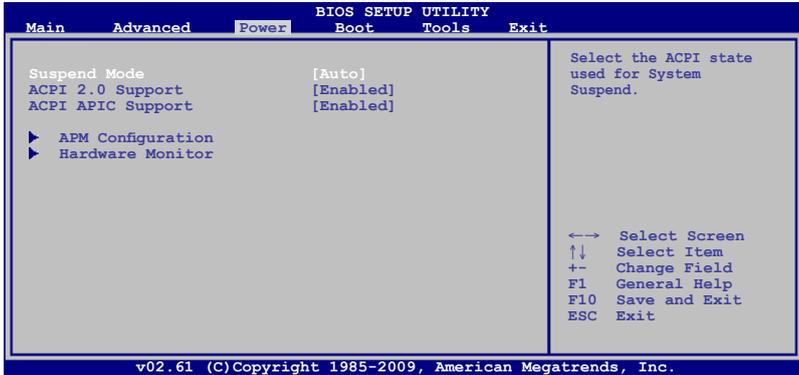
3.6.1 Suspend Mode [Auto]

Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend.

[Auto]   The system automatically configures the ACPI suspend mode.

[S1 (POS) only] Sets the APCI suspend mode to S1/POS (Power On Suspend).

[S3 only]   Sets the APCI suspend mode to S3/STR (Suspend To RAM).

3.6.2 ACPI 2.0 Support [Enabled]

[Disabled]   When set to [Disabled], the system will not add additional tables as per ACPI 2.0 specifications.

[Enabled]   When set to [Enabled], the system adds additional tables as per ACPI 2.0 specifications.

3.6.3 ACPI APIC Support [Enabled]

[Disabled]   When set to [Disabled], the system disable the Advanced Configuration and Power Interface (ACPI) support in the Advanced Programmable Interrupt Controller (APIC).

[Enabled]   When set to [Enabled], the ACPI APIC table pointer is included in the RSDT pointer list.

3.6.4 APM Configuration

```
                              BIOS SETUP UTILITY
                        Power

  APM Configuration                                           Options

  Restore on AC Power Loss     [Power Off]
  Power On By PME              [Disabled]          Power On
  Power On By PS/2 Keyboard    [Disabled]          Power Off
  Power On By PS/2 Mouse       [Disabled]          Last State
  Power On By Ring             [Disabled]
  Power On By RTC Alarm        [Disabled]
```

Restore On AC Power Loss [Power Off]

[Power On]   The system goes into on state after an AC power loss.

[Power Off]   The system goes into off state after an AC power loss.

[Last State]   The system goes into either off or on state, whatever the system state was
                 before the AC power loss.

Power On By PME [Disabled]

[Disabled]   Disables the PME to wake up from S5 by PCI/PCIE/onboard LAN devices.

[Enabled]   Allows you to turn on the system through a PCI/PCIE/onboard LAN device.
                 This feature requires an ATX power supply that provides at least 1A on the
                 +5VSB lead.

Power On By PS/2 Keyboard [Disabled]

[Disabled]   Disables the Power On by a PS/2 keyboard.

[Enabled]   Sets specific keys on the PS/2 keyboard to turn on the system. This feature
                 requires an ATX power supply that provides at least 1A on the +5VSB lead.

Power On By PS/2 Mouse [Disabled]

[Disabled]   Disables the Power On by a PS/2 mouse.

[Enabled]   Allows to use a PS/2 mouse to turn on the system. This feature requires an
                 ATX power supply that provides at least 1A on the +5VSB lead.

Power On By Ring [Disabled]

[Disabled]   The computer could not be powered up when the external modem receives
                 a call while the computer is in Soft-off mode.

[Enabled]   The computer could be powered up when the external modem receives a
                 call while the computer is in Soft-off mode.

The computer cannot receive or transmit data until the computer and applications are fully
running. Thus, connection cannot be made on the first try. Turning an external modem
off and then back on while the computer is off causes an initialization string that turns the
system power on.

Power On By RTC Alarm [Disabled]

[Disabled]   Disables RTC to generate a wake event.

[Enabled]   When set to [Enabled], the items **RTC Alarm Date/ RTC Alarm Time** will
                 become user-configurable with set values.

3.6.5 Hardware Monitor

```
                        BIOS SETUP UTILITY
                   Power

 Hardware Monitor                               CPU Temperature

 CPU Temperature              [52°C/125.5°F]
 MB Temperature               [34°C/93°F]

 CPU Fan Speed                [3515RPM]
 Chassis Fan 1 Speed          [N/A]
 Chassis Fan 2 Speed          [N/A]

 VCORE Voltage                [ 1.360V]
 3.3V Voltage                 [ 3.320V]       ←—→  Select Screen
 5V Voltage                   [ 5.053V]       ↑↓   Select Item
 12V Voltage                  [12.251V]       +-   Change Field
                                              F1   General Help
 CPU Q-Fan Function           [Disabled]      F10  Save and Exit
 Chassis Q-Fan Function       [Disabled]      ESC  Exit
```

CPU/MB Temperature [xxxºC/xxxºF]

The onboard hardware monitor automatically detects and displays the CPU and motherboard temperatures. Select **Ignored** if you do not wish to display the detected temperatures.

CPU Fan /Chassis Fan 1 and 2 Speed [xxxxRPM] or [Ignored] / [N/A]

The onboard hardware monitor automatically detects and displays the CPU and chassis fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows **N/A**. Select **Ignored** if you do not wish to display the detected speed.

VCORE Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Select **Ignored** if you do not want to detect this item.

CPU Q-Fan Function [Disabled]

[Disabled]   Disables the CPU Q-Fan control feature.

[Enabled]   Enables the CPU Q-Fan control feature.

> The following two items appear only when you set **CPU Q-Fan Function** to [Enabled].

Select Fan Type: [PWR Fan]

[PWR Fan]   Sets to [PWR Fan] when using a 4-pin CPU fan.

[DC Fan]   Sets to [DC Fan] when using a 3-pin CPU fan.

CPU Q-Fan Mode [Silent]

[Performance]   Sets to [Performance] to achieve maximum CPU fan speed.

[Optimal]   Sets to [Optimal] to make the CPU fan automatically adjust depending on the CPU temperature.

[Silent]   Sets to [Silent] to minimize the fan speed for quiet CPU fan operation.

Chassis Q-Fan Function [Disabled]

[Disabled]   Disables the Chassis Q-Fan control feature.

[Enabled]   Enables the Chassis Q-Fan control feature.

The following item appears only when you set **Chassis Q-Fan Function** to [Enabled].

Chassis Q-Fan Mode [Silent]

[Performance]   Sets to [Performance] to achieve maximum chassis fan speed.

[Optimal]   Sets to [Optimal] to make the chassis fan automatically adjust depending on the chassis temperature.

[Silent]   Sets to [Silent] to minimize fan speed for quiet chassis fan operation.

