

M4N75TD

Motherboard

ASUS®

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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.

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

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.

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.

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>+

M4N75TD specifications summary

CPU	AMD® Socket AM3; Phenom™ II / Athlon™ II / Sempron™ 100 Series Processors AMD® 140W CPU Support Supports 45nm CPU
Chipset	NVIDIA nForce® 750a SLI® Supports NVIDIA Clock Calibration (NVCC) function
System bus	Up to 5200 MT/s HyperTransport™ 3.0
Memory	4 x DIMM, max. 16 GB, DDR3 2000(O.C.) / 1333 / 1066 MHz ECC / non-ECC, un-buffered memory Dual-channel memory architecture * When you install a total memory of 4 GB capacity or more, Windows® 32-bit operating system may only recognize less than 3 GB. We recommend using a maximum of 3 GB system memory if you are using a Windows® 32-bit OS. ** Refer to www.asus.com or this user manual for the Memory QVL (Qualified Vendors Lists)
Multi-GPU support	Supports NVIDIA® SLI™ Technology at x8 link Supports Hybrid SLI® Technology
Expansion slots	2 x PCIe 2.0 x16 slots (dual at x8 mode) 2 x PCIe x1 slots 2 x PCI 2.2 slots
Storage	NVIDIA nForce® 750a SLI® chipset <ul style="list-style-type: none"> - 1 x Ultra DMA 133/100 port - 6 x SATA 3.0 Gb/s ports (Legacy IDE operation is only supported on drives 1–4) NVIDIA® MediaShield™ RAID supports RAID 0, 1, 0+1, 5, and JBOD
LAN	Broadcom® B5071 Gigabit LAN controller featuring AI NET 2
Audio	VIA® VT1708S 8-channel High Definition Audio CODEC <ul style="list-style-type: none"> - Supports Jack-Detection, Multi-Streaming, and Front Panel Jack-Retasking - Optical S/PDIF Out port at back I/O - ASUS Noise Filter
IEEE 1394	VIA® VT6308P controller supports 2 x IEEE 1394a ports
USB	12 x USB 2.0 ports (6 ports at midboard; 6 ports at back panel)

(continued on the next page)

M4N75TD specifications summary

ASUS Unique Features	ASUS Exclusive Features <ul style="list-style-type: none">- Core Unlocker- MemOK! ASUS Power Solutions <ul style="list-style-type: none">- 8+1 Phase Power Design- 100% Long-Life Solid Cap.- EPU ASUS Express Gate ASUS Quiet Thermal Solution <ul style="list-style-type: none">- Fanless Design: stylish heatsink solution- Stack Cool 3 ASUS EZ DIY <ul style="list-style-type: none">- CrashFree BIOS 3- O.C. Profile- EZ Flash 2- MyLogo 2™- Multi-language BIOS
ASUS Exclusive Overclocking Features	Intelligent overclocking tools <ul style="list-style-type: none">- TurboV- Turbo Key Precision Tweaker 2 <ul style="list-style-type: none">- vDIMM: 16-step DRAM voltage control- vCore: Adjustable CPU voltage at 0.0125V increment- vChipset (N.B.): 4-step voltage control SFS (Stepless Frequency Selection): <ul style="list-style-type: none">- FSB tuning from 200MHz up to 600MHz at 1MHz increment- Memory tuning from 1066MHz up to 2000MHz- PCIe frequency tuning from 100MHz to 200MHz at 1MHz increment Overclocking protection: <ul style="list-style-type: none">- ASUS C.P.R. (CPU Parameter Recall)
Rear 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 IEEE 1394a port 1 x LAN (RJ-45) port 6 x USB 2.0/1.1 ports 8-channel audio I/O ports

(continued on the next page)

M4N75TD specifications summary

Internal I/O connectors	3 x USB connectors support additional 6 USB ports 1 x IDE connector 1 x COM connector 6 x SATA connectors 1 x CPU Fan connector 2 x Chassis Fan connectors (1 x 4-pin, 1 x 3-pin) 1 x Power Fan connector 1 x IEEE1394a connector 1 x MemOK! button 1 x Core Unlocker switch 1 x S/PDIF Out Header Front panel audio connector 24-pin ATX Power connector 8-pin ATX 12V Power connector System Panel
BIOS features	8 Mb Flash ROM, AMI BIOS, PnP, DMI 2.0, WfM2.0, SM BIOS 2.5, ACPI 2.0, ASUS EZ Flash 2, ASUS CrashFree BIOS 3
Support CD contents	Drivers ASUS Utilities ASUS Update 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

Product introduction

1.1 Welcome!

Thank you for buying an ASUS® M4N75TD 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.

Motherboard	ASUS M4N75TD motherboard
Cables	1 x Ultra DMA 133/100/66 cable 2 x Serial ATA cables 1 x SLI bridge cable
Accessories	1 x I/O shield
Application DVD	ASUS motherboard support DVD
Documentations	User manual



If any of the above items is damaged or missing, contact your retailer.

1.3 Special features

1.3.1 Product highlights



AMD® Socket AM3; Phenom™ II / Athlon™ II / Sempron™ 100 Series Processors

This motherboard supports AMD® 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.



NVIDIA nForce® 750a SLI®

NVIDIA nForce® 750a SLI® media and communication processors (MCPs) are the foundation for the world's ultimate gaming PC. The MCPs support the NVIDIA® Scalable Link Interface (SLI) technology that allows two graphics processing units (GPUs) in a single system. The NVIDIA nFORCE® 750a SLI® chipset also supports six (6) Serial ATA 3 Gb/s devices, PCI Express x16 slots with NVIDIA® SLI™ support at dual x8 mode, and up to 12 USB 2.0 ports.



DDR3 2000(O.C.) support

This motherboard supports DDR3 2000(O.C.), which provides faster data transfer rate and more bandwidth to increase memory data transfer rate and computing efficiency. This enhances system performance in 3D graphics and other memory demanding applications.

1.3.2 ASUS Unique Features



ASUS 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.

ASUS Exclusive Features



Core Unlocker

ASUS Core Unlocker simplifies the activation of a latent AMD® CPU—with just a simple switch or hot key. Enjoy an instant performance boost by simply unlocking the extra cores, without performing complicated BIOS changes.



MemOK!

Memory compatibility is among the top concerns during computer upgrades. Worry no more. MemOK! is the fastest memory booting solution today. This remarkable memory rescue tool requires nothing but a push of a button to patch memory issues and get your system up and running in no time. The technology is able to determine failsafe settings that can dramatically improve your system booting success.

ASUS Power Solutions



8+1 Phase Power Design

To fully unleash the latest generation AM3 CPU's potential, ASUS M4N75TD motherboard has 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. ASUS M4N75TD also features an extra 1-phase power for integrated memory/HT controller to provide independent power to vital components.

100% Long-Life Solid Cap.

This motherboard uses all long-life capacitors onboard for durability, improved lifespan, and enhanced thermal capacity.



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!

ASUS Quiet Thermal Solutions



Fanless Design: stylish heatsink solution

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 thickened bottom design effectively cools down hot airflows generated by the north bridge chipset. Combined with usability and aesthetics, the ASUS streamline-shaped heatsink will give users an extremely silent and cooling experience with the elegant appearance!



Up to 20°C (36°F) Cooler—Stack Cool 3

Stack Cool 3 is a fanless cooling solution offered exclusively by ASUS. It effectively and noiselessly transfers heat generated by the critical components to the other side of the specially designed PCB (printed circuit board) for effective heat dissipation—making temperatures cooler by up to 20°C.

ASUS Intelligent Overclocking Tools



TurboV

Feel the adrenaline rush of real-time O.C. —now a reality with the ASUS TurboV. This easy O.C. tool allows you to overclock without exiting or rebooting the OS: and its user-friendly interface makes overclock with just a few clicks away. More, 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 boosts performances without interrupting ongoing work or games, simply through pressing the button.

1.4 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, switch off the ATX power supply and detach its power cord. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

1.5 Motherboard overview

1.5.1 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.

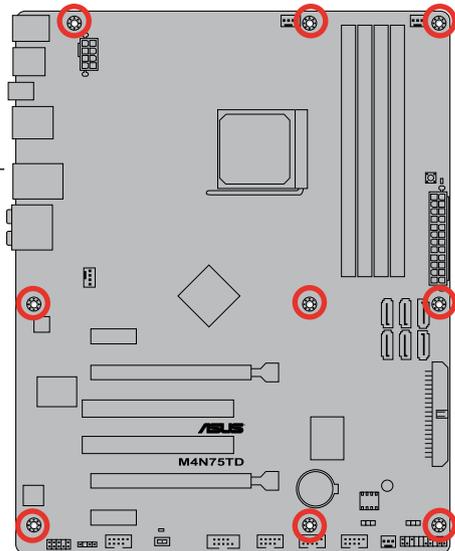
1.5.2 Screw holes

Place nine (9) screws into the holes indicated by circles to secure the motherboard to the chassis.

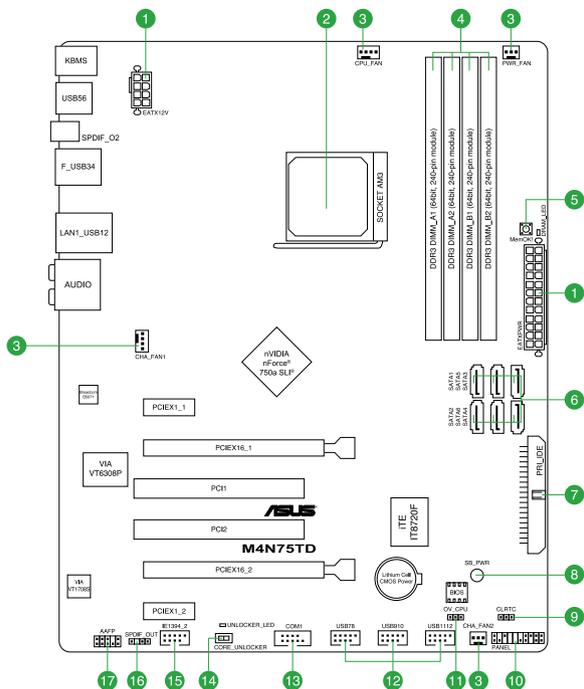


Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis.



1.5.3 Motherboard layout



1.5.4 Layout contents

Connectors/Jumpers/Slots	Page
1. ATX power connectors (24-pin EATXPWR, 8-pin EATX12V)	1-24
2. CPU socket AM3	1-6
3. CPU, Chassis and Power Fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN1, 3-pin CHA_FAN2, 3-pin PWR_FAN)	1-26
4. DDR3 DIMM slots	1-9
5. MemOK! switch	1-18
6. Serial ATA connectors (7-pin SATA1-6)	1-25
7. IDE connector (40-1 pin PRI_IDE)	1-23
8. Standby power LED (SB_PWR)	1-19
9. Clear RTC RAM (CLRTC)	1-16
10. System panel connector (20-8 pin PANEL)	1-27
11. CPU overvoltage setting (3-1 pin OV_CPU)	1-17
12. USB connectors (10-1 pin USB78, USB910, USB1112)	1-28
13. Serial port connector (10-1 pin COM1)	1-29
14. Core Unlocker switch (CORE_UNLOCKER)	1-19
15. IEEE 1394a connector (10-1 pin IE1394_2)	1-30
16. Digital audio connector (4-1 pin SPDIF_OUT)	1-28
17. Front panel audio connector (10-1 pin AAFP)	1-29

1.6 Central Processing Unit (CPU)

The motherboard comes with an AM3 socket designed for AMD® Phenom™ II / Athlon™ II / Sempron™ 100 Series Processors.

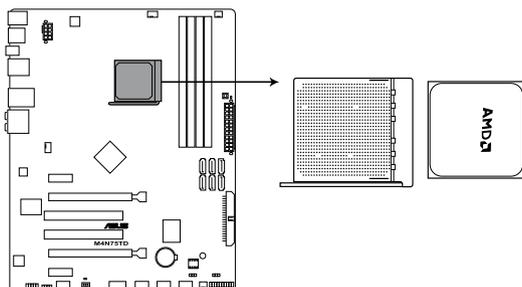


The CPU socket is not compatible with AMD® Opteron™ processors. Do not install an Opteron™ processor on this motherboard.

1.6.1 Installing the CPU

To install a CPU:

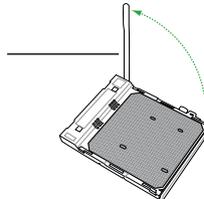
1. Locate the CPU socket on the motherboard.



M4N75TD CPU socket AM3

2. Press the lever sideways to unlock the socket, then lift it up to a 90°–100° angle.

Socket lever

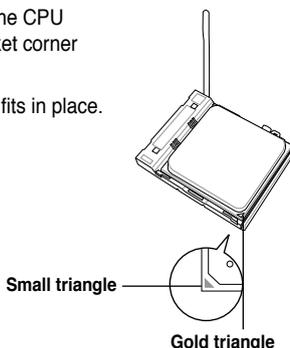


Ensure that the socket lever is lifted up to 90°–100° angle, otherwise the CPU will not fit in completely.

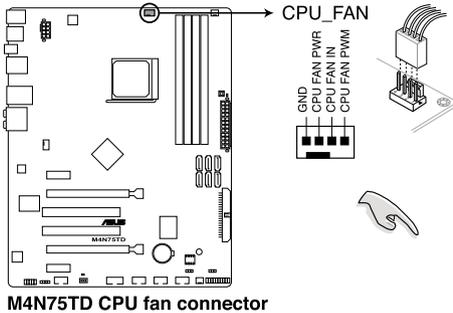
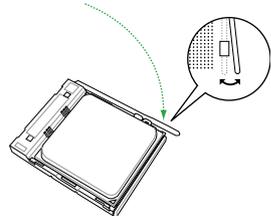
3. Position the CPU above the socket such that the CPU corner with the gold triangle matches the socket corner with a small triangle.
4. Carefully insert the CPU into the socket until it fits in place.



The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to prevent bending the pins and damaging the CPU!



- 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.
- Install a CPU heatsink and fan following the instructions that came with the heatsink package. You can also refer to section **1.6.2 Installing the heatsink and fan** for instructions.
- Connect the CPU fan cable to the CPU_FAN connector on the motherboard.



