

ASUS[®] P3B-1394

IEEE-1394 Motherboard

USER'S MANUAL

USER'S NOTICE

No part of this manual, including the products and software described in it, may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form or by any means, except documentation kept by the purchaser for backup purposes, without the express written permission of ASUSTeK COMPUTER INC. ("ASUS").

ASUS PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL ASUS, ITS DIRECTORS, OFFICERS, EMPLOYEES OR AGENTS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF PROFITS, LOSS OF BUSINESS, LOSS OF USE OR DATA, INTERRUPTION OF BUSINESS AND THE LIKE), EVEN IF ASUS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES ARISING FROM ANY DEFECT OR ERROR IN THIS MANUAL OR PRODUCT.

Product warranty or service will not be extended if: (1) the product is repaired, modified or altered, unless such repair, modification or alteration is authorized in writing by ASUS; or (2) the serial number of the product is defaced or missing.

Products and corporate names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

- Intel, LANDesk, and Pentium are registered trademarks of Intel Corporation.
- Celeron is a trademark of Intel Corporation.
- Vortex and Wavetracing are trademarks of Aureal Semiconductor Incorporated.
- IBM and OS/2 are registered trademarks of International Business Machines.
- Symbios is a registered trademark of Symbios Logic Corporation.
- Windows and MS-DOS are registered trademarks of Microsoft Corporation.
- Adobe and Acrobat are registered trademarks of Adobe Systems Incorporated.

The product name and revision number are both printed on the product itself. Manual revisions are released for each product design represented by the digit before and after the period of the manual revision number. Manual updates are represented by the third digit in the manual revision number.

For previous or updated manuals, BIOS, drivers, or product release information, contact ASUS at <http://www.asus.com.tw> or through any of the means indicated on the following page.

SPECIFICATIONS AND INFORMATION CONTAINED IN THIS MANUAL ARE FURNISHED FOR INFORMATIONAL USE ONLY, AND ARE SUBJECT TO CHANGE AT ANY TIME WITHOUT NOTICE, AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY ASUS. ASUS ASSUMES NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS OR INACCURACIES THAT MAY APPEAR IN THIS MANUAL, INCLUDING THE PRODUCTS AND SOFTWARE DESCRIBED IN IT.

Copyright © 1999 ASUSTeK COMPUTER INC. All Rights Reserved.

Product Name: **ASUS P3B-1394**

Manual Revision: **1.02 E395**

Release Date: **August 1999**

ASUS CONTACT INFORMATION

ASUSTeK COMPUTER INC. (Asia-Pacific)

Marketing

Address: 150 Li-Te Road, Peitou, Taipei, Taiwan 112
Telephone: +886-2-2894-3447
Fax: +886-2-2894-3449
Email: info@asus.com.tw

Technical Support

MB/Other (tel): English: +886-2-2890-7121
Notebook (tel): English: +886-2-2890-7122
Server (tel): English: +886-2-2890-7123
Fax: +886-2-2895-9254
Email: tsd@asus.com.tw
Newsgroup: news2.asus.com.tw
WWW: www.asus.com.tw
FTP: ftp.asus.com.tw/pub/ASUS

ASUS COMPUTER INTERNATIONAL (America)

Marketing

Address: 6737 Mowry Avenue, Mowry Business Center, Building 2
Newark, CA 94560, USA
Fax: +1-510-608-4555
Email: info-usa@asus.com.tw

Technical Support

Fax: +1-510-608-4555
BBS: +1-510-739-3774
Email: tsd@asus.com
WWW: www.asus.com
FTP: ftp.asus.com/Pub/ASUS

ASUS COMPUTER GmbH (Europe)

Marketing

Address: Harkortstr. 25, 40880 Ratingen, BRD, Germany
Fax: +49-2102-4420-66
Email: sales@asuscom.de

Technical Support

Hotline: MB/Other: +49-2102-9599-0 Notebook: +49-2102-9599-10
Fax: +49-2102-9599-11
Online Support: www.asuscom.de/de/support
WWW: www.asuscom.de
FTP: ftp.asuscom.de/pub/ASUSCOM

CONTENTS

1. INTRODUCTION	7
1.1 How This Manual Is Organized	7
1.2 Item Checklist	7
2. FEATURES	8
2.1 The ASUS P3B-1394 Motherboard	8
2.1.1 Specifications	8
2.1.2 Special Features	10
2.1.3 Performance Features	10
2.1.4 Intelligence	11
2.2 ASUS P3B-1394 Part Locations	12
2.3 ASUS P3B-1394 Part Descriptions	13
3. HARDWARE SETUP	14
3.1 Motherboard Layout	14
3.2 Layout Contents	15
3.3 Hardware Setup Procedure	17
3.4 Motherboard Settings	17
3.5 System Memory (DIMM)	21
3.5.1 General DIMM Notes	21
3.5.2 DIMM Memory Installation	22
3.6 Central Processing Unit (CPU)	23
3.6.1 Universal Retention Mechanism	23
3.6.2 Heatsinks	23
3.6.3 Installing the Processor	24
3.6.4 Recommended Heatsinks for Slot 1 Processors	26
3.7 Expansion Cards	27
3.7.1 Expansion Card Installation Procedure	27
3.7.2 Assigning IRQs for Expansion Cards	27
3.7.3 Assigning DMA Channels for ISA Cards	28
3.7.4 Accelerated Graphics Port (AGP)	28
3.8 External Connectors	29
3.9 Power Connection Procedures	39
4. BIOS SETUP	40
4.1 Managing and Updating Your BIOS	40
4.1.1 Upon First Use of the Computer System	40
4.1.2 Updating BIOS Procedures (only when necessary)	41

CONTENTS

4.2	BIOS Setup	43
4.3	Standard CMOS Setup	44
4.4	BIOS Features Setup	47
4.5	Chipset Features Setup	51
4.6	Power Management Setup	54
4.7	PNP and PCI Setup	57
4.8	Load BIOS Defaults	59
4.9	Load Setup Defaults	59
4.10	Supervisor Password & User Password	60
4.11	IDE HDD Auto Detection	61
4.12	Save & Exit Setup	62
4.13	Exit Without Saving	62
5.	SOFTWARE SETUP	63
5.1	Operating Systems	63
5.2	Starting Windows For the First Time	63
5.3	P3B-1394 Support CD	64
5.4	Intel LDCM Administrator Setup	66
5.5	Intel LDCM Client Setup	67
5.6	Install 1394 Host Controller Driver	69
5.7	Install ASUS PC Probe Vx.xx	70
5.8	Install ASUS Update Vx.xx	71
5.9	Install PC-Cillin 98 Vx.xx	72
5.10	Install ADOBE AcroBat Reader Vx.x	73
5.11	Uninstalling Programs	75
5.12	Ulead VideoStudio 3.0 SE DV	75
6.	SOFTWARE REFERENCE	77
6.1	Intel LANdesk Client Manager	77
6.2	ASUS PC Probe	83
6.3	Ulead VideoStudio 3.0	89
7.	APPENDIX	93
7.1	PCI-L101 Fast Ethernet Card	93
7.2	S370 CPU Card	95
7.3	Glossary	97

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.

