

ASUS[®] P4B-LA

Intel[®] 845

Micro-ATX Motherboard

Quick Start

USER'S MANUAL

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Federal Communications Commission Statement

This device complies with FCC Rules Part 15. 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:

- Re-orient 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.

WARNING! Any changes or modifications to this product not expressly approved by the manufacturer could void any assurances of safety or performance and could result in violation of Part 15 of the FCC Rules.

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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.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

1. INTRODUCTION

1.1 How This Manual Is Organized

This manual is divided into the following sections:

- | | |
|--------------------------|---------------------------------------------|
| 1. INTRODUCTION | Manual information and checklist |
| 2. FEATURES | Production information and specifications |
| 3. HARDWARE SETUP | Instructions on setting up the motherboard. |

1.2 Item Checklist

Check that your package is complete. If you discover damaged or missing items, contact your retailer.

Package Contents

- (1) Motherboard

2. FEATURES

2.1 The P4B-LA

The P4B-LA motherboard is carefully designed for the demanding PC user who wants advanced features processed by the fastest processors.

2.1.1 Core Specifications

- **Latest Intel Processor Support**
Pentium4® Socket 478/Northwood 100/133MHz FSB
- **North bridge controller.** The Intel Memory Controller Hub (MCH) is one part of the Intel 845 (Brookdale) chipset. The MCH along with the south bridge Intel I/O Controller Hub 2 (ICH2) are interconnected through the Intel proprietary Hub interface. The MCH provides the processor interface, system memory interface, AGP interface, and Hub Interface.
- **South bridge controller.** Referred to as the Intel I/O Controller Hub 2 (ICH2) of the Intel 845 chipset, this controller provides the I/O subsystem that allows access to the rest of the system. The ICH2 integrates I/O functions such as system bus interface, Ultra ATA/100, Low Pin Count (LPC) interface, Universal Serial Bus (USB) 1.1 interface, PCI interface.
- **PC100/PC133 SDRAM DIMM Memory Sockets:** Equipped with two Dual Inline Memory Module (DIMM) sockets to support PC100/PC133-compliant non-ECC SDRAMs (available in 64, 128, 256, 512Mb densities) up to 512MB.
- **Super I/O chipset.** A Low Pin Count (LPC) chipset combines the commonly used Super I/O functionality and system hardware monitoring capability. The chipset incorporates Fan Speed Control Monitor (FSCM), event wake-up feature, floppy disk controller, keyboard/mouse controller, a parallel port, two enhanced serial ports, watchdog timer, and a MIDI interface compatible with MPU-401 UART mode.
- **UltraDMA33/66/100 Support:** Comes with an onboard PCI Bus Master IDE controller with two connectors that support four IDE devices on two channels. Supports UltraDMA/100, UltraDMA/66, UltraDMA/33, PIO Modes 3 & 4 and Bus Master IDE DMA Mode 2, and Enhanced IDE devices, such as DVD-ROM, CD-ROM, CD-R/RW, LS-120, and Tape Backup drives.
- **Flash EEPROM:** 2Mb firmware programmable BIOS program offers enhanced ACPI for Windows 98/ME/2000 compatibility, and autodetection of most devices for virtually automatic setup..

2. FEATURES

2.1.2 Connections

- **CPU socket:** 478-pin surface mount, ZIF socket PGA478 B.
- **PCI Expansion Slots:** Provides three 32-bit PCI (PCI 2.2 compliant) expansion slots. All PCI slots can support Bus Master PCI cards, such as SCSI or LAN cards. (PCI supports up to 133MB/s maximum throughput.)
- **IDE connectors:** These dual-channel bus master IDE connectors support up to four Ultra DMA/100/66, PIO Modes 3 & 4 IDE devices. Both the primary (blue) and secondary (black) connectors are slotted to prevent incorrect insertion of the IDE ribbon cable.
- **Floppy disk connector.** This connector accommodates the floppy disk drive ribbon cable. One side of the connector is slotted to prevent incorrect insertion of the floppy disk cable.
- **ATX power connector.** This 20-pin connector supplies an ATX 12V power supply. The power supply must have at least 1A on the +5V standby lead (+5VSB).
- **ATX 12V connector.** This power connector supplies the 4-pin 12V plug from the ATX 12V power supply.
- **AGP slot:** The Accelerated Graphics Port (AGP) slot supports 1.5V AGP4X mode graphics cards for 3D graphical applications.
- **RJ-45 port:** This port allows connection to a Local Area Network (LAN) through a network hub.
- **Microphone jack:** Pink jack connects a microphone.
- **Line In jack:** Light blue jack connects a tape player or other audio sources.
- **Line Out jack:** Lime jack connects a headphone or a speaker.
- **USB ports.** Two 4-pin Universal Serial Bus (USB) ports are available for connecting USB devices such as a mouse and PDA.
- **Game/MIDI connector.** This connector supports a joystick or a game pad for playing games, and MIDI devices for playing or editing audio files.
- **Serial ports:** Two 9-pin COM1/COM2 ports are for pointing devices or other serial devices.
- **Parallel port:** A 25-pin port connects a parallel printer, a scanner, or other devices.
- **PS/2 mouse port:** Green 6-pin connector is for a PS/2 mouse.
- **PS/2 keyboard port:** Purple 6-pin connector is for a PS/2 keyboard.

2. FEATURES

2.1.3 Performance

- **Onboard LED:** The onboard LED will light up when there is standby power to the motherboard. This acts as a reminder to the user to turn OFF the power before plugging and unplugging devices so as not to damage the motherboard, peripherals, and/or components.
- **UltraPerformance:** Onboard IDE Bus Master controller with two connectors that support four IDE devices in two channels. Supports UltraDMA/100, UltraDMA/66, UltraDMA/33 (IDE DMA Mode 2), PIO Modes 3 & 4, and supports Enhanced IDE devices: DVD-ROM, CD-ROM, CD-R/RW, LS-120, and Tape Backup drives.
- **Concurrent PCI:** Concurrent PCI allows multiple PCI transfers from PCI master buses to memory and processor.
- **SDRAM Optimized Performance:** This motherboard supports PC133-compliant Synchronous Dynamic Random Access Memory (SDRAM), which increases the data transfer rate to 1066MB/s max.
- **ACPI Ready:** ACPI (Advanced Configuration and Power Interface) is also implemented on all smart series motherboards. ACPI provides more Energy Saving Features for operating systems (OS) supporting OS Direct Power Management (OSPM). With these features implemented in the OS, PCs can be ready around the clock, yet satisfy all the energy saving standards. To gain all the benefits, an ACPI-supported OS, such as Windows 98/2000/ME is required.
- **Audio CODEC.** This AC '97 audio codec provides stereo analog I/O on the motherboard and peripheral devices to deliver high quality audio to PC-connected speakers, headphones, and microphones. The codec includes analog-to-digital and digital-to-analog sample rate converters, as power amplifiers and programmable gain blocks.
- **New Comliancy:** Both the BIOS and hardware levels of the motherboard meet the stringent requirements for PC 99 certification. The new PC 99 requirements for systems and components are based on high-level goals: support for Plug and Play compatibility and power management for managing all system components, and 32-bit device drivers and installation procedures for Windows 95/98/NT. Color-coded connectors and descriptive icons make identification easy.