3.7 Boot menu

The Boot menu items allow you to change the system boot options. Select an item then press <Enter> to display the submenu.

```
                          BIOS SETUP UTILITY
    Main      Advanced      Power      Boot      Tools      Exit

    Boot Settings                                   Specifies the Boot
   ─────────────────────────────────────           Device Boot Priority
    ▶  Boot Device Priority                         sequence.

    ▶  Boot Settings Configuration                  A virtual floppy disk
    ▶  Security                                     drive (Floppy Drive B:
                                                    ) may appear when you
                                                    set the CD-ROM drive
                                                    as the first boot
                                                    device.


                                                    ←→   Select Screen
                                                    ↑↓   Select Item
                                                    Enter Go to Sub Screen
                                                    F1   General Help
                                                    F10  Save and Exit
                                                    ESC  Exit

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```

3.7.1 Boot Device Priority

```
                          BIOS SETUP UTILITY
                              Boot

    Boot Device Priority
   ─────────────────────────────────────
    1st Boot Device               [Removable Dev.]
    2nd Boot Device               [Hard Drive]
    3rd Boot Device               [ATAPI DVD-ROM]
```

1st ~ xxth Boot Device [Removable]

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.
Configuration options: [Removable Dev.] [Hard Drive] [ATAPI CD-ROM] [Disabled]

• To select the boot device during system startup, press <F8> when ASUS Logo appears.

• To access Windows® OS in Safe Mode, do any of the following:
  • Press <F5> when ASUS Logo appears
  • Press <F8> after POST.

3.7.2 Boot Settings Configuration

```
                    BIOS SETUP UTILITY
                    Boot

  Boot Settings Configuration                    Allows BIOS to skip
                                                 certain tests while
  Quick Boot              [Enabled]              booting. This will
  Full Screen Logo        [Enabled]              decrease the time
  AddOn ROM Display Mode   [Force BIOS]          needed to boot the
  Bootup Num-Lock         [On]                   system.
  Wait For 'F1' If Error  [Enabled]
  Hit 'DEL' Message Display [Enabled]
```

Quick Boot [Enabled]

[Disabled]   When set to [Disabled], BIOS performs all the POST items.

[Enabled]   When set to [Enabled], BIOS skips some power on self tests (POST) while
                    booting to decrease the time needed to boot the system.

Full Screen Logo [Enabled]

[Enabled]   Enables the full screen logo display feature.

[Disabled]   Disables the full screen logo display feature.

Set this item to [Enabled] to use the ASUS MyLogo 2™ feature.

AddOn ROM Display Mode [Force BIOS]

[Force BIOS]   The third-party ROM messages will be forced to display during the boot
                    sequence.

[Keep Current]   The third-party ROM messages will be displayed only if the third-party
                    manufacturer had set the add-on device to do so.

Bootup Num-Lock [On]

[Off]   Sets the power-on state of the NumLock to [Off].

[On]   Sets the power-on state of the NumLock to [On].

Wait For 'F1' If Error [Enabled]

[Disabled]   Disables this function.

[Enabled]   The system waits for the <F1> key to be pressed when error occurs.

Hit 'DEL' Message Display [Enabled]

[Disabled]   Disables this function.

[Enabled]   The system displays the message "Press DEL to run Setup" during POST.

3.7.3 Security

The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options.

```
                        BIOS SETUP UTILITY
                            Boot

  Security Settings                          <Enter> to change
                                             password.
  Supervisor Password   : Not Installed      <Enter> again to
  User Password         : Not Installed      disable password.

  Change Supervisor Password
  Change User Passward
```
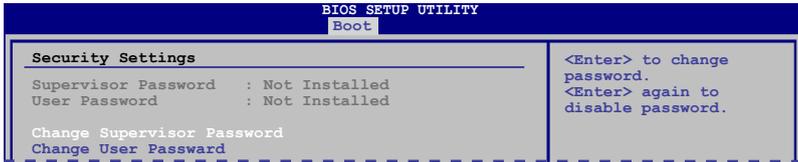
Change Supervisor Password

Select this item to set or change the supervisor password. The **Supervisor Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a Supervisor Password:

1.   Select the **Change Supervisor Password** item and press <Enter>.

2.   From the password box, type a password composed of up to six letters and/or numbers, then press <Enter>.

3.   Confirm the password when prompted.

The message **Password Installed** appears after you successfully set your password.

To change the supervisor password, follow the same steps as in setting a user password.

To clear the supervisor password, select the **Change Supervisor Password** then press <Enter> twice. The message **Password Uninstalled** appears.

If you forget your BIOS password, you can clear clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section **2.6 Jumpers** for information on how to erase the RTC RAM.

After you have set a supervisor password, the other items appear to allow you to change other security settings.

```
                        BIOS SETUP UTILITY
                            Boot

  Security Settings                          <Enter> to change
                                             password.
  Supervisor Password   : Installed          <Enter> again to
  User Password         : Installed          disabled password.

  Change Supervisor Password
  User Access Level        [Full Access]
  Change User Password
  Clear User Password
  Password Check           [Setup]
```
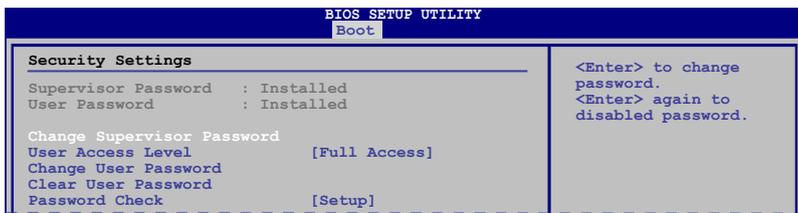
User Access Level [Full Access]

This item allows you to select the access restriction to the Setup items.

[No Access]   Prevents user access to the Setup utility.

[View Only]   Allows access but does not allow change to any field.

[Limited]   Allows changes only to selected fields, such as Date and Time.

[Full Access]   Allows viewing and changing all the fields in the Setup utility.

Change User Password

Select this item to set or change the user password. The **User Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows Installed.

To set a User Password:

1.   Select the **Change User Password** item and press <Enter>.

2.   On the password box that appears, type a password composed of up to six letters and/or numbers, then press <Enter>.

3.   Confirm the password when prompted.

The message **Password Installed** appears after you set your password successfully.

To change the user password, follow the same steps as in setting a user password.

Clear User Password

Select this item to clear the user password.

Password Check [Setup]

[Setup]   BIOS checks for user password when accessing the Setup utility.

[Always]   BIOS checks for user password both when accessing Setup and booting the system.

3.8 Tools menu

The Tools menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.

```
                          BIOS SETUP UTILITY
  Main    Advanced    Power     Boot     Tools     Exit
┌──────────────────────────────────────────┬─────────────────────────────┐
│                                           │ Press ENTER to run the      │
│  ASUS EZ Flash 2                          │ utility to select and       │
│                                           │ update BIOS.                │
│  Express Gate          [Auto]             │ This utility supports:      │
│   Enter OS Timer       [10 Seconds]       │ 1.FAT 12/16/32 (r/w)        │
│   Reset User Data      [No]               │ 2.NTFS (read only)          │
│  ▶ ASUS O.C. Profile                      │ 3.CD-DISC (read only)       │
│  ▶ AI NET 2                               │                             │
│                                           │                             │
│                                           │                             │
│                                           │ ←→   Select Screen          │
│                                           │ ↑↓   Select Item            │
│                                           │ Enter Go to Sub Screen      │
│                                           │ F1   General Help           │
│                                           │ F10  Save and Exit          │
│                                           │ ESC  Exit                   │
│                                           │                             │
│       v02.61 (C)Copyright 1985-2009, American Megatrends, Inc.          │
└────────────────────────────────────────────────────────────────────────┘
```
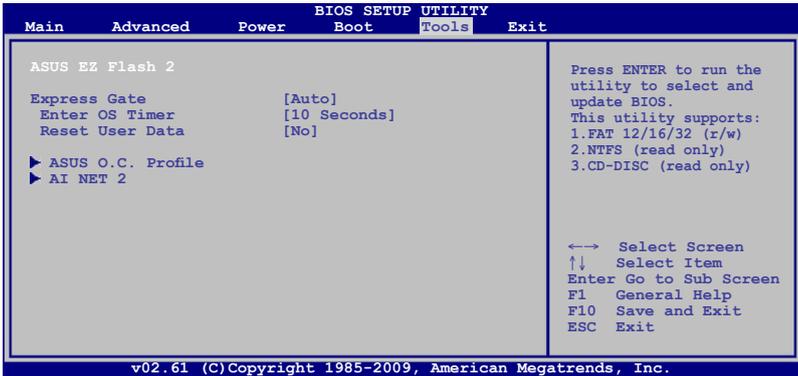
3.8.1 ASUS EZ Flash 2

Allows you to run ASUS EZ Flash 2. When you press <Enter>, a confirmation message appears. Use the left/right arrow key to select between [Yes] or [No], then press <Enter> to confirm your choice. See section **3.2.2 ASUS EZ Flash 2 utility** for details.