- (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 (1) 5.25" and (2) 3.5" floppy drives
- (1) Bag of spare jumper caps
- (1) Support CD with drivers and utilities
- (1) This Motherboard User's Manual
- IEEE-1394 serial cable connector set, which includes the following:
 - (1) 1394 CON board
 - (1) 8-to-6 pin cable
 - (1) 8-to-4 pin cable
 - (1) Metal bracket
- ASUS IrDA-compliant infrared module (optional)
- ASUS S370 Series CPU cards (optional)
- ASUS PCI-L101 Wake-On-LAN 10/100 Ethernet Card (optional)

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

- **Multi-Speed:** Supports Intel Pentium® III (450MHz and faster), Pentium® II (233MHz to 450MHz), and Celeron™ (266MHz and faster) processors.
- **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 Advanced Configuration Power Interface (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:** Advanced Configuration Power Interface (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.
- **Suspend and Go:** Suspend-to-RAM provides maximum power savings as an alternative to leaving the computer ON and QuickStart™ so that you do not fall asleep waiting for system bootup (Suspend-to-RAM supported OS required).
- **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.
- **PC'98 Compliant:** Both the BIOS and hardware levels of ASUS smart series motherboards meet PC'98 compliancy. The new PC'98 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 .
- **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

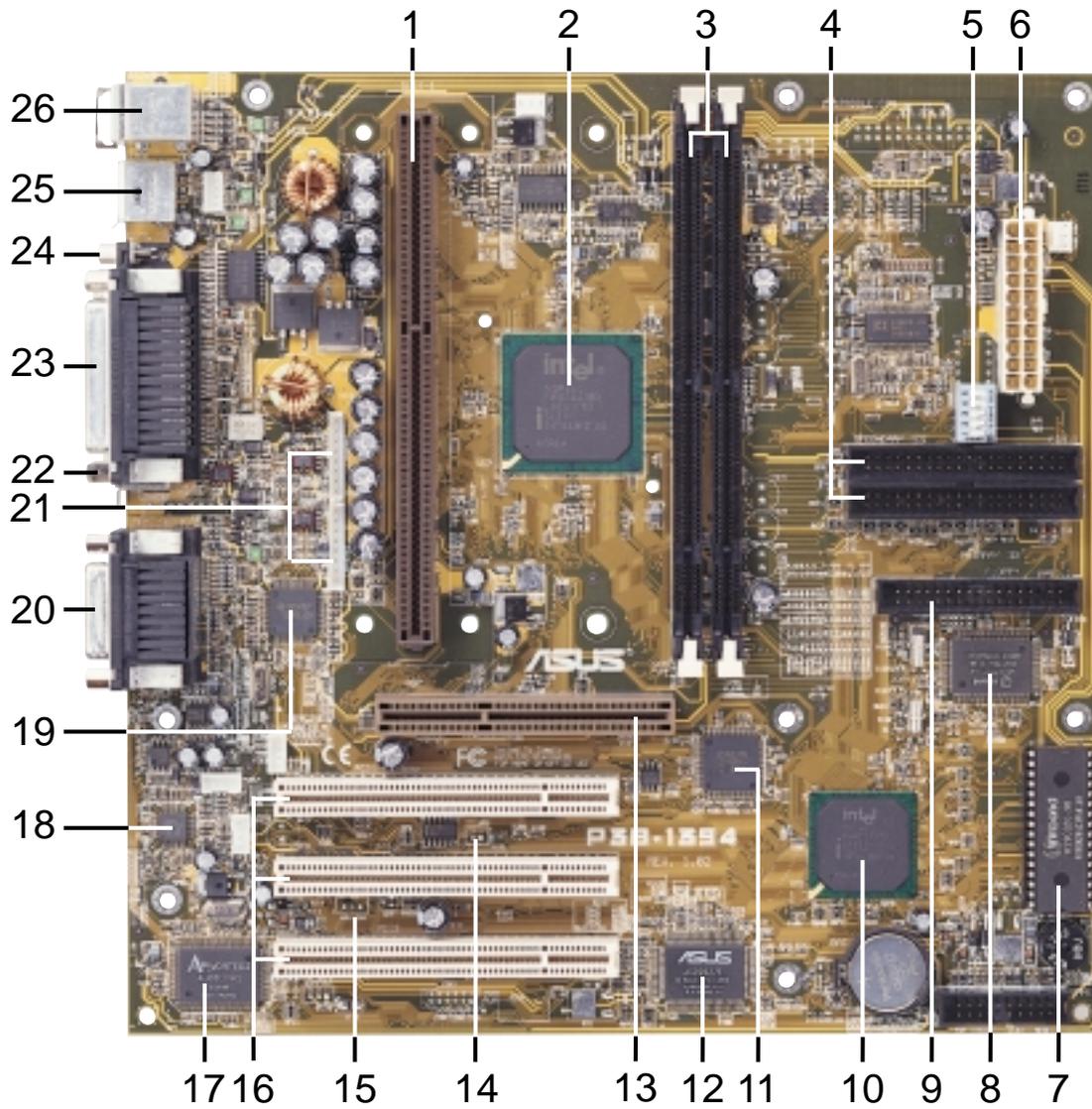
2.1.4 Intelligence

- **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, Deschutte Pentium II, and PPGA370 Celeron in conjunction with the ASUS S370-D or S370-L transform 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 ASUS P3B-1394 Part Locations

