

P5N-T Deluxe

ASUS[®]

Motherboard

E3411

First Edition V1

October 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 jumpers and connectors on the motherboard.
- **Chapter 3: Powering up**
This chapter describes the power up sequence and ways of shutting down the system.
- **Chapter 4: BIOS setup**
This chapter tells how to change system settings through the BIOS Setup menu. Detailed descriptions of the BIOS parameters are also provided.
- **Chapter 5: Software support**
This chapter describes the contents of the support DVD that comes with the motherboard package and the software.
- **Chapter 6: NVIDIA® SLI™ technology support**
This chapter tells how to install SLI-ready PCI Express graphics cards.
- **Appendix: CPU features**
The Appendix describes the CPU features and technologies that the motherboard supports.

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:

format A: /S

P5N-T Deluxe specifications summary

CPU	LGA775 socket for Intel® Core™2 Quad / Core™2 Extreme / Core™2 Duo / Pentium® Extreme / Pentium® D / Pentium® 4 Processors Compatible with Intel® 05B/05A/06 processors Intel® next generation 45nm Multi-Core CPU Note: Visit the ASUS website at www.asus.com for the Intel® CPU support list.
Chipset	NVIDIA® nForce 780i SLI
Front Side Bus	1333 / 1066 / 800 MHz
Memory	4 x DIMM, max. 8GB, DDR2 1066/800/667 MHz, non-ECC, un-buffered memory Dual channel memory architecture Note: Visit the ASUS website at www.asus.com for the latest Qualified Vendors List (QVL).
Expansion slots	3 x PCIe x16 (blue @PCIe 2.0 x16 mode, black @ PCIe x16 mode) with SLI™ support 2 x PCIe x1 1 x PCI
Scalable Link Interface (SLI™)	Supports three identical NVIDIA® SLI™-Ready graphics cards (all at x16 mode)
Storage	Southbridge supports: - 1 x Ultra DMA 133/100/66 - 6 x Serial ATA 3 Gb/s - NVIDIA® MediaShield™ RAID supports RAID 0, 1, 10(0+1), 5 and JBOD configuration across Serial ATA drives
LAN	Marvell® 88E1116 PCIe Gigabit LAN controller, featuring AI NET2
High Definition Audio	AD1® 1988B 8-channel High Definition Audio CODEC Supports Jack-Sensing, Enumeration, and Multi-streaming Coaxial / Optical S/PDIF out ports at back panel
IEEE 1394	VIA6308P controller supports: - 2 x IEEE 1394a connectors (one at mid-board; one at back panel)
USB	Supports up to 10 USB 2.0 ports (6 at mid-board, 4 at back panel)

(continued on the next page)

P5N-T Deluxe specifications summary

ASUS AI Lifestyle Unique features	ASUS Power Saving Solution: <ul style="list-style-type: none">- ASUS EPU (Energy Processing Unit)- ASUS 3rd Generation 8-phase Power Design- ASUS AI Nap ASUS AI Lifestyle Features: <ul style="list-style-type: none">- ASUS AI Direct Link ASUS Quiet Thermal Solution: <ul style="list-style-type: none">- ASUS Fanless Design: Heat-pipe solution- ASUS Fanless Design: StackCool 2- ASUS Q-Fan 2- ASUS Optional Fan for Water-cooling or Passive-Cooling only ASUS Crystal Sound: <ul style="list-style-type: none">- ASUS Audio 2- ASUS Noise Filter ASUS EZ DIY: <ul style="list-style-type: none">- ASUS Q-Shield- ASUS Q-Connector- ASUS O.C. Profile- ASUS CrashFree BIOS 3- ASUS EZ Flash 2- ASUS AI Slot Detector
ASUS Stylish Features	ASUS MyLogo3™ Multi-language BIOS
ASUS Exclusive Overclocking features	Intelligent overclocking tools: <ul style="list-style-type: none">- ASUS AI Booster utility Precision Tweaker 2: <ul style="list-style-type: none">- vCore: Adjustable CPU voltage at 0.00625V increment- vDIMM: 64-step DRAM voltage control- vChipset (N.B.): 33-step Chipset voltage control- vFSB Termination: 15-step reference voltage control- vCPU PLL: 64-step CPU PLL voltage control SFS (Stepless Frequency Selection) <ul style="list-style-type: none">- FSB tuning from 200MHz up to 800MHz at 1MHz increment- Memory tuning from 800MHz up to 3200MHz- PCI Express frequency tuning from 100MHz up to 150MHz at 1MHz increment Overclocking Protection: <ul style="list-style-type: none">- ASUS C.P.R.(CPU Parameter Recall)

(continued on the next page)

P5N-T Deluxe specifications summary

Rear panel	2 x PS/2 Keyboard port (purple) 1 x Optical S/PDIF Output port 1 x Coaxial S/PDIF Output port 1 x External SATA 1 x LAN (RJ45) port 4 x USB 2.0/1.1 ports 1 x IEEE1394a port
Internal connectors	1 x Floppy disk drive connector 1 x IDE connector 6 x Serial ATA connectors 3 x USB connectors support additional 6 USB ports 1 x COM connector 1 x IEEE 1394a port connector 1 x CPU / 1 x Power / 2 x Chassis Fan connectors Front panel audio connector 1 x S/PDIF Out Header Chassis Intrusion connector CD audio in 24-pin ATX Power connector 8-pin ATX 12V Power connector System Panel (Q-Connector)
BIOS features	8 Mb Award BIOS, PnP, DMI2.0, WfM2.0, SM BIOS 2.3, Multi-Language BIOS
Manageability	WOL by PME, WOR by PME, Chasis Intrusion, PXE
Support DVD contents	Drivers ASUS PC Probe II ASUS Update ASUS AI Suite Anti-virus software (OEM version)
Form factor	ATX form factor: 12 in x 9.6 in (30.5 cm x 24.5 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 Welcome! 1-1
- 1.2 Package contents..... 1-1
- 1.3 Special features..... 1-2

1.1 Welcome!

Thank you for buying an ASUS® P5N-T Deluxe 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 P5N-T Deluxe motherboard
I/O modules	1 x 1-port IEEE 1394a module 1 x 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	Q-Shield (I/O shield) 1 x ASUS Optional Fans for Water-Cooling or Passive-Cooling only 1 x 3-in-1 ASUS Q-Connector Kit (USB, IEEE 1394, system panel; Retail version only) 3 x ASUS SLI Bridges
Application DVD	ASUS motherboard support DVD
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

Intel® Core™ 2 Quad Processor Ready



This motherboard supports the latest Intel® Core™ 2 Quad processors in the LGA775 package. It is excellent for multi-tasking, multi-media and enthusiastic gamers with 1066 / 800 MHz FSB. The Intel® Core™ 2 Quad processor is one of the most powerful CPUs in the world. This motherboard also supports Intel® CPUs in the new 45 nm manufacturing process.