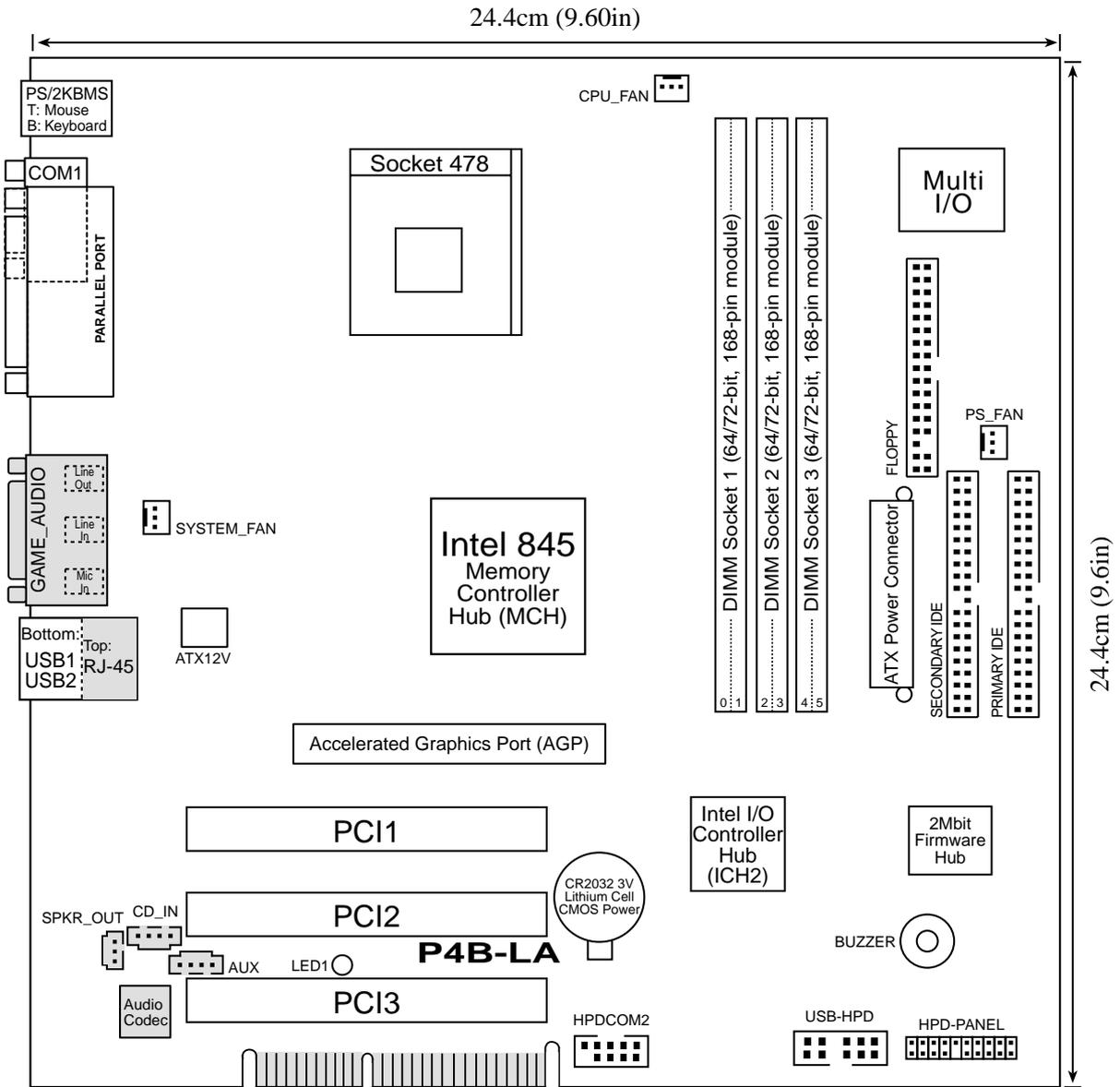
2. FEATURES

2.1.4 Intelligence

- **Fan Status Monitoring and Alarm:** To prevent system overheat and system damage, the CPU, power supply, and system fans can be monitored for RPM and failure. All the fans are set for its normal RPM range and alarm thresholds.
- **Temperature Monitoring and Alert:** To prevent system overheat and system damage, this motherboard supports processor thermal sensing and auto-protection.
- **Dual Function Power Button:** Through BIOS, the power button can be defined as the “Stand by” (a.k.a. Suspend or Sleep) button or as the Soft-Off (see **ATX Power / Soft-Off Switch Lead** in **3.8 Connectors** for more information) button. Regardless of the setting, pushing the power button for more than 4 seconds will enter the Soft-Off mode.

3. HARDWARE SETUP

3.1 P4B-LA Motherboard Layout



2. HW SETUP
Motherboard Layout

Grayed components are optional at the time of purchase.

3. HARDWARE SETUP

3.2 Layout Contents

INSTALLATIONS

- | | |
|------------------|-------------------------------------------|
| 1) DIMM1/2/3 | p.14 168-Pin System Memory Support |
| 2) CPU | p.16 Central Processing Unit (CPU) |
| 2) HEATSINK | p.17 Installing the Heatsink and Fan |
| 3) PCI 1/2/3 | p.20 32-bit PCI Bus Expansion Slots |
| 4) AGP | p.22 Accelerated Graphics Port (AGP) Slot |
| 4) PCI EXTENSION | p.23 PCI Golden Finger |

CONNECTORS

- | | |
|--------------------------------|--------------------------------------------------------------------|
| 1) PS2KBMS | p.24 PS/2 Mouse Connector (6 pin female) |
| 2) PS2KBMS | p.24 PS/2 Keyboard Connector (6 pin female) |
| 3) USB | p.25 Universal Serial Bus Ports (Two 4 pin female) |
| 4) PRINTER | p.25 Parallel Port Connector (25 pin female) |
| 5) COM1 / COM2 | p.26 Serial Port Connectors (9 pin male, 10-1 pin) |
| 6) GAME_AUDIO | p.27 Game/MIDI Connector (15 pin female) (<i>optional</i>) |
| 7) AUDIO_PORT | p.27 Audio Port Connectors (Three 1/8" female) (<i>optional</i>) |
| 8) FLOPPY | p.28 Floppy Disk Drive Connector (34-1pin) |
| 9) PRIMARY/SECONDARYIDE | p.28 Primary/Secondary IDE Connectors (Two 40-1pin) |
| 10) CPU_FAN, PS_FAN
SYS_FAN | p.29 CPU, Power Supply, System Fan Connectors (Three 3 pin) |
| 11) CD1, AUX, SPKR_OUT | p.30 Internal Audio Connectors (Three 4 pin) |
| 12) USB_HP | p.30 Universal Serial Bus Ports (Two 4 pin female) |
| 13) ATXPWR. ATX12V | p.31 ATX Power Supply Connector (20 pin) (4 pin) |
| 14) PWR (PANEL) | p.32 ATX Power / Soft-Off Switch Lead (2 pin) |
| 15) IDELED (PANEL) | p.32 IDELED Activity LED Lead (3-1 pin) |
| 16) PLED (PANEL) | p.32 System Power LED Lead (3-1 pin) |
| 17) RESET (PANEL) | p.32 Reset Switch Lead (2 pin) |
| 18) MLED (PANEL) | p.32 System Message LED (2 pin) |
| 19) KEYLOCK (PANEL) | p.32 Keyboard Lock Switch Lead (2 pin) |
| 20) SMI (PANEL) | p.32 System Management Interrupt Switch Lead (2 pin) |
| 21) SPEAKER (PANEL) | p.32 System Warning Speaker Lead (4 pin) |

3. HARDWARE SETUP

3.3 Motherboard Setup

Before using your computer, you must complete the following steps:

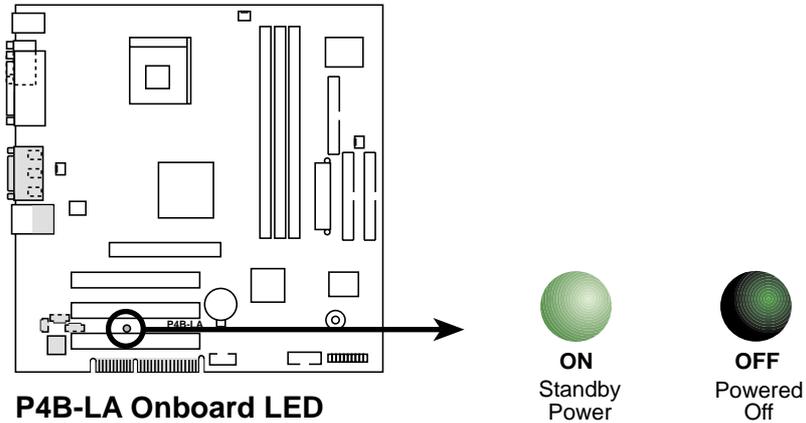
- **Prepare for Motherboard Setup**
- **Install Memory Modules**
- **Install the Central Processing Unit (CPU)**
- **Install Expansion Cards**
- **Connect Ribbon Cables, Panel Wires, and Power Supply**

WARNING! Computer motherboards and expansion cards contain very delicate Integrated Circuit (IC) chips. To protect them against damage from static electricity, you should follow some precautions whenever you work on your computer.