```
┌────────────────────────────────────────────────────────────────────────┐
│          ASUSTek EZ Flash 2 BIOS ROM Utility V3.36                      │
│  FLASH TYPE: MXIC 25L8005                                               │
│        ── Current ROM ──              ── Update ROM ──                  │
│     BOARD: M4A79XTD-EVO           BOARD: Unknown                        │
│     VER:  0202 (H:00 B:01)        VER:  Unknown                         │
│     DATE: 06/22/2009              DATE: Unknown                         │
│                                                                         │
│  PATH: A:\                                                              │
│   A:                                                                    │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
│                                                                         │
│   ── Note ──                                                            │
│   [Enter] Select or Load    [Tab] Switch    [V] Drive Info              │
│   [Up/Down/Home/End] Move   [B] Backup      [Esc] Exit                  │
└────────────────────────────────────────────────────────────────────────┘
```
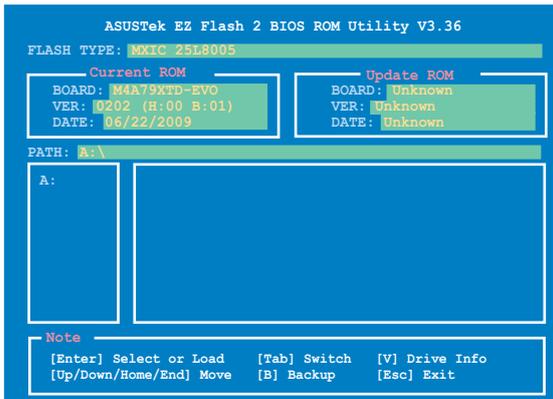
3.8.2 Express Gate [Auto]

Allows you to enable or disable the ASUS Express Gate feature. The ASUS Express Gate feature is a unique instant-on environment that provides quick access to the Internet browser and Skype. Configuration options: [Auto] [Enabled] [Disabled]

Enter OS Timer [10 Seconds]

Sets countdown duration that the system waits at the Express Gate's first screen before starting Windows or other installed OS. Choose [Prompt User] to stay at the first screen of Express Gate for user action.
Configuration options: [Prompt User] [1 second] [3 seconds] [5 seconds] [10 seconds] [15 seconds] [20 seconds] [30 seconds]

Reset User Data [No]

Allows you to clear Express Gate's user data.

[Reset]   When setting this item to [Reset], ensure that you save the setting to the BIOS so that the user data will be cleared the next time you enter the Express Gate. User data includes the Express Gate's settings as well as any personal information stored by the web browser such as bookmarks, cookies, browsing history. This is useful in the rare case where corrupt settings prevent the Express Gate environment from launching properly.
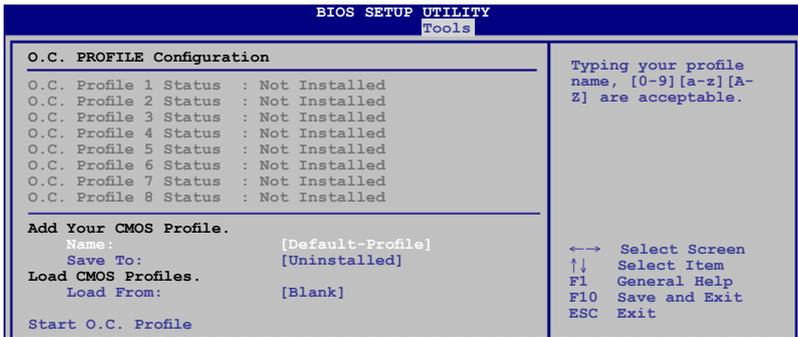
[No]   Set to [No] to disable the Reset User Data function when entering the Express Gate.

The first time wizard will run again when you enter the Express Gate environment after clearing its settings.

3.8.3   ASUS O.C. Profile

This item allows you to store or load multiple BIOS settings.

```
                         BIOS SETUP UTILITY
                                    Tools

  O.C. PROFILE Configuration              Typing your profile
                                          name, [0-9][a-z][A-
  O.C. Profile 1 Status  : Not Installed  Z] are acceptable.
  O.C. Profile 2 Status  : Not Installed
  O.C. Profile 3 Status  : Not Installed
  O.C. Profile 4 Status  : Not Installed
  O.C. Profile 5 Status  : Not Installed
  O.C. Profile 6 Status  : Not Installed
  O.C. Profile 7 Status  : Not Installed
  O.C. Profile 8 Status  : Not Installed

  Add Your CMOS Profile.
    Name:                [Default-Profile]
    Save To:             [Uninstalled]      ←→   Select Screen
  Load CMOS Profiles.                       ↑↓   Select Item
    Load From:           [Blank]            F1   General Help
                                            F10  Save and Exit
  Start O.C. Profile                        ESC  Exit
```
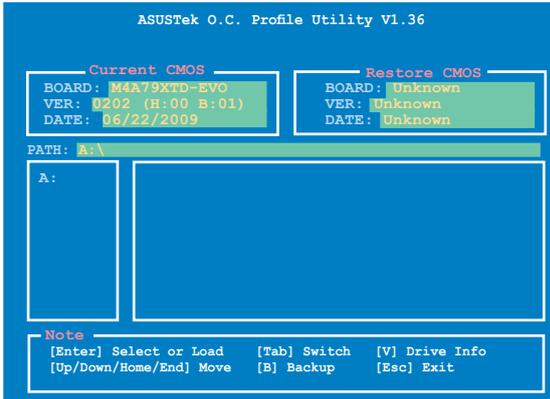
Add Your CMOS Profile

Allows you to save the current BIOS file to the BIOS Flash. In the Name sub-item, type your profile name and press <Enter>, and then choose a profile number to save your CMOS settings in the Save to sub-item.

Load CMOS Profiles

Allows you to load the previous BIOS settings saved in the BIOS Flash. Press <Enter>, and choose a profile to load.
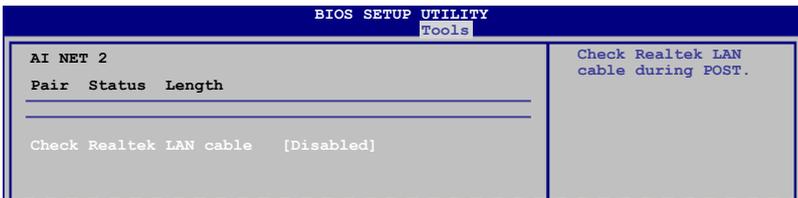
Start O.C. Profile

Allows you to run the utility to save and load CMOS. Press <Enter> to run the utility.

```
                ASUSTek O.C. Profile Utility V1.36


         Current CMOS                      Restore CMOS
    BOARD: M4A79XTD-EVO              BOARD: Unknown
    VER: 0202 (H:00 B:01)           VER: Unknown
    DATE: 06/22/2009                DATE: Unknown

   PATH: A:\

   A:




     Note
     [Enter] Select or Load      [Tab] Switch     [V] Drive Info
     [Up/Down/Home/End] Move      [B] Backup       [Esc] Exit
```

- • This function can support devices such as a USB flash disk or a floppy disk with FAT 32/16 format and single partition only.

- • DO NOT shut down or reset the system while updating the BIOS to prevent the system boot failure!

- • We recommend that you update the BIOS file only coming from the same memory/CPU configuration and BIOS version.

- • Only the CMO file can be loaded.

3.8.4   AI NET 2

```
                    BIOS SETUP UTILITY
                                   Tools
    AI NET 2                              Check Realtek LAN
                                          cable during POST.
    Pair  Status  Length


    Check Realtek LAN cable    [Disabled]
```
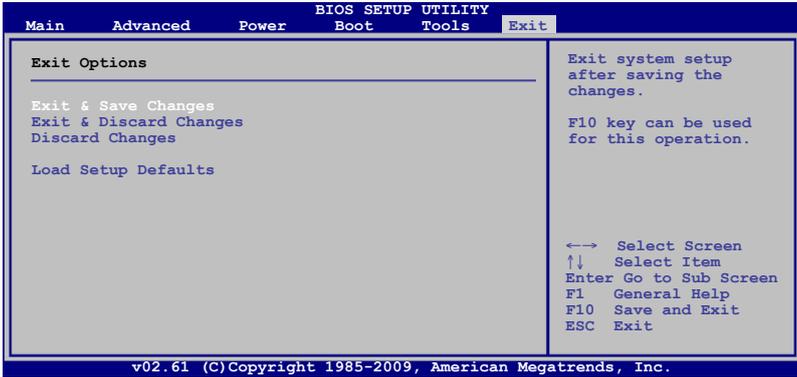
Check Realtek LAN Cable [Disabled]

Enables or disables checking of the Realtek LAN cable during the Power-On Self-Test (POST). It takes 3 to 10 seconds to diagnose the LAN cable.

[Disabled]   BIOS will not check the Realtek LAN cable during the Power-On Self-Test (POST).

[Enabled]   BIOS checks the Realtek LAN cable during the Power-On Self-Test (POST).

3.9 Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.

