

**M3N-HT
Deluxe/HDMI**



Motherboard

E3580

First Edition V1
December 2007

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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.

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.
- Make sure 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, make sure 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.



This symbol of the crossed out wheeled bin indicates that the product (electrical, electronic equipment, and mercury-containing button cell battery) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

About this guide

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

How this guide is organized

This guide contains the following parts:

- **Chapter 1: Product introduction**
This chapter describes the features of the motherboard and the new technology it supports.
- **Chapter 2: Hardware information**
This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the switches, jumpers, and connectors on the motherboard.
- **Chapter 3: Powering up**
This chapter describes the power up sequence and ways of shutting down the system.

Where to find more information

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

1. **ASUS websites**
The ASUS website provides updated information on ASUS hardware and software products. Refer to the ASUS contact information.
2. **Optional documentation**
Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

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



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



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



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



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

Typography

Bold text

Indicates a menu or an item to select.

Italics

Used to emphasize a word or a phrase.

<Key>

Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.

Example: <Enter> means that you must press the Enter or Return key.

<Key1+Key2+Key3>

If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).

Example: <Ctrl+Alt+D>

Command

Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.

Example: At the DOS prompt, type the command line:

afudos /im3NHTDLX.ROM

M3N-HT Deluxe/HDMI

specifications summary

CPU	AMD® Socket AM2+ Phenom™ FX / Phenom / Athlon™ / Sempron™ processor AMD® Socket AM2 Athlon 64 X2 / Athlon 64 FX / Athlon 64 / Sempron processor AMD® Cool'n'Quiet™ Technology
Chipset	NVIDIA® nForce 780a SLI
System bus	Up to 5200 MT/s; HyperTransport™ 3.0 interface for AM2+ CPU 2000 / 1600 MT/s for AM2 CPU
Memory	Dual-channel memory architecture - 4 x 240-pin DIMM sockets support unbuffered ECC/non-ECC DDR2 1066*/800/667/533 MHz memory modules - Supports up to 8 GB system memory *DDR2 1066 is supported by AM2+ CPUs only. Refer to www.asus.com for the supported CPU models and the Memory QVL (Qualified Vendors Lists).
VGA	Integrated NVIDIA® GPU Maximum shared memory of 512MB Supports HDMI™ Technology with HDCP compliant with max. resolution up to 1920 x 1200 Supports D-Sub with max. resolution up to 1920 x 1440 @75Hz Multi VGA output support: DVI & D-Sub Hybrid SLI Support
Expansion slots	3 x PCIe x16 support NVIDIA® 3-way SLI™ Tech @ dual x16 mode or tripple x8 1 x PCIe x1 2 x PCI 2.2 Support PCIe 2.0/1.0 architecture
Storage	Chipset: - 6 x SATA 3 Gb/s connectors with RAID 0, RAID1, RAID 0+1, RAID 5 and JBOD support - 1 x Ultra DMA 133/100/66/33 Marvell® 6111 SATA controller - 1 x External SATA 3Gb/s port (SATA-On-The-Go)
LAN	Gigabit LAN, featuring AI NET2
IEEE 1394	LSI® FW322 controller supports 2 x IEEE 1394a connectors (at mid-board)
USB	10 x USB 2.0 ports (4 at mid-board; 6 on the rear panel)

(continued on the next page)

M3N-HT Deluxe/HDMI

specifications summary

High Definition audio	ADI® AD1988B 8-channel High Definition audio CODEC - Supports Jack-Detection, Multi-Streaming, and Jack-Retasking - Coaxial/Optical S/PDIF Out ports at back I/O
ASUS AI Lifestyle unique features	ASUS Quiet Thermal Solution: - ASUS AI Cool Mempipe - ASUS AI Gear 2 - ASUS 8+2 Phase Power Design - ASUS AI Nap - ASUS Fanless Design: Heat-pipe solution & Stack Cool 2 - ASUS Q-Fan 2 - ASUS Optional Fan for Water-cooling or Passive-cooling only ASUS Crystal Sound: - ASUS Noise Filter - ASUS AI Audio 2 ASUS EZ DIY: - ASUS Q-Shield - ASUS Q-Connector - ASUS O.C. Profile - ASUS EZ Flash 2
Other features	ASUS Express Gate Uses 100% All High-quality Conductive Polymer Capacitors! ASUS MyLogo 2™ Multi-language BIOS
ASUS exclusive overclocking features	Intelligent overclocking tools: - AI Overclocking (Intelligent CPU frequency tuner) - ASUS AI Booster 2 utility Precision Tweaker 2: - vCore: Adjustable CPU voltage at 0.0125V increment - vDIMM: 35-step DRAM voltage control - vChipset: 16-step Chipset voltage control SFS (Stepless Frequency Selection): - FSB tuning from 200 MHz up to 500 MHz at 1 MHz increment - Memory tuning from 533 MHz up to 1066 MHz - PCI Express frequency tuning from 100 MHz to 200 MHz at 1 MHz increment Overclocking protection: - ASUS C.P.R. (CPU Parameter Recall)

(continued on the next page)

M3N-HT Deluxe/HDMI

specifications summary

Rear panel I/O ports	1 x PS/2 keyboard port (purple) 1 x S/PDIF Out (Coaxial + Optical) 1 x HDMI 1 x D-Sub 1 x External SATA 1 x LAN (RJ-45) 4 x USB 2.0/1.1 8-channel audio I/O
Internal I/O connectors	3 x USB connectors support additional 6 USB ports 1 x Floppy disk drive connector 1 x COM connector 1 x IDE connector 6 x SATA connectors (Only SATA 1–4 support IDE mode) 1 x CPU Fan connector 2 x Chassis Fan connector 1 x Power Fan connector 2 x IEEE1394a connector Front panel audio connector 1 x S/PDIF Out Header Chassis Intrusion connector CD audio in 24-pin ATX Power connector 1 x 8-pin ATX 12V Power connector System Panel (Q-Connector)
BIOS features	8 Mb Flash ROM, Award BIOS, PnP, DMI 2.0, WfM2.0, SM BIOS 2.5, ACPI 2.0, ASUS EZ Flash 2
Manageability	WfM 2.0, DMI 2.0, WOL by PME, WOR by PME, PXE
Support CD contents	Drivers ASUS Express Gate ASUS AI Suite ASUS PC Probe II ASUS Update Anti-virus Utility (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.

This chapter describes the motherboard features and the new technologies it supports.

1 Product introduction

Chapter summary

1

1.1	Welcome!	1-1
1.2	Package contents.....	1-1
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1.1 Welcome!

Thank you for buying an ASUS® M3N-HT Deluxe/HDMI 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 M3N-HT Deluxe Series
I/O modules	1 x Multi-functional module (1-port IEEE 1394a module and 2-port USB 2.0 module)
Cables	1 x Serial ATA power cable for 2 devices 6 x Serial ATA signal cables 1 x Ultra DMA 133/100/66 cable 1 x Floppy disk drive cable
Accessories	ASUS Cool Mempipe (Mempipe edition only) ASUS Q-Shield (I/O Shield) 1 x HDMI-DVI converter 1 x ASUS Q-Connector Kit (USB, 1394, system panel; Retail version only) 1 x ASUS 3-way SLI bridge connector 1 x ASUS SLI bridge Optional fan for Water-Cooling or Passive-cooling only
Application CD	ASUS motherboard support CD
Documentation	User guide



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

1.3 Special features

1.3.1 Product highlights

Green ASUS



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

AMD® Socket AM2+ Phenom™ FX / Phenom / Athlon™ / Sempron™ CPU support



This motherboard supports AMD® Socket AM2+ multi-core processors with unique L3 cache and delivers better overclocking capabilities with less power consumption. It features dual-channel DDR2 1066 memory support and accelerates data transfer rate up to 5200MT/s via HyperTransport™ 3.0 based system bus. See page 2-6 for details.