1. Unplug your computer when working on the inside.
2. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
3. Hold components by the edges and try not to touch the IC chips, leads or connectors, or other components.
4. Place components on a grounded antistatic pad or on the bag that came with the component whenever the components are separated from the system.
5. Ensure that the ATX power supply is switched off before you plug in or remove the ATX power connector on the motherboard.

3. HARDWARE SETUP

WARNING! Make sure that you unplug your power supply when adding or removing system components. Failure to do so may cause severe damage to your motherboard, peripherals, and/or components. The onboard LED when lit acts as a reminder that the system is in suspend or soft-off mode and not powered OFF.



3. HARDWARE SETUP

3.4 System Memory (DIMM)

NOTE: No hardware or BIOS setup is required after adding or removing memory. This motherboard uses only Dual Inline Memory Modules (DIMMs). Sockets are available for **3.3Volt** (power level) unbuffered Synchronous Dynamic Random Access Memory (SDRAM). One side (with memory chips) of the DIMM takes up one row on the motherboard.

Memory speed setup is recommended through **SDRAM Configuration** in **4.4.1 Chip Configuration**.

Install memory in any combination as follows:

DIMM Location	168-pin DIMM		Total Memory
Socket 1 (Rows 0&1)	SDRAM 8, 16, 32, 64, 128, 256, 512MB	x1	
Socket 2 (Rows 2&3)	SDRAM 8, 16, 32, 64, 128, 256, 512MB	x1	
Socket 3 (Rows 4&5)	SDRAM 8, 16, 32, 64, 128, 256, 512MB	x1	
	Total System Memory (Max 512MB)	=	

3.4.1 General DIMM Notes

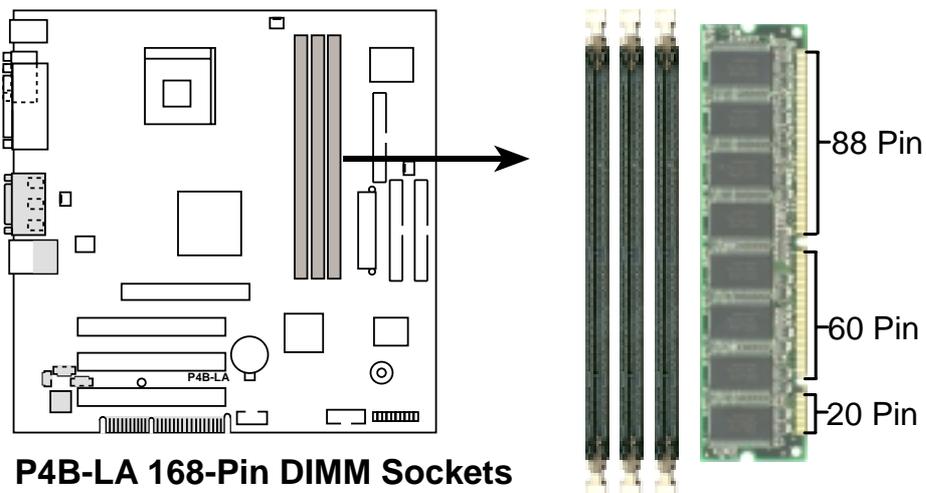
- motherboards support SPD (Serial Presence Detect) DIMMs. This is the memory of choice for best performance vs. stability.
- BIOS shows SDRAM memory on bootup screen.
- Single-sided DIMMs come in 16, 32, 64,128, 256MB; double-sided come in 32, 64, 128, 256, 512MB.

3. HARDWARE SETUP

3.4.2 Memory Installation

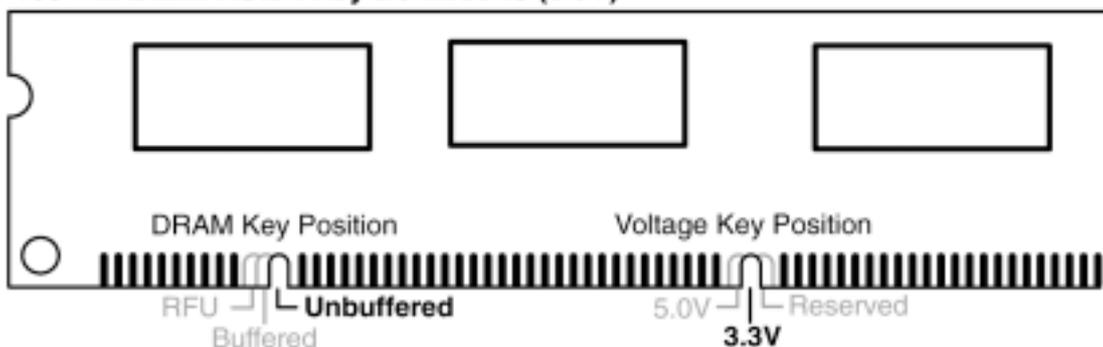
WARNING! Make sure that you unplug your power supply when adding or removing memory modules or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards (see **3.3 Hardware Setup Procedure** for more information).

Insert the module(s) as shown. Because the number of pins are different on either side of the breaks, the module will only fit in the orientation shown. DRAM SIMM modules have the same pin contacts on both sides. SDRAM DIMMs have different pin contacts on each side and therefore have a higher pin density.



The DIMMs must be 3.3Volt unbuffered SDRAMs. To determine the DIMM type, check the notches on the DIMMs (see figure below).

168-Pin DIMM Notch Key Definitions (3.3V)

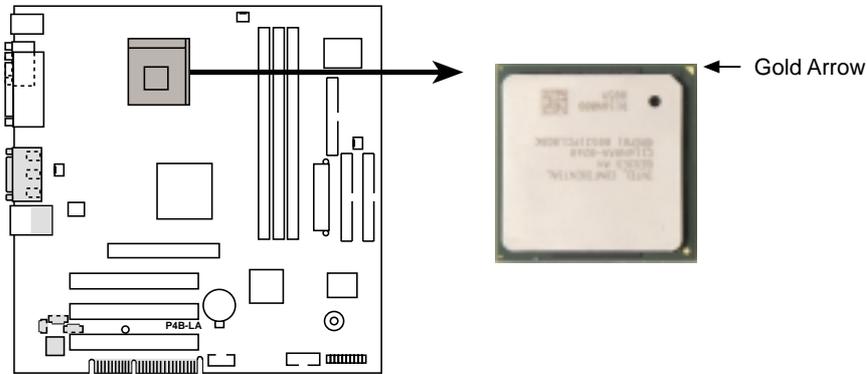


The notches on the DIMM will shift between left, center, or right to identify the type and also to prevent the wrong type from being inserted into the DIMM slot on the motherboard. You must tell your retailer the correct DIMM type before purchasing. This motherboard supports four clock signals per DIMM.