2. FEATURES
Specifications



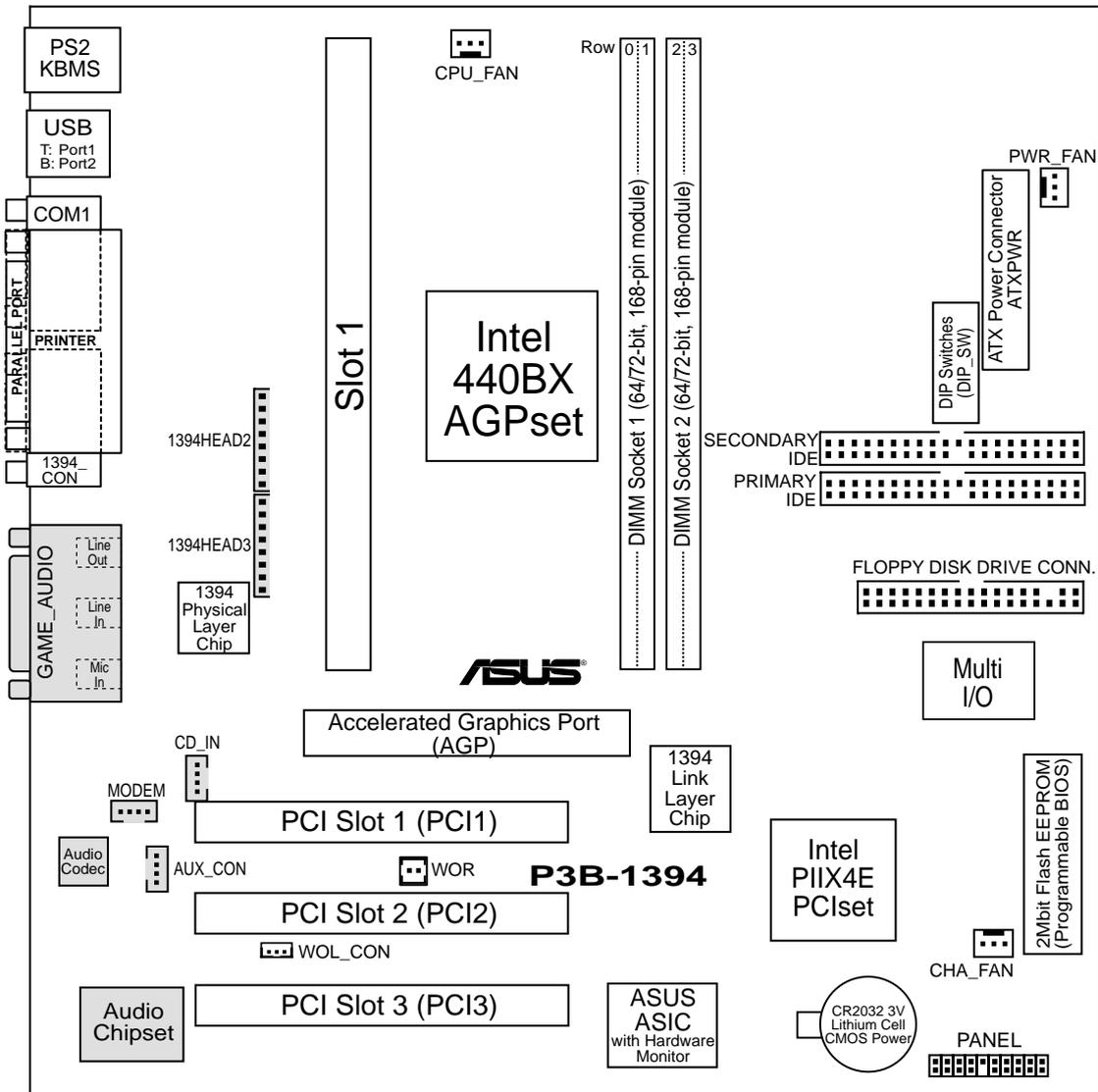
2. FEATURES

2.3 ASUS P3B-1394 Part Descriptions

- 1 SEC CPU Socket
- 2 Intel 440BX AGPset
- 3 2 DIMM Sockets
- 4 Primary, Secondary IDE Connectors
- 5 Function DIP Switches
- 6 ATX Power Connector
- 7 Programmable Flash EEPROM
- 8 Multi I/O Chip
- 9 Floppy Disk Drive Connector
- 10 Intel PIIX4E PCIset
- 11 TI 1394 Link Layer Chip
- 12 ASUS ASIC with hardware monitor
- 13 Accelerated Graphics Port
- 14 Wake-On-Ring Connector
- 15 Wake-On-LAN Connector
- 16 3 PCI Slots
- 17 Aureal 3D PCI Audio (optional)
- 18 AC'97 V2.1 Audio CODEC (for audio model only)
- 19 TI 1394 Physical Layer Chip
- 20 T: Joystick/MIDI Connector
B: Line Out, Line In, Microphone In Connectors
(for audio model only)
- 21 IEEE-1394 Headers (channels 2 & 3)
- 22 IEEE-1394 Connector (channel 1)
- 23 Parallel Port Connector
- 24 Serial Port Connector
- 25 2 USB Connectors
- 26 T: PS/2 Mouse Connector
B: PS/2 Keyboard Connector

3. HARDWARE SETUP

3.1 Motherboard Layout



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

3. HW SETUP
Motherboard Layout

3. HARDWARE SETUP

3.2 Layout Contents

Motherboard Settings

- 1) DIP_SW 6–10 p. 18 CPU External Frequency Selection
- 2) DIP_SW 2–5 p. 19 CPU Core:BUS Frequency Multiple Selection

Expansion Slots/Sockets

- 1) System Memory p. 20 System Memory Support
- 2) DIMM1, DIMM2 p. 22 DIMM Memory Module Support
- 3) SLOT-1 p. 23 CPU Support
- 4) PCI1, PCI2, PCI3 p. 27 32-bit PCI Bus Expansion Slots
- 5) AGP p. 28 Accelerated Graphics Port

Connectors

- 1) PS2KBMS p. 29 PS/2 Mouse Port Connector (6 pin-female)
- 2) PS2KBMS p. 29 PS/2 Keyboard Port Connector (6-pin female)
- 3) USB p. 30 Universal Serial Bus Connectors 1 & 2 (Two 4-pin female)
- 4) PRINTER p. 30 Parallel Port Connector (25-pin female)
- 5) COM1 p. 30 Serial Port Connector (9-pin male)
- 6) 1394_CON p. 31 1394 Connector (9-pin male)
- 7) GAME_AUDIO p. 31 Joystick/MIDI Connector (15-pin female) (optional)
- 8) GAME_AUDIO p. 31 Audio Port Connectors (Three 1/8" female) (optional)
- 9) PRIMARY IDE p. 32 Primary/Secondary IDE Connectors (Two 40-1 pins)
SECONDARY IDE
- 10) FLOPPY p. 32 Floppy Drive Port Connector (34 pins)
- 11) CHA_, PWR_, CPU_FAN p. 33 Chassis, Power Supply, CPU Fan Connectors (3 pins)
- 12) WOL_CON p. 34 Wake-On-LAN Connector (3 pins)
- 13) WOR p. 34 Wake-On-Ring Connector (2 pins)
- 14) 1394HEAD2/3 p. 35 IEEE-1394 Headers (Two 8-pin male) (optional)
- 15) MODEM, AUX_CON, p. 35 Internal Audio Connectors (Three 4 pins)
CD_IN
- 16) MLED (PANEL) p. 36 System Message LED (2 pins)
- 17) KEYLOCK (PANEL) p. 36 Keyboard Lock Switch Lead (2 pins)
- 18) SMI (PANEL) p. 36 System Management Interrupt Lead (2 pins)
- 19) SPEAKER (PANEL) p. 36 System Warning Speaker Connector (4 pins)
- 20) PWR (PANEL) p. 36 ATX / Soft-Off Switch Lead (2 pins)
- 21) IDELED (PANEL) p. 36 IDE Device Activity LED (2 pins)
- 22) PLED (PANEL) p. 36 System Power LED Lead (3 pins)
- 23) RESET (PANEL) p. 36 Reset Switch Lead (2 pins)
- 24) ATXPWR p. 37 ATX Power Supply Connector (20 pins)

3. HARDWARE SETUP

(This page was intentionally left blank.)

3. HARDWARE SETUP

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

3.4 Motherboard Settings

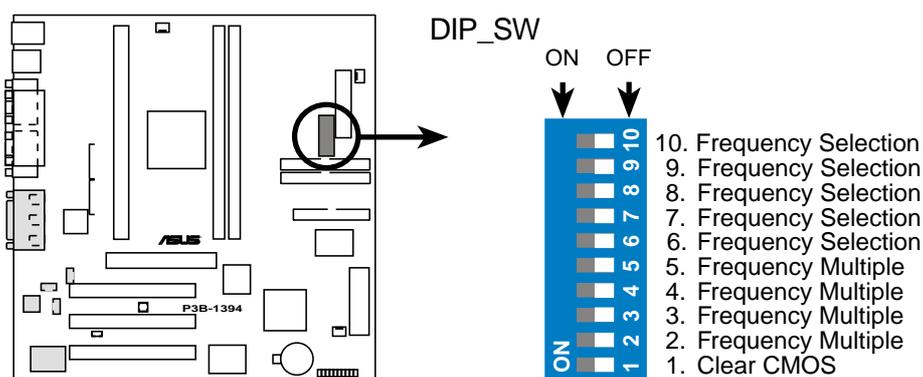
This section explains in detail how to change your motherboard's function settings through the use of switches and/or jumpers.