HyperTransport™ 3.0 support



HyperTransport™ 3.0 technology provides 2.6 times more bandwidth than HyperTransport™ 1.0, radically improving system efficiency to create a smoother, faster computing environment.

AMD® Socket AM2 Athlon™ 64 X2 / Athlon™ 64 FX / Athlon™ 64 / Sempron™ CPU support



This motherboard supports AMD® Socket AM2 single-core Athlon™ 64 / Sempron™ and dual-core Athlon™ 64 X2 / Athlon™ 64 FX processors with 2MB / 1MB / 512KB L2 cache based on 64-bit architecture. It features 2000 / 1600 MT/s HyperTransport™-based system bus, dual-channel un-buffered DDR2 800 memory support, and AMD® Cool 'n' Quiet™ Technology. See page 2-6 for details.

NVIDIA® nForce® 780a SLI chipset

The NVIDIA® nForce 780a SLI chipset supports the NVIDIA® Scalable Link Interface (SLI™) technology that allows three graphics processing units (GPUs) in a single system. It's designed for enthusiast, extreme overclocking capability, ultimate gaming performance with SLI technology support. It's definitely one of the fastest platform in the world. The NVIDIA® nForce 780a SLI chipset also supports six (6) Serial ATA 3 Gb/s devices, PCI Express™ x16 slots with NVIDIA® SLI™ support at dual x16 mode or at tripple x8 mode, and up to 10 USB 2.0 ports.

Native DDR2 1066 support



This motherboard is the first AMD® platform with native DDR2 1066 support. It provides faster **data transfer rate and more bandwidth to increase memory** computing efficiency, enhancing system performance in 3D graphics and other memory demanding applications. See page 2-12 for details.



DDR2 1066 is supported by some of the AM2+ CPUs only. Refer to www.asus.com for the supported CPU models.

NVIDIA® 3-Way SLI™ (Scalable Link Interface)



NVIDIA 3-Way SLI™ (Scalable Link Interface) takes advantage of the increased bandwidth of the PCI Express 2.0 bus architecture and features intelligent hardware and software that allows three graphics cards to efficiently work together to deliver earth-shattering, scalable performance. For some applications nearly triple performance!

PCIe 2.0 support



This motherboard supports the latest PCIe 2.0 devices for double speed and bandwidth which enhances system performance. See page 2-19 for details.

Hybrid SLI™



Hybrid SLI™ technology is a unique hybrid multi-GPU technology built upon NVIDIA. Hybrid SLI technology today includes two primary features: GeForce Boost and HybridPower™. GeForce Boost turbo-charges performance of NVIDIA discrete graphics cards when combined with M3N series motherboard GPUs. HybridPower™ unleashes graphics performance when needed and enables low-power operation when performance is not needed. You can switch from the discrete GeForce GPU(s) to the motherboard GPU for a quiet, low power PC experience.

Serial ATA 3 Gb/s technology and SATA-On-The-Go



This motherboard supports the next-generation hard disk drives based on the Serial ATA (SATA) 3Gb/s storage specifications, delivering enhanced scalability and doubling the bus bandwidth for high-speed data retrieval and save. The external SATA port located at the back I/O provides smart setup and hot-plug functions, enabling easy backup of media files to external devices. See pages 2-23 and 2-27 for details.

The NVIDIA® MediaShield™ RAID controller integrated in the NVIDIA® nForce® 780a SLI™ chipset allows RAID 0, RAID 1, RAID 0+1, RAID 5, and JBOD configurations for six SATA 3 Gb/s connectors. See page 2-27 for details.

HDMI Interface

HDMI (High-Definition Multimedia Interface) is a set of digital video standards that delivers multi-channel audio and uncompressed digital video through a single cable for full HD 1080p visuals. Supporting HDCP copy protection such as HD DVD and Blu-ray Discs, HDMI provides you with the highest-quality home theater experience.

IEEE 1394a support

The IEEE 1394a interface provides high speed digital interface for audio/video appliances such as digital television, digital video camcorders, storage peripherals, and other PC portable devices. See pages 2-22 and 2-28 for details.

S/PDIF digital sound ready

This motherboard provides convenient connectivity to external home theater audio systems via coaxial and optical S/PDIF (SONY-PHILIPS Digital Interface) Out jacks. It allows digital audio transferring without converting it to analog format, and therefore well preserves signal quality. See page 2-33 for details.

High Definition Audio

Enjoy high-end sound quality on your PC! The onboard 8-channel HD audio (High Definition Audio, previously codenamed Azalia) CODEC enables high-quality 192KHz/24-bit audio output that simultaneously sends different audio streams to different destinations. You can now talk to your partners on the headphones while playing multi-channel network games. See pages 2-22 and 2-23 for details.

Gigabit LAN solution

The NVIDIA® native Gigabit LAN controller delivers transfer speeds up to ten times faster than conventional 10/100/1000 Ethernet connections. Gigabit LAN is the networking standard for the early future and is ideal for handling large amounts of data such as video, audio, and voice. See page 2-22 for details.

1.3.2 ASUS AI Lifestyle unique features



ASUS Quiet Thermal Solution

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

ASUS Cool Mempipe (Mempipe Edition only)



ASUS Cool Mempipe supports unparalleled memory overclocking via innovative thermal solutions. By lowering the memory and system temperatures, the Cool Mempipe contributes to a stable computing environment. See pages 2-15 and 2-16 for details.



ASUS Cool Mempipe supports the thermal dissipation of memory modules on DIMM_A1 and DIMM_B1 sockets only.

AI Gear 2



AI Gear 2 allows you to choose from profiles to adjust CPU frequency and vCore voltage, minimizing system noise and saving CPU power consumption at most. You can real-time change the mode under operating system to suit your needs.

AI Nap



With AI Nap, the system can continue running at minimum power and noise when you are temporarily away. To wake the system and return to the OS environment, simply click the mouse or press a key.

8+2 Phase Power Design



ASUS 8+2 Phase Power Design, with independent power to vital components, ultimately enhances memory performance and ensures quick response and stability of CPU under heavy loading or overclocking modes.

Fanless Design–Stack Cool 2



ASUS Stack Cool 2 is a fan-less and zero-noise cooling solution that lowers the temperature of critical heat generating components. The motherboard uses a special design on the printed circuit board (PCB) to dissipate heat these critical components generate.

Fanless Design–Heat-pipe



The Heat Pipe design effectively directs the heat generated by the chipsets to the heatsink near the back IO ports, where it can be carried away by existing airflow from CPU fan or bundled optional fan. The purpose of the innovative heat pipe design on this motherboard is that the groundbreaking fanless design does not have lifetime problems as a chipset fan does. Furthermore, it provides options for users to install side-flow fan or passive cooler. The Heat Pipe design is the most reliable fanless thermal solution to date.



DO NOT uninstall the heat-pipe by yourself. Doing so may bend the tubing and affect the heat dissipation performance.