```
                          BIOS SETUP UTILITY
 Main     Advanced     Power     Boot     Tools     Exit

  Exit Options                                    Exit system setup
                                                  after saving the
                                                  changes.
  Exit & Save Changes
  Exit & Discard Changes                          F10 key can be used
  Discard Changes                                 for this operation.

  Load Setup Defaults


                                                  ←→   Select Screen
                                                  ↑↓   Select Item
                                                  Enter Go to Sub Screen
                                                  F1   General Help
                                                  F10  Save and Exit
                                                  ESC  Exit

       v02.61 (C)Copyright 1985-2009, American Megatrends, Inc.
```

> Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select **Ok** to save changes and exit.

> If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Press <Enter> to save the changes while exiting.

Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than System Date, System Time, and Password, the BIOS asks for a confirmation before exiting.

Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **Ok** to discard any changes and load the previously saved values.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **Ok** to load default values. Select **Exit & Save Changes** or make other changes before saving the values to the non-volatile RAM.

Chapter 4

4.1   Installing an operating system

This motherboard supports Windows® XP / Vista™ operating systems (OS). Always install the latest OS version and corresponding updates to maximize the features of your hardware.

> • Motherboard settings and hardware options vary. Use the setup procedures presented in this chapter for reference only. Refer to your OS documentation for detailed information.
>
> • Ensure that you install the Windows® XP Service Pack 2 or later versions before installing the drivers for better compatibility and system stability.

4.2   Support DVD information

The support DVD that comes with the motherboard package contains the drivers, software applications, and utilities that you can install to avail all motherboard features.

> The contents of the support DVD are subject to change at any time without notice. Visit the ASUS website at www.asus.com for updates.

4.2.1   Running the support DVD

Place the support DVD into the optical drive. The DVD automatically displays the Drivers menu if Autorun is enabled in your computer. Click each menu tab and select the items you want to install.

The Drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to use the devices.

The Make disk menu contains items to create the RAID/AHCI driver disk.

The Manual menu contains the list of supplementary user manuals. Click an item to open the folder of the user manual.

The Utilities menu shows the applications and other software that the motherboard supports.
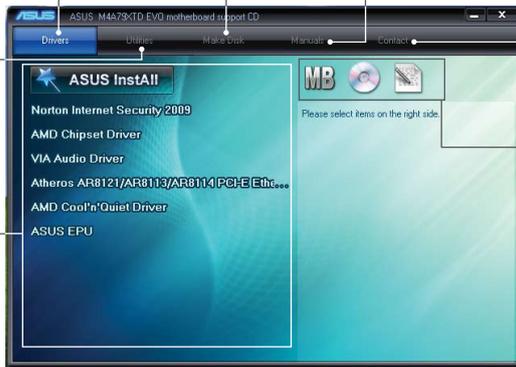
Click the Contact tab to display the ASUS contact information.

Click an icon to display DVD/ motherboard information

Click an item to install

> If Autorun is NOT enabled in your computer, browse the contents of the support DVD to locate the file ASSETUP.EXE from the BIN folder. Double-click the ASSETUP.EXE to run the DVD.

4.2.2   Obtaining the software manuals

The software manuals are included in the support DVD. Follow the instructions below to get the necessary software manuals.

The software manual files are in Portable Document Format (PDF). Install the Adobe® Acrobat® Reader from the Utilities menu before opening the files.

1.   Click the support DVD icon.

2.   The support DVD contents are displayed in graphical format. Double-click the **Manual** folder.

3.   Double-click the folder of your selected manual.

The screenshots in this section are for reference only. The actual software manuals containing in the support DVD vary by models.

4.3 Software information

Most of the applications in the support DVD have wizards that will conveniently guide you through the installation. View the online help or readme file that came with the software application for more information.

4.3.1 ASUS PC Probe II

PC Probe II is a utility that monitors the computer's vital components, and detects and alerts you of any problem with these components. PC Probe II senses fan rotations, CPU temperature, and system voltages, among others. Because PC Probe II is software-based, you can start monitoring your computer the moment you turn it on. With this utility, you are assured that your computer is always at a healthy operating condition.

Launching PC Probe II

1. Install PC Probe II from the motherboard support DVD.

2. Launch PC Probe II by clicking **Start > Programs > ASUS > PC Probe II > PC Probe II v1.xx.xx**. The PC Probe II main window appears.

3. The PC Probe II icon appears in the Windows® notification area. Click this icon to close or restore the application.

PC Probe II main window

Button	Function
CONFIG	Opens the Configuration window
	Opens the Report window
DMI	Opens the Desktop Management Interface window
PCI	Opens the Peripheral Component Interconnect window
WMI	Opens the Windows Management Instrumentation window
USAGE	Opens the hard disk drive, memory, CPU usage window
	Shows/Hides the Preference section
	Minimizes the application
	Closes the application

Refer to the software manual in the support DVD or visit the ASUS website at www.asus.com for detailed software configuration.

4.3.2 Cool 'n' Quiet!™ Technology

The motherboard supports the AMD Cool 'n' Quiet!™ Technology that dynamically and automatically change the CPU speed, voltage, and amount of power depending on the task the CPU performs.

Enabling Cool 'n' Quiet!™ Technology

1. Turn on the system and enter BIOS by pressing the <Del> key during the Power On Self-Tests (POST).
2. Go to **Advanced > CPU Configuration > Cool'n'Quiet** and set it to [Enabled]. See section **3.5 Advanced menu**.
3. Save your changes and exit BIOS Setup.
4. Reboot your computer and set your Power Option Properties depending on your operating system.

Launching the Cool 'n' Quiet!™ software

1. Install Cool 'n' Quiet!™ software from the motherboard support DVD.
2. Click **Start > Programs > ASUS > Cool & Quiet > Cool & Quiet**.
3. The Cool 'n' Quiet!™ technology screen appears and displays the current CPU Frequency and CPU Voltage.
