ASUS® P3B-1394

IEEE-1394 Motherboard

USER'S MANUAL

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FCC & DOC COMPLIANCE

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.

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**   Information and specifications concerning this product
3. **Hardware Setup**   Instructions on setting up the motherboard and jumpers
4. **BIOS Setup**   Instructions on setting up the BIOS software
5. **Software Setup**   Instructions on setting up the included support software
6. **Software Reference** Reference material for the included support software
7. **Appendix**   Optional items and general reference

1.2 Item Checklist

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

Package Contents

☑ (1) ASUS Motherboard

☑ (1) Universal Retention Mechanism for SECC2/SECC/SEPP processors

☑ (1) Ribbon cable for master and slave IDE drives

☑ (1) Ribbon cable for one 5.25" and two 3.5" floppy disk drives

☑ (1) Bag of spare jumper caps

☑ (1) ASUS Support CD with drivers and utilities

☑ (1) Ulead VideoStudio™ 3.0 CD

☑ (1) This Motherboard User's Manual

☑ IEEE-1394+COM2 serial cable connector set, which includes the following:
  (1) 1394 CON board with bracket
  (2) 8-to-6 pin cables
  (1) Serial COM2 cable

☑ (1) I/O Shield

Optional Items

☐ 6-to-6 pin IEEE-1394 cable

☐ 6-to-4 pin IEEE-1394 cable

☐ 4-to-4 pin IEEE-1394 cable

☐ ASUS IrDA-compliant infrared module

☐ ASUS S370-133 CPU card

☐ ASUS PCI-L101 Wake-On-LAN 10/100 Ethernet Card

2. FEATURES

2.1 The ASUS P3B-1394 Motherboard

The ASUS P3B-1394 is carefully designed for the demanding PC user who wants advanced features processed by the fastest CPU.

2.1.1 Specifications

- **Latest Intel Processor Support:**

Intel Pentium III	100MHz FSB, Katmai core	SECC2
Intel Pentium III E	100MHz FSB, Coppermine core	SECC2
Intel Pentium II	100/66MHz FSB	SECC
Intel Celeron	66MHz FSB	SEPP

- **1394-1995 and 1394.A Ready:** Integrated TI® 400Mbps capable link-layer controller and 400Mbps physical layer controller provide a fast, scalable, easy-to-use digital interface for throughput intensive consumer electronics devices such as, DV camcorders, digital cameras, scanners, and printers. IEEE-1394 supports traditional asynchronous data transfer as well as isochronous (real-time) data transfer.

- **Intel AGPset:** Features Intel's 440BX AGPset with I/O subsystems and front-side bus (FSB) platform, which boosts the traditional 66MHz external bus speed to 100MHz.

- **Multi-Cache:** Supports processors with 512, 256, 128, or 0KB Pipelined Burst Level 2 cache.

- **Anti-Boot Virus BIOS:** Features a programmable BIOS, offering enhanced **A**dvanced **C**onfiguration **P**ower **I**nterface (ACPI) support for Windows 98 compatibility, built-in firmware-based virus protection through Trend ChipAway Virus codes, and autodetection of most devices for virtually automatic setup.

- **PC100 Memory Support:** Equipped with two DIMM sockets to support Intel PC100-compliant SDRAMs (8, 16, 32, 64, 128, or 256MB) up to 512MB. These new SDRAMs are necessary to meet the critical enhanced 100MHz bus speed requirement.

- **PCI Audio with AC'97 Codec (optional):** Features Aureal's Vortex 2 positional 3D audio chip with A3D 2.0 hardware support. A3D 2.0 provides many advanced 3D audio features, including Aureal Wavetracing™, which traces sound waves in real-time to simulate the acoustic characteristics of the environment for true 3D audio.

- **Peripheral Wake Up:** Supports modem wake up and LAN card wake up functions from sleep or soft-off mode.

2. FEATURES

- **PC Health Monitoring:** Provides an easier way to examine and manage system status information, such as CPU and system voltages, temperatures, and fan status through the onboard hardware ASIC and the bundled LDCM by Intel or PC Probe from ASUS.

- **AGP Slot:** Supports an Accelerated Graphics Port card for high performance, component level interconnect targeted at 3D graphical display applications using a 1X or 2X mode bus.

- **Legacy Free:** Provides three 32-bit PCI (rev 2.2) expansion slots with no ISA, eliminating bottlenecks, and system memory management issues. PCI supports up to 133MB/s maximum throughput.

- **Multi-I/O:** Provides two high-speed UART compatible serial ports and one parallel port with EPP and ECP capabilities.

- **UltraDMA/33 Bus Master IDE:** Comes with an onboard PCI Bus Master IDE controller with two connectors that support four IDE devices in two channels. Supports UltraDMA/33, PIO Modes 3 and 4, and Bus Master IDE DMA Mode 2, as well as Enhanced IDE devices, such as Tape Backup, CD-ROM, CD-R/RW, and LS-120 drives.

- **Universal Retention Mechanism:** Supports a Pentium® III / II processor packaged in a Single Edge Contact Cartridge (SECC2/SECC) or a Celeron™ processor packaged in a Single Edge Processor Package (SEPP).

- **Wake-On-LAN Connector:** Supports Wake-On-LAN activity through an optional ASUS PCI-L101 10/100 Fast Ethernet PCI card (see *7.1 PCI-L101 LAN Card*) or a similar ethernet card.

2. FEATURES

2.1.2 Special Features

- **ACPI Ready: A**dvanced **C**onfiguration **P**ower **I**nterface (ACPI) provides more Energy Saving Features for operating systems that support OS Direct Power Management (OSPM) functionality. With these features implemented in the OS, PCs can be ready around the clock, yet satisfy all the energy saving standards. To fully utilize the benefits of ACPI, an ACPI-supported OS such as Windows 98 must be used.

- **Desktop Management Interface (DMI):** Supports DMI through BIOS, which allows hardware to communicate within a standard protocol creating a higher level of compatibility. (Requires DMI-enabled components.)

- **Easy Installation:** Incorporates BIOS that supports autodetection of hard disk drives, PS/2 mouse, and Plug and Play devices to make the setup of hard disk drives, expansion cards, and other devices virtually automatic.

- **New Compliancy:** Both the BIOS and hardware levels of this motherboard meet the stringent requirements for PC'99 certification. The new PC'99 requirements for systems and components are based on the following high-level goals: Support for Plug and Play compatibility and power management for configuring and managing all system components, and 32-bit device drivers and installation procedures for Windows95/98/NT . Color-coded connectors and descriptive icons make identification easy as required by PC'99.

- **Symbios SCSI BIOS:** Supports optional ASUS SCSI controller cards through the onboard SYMBIOS firmware.

2.1.3 Performance Features

- **1394 for High Speed Bi-Directional Data Transfer (100/200/400Mbps):** Fastest interface for existing and future consumer electronics devices.

- **Concurrent PCI:** Concurrent PCI allows multiple PCI transfers from PCI master busses to the memory and processor.

- **Double the IDE Transfer Speed:** ASUS smart series motherboards with Intel chipsets improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/s.

- **SDRAM Optimized Performance:** Supports the new generation memory - Synchronous Dynamic Random Access Memory (SDRAM) which increases the data transfer rate to 800MB/s max using PC100-compliant SDRAM.

2. FEATURES

2.1.4 Intelligence

- **Dual Function Power Button:** Pushing the power button for less than 4 seconds when the system is in the working state places the system into one of two states: sleep mode or soft-off mode, depending on the BIOS or OS setting (see **PWR Button < 4 Secs** in *4.6 Power Management Setup*). When the power button is pressed for more than 4 seconds, the system enters the soft-off mode regardless of the BIOS setting.

- **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 fans are set for its normal RPM range and alarm thresholds.

- **Message LED (requires ACPI OS support):** Turbo LEDs now act as information providers. Through the way a particular LED illuminates, the user can determine the stage the computer is in. A simple glimpse provides useful information to the user.

- **Remote Ring On (requires modem):** This allows a computer with this motherboard to be turned on remotely through an internal or external modem. With this feature, users can access their computers from anywhere in the world!

- **System Resources Alert:** Today's operating systems such as Windows 95/98/NT and OS/2, require much more memory and hard drive space to present enormous user interfaces and run large applications. The system resource monitor will warn the user before the system resources are used up to prevent possible application crashes. Suggestions will give the user information on managing their limited resources more efficiently.

- **Temperature Monitoring and Alert:** CPU temperature is monitored by the ASUS ASIC through the CPU's internal thermal diode (on Pentium III, Pentium II Deschutes, and Pentium III FC-PGA and Celeron PPGA in conjunction with the ASUS S370-133 CPU card) to prevent system overheat and system damage.

- **Voltage Monitoring and Alert:** System voltage levels are monitored to ensure stable voltage to critical motherboard components. Voltage specifications are more critical for future processors, so monitoring is necessary to ensure proper system configuration and management.

2. FEATURES

2.2 P3B-1394 Motherboard Components

See opposite page for locations.

Location

Processor Support	SEC CPU Slot for SECC2/SECC/SEPP Processors	**1**
	Feature Setting DIP Switches	**5**
	100/66MHz system bus (Frequency Multiples 3.0-7.5)	
Chipsets	Intel 440BX AGPset	**2**
	Multi-I/O Chipset	**9**
Main Memory	Maximum 512MB Supported	
	2 DIMM Sockets	**3**
	PC100/66 SDRAM Supported	
Expansion Slots	3 PCI v2.2 Slots	**17**
	1 Accelerated Graphics Port	**14**
System I/O	Intel PIIX4E PCIset	**11**
	2 IDE Connectors (UltraDMA/33 Supported)	**4**
	1 Floppy Disk Driver Connector	**10**
	1 Serial COM2 Header	**8**
	1 Serial COM1 Connector	**25**
	1 Parallel Port Connector	**24**
	2 USB Connectors	**26**
	1 PS/2 Mouse Connector	**27**
	1 PS/2 Keyboard Connector	**27**
	TI 1394 Link Layer Chip	**12**
	TI 1394 Physical Layer Chip	**20**
	IEEE-1394 Headers (channels 2 & 3)	**22**
	IEEE-1394 Connector (channel 1)	**23**
BIOS	AWARD BIOS, Programmable Flash 4Mbit EEPROM	**7**
	Supports Plug & Play, DMI, and Write Protection	
Audio	Aureal 3D PCI Audio (on audio model only)	**18**
	AC'97 V2.1 Audio Codec	**19**
	1 Joystick/MIDI Connector .... **(Top)**	**21**
	1/8" Jacks for Line In, Line Out, and Mic In .... **(Bottom)**	**21**
Network Features	Wake-On-LAN Connector	**16**
	Wake-On-Ring Connector	**15**
Hardware Monitoring	System Voltage Monitoring (integrated in ASUS ASIC)	**13**
	3 Fan Power and Speed Monitoring Connectors	
Power	ATX Power Supply Connector	**6**
Form Factor	ATX	

2. FEATURES

2.2.1 Component Locations

3. HARDWARE SETUP

3.1 P3B-1394 Motherboard Layout

PS2
KBMS

USB
T: Port1
B: Port2

COM1

PARALLEL PORT

PRINTER

1394_
CON

GAME_AUDIO

Line Out

Line In

Mic In

CPU_FAN

Row 0 1 2 3

Slot 1

Intel
440BX
AGPset

DIMM Socket 1 (64/72-bit, 168-pin module)

DIMM Socket 2 (64/72-bit, 168-pin module)

1394HEAD2

1394HEAD3

1394
Physical
Layer
Chip

PWR_FAN

ATX Power Connector ATXPWR

DIP Switches (DIP_SW)

SECONDARY IDE

PRIMARY IDE

COM2

FLOPPY DISK DRIVE CONN.

Multi I/O

Accelerated Graphics Port (AGP)

CD_IN

MODEM

Audio Codec

AUX_CON

WOR

PCI Slot 1 (PCI1)

1394
Link
Layer
Chip

P3B-1394

PCI Slot 2 (PCI2)

WOL_CON

Audio Chipset

PCI Slot 3 (PCI3)

SPDIFOUT

VIDEO

ASUS
ASIC
with Hardware
Monitor

Intel
PIIX4E
PCIset

2Mbit Flash EEPROM (Programmable BIOS)

CHA_FAN

CR2032 3V
Lithium Cell
CMOS Power

PANEL

(Grayed items are optional at the time of purchase.)

3. HARDWARE SETUP

3.2 Layout Contents

3.3 Hardware Setup Procedure

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

1. **Check Motherboard Settings**
2. **Install Memory Modules**
3. **Install the Central Processing Unit (CPU)**
4. **Install Expansion Cards**
5. **Connect Ribbon Cables, Panel Wires, and Power Supply**
6. **Setup the BIOS Software**

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 (see *3.1 Motherboard Layout* for location) when lit acts as a reminder that the system is in suspend or soft-off mode and not powered OFF.

3.4 Motherboard Settings

This section explains in detail how to change your motherboard's function settings through the use of switches and/or jumpers.

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.

**Motherboard Features Settings (DIP Switches - DIP_SW)**
The motherboard's onboard functions are adjusted through the DIP switches. The white block represents the switch's position. The example below shows all the switches in the OFF position.

DIP_SW

ON   OFF

10. Frequency Selection
9. Frequency Selection
8. Frequency Selection
7. Frequency Selection
6. Frequency Selection
4. Frequency Multiple
3. Frequency Multiple
2. Frequency Multiple
1. Clear CMOS
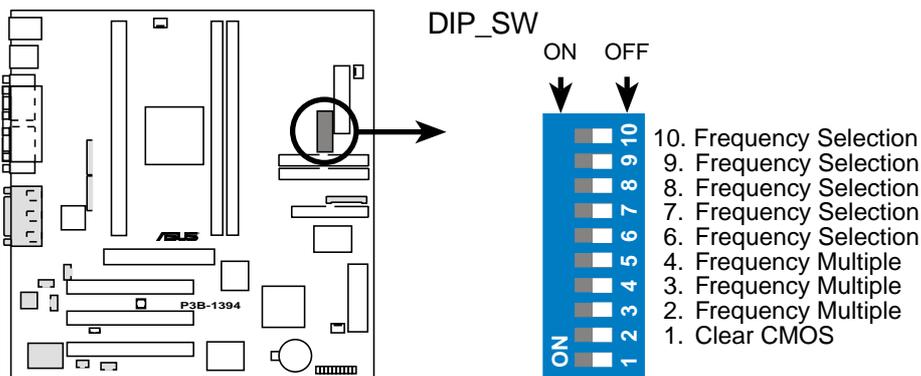
P3B-1394 DIP Switches

3. HARDWARE SETUP

**1) CPU External Frequency Selection (DIP_SW Switches 6-10)**

This option tells the clock generator what frequency to send to the CPU, DRAM, and the PCI bus. This allows the selection of the CPU's *External* frequency (or *BUS Clock*). The BUS Clock multiplied by the Frequency Multiple equals the CPU's *Internal* frequency (the advertised CPU speed).

P3B-1394
CPU External
Frequency Settings

| CPU | 66.0MHz | 75.0MHz | 83.0MHz | 100.0MHz |
| PCI | 33.4MHz | 37.5MHz | 41.6MHz | 33.4MHz |

| CPU | 103.0MHz | 105MHz | 110.0MHz | 112.0MHz |
| PCI | 34.3MHz | 35MHz | 36.7MHz | 37.3MHz |

| CPU | 115.0MHz | 120.0MHz | 124.0MHz | 124.0MHz |
| PCI | 38.3MHz | 40.0MHz | 41.3MHz | 31.0MHz |

| CPU | 133.0MHz | 133.0MHz |
| PCI | 44.3MHz | 33.3MHz |

NOTE: Overclocking your processor is not recommended. It may result in a slower speed. Voltage Regulator Output Selection (VID) is not needed for the Pentium III / II / Celeron processor because it sends VID signals directly to the onboard power controller.

3. HARDWARE SETUP

2) CPU Core:BUS Frequency Multiple (DIP_SW Switches 1-4)

This option sets the frequency multiple between the *Internal* frequency of the CPU and the CPU's *External* frequency. These must be set in conjunction with the *CPU Bus Frequency.*

DIP_SW

3.0x(3/1) 3.5x(7/2) 4.0x(4/1) 4.5x(9/2) 5.0x(5/1)

5.5x(11/2) 6.0x(6/1) 6.5x(13/2) 7.0x(7/1)
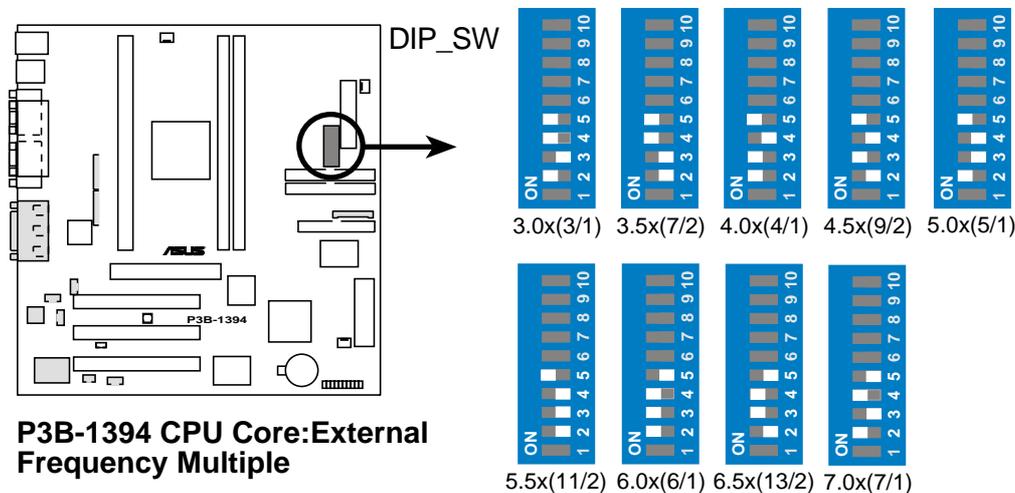
P3B-1394 CPU Core:External Frequency Multiple

Set the DIP switches by the Internal speed of your processor as follows:

Intel CPU Model	Freq	Mult	Ext Freq	(CPU Ext. Freq.)					(Freq. Multiple)			
				6	7	8	9	10	2	3	4	5
Pentium III	700MHz	7.0x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[ON]	[OFF]	[ON]	[OFF]
Pentium III	650MHz	6.5x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[OFF]	[ON]	[ON]	[OFF]
Pentium III	600MHz	6.0x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[ON]	[ON]	[ON]	[OFF]
Pentium III	550MHz	5.5x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[OFF]	[OFF]	[OFF]	[ON]
Pentium III	500MHz	5.0x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[ON]	[OFF]	[OFF]	[ON]
Pentium III/II	450MHz	4.5x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[OFF]	[ON]	[OFF]	[ON]
Pentium II	400MHz	4.0x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[ON]	[ON]	[OFF]	[ON]
Pentium II	350MHz	3.5x	100MHz	[OFF]	[OFF]	[OFF]	[OFF]	[ON]	[OFF]	[OFF]	[ON]	[ON]
Celeron	500MHz	7.5x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[OFF]	[OFF]	[ON]	[OFF]
Celeron	466MHz	7.0x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[ON]	[OFF]	[ON]	[OFF]
Celeron	433MHz	6.5x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[OFF]	[ON]	[ON]	[OFF]
Celeron	400MHz	6.0x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[ON]	[ON]	[ON]	[OFF]
Celeron	366MHz	5.5x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[OFF]	[OFF]	[OFF]	[ON]
Pentium II/Celeron	333MHz	5.0x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[ON]	[OFF]	[OFF]	[ON]
Pentium II/Celeron	300MHz	4.5x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[OFF]	[ON]	[OFF]	[ON]
Pentium II/Celeron	266MHz	4.0x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[ON]	[ON]	[OFF]	[ON]
Pentium II	233MHz	3.5x	66MHz	[ON]	[OFF]	[OFF]	[ON]	[ON]	[OFF]	[OFF]	[ON]	[ON]

For updated processor settings, please visit ASUS' web site (see ASUS CONTACT INFORMATION).

WARNING! Frequencies other than the recommended CPU bus frequencies are not guaranteed to be stable.

3. HARDWARE SETUP

3.5 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.

To utilize the chipset's Error Checking and Correction (ECC) feature, you must use a DIMM module with 9 chips per side (standard 8 chips/side + 1 ECC chip) and make the proper settings through *4.5 Chipset Features Setup*.

Memory speed setup is recommended through **SDRAM Configuration** in *4.5 Chipset Features Setup*.

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, 256MB	x1	
Socket 2 (Rows 2&3)	SDRAM 8, 16, 32, 64, 128, 256MB	x1	
	Total System Memory (Max 512MB)	=	

3.5.1 General DIMM Notes

- **For the system CPU bus to operate at 100MHz, use only PC100-compliant DIMMs.** When this motherboard operates at 100MHz, most system will not even boot if non-compliant modules are used because of the strict timing issues involved under this speed. If your DIMMs are not PC100-compliant, set the CPU bus frequency to 66MHz RAM to ensure system stability.
- ASUS motherboards support SPD (Serial Presence Detect) DIMMs. This is the memory of choice for best performance vs. stability.
- Two possible memory chips are supported: SDRAM with and without ECC.
- SDRAM chips are generally thinner with higher pin density than EDO (Extended Data Output) chips.
- BIOS shows SDRAM memory on bootup screen.
- Single-sided DIMMs come in 16, 32, 64,128MB; double-sided come in 32, 64, 128, 256MB.

3. HARDWARE SETUP

3.5.2 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.
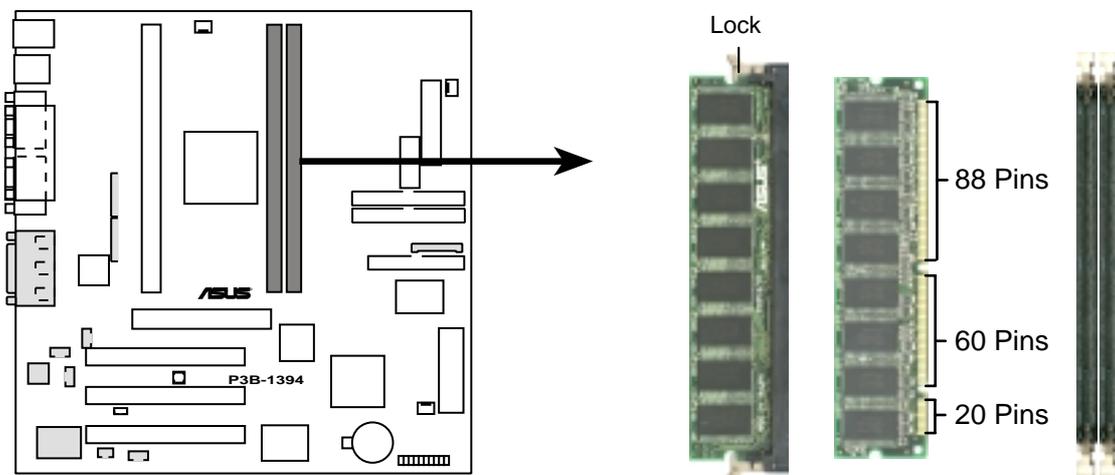
P3B-1394 168-Pin DIMM Memory Sockets

The DIMMs must be 3.3Volt unbuffered SDRAMs. To determine the DIMM type, check the notches on the DIMMs (see figure below).
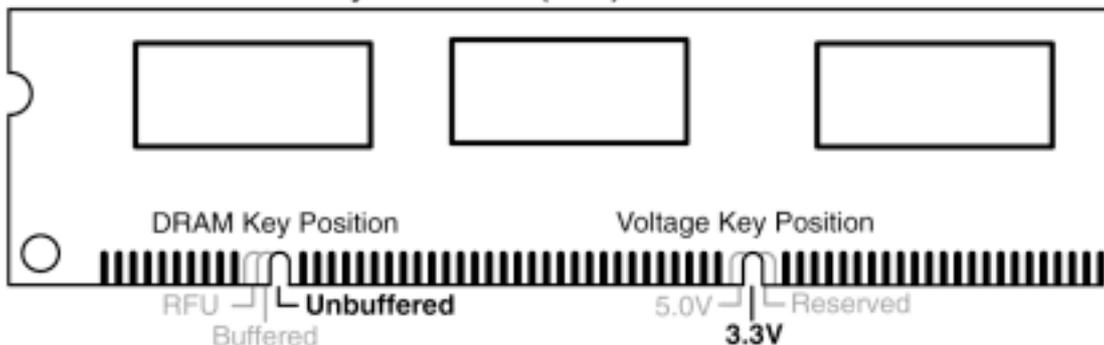
The notches on the DIMM will shift between left, center, or right to identify the type and also to prevent the wrong type from being inserted into the DIMM slot on the motherboard. You must tell your retailer the correct DIMM type before purchasing. This motherboard supports four clock signals per DIMM.