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.

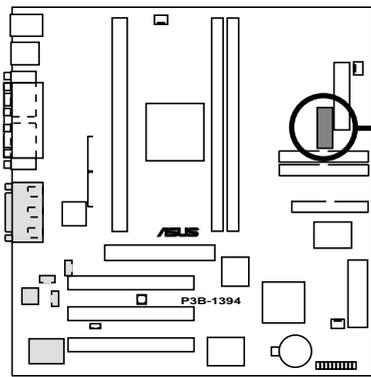


P3B-1394 DIP Switches

3. HARDWARE SETUP

1) CPU External Frequency Selection (DIP_SW Switches 7-10)

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**

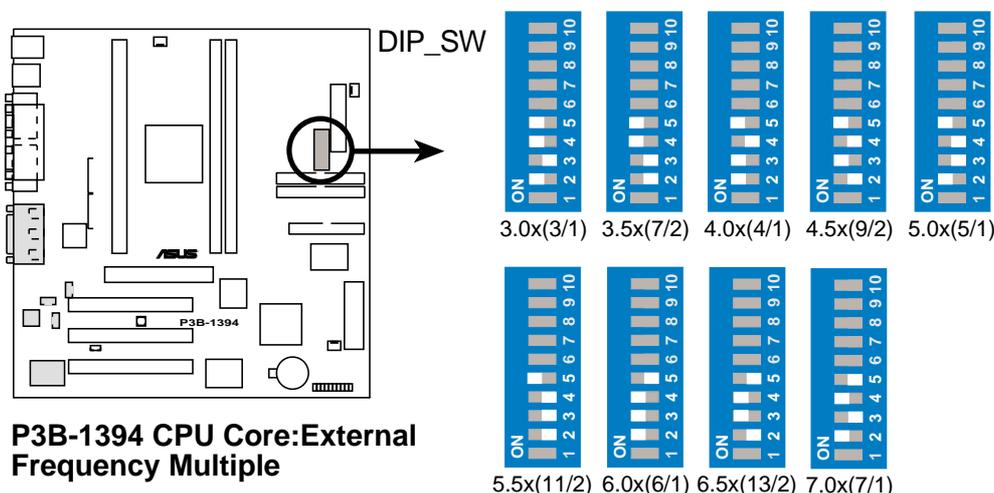
<p>CPU 66.0MHz PCI 33.4MHz</p>	<p>CPU 75.0MHz PCI 37.5MHz</p>	<p>CPU 83.0MHz PCI 41.6MHz</p>	<p>CPU 100.0MHz PCI 33.4MHz</p>
<p>CPU 103.0MHz PCI 34.3MHz</p>	<p>CPU 105MHz PCI 35MHz</p>	<p>CPU 110.0MHz PCI 36.7MHz</p>	<p>CPU 112.0MHz PCI 37.3MHz</p>
<p>CPU 115.0MHz PCI 38.3MHz</p>	<p>CPU 120.0MHz PCI 40.0MHz</p>	<p>CPU 124.0MHz PCI 41.3MHz</p>	<p>CPU 124.0MHz PCI 31.0MHz</p>
<p>CPU 133.0MHz PCI 44.3MHz</p>	<p>CPU 133.0MHz PCI 33.3MHz</p>		

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*.



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	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]	[OFF]	[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 above 100MHz exceed the specifications for the on-board Intel Chipset and are not guaranteed to be stable.

3. HARDWARE SETUP

(This page was intentionally left blank.)

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)	=	

NOTE: At the time this User's Manual was written, 256MB DIMMs are only available as registered memory (128Mbit cells).

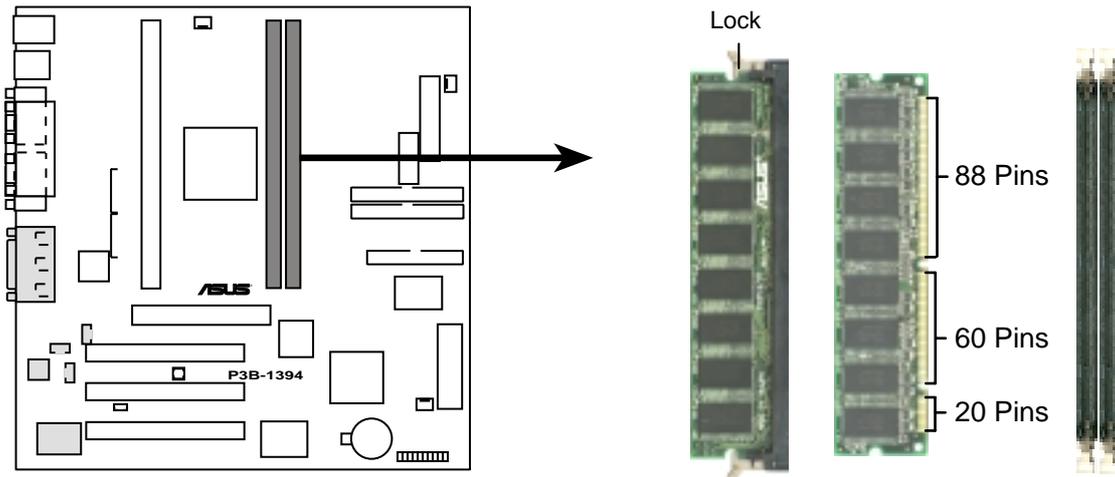
3.5.1 General DIMM Notes

- **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 DIMM Memory Installation

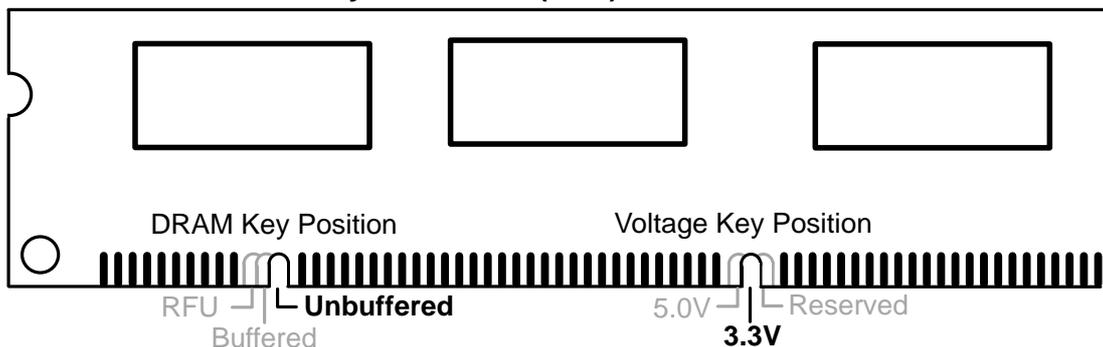
Insert the module(s) as shown. Because the number of pins are different on either side of the breaks, the module will only fit in the orientation shown. DRAM SIMM modules have the same pin contacts on both sides. SDRAM DIMMs have different pin contacts on each side and therefore have a higher pin density.



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).

168-Pin DIMM Notch Key Definitions (3.3V)



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

3. HARDWARE SETUP

3.6 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 examples.

Your motherboard provides a Slot 1 connector for a Pentium® III processor packaged in a Single Edge Contact Cartridge (SECC2), a Pentium® II processor packaged in SECC2/SECC, or a Celeron™ processor packaged in a Single Edge Processor Package (SEPP). An ASUS S370 CPU card can allow Socket 370 processors to be used on any ASUS motherboard with the Slot 1 connector (See 7.2 *S370 CPU Card* for instructions on using this card).