Intel® Core™ 2 Duo/ Intel® Core™ 2 Extreme CPU support



This motherboard supports the latest Intel® Core™ 2 processor in the LGA775 package. With the new Intel® Core™ microarchitecture technology and 1600 / 1333 / 1066 / 800 MHz FSB, the Intel® Core™ 2 is one of the most powerful and energy efficient CPUs in the world.

NVIDIA® nForce® 780i SLI chipset

The NVIDIA® nForce 780i 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 780i SLI chipset also supports six (6) Serial ATA 3 Gb/s devices, three PCI Express™ x16 slots with NVIDIA® SLI™ support at full x16, x16, x16 mode, and up to 10 USB 2.0 ports.

NVIDIA® Scalable Link Interface (SLI™)



NVIDIA SLI™ (Scalable Link Interface) takes advantage of the increased bandwidth of the PCI Express bus architecture and features intelligent hardware and software that allows two GPUs to efficiently work together to deliver earth-shattering, scalable performance.

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 GPUs to efficiently work together to deliver earth-shattering, scalable performance. For some applications nearly triple performance!

PCIe 2.0

This motherboard supports the latest PCIe 2.0 device for twice the current speed and bandwidth. This enhances system performance while still providing backward compatibility to PCIe 1.0 devices. See page 2-18 for details.

DDR2 memory support

The motherboard supports DDR2 memory that features data transfer rates of 1066/800/667 MHz to meet the higher bandwidth requirements of the latest 3D graphics, multimedia, and Internet applications. The dual-channel DDR2 architecture doubles the bandwidth of your system memory to boost system performance, eliminating bottlenecks with peak bandwidths of up to 12.8 GB/s. See page 2-13 for details.

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

This motherboard supports the next-generation hard drives based on the Serial ATA (SATA) 3 Gb/s storage specification, delivering enhanced scalability and doubling the bus bandwidth for high-speed data retrieval and saves. The external SATA port located at the back I/O provides smart setup and hot-plug functions. Easily backup photos, videos and other entertainment contents to external devices. See page 2-22 for details.

The NVIDIA® MediaShield™ RAID controller integrated in the NVIDIA® nForce® 780i SLI™ chipset allows RAID 0, RAID 1, RAID 10(0+1), RAID 5, and JBOD configurations for six SATA 3 Gb/s connectors. See page 2-24 for details.

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 & other PC portable devices. See pages 2-21 and 2-26 for details.

S/PDIF digital sound ready

This motherboard provides convenient connectivity to external home theater audio systems via coaxial and optical S/PDIF-out (SONY/PHILIPS Digital Interface) jacks. It allows to transfer digital audio without converting to analog format and keeps the best signal quality. See pages 2-21 and 2-22 for details.

Gigabit LAN solution

PCI Express Gb 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 2-21 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 headphone while playing multi-channel network games. See pages 2-21 and 2-22 for details.

Green ASUS

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

1.3.2 ASUS AI Lifestyle unique features

ASUS Power Saving Solution

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

ASUS EPU

The ASUS EPU utilizes innovative technology to digitally monitor and tune the CPU power supply with improved VR responses in heavy or light loadings. It automatically provides power for higher performance or improve efficiency by 7% when the PC is running low intensity applications. Working together with AI Gear 3, this can help you attain the best possible power efficiency and energy savings up to 58.6% to help save the environment.

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.

ASUS Quiet Thermal Solution

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

ASUS 3rd Generation 8 Phase Power Design

Longer Life, & Higher Efficiency!

With power efficiency so important to operating temperatures, ASUS' 3rd generation 8-phase VRM design leads the industry with its 95% power efficiency. High quality power components such as low RDS (on) MOSFETs for minimum switching loss & lower temperatures, Ferrite core chokes with lower hysteresis loss, and high quality Japanese-made conductive polymer capacitors all add up to ensure longer component life and lower power loss - creating more energy efficiency.

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 - Pure Copper 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 2-33 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.

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 multichannels will allow you to experience true-to-life high quality audio.

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.

ASUS EZ DIY

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

ASUS Q-Shield



The specially designed ASUS Q-Shield provides conductivity to best protect your motherboard against static electricity damage and shields it against Electronic Magnetic Interference (EMI). Without the usual "fingers" present, this new design is convenient and safe to install.

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 2-32 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 CrashFree BIOS 3



The ASUS CrashFree BIOS 3 allows users to restore corrupted BIOS data from a USB flash disk containing the BIOS file.

ASUS EZ Flash 2



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 AI Slot Detector



When PCIE/PCI devices are installed, you can find out if they are installed successfully via ASUS's innovatively designed on-board LEDs when they switch on the power. This provides an efficient way to identify the correct way to set up without entering the operating system.

ASUS MyLogo3™



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

AI Booster

The ASUS AI Booster allows you to overclock the CPU speed in Windows environment without the hassle of booting the BIOS.

Precision Tweaker 2

Allows the user to adjust the NB Voltage, FSB termination Voltage, CPU PLL Voltage and the DRAM Voltage in 0.02v steps to finetune voltages to achieve the most precise setting for the ultimate customized overclocking configuration.

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.

Hardware information

A large, light gray, stylized number '2' is positioned behind the word 'Hardware' in the title.