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

1.6.2 Installing the heatsink and fan



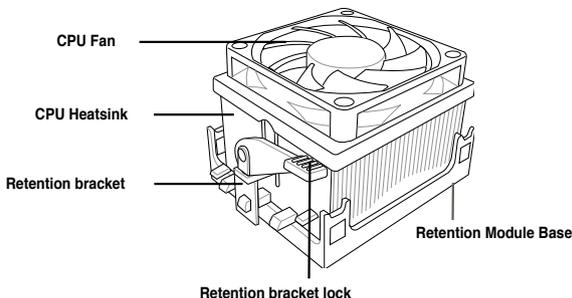
Ensure that you use only AMD-certified heatsink and fan assembly.

To install the CPU heatsink and fan:

- Place the heatsink on top of the installed CPU, making sure that the heatsink fits properly on the retention module base.



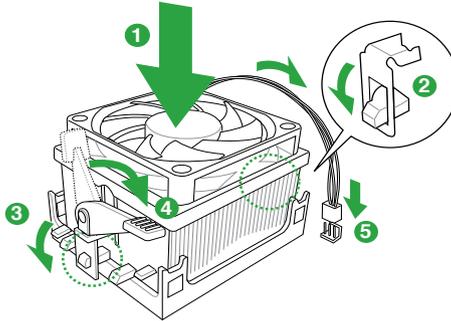
- The retention module base is already installed on the motherboard upon purchase.
- You do not have to remove the retention module base when installing the CPU or installing other motherboard components.
- If you purchased a separate CPU heatsink and fan assembly, ensure that a Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly.





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 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.

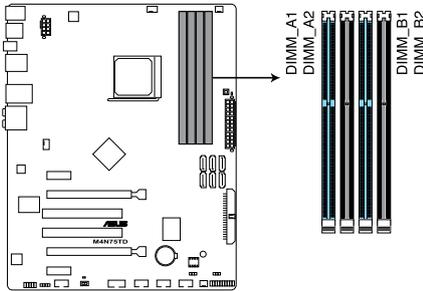


Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

1.7 System memory

1.7.1 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:



M4N75TD 240-pin DDR3 DIMM sockets

Channel	Sockets
Channel A	DIMM_A1 and DIMM_B1
Channel B	DIMM_A2 and DIMM_B2

1.7.2 Memory configurations

You may install 1GB, 2GB and 4GB unbuffered ECC/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.
- Always install DIMMs with the same CAS latency. For optimum compatibility, we recommend 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 install a 64-bit Windows OS when having 4GB or more memory installed on the motherboard.
- This motherboard does not support DIMMs made up of 512Mb (64MB) 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 **2.4 Ai Tweaker 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.

M4N75TD Motherboard Qualified Vendors Lists (QVL)

DDR3-1600MHz capability

Vendor	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)			
								1 DIMM	2 DIMM	3 DIMM	4 DIMM
A-DATA	AX3U1600PB1G8-2P	2GB(2 x 1GB)	SS	-	-	8-8-8-24	1.65-1.85	*	*	*	*
A-DATA	AD31600E001GMU	3GB(3 x 1GB)	SS	-	-	8-8-8-24	1.65-1.85	*	*	*	*
A-DATA	AX3U1600PB1G8-3P	3GB(3 x 1GB)	SS	-	-	8-8-8-24	1.65-1.85	*	*	*	*
A-DATA	AX3U1600GB2G9-AG(XMP)	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.65-1.85	*	*	*	*
A-DATA	AX3U1600XB2G7-EF(XMP)	4GB(2 x 2GB)	DS	-	-	7-7-7-20	1.75-1.85	*	*	*	*
A-DATA	AD31600F002GMU(XMP)	6GB(3 x 2GB)	DS	-	-	7-7-7-20	1.75-1.85	*	*	*	*
A-DATA	AX3U1600GB2G9-3G(XMP)	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.65-1.85	*	*	*	*
A-DATA	AX3U1600GB2G9-3G(XMP)	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.65-1.85	*	*	*	*
A-DATA	AX3U1600GB2G9-3G	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.65-1.85	*	*	*	*
A-DATA	AX3U1600XB2G7-FF(XMP)	6GB(3 x 2GB)	DS	-	-	7-7-7-20	1.75-1.85	*	*	*	*
CORSAIR	TR3X3G1600C8D	3GB(3 x 1GB)	SS	-	-	8-8-8-24	1.65	*	*	*	*
CORSAIR	TR3X3G1600C8DVer2.1(XMP)	3GB(3 x 1GB)	SS	-	-	8-8-8-24	1.65	*	*	*	*
CORSAIR	TR3X3G1600C9Ver1.1(XMP)	3GB(3 x 1GB)	SS	-	-	9-9-9-24	1.65	*	*	*	*
CORSAIR	CMD4GX3M2A1600C8(XMP)	4GB(2 x 2GB)	DS	-	-	8-8-8-24	1.65	*	*	*	*
CORSAIR	CMG4GX3M2A1600C7(XMP)	4GB(2 x 2GB)	DS	-	-	7-7-7-20	1.65	*	*	*	*
CORSAIR	CMX4GX3M2A1600C9(XMP)	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.65	*	*	*	*
CORSAIR	TR3X6G1600C8D	6GB(3 x 2GB)	DS	-	-	8-8-8-24	1.65	*	*	*	*
CORSAIR	TR3X6G1600C8DVer2.1(XMP)	6GB(3 x 2GB)	DS	-	-	8-8-8-24	1.65	*	*	*	*
CORSAIR	TR3X6G1600C9Ver2.1(XMP)	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.65	*	*	*	*
CORSAIR	CMD8GX3M4A1600C8(XMP)	8GB(4 x 2GB)	DS	-	-	8-8-8-24	1.65	*	*	*	*
CORSAIR	CMX8GX3M4A1600C9(XMP)	8GB(4 x 2GB)	DS	-	-	9-9-9-24	1.65	*	*	*	*
Crucial	BL12864BA1608.8SFB(XMP)	1GB	SS	-	-	-	1.8	*	*	*	*
Crucial	BL25664BN1608.16FF(XMP)	2GB	DS	-	-	8-8-8-24	1.65	*	*	*	*
G.SKILL	F3-12800CL9D-2GBNQ	2GB(2 x 1GB)	SS	-	-	-	1.6	*	*	*	*
G.SKILL	F3-12800CL9D-4GBRL	2GB(2 x 1GB)	SS	-	-	-	1.6	*	*	*	*
G.SKILL	F3-12800CL7D-4GBRH(XMP)	4GB(2 x 2GB)	DS	-	-	7-7-7-24	1.65	*	*	*	*
G.SKILL	F3-12800CL8D-4GBRM(XMP)	4GB(2 x 2GB)	DS	-	-	8-8-8-24	1.6	*	*	*	*
G.SKILL	F3-12800CL9D-4GBECO(XMP)	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.35	*	*	*	*
G.SKILL	F3-12800CL8T-6GBPI(XMP)	6GB(3 x 2GB)	DS	-	-	8-8-8-21	1.6-1.65	*	*	*	*
G.SKILL	F3-12800CL9T-6GBNQP	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.5-1.6	*	*	*	*
KINGMAX	FLGD45F-B8MF7(XMP)	1GB	SS	-	-	-	-	*	*	*	*
KINGMAX	FLGE85F-B8MF7(XMP)	2GB	DS	-	-	-	-	*	*	*	*
KINGSTON	KHX1600C9D3K3/12GX(XMP)	12GB(3 x 4GB)	DS	-	-	-	1.65	*	*	*	*
KINGSTON	KHX1600C9D3K3/12GX(XMP)	12GB(3 x 4GB)	DS	-	-	9	1.65	*	*	*	*
KINGSTON	KHX1600C8D3K2/4GX(XMP)	4GB(2 x 2GB)	DS	-	-	8	1.65	*	*	*	*
KINGSTON	KHX1600C8D3K2/4GX(XMP)	4GB(2 x 2GB)	DS	-	-	8	1.65	*	*	*	*
KINGSTON	KHX1600C8D3T1K2/4GX(XMP)	4GB(2 x 2GB)	DS	-	-	8	1.65	*	*	*	*
KINGSTON	KHX1600C9D3K2/4G	4GB(2 x 2GB)	DS	-	-	-	1.7-1.9	*	*	*	*
KINGSTON	KHX1600C9D3K3/6GX(XMP)	6GB(3 x 2GB)	DS	-	-	9	1.65	*	*	*	*
OCZ	OCZ3OB1600LV4GK	4GB(2 x 2GB)	DS	-	-	9-9-9	1.65	*	*	*	*
OCZ	OCZ3P1600LV4GK	4GB(2 x 2GB)	DS	-	-	7-7-7	1.65	*	*	*	*
OCZ	OCZ3X16004GK(XMP)	4GB(2 x 2GB)	DS	-	-	7-7-7	1.9	*	*	*	*
OCZ	OCZ3G1600LV6GK	6GB(3 x 2GB)	DS	-	-	8-8-8	1.65	*	*	*	*
OCZ	OCZ3X1600LV6GK(XMP)	6GB(3 x 2GB)	DS	-	-	8-8-8	1.65	*	*	*	*
OCZ	OCZ3X1600LV6GK(XMP)	6GB(3 x 2GB)	DS	-	-	8-8-8	1.65	*	*	*	*
Super Talent	WP160UX4G8(XMP)	4GB(2 x 2GB)	DS	-	-	8	-	*	*	*	*
Super Talent	WP160UX4G9(XMP)	4GB(2 x 2GB)	DS	-	-	9	-	*	*	*	*
Super Talent	WB160UX6G8(XMP)	6GB(3 x 2GB)	DS	-	-	-	-	*	*	*	*
Super Talent	WB160UX6G8(XMP)	6GB(3 x 2GB)	DS	-	-	8	-	*	*	*	*
Cell Shock	CS322271	2GB(2 x 1GB)	DS	-	-	7-7-7-14	1.7-1.9	*	*	*	*
EK Memory	EKM324L28BP8-I16(XMP)	4GB(2 x 2GB)	DS	-	-	9	-	*	*	*	*
Elixir	M2Y2G64CB8HA9N-DG(XMP)	2GB	DS	-	-	-	-	*	*	*	*
Mushkin	996657	4GB(2 x 2GB)	DS	-	-	7-7-7-20	-	*	*	*	*
Mushkin	998659(XMP)	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.5-1.6	*	*	*	*
Patriot	PVT33G1600ELK	3GB(3 x 1GB)	SS	-	-	9-9-9-24	1.65	*	*	*	*
PATRIOT	PGS34G1600LLKA	4GB(2 x 2GB)	DS	-	-	7-7-7-20	1.7	*	*	*	*
Patriot	PVS34G1600ELK	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.8	*	*	*	*
Patriot	PVS34G1600LLK(XMP)	4GB(2 x 2GB)	DS	-	-	7-7-7-20	1.9	*	*	*	*
Patriot	PVS34G1600LLK	4GB(2 x 2GB)	DS	-	-	7-7-7-20	2.0	*	*	*	*
Patriot	PVT36G1600ELK	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.65	*	*	*	*
Patriot	PVT36G1600ELK	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.65	*	*	*	*
Patriot	PVT36G1600LLK(XMP)	6GB(3 x 2GB)	DS	-	-	8-8-8-24	1.65	*	*	*	*
Team	BoxP/N:TXD34096M1600HC6DC-L (TXD32048M1600HC-L)(XMP)	4GB(2 x 2GB)	DS	-	-	6-7-6-18	1.65	*	*	*	*