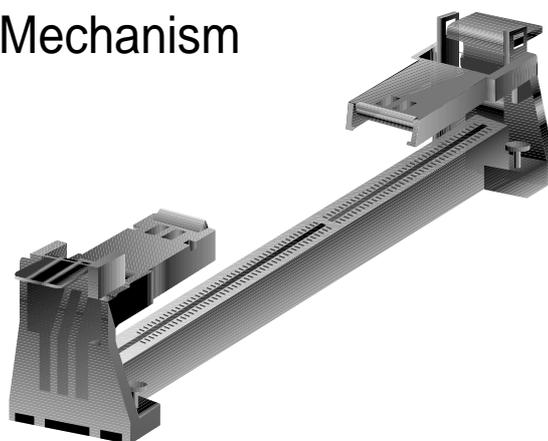
Pentium II processor packaged in an SECC with heatsink and fan (top view)



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 Universal Retention Mechanism

Your motherboard comes preinstalled with a Universal Retention Mechanism (URM). The URM supports Pentium III / II and Celeron processors.



Universal Retention Mechanism (URM)

3.6.2 Heatsinks

The recommended heatsinks (see 3.6.4 *Recommended Heatsinks for Slot 1 Processors*) 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.

3. HARDWARE SETUP

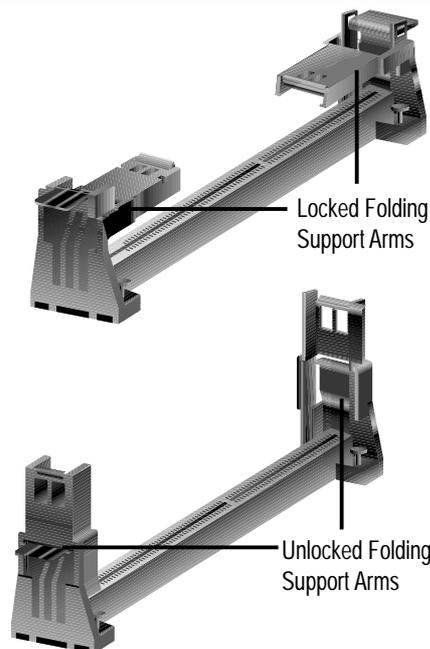
3.6.3 Installing the Processor

1. Unlock the URM's Folding Support Arms:

The folding support arms of the URM are locked when shipped.

To unlock the support arms, simply flip them up to an upright position.

The URM is now ready for the installation of your processor.



2. Attach 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.

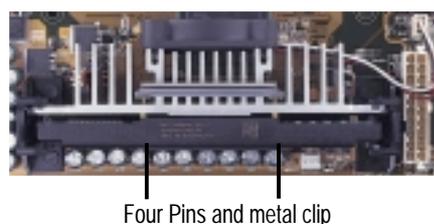
Using the SECC fan with the Pentium® II

Push the two lock arms in one direction to clamp the heatsink onto the processor and the other direction to release.



Using the SECC2 fan with the 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.



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.

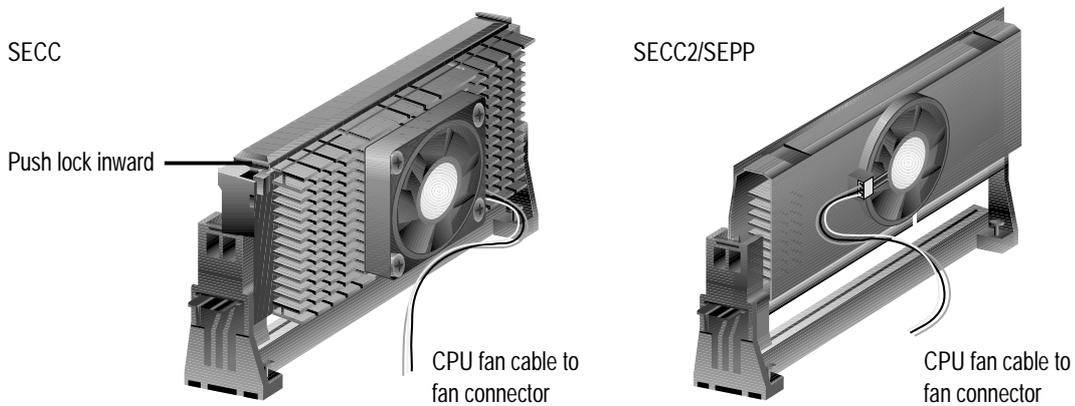
3. HARDWARE SETUP

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. Insert the SECC2/SECC/SEPP

SECC with Pentium® II only: Push the SECC's two locks inward until you hear a click (the picture in step 2 shows the locks in the outward position and inward in the picture below).

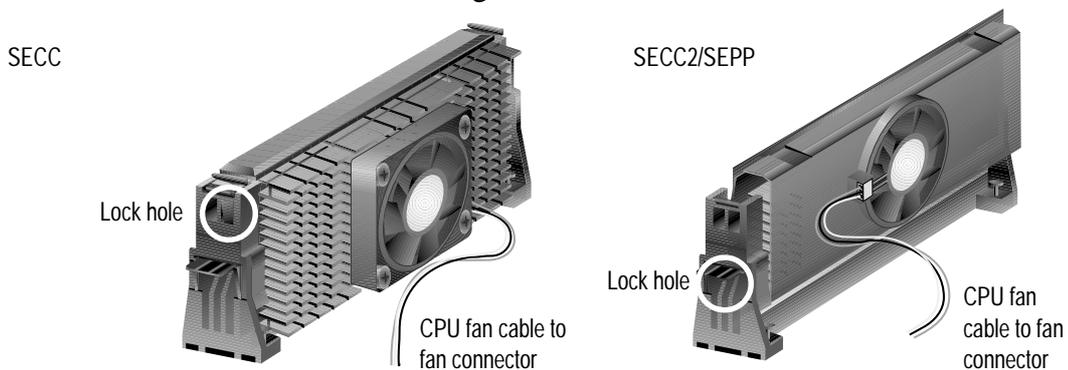
With the heatsink facing the motherboard's chipset, push the SECC2, SECC, or SEPP gently but firmly into the Slot 1 connector until it is fully inserted.



4. Secure the SECC2/SECC/SEPP

Secure the SECC2/SECC/SEPP in place by pushing the SECC2/SECC/SEPP until it is firmly seated on the Slot 1 connector.

SECC with Pentium® II only: The SECC locks should be outward when secured so that the lock shows through the retention mechanism's lock holes.



3. HARDWARE SETUP

3.6.4 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

3.7 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

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

	INT-A	INT-B	INT-C	INT-D
PCI slot 1	--	shared	--	--
PCI slot 2	--	--	shared	--
PCI slot 3	--	--	--	shared
Audio	--	--	--	shared
1394	--	--	shared	--
AGP slot	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.

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. If your motherboard has **ISA** audio onboard, an extra 3 IRQs will be used, leaving 3 IRQs free.

Both ISA and PCI expansion cards may require the use IRQs. System IRQs are available to cards installed in the ISA expansion bus first, then any remaining IRQs are available to PCI cards. Currently, there are two types of ISA cards. The original ISA expansion card design, now referred to as legacy ISA cards, requires that you configure the card's jumpers manually and then install it in an available slot on the ISA bus. 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**

3. HARDWARE SETUP

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.