3. HARDWARE SETUP

3.6 Central Processing Unit (CPU)

NOTE: The following pictures are provided for reference purposes only. The appearance of your retention mechanism and fan may be different from the following examples.

Your motherboard provides a Slot 1 connector for a Pentium® III processor packaged in a Single Edge Contact Cartridge 2 (SECC2), a Pentium® II processor packaged in SECC, or a Celeron™ processor packaged in a Single Edge Processor Package (SEPP). An ASUS S370-133 CPU card can allow Socket 370 processors to be used on any ASUS motherboard with the Slot 1 connector (See *7. APPENDIX* for instructions on using this card).

Pentium II processor packaged in an SECC with heatsink and fan (top view)

Pentium III (in an SECC2) with heatsink and fan
NOTE: The SEPP fan (for Celeron processors) is similar to SECC2 fan except that the clamping design is different.

3.6.1 Quick CPU Installation Procedure

1. Attach the heatsink to the processor with thermal grease and retention clip. The recommended heatsinks (see section on recommended heatsinks for Pentium III / II processors for more information) for the boxed Pentium III / II and Celeron processors are those with three-pin fans that can be connected to the fan connectors on the motherboard.

> **WARNING!** Be sure that there is sufficient air circulation across the processor's heatsink by regularly checking that your CPU fan is working. Without sufficient circulation, the processor could overheat and damage both the processor and the motherboard. You may install an auxiliary chassis fan, if necessary.

2. Install the Universal Retention Mechanism onto the motherboard.
3. Insert the processor.

3. HARDWARE SETUP

3.6.2 Attaching the Heatsink

NOTE: If provided, you should follow the heatsink attachment instructions that came with your heatsink or processor. The following steps are provided only as a general guide and may not reflect those for your heatsink.

1. Attach the heatsink to the processor core with a good quality thermal interface material.
2. Mount the heatsink to the processor package.

   Using SECC fan with Pentium® II
   Push the two lock arms one direction to clamp the heatsink onto the processor and the other direction to release.

   Lock Arm   Lock Arm

   Using SECC2 fan with Pentium® III
   Insert the four heatsink's pins through the holes of the SECC2. Place the metal clip on the ends of the pins and slide until it locks into place.
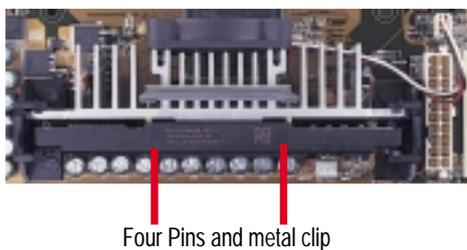
   Four Pins and metal clip

NOTE: The SEPP heatsink and fan (for Intel Celeron processors) is similar to the SECC2 heatsink and fan except that the clamping design is different.

WARNING! Make sure the heatsink is mounted tightly against the SECC2, SECC, or SEPP; otherwise, the CPU will overheat. You may install an auxiliary fan to provide adequate circulation across the processor's passive heatsink.

3. HARDWARE SETUP

## 3.6.3 Installing the Universal Retention Mechanism

Your motherboard comes with a set of Universal Retention Mechanism (URM), which supports Pentium III / II and Celeron processors. There are two types of URMs: (A) With Integrated Retainer Pins and (B) With Separate Retainer Pins.

URM (A)   URM (B)
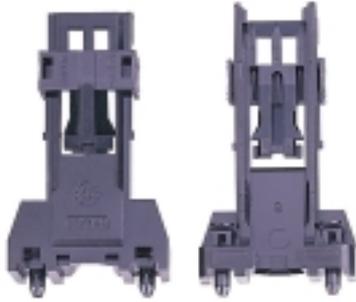
Integrated Retainer Pins   Separate Retainer Pins

1. Place the motherboard on the anti-static foam that was shipped with the mother-board. Do not place the motherboard on a hard surface while installing the URM as the black fastener sleeves must protrude through the bottom of the mother-board.
2. Locate the Slot 1 connector on the motherboard.
3. Position the retention mechanism on either side of the Slot 1 connector.
4. Making sure that the top retainer pins are not pushed in, press down on the retention brackets until the black fastener sleeves fit snugly against the board.

> **WARNING!** Installing the URM while the retainer pins are pushed in will not only cause the URM to be installed improperly but will also damage the URM.

5. Push the four retainer pins completely down into the black fastener sleeves until the head of each pin is securely seated.

3.6.4 Installing the Processor

NOTE: The following steps assume that you have already attached the heatsink and installed the URM into your motherboard.

1. Make sure that the processor substrate key is aligned with the Slot 1 connector key.
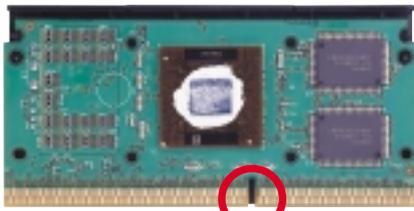
Connector Key
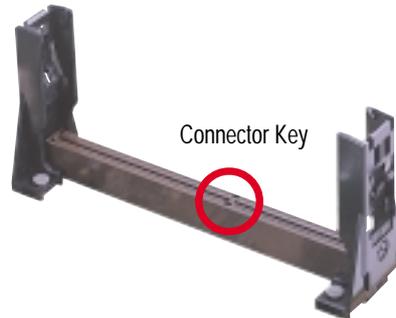
Substrate Key

2. Push down firmly but gently the SECC2/SECC/SEPP into the URM until it snaps into place.

NOTE: The processor edge fingers must be kept parallel to the connector or else misalignment will occur.

SECC for Pentium II only: Secure the SECC in place by pushing the two SECC locks outward so that the locks show through the retention mechanism's lock holes.

SECC2/SEPP: When engaged, the T-bars lock into the slots at the two ends of the SECC2/SEPP heatsink.

SECC

Lock hole

CPU fan cable to fan connector

SECC2/SEPP

Lock hole

CPU fan cable to fan connector
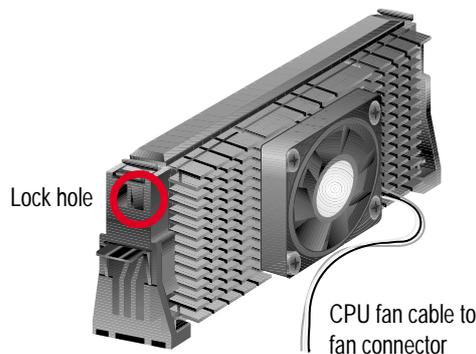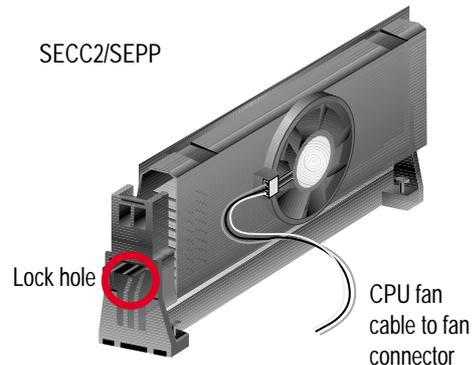
3. If your URM is of type A, make sure the locks are in the locked position as shown.

Locked Position
(push upward)
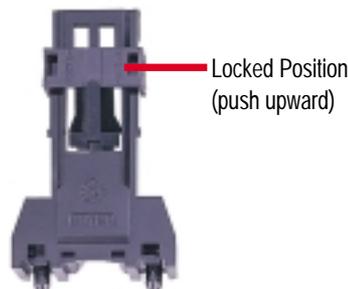
3. HARDWARE SETUP

3.6.5 Removing the Processor

SECC: Push the SECC's two locks inward to disengage the latch feature and firmly lift the SECC assembly out of the URM.

Push lock inward

SECC2/SEPP

CPU fan cable to fan connector

CPU fan cable to fan connector
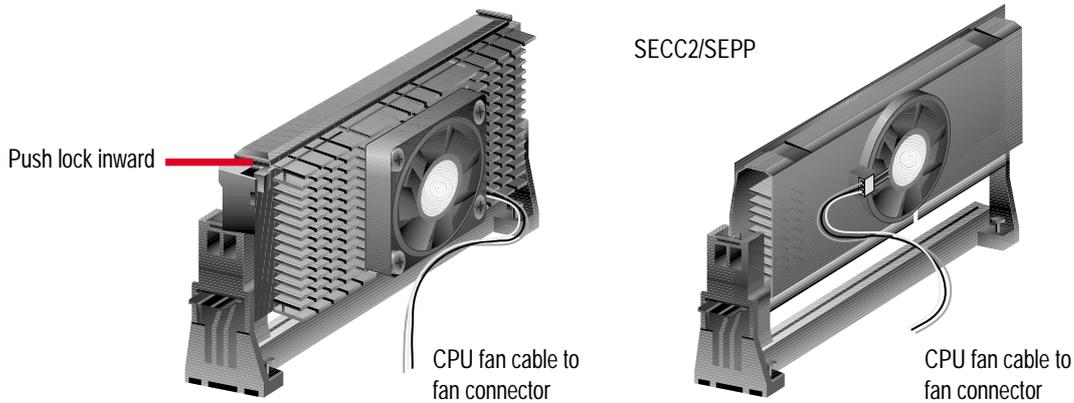
SECC2/SEPP:

URM (A): Unlock the URM by pushing the two locks down and then pull the SECC2/SEPP assembly out.

URM (B): Place one hand on the heatsink and your other thumb on the top of one of the URMs. Push the URM away from the assembly with your thumb while you rotate the processor out of the slot 1 connector with the other.

CAUTION! You may wear gloves to protect your hands from the sharp edges when removing SECC2/SEPP processors.

3.6.6 Recommended Heatsinks for Slot 1 Processors

The recommended heatsinks for the Slot 1 processors are those with three-pin fans, such as the ASUS Smart Fan, that can be connected to the motherboard's CPU fan connector. These heatsinks dissipate heat more efficiently and with an optional hardware monitor, they can monitor the fan's RPM and use the alert function with the Intel LANDesk Client Manager (LDCM) or the ASUS PC Probe software.

**SECC Heatsink & Fan**   **SECC2 Heatsink & Fan**

NOTE: The SEPP heatsink and fan (for Intel Celeron processors) is similar to the SECC2 heatsink and fan except that the clamping design is different.

3. HARDWARE SETUP

3.6.7 Precautions

Operating a processor at temperatures above its maximum specified operating temperature will shorten the processor lifetime and may cause unreliable operation. To prevent system overheat and/or damage, it is important to have accurate temperature readings of the processor core (the main source of power dissipation) for system thermal management. Included inside Pentium III, Pentium II (Deschutes), FC-PGA370 Celeron, and PPGA370 Celeron processors is a thermal sensor that is connected to the internal thermal diode.

Unlike other motherboards, this motherboard was designed to acquire thermal data directly from the processor thermal diode. Therefore, the CPU temperature reported may be higher than those from motherboards that take readings from thermal sensors external to the processor. This is not a cause for alarm. If, however, the BIOS and/or your hardware monitoring program is reporting a CPU temperature above the threshold, check the following:

1. An Intel recommended fan heatsink is used.
2. Good quality thermal interface material is used.
3. The heatsink is correctly installed onto the processor with a strong retention clip.
4. There is no visible gap between the processor die and heatsink.

The thermal interface material should be continuous with no through-holes or debris.
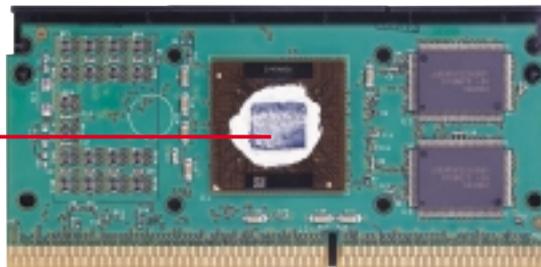
Example of a correctly installed retention clip
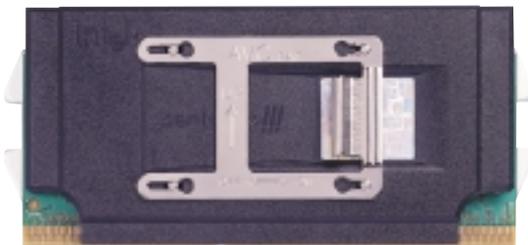
Example of an incorrectly installed retention clip
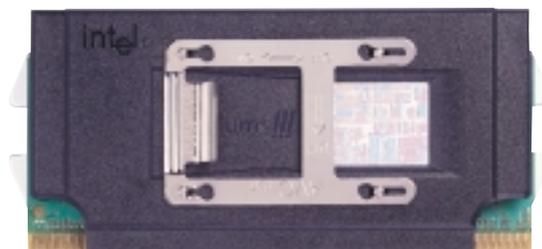
3.7 Expansion Cards

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

3.7.1 Expansion Card Installation Procedure

1. Read the documentation for your expansion card and make any necessary hardware or software settings for your expansion card, such as jumpers.
2. Remove your computer system's cover and the bracket plate on the slot you intend to use. Keep the bracket for possible future use.
3. Carefully align the card's connectors and press firmly.
4. Secure the card on the slot with the screw you removed above.
5. Replace the computer system's cover.
6. Set up the BIOS if necessary
   (such as *IRQ xx Used By ISA: Yes* in PNP AND PCI SETUP)
7. Install the necessary software drivers for your expansion card.

3.7.2 Assigning IRQs for Expansion Cards

Some expansion cards need to use an IRQ to operate. Generally, an IRQ must be exclusively assigned 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 your motherboard has **PCI** audio onboard, an extra IRQ will be used, leaving 5 IRQs free.

To see a map of your used and free IRQs in Windows 98, the **Control Panel** icon in **My Computer**, contains a **System** icon, which gives you a **Device Manager** tab. Double-clicking on a specific hardware device gives you the **Resources** tab, which shows the Interrupt number and address. Make sure that no two devices use the same IRQ or your computer will experience problems when those two devices are in use at the same time.

IMPORTANT: Interrupt requests are shared as shown by the following table:

	INT-A	INT-B	INT-C	INT-D
PCI slot 1	--	not shared	--	--
PCI slot 2	--	--	shared	--
PCI slot 3	--	--	--	shared
Audio	--	--	--	shared
1394	--	--	shared	--
AGP slot	not shared	--	--	--

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.

The following table lists the default IRQ assignments for standard PC devices. Use this table when configuring your system and for resolving IRQ conflicts.

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.

3.7.3 Accelerated Graphics Port (AGP)

This motherboard provides an accelerated graphics port (AGP) slot to support a new generation of graphics cards with ultra-high memory bandwidth, such as an ASUS 3D Hardware Accelerator.
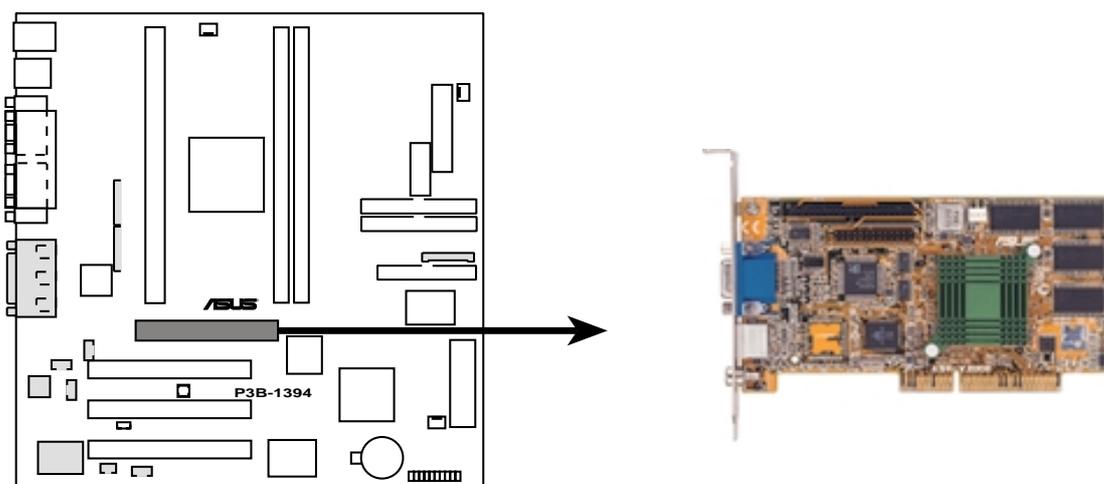
P3B-1394 Accelerated Graphics Port (AGP)

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 connectors 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 cables 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 not detected, expansion cards can use IRQ12. See **PS/2 Mouse Function Control** in *4.4 Advanced Menu*.

PS/2 Mouse (6-pin Female)
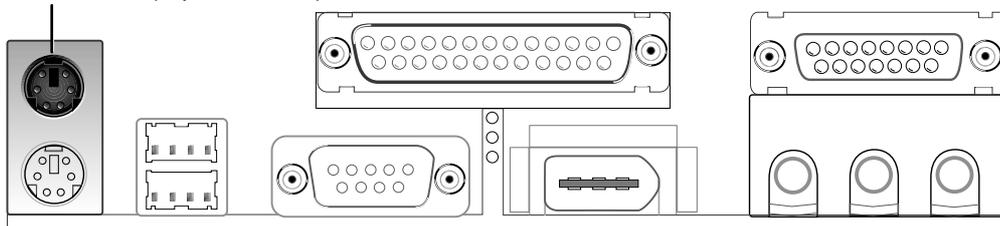
2) **PS/2 Keyboard Connector (Purple 6-pin PS2KBMS)**
    This connection is for a standard keyboard using an PS/2 plug (mini DIN). **This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.**
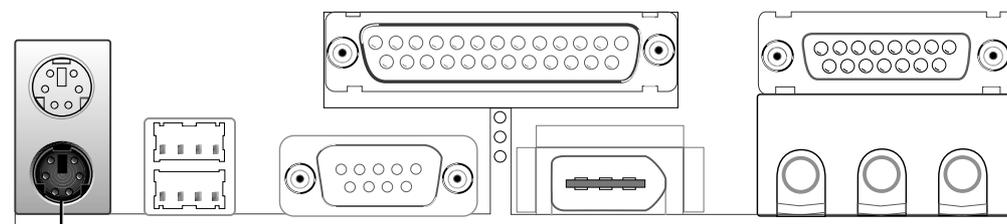
PS/2 Keyboard (6-pin Female)

3. HARDWARE SETUP

**3) Universal Serial Bus Connectors 1 & 2 (Two 4-pin USB)**
Two USB ports are available for connecting up to 127 USB devices. USB is a plug and play interface between a computer and its peripherals and has dual-speed data transfer rates of 1.5Mbps and 12Mbps.

USB 1

Universal Serial Bus (USB) 2
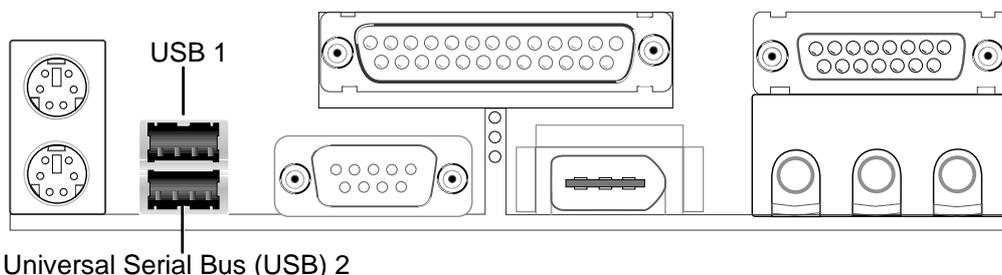
4) Parallel Port Connector (25-pin PRINTER)
You can enable the parallel port and choose the IRQ through **Onboard Parallel Port** in *4.5 Chipset Features Setup*. **NOTE**: Serial printers must be connected to the serial port.

Parallel (Printer) Port (25-pin Female)
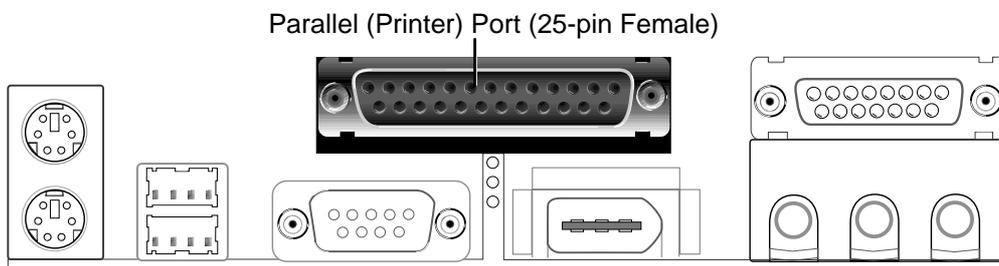
5) Serial Port Connectors (9-pin COM1)
The serial port can be used for pointing devices or other serial devices. See **Onboard Serial Port 1** in *4.5 Chipset Features Setup*.

Serial Port (9-pin Male) COM 1
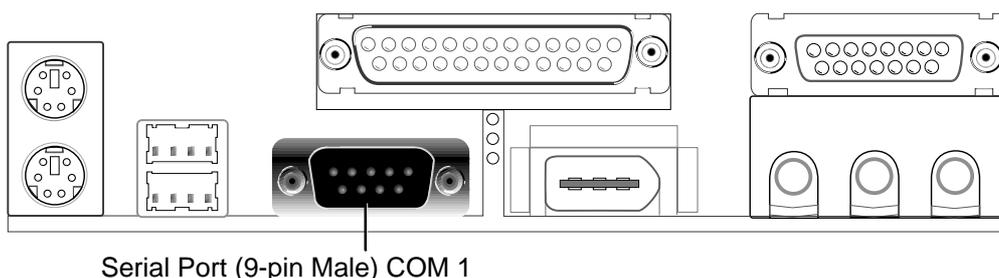
3. HARDWARE SETUP

6) IEEE-1394 Connector (6-pin 1394_CON)
This connector supports external devices with a 6-pin IEEE-1394 connector.