DDR3-1333MHz capability

Vendor	Part No.	Size	SS/DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								1 DIMM	2 DIMM	4 DIMM
A-DATA	AD3133301GOU	1GB	SS	A-DATA	AD30908C8D-151G	-	-	*	*	*
A-DATA	AD31333002GOU	2GB	DS	A-DATA	AD30908C8D-151G	-	-	*	*	*
A-DATA	AD3U1333B2G9-2	2GB	DS	A-DATA	AD30908C8D-151G	-	-	*	*	*
A-DATA	AX3U1333PB2G7-2P	4GB(2 x 2GB)	DS	-	-	7-7-7-20	1.65-1.85	*	*	*
A-DATA	AD3U1333C4G9-B	4GB	DS	Hynix	H5TQ2G83AFRH9C	1333-9-9-24	-	*	*	*
A-DATA	AD31333E002G0U	6GB(3 x 2GB)	DS	-	-	7-7-7-20	1.65-1.85	*	*	*
A-DATA	AX3U1333PB2G7-3P	6GB(3 x 2GB)	DS	-	-	7-7-7-20	1.65-1.85	*	*	*
Apacer	78.A1GC6.9L1	2GB	DS	Apacer	AM5D5808DEWSBG	9	-	*	*	*
CORSAIR	TR3X3G1333C9 (Ver2.1)	3GB(3 x 1GB)	SS	-	-	9-9-9-24	1.5	*	*	*
CORSAIR	CM3X1024-1333C9DHX	1GB	DS	-	-	-	1.1	*	*	*
CORSAIR	BoxP/N-TWIN3X2048-1333C9 (CM3X1024-1333C9)Ver1.1	2GB(2 x 1GB)	DS	-	-	9-9-9-24	1.70	*	*	*
CORSAIR	CM3X2G1333C9	2GB	DS	-	-	9-9-9-24	1.5	*	*	*
CORSAIR	BoxP/N-TW3X4G1333C9DHX (CM3X2048-1333C9DHX)Ver3.2	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.70	*	*	*
CORSAIR	TR3X6G1333C9 (Ver2.1)	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.5	*	*	*
CORSAIR	CMX8GX3M4A1333C9	8GB(4 x 2GB)	DS	-	-	9-9-9-24	1.5	*	*	*
Crucial	CT12864BA1339.8FF	1GB	SS	MICRON	D9KPT	9	-	*	*	*
Crucial	CT12864BA1339.85FD	1GB	SS	MICRON	MT8JF12864AY-1G4D1	9	-	*	*	*
Crucial	CT12872BA1339.9FF	1GB	SS	MICRON	D9KPT(ECC)	9	-	*	*	*
Crucial	BL25664BN1337.16FFF(XMP)	2GB	DS	-	-	7-7-7-24	1.65	*	*	*
Crucial	CT25664BA1339.16FF	2GB	DS	MICRON	D9KPT	9	-	*	*	*
Crucial	CT25664BA1339.16SFD	2GB	DS	MICRON	D9JNM	-	-	*	*	*
Crucial	CT25672BA1339.16FF	2GB	DS	MICRON	D9KPT(ECC)	9	-	*	*	*
Crucial	BL25664BA1336.16SFB1	4GB(2 x 2GB)	DS	NA	-	6-6-6-20	1.8	*	*	*
ELPIDA	EBJ10UE8BAW0-DJ-E	1GB	SS	ELPIDA	J1108BABG-DJ-E	9	-	*	*	*
ELPIDA	EBJ10UE8BDF0-DJ-F	1GB	SS	ELPIDA	J1108BDSE-DJ-F	-	-	*	*	*
ELPIDA	EBJ10UE8EDF0-DJ-F	1GB	SS	ELPIDA	J1108EDSE-DJ-F	-	-	*	*	*
ELPIDA	EBJ21UE8BAW0-DJ-E	2GB	DS	ELPIDA	J1108BABG-DJ-E	9	-	*	*	*
ELPIDA	EBJ21UE8BDF0-DJ-F	2GB	DS	ELPIDA	J1108BDSE-DJ-F	-	-	*	*	*
ELPIDA	EBJ21UE8EDF0-DJ-F	2GB	DS	ELPIDA	J1108EDSE-DJ-F	-	-	*	*	*
G.SKILL	F3-10600CL8D-2GBHK	2GB(2 x 1GB)	SS	-	-	-	1.65	*	*	*
G.SKILL	F3-10666CL7T-6GBPK(XMP)	2GB	DS	-	-	7-7-7-18	1.5-1.6	*	*	*
G.SKILL	F3-10666CL7D-4GBPH(XMP)	4GB(2 x 2GB)	DS	-	-	7-7-7-21	1.5	*	*	*
G.SKILL	F3-10666CL7D-4GBRH(XMP)	4GB(2 x 2GB)	DS	-	-	7-7-7-21	1.5	*	*	*
G.SKILL	F3-10666CL8D-4GBECO(XMP)	4GB(2 x 2GB)	DS	-	-	8-8-8-24	1.35	*	*	*
G.SKILL	F3-10666CL8D-4GBHK(XMP)	4GB(2 x 2GB)	DS	-	-	8-8-8-21	1.5-1.6	*	*	*
G.SKILL	F3-10666CL8D-4GBRM(XMP)	4GB(2 x 2GB)	DS	-	-	8-8-8-21	1.5-1.6	*	*	*
G.SKILL	F3-10666CL9T-6GBNQ	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.5	*	*	*
GEIL	GG34GB1333C9DC	4GB(2 x 2GB)	DS	GEIL	GL1L128M88BA12N	9-9-9-24	1.3	*	*	*
GEIL	GV34GB1333C7DC	4GB(2 x 2GB)	DS	-	-	7-7-7-24	1.5	*	*	*
Hynix	HMT112U6BFR8C-H9	1GB	SS	Hynix	H5TQ1G83BFR	9	-	*	*	*
Hynix	HMT125U6BFR8C-H9	2GB	DS	Hynix	H5TQ1G83BFR	9	-	*	*	*
Hynix	HMT125U6BFR8C-H9	2GB	DS	Hynix	H5TQ1G83BFRH9C	9	-	*	*	*
KINGMAX	FLFD45F-B8KG9	1GB	SS	KingMax	KFB8FNGBF-ANX-15A	-	-	*	*	*
KINGMAX	FLFE85F-B8KG9	2GB	DS	KingMax	KFB8FNGBF-ANX-15A	-	-	*	*	*
KINGSTON	KVR1333D3N9/1G	1G	SS	Kingston	D1288JELDPGD9U	-	1.5	*	*	*
KINGSTON	KVR1333D3N9/2G	2GB	DS	Qimonda	IDS91G-03A1F1C-13H	9	1.5	*	*	*
KINGSTON	KVR1333D3E9S/4G	4GB	DS	SAMSUNG	K4B2G0846B-HCH9	-	1.5	*	*	*
KINGSTON	KVR1333D3N9/4G	4GB	DS	SAMSUNG	K4B2G0846B-HCH9	9	1.5	*	*	*
MICRON	MT8JTF12864AZ-1G4F1	1GB	SS	MICRON	9FF22 D9KPT	9	-	*	*	*
MICRON	MT8JTF12864AZ-1G4F1	1GB	SS	MICRON	D9KPT	9	-	*	*	*
MICRON	MT9JSF12872AZ-1G4F1	1GB	SS	MICRON	D9KPT(ECC)	9	-	*	*	*
MICRON	MT16JF25664AZ-1G4F1	2GB	DS	MICRON	D9KPT	9	-	*	*	*
MICRON	MT16JTF25664AZ-1G4F1	2GB	DS	MICRON	9FF22 D9KPT	9	-	*	*	*
MICRON	MT18JSF25672AZ-1G4F1	2GB	DS	MICRON	D9KPT(ECC)	9	-	*	*	*
OCZ	OCZ3P1333LV3GK	3GB(3 x 1GB)	SS	-	-	7-7-7	1.65	*	*	*
OCZ	OCZ3G1333LV4GK	4GB(2 x 2GB)	DS	-	-	8-8-8	1.65	*	*	*
OCZ	OCZ3P1333LV4GK	4GB(2 x 2GB)	DS	-	-	7-7-7	1.65	*	*	*
OCZ	OCZ3G1333LV6GK	6GB(3 x 2GB)	DS	-	-	9-9-9	1.65	*	*	*
OCZ	OCZ3P1333LV6GK	6GB(3 x 2GB)	DS	-	-	7-7-7	1.65	*	*	*

DDR3-1333MHz capability (continued)

Vendor	Part No.	Size	SS/ DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								1 DIMM	2 DIMM	4 DIMM
OCZ	OCZX1333LV6GK(XMP)	6GB(3 x 2GB)	DS	NA	-	8-8-8	1.6	*	*	*
PSC	AL7F8G73D-DG1	1GB	SS	PSC	A3P1GF3DGF	-	-	*	*	*
PSC	AL8F8G73D-DG1	2GB	DS	PSC	A3P1GF3DGF	-	-	*	*	*
SAMSUNG	M378B2873DZ1-CH9	1GB	SS	SAMSUNG	K4B1G0846D	9	-	*	*	*
SAMSUNG	M378B2873EH1-CH9	1GB	SS	SAMSUNG	K4B1G0846E	-	-	*	*	*
SAMSUNG	M391B2873DZ1-CH9	1GB	SS	SAMSUNG	K4B1G0846D(ECC)	9	-	*	*	*
SAMSUNG	M378B5673DZ1-CH9	2GB	DS	SAMSUNG	K4B1G0846D	9	-	*	*	*
SAMSUNG	M378B5673EH1-CH9	2GB	DS	SAMSUNG	K4B1G0846E	-	-	*	*	*
SAMSUNG	M391B5673DZ1-CH9	2GB	DS	SAMSUNG	K4B1G0846D(ECC)	9	-	*	*	*
SAMSUNG	M378B5273BH1-CH9	4GB	DS	SAMSUNG	K4B2G0846B-HCH9	9	-	*	*	*
Super Talent	W1333UX2G8(XMP)	2GB(2 x 1GB)	SS	-	-	8	1.8	*	*	*
Asint	SLY3128M8-EDJ	1GB	SS	Asint	DDRIII1208-DJ	-	-	*	*	*
Asint	SLY3128M8-EDJE	1GB	SS	ELPIDA	J1108BASE-DJ-E	-	-	*	*	*
Asint	SLZ3128M8-EDJ	2GB	DS	Asint	DDRIII1208-DJ	-	-	*	*	*
Asint	SLZ3128M8-EDJE	2GB	DS	ELPIDA	J1108BASE-DJ-E	-	-	*	*	*
ASUS	N/A	1GB	DS	-	-	-	-	*	*	*
ATP	AQ28M64A8BJH9S	1GB	SS	SAMSUNG	K4B1G0846E	-	-	*	*	*
ATP	AQ28M72D8BJH9S	1GB	SS	SAMSUNG	K4B1G0846D(ECC)	-	-	*	*	*
ATP	AQ56M64A8BJH9S	2GB	DS	SAMSUNG	K4B1G0846D	-	-	*	*	*
ATP	AQ56M72E8BJH9S	2GB	DS	SAMSUNG	K4B1G0846D(ECC)	-	-	*	*	*
BUFFALO	FSH1333D3G-T3G(XMP)	3GB(3 x 1GB)	SS	-	-	7-7-7-20	-	*	*	*
EK Memory	EKM324L28BP8-I13	4GB(2 x 2GB)	DS	-	-	9	-	*	*	*
Elixir	M2Y2G64CB8HA9N-CG	2GB	DS	-	-	-	-	*	*	*
Elixir	M2Y2G64CB8HC9N-CG	2GB	DS	-	-	-	-	*	*	*
Patriot	PVT33G1333ELK	3GB(3 x 1GB)	SS	-	-	9-9-9-24	1.65	*	*	*
Patriot	PVS34G1333ELK	4GB(2 x 2GB)	DS	-	-	9-9-9-24	1.5	*	*	*
Patriot	PVS34G1333LLK	4GB(2 x 2GB)	DS	-	-	7-7-7-20	1.7	*	*	*
Patriot	PVT36G1333ELK	6GB(3 x 2GB)	DS	-	-	9-9-9-24	1.65	*	*	*
Silicon Power	SP001GBLTU1333S01	1GB	SS	NANYA	NT5CB128M8AN-CG	-	-	*	*	*
Silicon Power	SP001GBLTU133S02	1GB	SS	S-POWER	I0YT3E0	9	-	*	*	*
Silicon Power	SP002GBLTU133S02	2GB	DS	S-POWER	I0YT3E0	9	-	*	*	*
UMAX	E41302GP0-73BDB	2GB	DS	UMAX	U2S24D30TP-13	-	-	*	*	*

DDR3-1066MHz capability

Vendor	Part No.	Size	SS/ DS	Chip Brand	Chip NO.	Timing	Voltage	DIMM socket support (Optional)		
								1 DIMM	2 DIMM	4 DIMM
Crucial	CT12864BA1067.8FF	1GB	SS	MICRON	D9KPT	7	-	*	*	*
Crucial	CT12864BA1067.8SFD	1GB	SS	MICRON	D9JNL	7	-	*	*	*
Crucial	CT12872BA1067.9FF	1GB	SS	MICRON	D9KPT(ECC)	7	-	*	*	*
Crucial	CT25664BA1067.16FF	2GB	DS	MICRON	D9KPT	7	-	*	*	*
Crucial	CT25664BA1067.16SFD	2GB	DS	MICRON	D9JNL	7	-	*	*	*
Crucial	CT25672BA1067.18FF	2GB	DS	MICRON	D9KPT(ECC)	7	-	*	*	*
ELPIDA	EBJ10UE8BAW0-AE-E	1GB	SS	ELPIDA	J1108BABG-DJ-E	7	-			
ELPIDA	EBJ10UE8EDF0-AE-F	1GB	SS	ELPIDA	J1108EDSE-DJ-F	-	-	*	*	*
ELPIDA	EBJ11RD8BAFA-AE-E	1GB	DS	ELPIDA	J5308BASE-AC-E(ECC)	7	-			
ELPIDA	EBJ11UD8BAFA-AG-E	1GB	DS	ELPIDA	J5308BASE-AC-E	8	-			
ELPIDA	EBJ21UE8BAW0-AE-E	2GB	DS	ELPIDA	J1108BABG-DJ-E	7	-	*	*	*
ELPIDA	EBJ21UE8EDF0-AE-F	2GB	DS	ELPIDA	J1108EDSE-DJ-F	-	-	*	*	*
Hynix	HMT112U6AFP8C-G7N0	1GB	SS	HYNIX	H5TQ1G83AFP7C	7	-	*	*	*
Hynix	HYMT112U64ZNF8-G7	1GB	SS	HYNIX	HY5TQ1G831ZNF7-G7	7	-	*	*	*
Hynix	HMT125U6AFP8C-G7N0	2GB	DS	HYNIX	H5TQ1G83AFP7C	7	-	*	*	*
Hynix	HYMT125U64ZNF8-G7	2GB	DS	HYNIX	HY5TQ1G831ZNF7-G7	7	-	*	*	*
KINGSTON	KVR1066D3N71G	1GB	SS	KINGSTON	D1288JEKAPA7U	7	1.5	*	*	*
KINGSTON	KVR1066D3N72G	2GB	DS	KINGSTON	D1288JEKAPA7U	7	1.5	*	*	*
KINGSTON	KVR1066D3N72G	2GB	DS	ELPIDA	J1108BABG-DJ-E	-	1.5	*	*	*
KINGSTON	KVR1066D3N74G	4GB	DS	SAMSUNG	K4B2G0846B-HCF8	-	1.5	*	*	*
MICRON	MT8JTF12864AY-1G1D1	1GB	SS	MICRON	7VD22	7	-	*	*	*
MICRON	MT8JTF12864AZ-1G1F1	1GB	SS	MICRON	8ZF22 D9KPV	7	-	*	*	*
MICRON	MT8JTF12864AZ-1G1F1	1GB	SS	MICRON	D9KPT	7	-	*	*	*
MICRON	MT9JSF12872AZ-1G1F1	1GB	SS	MICRON	D9KPT(ECC)	7	-	*	*	*
MICRON	MT16JTF25664AY-1G1D1	2GB	DS	MICRON	7VD22	7	-	*	*	*
MICRON	MT16JTF25664AZ-1G1F1	2GB	DS	MICRON	8ZF22 D9KPV	7	-	*	*	*
MICRON	MT16JTF25664AZ-1G1F1	2GB	DS	MICRON	D9KPT	7	-	*	*	*
MICRON	MT18JSF25672AZ-1G1F1	2GB	DS	MICRON	D9KPT(ECC)	7	-	*	*	*
SAMSUNG	M378B5273BH1-CF8	4GB	DS	SAMSUNG	K4B2G0846B-HCF8	8	1.5	*	*	*
Asint	SLY3128M8-EAE	1GB	SS	Asint	DDRIII1208-AE	-	-	*	*	*
Asint	SLZ3128M8-EAE	2GB	DS	Asint	DDRIII1208-AE	-	-	*	*	*
Elixir	M2Y2G64CB8HA9N-BE	2GB	DS	-	-	-	-	*	*	*
Elixir	M2Y2G64CB8HC5N-BE	2GB	DS	Elixir	N2CB1G80CN-BE	-	-	*	*	*
Elixir	M2Y2G64CB8HC9N-BE	2GB	DS	-	-	-	-	*	*	*
WINTEC	3DUJ3191A-10	1GB	DS	Qimonda	IDSH51-03A1F1C-10F	7	-	*	*	*



Side(s): SS - Single-sided DS - Double-sided DIMM support:

- **A***: Supports one module inserted into either slot as Single-channel memory configuration.
- **B***: Supports two 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 slots and the black slots as two pairs of Dual-channel memory configuration.