Optional Fan (for Water-Cooling or Passive-Cooling only)



The optional fan is specifically designed to provide sufficient airflow over the CPU power modules and chipset area when water-cooling or passive-cooling is utilized, ensuring effective heat dissipation for the entire system. See page 2-11 for details.

Q-Fan 2



ASUS Q-Fan2 technology intelligently adjusts both CPU fan and chassis fan speeds according to system loading to ensure quiet, cool and efficient operation.

ASUS Crystal Sound

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

Noise Filter



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

AI Audio 2



AI Audio 2 creates a virtual center channel that expands the overall sound field without introducing a picket fencing effect. Preserving the dialogue or solo performances with downmixing from multi-channels allows you to experience true-to-life high quality audio.

ASUS EZ DIY

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

ASUS Express Gate



With only 5 seconds boot-up time, the ASUS Express Gate allows you to instantly surf the Internet without entering Windows or the Hard Disk. You can now enjoy Skype, IM, YouTube, webmail and internet file downloads and sharing whenever and wherever you want!

ASUS Q-Shield



The specially designed ASUS Q-Shield does without the usual “fingers”—making it convenient and easy to install. With better electric conductivity, it ideally protects your motherboard against static electricity and shields it against Electronic Magnetic Interference (EMI).

ASUS Q-Connector



ASUS Q-Connector allows you to easily connect or disconnect the chassis front panel cables to the motherboard. This unique module eliminates the trouble of connecting the system panel cables one at a time and avoiding wrong cable connections. See page 2-35 for details.

ASUS O.C. Profile



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

ASUS EZ Flash 2



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

ASUS MyLogo 2™



This feature allows you to convert your favorite photo into a 256-color boot logo for a more colorful and vivid image on your screen.

ASUS Multi-language BIOS



The multi-language BIOS allows you to select the language of your choice from the available options. The localized BIOS setup menu helps you configure your system easier and faster.

1.3.3 ASUS intelligent performance and overclocking features

Precision Tweaker 2



Precision Tweaker 2 allows the user to adjust the northbridge voltage, southbridge voltage, and DRAM voltage in 0.02V steps to achieve the most precise settings for the ultimate customized overclocking configuration.

AI Booster 2



Overclocking has never been so fun with a user-friendly utility under Windows that provides accurate settings for the CPU, chipset and memory. Now it's even easier to achieve astounding overclocking results without any hassles!

C.P.R. (CPU Parameter Recall)



The C.P.R. feature of the motherboard BIOS allows automatic re-setting to the BIOS default settings in case the system hangs due to overclocking. When the system hangs due to overclocking, C.P.R. eliminates the need to open the system chassis and clear the RTC data. Simply shut down and reboot the system, and the BIOS automatically restores the CPU default setting for each parameter.

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

2 Hardware information

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2.1 Before you proceed

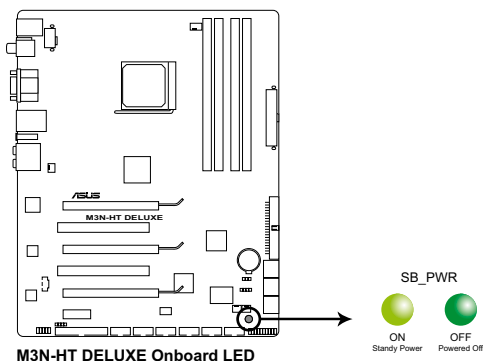
Take note of the following precautions before you install motherboard components or change any motherboard settings.



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

Onboard 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.



2.2 Motherboard overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.



Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

2.2.1 Placement direction

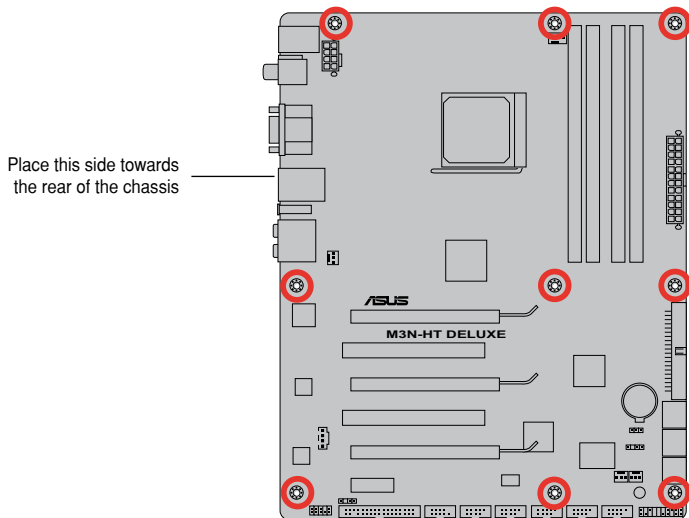
When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.2.2 Screw holes

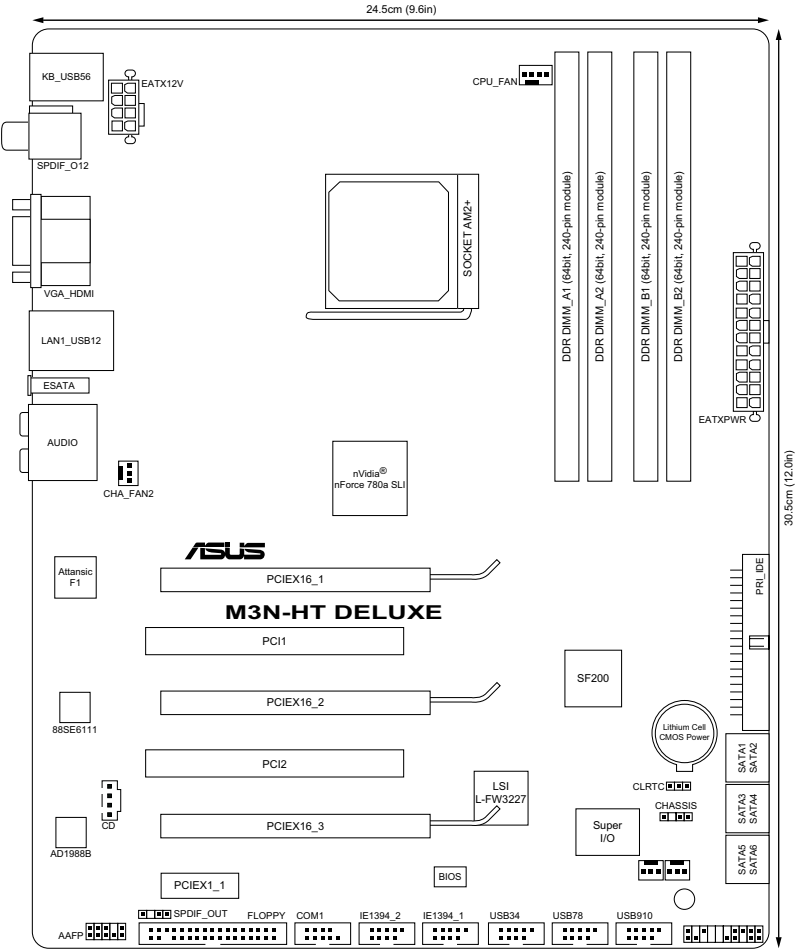
Place nine (9) screws into the holes indicated by circles to secure the motherboard to the chassis.