To simplify this process, this motherboard complies with the Plug and Play (PnP) specification, which was developed to allow automatic system configuration whenever a PnP-compliant card is added to the system. For PnP cards, IRQs are assigned automatically from those available.

If the system has both Legacy and PnP ISA cards installed, IRQs are assigned to PnP cards from those not used by Legacy cards. The PCI and PnP configuration of the BIOS setup utility can be used to indicate which IRQs are being used by Legacy cards. For older Legacy cards that do not work with the BIOS, you can contact your vendor for an ISA Configuration Utility.

An IRQ number is automatically assigned to PCI expansion cards after those used by Legacy and PnP ISA cards. In the PCI bus design, the BIOS automatically assigns an IRQ to PCI cards that require an IRQ. To install a PCI card, you need to set something called the INT (interrupt) assignment. Since all the PCI slots on this motherboard use an INTA #, be sure that the jumpers on your PCI cards are set to INT A.

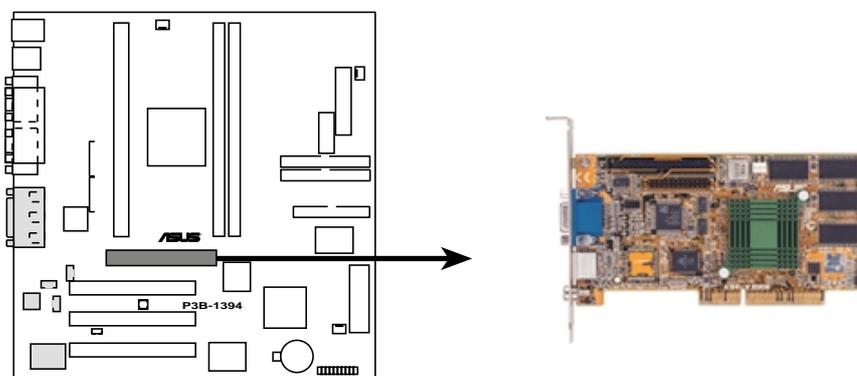
3.7.3 Assigning DMA Channels for ISA Cards

Some ISA cards, both legacy and PnP, may also need to use a DMA (Direct Memory Access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described earlier. You can select a DMA channel in the PCI and PnP configuration section of the BIOS Setup utility.

IMPORTANT: To avoid conflicts, reserve the necessary IRQs and DMAs for legacy ISA cards (see *4.7 PNP and PCI Setup*, choose *Yes* in **IRQ xx Used By ISA** and **DMA x Used By ISA** for those IRQs and DMAs you want to reserve).

3.7.4 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

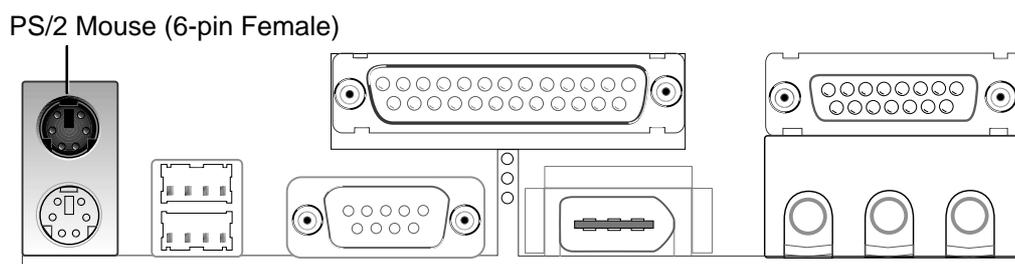
3.8 External Connectors

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.

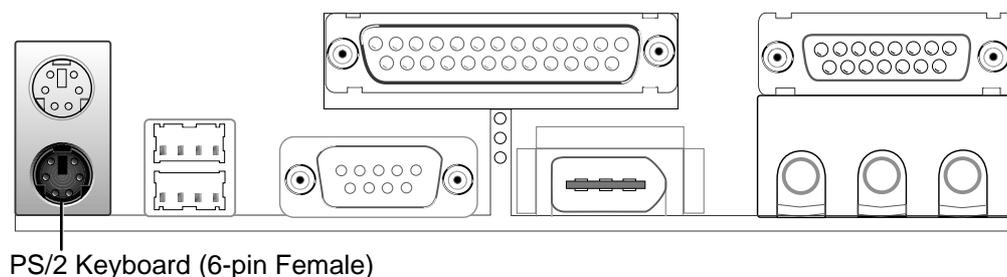
1) PS/2 Mouse Connector (6-pin PS2KBMS)

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 BIOS Features Setup*.



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

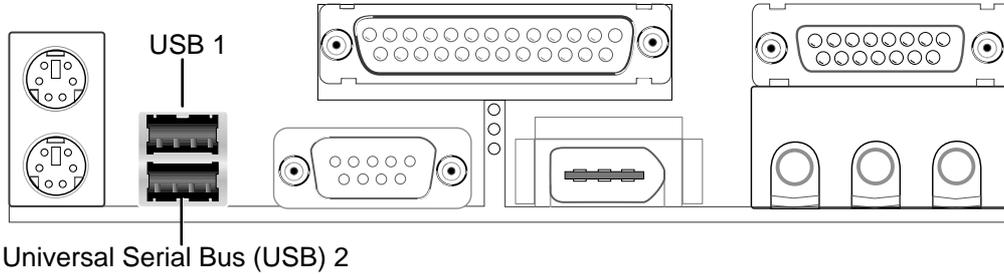
This connection is for a standard keyboard using an PS/2 plug (mini DIN). **This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.**



3. HARDWARE SETUP

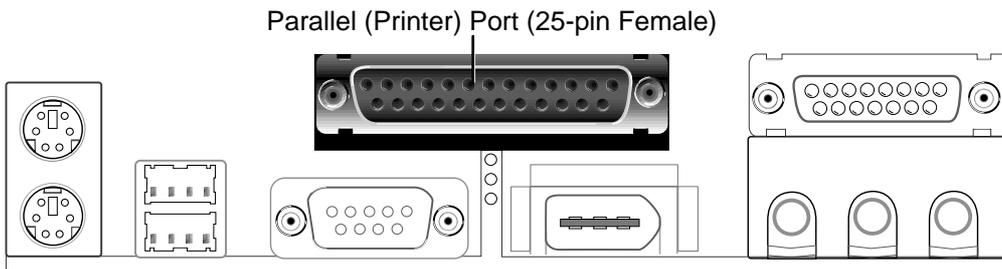
3) Universal Serial Bus Connectors 1 & 2 (Two 4-pin USB)

Two USB ports are available for connecting USB devices.



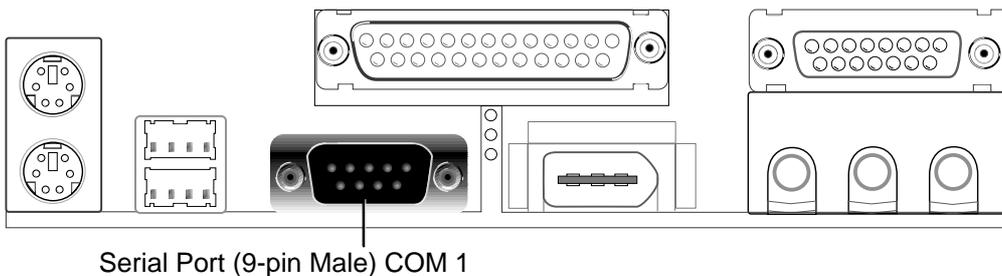
4) Parallel Port Connector (25-pin PRINTER)

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.