3. HARDWARE SETUP

3.5 Central Processing Unit (CPU)

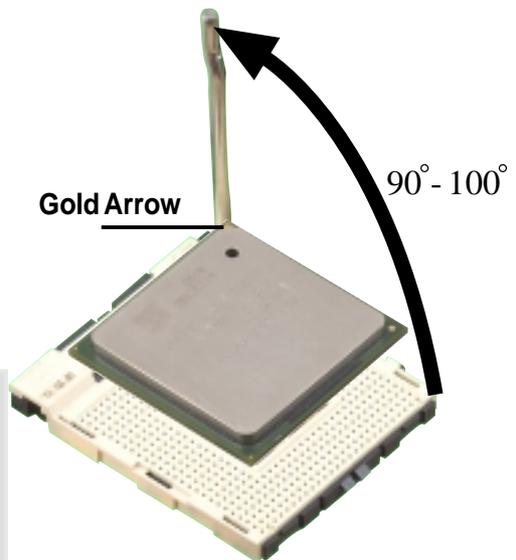
The motherboard provides a ZIF Socket 478, for CPU installation. A fan and heat-sink should be attached to the CPU to prevent overheating. Purchase and install a fan and heatsink before turning on the system.



P4B-LA Socket 478

1. Locate the Socket 478 and open it by pulling the lever gently sideways away from the socket. Then lift the lever upwards. The socket lever must be fully opened (90 to 100 degrees).
2. Insert the CPU with the correct orientation. The **gold arrow** of the CPU must be oriented toward the inner corner of the socket base nearest to the hinge of the lever handle.

CAUTION! The CPU fits in one orientation and should drop easily into place. **Do not force the CPU** into the socket to avoid bending the pins. If the CPU does not fit, check its alignment and look for bent pins.



3. Once completely inserted, press the CPU firmly and close the socket lever until it snaps into its locked position.
4. Install an Intel fan heatsink.

CAUTION! Take care not to scrape the motherboard surface when mounting a clamp-style processor fan, or else damage may occur. When mounting a heatsink onto your CPU, make sure that exposed CPU capacitors do not touch the heatsink, or else damage may occur! Refer to heatsink/CPU documentation.

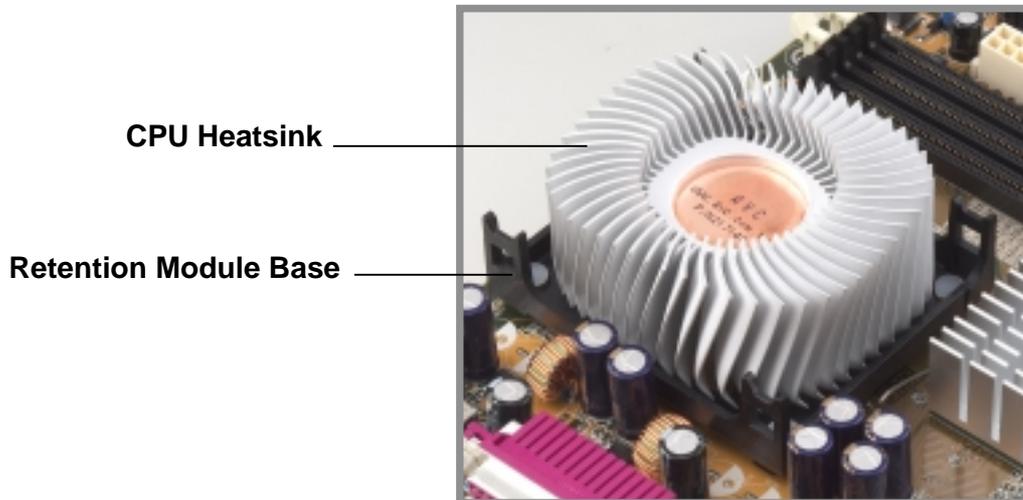
3. HARDWARE SETUP

3.6 Installing the Heatsink and Fan

The Intel® Pentium® 4 478/Northwood Processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance. The Intel Pentium 4 478/Northwood Processor includes the heatsink, fan, and retention mechanism. In case you buy a CPU separately, make sure that you use only Intel certified heatsink and fan.

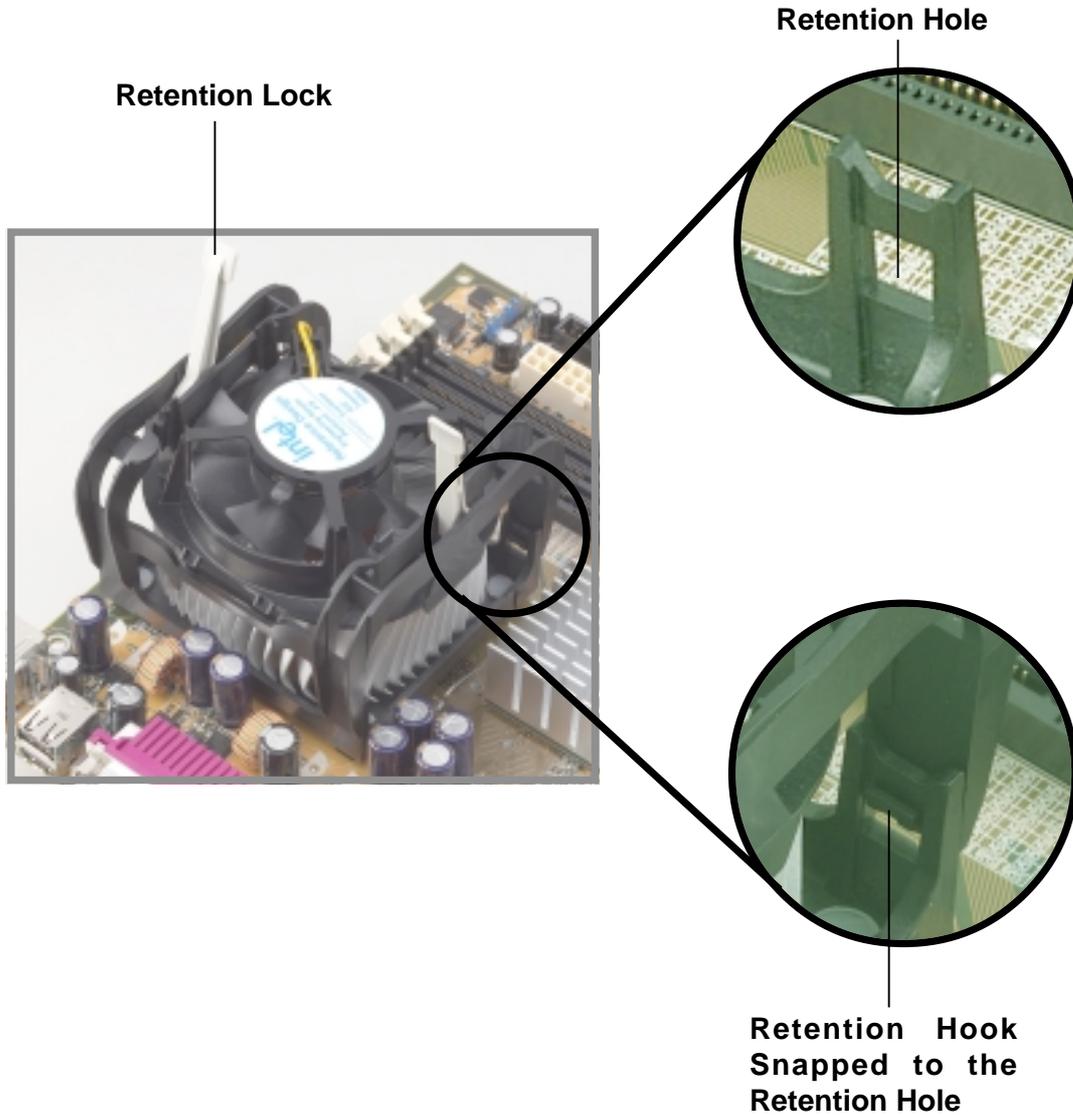
Step 1: Mount the Heatsink:

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



3. HARDWARE SETUP

2. Position the fan with the retention mechanism on top of the heatsink. Align and snap the four hooks of the retention mechanism to the holes on each corner of the module base. Make sure that the fan and retention mechanism assembly perfectly fits the heatsink and module base, otherwise you cannot snap the hooks into the holes. Keep the retention locks lifted upward while fitting the retention mechanism to the module base.