IEEE-1394 (6 pins)
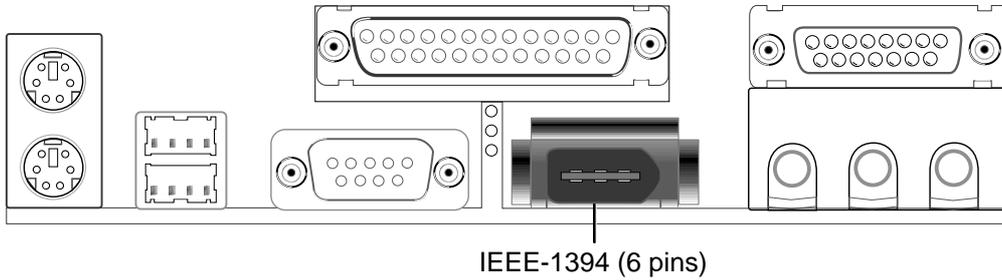
7) Joystick/MIDI Connector (15-pin GAME_AUDIO) (with optional onboard audio)
You may connect game joysticks or game pades to this connector for playing games. Connect MIDI devices for playing or editing audio.

Joystick/Midi (15-pin Female)
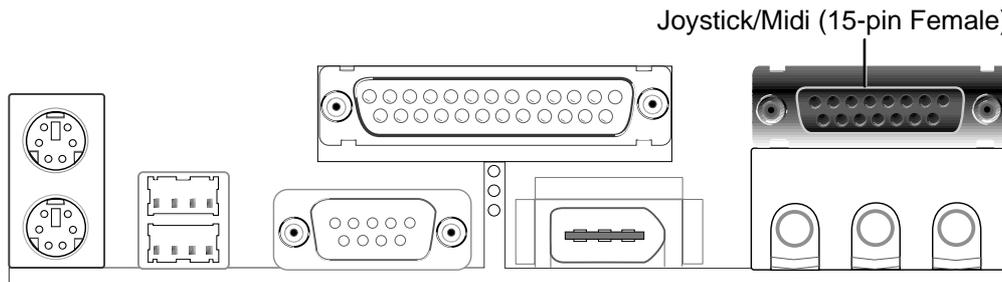
8) Audio Port Connectors (Three 1/8" Female) (with optional onboard audio)
**Line Out** can be connected to headphones or preferably powered speakers. **Line In** allows tape players or other audio sources to be recorded by your computer or played through the **Line Out**. **Mic** allows microphones to be connected for inputting voice.

Line Out Line In Mic
1/8" Stereo Audio Connectors
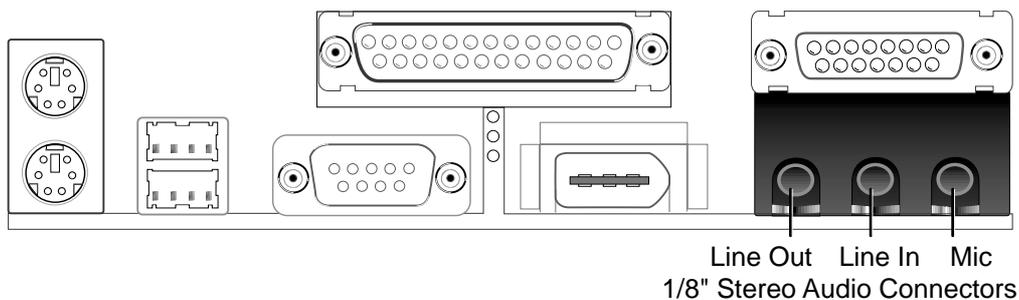
9) IDE Connectors (Two 40-1pin PRIMARY/SECONDARY IDE)

These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs at the other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Refer to the documentation of your hard disk for the jumper settings. BIOS now supports SCSI device or IDE CD-ROM bootup (see **HDD Sequence SCSI/IDE First** and **Boot Sequence** in *4.4 BIOS Features Setup*). **(Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged).**

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 **Boot Sequence** in *4.4 BIOS Features Setup*.
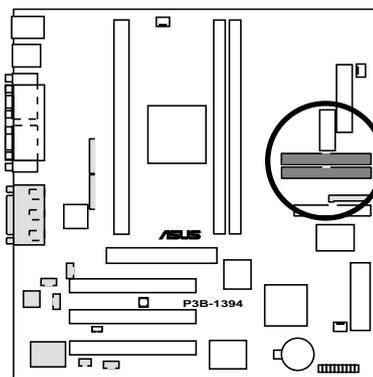
NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to pin 1

Secondary IDE Connector

Pin 1

Primary IDE Connector

P3B-1394 IDE Connectors
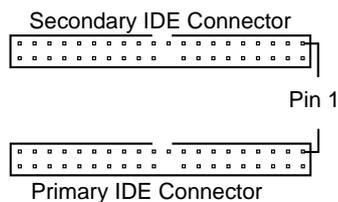
10) Floppy Disk Drive Connector (34-1pin FLOPPY)

This connector supports the provided floppy disk 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).**

Floppy Disk Drive Connector

Pin 1
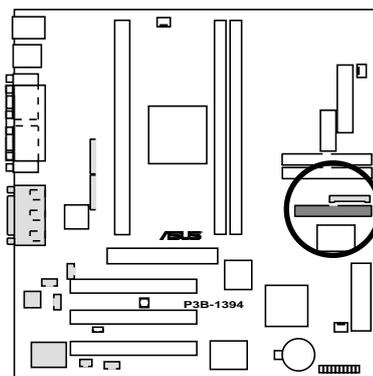
P3B-1394 Floppy Disk Drive Connector

11) **Chassis,Power Supply,CPU Fan Connectors (3-pin CHA_,PWR_,CPU_FAN)**

These connectors support cooling fans of 500mA (6W) or less. Orientate 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. The Rotations per Minute (RPM) can be monitored using ASUS PC Probe Utility or Intel LDCM Utility (see *6. Software Reference*).

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.**

CPU Fan Power (CPU_FAN)
GND
+12V
Rotation

Power Supply Fan (PWR_FAN)
GND
+12V
Rotation

Chassis Fan Power (CHA_FAN)
Rotation
+12V
GND

P3B-1394 12Volt Cooling Fan Power
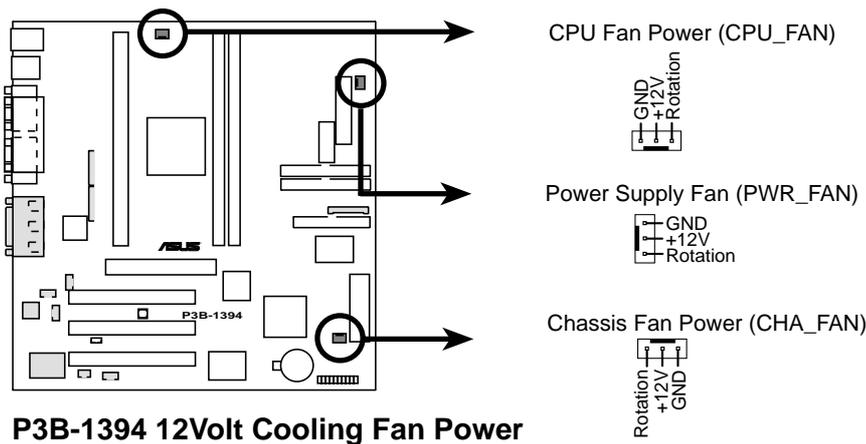
3. HARDWARE SETUP

12) Wake-On-LAN Connector (3-pin WOL_CON)

The WOL_CON connector powers up the system when a wake-up packet or signal is received from the network through the ASUS PCI-L101 LAN card.

IMPORTANT: This feature requires that **Wake On LAN** is set to *Enabled* (see *4.6 Power Management Setup*) and that your system has an ATX power supply with at least 720mA +5V standby power.


WOL_CON

Ground

+5 VSB   PME
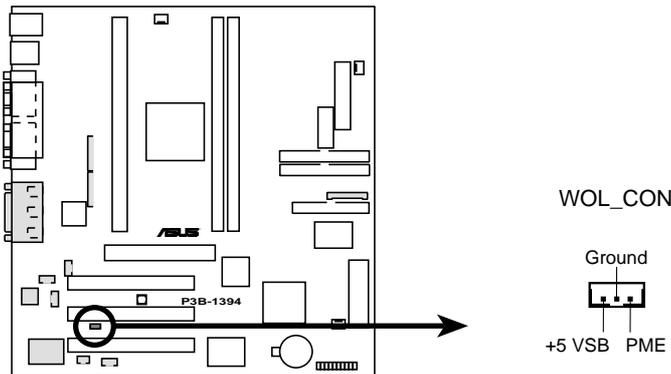
P3B-1394 Wake-On-LAN Connector

13) Wake-On-Ring Connector (2-pin WOR)

This connector connects to an internal modem card with a Wake-On-Ring output. The connector powers up the system when a ringup packet or signal is received through the internal modem card. **NOTE:** For external modems, Wake-On-Ring is detected through the COM port.

IMPORTANT: This feature requires that **PWR Up On Modem Act** is set to *Enabled* (see *4.6 Power Management Setup*).

Pin 2 PIXRI#
Pin 1 Ground

WOR
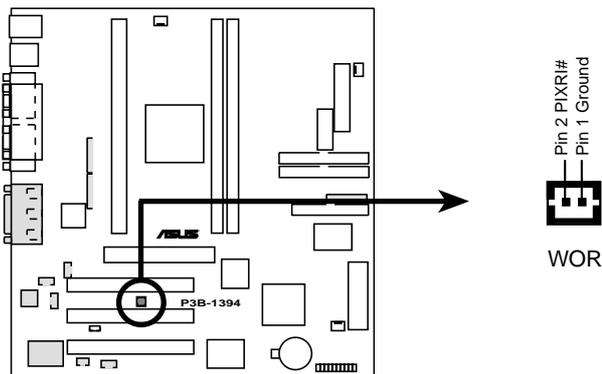
P3B-1394 Wake-On-Ring Connector

14) IEEE-1394 Headers (8-pin 1394HEAD2/1394HEAD3)

These headers can support an IEEE-1394 serial cable connector set that mounts to the front of a case for easy accessibility or an IEEE-1394/COM2 combination serial cable connector set (see below) that mounts to a free expansion slot at the back of your case. You can also connect 1394-compliant internal fixed-disk drives to these headers. **NOTE:** To use these headers, set **Onboard 1394** to *Enabled* (see *4.7 PNP and PCI Setup*)
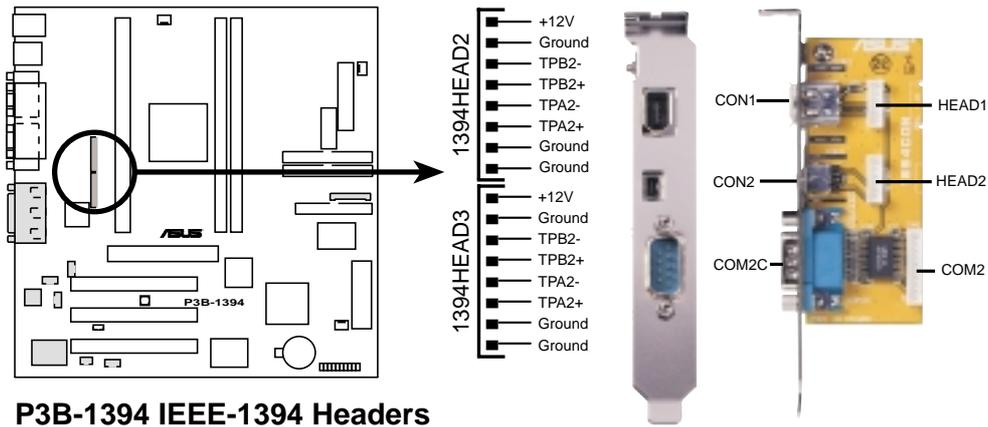
P3B-1394 IEEE-1394 Headers

NOTE: To use COM2C, you must have an IEEE-1394 device connected to CON1 (HEAD1 on the 1394 CON board must be used).

15) Internal Audio Connectors (4-pin MODEM, CD_IN, AUX_CON, VIDEO)

These connectors allow you to receive stereo audio input from sound sources, such as a CD-ROM, TV tuner, or MPEG card. The MODEM connector allows the onboard audio to interface with a voice modem card with a similar connector. It also allows the sharing of microphone and speaker between the onboard audio and the voice modem card.
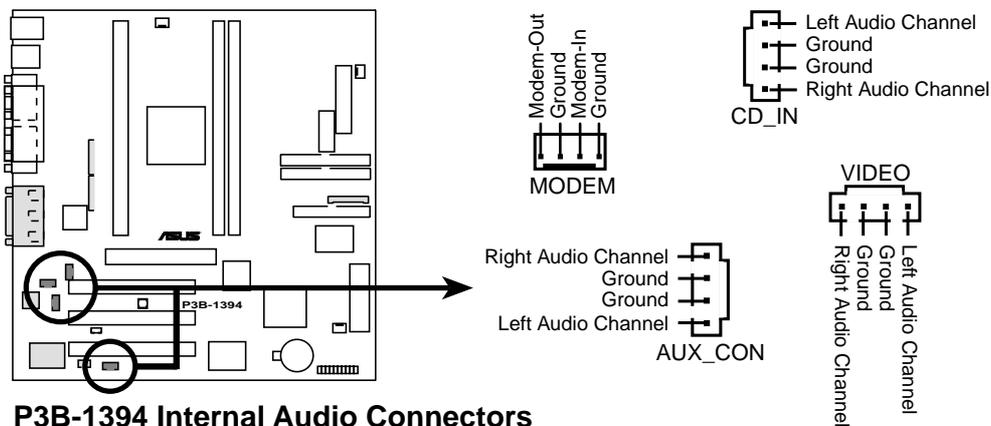
P3B-1394 Internal Audio Connectors

3. HARDWARE SETUP

For items 16-23
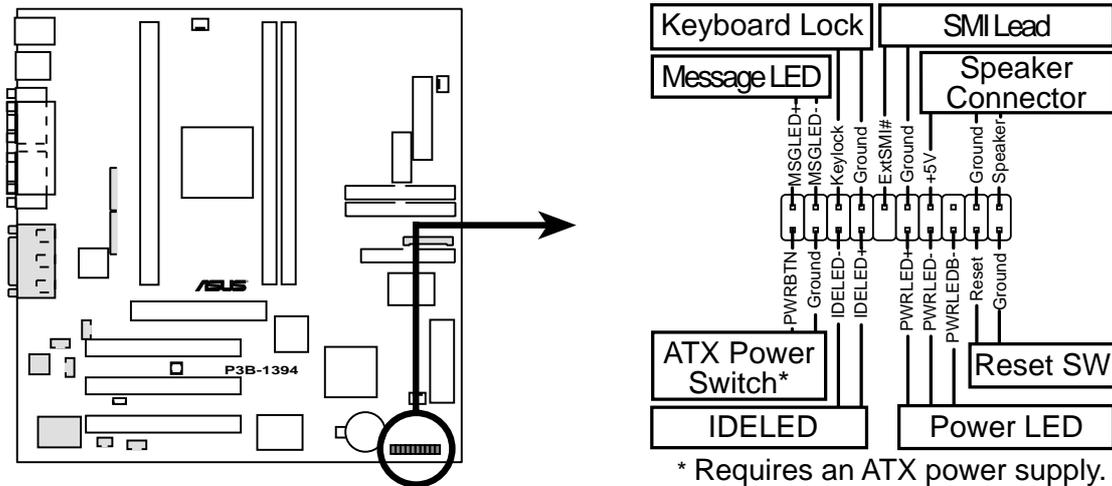
P3B-1394 System Panel Connections

* Requires an ATX power supply.

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

The LED connected to this lead indicates the state of the system. The LED lights when the system is in suspend mode and is OFF otherwise.

17) Keyboard Lock Switch Lead (2-pin KEYLOCK)

This 2-pin connector connects to the case-mounted key switch to allow keyboard locking. **NOTE:** When the keyboard is locked, the mouse can still be used.

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

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

19) System Warning Speaker Connector (4-pin SPEAKER)

This 4-pin connector connects to the case-mounted speaker.

20) ATX Power Switch / Soft-Off Switch Lead (2-pin PWR)

The system power is controlled by a momentary switch connected to this lead. Pushing the button once will switch the system between ON and SLEEP or ON and SOFT OFF, depending on your BIOS or OS setting. 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.

21) IDE Activity LED Lead (2-pin IDELED)

This 2-pin connector supplies power to the cabinet's IDE activity LED. Read and write activity by devices connected to the Primary or Secondary IDE connectors will cause the LED to light up.

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

This 3-1 pin connector connects to the system power LED, which lights when the system is powered ON and turns OFF when it is in sleep or soft-off mode.

23) Reset Switch Lead (2-pin RESET)

This 2-pin connector connects to 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.

24) ATX Power Supply Connector (20-pin ATXPWR)

This connector connects to 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 but gently making sure that the pins are aligned.


+12.0 Volts	+5.0 Volts
+5V Standby	+5.0 Volts
Power Good	-5.0 Volts
Ground	Ground
+5.0 Volts	Ground
Ground	Ground
+5.0 Volts	Power Supply On
Ground	Ground
+3.3 Volts	-12.0 Volts
+3.3 Volts	+3.3 Volts
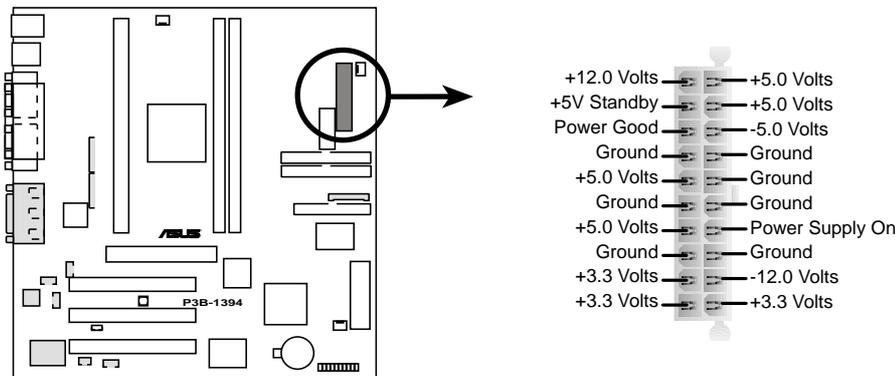
P3B-1394 ATX Power Connector

IMPORTANT: Make sure that your ATX power supply can supply at least 10mA on the 5-volt standby lead (5VSB). You may experience difficulty in powering on your system if your power supply cannot support the load. For Wake-On-LAN and suspend-to-RAM support, your ATX power supply must supply at least 720mA +5VSB.

3. HARDWARE SETUP

**25) Serial Port Header (10-pin COM2)**

The optional IEEE-1394/COM2 serial cable connector set can be used to add an additional serial port for a second serial device. Connect the IEEE-1394 cables from the 1394 CON board to the two IEEE-1394 headers (1394HEAD2/ 1394HEAD3), the serial cable from the bracket to the COM2 header, and then mount the bracket to the chassis on a free expansion slot.
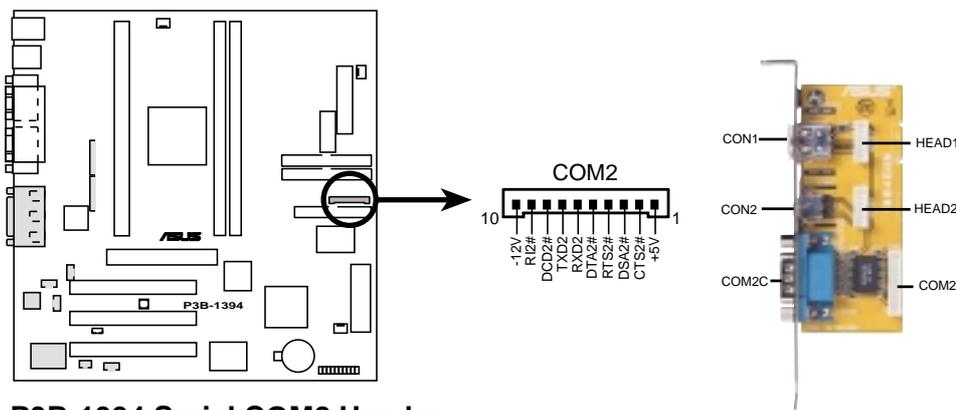
P3B-1394 Serial COM2 Header

NOTE: To use COM2C, you must have an IEEE-1394 device connected to CON1, i.e. HEAD1 on the 1394 CON board must be used *see* **14) IEEE-1394 Headers**.

26) Digital Audio Interface Header (3-pin SPDIFOUT)

This header is the digital link between the motherboard and your devices, such as CD player, sampler, or DAT recorder. It allows the digital transmission of audio data in SPDIF (Sony/Philips Digital Interface) format.
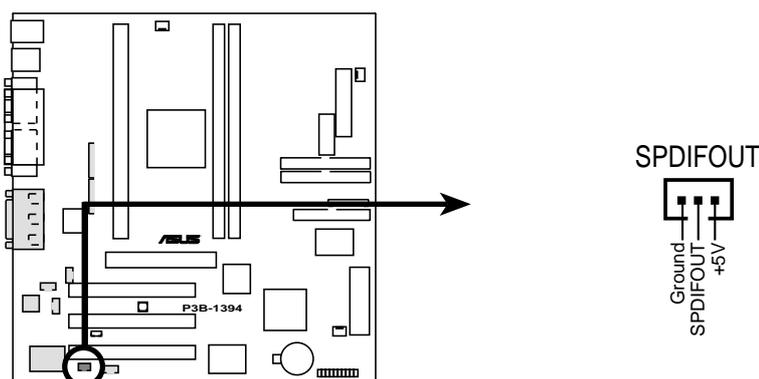
P3B-1394 Audio Digital Interface Connector

3. HARDWARE SETUP

3.9 Starting Up the First Time

1. After all connections are made, close the system case cover.

2. Be sure that all switches are off (in some systems, marked with ○).

3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.

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

5. You may then turn on your devices in the following order:
   a. Your monitor
   b. External SCSI devices (starting with the last device on the chain)
   c. Your system power. For ATX power supplies, you need to switch on the power supply as well as press the ATX power switch on the front of the case.

6. The power LED on the front panel of the system case will light. For ATX power supplies, the system LED will light when the ATX power switch is pressed. The LED on the monitor may light up or switch between orange and green after the system's if it complies with "green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, the BIOS will alarm beeps or additional messages will appear on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck your jumper settings and connections or call your retailer for assistance.