2.1	Before you proceed	2-1
2.2	Motherboard overview.....	2-2
2.3	Central Processing Unit (CPU)	2-6
2.4	System memory	2-13
2.5	Expansion slots.....	2-16
2.6	Jumper	2-20
2.7	Connectors	2-21

2.1 Before you proceed

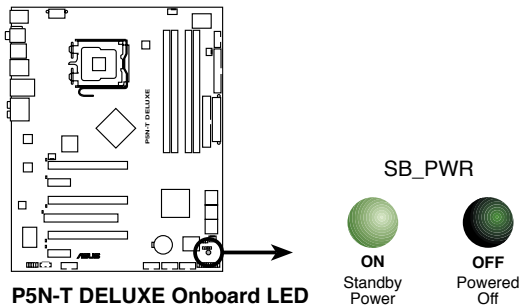
Take note of the following precautions before you install motherboard components or change any motherboard settings.



- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or 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.

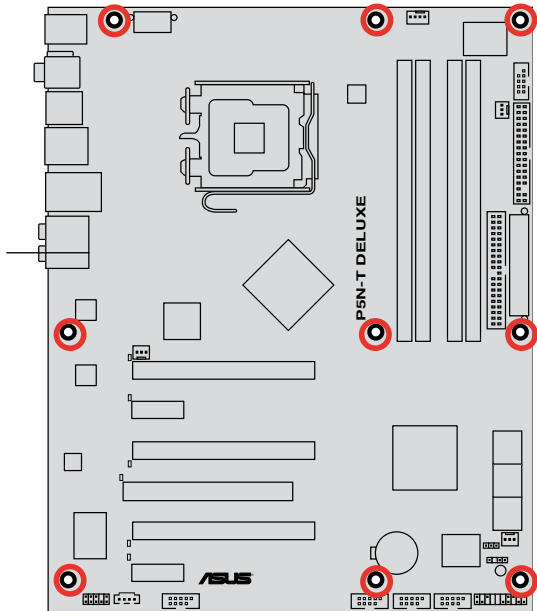
2.2.2 Screw holes

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

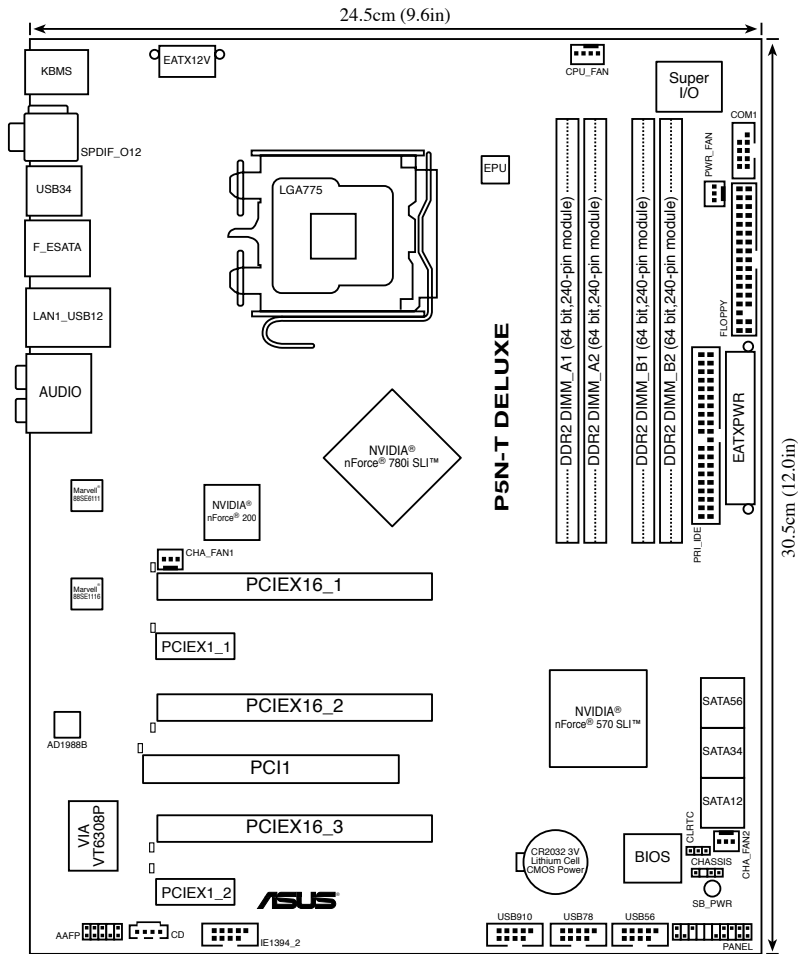


DO NOT overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis



2.2.3 Motherboard layout



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

2.2.4 Layout contents

Slots		Page
1.	DDR2 DIMM slots	2-13
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Jumper		Page
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3.	IEEE 1394a port	2-21
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5.	Center/Subwoofer port (orange)	2-21
6.	Rear Speaker Out port (black)	2-21
7.	Line In port (light blue)	2-21
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9.	Microphone port (pink)	2-22
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Internal connectors		Page
1.	Floppy disk drive connector (34-1 pin FLOPPY)	2-23
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3.	Serial ATA connectors (7-pin SATA1-6)	2-24
4.	USB connectors (10-1 pin USB56, USB78, USB910)	2-25
5.	IEEE 1394a port connector (10-1 pin IE1394_2)	2-26
6.	Serial port connector (10-1 pin COM1)	2-26
7.	CPU, chassis, power, and optional fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN1-2, 3-pin PWR_FAN)	2-27
8.	Chassis intrusion connector (4-1 pin CHASSIS)	2-28
9.	ATX power connectors (24-pin EATXPWR, 2 x 4-pin EATX12V)	2-28
10.	Front panel audio connector (10-1 pin AAFP)	2-30
11.	Optical drive audio connector (4-pin CD)	2-30
12.	System panel connector (20-8 pin PANEL)	2-31
13.	ASUS Q-Connector (system panel)	2-32

2.3 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA775 socket designed for the Intel® Core™2 Quad / Core™2 Extreme / Core™2 Duo / Pentium® Extreme / Pentium® D/ Pentium® 4 processors.