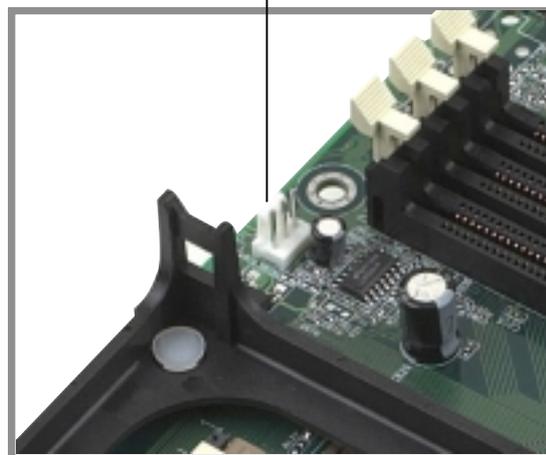
3. HARDWARE SETUP

3. Push down the locks on the retention mechanism to secure the heatsink and fan to the module base. When secure, the retention locks should point to opposite directions. The heatsink should entirely cover the CPU. With the added weight of the CPU fan and heatsink locking brace, no extra force is required to keep the CPU in place. Connect the CPU fan cable to the fan connector.



4. Connect the CPU fan cable. With the fan, heatsink, and the retention mechanism in place, attach the CPU fan cable to the connector on the motherboard labelled CPUFAN

CPU Fan Connector (CPUFAN)



3. HARDWARE SETUP

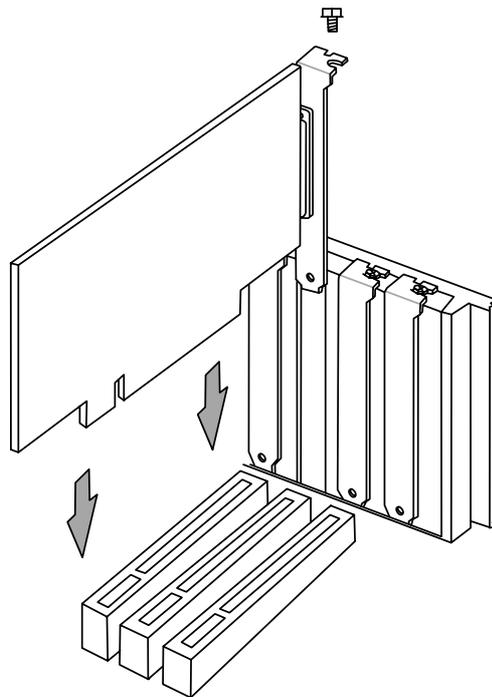
3.7 Expansion Cards

In the future, you may need to install expansion cards. The motherboard has five PCI expansion slots to support these cards. Follow the steps in the next section when installing expansion cards.

WARNING! Unplug the system power cord when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both the motherboard and expansion cards.

3.7.1 Installing an Expansion Card

1. Read the documentation that comes with the expansion card and make any necessary hardware settings for the card before installing it.
2. Remove the system unit cover and the bracket plate on the slot you intend to use. Keep the screw for later use.
3. Align the card connectors with the slot and press firmly until the card fits in place.
4. Secure the card to the slot with the screw you removed earlier.
5. Replace the system cover.
6. Change the necessary BIOS settings, if any.
7. Install the necessary software drivers for the expansion card.



3. HARDWARE SETUP

3.7.2 Assigning IRQs for Expansion Cards

Some expansion cards need an IRQ to operate. Generally, an IRQ must be assigned exclusively to one use. In a standard design, there are 16 IRQs available but most of them are already in use, leaving 6 IRQs free for expansion cards. If the motherboard has **PCI** audio onboard, an additional IRQ will be used. If the motherboard also has **MIDI** enabled, another IRQ will be used, leaving 4 IRQs free.

Standard Interrupt Assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	N/A	Programmable Interrupt
3*	11	Communications Port (COM2)
4*	12	Communications Port (COM1)
5*	13	Sound Card (sometimes LPT2)
6	14	Floppy Disk Controller
7*	15	Printer Port (LPT1)
8	3	System CMOS/Real Time Clock
9*	4	ACPI Mode when enabled
10*	5	IRQ Holder for PCI Steering
11*	6	IRQ Holder for PCI Steering
12*	7	PS/2 Compatible Mouse Port
13	8	Numeric Data Processor
14*	9	Primary IDE Channel
15*	10	Secondary IDE Channel

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

Interrupt Request Table for this Motherboard

Interrupt requests are shared as shown by the following table:

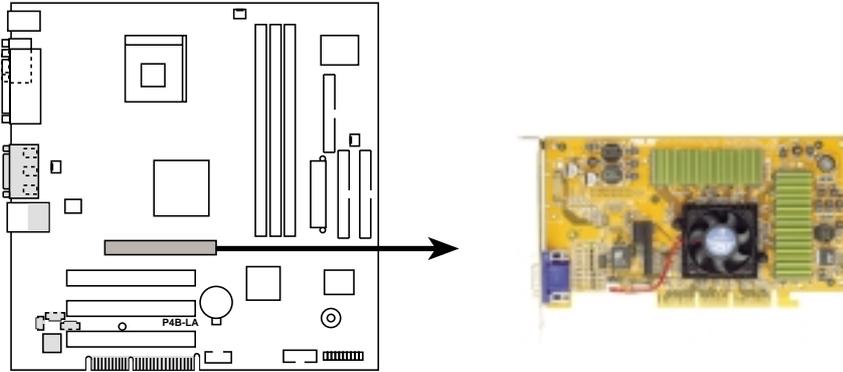
	A	B	C	D	E	F	G	H
PCI slot 1	—	—	—	—	—	shared	—	—
PCI slot 2	—	—	—	—	—	—	used	—
PCI slot 3	—	—	—	—	—	—	—	shared
PCI slot 4	—	—	—	—	shared	—	—	—
PCI slot 5	—	—	—	—	—	shared	—	—
Onboard USB controller HC0	—	—	—	used	—	—	—	—
Onboard USB controller HC1	—	—	—	—	—	—	—	shared
AGP	used	—	—	—	—	—	—	—
LAN	—	—	—	—	shared	—	—	—
Onboard Audio	—	—	—	—	—	shared	—	—

IMPORTANT: If using PCI cards on shared slots, make sure that the drivers support “Share IRQ” or that the cards do not need IRQ assignments. Conflicts will arise between the two PCI groups that will make the system unstable or cards inoperable.

3. HARDWARE SETUP

3.7.3 Accelerated Graphics Port (AGP) Pro Slot

This motherboard provides an accelerated graphics port (AGP) pro slot to support a new generation of AGP graphics cards with ultra-high memory bandwidth.

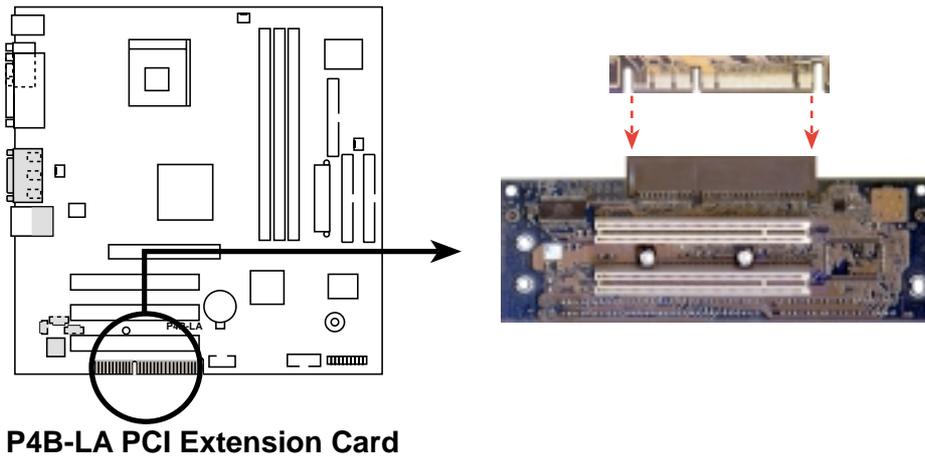


P4B-LA Accelerated Graphics Port (AGP)

3. HARDWARE SETUP

3.7.4 PCI Extension Card Golden Finger

This motherboard features a plug-in extension “golden finger” configured to support two extra PCI slots. An extension board plugs into the built-in golden finger on the edge of the motherboard. The golden finger only supports one PCI extension board; do not attempt to use other extenders or cards of any kind on the golden finger.