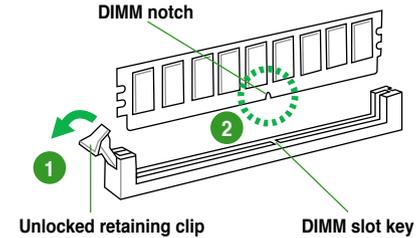
Visit the ASUS website for the latest QVL.

1.7.3 Installing a DIMM



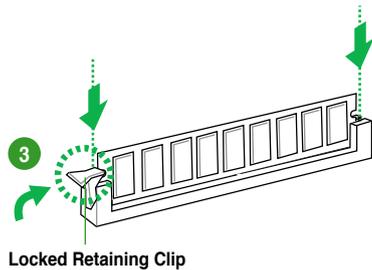
Unplug the power supply before adding or removing DIMMs or other system components. Failure to do so can cause severe damage to both the motherboard and the components.

1. Unlock a DIMM socket by pressing the retaining clip outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the DIMM slot key on the socket.



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

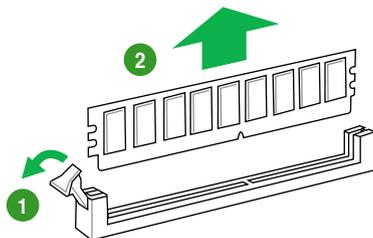
3. Hold the DIMM by both of its ends, then insert the DIMM vertically into the socket. Apply force to both ends of the DIMM simultaneously until the retaining clip snaps back into place, and the DIMM cannot be pushed in any further to ensure proper sitting of the DIMM.



Always insert the DIMM into the socket VERTICALLY to prevent DIMM notch damage.

1.7.4 Removing a DIMM

1. Press the retaining clip outward to unlock the DIMM.
2. Remove the DIMM from the socket.



1.8 Expansion slots

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



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

1.8.1 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.

1.8.2 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. See Chapter 2 for information on BIOS setup.
2. Assign an IRQ to the card.
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.

1.8.3 PCI slots

The PCI slots support cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications.

1.8.4 PCI Express 2.0 x1 slots

This motherboard supports PCI Express x1 network cards, SCSI cards, and other cards that comply with the PCI Express specifications.

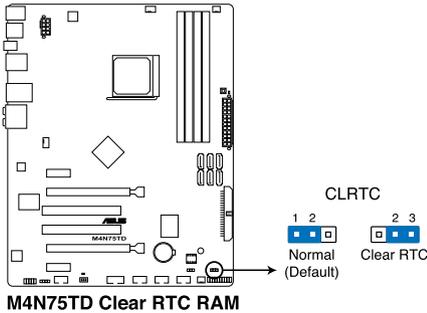
1.8.5 PCI Express 2.0 x16 slots

This motherboard supports two PCI Express 2.0 x16 graphics cards (run at x8 bandwidth) that comply with the PCI Express specifications.

1.9 Jumpers

1. Clear RTC RAM (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.



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 key during the boot process and enter BIOS setup to re-enter data.



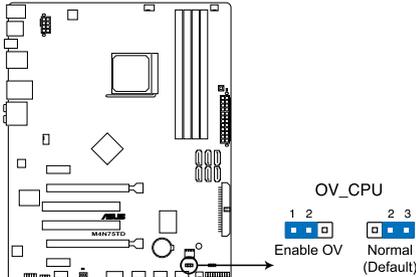
Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!



- 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.



M4N75TD CPU overvoltage setting

OV_CPU	
Pins 2-3 (Default)	0.80V – 1.55V
Pins 1-2 (OV Enabled)	up to 1.60V



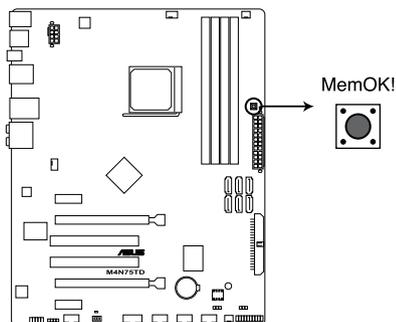
- Before you change the jumper setting for extra-high overvoltage ability, use the BIOS items introduced in **2.5 Ai Tweaker menu** first to adjust the desired CPU performance. Ensure that your system functions well under the highest BIOS voltage setting before you change the setting of this jumper.
- Refer to **2.5 Ai Tweaker 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.

1.10 Onboard switches

Onboard switches allow you to fine-tune performance when working on a bare or open-case system. This is ideal for overclockers and gamers who continually change settings to enhance system performance.

1. MemOK! switch

Installing DIMMs that are incompatible with the motherboard may cause system boot failure, and the DRAM_LED near the MemOK! switch lights continuously. Press and hold the MemOK! switch until the DRAM_LED starts blinking to begin automatic memory compatibility tuning for successful boot.



M4N75TD MemOK! switch



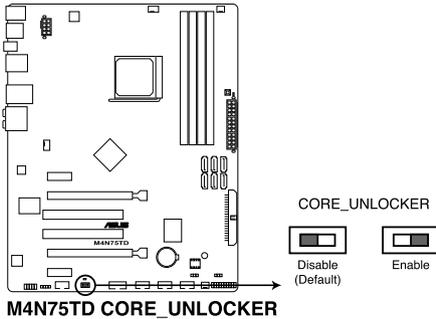
- Refer to section **1.11 Onboard LEDs** for the exact location of the DRAM_LED.
- The DRAM_LED also lights when the DIMM is not properly installed. Turn off the system and reinstall the DIMM before using the MemOK! function.
- Press the MemOK! switch under Windows™ OS environment will reboot the computer and start memory tuning.
- During the tuning process, the system loads and tests failsafe memory settings. It takes about 30 seconds for the system to test one set of failsafe settings. If the test fails, the system reboots and test the next set of failsafe settings. The blinking speed of the DRAM_LED increases, indicating different test processes.
- Due to memory tuning requirement, the system automatically reboots when each timing set is tested. If the installed DIMMs still fail to boot after the whole tuning process, the DRAM_LED lights continuously. Replace the DIMMs with ones recommended in the Memory QVL (Qualified Vendors Lists) in this user manual or on the ASUS website at www.asus.com.
- If you turn off the computer and replace DIMMs during the tuning process, the system continues memory tuning after turning on the computer. To stop memory tuning, turn off the computer and unplug the power cord for about 5–10 seconds.
- If your system fail to boot due to BIOS overclocking, press the MemOK! switch to boot and load BIOS default settings. A message will appear during POST reminding you that the BIOS has been restored to its default settings.
- We recommend that you download and update to the latest BIOS version from the ASUS website at www.asus.com after using the MemOK! function.

2. Core Unlocker switch

This switch allows you to unlock the extra cores of your CPU.



For ensuring the system performance, turn the switch setting to **Enable** when the system is powered off.

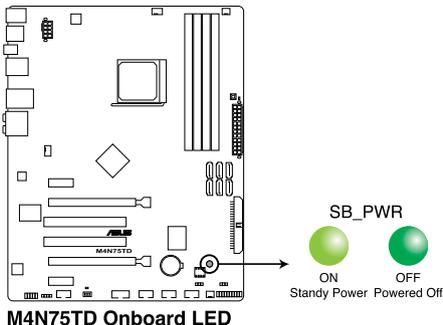


- The **UNLOCKER_LED** near the Core Unlocker switch lights when the switch setting is turned to **Enable**. Refer to section 1.11 **Onboard LEDs** for the exact location of the **UNLOCKER_LED**.
- You may also press <4> during the Power-On-Self-Test (POST) to activate the Core Unlocker function.
- The system will use the last setting you have made.

1.11 Onboard LEDs

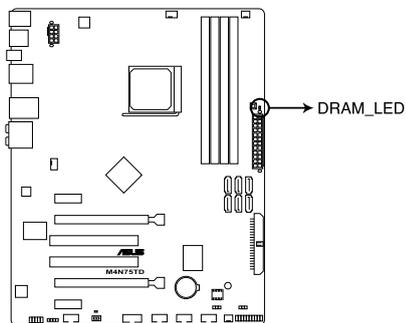
1. Standby Power LED

The motherboard comes with a standby power LED. The green LED 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.



2. DRAM LED

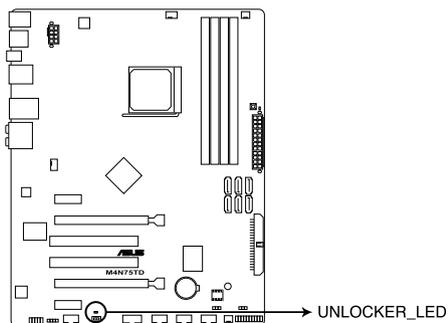
DRAM LED checks the DRAM in sequence during motherboard booting process. If an error is found, the LED next to the error device will continue lighting until the problem is solved. This user-friendly design provides an intuitional way to locate the root problem within a second.



M4N75TD DRAM LED

3. Core Unlocker LED

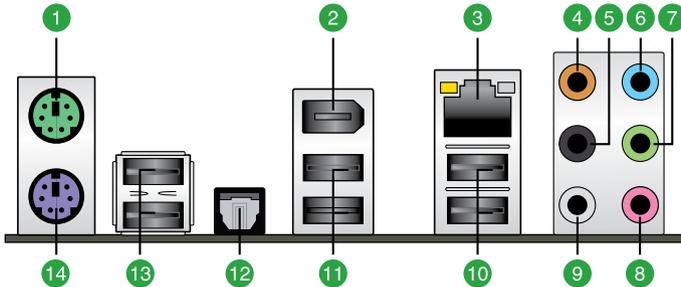
The Core Unlocker LED lights when the Core Unlocker switch is turned to **Enable**.



M4N75TD CORE_UNLOCKER LED

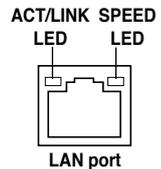
1.12 Connectors

1.12.1 Rear panel connectors



1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **IEEE 1394a port.** This 6-pin IEEE 1394a port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.
3. **LAN (RJ-45) port.** This port allows Gigabit connection to a Local Area Network (LAN) through a network hub.

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



4. **Center/Subwoofer port (orange).** This port connects the center/subwoofer speakers.
5. **Rear Speaker Out port (black).** This port connects the rear speakers in a 4-channel, 6-channel, or 8-channel audio configuration.
6. **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.
7. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.
8. **Microphone port (pink).** This port connects a microphone.
9. **Side Speaker Out port (gray).** This port connects the side speakers in an 8-channel audio configuration.



Refer to the audio configuration table on next page for the function of the audio ports in 2, 4, 6, or 8-channel configuration.

Audio 2, 4, 6, 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 Ou	Rear Speaker Out
Gray	–	–	–	Side Speaker Out

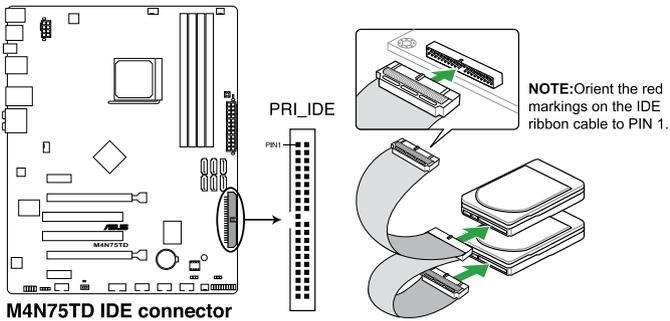
- 10. USB 2.0 ports 1 and 2.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 11. USB 2.0 ports 3 and 4.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 12. Optical S/PDIF Out port.** This port connects an external audio output device via an optical S/PDIF cable.
- 13. USB 2.0 ports 5 and 6.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 14. PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.

1.12.2 Internal connectors

1. IDE connector (40-pin PRI_IDE)

The onboard IDE connector is for 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 devices:

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



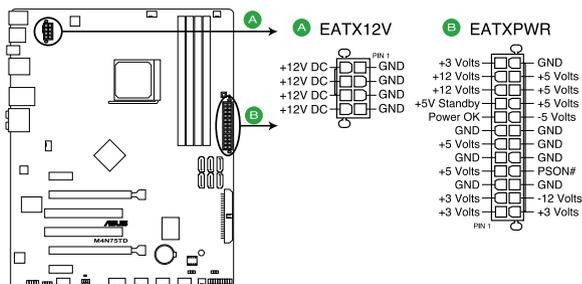
- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 133/100/66 IDE devices.