-
- Make sure that all power cables are unplugged before installing the CPU.
 - If installing a dual-core CPU, connect the chassis fan cable to the CHA_FAN1 connector to ensure system stability.
 - Due to the chipset limitation, we recommend you use FSB 800MHz CPU or above.
-

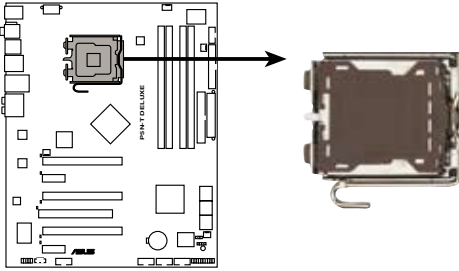


- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
 - Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA775 socket.
 - The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.
-

2.3.1 Installing the CPU

To install a CPU:

1. Locate the CPU socket on the motherboard.

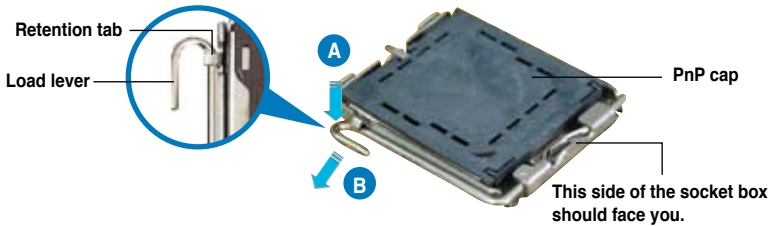


P5N-T DELUXE CPU Socket 775



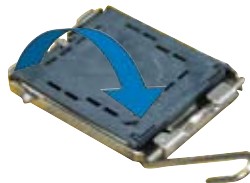
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

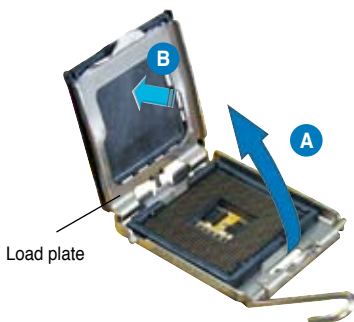


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

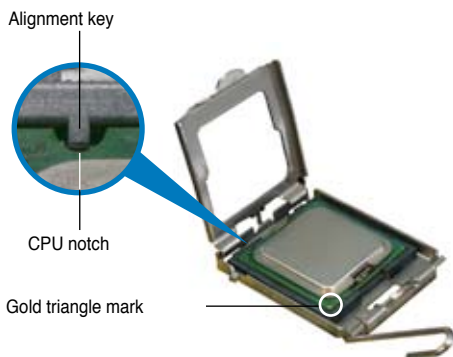
3. Lift the load lever in the direction of the arrow to a 135° angle.



- Lift the load plate with your thumb and forefinger to a 100° angle (A), then push the PnP cap from the load plate window to remove (B).

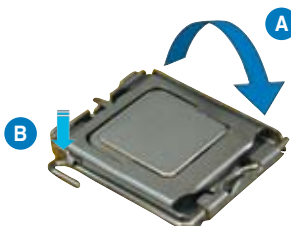


- Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket then fit the socket alignment key into the CPU notch.



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!

- Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.
- If installing a dual-core CPU, connect the chassis fan cable to the CHA_FAN1 connector to ensure system stability.



The motherboard supports Intel® LGA775 processors with the Intel® Enhanced Memory 64 Technology (EM64T), Enhanced Intel SpeedStep® Technology (EIST), and Hyper-Threading Technology. Refer to the Appendix for more information on these CPU features.

2.3.2 Installing the CPU heatsink and fan

The Intel® LGA775 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.



- When you buy a boxed Intel® processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel®-certified multi-directional heatsink and fan.
- Your Intel® LGA775 heatsink and fan assembly comes in a push-pin design and requires no tool to install.
- If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.



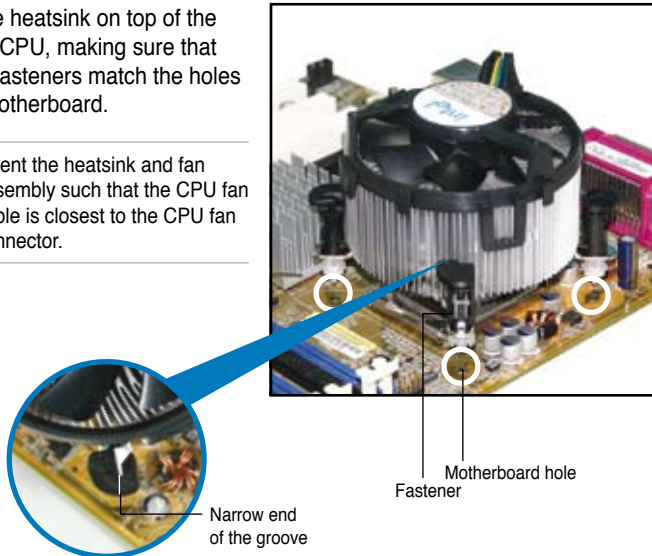
Make sure that you have installed the motherboard to the chassis before you install the CPU fan and heatsink assembly.

To install the CPU heatsink and fan:

1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

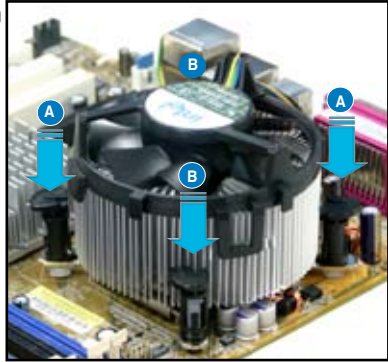
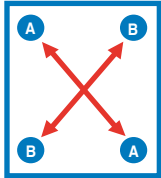


Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.

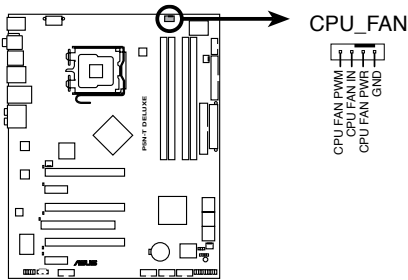


Make sure to orient each fastener with the narrow end of the groove pointing outward. (The photo shows the groove shaded for emphasis.)

2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.



3. Connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN.



P5N-T DELUXE CPU fan connector

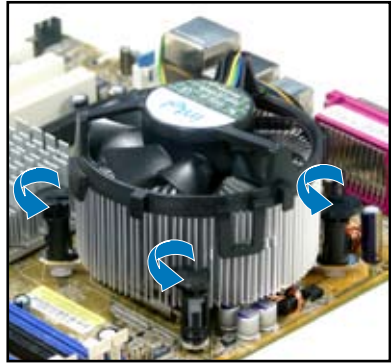


Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

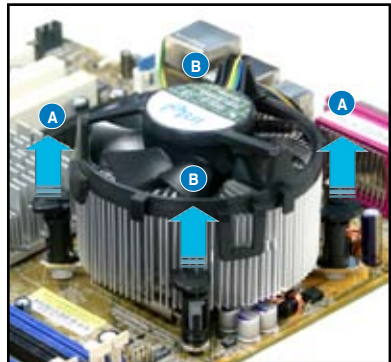
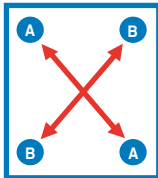
2.3.3 Uninstalling the CPU heatsink and fan

To uninstall the CPU heatsink and fan:

1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Rotate each fastener counterclockwise.



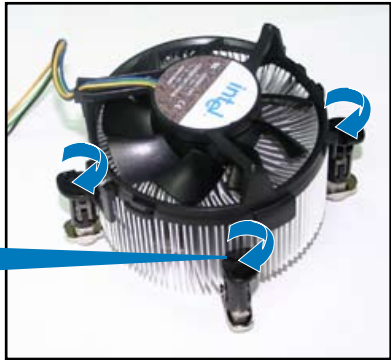
3. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard.



4. Carefully remove the heatsink and fan assembly from the motherboard.



5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.



The narrow end of the groove should point outward after resetting. (The photo shows the groove shaded for emphasis.)

Narrow end of the groove



Refer to the documentation in the boxed or stand-alone CPU fan package for detailed information on CPU fan installation.

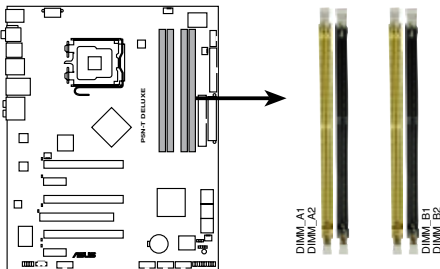
2.4 System memory

2.4.1 Overview

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

A DDR2 module has the same physical dimensions as a DDR DIMM but has a 240-pin footprint compared to the 184-pin DDR DIMM. DDR2 DIMMs are notched differently to prevent installation on a DDR DIMM socket.

The figure illustrates the location of the DDR2 DIMM sockets:



P5N-T DELUXE 240-pin DDR3 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 512 MB, 1 GB, and 2 GB unbuffered non-ECC DDR2 DIMMs into the DIMM sockets.

Mode	Sockets			
	DIMM_A1	DIMM_B1	DIMM_A2	DIMM_B2
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.
 - Due to chipset resource allocation, the system may detect less than 8 GB system memory when you installed four 2 GB DDR2 memory modules.
-



-
- If you install four 1 GB memory modules, the system may detect less than 3 GB of total memory because of address space allocation for other critical functions. This limitation applies to Windows Vista 32-bit/Windows XP 32-bit version operating system since it does not support PAE (Physical Address Extension) mode.
 - If you install Windows Vista 32-bit/Windows XP 32-bit version operating system, we recommend that you install less than 3GB of total memory.

Notes on memory limitations

- Due to chipset limitation, this motherboard can only support up to 8 GB on the operating systems listed below. You may install a maximum of 2 GB DIMMs on each slot.

64-bit

Windows XP Professional x64 Edition

Windows Vista x64 Edition

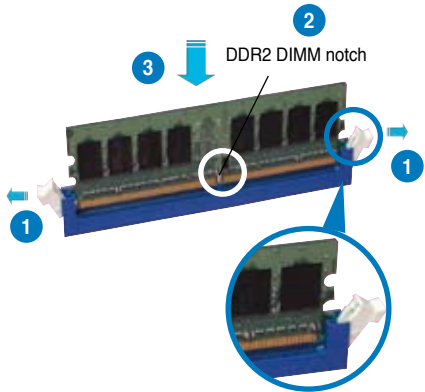
2.4.3 Installing a DIMM



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.

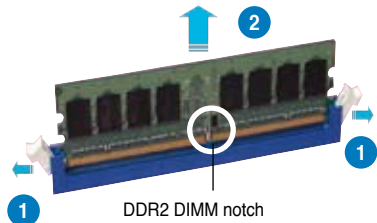
2.4.4 Removing a DIMM

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.

2.5 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 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. Refer to the table on the next page for details.

2.5.3 Interrupt assignments

IRQ	Standard function
0	System timer
1	Standard 101/102-key or Microsoft Natural Keyboard
4	Communications Port (COM1)*
6	Standard floppy disk controller
8	System CMOS/real-time clock
9	Microsoft ACPI-compliant system
9	NVIDIA nForce networking controller #3
9	NVIDIA nForce networking controller #4
10	NVIDIA nForce PCI system management
11	Mass storage controller
12	PS/2 compatible mouse port
13	Numeric data processor
14	Primary IDE channel
16	NVIDIA GeForce 6600 GT
19	VIA OHCI compliant IEEE 1394 host controller
20	NVIDIA nForce 590/570/550 Serial ATA controller
20	NVIDIA network bus enumerator
21	NVIDIA network bus enumerator
22	Standard OpenHCD USB host controller
22	NVIDIA nForce 590/570/550 Serial ATA controller
23	Standard Enhanced PCI to USB host controller
23	NVIDIA nForce 590/570/550 Serial ATA controller

IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCIEx16_1	-	-	-	-	shared	-	-	-
PCIEx16_2	-	-	-	-	-	shared	-	-
PCIEx16_3	-	-	-	-	shared	-	-	-
PCI Slot	-	-	-	-	-	shared	-	-
PCIEx1_1	shared	-	-	-	-	-	-	-
PCIEx1_2	-	shared	-	-	-	-	-	-
USB 1.1	-	shared	-	-	-	-	-	-
USB 2.0	-	-	shared	-	-	-	-	-
LAN	-	shared	-	-	-	-	-	-
PATA	shared	-	-	-	-	-	-	-
SATA_1	-	shared	-	-	-	-	-	-
SATA_2	-	-	shared	-	-	-	-	-
SATA_3	-	-	-	used	-	-	-	-
SATA_RAID	-	shared	-	-	-	-	-	-
1394	-	shared	-	-	-	-	-	-
Audio	-	-	shared	-	-	-	-	-

2.5.4 PCI slot

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 slot.