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



2.2.3 Motherboard layout



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

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1.	Floppy disk drive connector (34-1 pin FLOPPY)	2-25
2.	IDE connector (40-1 pin PRI_IDE)	2-26
3.	NVIDIA® nForce 780a SLI Serial ATA connectors (7-pin SATA1–4 [red]; SATA5–6 [black])	2-27
4.	USB connectors (10-1 pin USB34; 10-1 pin USB78; 10-1 pin USB910)	2-28
5.	IEEE 1394a port connector (10-1 pin IE1394_1; 10-1 pin IE1394_2)	2-28
6.	CPU, chassis, and power fan connectors (4-pin CPU_FAN; 3-pin CHA_FAN1; 3-pin CHA_FAN2; 3-pin PWR_FAN)	2-29
7.	Chassis intrusion connector (4-1 pin CHASSIS)	2-30
8.	Optical drive audio connector (4-pin CD)	2-30
9.	ATX power connectors (24-pin EATXPWR; 8-pin ATX12V)	2-31
10.	Front panel audio connector (10-1 pin AAFP)	2-32
11.	Serial port connector (10-1 pin COM1)	2-32
12.	Digital audio connector (4-1 pin SPDIF_OUT)	2-33
13.	System panel connector (20-8-pin PANEL)	2-34
	• System power LED (2-pin PLED) • Hard disk drive activity LED (2-pin IDE_LED) • System warning speaker (4-pin SPEAKER) • ATX power button/soft-off button (2-pin PWRSW) • Reset button (2-pin RESET)	
	ASUS Q-Connector (system panel)	2-35

2.3 Central Processing Unit (CPU)

The motherboard comes with an AM2+/AM2 socket designed for AMD® Socket AM2+ Phenom™ FX / Phenom / Athlon™ / Sempron™ processor or for Socket AM2 Athlon 64 X2 / Athlon 64 FX / Athlon 64 / Sempron processor.

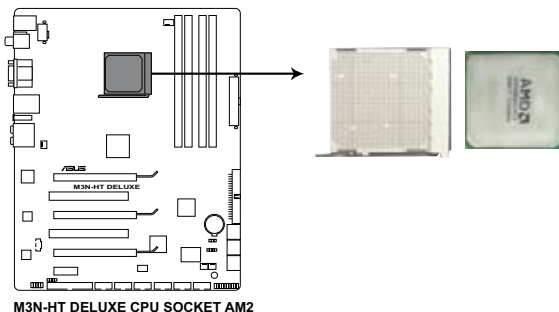


The AM2+/AM2 socket has a different pinout from the 940-pin socket designed for the AMD Opteron processor. Make sure you use a CPU designed for the AM2+/AM2 socket. The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

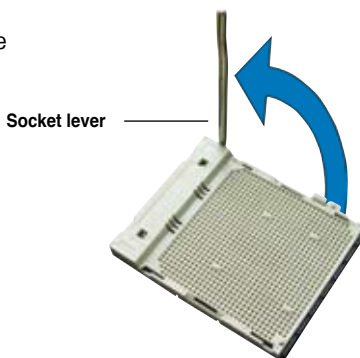
2.3.1 Installing the CPU

To install a CPU:

1. Locate the CPU socket on the motherboard.

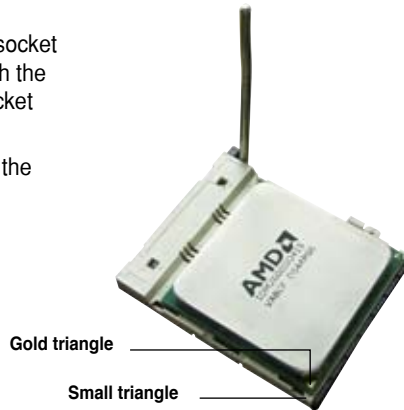


2. Unlock the socket by pressing the lever sideways, then lift it up to a 90° angle.



Make sure that the socket lever is lifted up to a 90° angle; otherwise, the CPU will not fit in completely.

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.



5. When the CPU is in place, push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.
6. Install a CPU heatsink and fan following the instructions that came with the heatsink package.



2.3.2 Installing the heatsink and fan

The AMD® AM2+ Phenom™ FX / Phenom / Athlon™ / Sempron™ processor or AMD® AM2 Athlon 64 X2 / Athlon 64 FX / Athlon 64 / Sempron processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.



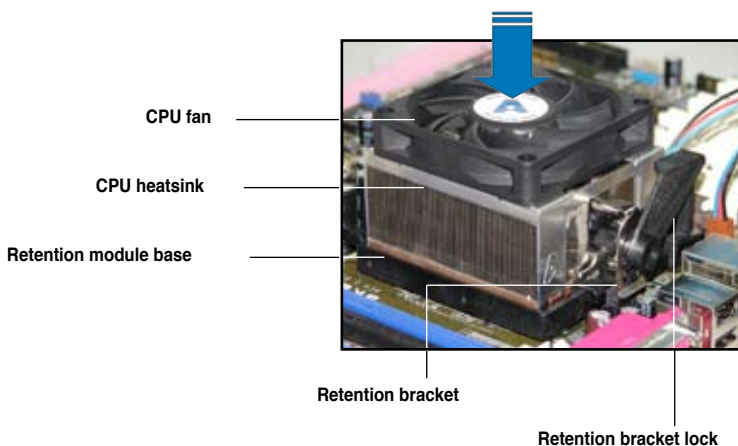
Make sure that you use only AMD-certified heatsink and fan assembly.

To install the CPU heatsink and fan:

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

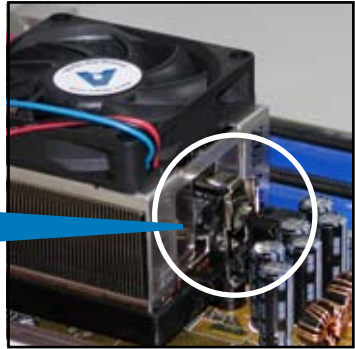


- The retention module base is already installed on the motherboard upon purchase.
 - You do not have to remove the retention module base when installing the CPU or installing other motherboard components.
 - If you purchased a separate CPU heatsink and fan assembly, make sure that a Thermal Interface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



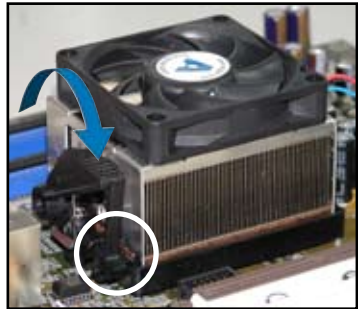
3. Align the other end of the retention bracket (near the retention bracket lock) to the retention module base. A clicking sound denotes that the retention bracket is in place.



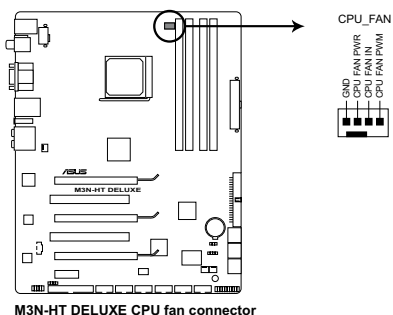
Make sure that the fan and heatsink assembly perfectly fits the retention mechanism module base, otherwise you cannot snap the retention bracket in place.



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.