3. HARDWARE SETUP

3.8 External Connectors

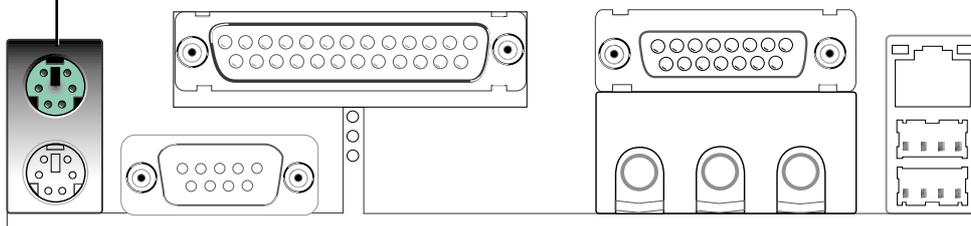
WARNING! Some pins are used for connectors or power sources. These are clearly distinguished from jumpers in the Motherboard Layout. Placing jumper caps over these connector pins will cause damage to your motherboard.

IMPORTANT: Ribbon cables should always be connected with the red stripe to Pin 1 on the connectors. Pin 1 is usually on the side closest to the power connector on hard drives and CD-ROM drives, but may be on the opposite side on floppy disk drives. Check the connectors before installation because there may be exceptions. IDE ribbon cable must be less than 46 cm (18 in.), with the second drive connector no more than 15 cm (6 in.) from the first connector.

1) PS/2 Mouse Connector (Green 6-pin PS2KBMS)

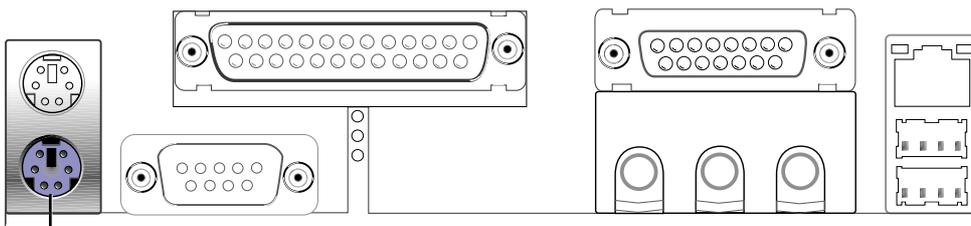
The system will direct IRQ12 to the PS/2 mouse if one is detected. If one is not detected, expansion cards can use IRQ12. See **PS/2 Mouse Function Control** in *4.4 Advanced Menu*.

PS/2 Mouse (6-pin female)



2) PS/2 Keyboard Connector (Purple 6-pin PS2KBMS)

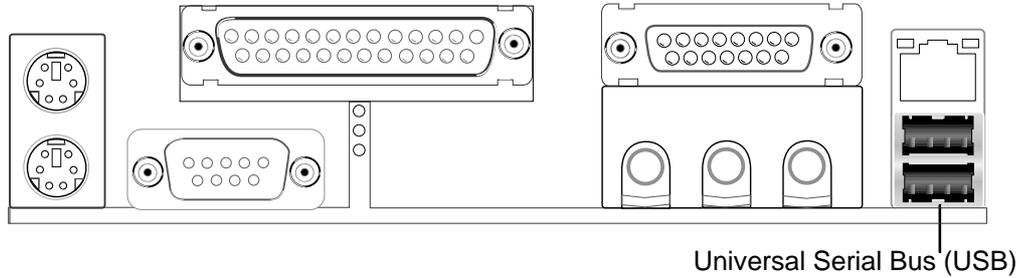
This connection is for a standard keyboard using an PS/2 plug (mini DIN). **This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.**



3. HARDWARE SETUP

3) Universal Serial BUS Ports 0 & 1 (Black two 4-pin USB)

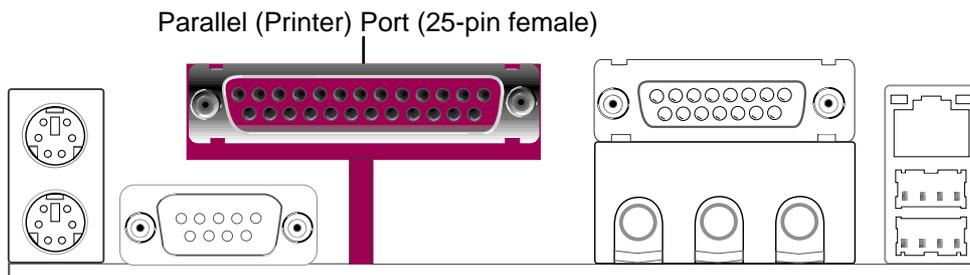
Two USB ports are available for connecting USB devices. For additional USB ports, you can use the USB headers (see **USB Headers** later in this section) and mount it to the chassis.



4) Parallel Port Connector (Burgundy 25-pin PRINTER)

You can enable the parallel port and choose the IRQ through **Onboard Parallel Port** (see *4.4.2 I/O Device Configuration*).

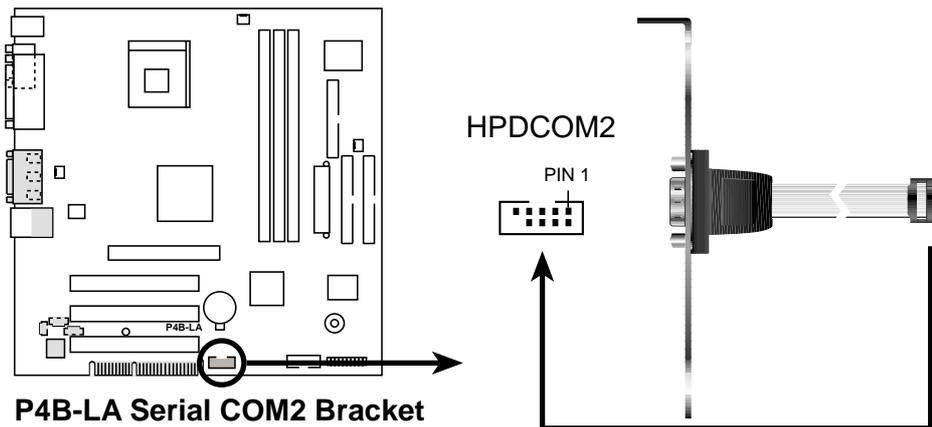
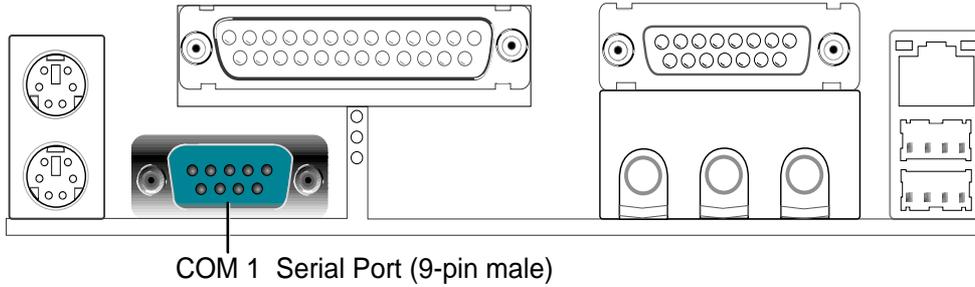
NOTE: Serial printers must be connected to the serial port.