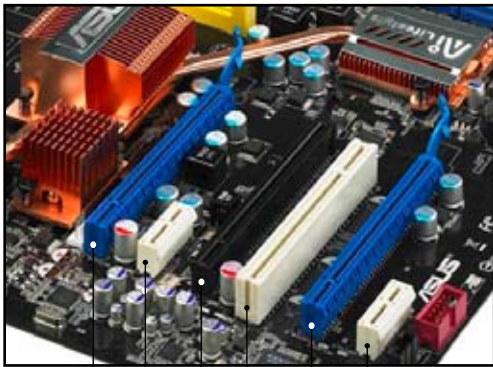
2.5.5 PCI Express x1 slots

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

2.5.6 PCI Express 2.0 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 tri-display. Two (blue slots) 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.



- PCI Express x1_2 slot
- PCIe 2.0 x16_3 slot (blue, @x16)
- PCI slot
- PCIe x16_2 slot (black, @x16)
- PCI Express x1_1 slot
- PCIe 2.0 x16_1 slot (blue, @x16)



-
- 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).
 - 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 2-27 for details.
 - In single card mode, use either the blue or black slot for PCI Express x16 graphics cards to get better performance.
 - In SLI™ mode, we recommend that you use the PCIe 2.0 slots (blue slots) to get better performance.
 - We recommend that you provide sufficient power when running NVIDIA® SLI™ mode. See page 2-29 for details.
-

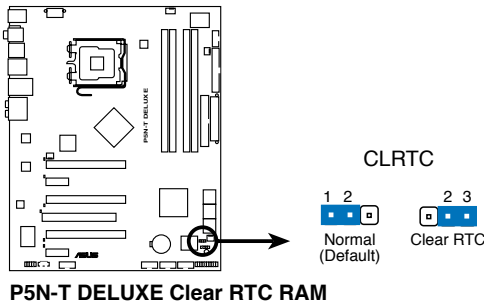
2.6 Jumper

1. Clear RTC RAM (3-pin CLRRTC)

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:

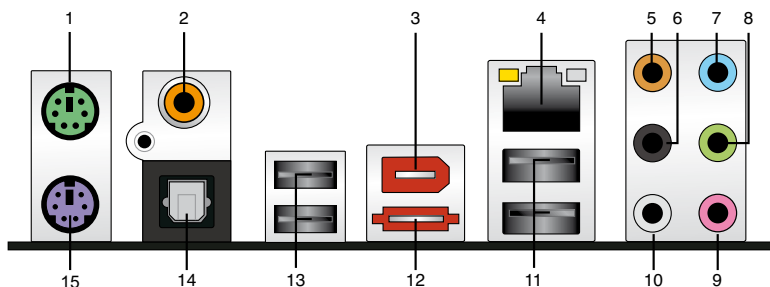
1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Reinstall the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the key during the boot process and enter BIOS setup to re-enter data.



- Make sure to re-enter your previous BIOS settings after you clear the CMOS.
- 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.

2.7 Connectors

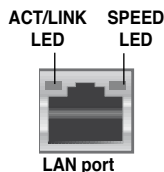
2.7.1 Rear panel connectors



1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Coaxial S/PDIF Out port.** This port connects an external audio output device via a coaxial S/PDIF cable.
3. **IEEE 1394a port.** This 6-pin IEEE 1394a port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.
4. **LAN (RJ-45) port.** 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.

LAN port LED indications

Activity/Link 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



5. **Center/Subwoofer port (orange).** This port connects the center/subwoofer speakers.
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 Out	Rear Speaker Out
Gray	–	–	–	Side Speaker Out

- 11. **USB 2.0 ports 1 and 2.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 12. **External SATA port.** This port connects to an external a Serial ATA hard disk drive.



The external SATA port supports external Serial ATA 3 Gb/s devices. Longer cables support higher power requirements to deliver signal up to two meters away, and enables improved hot-swap function.



When using hot-plug and NCQ, set the J-Micron eSATA/PATA Controller Mode in the BIOS to [AHCI].



DO NOT insert a different connector to the external SATA port.

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

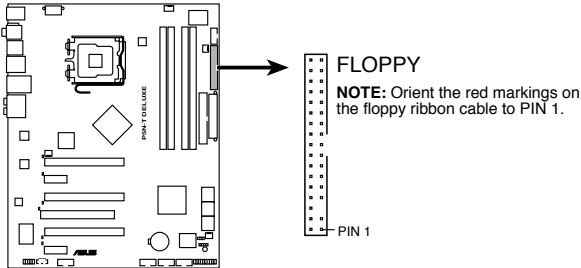
2.7.2 Internal connectors

1. Floppy disk drive connector (34-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.



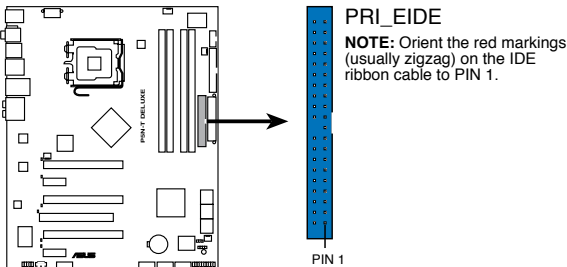
Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.