Award BIOS Beep Codes

Beep	Meaning
One short beep when displaying logo	No error during POST
Long beeps in an endless loop	No DRAM installed or detected
One long beep followed by three short beeps	Video card not found or video card memory bad
High frequency beeps when system is working	CPU overheated System running at a lower frequency

4. BIOS SETUP

4.1 Managing and Updating Your BIOS

4.1.1 Upon First Use of the Computer System

It is recommended that you save a copy of the original motherboard BIOS along with a Flash Memory Writer utility (AFLASH.EXE) to a bootable floppy disk in case you need to reinstall the BIOS later. **AFLASH.EXE** is a Flash Memory Writer utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the motherboard. This file works only in DOS mode. To determine the BIOS version of your motherboard, check the last four numbers of the code displayed on the upper left-hand corner of your screen during bootup. A larger number represents a newer BIOS file.

1. Type **FORMAT A:/S** at the DOS prompt to create a bootable system floppy disk. **DO NOT** copy AUTOEXEC.BAT & CONFIG.SYS to the disk.

2. Type **COPY E:\AFLASH\AFLASH.EXE A:** (assuming E is your CD-ROM drive) to copy AFLASH.EXE to the just created boot disk.

   NOTE: AFLASH works only in DOS mode. It will not work with DOS prompt in Windows and will not work with certain memory drivers that may be loaded when you boot from your hard drive. It it recommended that you reboot using a floppy.

3. Reboot your computer from the floppy disk. **NOTE:** BIOS setup must specify "Floppy" as the first item in the boot sequence.

4. In DOS mode, type **A:\AFLASH <Enter>** to run AFLASH.
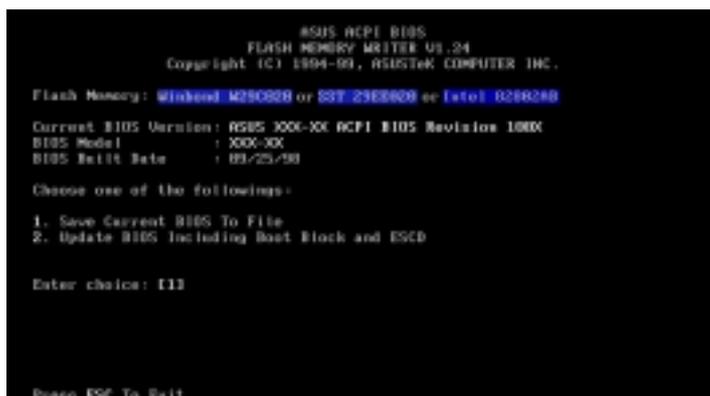
IMPORTANT! If "unknown" is displayed after **Flash Memory:,** the memory chip is either not programmable or is not supported by the ACPI BIOS and therefore, cannot be programmed by the Flash Memory Writer utility.

5. Select **1. Save Current BIOS to File** from the Main menu and press <Enter>. The **Save Current BIOS To File** screen appears.
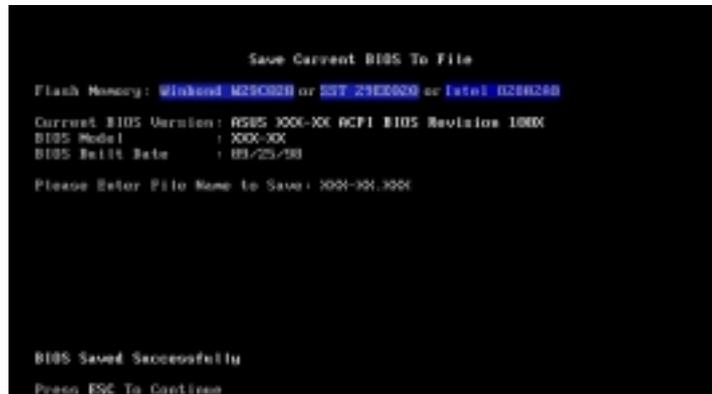
6. Type a filename and the path, for example, **A:\XXX-XX.XXX** and then press <Enter>.

4.1.2   Updating BIOS Procedures (only when necessary)

1. Download an updated ASUS BIOS file from the Internet (WWW or FTP) (see ASUS CONTACT INFORMATION on page 3 for details) and save to the disk you created earlier.
2. Boot from the disk you created earlier.
3. At the "A:\" prompt, type **AFLASH** and then press <Enter>.
4. At the **Main Menu**, type **2** and then press <Enter>. The **Update BIOS Including Boot Block and ESCD** screen appears.
5. Type the filename of your new BIOS and the path, for example, **A:\XXX-XX.XXX**, and then press <Enter>.
   NOTE: To cancel this operation, press <Enter>.

6. When prompted to confirm the BIOS update, press **Y** to start the update.

7. The utility starts to program the new BIOS information into the flash ROM. The boot block will be updated automatically only when necessary. This will minimize the chance of a failed updating. When the programming is finished, *Flashed Successfully* will be displayed.

8. Follow the onscreen instructions to continue.

> **WARNING!** If you encounter problems while updating the new BIOS, DO NOT turn off your system since this might prevent your system from booting up. Just repeat the process, and if the problem still persists, update the original BIOS file you saved to disk above. If the Flash Memory Writer utility was not able to successfully update a complete BIOS file, your system may not be able to boot up. If this happens, your system will need servicing.

4. BIOS SETUP

4.2 BIOS Setup

The motherboard supports a 5-Volt programmable Flash ROM chip, which can be updated when BIOS upgrades are released. Use the Flash Memory Writer utility to download the new BIOS file into the ROM chip as described in detail in this section.

All computer motherboards provide a Setup utility program for specifying the system configuration and settings. If your motherboard came in a computer system, the proper configuration entries may have already been made. If so, invoke the Setup utility, as described later, and take note of the configuration settings for future reference; in particular, the hard disk specifications.

If you are installing the motherboard, reconfiguring your system or you receive a Run Setup message, you will need to enter new setup information. This section describes how to configure your system using this utility.

The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the system provides you with the opportunity to run this program. This appears during the Power-On Self Test (POST). Press <F2> to call up the Setup utility. If you are a little bit late pressing the mentioned key(s), POST will continue with its test routines, thus preventing you from calling up Setup. If you still need to call Setup, reset the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the Reset button on the system case. You can also restart by turning the system off and then back on again, but do so only if the first two methods fail.

When you invoke Setup, the CMOS SETUP UTILITY main program screen will appear with the following options:

Load Defaults

The "Load BIOS Defaults" option loads the minimum settings for troubleshooting. "**Load Setup Defaults**", on the other hand, is for loading optimized defaults for regular use. Choosing defaults at this level, will modify all applicable settings.

A section at the bottom of the above screen displays the control keys for this screen. Take note of these keys and their respective uses. Another section just below the control keys section displays information on the currently highlighted item in the list.

4.3 Standard CMOS Setup

This "Standard CMOS Setup" option allows you to record some basic system hardware configuration and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option anymore. However, if the configuration stored in the CMOS memory on the board gets lost or damaged, or if you change your system hardware configuration, you will need to respecify the configuration values. The configuration values usually get lost or corrupted when the power of the onboard CMOS battery weakens.
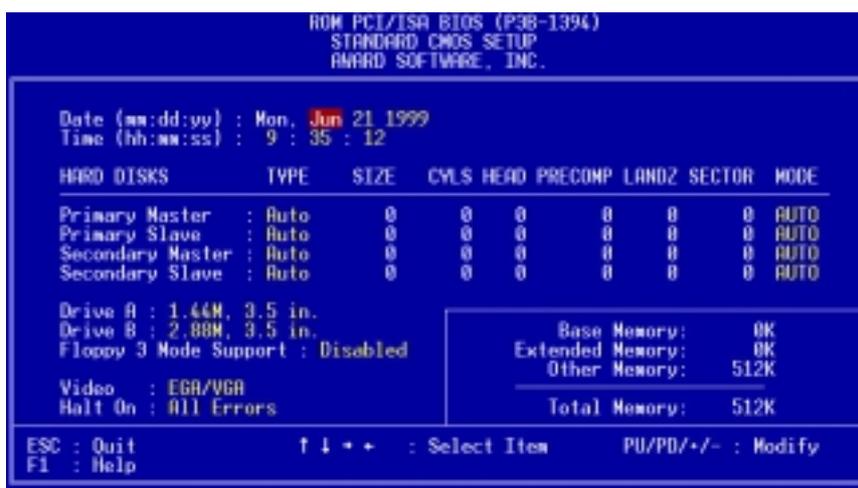
The preceding screen provides you with a list of options. At the bottom of this screen are the control keys for this screen. Take note of these keys and their respective uses.

User-configurable fields appear in a different color. If you need information on the selected field, press <F1>. The help menu will then appear to provide you with the information you need. The memory display at the lower right-hand side of the screen is read-only and automatically adjusts accordingly.

Details of Standard CMOS Setup:

Date

To set the date, highlight the "Date" field and then press either <Page Up>/<Page Down> or <+>/<–> to set the current date. Follow the month, day and year format. Valid values for month, day and year are: **Month: (1** to **12), Day: (1** to **31), Year: (**up to **2079)**

4. BIOS SETUP

Time

To set the time, highlight the "Time" field and then press either <Page Up>/<Page Down> or <+>/<–> to set the current time. Follow the hour, minute and second format. Valid values for hour, minute and second are: **(Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59)**. Press <Enter> twice if you do not want to modify the current time.

NOTE: You can bypass the date and time prompts by creating an AUTOEXEC.BAT file. For information on how to create this file, please refer to the MS-DOS manual.

Hard Disks

This field records the specifications for all non-SCSI hard disk drives installed in your system. The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first of which is the "master" and the second is the "slave".

Specifications for SCSI hard disks need not to be entered here since they operate using device drivers and are not supported by any the BIOS. If you install either the optional PCI-SC200 or PCI-SC860 SCSI controller card into the motherboard, see section VI for instructions. If you install other vendor's SCSI controller card, refer to their respective documentations on how to install the required SCSI drivers.

For IDE hard disk drive setup, you can:
- Use the *Auto* setting for detection during bootup.
- Use the IDE HDD AUTO DETECTION in the main menu to automatically enter the drive specifications.
- Enter the specifications yourself manually by using the "User" option.

The entries for specifying the hard disk type include **CYLS** (number of cylinders), **HEAD** (number of read/write heads), **PRECOMP** (write precompensation), **LANDZ** (landing zone), **SECTOR** (number of sectors) and **MODE**. The **SIZE** field automatically adjusts according to the configuration you specify. The documentation that comes with your hard disk should provide you with the information regarding the drive specifications.

The **MODE** entry is for IDE hard disks only, and can be ignored for MFM and ESDI drives. This entry provides three options: *Normal, Large, LBA*, or *Auto* (see below). Set **MODE** to the *Normal* for IDE hard disk drives smaller than 528MB; set it to *LBA* for drives over 528MB that support Logical Block Addressing (LBA) to allow larger IDE hard disks; set it to *Large* for drives over 528MB that do not support LBA. *Large* type of drive can only be used with MS-DOS and is very uncommon. Most IDE drives over 528MB support the *LBA* mode.

4. BIOS SETUP

Auto detection of hard disks on bootup

For each field: Primary Master, Primary Slave, Secondary Master, and Secondary Slave, you can select *Auto* under the TYPE and MODE fields. This will enable auto detection of your IDE hard disk during bootup. This will allow you to change your hard disks (with the power off) and then power on without having to reconfigure your hard disk type. If you use older hard disks that do not support this feature, then you must configure the hard disk in the standard method as described earlier by the "User" option.

NOTE: After the IDE hard disk drive information has been entered into BIOS, new IDE hard disk drives must be partitioned (such as with FDISK) and then formatted before data can be read from and write on. Primary IDE hard disk drives must have its partition set to *active* (also possible with FDISK).

NOTE: SETUP Defaults are noted in parenthesis next to each function heading.

Drive A / Drive B

These fields record the types of floppy disk drives installed in your system. The available options for drives A and B are: *360KB, 5.25 in.; 1.2MB, 5.25 in.; 720KB, 3.5 in.; 1.44MB, 3.5 in.; 2.88MB, 3.5 in.; None*

To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the left- or right-arrow keys.

Floppy 3 Mode Support (Disabled)

This is the Japanese standard floppy drive. The standard stores 1.2MB in a 3.5inch diskette. This is normally disabled but you may choose from either: *Drive A, Drive B, Both, and Disabled*

Video (EGA/VGA)

Set this field to the type of video display card installed in your system. The options are *EGA/VGA*, *CGA 40*, *CGA 80*, and *MONO* (for Hercules or MDA).

If you are using a VGA or any higher resolution card, choose *EGA/VGA*.

Halt On (All Errors)

This field determines which types of errors will cause the system to halt. Choose from *All Errors*; *No Errors*; *All,But Keyboard, All,But Diskette*; and *All,But Disk/Key.*

4. BIOS SETUP

4.4 BIOS Features Setup

This "BIOS Features Setup" option consists of configuration entries that allow you to improve your system performance, or let you set up some system features according to your preference. Some entries are required by the motherboard's design to remain in their default settings.

```
                    ROM PCI/ISA BIOS (P3B-1394)
                        BIOS FEATURES SETUP
                        AWARD SOFTWARE, INC.

 CPU Internal Core Speed    : 500MHz   PCI/VGA Palette Snoop    : Disabled
                                       Video  ROM BIOS  Shadow  : Enabled
                                       C8000  -  CBFFF  Shadow  : Disabled
 Boot Virus Detection       : Enabled  CC000  -  CFFFF  Shadow  : Disabled
 Processor Serial Number    : Disabled D0000  -  D3FFF  Shadow  : Disabled
 CPU Level 1 Cache          : Enabled  D4000  -  D7FFF  Shadow  : Disabled
 CPU Level 2 Cache          : Enabled  D8000  -  DBFFF  Shadow  : Disabled
 CPU Level 2 Cache ECC Check: Disabled DC000  -  DFFFF  Shadow  : Disabled
 BIOS Update                : Enabled  Boot Up NumLock Status   : On
 Quick Power On Self Test   : Enabled  Typematic Rate Setting   : Disabled
 HDD Sequence SCSI/IDE First: IDE      Typematic Rate (Chars/Sec): 6
 Boot Sequence              : CDROM,A,C Typematic Delay (Msec)   : 250
 Boot Up Floppy Seek        : Disabled Security Option          : System
 Floppy Disk Access Control : R/W      PS/2 Mouse Function Control: Auto
 IDE HDD Block Mode Sectors : HDD MAX
 HDD S.M.A.R.T. capability  : Disabled ESC : Quit        ↑↓→← : Select Item
 OS/2 Onboard Memory > 64M  : Disabled F1  : Help        PU/PD/+/- : Modify
                                       F5  : Old Values
                                       F6  : Load BIOS  Defaults
                                       F7  : Load Setup Defaults
```

A section at the lower right of the screen displays the control keys you can use. Take note of these keys and their respective uses. If you need information on a particular entry, highlight it and then press <F1>. A pop-up help menu will appear to provide you with the information you need. <F5> loads the last set values, <F6> and <F7> loads the BIOS default values and Setup default values, respectively.

NOTE: SETUP Defaults are noted in parenthesis next to each function heading.

Details of BIOS Features Setup
CPU Internal Core Speed
This field displays the internal core speed of your CPU.

Boot Virus Detection (Enabled)
This field allows you to set boot virus detection, ensuring a virus-free boot sector. This new antivirus solution is unlike native BIOS tools, which offer limited virus protection typically by write-protecting the partition table. With this new solution, your computer is protected against boot virus threats earlier in the boot cycle, that is, before they have a chance to load into your system. This ensures your computer boots to a clean operating system. The system halts and displays a warning message when it detects a virus. If this occurs, you can either allow the operation to continue or use a virus-free bootable floppy disk to restart and investigate your system. Because of conflicts with new operating systems, for example, during installation of new softwares, you may have to set this to *Disabled* to prevent write errors.

Processor Serial Number (Disabled)

The Processor Serial Number is a unique electronic number that is added to every Pentium III processor to help verify the identity of the user across the Internet. Set this field to *Enabled* when you need increased security for doing business online or e-commerce. Otherwise, set it to *Disabled* for greater anonymity when surfing the Internet. If you are not using a Pentium III processor on the motherboard, you may not make changes to this field.

CPU Level 1 Cache / CPU Level 2 Cache (Enabled)

These fields allow you to choose from the default of *Enabled* or choose *Disabled* to turn on or off the CPU's Level 1 and Level 2 built-in cache.

CPU Level 2 Cache ECC Check (Disabled)

This function controls the ECC check capability in the CPU level 2 cache.

BIOS Update (Enabled)

This functions as an update loader integrated into the BIOS to supply the processor with the required data. The BIOS will load the update on all processors during system bootup in the default position of *Enabled*.

Quick Power On Self Test (Enabled)

This field speeds up the Power-On Self Test (POST) routine by skipping memory retesting a second and third time. Setup default setting for this field is *Enabled*. A complete test of the system is done on each test.

HDD Sequence SCSI/IDE First (IDE)

When using both SCSI and IDE hard disk drives, IDE is always the boot disk using drive letter C (default setting of **IDE**). This new feature allows a SCSI hard disk drive to be the boot disk when set to *SCSI*. This allows multiple operating systems to be used on both IDE and SCSI drives or the primary operating system to boot using a SCSI hard disk drive.

Boot Sequence (CDROM,A,C)

This field determines where the system looks first for an operating system. Options are *CDROM,A,C*; *D,A*; *E,A*; *F,A*; *C only*; *LS/ZIP, C*; *LAN,A,C*; *A,C*; *C,A; A,CDROM,C*; and *CDROM,C,A*. The setup default setting is to check first the floppy disk and then the hard disk drive, that is, *A, C*.

Boot Up Floppy Seek (Disabled)

When enabled, the BIOS will seek drive A one time.

Floppy Disk Access Control (R/W)

This allows protection of files from the computer system to be copied to floppy disks by allowing the setting of *Read Only* to only allow reads from the floppy disk drive but not writes. The setup default *R/W* allows both reads and writes.

4. BIOS SETUP

IDE HDD Block Mode Sectors (HDD MAX)

This field enhances hard disk performance by making multi-sector transfers instead of one sector per transfer. Most IDE drives, except older versions, can utilize this feature. The selections are *HDD MAX*, *Disabled*, *2*, *4*, *8*, *16*, and *32*.

HDD S.M.A.R.T. capability (Disabled)

This field enables or disables S.M.A.R.T. (Self-Monitoring Analysis and Reporting Technology) support for S.M.A.R.T.-capable hard disk drives. This technology requires an application that can display S.M.A.R.T. warning messages.

OS/2 Onboard Memory > 64M (Disabled)

When using OS/2 operating systems with installed DRAM of greater than 64MB, you need to set this option to *Enabled* otherwise leave this on *Disabled*.

....

PCI/VGA Palette Snoop (Disabled)

Some display cards that are nonstandard VGA such as graphics accelerators or MPEG Video Cards may not show colors properly. The setting *Enabled* should correct this problem. Otherwise leave this on the setup default setting of *Disabled*.

Video ROM BIOS Shadow (Enabled)

This field allows you to change the video BIOS location from ROM to RAM. Relocating to RAM enhances system performance, as information access is faster than the ROM.

C8000-CBFFF to DC000-DFFFF (Disabled)

These fields are used for shadowing other expansion card ROMs. If you install other expansion cards with ROMs on them, you will need to know which addresses the ROMs use to shadow them specifically. Shadowing a ROM reduces the memory available between 640K and 1024K by the amount used for this purpose.

Boot Up NumLock Status (On)

This field enables users to activate the Number Lock function upon system boot.

Typematic Rate Setting (Disabled)

When enabled, you can set the two typematic controls listed next. Setup default setting is *Disabled*.

Typematic Rate (Chars/Sec) (6)

This field controls the speed at which the system registers repeated keystrokes. Options range from 6 to 30 characters per second. Setup default setting is *6;* the other settings are *8*, *10*, *12*, *15*, *20*, *24*, and *30*.

Typematic Delay (Msec) (250)

This field sets the time interval for displaying the first and second characters. Four delay rate options are available: *250*, *500*, *750*, and *1000*.

4. BIOS SETUP

Security Option (System)

When you specify a *Supervisor Password* and/or *User Password* (explained later in this section), the Security Option field determines when the system prompts for the password. The default setting is *System*, where the system prompts for the User Password every time you start your system. The other option is *Setup*, where the system goes through its startup routine unless the Setup utility is called, when the system prompts for the Supervisor Password.

PS/2 Mouse Function Control (Auto)

The default of *Auto* allows the system to detect a PS/2 mouse on bootup. If detected, IRQ12 will be used for the PS/2 mouse. IRQ12 will be reserved for expansion cards if a PS/2 mouse is not detected. *Enabled* will always reserve IRQ12, whether on bootup a PS/2 mouse is detected or not.

4. BIOS SETUP

4.5 Chipset Features Setup

This "Chipset Features Setup" option controls the configuration of the board's chipset. Control keys for this screen are the same as for the previous screen.

NOTE: SETUP Defaults are noted in parenthesis next to each function heading.

Details of Chipset Features Setup

SDRAM Configuration (By SPD)

This sets the optimal timings for items 2-5. Leave on default setting.

SDRAM CAS Latency (2T)

This controls the latency between SDRAM read command and the time that the data actually becomes available. Leave on default setting.

SDRAM RAS to CAS Delay (2T)

This controls the latency between SDRAM active command and the read/write command. Leave on default setting.

SDRAM RAS Precharge Time (2T)

This controls the idle clocks after issuing a precharge command to SDRAM. Leave on default setting.

DRAM Idle Timer (8T)

This controls the idle clocks before closing an opened SDRAM page. Leave on default setting.

SDRAM MA Wait State (Normal)

This controls the leadoff clocks for CPU read cycles. Leave on default setting.

Graphics Aperture Size (64MB)

Memory-mapped, graphics data structures can reside in a Graphics Aperture. Leave on default setting.

# 4. BIOS SETUP

Video Memory Cache Mode (UC)

USWC (uncacheable, speculative write combining) is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must leave this on the default setting of *UC* (uncacheable) if your display card cannot support this feature or else your system may not boot.

PCI 2.1 Support (Enabled)

This function allows you to enable or disable PCI 2.1 features including passive release and delayed transaction. Leave *Enabled* (default setting) for PCI 2.1 compliancy.

DRAM are xx bits wide

If all your DRAM modules have ECC chips (e.g., 8 chips + 1 ECC chips), they are considered 72bits and the following will be displayed:

If your DRAM modules do not have ECC chips (e.g. 8 chips), they are considered 64 bits and the following will be displayed instead:

Data Integrity Mode (Non-ECC)

Non-ECC has byte-wise write capability but no provision for protecting data integrity in the DRAM array. *EC-Only* data errors are detected but not corrected. *ECC* with hardware scrubbing allows a detection of single-bit and multiple-bit errors and recovery of single-bit errors. (See section III for more information on DRAM memory modules.)

....

Onboard FDC Controller (Enabled)

When *Enabled*, this field allows you to connect your floppy disk drives to the onboard floppy disk drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy disk drives, set this field to *Disabled*.

Onboard Serial Port 1 (3F8H/IRQ4)

The settings are *3F8H/IRQ4*, *2F8H/IRQ3, 3E8H/IRQ4, 2E8H/IRQ10,* and *Disabled* for the onboard serial connector.