3. HARDWARE SETUP

5) Serial Port Connectors (Teal/Turquoise 9-pin COM1, 10-1 pin COM2)

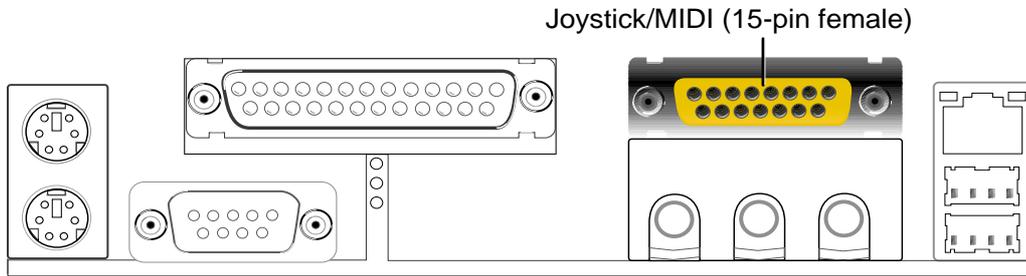
One serial port is ready for a mouse or other serial devices. A second serial port is available using a serial port bracket connected from the motherboard to an expansion slot opening. See **Onboard Serial Port 1/2** in **4.4.2 I/O Device Configuration** for settings.



3. HARDWARE SETUP

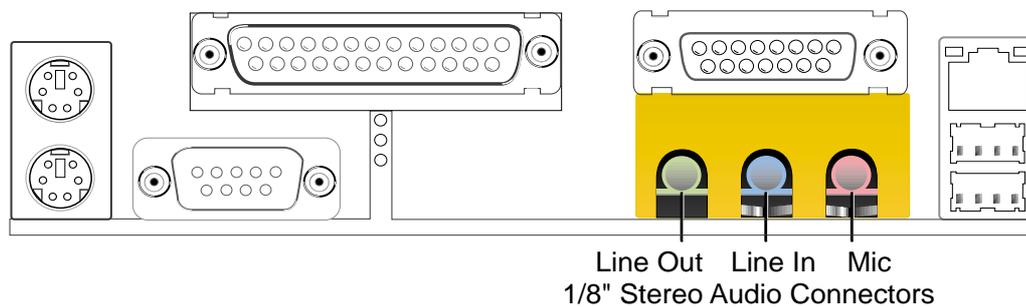
6) Game/MIDI Connector (Gold 15-pin GAME_AUDIO) (optional)

Connect game joysticks or game pads to this connector for playing games. Connect MIDI devices for playing or editing professional audio.



7) Audio Port Connectors (Three 1/8" AUDIO_PORT) (optional)

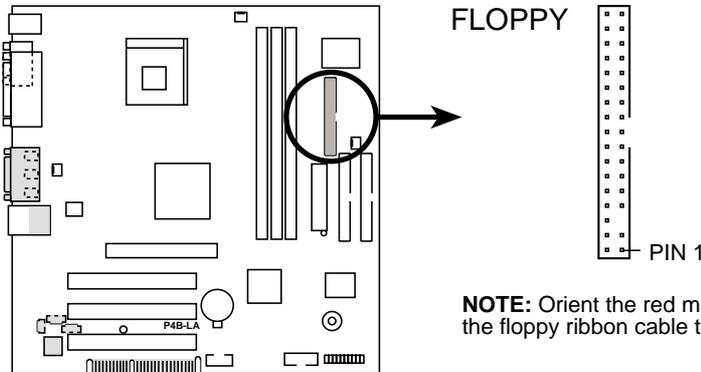
Line Out (lime) can be connected to headphones or preferably powered speakers. **Line In** (light blue) allows tape players or other audio sources to be recorded by the computer or played through the **Line Out** (lime). **Mic** (pink) allows microphones to be connected for inputting voice.



3. HARDWARE SETUP

8) Floppy Disk Drive Connector (34-1pin FLOPPY)

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drives. **(Pin 5 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 5 plugged).**



NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.

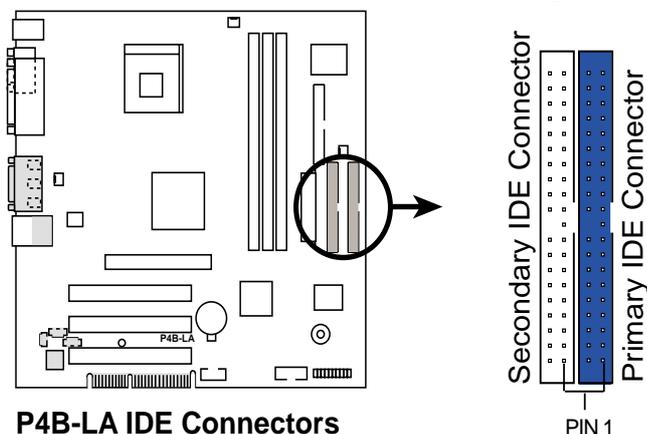
P4B-LA Floppy Disk Drive Connector

9) Primary (Blue) / Secondary IDE Connectors (40-1 pin IDE1/IDE2)

These connectors support the provided UltraDMA/66 IDE hard disk ribbon cable. Connect the cable's blue connector to the motherboard's primary (recommended) or secondary IDE connector, and then connect the gray connector to your UltraDMA/66 slave device (hard disk drive) and the black connector to your UltraDMA/66 master device. It is recommended that non-UltraDMA/66 devices be connected to the secondary IDE connector. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Refer to your hard disk documentation for the jumper settings. BIOS now supports specific device bootup (*See BIOS*). **(Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged).** If you have more than two UltraDMA/66 devices, you will need to purchase another UltraDMA/66 cable.

NOTE: The hole near the blue connector on the UltraDMA/66 cable is intentional.

TIP: You may configure two hard disks to be both Masters with two ribbon cables – one for the primary IDE connector and another for the secondary IDE connector. You may install one operating system on an IDE drive and another on a SCSI drive and select the boot disk through *BIOS*.



P4B-LA IDE Connectors

NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

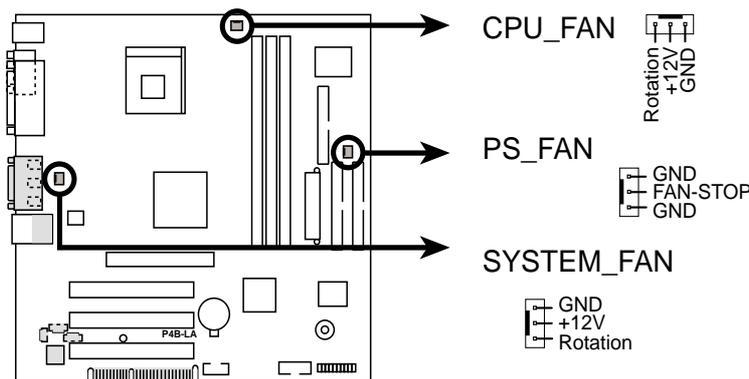
3. HARDWARE SETUP

10) CPU (CPU_FAN), Power Supply (PS_FAN), Chassis (SYS_FAN) Fan Connectors (3 pins)

These connectors support cooling fans of 750mA or less. Orient the fans so that the heat sink fins allow airflow to go across the onboard heat sink(s) instead of the expansion slots. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector.

NOTE: The "Rotation" signal is to be used only by a specially designed fan with rotation signal.