P5N-T DELUXE Floppy disk drive connector

2. IDE connector (40-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.



P5N-T DELUXE IDE connector

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



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

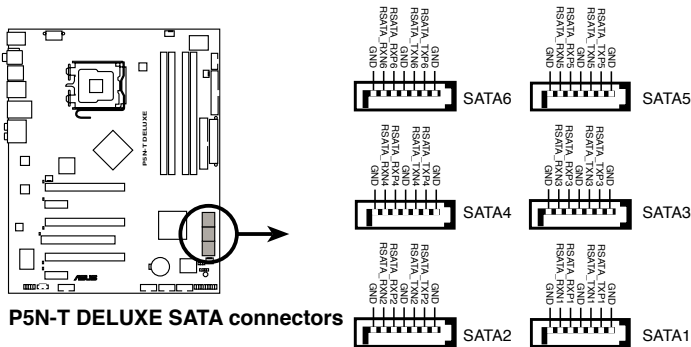


If any device jumper is set as “Cable-Select,” make sure all other device jumpers have the same setting.

3. Serial ATA connectors (7-pin SATA1-6)

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

If you installed Serial ATA hard disk drives, you can create a RAID 0, RAID 1, RAID 0+1, RAID 5, or JBOD configuration with the onboard NVIDIA® MediaShield™ RAID controller.



The RAID function of these connectors is set to [Disabled] by default. If you intend to create a Serial ATA RAID set using these connectors, enable the **RAID Enabled** item under the **Serial ATA Configuration** sub-menu in the BIOS.

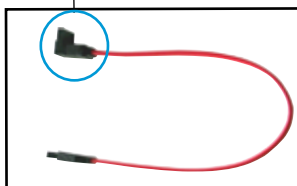


These connectors support Native Command Queuing (NCQ), Power Management (PM) Implementation Algorithm, Hot Swap and smart setup.



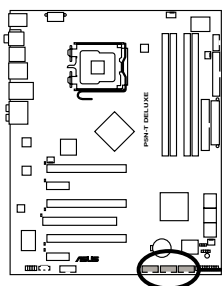
Connect the right-angle side of SATA signal cable to the SATA device, or connect the right-angle side of the SATA cable to the onboard SATA port to avoid mechanical conflict with huge graphics cards.

Right-angle side

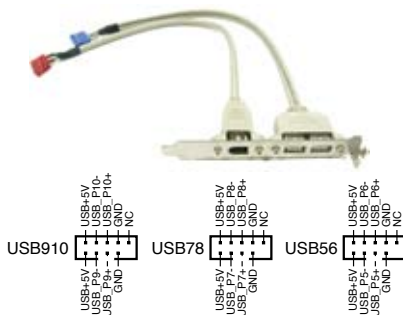


4. USB connectors (10-1 pin USB56, USB78, USB910)

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.



P5N-T DELUXE USB 2.0 connectors



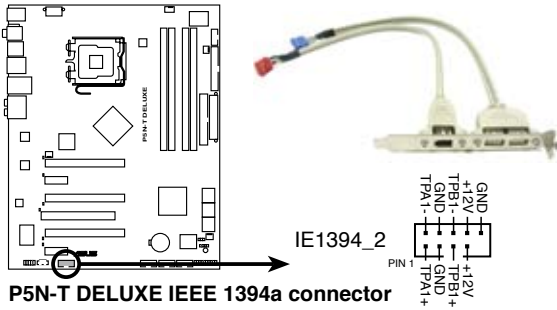
Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!



You can connect the USB cable to ASUS Q-Connector (USB, blue) first, and then install the Q-Connector (USB) to the USB connector onboard.

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

This connector is for a 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.



P5N-T DELUXE IEEE 1394a connector



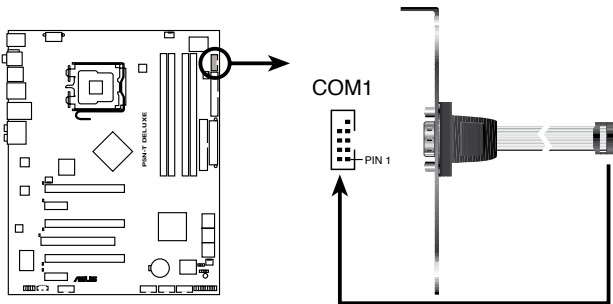
Never connect a USB cable to the IEEE 1394a connector. Doing so will damage the motherboard!



You can connect the 1394 cable to ASUS Q-Connector (1394, red) first, and then install the Q-Connector (1394) to the 1394 connector onboard.

6. 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.



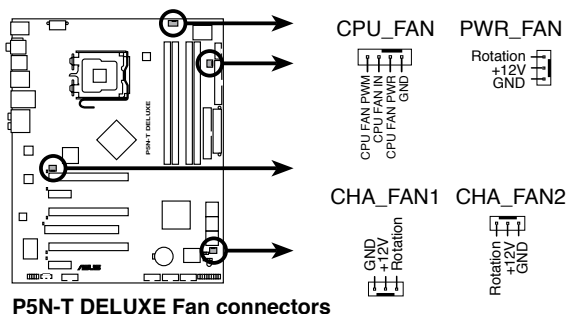
P5N-T DELUXE COM port connector



The serial port module is purchased separately.

7. CPU, chassis, power, and optional fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN1-2, 3-pin PWR_FAN)

The fan connectors support cooling fans of 1A~2.2A (26.4 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!

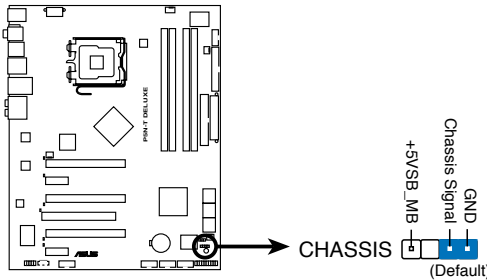


- Only the CPU_FAN, CHA_FAN1 and CHA_FAN2 connectors support the ASUS Q-FAN 2 feature.
- If you install two VGA cards, we recommend that you plug the rear chassis fan cable to the motherboard connector labeled CHA_FAN1 or CHA_FAN2 for better thermal environment.

8. 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.

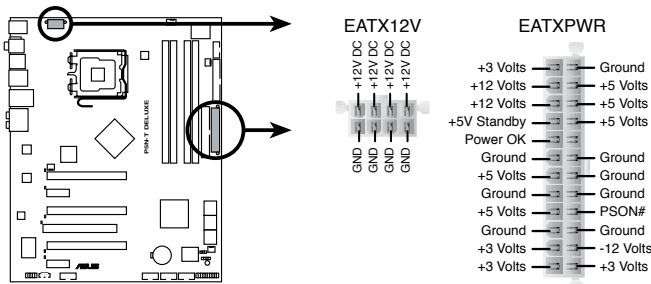
By default , the pin labeled “Chassis Signal” and “Ground” are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.