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

2. ATX power connectors (24-pin EATXPWR, 8-pin EATX12V)

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



M4N75TD ATX power connectors

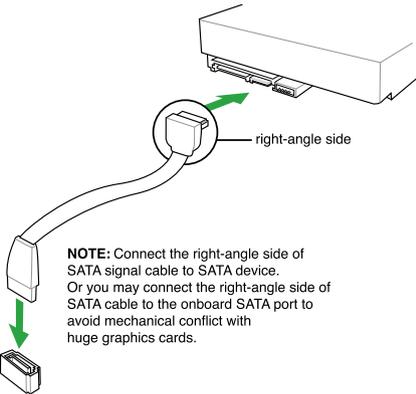
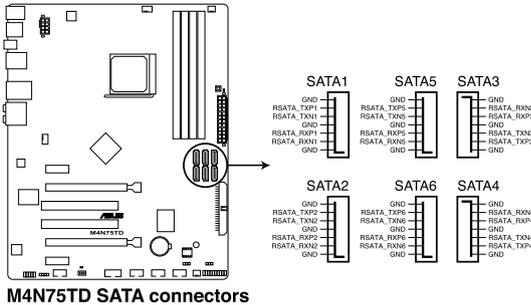


- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 350W.
- Do not forget to connect the 8-pin EATX +12 V power plug; otherwise, the system will not boot.
- Use of a PSU with a higher power output is recommended 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 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.
- If you want to use two or more high-end PCI Express x16 cards, use a PSU with 1000W power or above to ensure the system stability.

PSU suggested list		
AcBel PC7030	EnerMAX EGX1000EWL	Seasonic SS-550HT
AcBel API4PC24	EnerMAX EG495AX-VE (E)(24P)	Seasonic SS-600HT
Antec EA-380	EnerMAX ELT500AWT	Seventeam ST-522HLP
Delta GPS-550AB	EnerMAX EIN720AWT	Seventeam ST550EAJ-05F
ASUS P-50GA	FSP FSP500-60GLN	Seventeam ST-420BKP
ASUS P-55GA	FSP ATX-300PNR	Snake PSH850V
ASUS U-65GA	Gigabyte P610A-C1	Snake PSH500V
ASUS U-75HA	GoldenField ATX-S398	Silverstone SST-ST85F
Be quiet P6-PRO-850W	GoldenField ATX-S550	Silverstone ZM1200M
Be quiet BN077	GreatWall BTX-600SE	Silverstone SST-ST50EF
Be quiet BN073	HECHUAN ST-ATX330	Silverstone PSU ST562F
Bubalus PE600WJD	Huntkey 磐石500	Tagan TG1100-U33
CoolerMaster RS-850EMBA	Huntkey R85	T.C.STAR D420
CoolerMaster RS-A00-ESBA	I-cuteAP-600S	Thermaltake W0133RU
CoolerMaster RS-650	OCZ OCZGXS850	Thermaltake W0171
CoolerMaster RS-750	OCZ OCZ1000PXS	Thermaltake TWW500W-AP
Corsair CMPSU-620HX	SAMA YUHUI-350P	Thermaltake PUREPower-600AP
Corsair HX1000W	Seasonic SS-850EM	TOPower TOP-500P5
Coolive AP-350F	Seasonic SS-900HP	Zippy HP2-6500PE (G1)
CWT PSH650V-D	Seasonic SS-351HT	Zippy PSL6720P
CWT PSH750V-D	Seasonic SS-460HS	
Delta GPS-350AB	Seasonic SS-500HM	

3. NVIDIA nForce® 750a SLI® Serial ATA connectors (7-pin SATA1-6)

These connectors are for the Serial ATA signal cables for Serial ATA 3Gb/s hard disk and optical disk drives. The Serial ATA 3Gb/s is backward compatible with Serial ATA 1.5Gb/s specification. The data transfer rate of the Serial ATA 3Gb/s is faster than the standard parallel ATA with 133 MB/s (Ultra DMA133). If you install SATA hard disk drives to the SATA connectors, you can create a RAID 0, RAID 1, RAID 0+1, RAID 5, or JBOD configuration through the onboard NVIDIA nForce® 750a SLI® controller.



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.



- SATA 5-6 connectors support AHCI mode and RAID mode only. Make sure to install the AHCI driver or RAID driver in the bundled support DVD before connecting devices to SATA 5-6 connectors. Otherwise, the devices will not work.
- Due to chipset limitation, when set any of SATA ports to RAID mode, all SATA ports run at RAID mode together.
- You must install Windows XP® Service Pack 2 or later version before using Serial ATA hard disk drives.



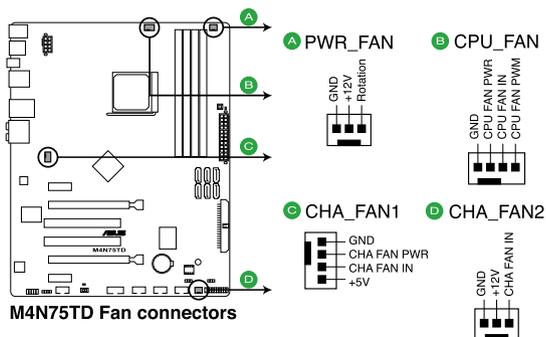
- SATA1-4 connectors are set to [IDE Mode] by default. If you intend to create a Serial ATA RAID set using these connectors, set the SATA Mode select item in the BIOS to [RAID Mode]. See page 2-10 for details.
- Before creating a RAID set, refer to the manual bundled in the motherboard support DVD.

4. CPU, Chassis and Power Fan connectors (4-pin CPU_FAN, 4-pin CHA_FAN1, 3-pin CHA_FAN2, 3-pin PWR_FAN)

Connect the fan cables to the fan connectors on the motherboard, ensuring that the black wire of each cable matches the ground pin of the connector.



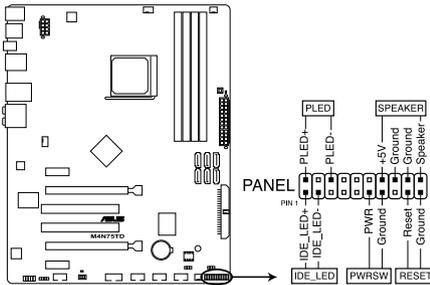
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors.



- The CPU_FAN connector supports the CPU fan of maximum 1A (12 W) fan power.
- Only the CPU_FAN, CHA_FAN1 and CHA_FAN2 connectors support the ASUS Fan Xpert feature.
- If you install two VGA cards, we recommend that you plug the rear chassis fan cable to the motherboard connector labeled CHA_FAN1 or CHA_FAN2 for better thermal environment.

5. System panel connector (20-pin PANEL)

This connector supports several chassis-mounted functions.



M4N75TD System panel connector

- **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 PWRSR)**

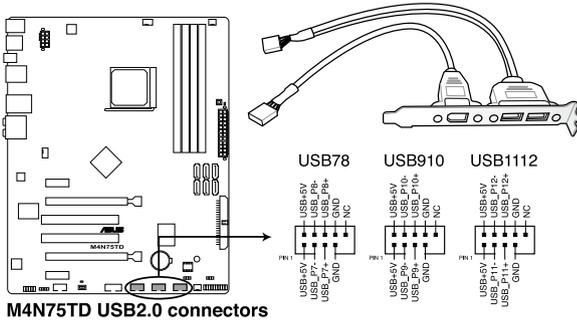
This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **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.

6. USB connectors (10-1 pin USB78, 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.



M4N75TD USB2.0 connectors



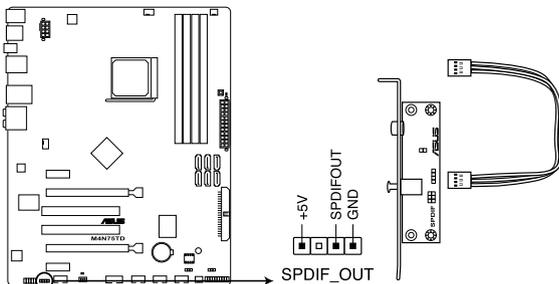
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!



The USB 2.0 module is purchased separately.

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

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) ports.



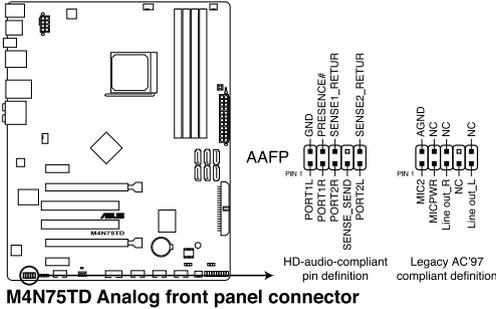
M4N75TD Digital audio connector



The S/PDIF module is purchased separately.

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

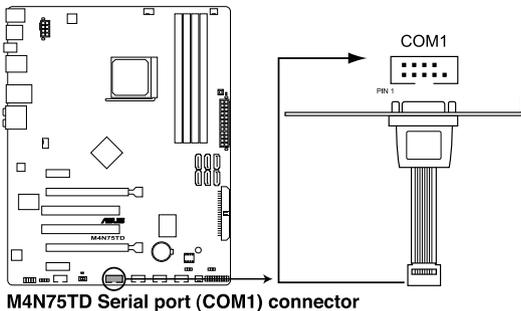
This connector is for a chassis-mounted front panel audio I/O module that supports either High Definition Audio or AC'97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.



- We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard high-definition audio capability.
- If you want to connect a high-definition front panel audio module to this connector, ensure that the **Front Panel Select** item in the BIOS is set to [HD Audio]. If you want to connect an AC'97 front panel audio module to this connector, set the item to [AC97]. See page 2-18 for details.

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

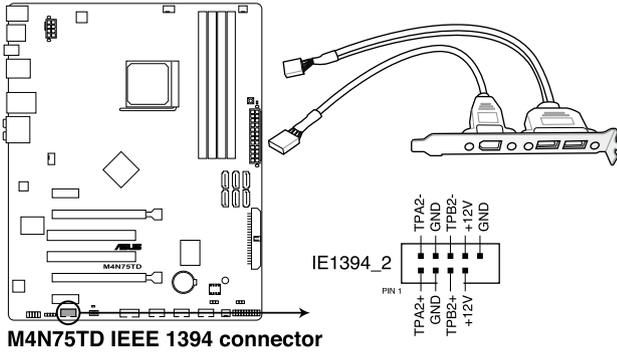
The connector is for a serial (COM) port. Connect the serial port module cable to the connector, then install the module to a slot opening at the back of the system chassis.



The serial port bracket (COM1) is purchased separately.

10. 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.



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

1.13 Software support

1.13.1 Installing an operating system

This motherboard supports Windows® 7/Vista/XP 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 Windows® XP Service Pack 1 or later versions before installing the drivers for better compatibility and system stability.

1.13.2 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.



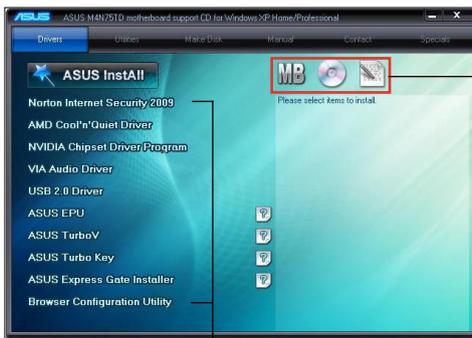
- The contents of the Support DVD are subject to change at any time without notice. Visit the ASUS website at www.asus.com for updates.
- For detailed software instructions, see the **Manual** folder in the Support DVD or download the latest software manual from the ASUS website at www.asus.com.

To run the Support DVD

Place the Support DVD to the optical drive. The DVD automatically displays the Drivers menu if Autorun is enabled in your computer.



The screen on this page is used for reference only.



Click an icon to display Support 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.

1.14 NVIDIA® SLI™ technology support

1.14.1 NVIDIA® SLI™ technology

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

Requirements

- In SLI mode, you should have two identical SLI-ready graphics cards that are NVIDIA® certified.
- Ensure that your graphics card driver supports the NVIDIA SLI technology. Download the latest driver from the NVIDIA website (www.nvidia.com).
- Ensure that your power supply unit (PSU) can provide at least the minimum power required by your system. See page 1-24 for details.



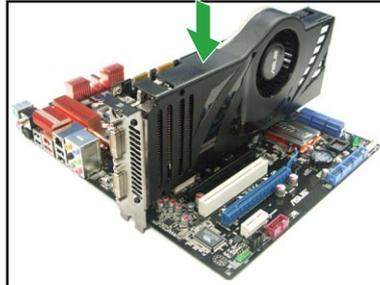
-
- We recommend that you install additional chassis fans for better thermal environment.
 - Visit the NVIDIA zone website (<http://www.nzone.com>) for the latest certified graphics card and supported 3D application list.
-

Installing two SLI-ready graphics cards

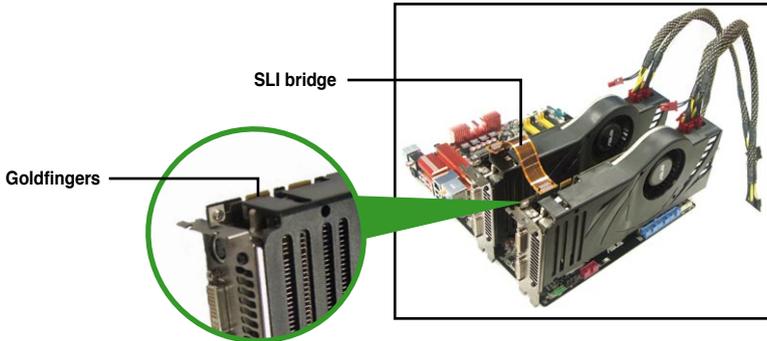


The following pictures are for reference only. The graphics cards and the motherboard layout may vary with models, but the installation steps remain the same.

1. Prepare two SLI-ready graphics cards.
2. Insert the two graphics card into the PCIEX16 slots. If your motherboard has more than two PCIEX16 slots, refer to Chapter 2 in this 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 SLI bridge connector to the goldfingers on each graphics card. Ensure that the connector is firmly in place.
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.



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 NVIDIA® SLI™ technology. Download the latest driver from the NVIDIA website (www.nvidia.com).

Enabling the NVIDIA® SLI™ technology

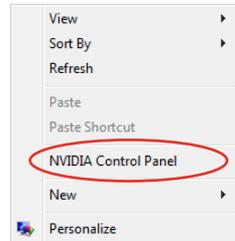
After installing your graphics cards and the device drivers, enable the SLI feature in NVIDIA® Control Panel under the Windows® Vista™ / 7 operating system.