Onboard Serial Port 2 (2F8H/IRQ3)

The settings are *3F8H/IRQ4, 2F8H/IRQ3*, *3E8H/IRQ4, 2E8H/IRQ10,* and *Disabled* for the onboard serial connector.

4. BIOS SETUP

Onboard Parallel Port (378H/IRQ7)

This field sets the address of the onboard parallel port connector. You can select *3BCH/IRQ 7, 378H/IRQ 7, 278H/IRQ 5, or Disabled.* If you install an I/O card with a parallel port, ensure that there is no conflict in the address assignments. The PC can support up to three parallel ports as long as there are no conflicts for each port.

Parallel Port Mode (ECP+EPP)

This field allows you to set the operation mode of the parallel port. The setting *Normal* allows normal-speed operation but in one direction only; *EPP* allows bidirectional parallel port operation; *ECP* allows the parallel port to operate in bidirectional DMA mode; *ECP+EPP* allows normal speed operation in a two-way mode.

ECP DMA Select (3)

This selection is available only if you select *ECP* or *ECP+EPP* in the **Parallel Port Mode**. Select either DMA Channel *1* or *3*.

Onboard PCI IDE Enable (Both)

You can select to enable the *primary* IDE channel, *secondary* IDE channel, *both*, or *disable* both channels (for systems with only SCSI drives).

IDE Ultra DMA Mode (Auto)

This field autodetects Ultra DMA capability (for improved transfer speeds and data integrity) for compatible IDE devices. Set to *Disable* to suppress Ultra DMA capability.

IDE 0 Master/Slave PIO/DMA Mode, IDE 1 Master/Slave PIO/DMA Mode (Auto)

Each channel (0 and 1) has both a master and a slave making four IDE devices possible. Because each IDE device may have a different Mode timing (*0, 1, 2, 3, 4*), it is necessary for these to be independent. The default setting of *Auto* will allow autodetection to ensure optimal performance

4. BIOS SETUP
Chipset Features

4.6 Power Management Setup

NOTE: SETUP Defaults are noted in parenthesis next to each function heading.

Details of Power Management Setup

Power Management (User Define)

This option must be enabled to use any of the automatic power saving features. The *User Define* option allows you to make your own selections in the Power menu. When set to *Max Saving*, system power will be conserved to its greatest amount. The **Suspend Mode** field will then be set to predefined value that ensures maximum power savings.

This field acts as the master control for the power management modes. *Max Saving* puts the system into power saving mode after a brief period of system inactivity; *Min Saving* is almost the same as *Max Saving* except that the system inactivity period is longer; *Disable* disables the power saving features; *User Define* allows you to set power saving options according to your preference. The configuration options are *User Define, Disable*, *Min Saving*, and *Max Saving*.

> **IMPORTANT!** Advanced Power Management (APM) should be installed to keep the system time updated when the computer enters suspend mode activated by the BIOS Power Management. For DOS environments, you need to add the statement, DEVICE=C:\DOS\POWER.EXE, to your CONFIG.SYS file. For Windows 3.x and Windows 95, you need to install Windows with the APM feature. For Windows 98 and later, APM is automatically installed. A battery and power cord icon labeled "Power Management" will appear in the "Control Panel." Choose "Advanced" in the Power Management Properties dialog box.

Video Off Option (Suspend -> Off)

This field determines when to activate the video off feature for monitor power management. The settings are *Suspend -> Off* and *Always On.*

4. BIOS SETUP

Video Off Method (DPMS OFF)

This field defines the video off features. The following options are available: *DPMS OFF*, *DPMS Reduce ON*, *Blank Screen*, *V/H SYNC+Blank, DPMS Standby,* and *DPMS Suspend*. The DPMS (Display Power Management System) features allow the BIOS to control the video display card if it supports the DPMS feature. *Blank Screen* only blanks the screen (use this for monitors without power management or "green" features. If set up in your system, your screen saver will not display with *Blank Screen* selected). *V/H SYNC+Blank* blanks the screen and turns off vertical and horizontal scanning.

....

PM Timers

This section controls the time-out settings for the Power Management scheme. The fields included in this section are "HDD Power Down", which places the hard disk into its lowest power consumption mode, and the Doze, Standby and Suspend system inactivation modes.

The system automatically "wakes up" from any power saving mode when there is system activity such as when a key is pressed from the keyboard, or when there is activity detected from the enabled IRQ channels.

HDD Power Down (Disable)

Shuts down any IDE hard disk drives in the system after a period of inactivity. This time period is user-configurable to *1–15 Min* or *Disable*. This feature does not affect SCSI hard drives.

Suspend Mode (Disable)

Sets the period of time after which the suspend mode activates: *30 sec*, *1 Min*, *2 Min*, *4 Min*, *8 Min*, *20 Min*, *30 Min*, *40 Min*, *1 Hour,* and *Disable*.
NOTE: This field is only effective for DOS, Windows 95, and Windows NT 4.0 environments.

....

ACPI

ACPI Mode (S1)

The default setting S1 is a "light" sleeping mode in which no system context (CPU or chipset) is lost and the hardware is responsible for maintaining all system context. In the S1 sleeping state, the computer can return to the working state quickly the next time it is needed. By contrast, S3 is a "deeper" sleeping state where all system context is saved to system memory.

....

Power Up Control

PWR Button < 4 Secs (Soft Off)

When set to *Soft Off*, the ATX switch can be used as a normal system power-off button when pressed for less than 4 seconds. *Suspend* allows the button to have a dual function where pressing less than 4 seconds will place the system in sleep mode. Regardless of the setting, holding the ATX switch for more than 4 seconds will power off the system. **NOTE:** This field is only effective in APM OS system.

4. BIOS SETUP

AC PWR Loss Restart (Disabled)

This allows you to set whether you want your system to boot up after the power has been interrupted. *Disabled* leaves your system off after reapplying power and Enabled boots up your system after reapplying power.

Wake On LAN (Disabled)

This allows you to remotely power up your system through your network by sending a wake-up frame or signal. With this feature, you can remotely upload/download data to/from systems during off-peak hours. Set to *Enabled* to set this feature.

> **IMPORTANT!** This feature requires the ASUS PCI-L101 LAN Card (see **7.1 PCI-L101 LAN Card**) and an ATX power supply with at least 720mA +5V standby power.

Automatic Power Up (Disabled)

This allows you to have an unattended or automatic power up of your system. You may configure your system to power up at a certain time of the day by selecting *Everyday*, which will allow you to set the time or at a certain time and day by selecting *By Date*.

....

Fan Monitor (xxxxRPM)

The onboard hardware monitor is able to detect the Chassis Fan Speed, CPU Fan Speed, and the Power Supply Fan Speed in Rotations Per Minute (RPM). Set to *Ignore* if one of these are not used so that error messages will not be given.

....

Thermal Monitor (xxxC/xxxF)

The onboard hardware monitor is able to detect the CPU and MB (motherboard) temperatures. Set to *Ignore* only if necessary.

....

Voltage Monitor (xx.xV)

The onboard hardware monitor is able to detect the voltages put out by the voltage regulators. Set to *Ignore* only if necessary.

NOTE: If any of the monitored items are out of range, an error message will appear: "Hardware Monitor found an error, enter POWER MANAGEMENT SETUP for details". You will then be prompted to "Press **F1** to continue, **DEL** to enter SETUP".

4.7   PNP and PCI Setup

This "PNP and PCI Setup" option configures the PCI bus slots. All PCI bus slots on the system use INTA#. Thus all installed PCI cards must be set to this value.
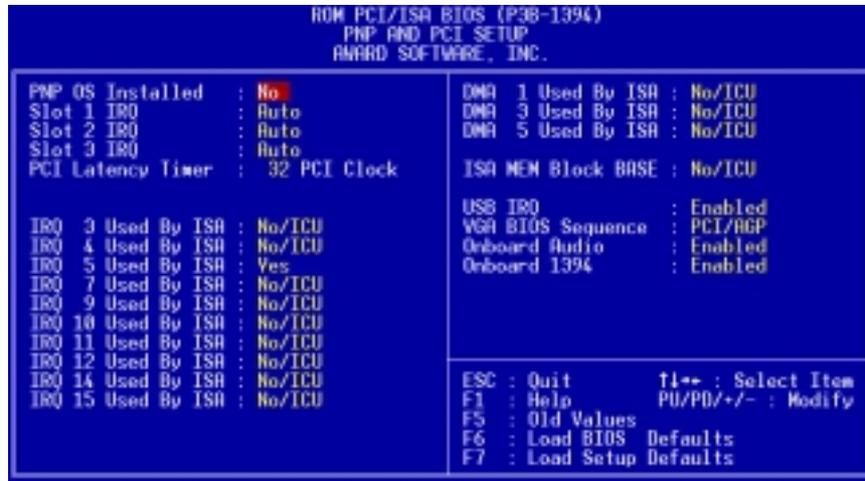
NOTE: SETUP Defaults are noted in parenthesis next to each function heading.

Details of PNP and PCI Setup

PNP OS Installed (No)

This field allows you to use a Plug-and-Play (PnP) operating system to configure the PCI bus slots instead of using the BIOS. Thus interrupts may be reassigned by the OS when *Yes* is selected. When a non-PnP OS is installed or to prevent reassigning of interrupt settings, select the default setting of *No*.

Slot 1 IRQ / Slot 2 IRQ / Slot 3 IRQ (Auto)

These fields set how IRQ use is determined for each PCI slot. The default setting for each field is *Auto*, which uses auto-routing to determine IRQ use. The other options are manual settings of *NA, 5, 7, 9, 10, 11, 12, 14* or *15* for each slot.

PCI Latency Timer (32 PCI Clock)

The default setting of *32 PCI Clock* enables maximum PCI performance for this motherboard.

IRQ xx Used By ISA

These fields indicate whether or not the displayed IRQ for each field is being used by a legacy (non-PnP) ISA device. Two options are available: *No/ICU* and *Yes*. The first option, the default value, indicates either that the displayed IRQ is not used or an ISA Configuration Utility (ICU) is being used to determine if an ISA device is using that IRQ. If you install a legacy ISA card that requires a unique IRQ, and you are not using an ICU, you must set the field for that IRQ to *Yes*. For example: If you install a legacy ISA card that requires IRQ 10, then set **IRQ10 Used By ISA** to *Yes*.

....

DMA x Used By ISA (No/ICU)

These fields indicate whether or not the displayed DMA channel for each field is being used by a legacy (non-PnP) ISA card. Available options include: *No/ICU* and *Yes*. The first option, the default setting, indicates either that the displayed DMA channel is not used or an ICU is being used to determine if an ISA card is using that channel. If you install a legacy ISA card that requires a unique DMA channel, and you are not using an ICU, you must set the field for that channel to *Yes*.

ISA MEM Block BASE (No/ICU)

This field allows you to set the base address and block size of a legacy ISA card that uses any memory segment within the C800H and DFFFH address range. If you have such a card, and you are not using an ICU to specify its address range, select a base address from the six available options; the **ISA MEM Block SIZE** field will then appear for selecting the block size. If you have more than one legacy ISA card in your system that requires to use this address range, you can increase the block size to either 8K, 16K, 32K, or 64K. If you are using an ICU to accomplish this task, leave **ISA MEM Block BASE** to its default setting of *No/ICU*.

USB IRQ (Enabled)

Enabled reserves an IRQ# for the USB to work, *Disabled* does not allow the USB to have an IRQ# and therefore prevents the USB from functioning. If you are not using any USB devices, you may set this feature to *Disabled* to save an extra IRQ# for expansion cards.

VGA BIOS Sequence (PCI/AGP)

If your computer has both PCI and AGP VGA cards, this field allows you to select which of the cards will act as your primary card. The default, *PCI/AGP*, allows your PCI card to take precedent when detected. *AGP/PCI* uses the AGP card as your primary card.

Onboard Audio (Enabled)

This feature allows you to enable or disable the onboard audio device. If you want to use your own audio devices, set this field to *Disabled*.

Onboard 1394 (Enabled)

This feature allows you to enable or disable the onboard 1394 controllers. If you are not using any IEEE-1394 devices, you may disable this field.

4.8   Load BIOS Defaults

This "Load BIOS Defaults" option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high performance features. To load these default settings, highlight "Load BIOS Defaults" on the main screen and then press <Enter>. The system displays a confirmation message on the screen. Press <Y> and then <Enter> to confirm. Press <N> and then <Enter> to abort. This feature does not affect the fields on the Standard CMOS Setup screen.

4.9   Load Setup Defaults

This "Load Setup Defaults" option allows you to load the default values to the system configuration fields. These default values are the optimized configuration settings for the system. To load these default values, highlight "Load Setup Defaults" on the main screen and then press <Enter>. The system displays a confirmation message on the screen. Press <Y> and then <Enter> to confirm. Press <N> and then <Enter> to abort. This feature does not affect the fields on the Standard CMOS Setup screen.
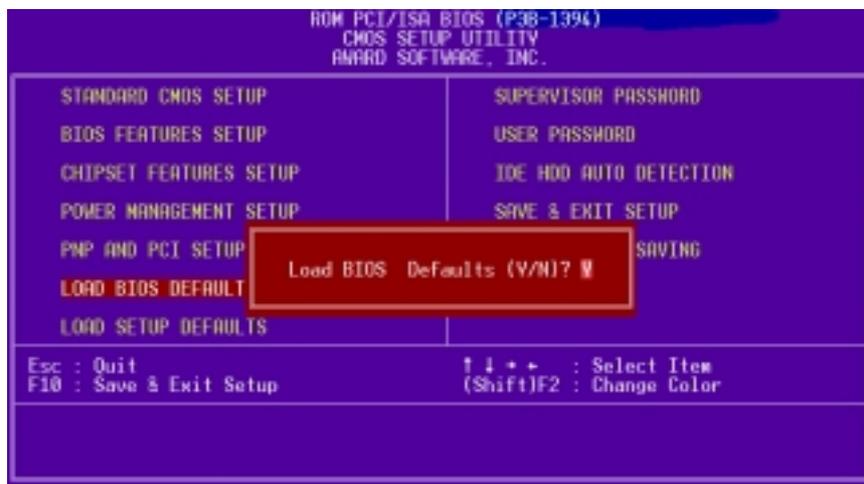
4.10 Supervisor Password & User Password

These two options set the system passwords. "Supervisor Password" sets a password that will be used to protect the system and the Setup utility; "User Password" sets a password that will be used exclusively on the system. By default, the system comes without any passwords. To specify a password, highlight the type you want and then press <Enter>. A password prompt appears on the screen. Taking note that the password is case sensitive, and can be up to 8 alphanumeric characters long, type in your password and then press <Enter>. The system confirms your password by asking you to type it again. After setting a password, the screen automatically reverts to the main screen.

To implement password protection, specify in the "Security Option" field of the BIOS Features Setup screen when the system will prompt for the password. If you want to disable either password, press <Enter> instead of entering a new password when the "Enter Password" prompt appears. A message confirms the password has been disabled.

Forgot the password?

If you forgot the password, you can clear the password by erasing the CMOS Real Time Clock (RTC) RAM. The RAM data containing the password information is powered by the onboard button cell battery. To erase the RTC RAM: (1) Unplug your computer, (2) Switch DIP switch 1 to [ON] and then back to [OFF], (3) Turn ON your computer, (4) Hold down <Delete> during bootup and enter BIOS setup to re-enter user preferences.
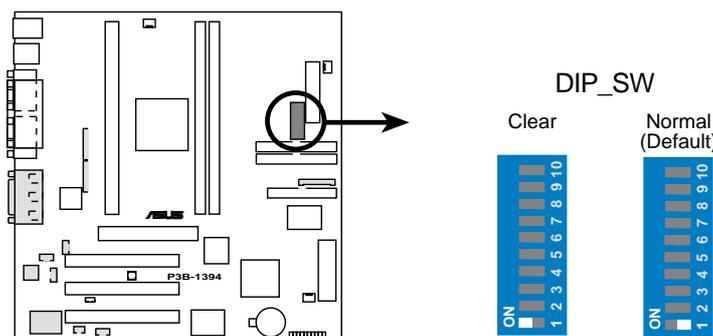
P3B-1394 Clear RTC RAM

4.11 IDE HDD Auto Detection

This "IDE HDD Auto Detection" option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.
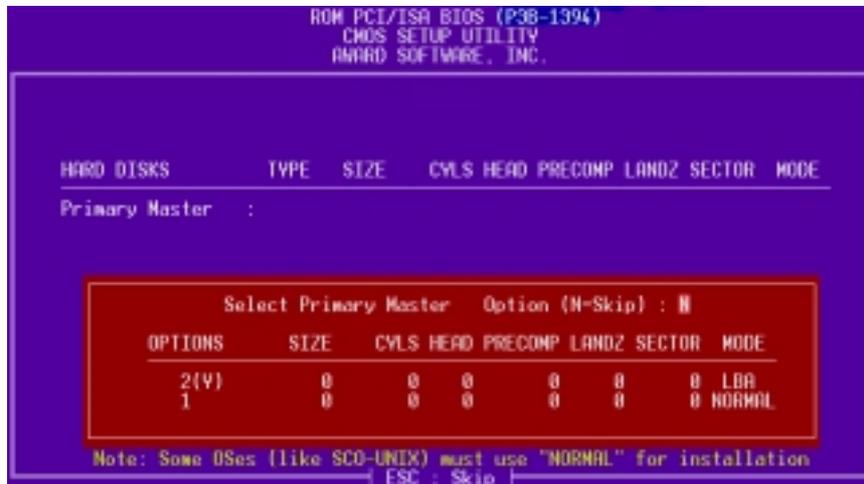
Up to four IDE drives can be detected, with parameters for each listed inside the box. To accept the optimal entries, press <Y> or else select from the numbers displayed under the OPTIONS field (2, 1, 3 in this case); to skip to the next drive, press <N>. If you accept the values, the parameters will appear listed beside the drive letter on the screen. The process then proceeds to the next drive letter. Pressing <N> to skip rather than to accept a set of parameters causes the program to enter zeros after that drive letter.

Remember that if you are using another IDE controller that does not feature Enhanced IDE support for four devices, you can only install two IDE hard disk drives. Your IDE controller must support the Enhanced IDE features in order to use Drive E and Drive F. The onboard PCI IDE controller supports Enhanced IDE, with two connectors for connecting up to four IDE devices. If you want to use another controller that supports four drives, you must disable the onboard IDE controller in the Chipset Features Setup screen.

When auto-detection is completed, the program automatically enters all entries you accepted on the field for that drive in the Standard CMOS Setup screen. Skipped entries are ignored and are not entered in the screen.

If you are auto-detecting a hard disk that supports the LBA mode, three lines will appear in the parameter box. Choose the line that lists LBA for an LBA drive. Do not select Large or Normal.

The auto-detection feature can only detect one set of parameters for a particular IDE hard drive. Some IDE drives can use more than one set. This is not a problem if the drive is new and empty.

IMPORTANT! If your hard disk was already formatted on an older previous system, incorrect parameters may be detected. You will need to enter the correct parameters manually or use low-level format if you do not need the data stored on the hard disk.

If the parameters listed differ from the ones used when the disk was formatted, the disk will not be readable. If the auto-detected parameters do not match the ones that should be used for your disk, do not accept them. Press <N> to reject the presented settings and enter the correct ones manually from the Standard CMOS Setup screen.

4.12 Save & Exit Setup

Select this option to save into the CMOS memory all modifications you specified during the current session. To save the configuration changes, highlight the "Save & Exit Setup" option on the main screen, type "Y", and then press <Enter>.
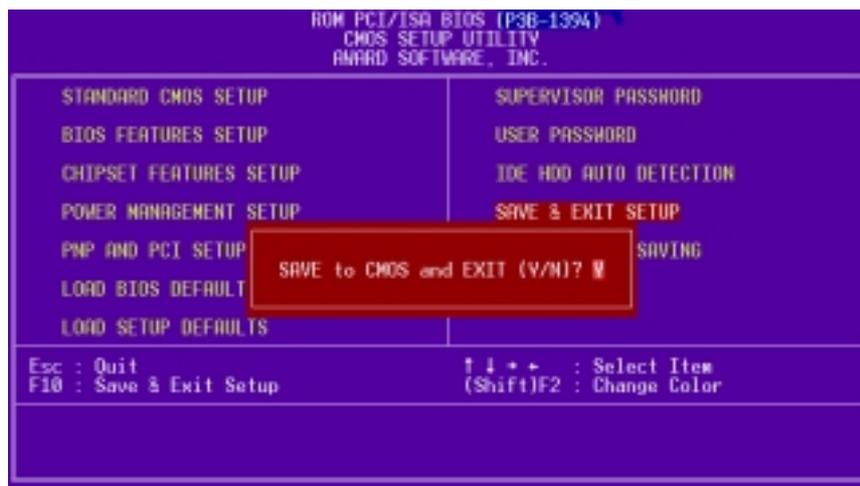
4.13 Exit Without Saving

Select this option to exit the Setup utility without saving the modifications you specify during the current session. To exit without saving, highlight the "Exit Without Saving" option on the main screen and then press <Enter>.

5. SOFTWARE SETUP

5.1 Operating Systems

You should always use the latest operating system and updates when using new hardware to ensure full compliancy. For Windows 95, you must use OSR 2.0 or later. For Windows NT 4.0, you must use Service Pack 3.0 or later.

5.2 Starting Windows For the First Time

Power ON your system and insert your ASUS support CD into your CD-ROM drive. When you start Windows for the first time after the installation of your mother-board, Windows will detect all plug-and-play devices.

5.2.1 Install Audio Device Driver

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here and then click *Next*.

(5) Browse to E:\Audio\A3D\Win9x\English and then click here.

(6) Click here.

NOTE: The screen displays may not reflect exactly the screen contents displayed on your screen.

5. S/W SETUP
Windows 98

5. SOFTWARE SETUP

5.2.2 Install IEEE-1394 Device Driver

(1) Click here.

(2) Click here.

(3) Insert your Windows 98 SE CD, browse to here, and click *Next*.

(4) Click here and then click *Next*.

(5) Click here.

(6) Click here.

5. *S/W* SETUP
Windows 98

64   **ASUS P3B-1394 User's Manual**

5.3 P3B-1394 Support CD

NOTE: The support CD contents are subject to change at any time without notice.

To begin using your support CD, insert it into your CD-ROM drive and the support CD installation menu should appear. If the menu does not appear, double-click or run **E:\ASSETUP.EXE** (assuming that your CD-ROM drive is drive **E:**).

- **Intel LDCM Administrator Setup:** Installs software to monitor PC systems on the network within the same bridge address with the Client software installed. The administrator should install both Client and Administrator Software.
- **Intel LDCM Client Setup:** Installs software to monitor PC systems on the local system. The LANDesk Client Manager must be installed in order to use the hardware manager features.
- **Install 1394 Host Controller Driver** (for Windows 98 First Edition only)**:** Installs the driver for the onboard 1394 host controller.
- **Install Vortex AU8830 Audio Driver:** Installs the audio driver for the onboard audio chipset.
- **Install Vortex A3D Demo Program:** Installs the A3D demo program.
- **Install ASUS PC Probe Vx.xx:** Installs a simple utility to monitor your computer's fan, temperature, and voltages.
- **Install ASUS Update Vx.xx:** Installs a program to help you update your BIOS or download a BIOS image file.
- **Install PC-Cillin 98 Vx.xx:** Installs the PC-cillin virus protection software. View the online help for more information.
- **Install ADOBE AcroBat Reader Vx.x:** Installs the Adobe Acrobat Reader software necessary to view user's manuals saved in PDF format. Updated or other language versions of this motherboard's manual is available in PDF format at any of our web sites.
- **Show Motherboard Information:** Allows you to view information about your motherboard, such as product name, BIOS version, and CPU.
- **Browse Support CD:** Allows you to view the contents of the CD.
- **ReadMe:** Displays the filelist for the included support software. (Click RIGHT ARROW on the lower-right corner of the main menu.)
- **Exit:** Exits the CD installation menu.