WARNING! The CPU and/or motherboard will overheat if there is no airflow across the CPU and onboard heatsinks. Damage may occur to the motherboard and/or the CPU fan if these pins are incorrectly used. **These are not jumpers, do not place jumper caps over these pins.**

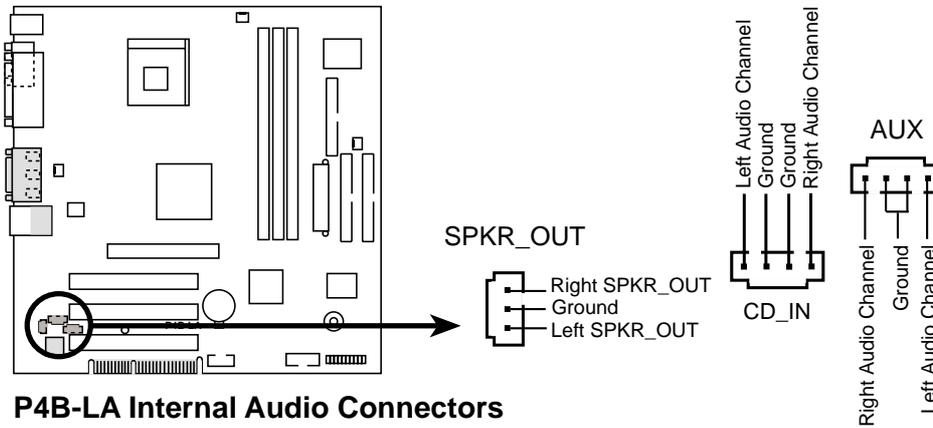


P4B-LA 12-Volt Cooling Fan Power

3. HARDWARE SETUP

11) Internal Audio Connectors (4-pin CD1, AUX, SPKR_OUT)

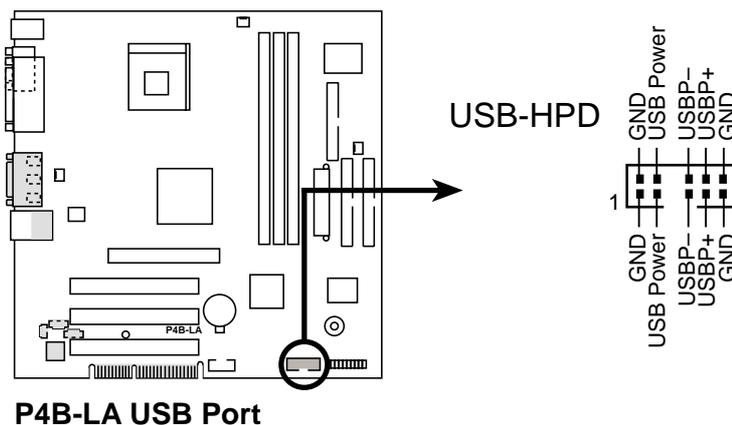
These connectors allow you to receive stereo audio input from such sound sources as a CD-ROM, TV tuner, or MPEG card.



P4B-LA Internal Audio Connectors

12) USB Header (10-1 pin USB_HPDP)

If the USB Ports on the back panels are inadequate, one USB header is available for two additional USB ports. Connect the 10-pin ribbon cables from the provided 2-port USB connector set to the two midboard 10-pin USB headers and mount the USB connector set to an open slot on your chassis.

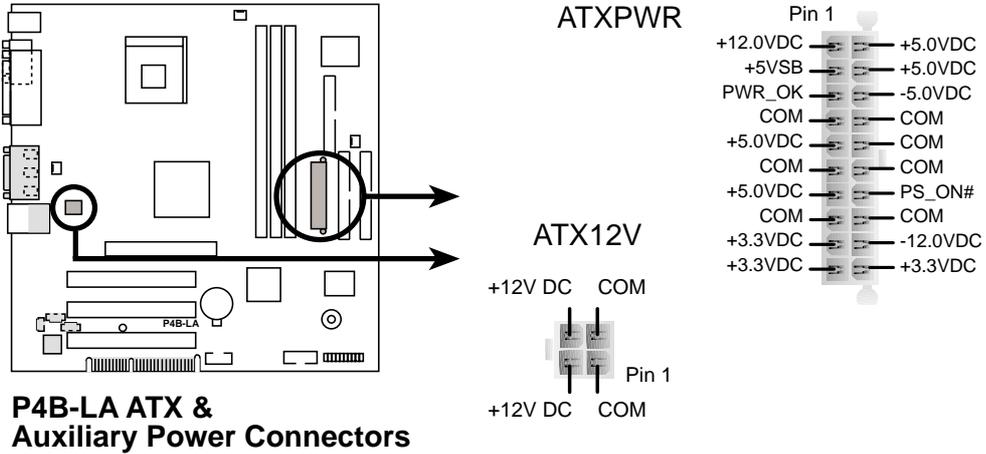


P4B-LA USB Port

3. HARDWARE SETUP

13) ATX Power Supply Connector (20-pin ATXPWR, 4-pin ATX12V)

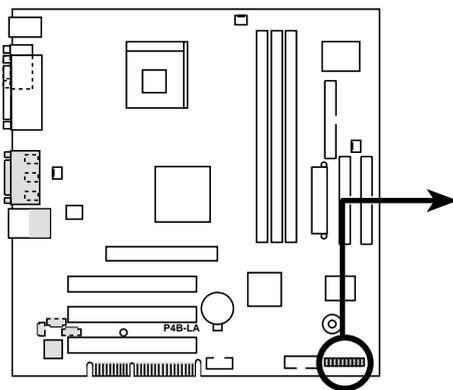
This connector supports an ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned.



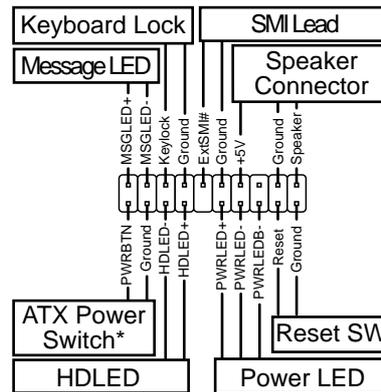
P4B-LA ATX & Auxiliary Power Connectors

3. HARDWARE SETUP

The following is for items 14–32



P4B-LA System Panel Connectors



* Requires an ATX power supply.

14) ATX Power Switch Lead (2-pin PWR)

The system power is controlled by a momentary switch connected to this lead. Pressing the button once will switch the system between ON and SOFT OFF. Pushing the switch while in the ON mode for more than 4 seconds will turn the system off. The system power LED shows the status of the system's power.

15) IDE Activity LED Lead (2 pin IDELED)

This connector supplies power to the cabinet's IDE activity LED. Read and write activity by devices connected to the Primary/Secondary IDE and Primary/Secondary ATA100 connectors will cause the LED to light up.

16) System Power LED Lead (3-1 pin PLED)

This 3-1 pin connector supports the system power LED, which lights when the system is powered on and blinks when it is in sleep mode.

17) Reset Switch Lead (2-pin RESET)

This 2-pin connector supports the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting to prolong the life of the system's power supply.

18) System Message LED Lead (2-pin MLED)

This lead signals whether a message has been received from a fax/modem. The LED will remain lit when there is no signal and blink when there is data received. This function requires an ACPI OS and driver support.

19) Keyboard Lock Switch Lead (2-pin KLCK)

This 2-pin connector supports the case-mounted key switch to allow keyboard locking.

20) System Management Interrupt Lead (2-pin SMI)

This lead allows the user to manually place the system into a suspend mode or "Green" mode, where system activity is decreased to save electricity and expand the life of certain components when the system is not in use. This 2-pin connector connects to the case-mounted suspend switch.

21) System Warning Speaker Lead (4-pin SPEAKER)

This 4-pin connector supports the case-mounted speaker. Two sources (LINE_OUT and SPEAKER) will allow you to hear system beeps and warnings. Only SPEAKER will allow you to hear system beeps before the integrated audio has been properly initialized.