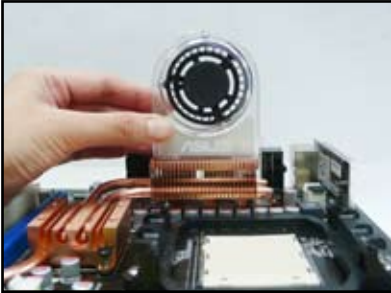
- Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.
- This connector is backward compatible with old 3-pin CPU fan.

2.3.3 Installing the optional fans



Install the optional fan only if you are using a passive cooler or a water cooler. Installing the optional fan with an active CPU cooler will interfere with the airflow and destabilize the system.

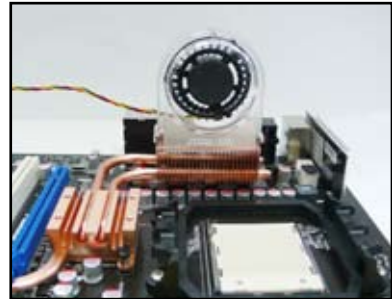
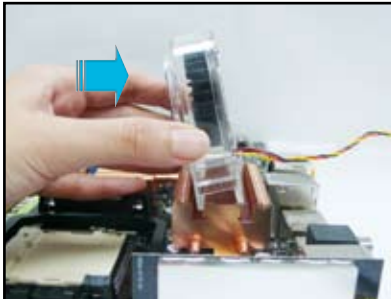
1. Position the fan above the pipe and heatsink assembly.
2. Fit the fan to the grooved edge of the heatsink.



Make sure that the ASUS logo faces to the CPU socket.



3. Carefully push down the fan until it snugly fits the heatsink, then connect the fan cable.
4. The photo shows the fan installed on the motherboard.



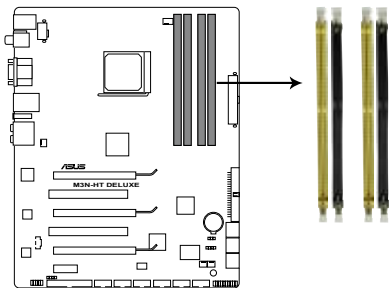
- Plug the optional fan cable to the CHA_FAN1/2 connector on the motherboard.
- Make sure the optional fan is installed correctly to prevent damage to the fan and motherboard components.

2.4 System memory

2.4.1 Overview

The motherboard comes with four Double Data Rate 2 (DDR2) Dual Inline Memory Modules (DIMM) sockets.

The figure illustrates the location of the DDR2 DIMM sockets:



M3N-HT DELUXE 240-pin DDR2 DIMM sockets

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

2.4.2 Memory configurations

You may install 256 MB, 512 MB, 1 GB, and 2 GB unbuffered ECC and non-ECC DDR2 DIMMs into the DIMM sockets.

Recommended Memory Configurations

Mode	Sockets			
	DIMM_A1 (yellow)	DIMM_A2 (black)	DIMM_B1 (yellow)	DIMM_B2 (black)
Single-Channel	—	—	Populated	—
	Populated	—	—	—
Dual-channel (1)	Populated	—	Populated	—
Dual-channel (2)	Populated	Populated	Populated	Populated



- 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, it is recommended that you obtain memory modules from the same vendor.
- If you install four 1 GB memory modules, the system may only recognize less than 3GB because the address space is reserved for other critical functions. This limitation appears on Windows® XP/Vista 32-bit operation system which does not support Physical Address Extension (PAE).
- If you install Windows® XP/Vista 32-bit operation system, a total memory of less than 3GB is recommended.
- This motherboard does not support memory modules made up of 128 Mb chips.

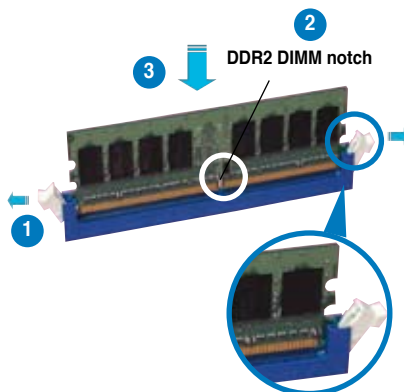
2.4.3 Installing a DIMM



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.

To install a DIMM:

1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



Unlocked retaining clip



- A DDR2 DIMM is keyed with a notch so that it fits in only one direction. Do not force a DIMM into a socket to avoid damaging the DIMM.
- The DDR2 DIMM sockets do not support DDR DIMMs. DO not install DDR DIMMs to the DDR2 DIMM sockets.

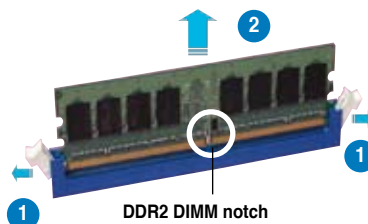
2.4.4 Removing a DIMM

To remove a DIMM:

1. Simultaneously press the retaining clips outward to unlock the DIMM.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.



2. Remove the DIMM from the socket.

2.4.5 Installing ASUS Cool Mempipe (Mempipe Edition only)

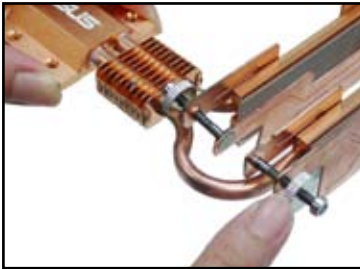
Install ASUS Cool Mempipe to your motherboard to achieve excellent thermal dissipation for your memory modules.

To install ASUS Cool Mempipe:

1. Secure the motherboard to your chassis with nine screws.
2. Install memory modules to sockets DIMM_A1/B1 first.



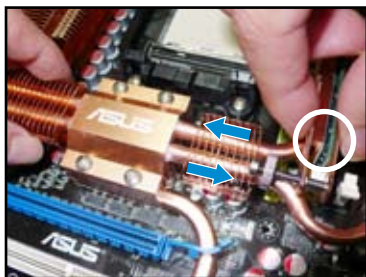
3. Loosen the four nuts to part the heat spreaders.
4. Remove the four pieces of protective film on the heat spreaders.



5. Align the Cool Mempipe with the northbridge heatsink and ensure the memory modules are located between the heat spreaders.
6. Fasten the Cool Mempipe to the northbridge heatsink with four screws.



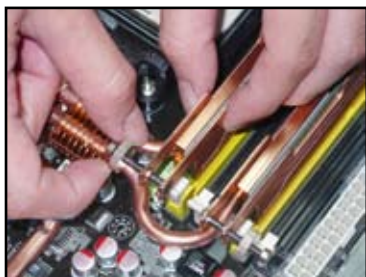
7. Adjust the heatpipe until the heat spreaders contact the memory modules.



8. Firmly press the heat spreaders against the memory modules.



9. Hold the heat spreaders and secure the four nuts. DO NOT overtighten the nuts.



10. Install another two memory modules to sockets DIMM_A2/ B2 if necessary.



Install memory modules to sockets DIMM_A2 and DIMM_B2 after the completion of Cool Mempipe installation.

2.5 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.



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

2.5.1 Installing an expansion card

To install an expansion card:

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

2.5.2 Configuring an expansion card

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

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 4 for information on BIOS setup.
2. Assign an IRQ to the card. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.



When using PCI cards on shared slots, ensure that the drivers support "Share IRQ" or that the cards do not need IRQ assignments; otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.