Launching the NVIDIA Control Panel

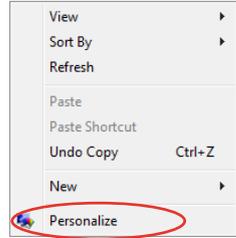
You can launch the NVIDIA Control Panel by the following two methods.

- A. Right click on the empty space of the Windows® desktop and select **NVIDIA Control Panel**.

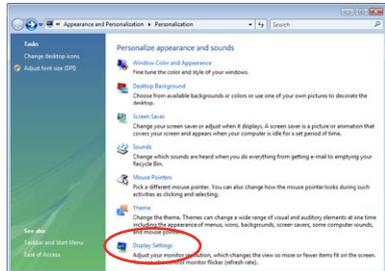
The NVIDIA Control Panel window appears (See Step B5).



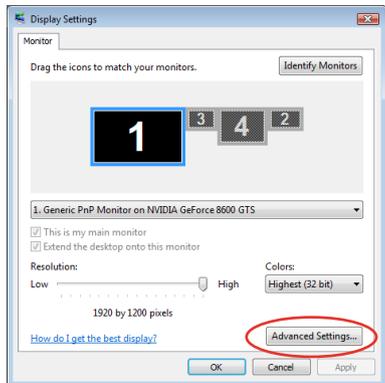
B1. If you cannot see the NVIDIA Control Panel item in step (A), select **Personalize**.



B2. From the **Personalization** window, select **Display Settings**.



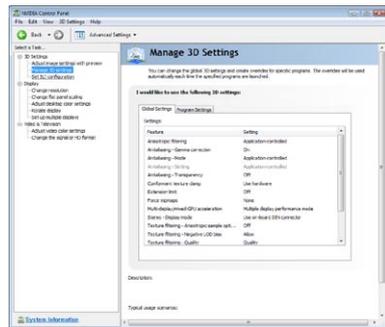
B3. From the Display Settings dialog box, click **Advanced Settings**.



B4. Select the NVIDIA GeForce tab, and then click **Start the NVIDIA Control Panel**.

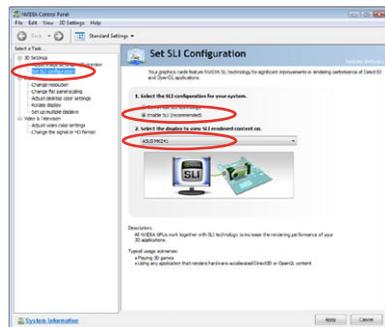


B5. The NVIDIA Control Panel window appears.



Enabling SLI settings

From the NVIDIA Control Panel window, select **Set SLI Configuration**. Click **Enable SLI** and set the display for viewing SLI rendered content. When done, click **Apply**.



1.14.2 NVIDIA® Hybrid SLI™ technology

The motherboard supports the NVIDIA® Hybrid SLI™ technology that includes two primary features: GeForce® Boost and HybridPower™. GeForce® Boost enhances the performance of NVIDIA discrete Graphics Process Units (dGPU) when they work with the onboard motherboard GPU (mGPU). HybridPower™ unleashes the graphics performance of the dGPU and enables low-power operation when the performance of the dGPU is not needed. You can switch from the dGPU(s) to the mGPU for a quiet, power-saving computer environment.



-
- Hybrid SLI technology is supported by Windows® Vista™ / 7 only.
 - Hybrid SLI technology requires at least 2GB system memory to activate.
 - GeForce Boost supports up to two displays simultaneously (both connected to either the mGPU or the dGPU).
 - When two or more displays are connected to both the mGPU and the dGPU, the Hybrid SLI mode is disabled and the multi-display mode is enabled. In the multi-display mode, up to four displays can be connected (two displays driven by the mGPU and two displays by the dGPU).
 - HybridPower requires displays to be connected to the mGPU. HybridPower cannot be enabled when displays are driven through the dGPU.
 - HybridPower and GeForce Boost are supported by certain set of dGPUs. Go to www.nvidia.com/hybridсли to learn the supported GPUs.
-

Enabling GeForce® Boost™



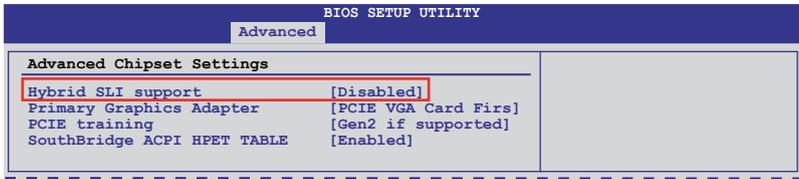
Before enabling GeForce Boost, ensure that you have installed a dGPU recommended for GeForce Boost on your motherboard.

GeForce Boost

1. Turn on the system and press during the Power-On Self-Test (POST) to enter the BIOS Setup Utility.
2. Go to **Advanced > Chipset > SouthBridge Configuration** and set the **Hybrid SLI support** item to [Auto]. See **section 2.5.2 Chipset** for details.



The Hybrid Support item becomes user-configurable only when a dGPU is detected. Ensure that your dGPU is properly installed.



3. Save your changes and Exit Setup.
4. Place the motherboard support DVD into the optical drive, and go to the **Drivers** menu to install the **NVIDIA Chipset Driver Program**.
5. Restart the system.
6. If the driver is correctly installed, you will find the Hybrid SLI icon on the taskbar.

The Hybrid SLI icon indicates that the system is in Performance mode and that GeForce Boost is enabled. The onboard GPU will share the rendering load with the dGPU and boost the performance of the dGPU.



Visit www.asus.com for the latest chipset driver.

To enable HybridPower

- 1. Follow Step 1 to 5 on the previous page to complete the hardware and driver installation.
- 2. If the driver is correctly installed, you will find the Hybrid SLI icon on the taskbar.

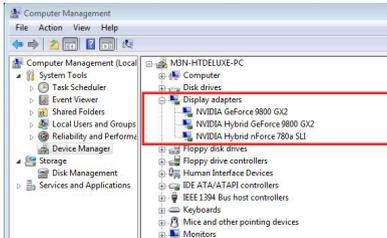


The Hybrid SLI icon indicates that the system is in Performance mode and that rendering is being done by the dGPU. The mGPU is being used only to drive the display.

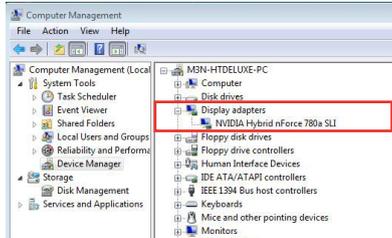
- 3. Click the Hybrid SLI icon and select **Save Power**.
- 4. The icon will change state (from  to ) to indicate that the system is in Power Saving mode, which means that the dGPU is turned off and the mGPU is both rendering and displaying.



- 5. When the Power Saving mode is enabled, the dGPU does not show in the Windows® Device Manager.



Power Saving mode is disabled.



When the Power Saving mode is enabled, the dGPU is turned off and does not appear in the Device Manager.

Chapter 2

BIOS setup

2.1 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.**

2.2 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 utility:** Updates the BIOS in Windows® environment.
2. **ASUS EZ Flash 2 utility:** Updates the BIOS using a USB flash drive.
3. **ASUS CrashFree BIOS 3 utility:** 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.**

2.2.1 ASUS Update utility

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



- ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).
- This utility is available in the support DVD that comes with the motherboard package.

Installing ASUS Update

To install ASUS Update:

1. Place the support DVD in the optical drive. The **Drivers** menu appears.
2. Click the **Utilities** tab, and then click **Install ASUS Update**.
3. Follow the onscreen instructions to complete the installation.



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

Updating the BIOS

To update the BIOS:

1. From the Windows® desktop, click **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate** to launch the ASUS Update utility.
2. From the dropdown list, select any of the updating process:

Updating from the Internet

- a. Select **Update BIOS from the Internet**, and then click **Next**.
- b. Select the ASUS FTP site nearest you to avoid network traffic, or click **Auto Select**, and then click **Next**.
- c. From the FTP site, select the BIOS version that you wish to download, and then click **Next**.



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

Updating from a BIOS file

- a. Select **Update BIOS from a file**, and then click **Next**.
 - b. Locate the BIOS file from the **Open** window, and then click **Open**.
3. Follow the onscreen instructions to complete the updating process.

2.2.2 ASUS EZ Flash 2 utility

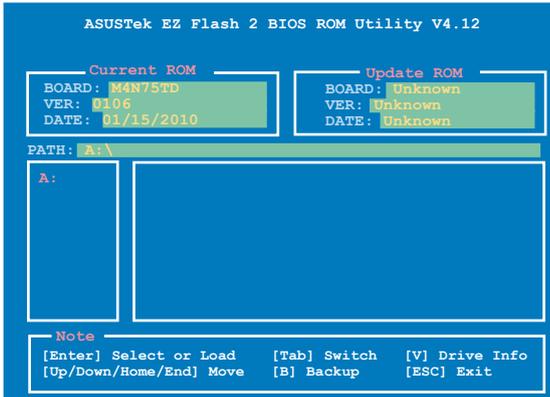
The ASUS EZ Flash 2 feature allows you to update the BIOS without having to use a bootable floppy disk or a DOS-based utility.



Download the latest BIOS file from the ASUS website at www.asus.com.

To update the BIOS using EZ Flash 2:

1. Insert the floppy/USB flash disk that contains the latest BIOS file to the floppy disk drive or the USB port, then launch EZ Flash 2. You can launch EZ Flash 2 in two ways.
 - a. Press **<Alt> + <F2>** during POST to display the following:



- b. Enter the BIOS setup program. Go to the **Tools** menu to select **EZ Flash 2** and press **<Enter>** to enable it.
Press **<Tab>** to switch between drives until the correct BIOS file is found.
4. When the correct BIOS file is found, EZ Flash 2 performs the BIOS update process and automatically reboots the system when done.



- This function can support devices such as USB flash disk, or 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 system boot failure!
-

2.2.3 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 updating the BIOS! Doing so can cause system boot failure!

2.3 BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section **2.1 Managing and updating your BIOS**.

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to "Run Setup". This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware chip.

The firmware chip on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press **** 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, reboot the system by doing any of the following procedures:

- Restart using the OS standard shut-down procedure.
- Press **<Ctrl>+<Alt>+** simultaneously.
- Press the reset button on the system chassis.
- Press the power button to turn the system off then back on.



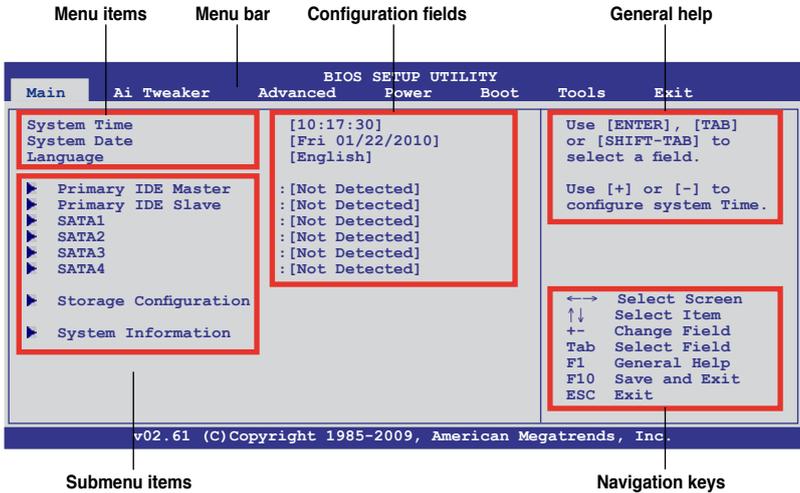
Using the power button, reset button, or the **<Ctrl>+<Alt>+** keys to force reset from a running operating system can cause damage to your data or system. We recommend to always shut-down the system properly from the operating system.

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 make your selections from the available options using the navigation keys.



- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Setups Default** item under the Exit Menu. See section **2.10 Exit Menu**.
 - The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
 - Visit the ASUS website at www.asus.com to download the latest BIOS file for this motherboard.
-

2.3.1 BIOS menu screen



2.3.2 Menu bar

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

- Main** For changing the basic system configuration
- Ai Tweaker** For changing the overclocking settings
- 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 changing the system tools configuration
- Exit** For selecting the exit options and loading default settings

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.



- The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
- Visit the ASUS website at www.asus.com to download the latest BIOS information.

2.3.3 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.



Some of the navigation keys differ from one screen to another.

2.3.4 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.

2.3.5 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>.

2.3.6 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 then press <Enter> to display a list of options. Refer to **2.2.8 Pop-up window**.

2.3.7 General help

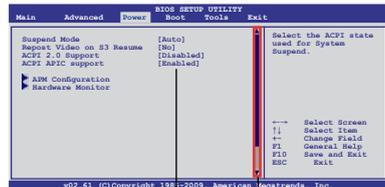
At the top right corner of the menu screen is a brief description of the selected item.

2.3.8 Pop-up window

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

2.3.9 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.



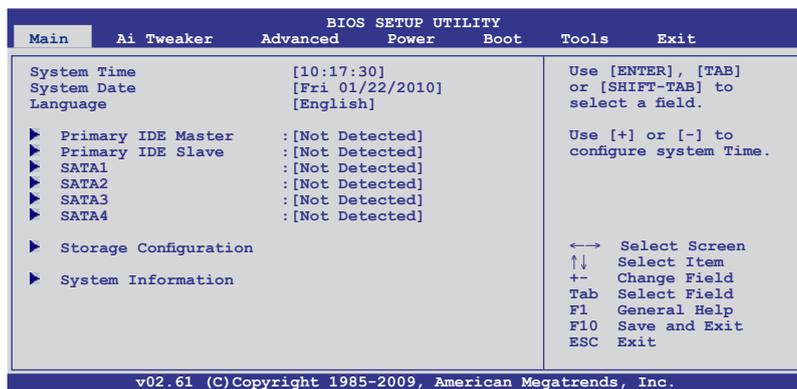
Pop-up window
Scroll bar

2.4 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 section **2.3.1 BIOS menu screen** for information on the menu screen items and how to navigate through them.



2.4.1 System Time [xx:xx:xx]

Allows you to set the system time.

2.4.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

2.4.3 Language [English]

Allows you to select the display language for the BIOS setup screen.