Additonal CD Contents: DMI Configuration Utility in the **DMI** folder, Flash BIOS writer in the **AFLASH** folder, IDE Bus Master driver for improved performance under Windows NT in the **BUSMASTR** folder, USB patch to fix problems when using the USB driver under Windows 95 OSR 2.1 in the **USBPATCH** folder.

5. S/W SETUP
Windows 98

5.4 Intel LDCM Administrator Setup

Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.

NOTE: Intel LDCM will not run if another hardware monitoring utility is installed. To uninstall any program, see *5.11 Uninstalling Programs*.


(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here.

(6) Click here and then click *Finish* to restart.

5. *S/W SETUP*
Windows 98

5.5 Intel LDCM Client Setup

Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.

NOTE: Intel LDCM will not run if another hardware monitoring utility is installed. To uninstall any program, see *5.11 Uninstalling Programs*.

5. S/W SETUP
Windows 98

5. SOFTWARE SETUP

Disk Instrumentation Settings

These are recommended settings for the Disk Instrumentation. You may change the Warning and Critical thresholds within the range specified.

Warning: A low Polling Interval will increase your CPU load and decrease system performance.

5　　Warning Level (5 MB - 5000 MB)

3　　Critical　Level (2 MB - 5000 MB)

(7)　Click here.

< Back　　Next >

Memory Instrumentation Settings

These are recommended settings for the Memory Instrumentation. You may change the Warning and Critical thresholds within the range specified.

Warning: A low Polling Interval will increase your CPU load and decrease system performance.

10　　Warning Level (10 MB - 100 MB)

5　　Critical　Level (5 MB - 100 MB)

(8)　Click here.

< Back　　Next >

Baseboard Thermal Instrumentation Settings

These are recommended settings for the Baseboard Thermal Instrumentation. Low Thermal Polling Interval is used here to instantly warn of damaging temperatures. You may change the settings within the range specified.

Nominal Baseboard Temperature　　30 C

Current Baseboard Temperature　　33 C

Maximum Threshold Temperature　　98 C

(9)　Click here.

5　　Polling Interval (1 Sec - 10 Sec)

< Back　　Next >

LDCM Component Configurations

Install the following LDCM components:

Current Settings:

Install the following LDCM components:
Audio
Video
Disk
Memory
Input Devices
I/O Ports
LM78 Device
ASUS LM78

Disk Instrumentation Settings

(10)　Click here.

< Back　　Next >　　Cancel

LANDesk Client Manager Setup Complete

Changes were made to AUTOEXEC.BAT.
A backup copy of the AUTOEXEC.BAT was saved as 'AUTOEXEC.INT'.

You must reboot your system for these changes to take effect.

○ Yes, I want to restart my computer now
○ No, I will restart my computer later.

(11)　Click here and then click *Finish* to restart.

< Back　　Finish

5.6 Install 1394 Host Controller Driver

(only for Windows 98 First Edition)

Insert the Support CD that came with your motherboard into your CD-ROM drive
or double-click the CD drive icon in **My Computer** to bring up the setup screen.

(1) Click here.

(2) Click here.

**(3) Click here only after you
have read the license
agreement.**

(4) Click here.

5. S/W SETUP
Windows 98
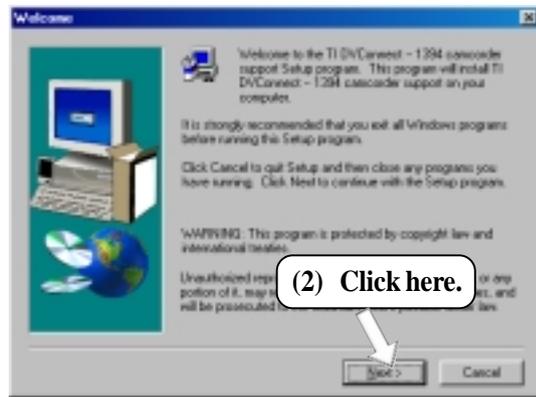
5.7 Install ASUS PC Probe Vx.xx

Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.

NOTE: ASUS PC Probe will not run if another hardware monitoring utility is installed. To uninstall any program, see *5.11 Uninstalling Programs*.

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here.

(6) Click here.

(7) Click here.

(8) Click *Next* and when the Setup Complete box appears, click *Finish*.

5. S/W SETUP
Windows 98
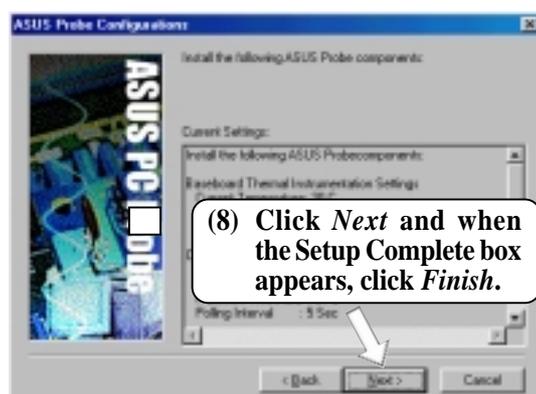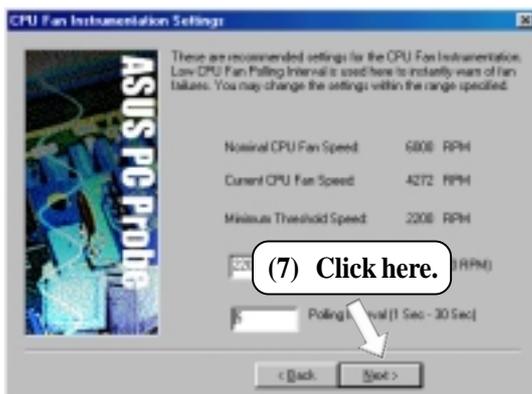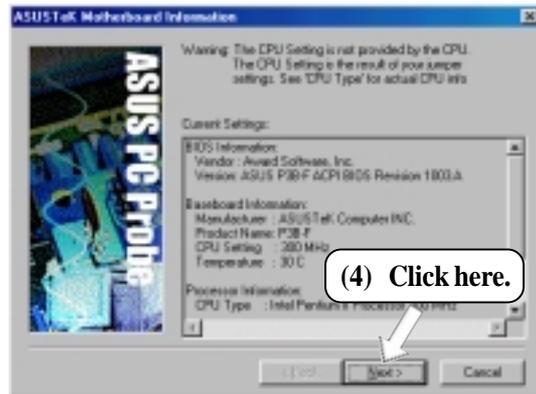
5. SOFTWARE SETUP

5.8 Install ASUS Update Vx.xx

Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here.
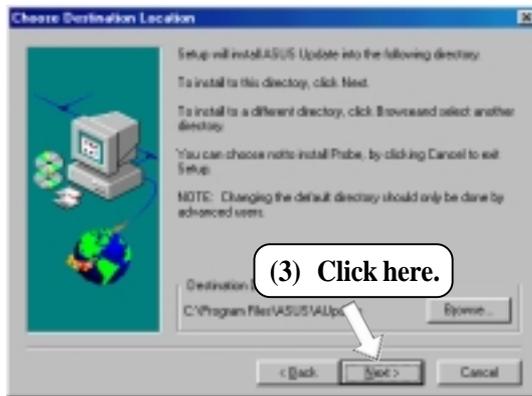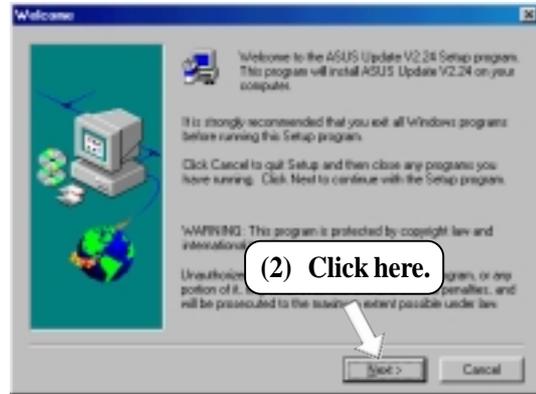
5.9 Install PC-Cillin 98 Vx.xx

Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.

(1) Click here.

(2) Click here.

(3) Click here only after you have read the License Agreement.

(4) Setup will proceed with the installation if no viruses are found. Click here to start installation.

(5) Click here.
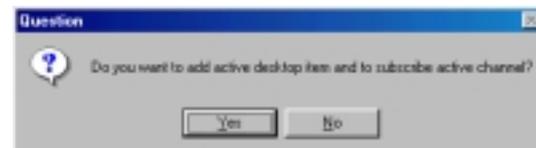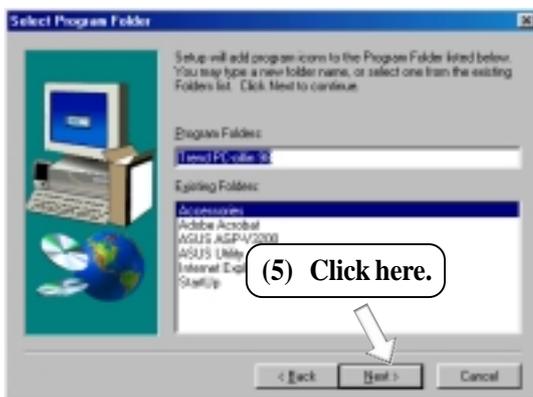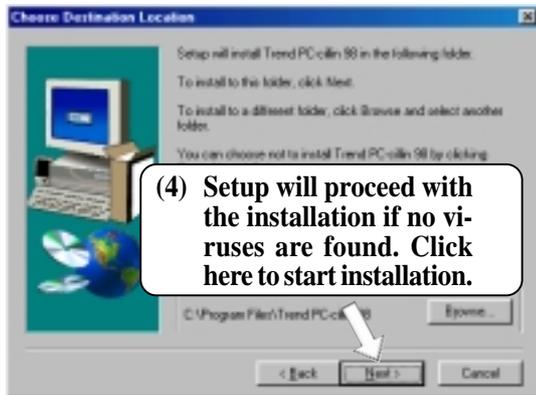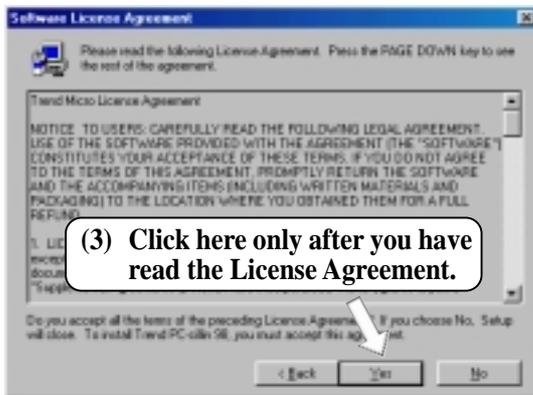
(6) & (7) Select the preferred features by clicking the appropriate buttons.

(8) Insert a floppy disk and then click here. Once the Emergency Clean disk is created, click *OK*.

(9) Click here and then click *Finish* to restart.
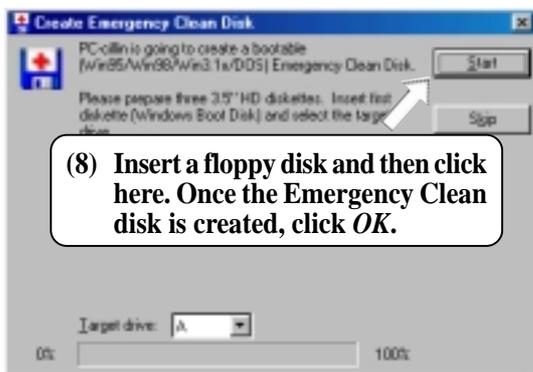
5.10 Install Adobe Acrobat Reader Vx.x

Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.

(1) Click here.

(2) Click here.

(3) Click here only after you have read the License Agreement.

(4) Click here.

(5) Click here and then click *Finish* to restart.

5. S/W SETUP
Windows 98
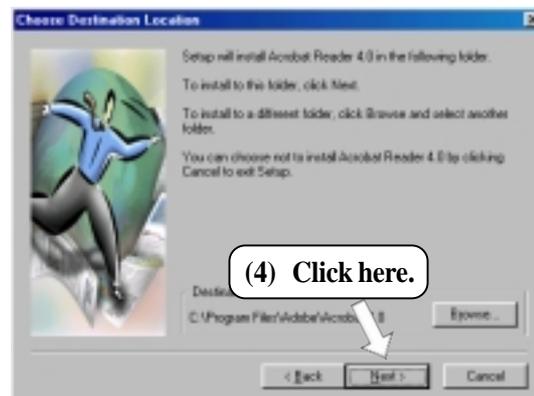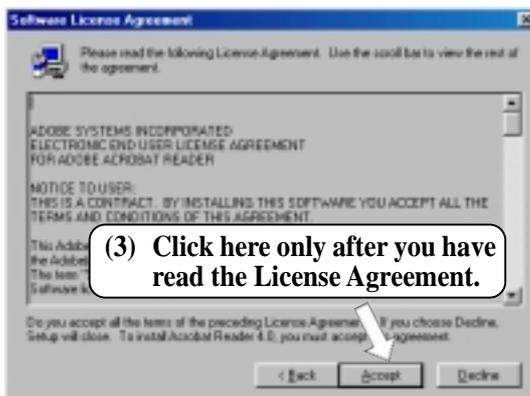
5.11 Uninstalling Programs

Add/Remove Programs is a basic component within Windows. You may use this function if a program does not provide its own uninstallation program.

(1) Double-click here to open the *Add/Remove Programs Properties* dialog box.

(2) Select the program to remove and click here.

(3) Click here.
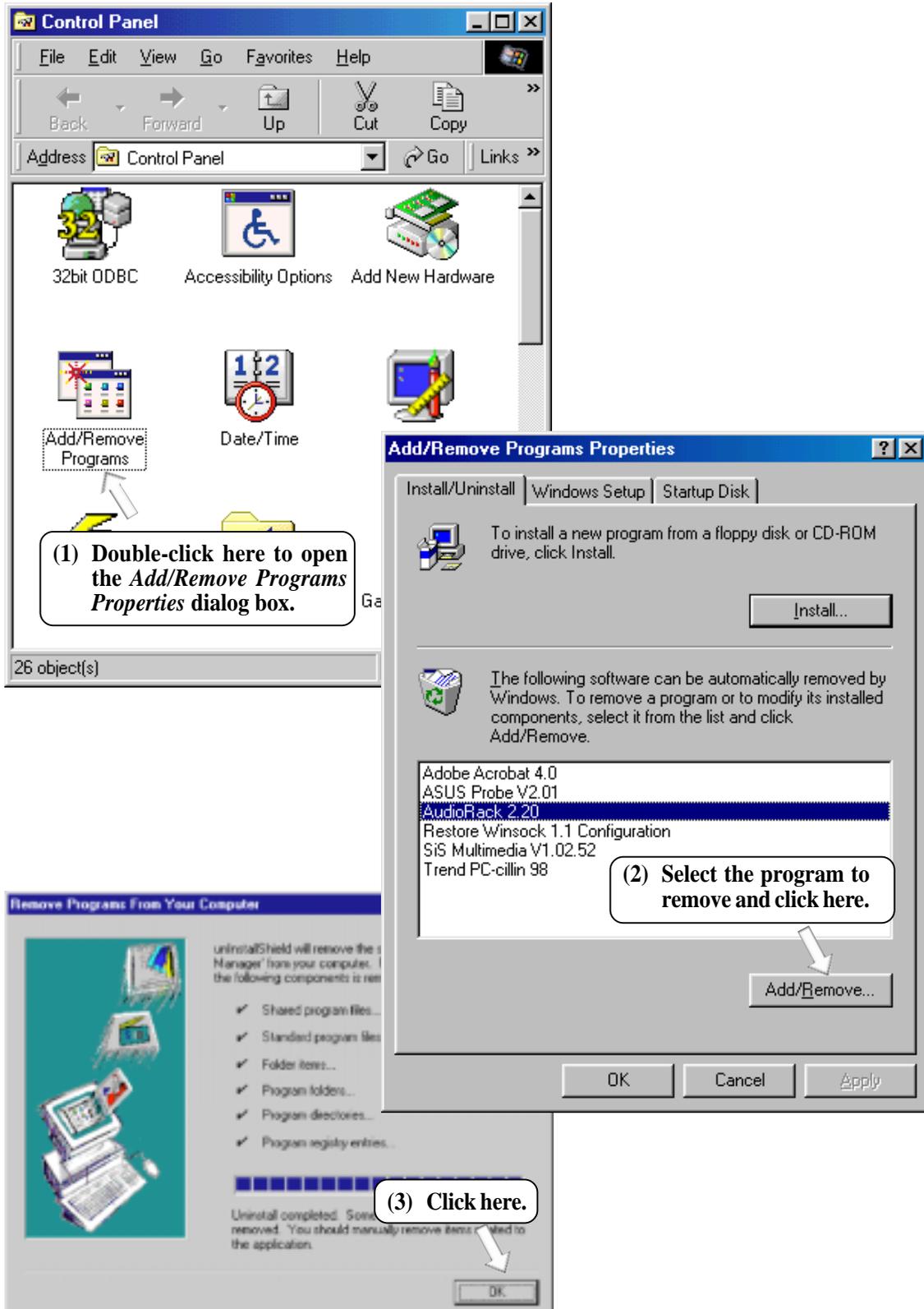
5. SOFTWARE SETUP

5.12 Ulead VideoStudio 3.0 SE DV

5.12.1 System Requirements

• Pentium II 266MHz recommended for **D**igital **V**ideo (DV).

• For DV device control, you will need an OHCI-compliant IEEE-1394 controller and a DV camcorder

• A hard disk drive with a sustained transfer rate of at least 3.6MB per second (SCSI and UltraDMA hard disk drivers are recommended).

• Microsoft Windows 95, Windows 98, or Windows NT 4.0. For DV support, Windows 98 or Windows 98 SE is required.

• 32MB RAM (64MB recommended)

• 80MB of available hard disk space

• CD-ROM drive

• True color (24 bit) or high color (16 bit) display

• Windows pointing device

• Video for Windows-compatible video capture card (recommended)

• Windows-compatible sound card (recommended)

5.12.2 Ulead Contact Information

North & South America

Ulead Systems, Inc.
970 West 190th Street, Suite 520
Torrance, CA 90502
USA

Tech Support: 1-310-523-9391
FAX: 1-310-523-9399
http://www.ulead.com
e-mail: support@ulead.com

Germany

Ulead Support Center
Am Strühtchen 8
D-56412 Großholbach

Tel: +49-2602-917-329
Fax: +49-2602-917-327
e-mail: uleadger@aol.com

Ulead Systems GmbH
Wolfenbuetteler Str. 33
38102 Braunschweig
Germany

Tel: +49-531-220-7920
Fax: +49-531-220-7999
http://www.ulead.de
e-mail: support@ulead.de

France

Upgrade & Support Center
30 rue du Bailly
93210 Saint Denis La Plaine
France

Tel: +33-1-4946-2346
FAX: +33-1-4946-2349
Support Hot Line: +33-1-4946-2340
http://www.graphics-france.com
e-mail: support@graphics-france.com

All Other Countries

Ulead Systems, Inc
10F, No. 45
Tung Hsing Rd.
Taipei, Taiwan

Tel: 886-2-2764-8599
FAX: 886-2-2764-9599
FAXBack Hotline:
+886-2-87871748
+886-2-87871749
http://www.ulead.com
e-mail: support@ulead.com.tw

5. SOFTWARE SETUP

5.12.3 Installation Procedure

Insert the Ulead VideoStudio CD into your CD-ROM drive. Windows may automatically run the setup utility or you can use Windows Explorer to browse for, and then manually run, SETUP.EXE. Click **Install Ulead VideoStudio 3.0** to install the program as well as the necessary drivers. It is recommended that you install the selected drivers, as they will optimize the way Ulead VideoStudio works with your system's hardware. The unselected drivers are optional. You can choose to install them at the same time or at a later date by using the **Install Drivers** option.

NOTE: Read the license agreement carefully before continuing with the installation process. When the installation is complete, please take a moment to go on-line and instantly register your new software.

6. SOFTWARE REFERENCE

6.1 Intel LANDesk Client Manager

With the growth of the computer industry, computer systems have become more complex and difficult to manage. Intel LANDesk Client Manager is a computer management application that simplifies many aspects of managing a computer and assists in troubleshooting common computer problems.

Use Client Manager to:

- Review system inventory
- View DMI-compliant component information
- Backup and restore system files
- Troubleshoot
- Monitor your computer's health
- Receive notifications for system events

Client Manager has been implemented in two different ways:

The client version enables you to view information and manage alerts for a local computer. This version does not permit you to select remote computers, transfer files, or reboot other computers.

The first time you run Client Manager, it searches your network for other computers running Client Manager. Client Manager creates a list of the computers it finds and saves the list to the Windows registry. From this point on, when you run Client Manager or open the Select Computer dialog box, Client Manager checks to see if these computers (listed in the registry) are available and healthy.