2.5.3 Interrupt assignments

Standard interrupt assignments

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

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

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCIe x16_1	shared	shared	shared	shared	—	—	—	—
PCIe x16_2	shared	shared	shared	shared	—	—	—	—
PCIe x16_3	shared	shared	shared	shared	—	—	—	—
USB 1.0 controller 1	—	—	—	shared	—	—	—	—
USB 1.0 controller 2	—	—	—	shared	—	—	—	—
USB 1.0 controller 3	—	—	—	shared	—	—	—	—
USB 1.0 controller 4	—	—	—	shared	—	—	—	—
USB 2.0 controller	—	—	—	shared	—	—	—	—
HD audio	shared	—	—	—	—	—	—	—
Onboard SATA	—	—	—	—		shared	—	—

2.5.4 PCI slots

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

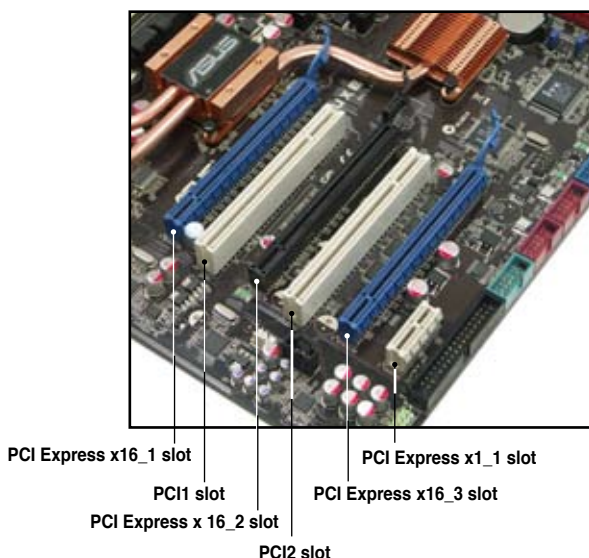
2.5.5 PCI Express x1 slot

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

2.5.6 Three PCI Express x16 slots

This motherboard has three PCI Express x16 slots that support PCI Express x16 graphic cards complying with the PCI Express specifications. With three graphics cards installed, the motherboard can enable multi-display. All of the three PCI Express x16 slots support PCIe 2.0 devices.

This motherboard supports 3 SLI-ready Express x16 graphics cards that comply with the PCI Express specifications.



Primary PCI Express x16 slot

The primary PCI Express x16 slots support PCI Express x16 graphic cards that comply with the PCI Express specifications.

Universal PCI Express slot (max. x8 mode)

This motherboard also supports a Universal PCI Express slot with a maximum speed of 2 GB/s. The operating frequency of this slot changes, depending on the type of PCI Express card you install. Refer to the table below for details.

The figure shows two graphics cards installed on the primary PCI Express x16 slot and the Universal PCI Express slot.



-
- We recommend that you install a VGA card on the primary (blue) PCI Express slots, and install any other PCI Express device on the PCI Express slot (black).
 - Currently, only NVIDIA® SLI™-Ready **GeForce® 8800 Ultra** and **GeForce® 8800 GTX** graphics cards support 3-Way SLI™ mode.
 - Currently, only NVIDIA® **GeForce® 8500 GT** and **GeForce® 8400 GS** graphics cards support GeForce Boost function under Hybrid SLI™ mode.
 - Currently, only NVIDIA® **GeForce® 9800 GX2** and **GeForce® 9800 GTX** graphics cards support Hybrid Power function under Hybrid SLI™ mode.
 - Connect a rear chassis fan to the chassis (CHA_FAN1 or CHA_FAN2) connector when using two (or three) graphics cards for better thermal environment. See page 2-29 for details.
 - We recommend that you provide sufficient power when running NVIDIA® SLI™ mode. See page 2-31 for details.
 - We recommend that you provide sufficient power when running NVIDIA® SLI™ mode. See page 2-31 for details.
-

2.6 Jumper

Clear RTC RAM (3-pin CLRTC)

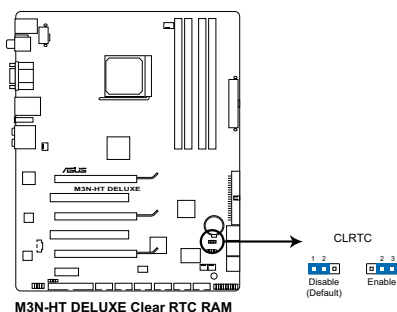
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. 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.
4. Reinstall the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the key during the boot process and enter BIOS setup to re-enter data.



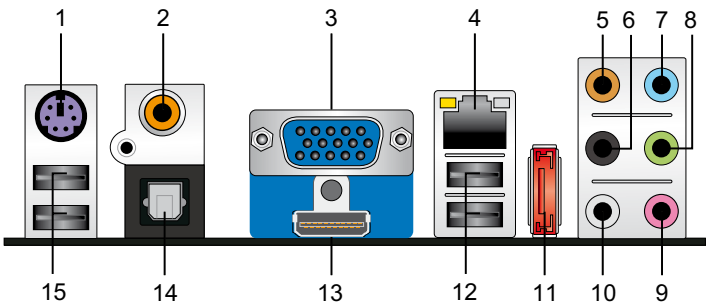
Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!



- 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 limitation, AC power off is required prior using C.P.R. function. You must turn off and on the power supply or unplug and plug the power cord before reboot the system.

2.7 Connectors

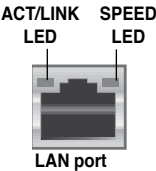
2.7.1 Rear panel connectors



- 1. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.
- 2. **Coaxial S/PDIF Out port.** This port connects an external audio output device via a coaxial S/PDIF cable.
- 3. **VGA port.** This port is for a VGA monitor or other VGA-compatible devices.
- 4. **LAN (RJ-45) port.** Supported by Gigabit LAN controller, this port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.
- 5. **Center/Subwoofer port (orange).** This port connects the center/subwoofer speakers.

LAN port LED indications

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



- 6. **Rear Speaker Out port (black).** This port connects the rear speakers in a 4-channel, 6-channel, or 8-channel audio configuration.
- 7. **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.
- 8. **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.
- 9. **Microphone port (pink).** This port connects a microphone.
- 10. **Side Speaker Out port (gray).** This port connects the side speakers in an 8-channel audio configuration.



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

Audio 2, 4, 6, or 8-channel configuration

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

- 11. External SATA port.** This port connects an external Serial ATA hard disk drive.



The external SATA port supports external Serial ATA 3.0 Gb/s devices. Longer cables support higher power requirements to deliver signal up to two meters away, and enables improved hot-swap function.



DO NOT insert a different connector to this port.

- 12. USB 2.0 ports 1 and 2.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 13. HDMI port.** This port is for a high-definition multimedia interface (HDMI) connector.

- This motherboard comes with dual-VGA outputs that features different displays on 2 monitors at the same time if you connect 2 monitors to both the onboard VGA and HDMI ports.
- With the bundled HDMI-to-DVI converter, this motherboard can also support DVI output.



14. **Optical S/PDIF Out port.** This port connects an external audio output device via an optical S/PDIF cable.
15. **USB 2.0 ports 3 and 4.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

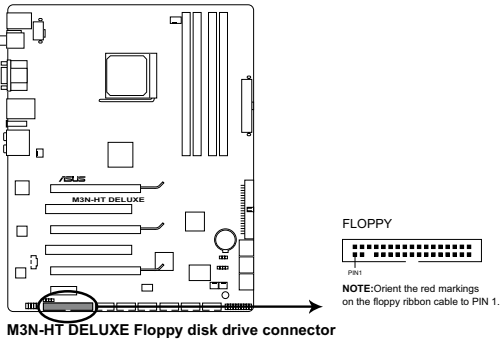
2.7.2 Internal connectors

1. Floppy disk drive connector (34-1 pin FLOPPY)

This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.



Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.



2. IDE connector (40-1 pin PRI_IDE)

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

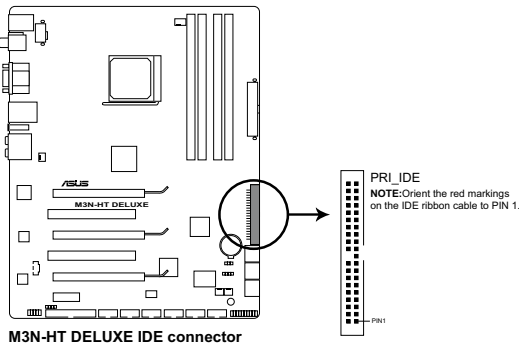
	Drive jumper setting	Mode of device(s)	Cable connector
Single device	Cable-Select or Master	–	Black
Two devices	Cable-Select	Master	Black
		Slave	Gray
	Master	Master	Black or gray
	Slave	Slave	



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



If any device jumper is set as “Cable-Select,” make sure all other device jumpers have the same setting.



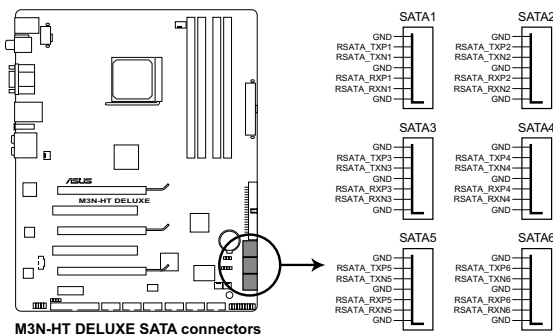
3. NVIDIA® nForce 780a SLI Serial ATA connectors (7-pin SATA1–4 [red]; 7-pin SATA5–6 [black])

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

If you install SATA hard disk drives to the SATA1/2/3/4/5/6 connectors, you can create a RAID 0, RAID 1, RAID 0+1, RAID 5 and JBOD configuration through the onboard NVIDIA® nForce 780a SLI controller.



- SATA1–4 connectors are set to [IDE] by default. If you intend to create a Serial ATA RAID set using these connectors, set the **Onchip SATA Type** item in the BIOS to [RAID].
- Before creating a RAID set, refer to the manual bundled in the motherboard support CD.



M3N-HT DELUXE SATA connectors

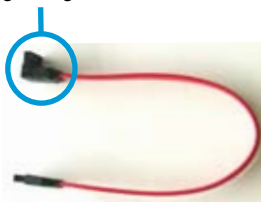


- SATA 5–6 connectors support AHCI mode and RAID mode only. Make sure to install the AHCI driver or RAID driver in the bundled support CD before connecting devices to SATA 5–6 connectors. Otherwise, the devices will not work.
- You must install the Windows® XP Service Pack 1 before using Serial ATA hard disk drives. The Serial ATA RAID feature (RAID 0 and RAID 1) is available only if you are using Windows® XP or later version.
- When using the connectors in Native IDE mode, connect the primary (boot) hard disk drive to the SATA1/3 connector. Refer to the table below for the recommended SATA hard disk drive connections.



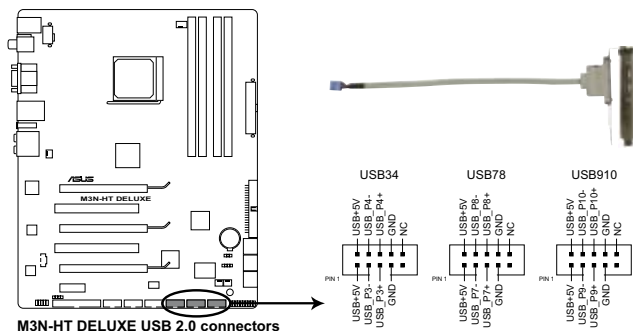
Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with huge graphics cards.

right angle side



4. USB connectors (10-1 pin USB34; 10-1 pin USB78; 10-1 pin USB910)

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.



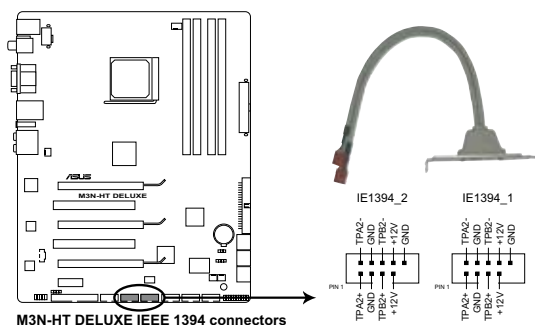
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!



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

5. IEEE 1394a port connector (10-1 pin IE1394_1; 10-1 pin IE1394_2)

These connectors are for IEEE 1394a ports. Connect the IEEE 1394a module cable to one of the connectors, 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!



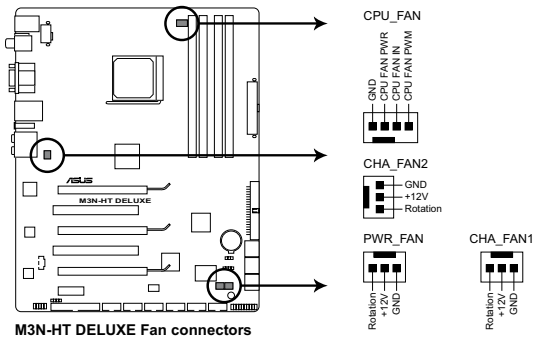
You can connect the front panel 1394 cable to the ASUS Q-Connector (1394, red) first, and then install the Q-Connector (1394) to the 1394 connector onboard if your chassis supports front panel 1394 ports.

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

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



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

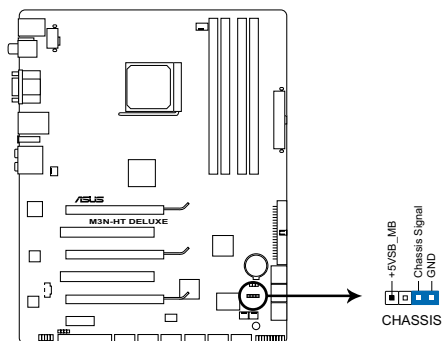


- Only the CPU_FAN and CHA_FAN 1 connectors support the ASUS Q-FAN 2 feature.
- If you install two graphics cards, we recommend that you plug the rear chassis fan cable to the motherboard connector labeled CHA_FAN1 or CHA_FAN2 for better thermal environment.

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

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

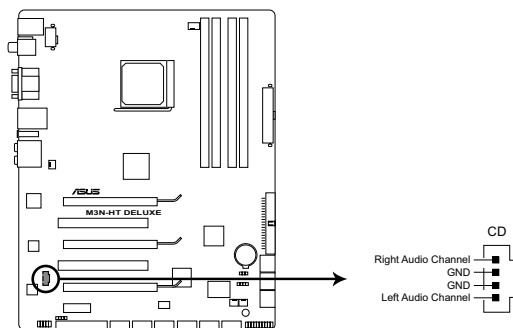
By default , the pin labeled “Chassis Signal” and “Ground” are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.