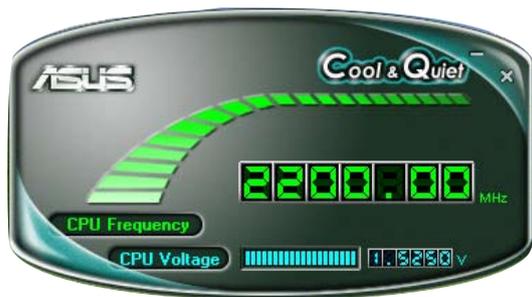
Refer to the software manual in the support DVD or visit the ASUS website at www.asus.com for detailed software configuration.

4.3.3 ASUS AI Suite

ASUS AI Suite allows you to launch several ASUS utilities easily.

Launching AI Suite

1.   Install AI Suite from the motherboard support DVD.

2.   Launch AI Suite by clicking **Start** > **Programs** > **ASUS** > **AI Suite** > **AI Suite v1.xx.xx**.
      The AI Suite main window appears.

3.   The AI Suite icon [icon] appears in the Windows® notification area. If you minimize the
      application main window, click this icon to restore the window.

Using AI Suite

Click each utility button to launch the utility, or click the **Normal** button to restore system
default settings.

**Click to open the monitor window that displays
system information such as CPU temperature,
CPU voltage, fan speed, and CPU/FSB frequency**

**Click to restore
default settings**

**Click to launch
each utility**
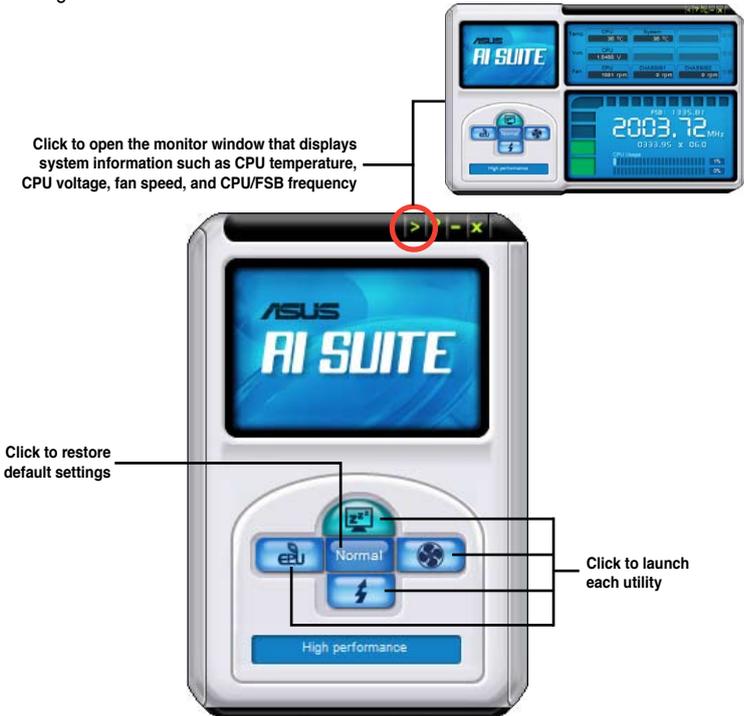
    •   The screenshots in this section are for reference only. The actual utility buttons vary
         by models.

   •   Refer to the software manual in the support DVD or visit the ASUS website at
         www.asus.com for detailed software configuration.

Chapter 4

4.3.4   ASUS EPU

ASUS EPU is an energy-efficient tool that provides you with a total system power-saving solution. It detects the current computer loading and intelligently adjusts the power in real-time. With auto phase switching for components, the EPU automatically provides the most appropriate power usage via intelligent acceleration and overclocking

ASUS EPU provides you with these modes to choose from:

•   **Turbo Mode**

•   **High Performance Mode**

•   **Maximum Power Saving Mode**

When you select **Auto Mode** , the system shifts modes automatically according to the current system status. You can also configure advanced settings for each mode.

Launching EPU

After installing EPU from the motherboard support DVD, double-click the EPU tray icon to launch the program.

EPU main menu

Refer to the software manual in the support DVD or visit the ASUS website at www.asus.com for detailed software configuration.

4.3.5 ASUS Q-Fan 2

This ASUS Q-Fan 2 Control feature allows you to set the appropriate performance level of the CPU Q-Fan 2 or the Chassis Q-Fan 2 for more efficient system operation. After enabling the Q-Fan 2 function, the fans can be set to automatically adjust depending on the temperature, to decrease fan speed, or to achieve the maximum fan speed.

After installing AI Suite from the bundled support DVD, you can launch the utility by double-clicking the AI Suite icon on the Windows® OS taskbar and click the Q-Fan 2 button on the AI Suite maIn window.

Click the drop-down menu button and display the fan names. Select **CPU Q-Fan 2** or **CHASSIS Q-Fan 2**. Click the box of **Enable Q-Fan 2** to activate this function.
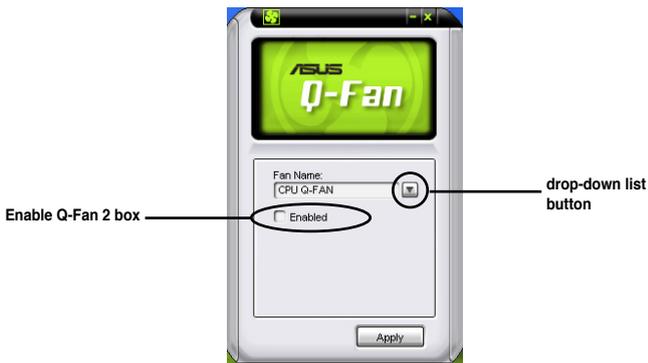
Profile list appears after clicking the **Enable Q-Fan 2** box. Click the drop-down list button and select a profile. **Optimal** mode makes the fans adjust speed with the temperature; **Silent** mode minimizes fan speed for quiet fan operation; **Performance** mode boosts the fan to achieve maximal fan speed for the best cooling effect.
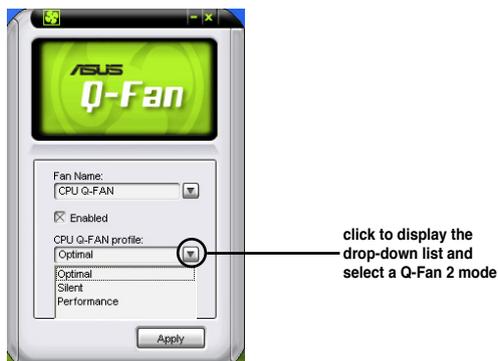
Click **Apply** at the bottom to save the setup.

Chapter 4

4.3.6   ASUS TurboV

ASUS TurboV allows you to easily overclock without exiting or rebooting the OS, and set up the best O.C. settings for different scenarios.

> Refer to the CPU documentation before adjusting CPU voltage settings. Setting a high voltage may damage the CPU permanently, and setting a low voltage may make the system unstable.

> •   Only AMD® Black Edition processors support the CPU Ratio function.
>
> •   For system stability, all changes made in ASUS TurboV will not be saved to BIOS settings and will not be kept on the next system boot. Use the **Save Profile** function to save your customized overclocking settings and manually load the profile after Windows starts.
>
> •   For system stability, set ASUS EPU to **High Performance** Mode while using ASUS TurboV.

Launching ASUS TurboV

1.   Install the ASUS TurboV utility from the motherboard support DVD.

2.   Click **Start > Programs** > **ASUS** > **TurboV** > **TurboV**.

Load existing ASUS Turbo profiles. Three pre-defined profiles are provided: "Race Car", "Jet Plane", and "Rocket".

Save the current settings as a new profile

Target settings

Default settings

Click to show more settings

Advanced CPU and chipset voltage settings

Voltage Adjustment bars

Adjusts CPU core ratio

Applies all changes immediately

Undoes all changes without applying

> •   Set the **CPU Ratio** item in BIOS to [Auto] before using the CPU Ratio function in TurboV. See chapter 3 for details.
>
> •   For advanced overclock ability, adjust first the BIOS items, and then proceed more detailed adjustments using TurboV.
>
> •   Refer to the software manual in the support DVD or visit the ASUS website at www.asus.com for detailed software configuration.

4.3.7 ASUS Turbo Key

ASUS Turbo Key allows the user to turn the PC power button into a physical overclocking button. After the easy setup, Turbo Key can boost performances without interrupting ongoing work or games—with just one touch!

Launching ASUS Turbo Key

1. Install ASUS Turbo Key from the motherboard support DVD.
2. Restart your computer. ASUS Turbo Key automatically starts after Windows® start-up.
3. Double-click the ASUS Turbo Key icon in the Windows® notification area to launch the Turbo Key user interface.

Configuring ASUS Turbo Key
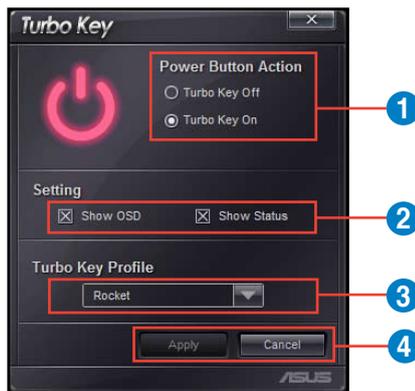
1. Select your desired power button action. Select **Turbo Key Off** to keep the power button as a common switch. Select **Turbo Key On** to boost system performance after pressing the power button.
2. You can choose whether to show Turbo Key OSD and status by clicking the check boxes in the **Setting** section.
3. You can decide the performance boost level by selecting **Turbo Key Profile**. You can also load personal profiles saved in the ASUS TurboV utility. The default is "Rocket Mode". For detailed ASUS TurboV configurations, refer to the software manual in the support DVD or visit the ASUS website at www.asus.com.
4. Click **Apply** for all settings to take effect.

Using ASUS Turbo Key