5) Serial Port Connectors (9-pin COM1)

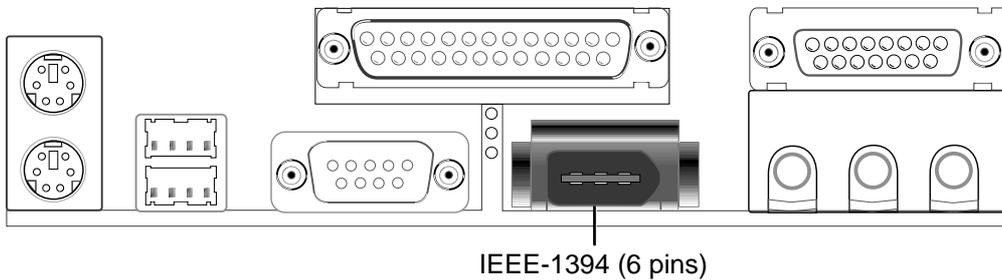
The serial port can be used for pointing devices or other serial devices. See **Onboard Serial Port 1** in *4.5 Chipset Features Setup*.



3. HARDWARE SETUP

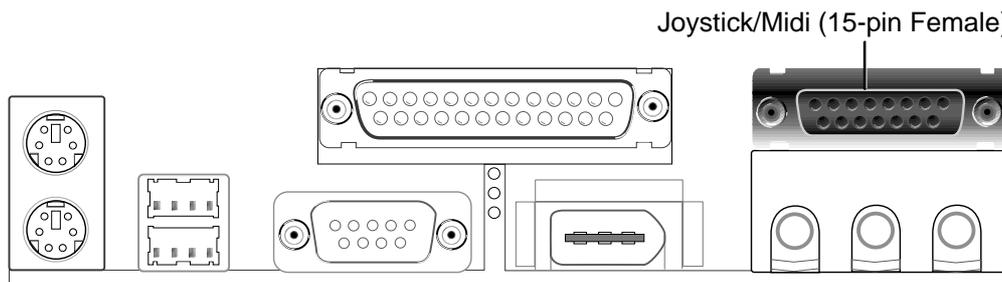
6) IEEE-1394 Connector (6-pin 1394_CON)

This connector supports external devices with a 6-pin IEEE-1394 connector.



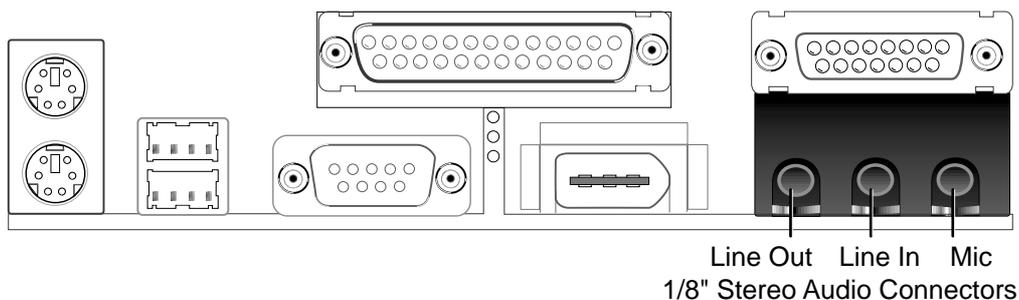
7) Joystick/MIDI Connector (15-pin GAME_AUDIO) (with optional onboard audio)

You may connect game joysticks or game pades to this connector for playing games. Connect MIDI devices for playing or editing audio.



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.

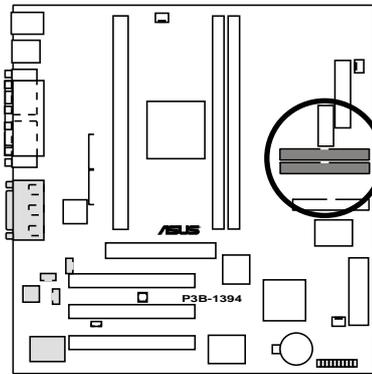


3. HARDWARE SETUP

9) IDE Connectors (Two 40-1pin PRIMARY/SECONDARY IDE)

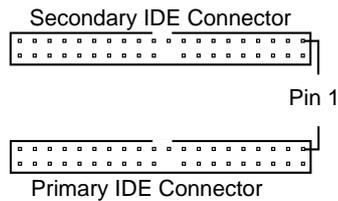
These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs at the other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Refer to the 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*.



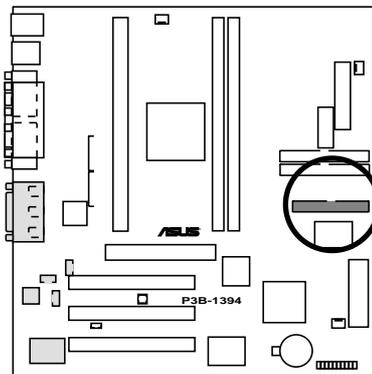
P3B-1394 IDE Connectors

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



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).



P3B-1394 Floppy Disk Drive Connector

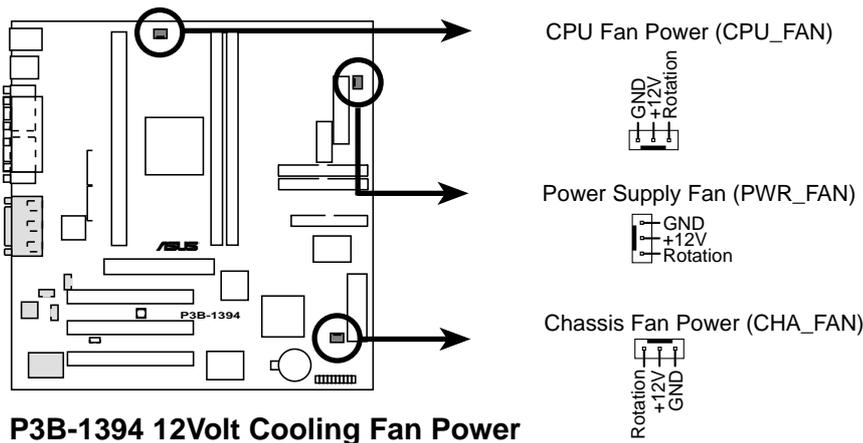


3. HARDWARE SETUP

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.**

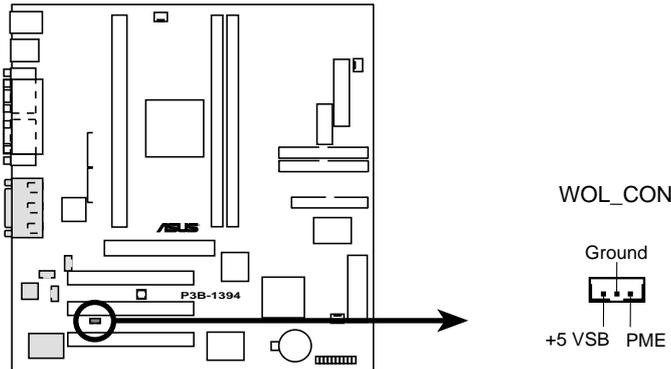


3. HARDWARE SETUP

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.