M3N-HT DELUXE Chassis intrusion connector

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

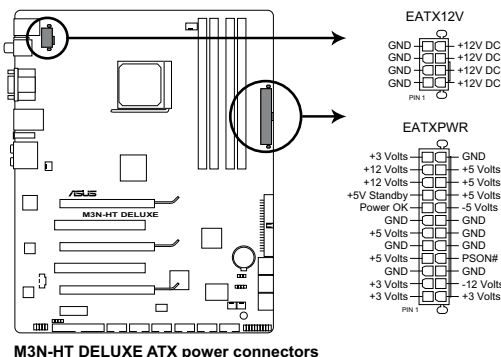
These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



M3N-HT DELUXE Internal audio connector

9. ATX power connectors (24-pin EATXPWR; 8-pin ATX12V)

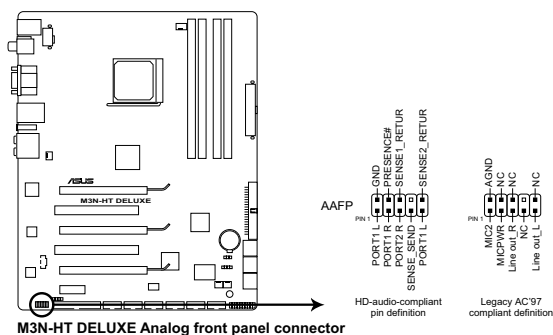
These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 600 W.
- Do not forget to connect the 8-pin ATX +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.
- The ATX 12 V Specification 2.0-compliant (500W) PSU has been tested to support the motherboard power requirements with the following configuration:
CPU: AMD FX-62
Memory 1024 MB DDR2-800 (x4)
Graphics card: PCI Express x16 NVIDIA 7900GTX
Serial ATA device: SATA hard disk drive (x2)
Optical drives: DVD-RW

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

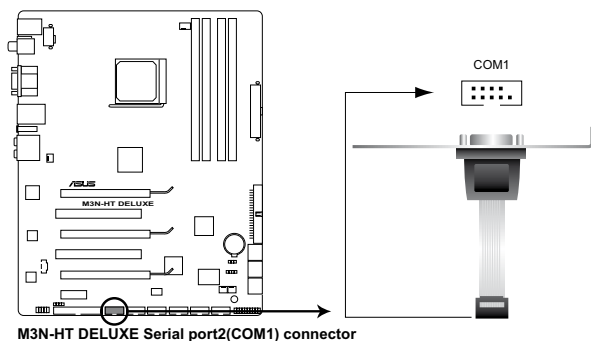
This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.



- We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.
- If you want to connect a high-definition front panel audio module to this connector, set the **Front Panel Support Type** item in the BIOS setup to **[HD Audio]**; if you want to connect an AC'97 front panel audio module to this connector, set the item to **[AC97]**. By default, this connector is set to **[HD Audio]**.

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

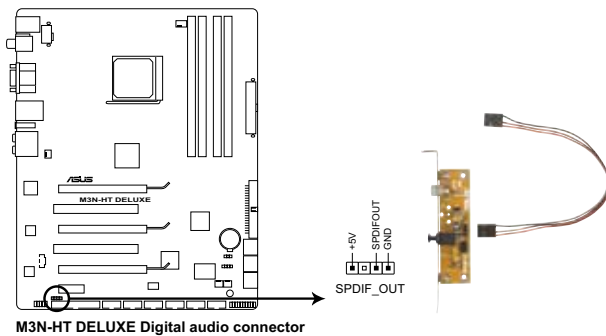
This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



The COM module is purchased separately.

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

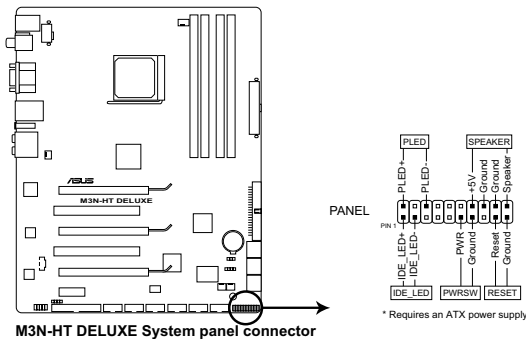
This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.



The S/PDIF module is purchased separately.

13. System panel connector (20-8 pin PANEL)

This connector supports several chassis-mounted functions.



- **System power LED (2-pin PLED)**

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

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

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

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

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

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

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

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

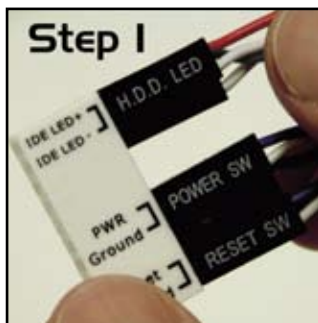
This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

ASUS Q-Connector (system panel)

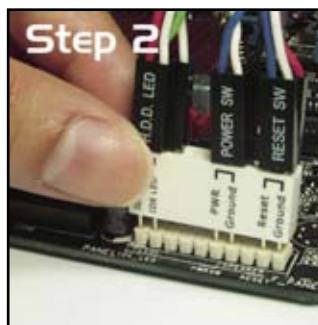
You can use the ASUS Q-Connector to connect/disconnect chassis front panel cables in a few steps. Refer to the instructions below to install the ASUS Q-Connector.

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

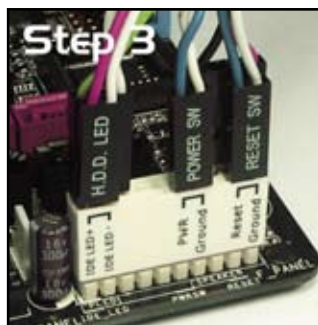
Refer to the labels on the Q-Connector to know the detailed pin definitions, then match them to the respective front panel cable labels.



2. Install the ASUS Q-Connector to the system panel connector, making sure the orientation matches the labels on the motherboard.



3. The front panel functions are now enabled. The figure shows the Q-Connector properly installed on the motherboard.



This chapter describes the power up sequence, the vocal POST messages, and ways of shutting down the system.

Powering up 3

Chapter summary

3

3.1	Starting up for the first time.....	3-1
3.2	Turning off the computer.....	3-2

3.1 Starting up for the first time

1. After making all the connections, replace the system case cover.
2. Be sure that all switches are off.
3. Connect the power cord to the power connector at the back of the system chassis.
4. Connect the power cord to a power outlet that is equipped with a surge protector.
5. Turn on the devices in the following order:
 - a. Monitor
 - b. External SCSI devices (starting with the last device on the chain)
 - c. System power
6. After applying power, the system power LED on the system front panel case lights up. For systems with ATX power supplies, the system LED lights up when you press the ATX power button. If your monitor complies with “green” standards or if it has a “power standby” feature, the monitor LED may light up or switch between orange and green after the system LED turns on.

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

3.2 Turning off the computer

3.2.1 Using the OS shut down function

If you are using Windows® XP:

1. Click the **Start** button then select **Turn Off Computer**.
2. Click the **Turn Off** button to shut down the computer.
3. The power supply should turn off after Windows® shuts down.

If you are using Windows® Vista™:

1. Click the **Start** button then select **ShutDown**.
2. The power supply should turn off after Windows® shuts down.

3.2.2 Using the dual function power switch

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