Configuration options: [繁體中文] [简体中文] [日本語] [Français] [Deutsch] [English]

2.4.4 Primary IDE Master/Slave

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

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 device is installed in the system.

Type [Auto]

Selects the type of IDE drive. Setting to [Auto] allows automatic selection of the appropriate IDE device type. Select [CDROM] if you are specifically configuring a CD-ROM drive. Select [ARMD] (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to [Auto] enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-Sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to [Auto], the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode. Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Enabled]

Enables or disables 32-bit data transfer. Configuration options: [Disabled] [Enabled]

2.4.5 SATA 1–4

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

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 Serial ATA device is installed in the system.

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to [Auto] enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to [Auto], the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Selects the PIO mode. Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto]

SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Enabled]

Enables or disables 32-bit data transfer. Configuration options: [Disabled] [Enabled]

2.4.6 Storage Configuration

This menu allows you to configure the IDE/SATA devices.

Onboard PCI IDE Controller [Enabled]

Set to [Disabled] to disable the integrated IDE controller or [Enabled] to enable both the integrated IDE controller and onchip SATA controller.
Configuration options: [Enabled] [Disabled]

OnChip SATA Controller [Enabled]

Enables or disables the OnChip SATA Controller. Configuration options: [Enabled] [Disabled]

SATA Mode select [IDE Mode]

Allows you to select the SATA type.
Configuration options: [IDE Mode] [RAID Mode] [AHCI Mode]



-
- If you want the Serial ATA hard disk drives to use the Advanced Host Controller Interface (AHCI), set this item to [AHCI Mode]. 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.
 - If you want to create a RAID configuration from the Serial ATA hard disk drives, set this item to [RAID Mode].
-

2.4.7 System Information

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu.

BIOS Information

Displays the auto-detected BIOS information.

Processor

Displays the auto-detected CPU specification.

System Memory

Displays the auto-detected system memory.

2.5 Ai Tweaker menu

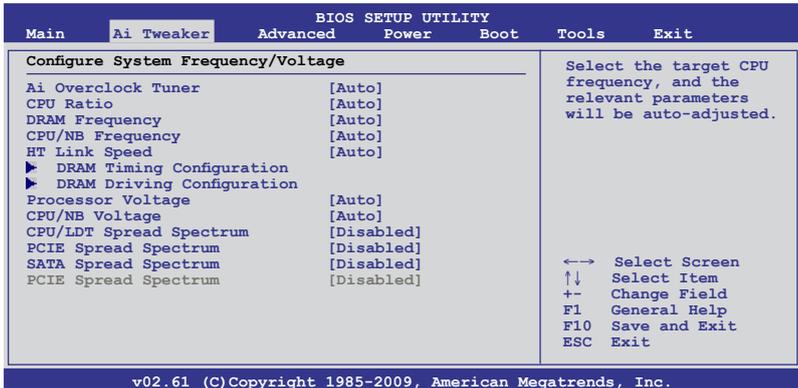
The Ai Tweaker menu items allow you to configure overclocking-related items.



Take caution when changing the settings of the Ai Tweaker menu items. Incorrect field values can cause the system to malfunction.



The default values of the following items vary depending on the CPU and memory modules you install on the motherboard.



2.5.1 Ai Overclock Tuner [Auto]

Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Configuration options: [Manual] [Auto] [D.O.C.P]



The following two (2) items appear only when you set the **Ai Overclock Tuner** item to [Manual].

CPU Bus Frequency [XXX]

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

PCIE Frequency [XXX]

Use the <+> and <-> keys to adjust the PCIE frequency. You can also type the desired PCIE frequency using the numeric keypad. The values range from 100 to 200.

DRAM O.C. Profile [DDR3-1600MHz]

This item appears only when you set the **Ai Overclock Tuner** item to [D.O.C.P] and allows you to select a DRAM O.C. profile, which applies different settings to DRAM frequency, DRAM timing and DRAM voltage. Configuration options: [DDR3-1600MHz] [DDR3-1800MHz] [DDR3-1866MHz] [DDR3-2000MHz]

2.5.2 CPU Ratio [Auto]

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

2.5.3 DRAM Frequency [Auto]

Allows you to set the DRAM frequency.

Configuration options: [Auto] [800MHz] [1067MHz] [1333MHz] [1600MHz]

2.5.4 CPU/NB Frequency [Auto]

Allows you to select the CPU/NB frequency.

Configuration options: [Auto] [800MHz] [1000MHz] [1200MHz] [1400MHz] [1600MHz] [1800MHz] [2000MHz]

2.5.5 HT Link Speed [Auto]

Allows you to set the CPU-Northbridge HyperTransport link speed.

Configuration options: [Auto] [200 MHz] [400 MHz] [600 MHz] [800 MHz] [1000 MHz] [1200 MHz] [1400 MHz] [1600 MHz] [1800 MHz] [2000 MHz]

2.5.6 DRAM Timing Configuration



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

DRAM CAS# Latency [Auto]

Configuration options: [Auto] [4 CLK] – [12 CLK]

DRAM RAS# to CAS# Delay [Auto]

Configuration options: [Auto] [5 CLK] – [12 CLK]

DRAM RAS# PRE Time [Auto]

Configuration options: [Auto] [5 CLK] – [12 CLK]

DRAM RAS# ACT Time [Auto]

Configuration options: [Auto] [15 CLK] – [30 CLK]

DRAM READ to PRE Time [Auto]

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

DRAM Row Cycle Time [Auto]

Configuration options: [Auto] [11 CLK] – [41 CLK]

DRAM WRITE Recovery Time [Auto]

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

DRAM RAS# to RAS# Delay [Auto]

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

DRAM READ to WRITE Delay [Auto]

Configuration options: [Auto] [3 CLK] – [17 CLK]

DRAM WRITE to READ Delay(DD) [Auto]

Configuration options: [Auto] [2 CLK] – [10 CLK]

DRAM WRITE to READ Delay(SD) [Auto]

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

DRAM WRITE to WRITE Timing [Auto]

Configuration options: [Auto] [3 CLK] – [10 CLK]

DRAM READ to READ Timing [Auto]

Configuration options: [Auto] [3 CLK] – [10 CLK]

DRAM REF Cycle Time [Auto]

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

DRAM Refresh Rate [Auto]

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

DRAM Command Rate [Auto]

Configuration options: [Auto] [1T] [2T]

2.5.7 DRAM Driving Configuration



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

CKE drive strength [Auto]

Configuration options: [Auto] [1x] [1.25x] [1.5x] [2x]

CS/ODT drive strength [Auto]

Configuration options: [Auto] [1x] [1.25x] [1.5x] [2x]

ADDR/CMD drive strength [Auto]

Configuration options: [Auto] [1x] [1.25x] [1.5x] [2x]

MEMCLK drive strength [Auto]

Configuration options: [Auto] [0.75x] [1x] [1.25x] [1.5x]

Data drive strength [Auto]

Configuration options: [Auto] [0.75x] [1x] [1.25x] [1.5x]

DQS drive strength [Auto]

Configuration options: [Auto] [0.75x] [1x] [1.25x] [1.5x]

Processor ODT [Auto]

Configuration options: [Auto] [240 ohms +/- 20%] [120 ohms +/- 20%] [60 ohms +/- 20%]



The following six (6) items are adjusted by typing the desired values using the numeric keypad and press the <Enter> key. You can also use the <+> and <-> keys to adjust the value. To restore the default setting, type [auto] using the keyboard and press the <Enter> key.

2.5.8 Processor Voltage [Auto]

Allows you to set the CPU VCore voltage.

2.5.9 CPU/NB Voltage [Auto]

Allows you to set the CPU/NB voltage.

2.5.10 CPU VDDA Voltage [Auto]

This item appears only when you set the **Ai Overclock Tuner** item to [Manual] or [D.O.C.P], and allows you to set the CPU VDDA voltage. The values range from 2.50V to 2.80V with a 0.10V interval.

2.5.11 DRAM Voltage [Auto]

This item appears only when you set the **Ai Overclock Tuner** item to [Manual] or [D.O.C.P], and allows you to set the DRAM voltage. The values range from 1.20V to 2.20V with a 0.15V interval.

2.5.12 HT Voltage [Auto]

This item appears only when you set the **Ai Overclock Tuner** item to [Manual] or [D.O.C.P], and allows you to set the HyperTransport voltage. The values range from 1.20V to 1.50V with a 0.10V interval.

2.5.13 NB Voltage [Auto]

This item appears only when you set the **Ai Overclock Tuner** item to [Manual] or [D.O.C.P], and allows you to set the NorthBridge voltage. The values range from 1.10V to 1.40V with a 0.10V interval.

2.5.14 CPU/LDT Spread Spectrum [Disabled]

Set to [Disabled] to enhance CPU Bus overclocking ability or [Enabled] for EMI control.
Configuration options: [Disabled] [Enabled]

2.5.15 PCIE Spread Spectrum [Disabled]

Set to [Disabled] to enhance PCIE overclocking ability or [Linear Down] for EMI control.
Configuration options: [Disabled] [Linear Down]

2.5.16 SATA Spread Spectrum [Disabled]

Allows you to adjust the SATA spread spectrum setting.
Configuration options: [Disabled] [Linear Down]

2.5.17 PCI Spread Spectrum [Disabled]

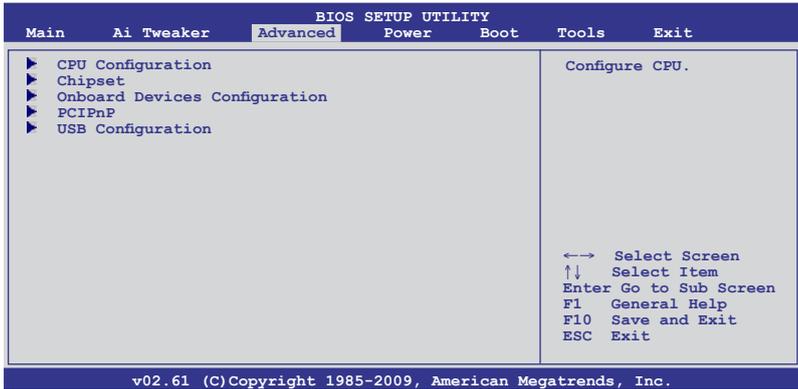
This item becomes user-configurable only when you set the SATA Spread Spectrum item to [Linear Down]. We recommend that you leave this item to its default setting for system stability. Configuration options: [Disabled] [Linear Down]

2.6 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.



2.6.1 CPU Configuration

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

GART Error Reporting [Disabled]

This option should remain disabled for the normal operation. The driver developer may enable it for testing purpose. Configuration options: [Disabled] [Enabled]

Microcode Updation [Enabled]

Allows you to enable or disable the microcode updation.
Configuration options: [Disabled] [Enabled]

Secure Virtual Machine Mode [Enabled]

Allows you to enable or disable the AMD Secure Virtual Machine mode (SVM).
Configuration options: [Disabled] [Enabled]

Cool'n'Quiet [Enabled]

Enables or disables the AMD Cool'n'Quiet function.
Configuration options: [Disabled] [Enabled]

ACPI SRAT Table [Enabled]

Enables or disables the building of ACPI SRAT table.
Configuration options: [Disabled] [Enabled]

C1E Support [Enabled]

Allows you to enable or disable the Enhanced Halt State support.
Configuration options: [Disabled] [Enable]

NVIDIA Core Calibration [Disabled]

Allows you to select the CPU core overclocking for each or all CPU cores.

Configuration options: [Disabled] [Auto] [All Cores] [Per Core]

Unleashing Mode [Disabled]

This item appears only when you set the **NVIDIA Core Calibration** item to [Auto], [Per Core] or [All Cores]. Enabling this item allows the system to get full computing of the processor.

Core 0/1/2/3 NVCC Percentage [xx%]

This item appears only when you set the **NVIDIA Core Calibration** item to [Per Core] or [All Cores]. Use the <+> and <-> keys to adjust the NVCC voltage for Core 0/1/2/3.

2.6.2 Chipset

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

NorthBridge Configuration

ECC Configuration

ECC Mode [Disabled]

Disables or sets the DRAM ECC mode that allows the hardware to report and correct memory errors. Set this item to [Basic], [Good], or [Max] to allow ECC mode auto-adjustment. Set this item to [Super] to adjust the **DRAM BG Scrub** sub-item manually. You may also adjust all sub-items by setting this item to [User].

Configuration options: [Disabled] [Basic] [Good] [Super] [Max] [User]

DRAM ECC Enable [Enabled]

Set this item to [Enabled] to allow hardware to report and correct memory errors automatically, maintaining system integrity. Configuration options: [Disabled] [Enabled]

DRAM SCRUB REDIRECT [Enabled]

Enables or disables the DRAM SCRUB REDIRECT feature that allows the system to correct the DRAM ECC errors immediately when they occur. Configuration options: [Disabled] [Enabled]

4-Bit ECC Mode [Enabled]

Enables or disables the ECC chip kill feature. Configuration options: [Disabled] [Enabled]

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]

SouthBridge Configuration

Hybrid SLI support [Disabled]

Allows you to enable or disable the Hybrid SLI function if you install a Hybrid SLI-support graphics card. Configuration options: [Auto] [Disable].

Primary Graphics Adapter [PCIe VGA Card First]

Allows you to select which graphics controller to use as the primary boot device. Configuration options: [PCI VGA Card First] [PCIe VGA Card First]

PCIe training [Gen2 if supported]

Configuration options: [Only Gen1] [Gen2 if supported]

SouthBridge ACPI HPET TABLE [Enabled]

Allows you to enable or disable the southbridge ACPI HPET (High Precision Event Timer). Configuration options: [Disabled] [Enabled]

2.6.3 Onboard Devices Configuration

Onboard LAN [Enabled]

Allows you to enable or disable the onboard LAN. Configuration options: [Enabled] [Disabled]

Onboard LAN Boot ROM [Disabled]

Allows you to enable or disable the onboard LAN Boot ROM. Configuration options: [Disabled] [Enabled]

Onboard 1394 [Enabled]

Allows you to enable or disable the onboard 1394 device support. Configuration options: [Disabled] [Enabled]

On-board AUDIO [Enabled]

Allows you to enable or disable the onboard Audio controller. Configuration options: [Disabled] [Enabled]

Front Panel Select [HD Audio]

Allows you to set the front panel audio connector (AAFP) mode to legacy AC'97 or high-definition audio depending on the audio standard that the front panel audio module supports. Configuration options: [AC97] [HD Audio]

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]

2.6.4 PCIPnP

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

Plug And Play O/S [No]

When set to [No], BIOS configures all the devices in the system. 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. Configuration options: [No] [Yes]

2.6.5 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.