Press the power button on your computer chassis to use the Turbo Key function defined in the Turbo Key user interface. Press the power button again to turn off the Turbo Key function.

Press and hold the power button for 4 seconds will turn off your computer.

Refer to the software manual in the support DVD or visit the ASUS website at www.asus.com for detailed software configuration.

Chapter 4

4.3.8   ASUS Express Gate

ASUS Express Gate is an instant-on environment that gives you quick access to the Internet, Skype, and viewing your pictures. Within a few seconds of powering on your computer, you will be at the Express Gate menu where you can start the web browser, Skype, or other Express Gate applications.

Notices about ASUS Express Gate

- •   Ensure to install ASUS Express Gate from the motherboard support DVD before use.
- •   ASUS Express Gate supports SATA devices in IDE mode only. See chapter 3 for BIOS setup details.
- •   ASUS Express Gate supports SATA devices connected to **motherboard chipset-controlled onboard SATA ports** only. All onboard extended SATA ports and external SATA ports are NOT supported. See chapter 2 for the exact location of onboard SATA ports.
- •   ASUS Express Gate supports file uploading from ODD and USB drives and downloading to USB drives only.
- •   ASUS Express Gate supports installation on SATA HDDs, USB HDDs and Flash drives with at least 1.2GB of available disk space. When installed on USB HDDs and Flash drives, connect the drives to the motherboard USB port before turning on the computer.
- •   Your monitor must support the screen resolution of **1024 x 768**, or ASUS Express Gate will be skipped during the booting process, and the existing OS will be launched directly.
- •   Installation of at least 1GB system memory is recommended for better performance.

The First Screen

Express Gate's first screen appears within a few seconds after you power on the computer.

Click any of the application icons to enter Express Gate environment and launch the selected application

Turn off the computer

Continue booting to existing OS when the timer above the Exit icon counts down to zero (0); click to immediately enter existing OS

- •   To enter the motherboard BIOS setup program, click **Exit** on the Express Gate First Screen, and then press the <Del> key during POST.
- •   See the software manual in the bundled motherboard support DVD or click   in the Express Gate environment for detailed software instructions.
- •   Express Gate complies with the OpenGL standard. Refer to http://support.asus.com for Express Gate source codes.
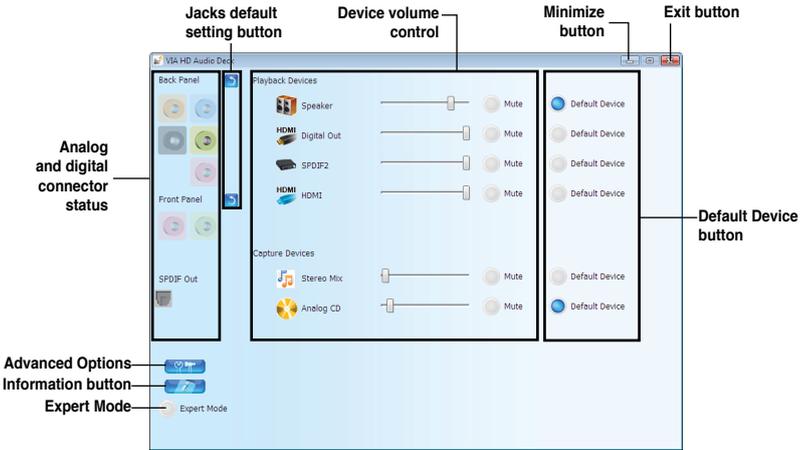
4.3.9 VIA® High Definition Audio utility

The VIA® High Definition Audio CODEC provides 8-channel audio capability to deliver the ultimate audio experience on your computer. The software provides Jack-Detection, Multi-Streaming, Front Panel Jack-Retasking and S/PDIF Out support.

Follow the installation wizard to install the VIA® Audio Driver from the support CD/DVD that came with the motherboard package.

If the VIA audio software is correctly installed, you will find the **VIA HD Audio Deck** icon on the taskbar. Double-click on the icon to display the VIA HD Audio Deck.

VIA HD Audio Deck

A. VIA HD Audio Deck for Windows® Vista™

Jacks default setting button | Device volume control | Minimize button | Exit button

Analog and digital connector status

Default Device button

Advanced Options
Information button
Expert Mode

B. VIA HD Audio Deck for Windows XP

Display panel and volume control

Minimize button

Configuration options

Control settings window

Refer to the software manual in the support DVD or visit the ASUS website at www.asus.com for detailed software configuration.

Chapter 4

4.4 RAID configurations

The motherboard comes with the AMD SB750 chipset that allows you to configure Serial ATA hard disk drives as RAID volumes. The motherboard supports the following RAID configurations: RAID 0, RAID 1, RAID 5, and RAID 10.

• You must install Windows® XP Service Pack 2 or later versions before using Serial ATA hard disk drives. The Serial ATA RAID feature is available only if you are using Windows® XP SP2 or later versions.

• Due to Windows® XP / Vista limitation, a RAID array with the total capacity over 2TB cannot be set as a boot disk. A RAID array over 2TB can only be set as a data disk only.

• If you want to install a Windows® operating system to a hard disk drive included in a RAID set, you have to create a RAID driver disk and load the RAID driver during OS installation. Refer to section **4.5 Creating a RAID driver disk** for details.

4.4.1 RAID definitions

RAID 0 *(Data striping)* optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

RAID 1 *(Data mirroring)* copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

RAID 5 stripes both data and parity information across three or more hard disk drives. Among the advantages of RAID 5 configuration include better HDD performance, fault tolerance, and higher storage capacity. The RAID 5 configuration is best suited for transaction processing, relational database applications, enterprise resource planning, and other business systems. Use a minimum of three identical hard disk drives for this setup.

RAID 10 is data striping and data mirroring combined without parity (redundancy data) having to be calculated and written. With the RAID 0+1 configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

4.4.2   Installing Serial ATA hard disks

The motherboard supports Serial ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install the SATA hard disks for a RAID configuration:

1.   Install the SATA hard disks into the drive bays.

2.   Connect the SATA signal cables.

3.   Connect a SATA power cable to the power connector on each drive.

4.4.3   Setting the RAID item in BIOS

You must enable the RAID function in the BIOS Setup before creating RAID volume(s) using SATA HDDs. To do this:

1.   Enter the BIOS Setup during POST.

2.   Go to the Main menu > Storage Configuration, and then press <Enter>.

3.   Set the OnChip SATA Type item to [RAID].

4.   Save your changes, and then exit the BIOS Setup.

> Refer to Chapter 3 for details on entering and navigating through the BIOS Setup.
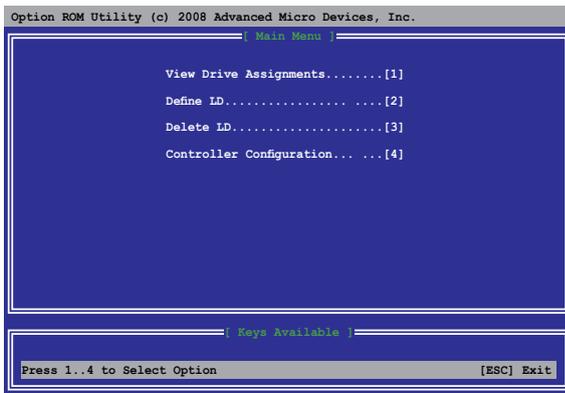
> Due to chipset limitation, when set any of SATA ports to RAID mode, all SATA ports run at RAID mode together.

4.4.4   AMD® Option ROM Utility®

To enter the AMD® Option ROM utility®

1.   Boot up your computer.

2.   During POST, press <Ctrl> + <F> to display the utility main menu.