P5N-T DELUXE Chassis intrusion connector

9. ATX power connectors (24-pin EATXPWR, 2 x 4-pin EATX12V)

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.



P5N-T DELUXE ATX power connectors



- Make sure to remove the cap on the ATX12V connector before connecting an 8-pin EPS +12V power plug.
- Use only either a 4-pin ATX12V or an 8-pin EPS +12V power plug for the EATX12V connector.



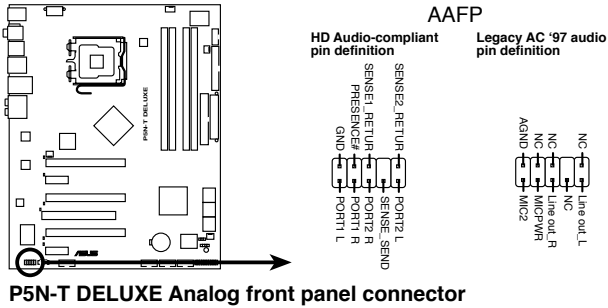
- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12V Specification 2.0 (or later version) and provides a minimum power of 550 W.
- Do not forget to connect the 4-pin/8pin EATX12V power plug; otherwise, the system will not boot.
- If you are uncertain 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.
- 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 want to use two or more high-end PCI Express x16 cards, use a PSU with 1000 W power or above to ensure the system stability.
- The ATX12 V Specification 2.0-compliant (500 W) PSU has been tested to support the motherboard power requirement with the following configuration:

Normal Loading	
CPU	PSC 3.73G 1066
DDR800	1GB*2
VGA	Nvidia 7800GTX*2
SATA-HD	SATA*4
ESATA-HD	1
IDE-HD	1
CD-ROM	1
USB	2
PCI	1

- If you want to use 3-way SLI™ configuration, visit the NVIDIA website (www.nvidia.com) for the qualified PSU vendor list.

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.



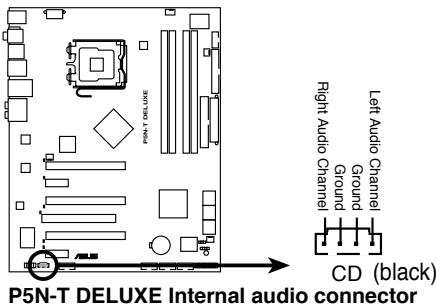
P5N-T DELUXE Analog front panel connector



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

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

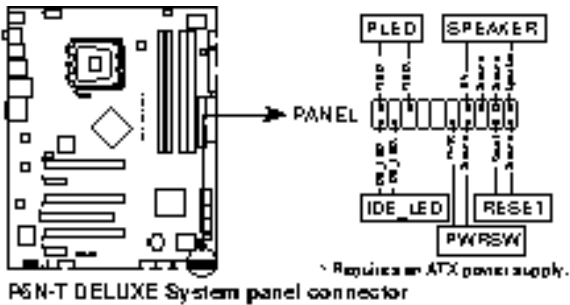
This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



P5N-T DELUXE Internal audio connector

12. 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 PWR)**

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)**

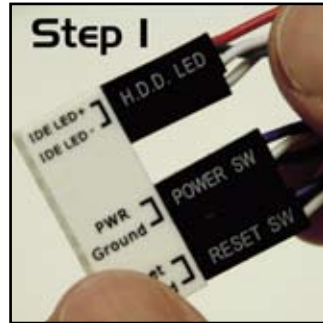
This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

13. ASUS Q-Connector (system panel)

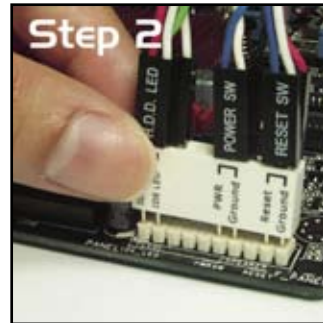
You can use the ASUS Q-Connector to connect/disconnect chassis front panel cables in a few steps. Refer to the instructions below to install the ASUS Q-Connector.

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

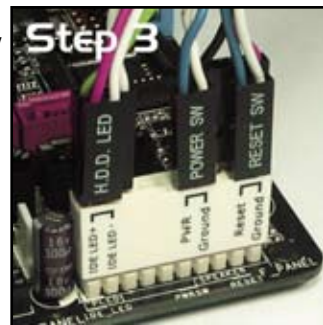
Refer to the labels on the Q-Connector to know the detailed pin definitions, then match them to the respective front panel cable labels.



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.

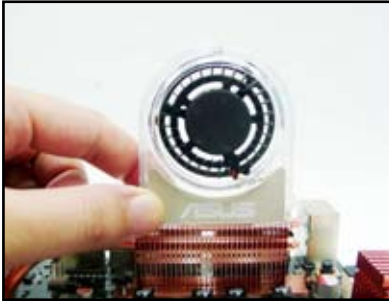


2.7.3 Installing the optional fans

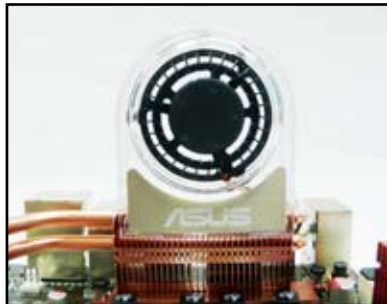


Install the optional fan only if you are using a passive cooler or a water cooler. Installing the optional fan with an active CPU cooler will interfere with the airflow and destabilize the system.

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



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, CHA_FAN2 or PWR_FAN connector on the motherboard.
- Make sure the optional fan is installed correctly to prevent damage to the fan and motherboard components.
- We strongly recommend that you install the optional fan when using a passive cooler or a water cooler.

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. Follow the instructions in Chapter 4.

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. Refer to section **4.5 Power Menu** in Chapter 4 for details.