The **Module Version** and **USB Devices Enabled** items show the auto-detected values. If no USB device is detected, the item shows **None**.

USB Functions [Enabled]

Allows you to enable or disable the USB Functions.

Configuration options: [Enabled] [Disabled]



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

USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 controller.

Configuration options: [Enabled] [Disabled]



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

Legacy USB Support [Enabled]

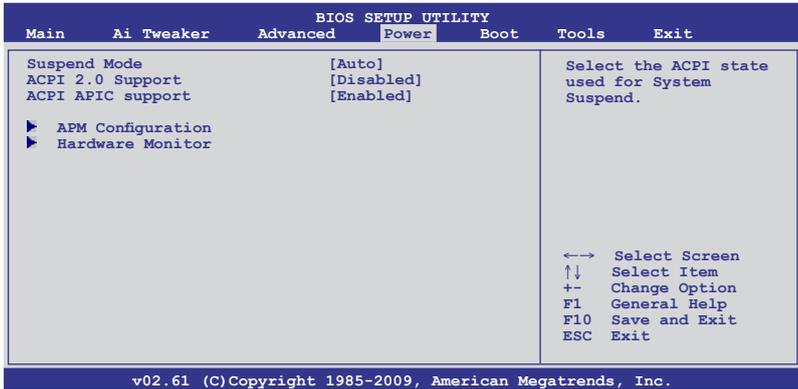
Allows you to enable or disable support for USB devices on legacy operating systems (OS). Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled] [Auto]

USB 2.0 Controller Mode [HiSpeed]

Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [FullSpeed] [HiSpeed]

2.7 Power menu

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



2.7.1 Suspend Mode [Auto]

Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend. Configuration options: [S1 (POS) Only] [S3 Only] [Auto]

[S1(POS) Only] - Enables the system to enter the ACPI S1 (Power on Suspend) sleep state.

In S1 sleep state, the system appears suspended and stays in a low power mode. The system can be resumed at any time.

[S3 Only] - Enables the system to enter the ACPI S3 (Suspend to RAM) sleep state (default).

In S3 sleep state, the system appears to be off and consumes less power than in the S1 state. When signaled by a wake-up device or event, the system resumes to its working state exactly where it was left off.

[Auto] - Detected by OS.

2.7.2 ACPI 2.0 Support [Disabled]

Allows you to add more tables for Advanced Configuration and Power Interface (ACPI) 2.0 specifications. Configuration options: [Disabled] [Enabled]

2.7.3 ACPI APIC support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Application-Specific Integrated Circuit (ASIC). When set to **Enabled**, the ACPI APIC table pointer is included in the RSDT pointer list.

Configuration options: [Disabled] [Enabled]

2.7.4 Hardware Monitor

CPU/MB Temperature [xxx°C/xxx°F]

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

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

The onboard hardware monitor automatically detects and displays the CPU and chassis fan speeds 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 / 3.3V / 5V / 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Select **Ignored** if you do not wish to display the detected voltage output.

CPU Q-Fan Function [Disabled]

Allows you to enable or disable the CPU Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. Configuration options: [Disabled] [Enabled]

Select Fan Type: [PWM Fan]

This item appears only when you set the **CPU Q-Fan Function** item to [Enabled] and allows you to select the CPU fan type you installed on the motherboard.

Configuration options: [PWM Fan] [DC Fan]



-
- If you install a PWM (4-pin) fan but set this item to [DC Fan], the fan you installed may not work.
 - If you install a DC (3-pin) fan but set this item to [PWM Fan], the CPU Q-Fan function will not work, and the fan you install will always run at full speed.
-

CPU Q-Fan Mode [Silent]

Allows you to set the appropriate performance level of the CPU Q-Fan. When set to [Optimal], the CPU fan automatically adjusts depending on the CPU temperature. Set this item to [Silent] to minimize fan speed for quiet CPU fan operation, or [Performance] to achieve the maximum CPU fan speed. Configuration options: [Performance] [Optimal] [Silent]

Chassis Q-Fan Function [Disabled]

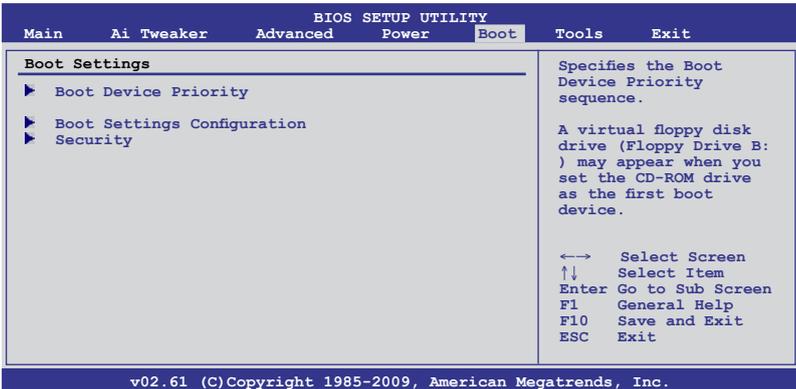
Allows you to enable or disable the chassis Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. Configuration options: [Disabled] [Enabled]

Chassis Q-Fan Mode [Silent]

Allows you to set the appropriate performance level of the Chassis Q-Fan. When set to [Optimal], the Chassis fan automatically adjusts depending on the Chassis temperature. Set this item to [Silent] to minimize fan speed for quiet Chassis fan operation, or [Performance] to achieve the maximum Chassis fan speed. Configuration options: [Performance] [Optimal] [Silent]

2.8 Boot menu

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



2.8.1 Boot Device Priority

1st ~ xxth Boot Device

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: [1st FLOPPY DRIVE] [Hard Drive] [ATAPI CD-ROM] [Disabled]

2.8.2 Boot Settings Configuration

Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to **[Disabled]**, BIOS performs all the POST items. Configuration options: [Disabled] [Enabled]

Full Screen Logo [Enabled]

This allows you to enable or disable the full screen logo display feature.

Configuration options: [Disabled] [Enabled]



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

AddOn ROM Display Mode [Force BIOS]

Sets the display mode for option ROM. Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock. Configuration options: [Off] [On]

Wait for 'F1' If Error [Enabled]

When set to [Enabled], the system waits for the F1 key to be pressed when error occurs.

Configuration options: [Disabled] [Enabled]

Hit 'DEL' Message Display [Enabled]

When set to [Enabled], the system displays the message **Press DEL to run Setup** during POST. Configuration options: [Disabled] [Enabled]

2.8.3 Security

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

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 at least 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 supervisor password.

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



If you forget your BIOS password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section 1.9 **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.

User Access Level [Full Access]

This item allows you to select the access restriction to the Setup items. Configuration options: [No Access] [View Only] [Limited] [Full Access]

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 at least 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.

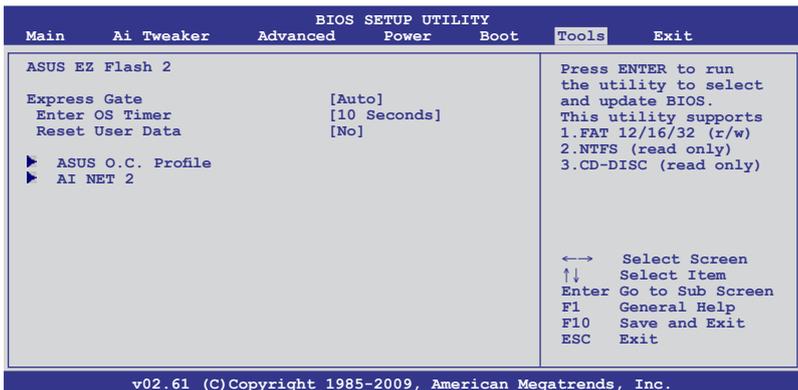
Clear User Password

Select this item to clear the user password.

Password Check [Setup]

When set to **[Setup]**, BIOS checks for user password when accessing the Setup utility. When set to **[Always]**, BIOS checks for user password both when accessing Setup and booting the system. Configuration options: [Setup] [Always]

2.9 Tools menu



2.9.1 ASUS EZ Flash 2

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

2.9.2 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: [Enabled] [Disabled] [Auto]

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.

Configuration options: [No] [Reset]

When setting this item to [Reset], make sure to 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 (bookmarks, cookies, browsing history, etc.). This is useful in the rare case where corrupt settings prevent the Express Gate environment from launching properly.



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

2.9.3 ASUS O.C. Profile

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

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. You can save eight (8) CMOS profiles.

Load CMOS Profile.

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.



-
- 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 "xxx.CMO" file can be loaded.
-

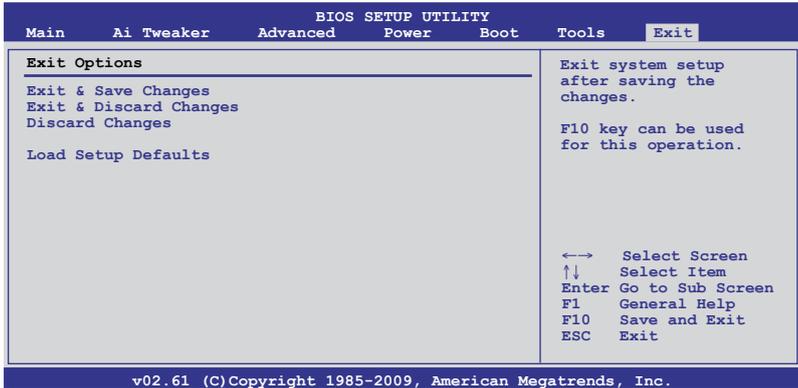
2.9.4 AI NET 2

Check Broadcom Phy LAN cable [Disabled]

Enables or disables checking of the Broadcom LAN cable during the Power-On Self-Test (POST). Configuration options: [Disabled] [Enabled]

2.10 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.



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.

ASUS contact information

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Support Fax +49-2102-9599-11
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DECLARATION OF CONFORMITY
Per FCC Part 2 Section 2.1077(a)



Responsible Party Name: **Asus Computer International**

Address: **800 Corporate Way, Fremont, CA 94539.**

Phone/Fax No: **(510)739-3777/(510)608-4555**

hereby declares that the product

Product Name : Mother board

Model Number : M4N75TD

Conforms to the following specifications:

- FCC Part 15, Subpart B, Unintentional Radiators
- FCC Part 15, Subpart C, Intentional Radiators
- FCC Part 15, Subpart E, Intentional Radiators

Supplementary Information:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Representative Person's Name : **Steve Chang / President**

Signature : Steve Chang
Date : **Feb. 03, 2010**

EC Declaration of Conformity



Leading Innovation - Pursuing Perfection

We, the undersigned,

Manufacturer:	ASUSTeK COMPUTER INC.
Address, City:	No. 150, LI-TE RD., FEITOU, TAIPEI 112, TAIWAN R.O.C.
Country:	TAIWAN
Authorized representative in Europe:	ASUS COMPUTER GmbH
Address, City:	HARKORT STR. 21-23, 40880 RATINGEN
Country:	GERMANY

declare the following apparatus:

Product name :	Mother Board
Model name :	M4N75TD

conform with the essential requirements of the following directives:

<input checked="" type="checkbox"/> 2004/10/CEC-EMC Directive	<input type="checkbox"/> EN 55024:1998+A1:2001+A2:2003
<input checked="" type="checkbox"/> EN 61000-3-2:2006	<input checked="" type="checkbox"/> EN 61000-3-3:1998+A1:2001+A2:2005
<input type="checkbox"/> EN 55013:2001+A1:2003+A2:2006	<input type="checkbox"/> EN 55020:2007

1989/5/EC-R & TTE Directive

<input type="checkbox"/> EN 300 328 V1.7.1(2006-05)	<input type="checkbox"/> EN 301 488-1 V1.8.1(2008-04)
<input type="checkbox"/> EN 300 440-1 V1.4.1(2008-05)	<input type="checkbox"/> EN 301 488-3 V1.4.1(2002-08)
<input type="checkbox"/> EN 301 488-2 V1.4.1(2002-08)	<input type="checkbox"/> EN 301 488-4 V1.4.1(2002-08)
<input type="checkbox"/> EN 301 511 V9.0.2(2002-05)	<input type="checkbox"/> EN 301 488-7 V1.3.1(2005-16)
<input type="checkbox"/> EN 301 908-1 V3.2.1(2007-05)	<input type="checkbox"/> EN 301 489-7 V1.4.1(2007-11)
<input type="checkbox"/> EN 301 908-2 V3.2.1(2007-05)	<input type="checkbox"/> EN 301 489-9 V1.4.1(2007-11)
<input type="checkbox"/> EN 301 908-3 V3.2.1(2007-05)	<input type="checkbox"/> EN 301 489-17 V1.3.2(2007-06)
<input type="checkbox"/> EN 301 883 V1.4.1(2005-03)	<input type="checkbox"/> EN 301 489-24 V1.4.1(2007-06)
<input type="checkbox"/> EN 50371:2002	<input type="checkbox"/> EN 302 328-3 V1.3.1(2007-09)
<input type="checkbox"/> EN 62311:2008	<input type="checkbox"/> EN 302 328-3 V1.3.1(2007-09)
<input type="checkbox"/> EN 50385:2002	<input type="checkbox"/> EN 301 357-2 V1.3.1(2006-05)

2006/95/EC-LVD Directive

<input checked="" type="checkbox"/> EN 60950-1:2001+A11:2004	<input type="checkbox"/> EN 60065:2002+A1:2006
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CE marking



(EC conformity marking)

Position : **CEO**
Name : **Jerry Shen**

Jerry Shen

Signature : _____

Declaration Date: **Feb. 03, 2010**
Year to begin affixing CE marking: **2010**