```
 Option ROM Utility (c) 2008 Advanced Micro Devices, Inc.
══════════════════════════════════[ Main Menu ]═══

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

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

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

            Controller Configuration... ...[4]




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

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

Chapter 4

The Main Menu allows you to select an operation to perform. The Main Menu options include:

- **View Drive Assignments:** shows the status of the hard disk drives.
- **Define LD:** creates a RAID 0, RAID 1, RAID 5 or RAID 10 configuration.
- **Delete LD:** deletes a selected RAID volume and partition.
- **Controller Configuration:** Shows the system resources configuration.

Press <1>, <2>, <3>, or <4> to enter the option you need; press <ESC> to exit the utility.

> The RAID BIOS setup screens shown in this section are for reference only and may not exactly match the items on your screen.

> The utility supports maximum four hard disk drives for RAID configuration.

Creating a RAID volume

To create a RAID volume

1. In the Main Menu, press <2> to enter the **Define LD** function.
2. Press <Enter>, and the following screen appears.

```
Option ROM Utility (c) 2008 Advanced Micro Devices, Inc.
================================[ Define LD Menu ]================================

  LD No      RAID Mode      Total Drv

  LD 1        RAID 0            0

  Strip Block:      64 KB                       Fast Init:   ON
  Gigabyte Boundary: ON                         Cache Mode: WriteThru

============================[ Drives Assignments ]============================
  Channel:ID  Drive Model      Capabilities   Capacity(GB)  Assigment
       1:Mas ST3160812AS       SATA 3G          160.04          N
       2:Mas ST3160812AS       SATA 3G          160.04          N
       3:Mas ST3160812AS       SATA 3G          160.04          N
       4:Mas ST3160812AS       SATA 3G          160.04          N



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

[↑] Up [↓] Down [ESC] Exit [Space] Change [Ctrl-Y] Save [PgUp/Dn] Page Change
```

3. Use the Up/Down arrow key to highlight the **LD1** item and press <Space> to select a RAID mode you would like to create.
4. Move to the **Assignment** item by using the down arrow key and press <Space> to set **Y** to the drives you would like to include in the RAID volume.
5. Press <Ctrl> + <Y> to save the setting. The utility prompts the following messages:

```
   Fast Initialization Option has been selected
   It will erase the MBR data of the disks.
   <Press Ctrl-Y Key if you are sure to erase it>
   <Press any other key to ignore this option>
```

To continue, press <Ctrl> + <Y> to erase MBR and all data on the selected drives. To cancel, press any other key to ignore this option. The utility prompts the following messages:

```
Press Ctrl-Y to Modify Array Capacity or press any
other key to use maximum capacity...
```

Press <Ctrl> + <Y> to key in the desired capacity, or press any other key to use the maximum capacity.

6.   The utility displays the following screen on the next page.

```
Option ROM Utility (c) 2008 Advanced Micro Devices, Inc.
                         ═[ Define LD Menu ]═

   LD No        RAID Mode     Total Drv   Capacity(GB)   Status

   LD 1         RAID 0           2          317.99       Functional
   LD 2         ----           ----        --------      ----
   LD 3         ----           ----        --------      ----
   LD 4         ----           ----        --------      ----
   LD 5         ----           ----        --------      ----
   LD 6         ----           ----        --------      ----
   LD 7         ----           ----        --------      ----
   LD 8         ----           ----        --------      ----
   LD 9         ----           ----        --------      ----
   LD 10        ----           ----        --------      ----




                         ═[ Keys Available ]═

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

Chapter 4

Deleting a RAID configuration

⚠️ Take caution when deleting a RAID volume. You will lose all data on the hard disk drives when you delete a RAID volume.

To delete a RAID volume

1. In the Main Menu, press <3> to enter the **Delete LD** function.

2. Select the RAID item you want to delete and press <Del> or <Alt> + <D>.

```
Option ROM Utility (c) 2008 Advanced Micro Devices, Inc.
================================[ Delete LD Menu ]================================

  LD No        RAID Mode      Total Drv  Capacity(GB)  Status

  LD 1         RAID 0           2           317.99     Functional
  LD 2         ----           ----       --------      ----
  LD 3         ----           ----       --------      ----
  LD 4         ----           ----       --------      ----
  LD 5         ----           ----       --------      ----
  LD 6         ----           ----       --------      ----
  LD 7         ----           ----       --------      ----
  LD 8         ----           ----       --------      ----
  LD 9         ----           ----       --------      ----
  LD 10        ----           ----       --------      ----




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

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

3. The utility prompts the following messages:

```
  Press Ctrl-Y to delete the data in the disk!
  or press any other key to abort...
```

Press <Ctrl> + <Y> to delete the RAID volume.

4.5 Creating a RAID driver disk

A floppy disk with the RAID driver is required when installing a Windows® operating system on a hard disk drive that is included in a RAID set.

- **The motherboard does not provide a floppy drive connector.** You have to use a USB floppy disk drive when creating a **SATA** RAID driver disk.

- Windows® XP may not recognize the USB floppy disk drive due to Windows® XP limitation. To work around this OS limitation, refer to section 4.5.4 Using a USB floppy disk drive.

4.5.1 Creating a RAID driver disk without entering the OS

To create a RAID/SATA driver disk without entering the OS

1. Boot your computer.
2. Press <Del> during POST to enter the BIOS setup utility.
3. Set the optical drive as the primary boot device.
4. Insert the support DVD into the optical drive.
5. Save changes and exit BIOS.
6. When the Make Disk menu appears, press <a> or <b> to create a 32/64bit ATI RAID/AHCI controller driver disk for Windows XP/Vista.
7. Insert a formatted floppy disk into the floppy drive then press <Enter>.
8. Follow the succeeding screen instructions to complete the process.

4.5.2 Creating a RAID driver disk in Windows®

To create a RAID driver disk in Windows®

1. Start Windows®.
2. Plug the USB floppy disk drive and insert a floppy disk.
3. Place the motherboard support DVD into the optical drive.
4. Go to the Make Disk menu, and then click ATI RAID/AHCI 32/64bit WinXP/Vista Driver to create a RAID driver disk.
5. Select USB floppy disk drive as the destination disk.
6. Follow the succeeding screen instructions to complete the process.

Write-protect the floppy disk to avoid a computer virus infection.

4.5.3 Installing the RAID driver during Windows® OS installation

To install the RAID driver in Windows® XP

1. During the OS installation, the system prompts you to press the F6 key to install third-party SCSI or RAID driver.
2. Press <F6>, and then insert the floppy disk with RAID driver into the floppy disk drive.
3. When prompted to select the SCSI adapter to install, ensure that you select SB 750.
4. Follow the succeeding screen instructions to complete the installation.

To install the RAID driver in Windows® Vista

1.   Insert the floppy disk with RAID driver into the floppy disk drive.

2.   During the OS installation, select SB 750.

3.   Follow the succeeding screen instructions to complete the installation.

4.5.4   Using a USB floppy disk drive

Due to OS limitation, Windows® XP may not recognize the USB floppy disk drive when you install the RAID driver from a floppy disk during the OS installation.