6.1.1 Main Client Manager Window
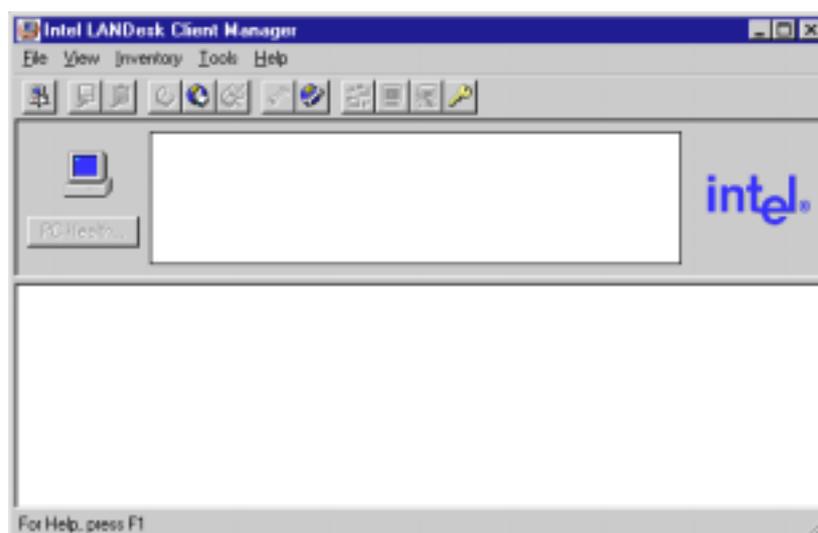
6. SOFTWARE REFERENCE

6.1.2   Using the Taskbar icons

Toolbar Descriptions

Icon	Description	Menu Path
	Opens the Select Computer dialog box	File | Select Computer
	Opens the Export dialog box to export the inventory to a file	File | Export
	Exports the inventory to the clipboard	File | Export to clipboard
	Opens the notification log	View | Notification Log
	Opens the global notification log	View | Global Notification Log
	Opens the remote access log	View | Remote Access Log
	Opens the Configure Notifications dialog box	Tools | Configure Notifications
	Opens the Configure Global Notifications dialog box	Tools | Configure Global
	Opens the File Transfer dialog box	Tools | Transfer Files
	Reboots the computer	Tools | Reboot
	Opens the DMI Explorer	Tools | DMI Explorer
	Opens the Set Access Rights dialog box	Tools | Set Access Rights

6. SOFTWARE REFERENCE

6.1.3   Using the Select Computer Dialog Box
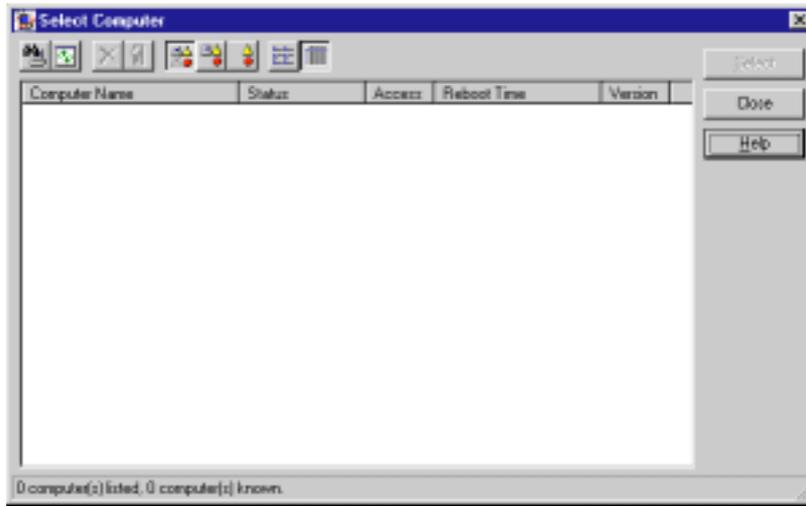
	Discovers new computers on the network
	Refreshes the health of known computers
	Removes a computer from the list of discovered computers
	Wakes up a sleeping computer
	Shows all discovered computers
	Shows only available computers
	Shows only unhealthy computers
	Shows a simple list view
	Shows a detailed list view

6.1.4   To select a computer

1. From the main Client Manager window, click **File | Select Computer**.
2. In the *Select Computer* dialog box, click the computer you want to view.
3. Click the **Select** button.

6.1.5   To discover new computers

•   In the *Select Computer* dialog box, click the **Discover** button on the toolbar or press <Shift>+<F5>.

   TIP: Use the **Discover** button each time you add a computer to the network, change a computer's network adapter, or upgrade a computer to a newer version Client Manager.

6.1.6   To refresh PC health

•   In the *Select Computer* dialog box, click the **Refresh Known Computers** button on the toolbar or press <F5>.

   TIP: PC health does not automatically update as changes occur. For example, if a computer's health changes while you are displaying the *Select Computer* dialog box, you need to refresh the list in order to view the correct PC health.

6.1.7   To remove a computer from the list

1. In the *Select Computer* dialog box, click the computer name you want to remove.
2. Click the **Remove Computer** button on the toolbar or press Delete.
3. At the prompt, click the **Yes** button.

TIP: Perform this task each time you remove a computer from the network, since the name of that computer is not automatically removed from this list.

6.1.8   To wake up a computer

1. In the *Select Computer* dialog box, click the computer name you want to wake up. You can also <Shift>+click to select a continuous group of computers or <Ctrl>+click to select individual computers in the list.

   TIP: You can only attempt to wake up computers that have a status of Unavailable or Wakeable. If the Select Computer dialog box does not display any computers with a status of Unavailable or Wakeable and you suspect it should, the list view may be filtered to display only unhealthy or available computers. You may need to change your list view to display all computers.

2. Click the **Wake Up Computer** button on the toolbar to wake up the selected computer(s) or press <Alt>+<W>.

6. SOFTWARE REFERENCE

After you attempt to wake up a computer, the status of that computer changes in the list view to a Wake Pending status. If the attempt to wake up a computer is successful, the Wake Pending status changes to a status reflecting the computer's health (such as Normal, Warning, or Critical). If the computer does not wake up after five minutes, a message box appears stating possible reasons why the computer did not respond. (For example, the computer may be disabled or may not support Wake-On-LAN.) After clicking OK, the Wake Pending status reverts to its original status of Unavailable or Wakeable.

NOTE: You computer must have a Wake-On-LAN network adapter to support this feature. Some computers that support the Wake-On-LAN technology may have remote wakeup disabled in the BIOS by default. Before Client Manager can wake up a remote computer, you will need to enable this option in the BIOS configuration of each remote computer.

6.1.9   Displaying the Properties of a Client Computer

You can display the properties of any discovered client computer even if you cannot otherwise access the computer because of access limitations or Unavailable status. If you display the properties of an unavailable computer, the properties are read from a database in the Windows registry on your computer. Since the Operating System information is not stored in this same database, that information is not available for a computer with a status of Unavailable. Remember that some items may not be current if the properties have changed while the computer was off the network.

6. SOFTWARE REFERENCE

6.1.10 Understanding the Computer Status Icons

When you open the Select Computer dialog box, each computer in the list displays an icon indicating the current status of that computer. The table below describes the seven states a computer may be in.

	Unavailable	The computer is currently in a powered-down state.
	Wakeable	The computer is currently in a powered-down state but supports Remote Wakeup technology.
	Wake Pending	A temporary status (not to exceed five minutes) while Client Manager attempts to wake up a computer. (A computer that is in the process of booting without having received a wakeup instruction is listed as *Unavailable*, not *Wake Pending*.)
	Normal	The computer is operating within normal tolerances.
	Warning	A computer that has exceeded a warning tolerance level. For example, the PC Health indicator can be configured to display a warning icon if a hard disk is running low on space.
	Critical	A computer that has exceeded a critical tolerance level. For example, if the hard disk is running critically low on available space, the PC Health indicator displays a critical icon.
	Unknown	A computer that is powered on, but the health status (Normal, Warning, or Critical) is not known.
	Normal (Mobile)	A computer that includes support for mobile PC features, such as mobile battery. Mobile computers display the same array of health icons (above) used for non-mobile computers.

6. SOFTWARE REFERENCE

6.2 ASUS PC Probe

ASUS PC Probe is a convenient utility to continuously monitor your computer system's vital components, such as fan rotations, voltages, and temperatures. It also has a utility that lets you review useful information about your computer, such as hard disk space, memory usage, and CPU type, CPU speed, and internal/external frequencies through the DMI Explorer.

6.2.1 Starting ASUS PC Probe

When ASUS PC Probe starts, a splash screen appears allowing you to select whether to show the screen again when you open PC Probe or not. To bypass this startup screen, clear the **Show up in next execution** check box.

To open **ASUS PC Probe**, click the Windows **Start** button, point to **Programs**, and then **ASUS Utility**, and then click **Probe Vx.xx**.

The PC Probe icon will appear on the taskbar's system tray indicating that ASUS PC Probe is running. Clicking the icon will allow you to see the status of your PC.

6. SOFTWARE REFERENCE

6.2.2 Using ASUS PC Probe

Monitoring

Monitor Summary

Shows a summary of the items being
monitored.

Temperature Monitor

Shows the PC's temperature (for
supported processors only).

Temperature Warning
threshold adjustment
(Move the slider up to increase the
threshold level or down to decrease
the threshold level)
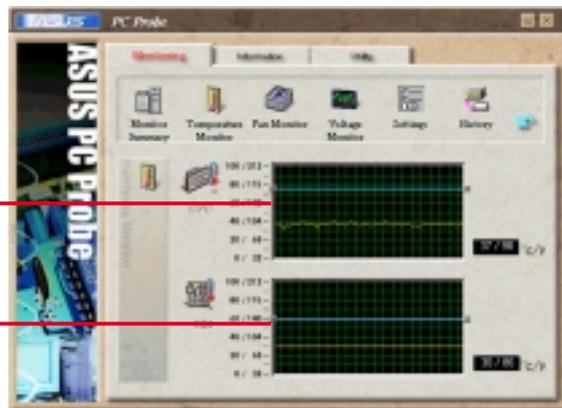
Fan Monitor

Shows the PC's fan rotation.

Fan Warning
threshold adjustment
(Move the slider up to increase the
threshold level or down to decrease
the threshold level)
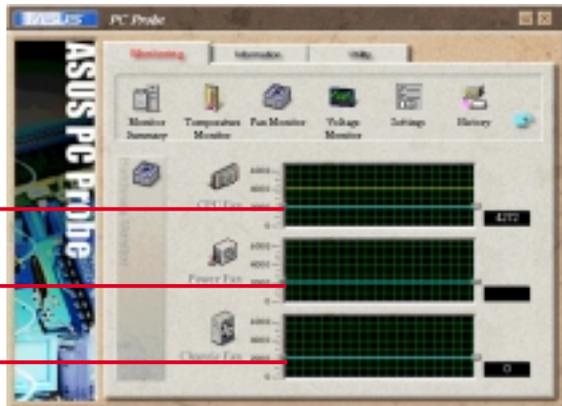
Voltage Monitor

Shows the PC's voltages.

6. SOFTWARE REFERENCE

Settings

Lets you set threshold levels and polling intervals or refresh times of the PC's temperature, fan rotation, and voltages.

History

Lets you record the monitoring activity of a certain component of your PC for future reference.
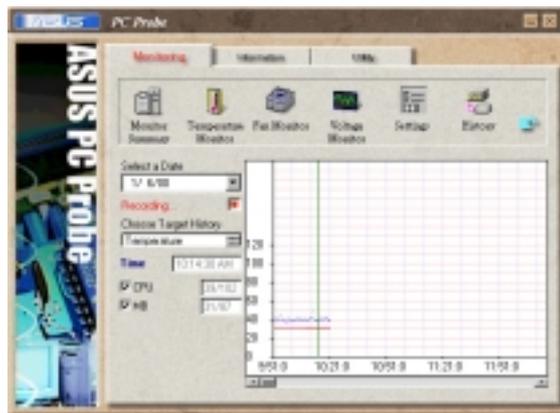
Fan Control

Lets you enable/disable Smart Fan Control. Smart Fan Control adjusts the fan speed automatically based on the current CPU temperature and predefined threshold.
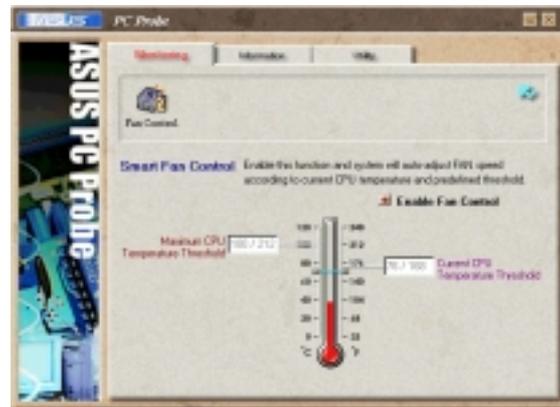
Information

Hard Drives

Shows the used and free space of the PC's hard disk drives and the file allocation table or file system used.
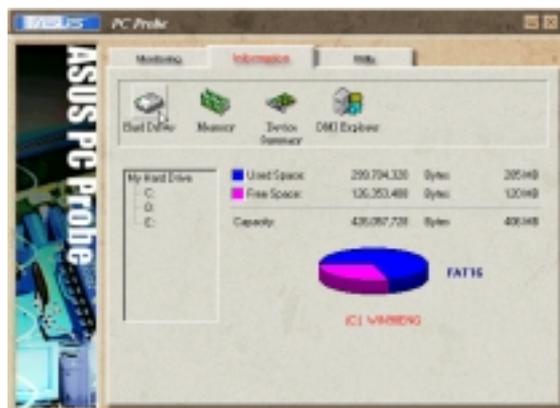
Memory
Shows the PC's memory load, memory usage, and paging file usage.

Device Summary
Shows a summary of devices in your PC.

DMI Explorer
Shows information pertinent to the PC, such as CPU type, CPU speed, and internal/external frequencies, and memory size.

Utility
Lets you run programs outside of the ASUS Probe modules. To run a program, click **Execute Program**. **NOTE:** This feature is currently unavailable.

6. SOFTWARE REFERENCE

6.2.3 ASUS PC Probe Task Bar Icon

Right clicking the PC Probe icon will bring up a menu to open or exit ASUS PC Probe and pause or resume all system monitoring.

Popup Asus Probe
Pause All Monitoring
Resume All Monitoring
Exit Asus Probe

10:35 PM

When the ASUS PC Probe senses a problem with your PC, portions of the ASUS PC Probe icon changes to red, the PC speaker beeps, and the ASUS PC Probe monitor is displayed.

10:20 PM
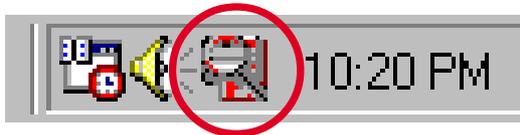
6. SOFTWARE REFERENCE

6.3 ASUS Update

ASUS LiveUpdate is a utility that allows you to update your motherboard's
BIOS and drivers. The use of this utility requires that you are properly con-
nected to the Internet through an **I**nternet **S**ervice **P**rovider (ISP).

1. Start ASUS Update
Launch the utility from **Start | Programs | ASUS
Utility | ASUS Update Vx.xx.**
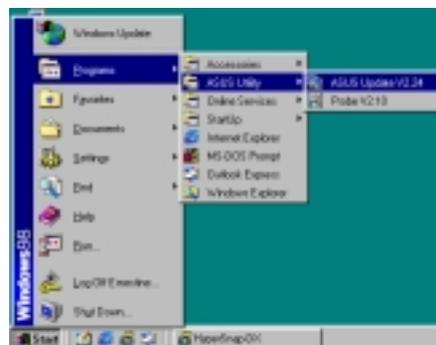
2. Select an update method.

3. If you selected updating/downloading from the
Internet, you will need to select an Internet site.
Choose the site that is closest to you or click
Auto Select.

If you selected **Update from a file**, you will
be prompted to locate the file.

6. SOFTWARE REFERENCE

6.4 Ulead VideoStudio 3.0

Ulead VideoStudio 3.0 is a powerful tool for making movies on your computer. The easiest to use and most trouble free video editing software available on the market today, Ulead VideoStudio walks you through the process of editing with frame accuracy, adding transition effects, creating animated titles, and recording CD quality audio tracks. Just follow along the step by step path to video perfection.

Ulead VideoStudio is two programs in one: **Video Wizard** and **Ulead VideoStudio**. Both work together seamlessly and each is well suited to a particular task. Both can be run by selecting the programs from the Windows Start menu.

Ulead VideoStudio also has a special Task Guide Help to lead you through each step and an extensive on-line help, which you can access by pressing **F1** on your keyboard while the program is running. You can also find specific information about an item by moving the cursor over it in the program and pressing **F1**.

6. SOFTWARE REFERENCE

6.4.1 Video Wizard

Video Wizard is a simplified video editor and is fully capable of creating completed movies. It is also an excellent tool for setting up more sophisticated projects that can be polished up in Ulead VideoStudio.

Preview window
Displays the output from your video source or a preview of the video files in your movie.

Step guide
Contains information, help, and advice to guide you through a particular step.

Step buttons
Click to move through the process of creating a movie.

Editing tools
Use these buttons, controls, and text boxes to creatively produce your movie.
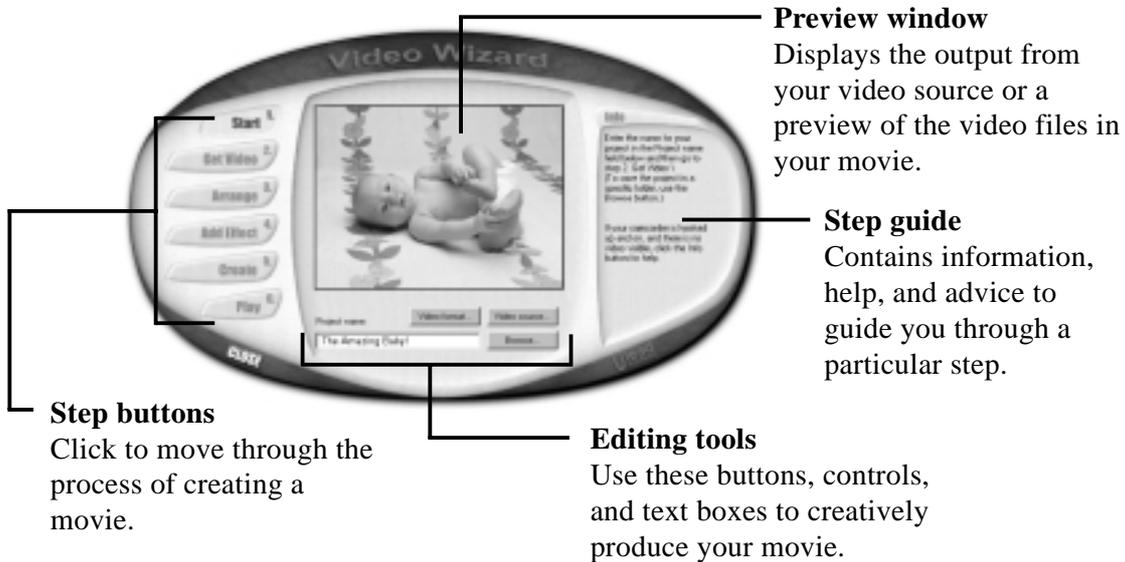
NOTE: Once your video source is connected to your computer, its output should immediately be visible in the **Preview window**. If it is not, please refer to your capture card's documentation to make sure it is correctly installed and that your camcorder is properly connected.

When you are ready to go, enter a name for a new project and then click the **Get Video** button to move on to the next step. As you complete a procedure, click the next **Step button** to move to the next section. Continue through all of the steps to create a finished movie, ready for viewing. In addition to the new movie, a special **Project file (*.VSP)** has also been created, ready to edit further in **Ulead VideoStudio**.

6. SOFTWARE REFERENCE

6.4.2 Ulead VideoStudio

Video Wizard and Ulead VideoStudio both follow a step-by-step organization. By working through the steps, listed from left to right across the Step menu at the top of the program, you can quickly create fantastic home videos.

Step menu
Click the name of a step to work on a specific aspect of your movie.

Preview window
Displays video files or your camcorder's output.

Library
Contains all of your media files, transitions, and titles.

Options panel
Contains all of the editing tools. The controls change depending on the step you are working on.

Trim bar
Use the two handles on either side of this tool to quickly edit your clips.

Movie tracks
Shows the four separate tracks of your movie: Video, Title, Voice, and Music.

Timeline/Storyboard
Gives you an overview of your story at a glance.

Like a professional production, your movie is composed of a number of different parts. These parts are organized into a project file that is put together visually on the Timeline at the bottom of the program. Using common Windows techniques, like drag and drop, you can creatively control your video with ease and precision. When you are finished editing, you can create, or render, a master copy of your new movie.

6. SOFTWARE REFERENCE

Step by Step

Here's a brief walkthrough of Ulead VideoStudio. Just click the Step menu at the top of the program interface to move to a particular section.

Start   Capture   Storyboard   Effects   Title   Voice   Music   Finish

1. Start
Create a new project or open an existing one with the controls in the **Options** panel.

2. Capture
Click the **Capture** button to begin. When your video source is hooked up correctly, the output should be visible in the preview window.

3. Storyboard
Drag and drop clips to the **Timeline** and use the **Trim** bar to make precise edits. Arrange the sequence of the scenes in your movie to create a coherent story.

4. Effects
Place cool transition effects between your clips to give your production a professional touch. Drag and drop operations mean that nothing could be easier or more fun.

5. Title
Type opening credits, closing credits, captions, and titles over your video. Any True Type font on your computer of any color style and size can be used. Animated, scrolling, and fading titles are a click away.

6. Voice
Give your movie additional clarity by recording a voiceover narration.

7. Music
Set the mood and add ambiance by using background music from your favorite CDs.

8. Finish
Create a new movie from your project with one click. There are a number of exciting things you can do with the finished product:

* Watch it on your computer.
* Post it to your Web site.
* Put the movie on a CD-ROM.
* Record it back to video tape.
* Send it by e-mail.
* Create a multimedia greeting card.

7. APPENDIX

7.1 PCI-L101 Fast Ethernet Card
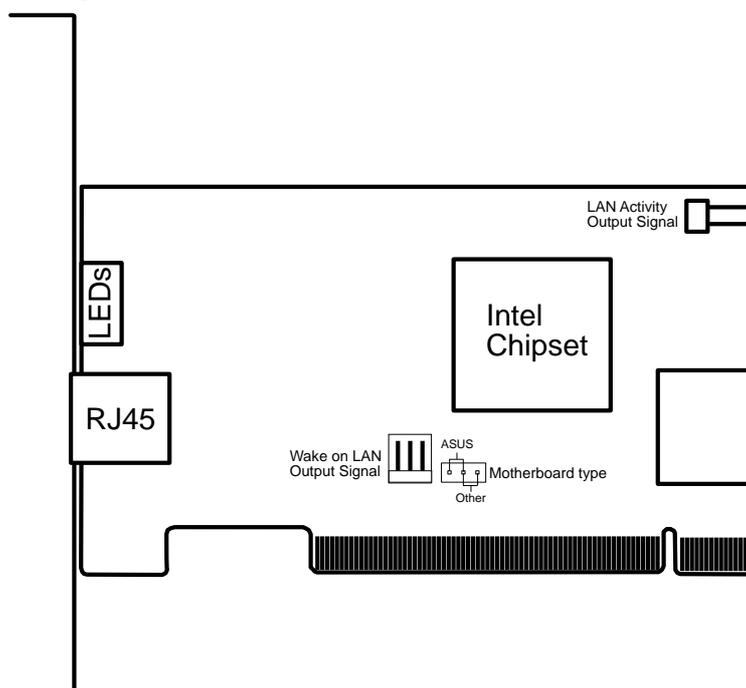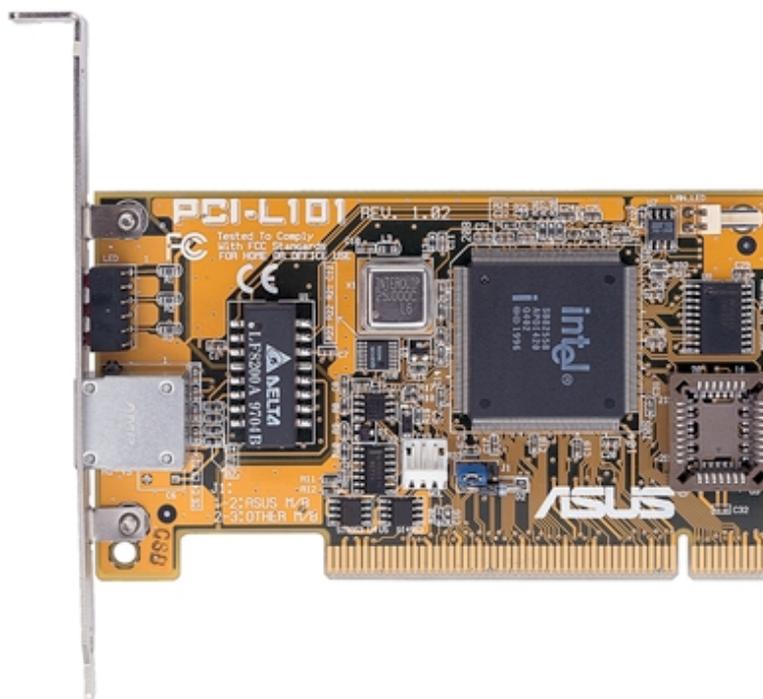
If you are using the ASUS PCI-L101 on an ASUS motherboard, leave the jumper on its defaut setting of "ASUS." If you are using another brand of motherboard, set the jumper to "Other." Connect the Wake on LAN (WOL) output signal to the motherboard's WOL_CON in order to utilize the wake on LAN feature of the motherboard. Connect the LAN activity output signal (LAN_LED) to the system cabinet's front panel LAN_LED in order to display the LAN data activity.