To solve this issue, add the USB floppy disk drive's Vendor ID (VID) and Product ID (PID) to the floppy disk containing the RAID driver. Refer to the steps below:

1.   Using another computer, plug the USB floppy disk drive, and insert the floppy disk containing the RAID driver.

2.   Right-click **My Computer** on the Windows® desktop or **start** menu, and then select **Manage** from the pop-up window.
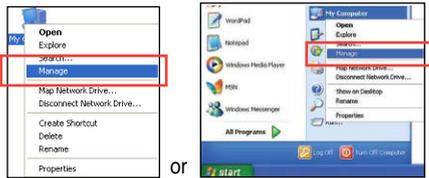
3.   Select **Device Manager**. From the **Universal Serial Bus controllers**, right-click **xxxxxx USB Floppy**, and then select **Properties** from the pop-up window.

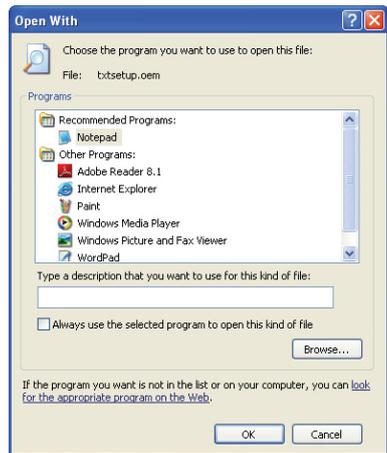   The name of the USB floppy disk drive varies with different vendors.
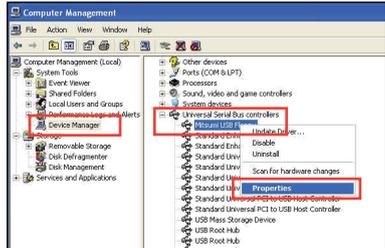
4.   Click **Details** tab. The Vendor ID (VID) and Product ID (PID) are displayed.
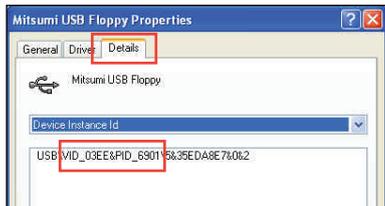
5. Browse the contents of the RAID driver disk to locate the file **txtsetup.oem**.

6. Double-click the file. A window appears, allowing you to select the program for opening the oem file.
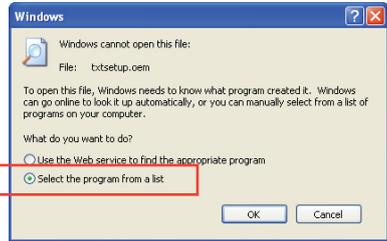
7. Use Notepad to open the file.

8. Find the **[HardwareIds.scsi.iaAHCI_ICH10R]** and **[HardwareIds.scsi.iastor_ICH8RICH9RICH10RDO]** sections in the **txtsetup.oem** file.

9. Type the following line to the bottom of the two sections:
    id = "USB\VID_xxxx&PID_xxxx", "usbstor"

```
[HardwareIds.scsi.iaAHCI_ICH10R]
id = "PCI\VEN_8086&DEV_3A22&CC_0106","iaStor"
id = "USB\VID_03EE&PID_6901", "usbstor" #--Mitsumi

[HardwareIds.scsi.iaStor_ICH8RICH9RICH10RDO]
id = "PCI\VEN_8086&DEV_2822&CC_0104","iaStor"
id = "USB\VID_03EE&PID_6901", "usbstor" #--Mitsumi
```

Add the same line to both sections.

The VID and PID vary with different vendors.

10. Save and exit the file.

Chapter 4

5.1 ATI® CrossFireX™ technology

The motherboard supports the ATI® CrossFireX™ technology that allows you to install multi-graphics processing units (GPU) graphics cards. Follow the installation procedures in this section.

5.1.1 Requirements

- Prepare two identical CrossFireX-ready graphics cards or one CrossFireX-ready dual-GPU graphics card that are ATI® certified.
- Ensure that your graphics card driver supports the ATI CrossFireX technology. Download the latest driver from the AMD website (www.amd.com).
- Ensure that your power supply unit (PSU) can provide at least the minimum power required by your system. See page 2-31 for details.

- We recommend that you install additional chassis fans for better thermal environment.
- Visit the ATI Game website (http://game.amd.com) for the latest certified graphics card and the supported 3D application list.

5.1.2 Before you begin

For ATI CrossFireX to work properly, you have to uninstall all existing graphics card drivers before installing ATI CrossFireX graphics cards to your system.

To uninstall existing graphics card drivers

1. Close all current applications.
2. For Windows XP, go to **Control Panel > Add/Remove Programs**.
   For Windows Vista, go to **Control Panel > Programs and Features**.
3. Select your current graphics card driver/s.
4. For Windows XP, select **Add/Remove**.
   For Windows Vista, select **Uninstall**.
5. Turn off your computer.

5.2 Installing CrossFireX™ graphics cards

The following pictures are for reference only. The graphics cards and the motherboard layout may vary with models, but the installation steps remain the same.

1. Prepare two CrossFireX-ready graphics cards.

2. Insert the two graphics card into the PCIEX16 slots. If your motherboard has more than two PCIEX16 slots, refer to its user manual for the locations of the PCIEX16 slots recommended for multi-graphics card installation.

3. Ensure that the cards are properly seated on the slots.

4. Align and firmly insert the CrossFireX bridge connector to the goldfingers on each graphics card. Ensure that the connector is firmly in place.

CrossFireX bridge

Goldfingers
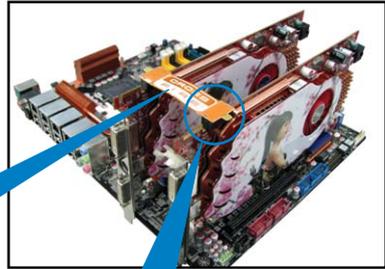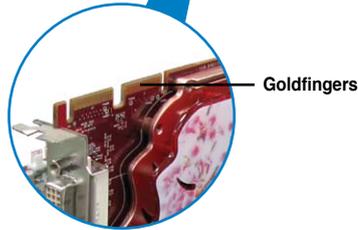
5. Connect two independent auxiliary power sources from the power supply to the two graphics cards separately.

6. Connect a VGA or a DVI cable to the graphics card.
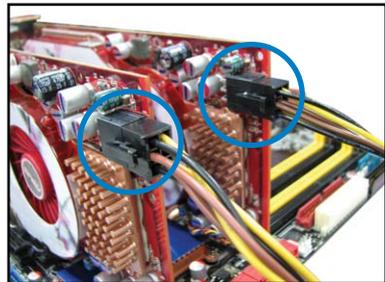
5.3 Software information

5.3.1 Installing the device drivers

Refer to the documentation that came with your graphics card package to install the device drivers.

Ensure that your PCI Express graphics card driver supports the ATI® CrossFireX™ technology. Download the latest driver from the AMD website (www.amd.com).

5.3.2 Enabling the ATI® CrossFireX™ technology

After installing your graphics cards and the device drivers, enable the CrossFireX™ feature through the ATI Catalyst™ Control Center in Windows environment.

Launching the ATI Catalyst Control Center

To launch the ATI Catalyst Control Center

1. Right-click on the Windows® desktop and select **Catalyst(TM) Control Center**. You can also right-click the ATI icon in the Windows notification area and select **Cayalist Control Center**.

2. The **Catalyst Control Center Setup Assistant** appears when the system detects the existance of multi-graphics cards. Click **Go** to continue to the **Catalyst Control Center Advanced View** window.
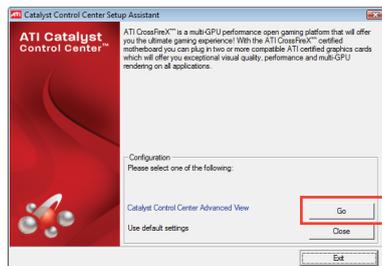
Enabling CrossFireX technology

1. In the Catalyst Control Center window, click **Graphics Settings > CrossFireX > Configure**.

2. From the Graphics Adapter list, select the graphics card to act as the display GPU.

3. Select **Enable CrossFireX**.

4. Click **Apply**, and then click **OK** to exit the window.