7. APPENDIX

7.1.1 Features

- Intel 82558 Ethernet LAN Controller (Fully integrated 10BASE-T/100BASE-TX)
- Wake-On-LAN Remote Control Function Supported
- PCI Bus Master Complies to PCI Local Bus Rev. 2.1 specifications
- Consists of MAC & PHY (10/100Mbps) interfaces
- Complies to IEEE 802.3 10BASE-T and IEEE 802.3u 100BASE-TX interfaces
- Fully supports 10BASE-T & 100BASE-TX operations through a single RJ45 port
- Supports 32-bit Bus Master Technology / PCI Rev. 2.1
- Enhancements on ACPI & APM
- Adheres to PCI Bus Power Management Interface Rev. 1.0, ACPI Rev. 1.0, and Device Class Power Management Rev. 1.0
- IEEE 802.3u auto-negotiation for 10Mbps/100Mbps Network Data Transfer Rates.
- Provides LED indicators for monitoring network conditions
- Plug and Play

7.1.2 Software Driver Support

- **NetWare ODI Drivers -** Novell Netware 3.x, 4.x, DOS, OS/2 Client
- **NDIS 2.01 Drivers -** Microsoft LAN Manager, Microsoft Windows 3.11, IBM LAN Server
- **NDIS 3.0 Drivers -** Microsoft Windows NT, Microsoft Windows 95, Microsoft Windows 3.11

7.1.3 Question and Answer

Q: What is Wake-On-LAN ?

A: The Wake-On-LAN feature provides the capability to remotely power on systems supporting Wake-On-LAN by simply sending a wake-up frame. With this feature, remotely uploading/downloading data to/from systems during off-peak hours will be feasible.

Q: What can Wake-On-LAN do for you ?

A: Wake-On-LAN is a remote management tool with advantages that can reduce system management workload, provide flexibility to the system administrator's job, and then of course save you time-consuming efforts and costs.

Q: What components does Wake-On-LAN require to be enable?

A: To enable Wake-On-LAN function, your system requires Ethernet LAN adapter card that can activate Wake-On-LAN function, a client with Wake-On-LAN capability, and software such as LDCM Rev. 3.10 or up that can trigger wake-up frame.

7. APPENDIX

7.2 ASUS S370-133 CPU Card

The optional ASUS S370-133 CPU card allows Slot 1 motherboards to accept socket 370 processors with a FSB running at up to 133MHz. The ASUS S370-133 CPU card supports both Coppermine and Celeron processors to give Slot 1 motherboard owners an inexpensive way to upgrade their Pentium II/III computers using lower costing socket 370 processors. Since socket 370 processors are designed on the Pentium II/III design, the only difference is the package form factor. Additionally, the S370-133 card can acquire temperature data from the processor's thermal diode and send it to the motherboard that supports CPU thermal monitoring.

The following shows a picture of the ASUS S370-133 CPU card with a black plastic retainer attached to the edge. The retainer is used to hold the ASUS S370-133 CPU card in place using the motherboard's Slot 1 retention mechanism.

ASUS S370-133 CPU Card Retainer

Fin   Fin
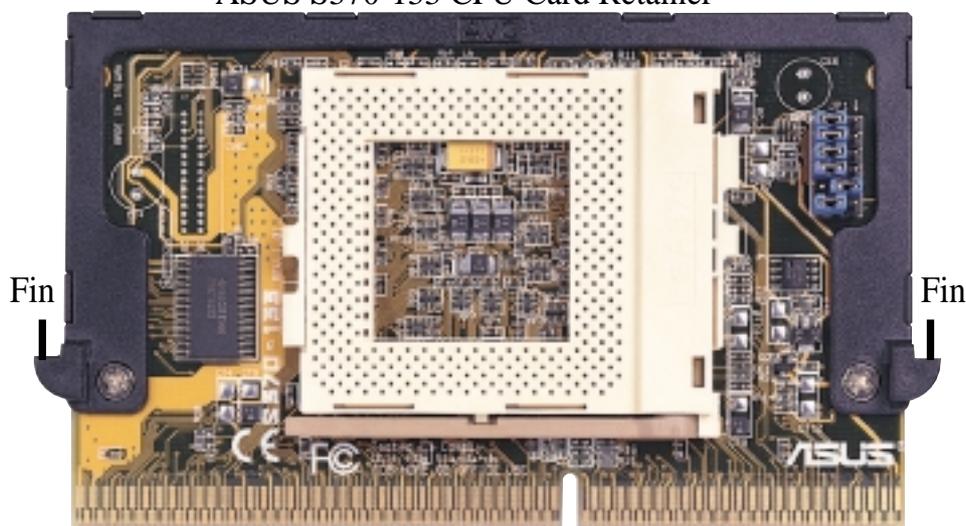
Slot 1 Compatible Connector

7.2.1 Using the ASUS S370-133

The general procedure for using the ASUS S370-133 CPU card:

1. Set the **JP6** jumper according to the type of your CPU. See the reverse side of the ASUS S370-133 CPU card or this insert for jumper settings.
2. Check the voltage setting for your socket 370 processor using the jumpers on the card if necessary. For current socket 370 processors, the default setting should be used.
3. Install the socket 370 processor. Installation of socket 370 processors is exactly like socket 7 processors. Lift the brown lever to 90° to install the processor and lower the brown lever to lock the processor.
4. Install the CPU fan.
5. Insert the ASUS S370-133 CPU card into Slot 1 on the motherboard. The two fins on the sides of the ASUS S370-133 CPU card must catch on the retention mechanism so that it locks in place.
6. Connect the socket 370 processor's fan connector to the motherboard.
7. Make sure that no wires or objects come in contact with the fan and you're done!

7. APPENDIX

7.2.2 Setting up the ASUS S370-133
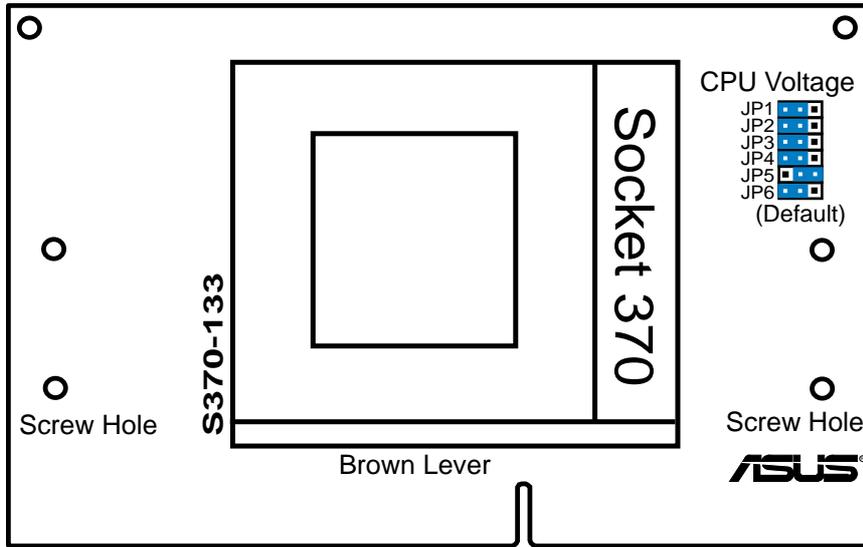
7.2.3 ASUS S370-133 Jumper Settings

Setting the CPU voltage is *not* necessary for current socket 370 processors. If required, your socket 370 processor should have its voltage requirement printed on its surface or documentation. If no voltage is indicated or you are not sure, use the "CPU Def." setting as shown below. Notice that **JP6** should be set to distinguish between Coppermine and Celeron processors.
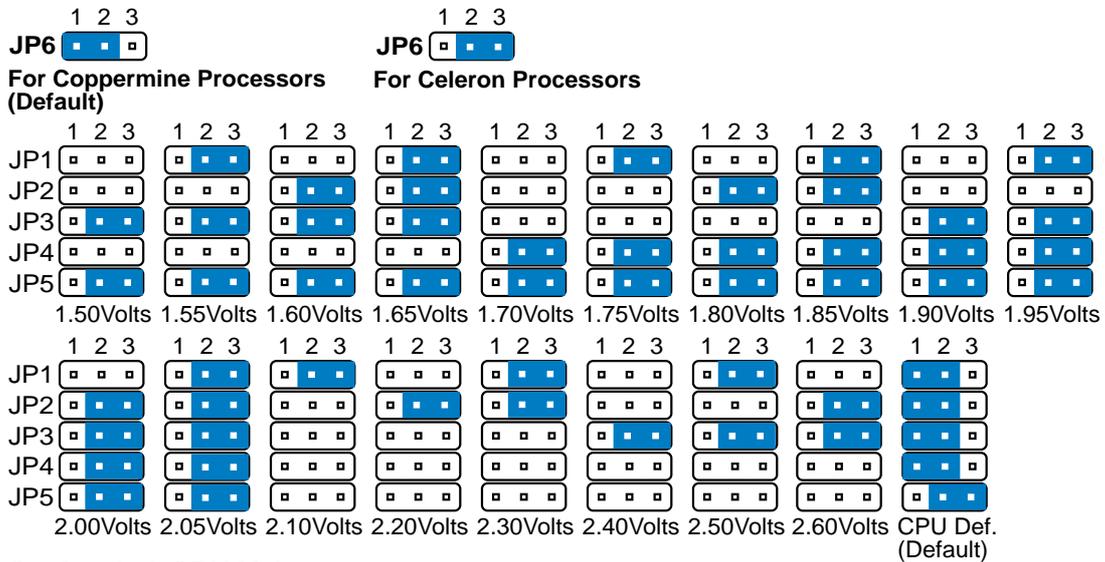
Socket 370 CPU Voltage

WARNING! Exceeding your socket 370 processor's required voltage can damage your processor permanently! Make sure that the jumpers are as shown for "CPU Def." unless otherwise specified before powering on your motherboard.

7. APPENDIX

7.3 Glossary

1394
1394 is the IEEE designation for the high performance serial bus at 12.5, 25 or 50MBytes/sec speeds. This serial bus defines both a back plane physical layer and a point-to-point cable-connected virtual bus. The primary application of the cable version is the integration of I/O connectivity at the back panel of personal computers using a low-cost, scalable, high-speed serial interface. The 1394 standard also provides new services such as live connect/disconnect capability for external devices including disk drives, printers and hand-held peripherals such as scanners and cameras. This is a new standard to complement the slower USB interface and to compete with the more expensive SCSI interface.

AC97 (Audio Codec '97)
AC '97 is the next step in enabling PCs with audio quality comparable to consumer electronics devices. The specification defines new cost-effective options to help integrate the components necessary to support next-generation auto-intensive PC applications such as DVD, 3-D multiplayer gaming and interactive music. The specification also defines new extensions supporting modem and docking to help both desktop and mobile manufacturers adopt these new technologies more quickly and cost-effectively. This specification uses software emulation to compete with the PCI SoundBlaster specification.

ACPI (Advanced Configuration and Power Interface)
The ACPI specification defines a cross-platform interface designed to support many operating systems. ACPI defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including hardware, operating system and application software. This enables the system to automatically turn ON and OFF peripherals such as CD-ROMs, network cards, hard disk drives, and printers, as well as consumer devices connected to the PC such as VCRs, TVs, phones, and stereos. With this technology, peripherals will also be able to activate the PC. For example, inserting a tape into a VCR can turn on the PC, which could then activate a large-screen TV and high-fidelity sound system.

AGP (Accelerated Graphics Port)
An interface specification that enables high-performance 3D graphics on mainstream PCs. AGP was designed to offer the necessary bandwidth and latency to perform texture mapping directly from system memory.

Bus	Bus Frequency	Bandwidth	Data Transfer Rate
PCI	33MHz	33MHz	133MByte/sec
AGP 1X	66MHz	66MHz	266MByte/sec
AGP 2X	66MHz	133MHz	512MByte/sec
AGP 4X	66MHz	266MHz	1024MByte/sec

BIOS (Basic Input/Output System)
BIOS is a set of routines that affect how the computer transfers data between computer components, such as memory, disks, and the display adapter. The BIOS instructions are built into the computer's read-only memory. BIOS parameters can be configured by the user through the BIOS Setup program. The BIOS can be updated using the provided utility to copy a new BIOS file into the EEPROM.

Bit (Binary Digit)
Represents the smallest unit of data used by the computer. A bit can have one of two values: 0 or 1.

7. APPENDIX

Boot
Boot means to start the computer operating system by loading it into system memory. When the manual instructs you to "boot" your system (or computer), it means to turn ON your computer. "Reboot" means to restart your computer. When using Windows 95 or later, selecting "Restart" from "Start | Shut Down..." will reboot your computer.

Bus Master IDE
PIO (Programmable I/O) IDE requires that the CPU be involved in IDE access and waiting for mechanical events. Bus master IDE transfers data to/from the memory without interrupting the CPU. Bus master IDE driver and bus master IDE hard disk drives are required to support bus master IDE mode.

Byte (Binary Term)
One byte is a group of eight contiguous bits. A byte is used to represent a single alphanumeric character, punctuation mark, or other symbol.

COM Port
COM is a logical device name used by to designate the computer serial ports. Pointing devices, modems, and infrared modules can be connected to COM ports. Each COM port is configured to use a different IRQ and address assignment.

Concurrent PCI
Concurrent PCI maximizes system performance with simultaneous CPU, PCI and ISA bus activities. It includes multi-transaction timing, enhanced write performance, a passive release mechanism and support for PCI 2.1 compliant delayed transactions. Concurrent PCI provides increased bandwidth, reduced system latencies, improves video and audio performance, and improves processing of host based applications.

CPU (Central Processing Unit)
The CPU, sometimes called "Processor," actually functions as the "brain" of the computer. It interprets and executes program commands and processes data stored in memory. Currently, there are socket 370 (for Pentium Celeron-PPGA), socket 7 (for Pentium, AMD, Cyrix, IBM), slot 1 (for Pentium II and III), slot 2 (for Xeon), and slot A (for AMD) processors.

Device Driver
A device driver is a special set of instructions that allows the computer's operating system to communicate with devices such as VGA, audio, printer, or modem.

DOS (Disk Operating System)
DOS is the foundation on which all other programs and software applications operate, including Windows. DOS is responsible for allocating system resources such as memory, CPU time, disk space, and access to peripheral devices. For this reason, DOS constitutes the basic interface between you and your computer.

DRAM (Dynamic Random Access Memory)
There are several different types of DRAM such as, EDO DRAM (Extended Data Output DRAM) and SDRAM (Synchronous DRAM).

Flash ROM
The flash ROM is designed to be a resident program and can be updated by a specific programming method. Normally, the flash ROM is used for system BIOS which initiates hardware devices and sets up necessary parameters for the OS. Since the contents of flash ROM can be modified, users are able to update the BIOS by themselves.

IDE (Integrated Drive Electronics)
IDE devices integrate the drive control circuitry directly on the drive itself, eliminating the need for a separate adapter card (in the case for SCSI devices). UltraDMA/33 IDE devices can achieve up to 33MB/Sec transfer.

7. APPENDIX

LPT Port (Line Printer Port)
Logical device name reserved by DOS for the computer parallel ports. Each LPT port is configured to use a different IRQ and address assignment.

MMX
A set of 57 new instructions based on a technique called Single Instruction, Multiple Data (SIMD), which is built into the new Intel Pentium PP/MT (P55C) and Pentium II (Klamath) CPU as well as other x86-compatible microprocessors. The MMX instructions are designed to accelerate multimedia and communications applications, such as 3D video, 3D sound, video conference.

OnNow
The OnNow design initiative is a comprehensive, system-wide approach to system and device power control. OnNow is a term for PC that is always ON but appears OFF and responds immediately to user or other requests. The OnNow design initiative involves changes that will occur in the Microsoft Windows operating system, device drivers, hardware, and applications, and also relies on the changes defined in the Advanced Configuration and Power Interface (ACPI) specification.

PC100
SDRAM is Intel's goal is to ensure that memory subsystems continue to support evolving platform requirements and to assure that memory does not become a bottleneck to system performance. It is especially important to ensure that the PC memory roadmap evolves together with the performance roadmaps for the processors, I/O and graphics.

PCI Bus (Peripheral Component Interconnect Local Bus)
PCI bus is a specification that defines a 32-bit data bus interface. PCI is a standard widely used by expansion card manufacturers.

PCI Bus Master
The PCI Bus Master can perform data transfer without local CPU help and furthermore, the CPU can be treated as one of the Bus Masters. PCI 2.1 supports concurrent PCI operation to allow the local CPU and bus master to work simultaneously.

Plug and Play BIOS
The ISA bus architecture requires the allocation of memory and I/O address, DMA channels and interrupt levels among multiple ISA cards. However, configuration of ISA cards is typically done with jumpers that change the decode maps for memory and I/O space and steer the DMA and interrupt signals to different pins on the bus. Further, system configuration files may need to be updated to reflect these changes. Users typically resolve sharing conflicts by referring to documentation provided by each manufacturer. For the average user, this configuration process can be unreliable and frustrating. Plug and play (PnP) BIOS eliminates the ISA add-on card hardware conflict problem. The PnP BIOS uses a memory block to define and remember each card's configuration, which allows the user to change the card's IRQs and DMA in BIOS either automatically or manually.

POST (Power On Self Test)
When you turn ON the computer, it will first run through the POST, a series of software-controlled diagnostic tests. The POST checks system memory, the motherboard circuitry, the display, the keyboard, the diskette drive, and other I/O devices.

PS/2 Port
PS/2 ports are based on IBM Micro Channel Architecture. This type of architecture transfers data through a 16-bit or 32-bit bus. A PS/2 mouse and/or keyboard may be used on ATX motherboards.

7. APPENDIX

ROM (Read Only Memory)
ROM is nonvolatile memory used to store permanent programs (called firmware) used in certain computer components. Flash ROM (or EEPROM) can be reprogrammed with new programs (or BIOS).

SCSI (Small Computer System Interface)
High speed multi-threaded I/O interface defined by the X3T9.2 committee of the American National Standards Institute (ANSI) for connecting many peripheral devices. The standard started from 10MBytes/sec to 160MBytes/sec available today.

SDRAM (Synchronous DRAM)
The SDRAM features a fully synchronous operation referenced to a positive edge clock whereby all operations are synchronized at a clock input which enables the coexistence of high performance and a simple user interface. SDRAM takes memory access away from the CPU's control; internal registers in the chips accept the request, and let the CPU do something else while the data requested is assembled for the next time the CPU talks to the memory. As they work on their own clock cycle, the rest of the system can be clocked faster. There is a version optimized for video cards, and main memory for motherboards.

SPD for SDRAM module
Serial Presence Detect (SPD) is most like an ID detect for SDRAM module, it using a EEPROM component on DIMM module for storing module configuration information inside. The Serial Presence Detect function is implemented using a 2048 bit EEPROM component. This nonvolatile storage device contains data programmed by the DIMM manufacturer that identifies the module type and various SDRAM organization and timing parameters.

System Disk
A system disk contains the core file of an operating system and is used to boot up the operating system.

UltraDMA
Ultra DMA/33 is a "synchronous DMA" protocol designed by Intel. This function is included into Intel's PIIX4 chipset. The traditional IDE transfer only uses one edge of the data stroke as the data transfer. Ultra DMA/33 uses both edges of data strobe when the data is transferred. Hence, the data transfer rate is double of the PIO mode 4 or DMA mode 2 (16.6MB/s x2 = 33MB/s) on ATA-2 devices.

Ultra ATA/66, also known as Ultra DMA/66, is an extension of current Ultra ATA/33 interface. This new high-speed interface has doubled the Ultra ATA/33 burst data transfer rate to 66.6 Mbytes/sec and maximized disk performance under current PCI local bus environment

USB (Universal Serial Bus)
A 4-pin serial cable bus that allows up to 127 plug and play computer peripherals such as keyboard, mouse, joystick, scanner, printer, modem, and monitor to share a bandwidth through a host scheduled token based protocol. This allows attaching or detaching while the host and other peripherals are in operation. Supports synchronous and asynchronous transfer types over the same set of wires up to 12Mbit/sec. USB 2.0 provides twice the transfer rate compared to USB 1.0 and competes with the 1394 standard.

Wake-On-Lan
Computer will automatically wake-up upon receiving a wake-up packet through a Network interface when it is under power soft-off, suspend or sleep mode.

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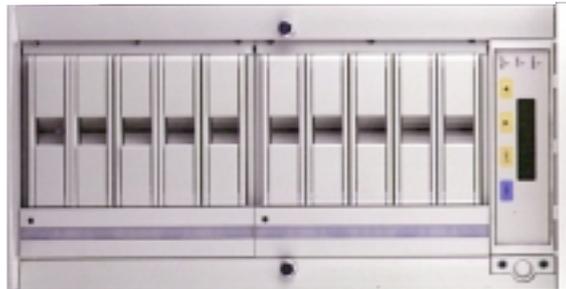
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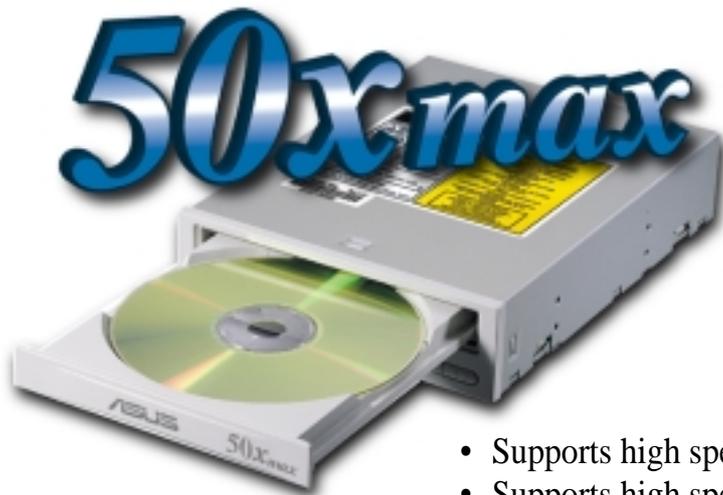
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