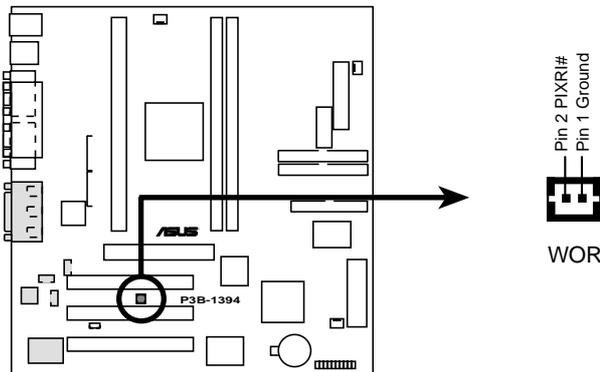


P3B-1394 Wake-On-LAN Connector

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*).

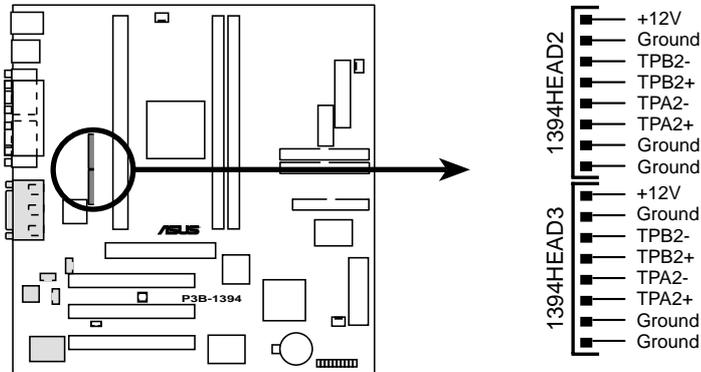


P3B-1394 Wake-On-Ring Connector

3. HARDWARE SETUP

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

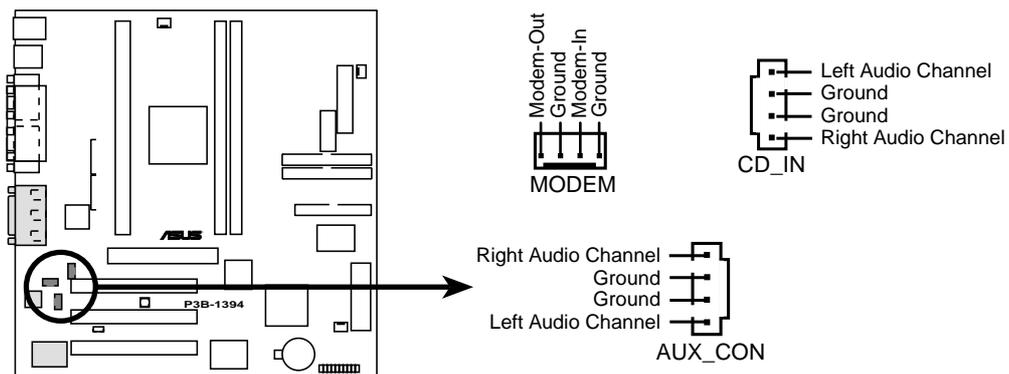
These headers support a 1394 serial connector cable set that mounts to the front of a case that has a 1394 connector slot for easy accessibility. You can also connect 1394-compliant internal fixed-disk drives to these headers. NOTE: To use these headers, set **Onboard 1394** to *Enabled* (see **4.7 PNP and PCI Setup**)



P3B-1394 IEEE-1394 Headers

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

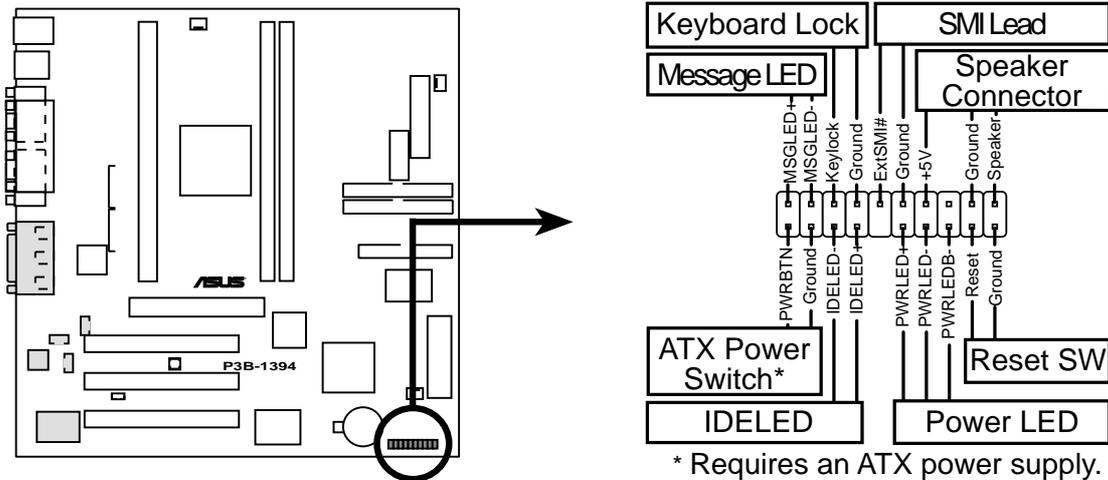
These connectors allow you to receive stereo audio input from sound sources, such as a CD-ROM, TV tuner, or MPEG card. The MODEM connector allows the onboard audio to interface with a voice modem card with a similar connector. It also allows the sharing of microphone and speaker between the onboard audio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



P3B-1394 Internal Audio Connectors

3. HARDWARE SETUP

For items 16-23



P3B-1394 System Panel Connections

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. If you do not have a switch for the connector, you may use the “Turbo Switch” since it does not have a function. SMI is activated when it detects a *short to open* moment and therefore leaving it shorted will not cause any problems. This may require one or two pushes depending on the position of the 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.

3. HARDWARE SETUP

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)

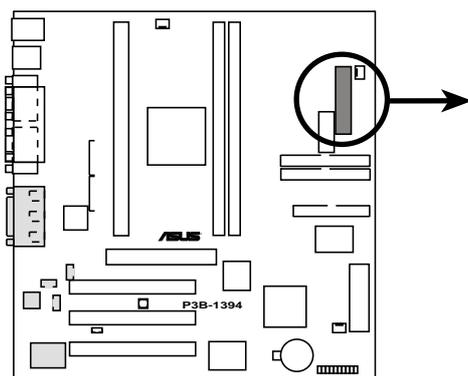
This 3-1 pin connector connects to the system power LED, which lights when the system is powered ON and turns OFF when it is in sleep or soft-off mode.

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.



P3B-1394 ATX Power Connector

+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

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

(This page was intentionally left blank.)

3. HARDWARE SETUP

3.9 Power Connection Procedures

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 monitor LED may light up 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, 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.
 7. During power-on, hold down <Delete> to enter BIOS setup. Follow the instructions in **4. BIOS Setup**
- * **Powering Off your computer:** You must first exit or shut down your operating system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down your operating system. If you use Windows 95, click the **Start** button, click **Shut Down**, and then click **Shut down the computer?**. The power supply should turn off after Windows shuts down.

NOTE: The message "You can now safely turn off your computer" will not appear when shutting down with ATX power supplies.

4. BIOS SETUP

4.1 Managing and Updating Your BIOS

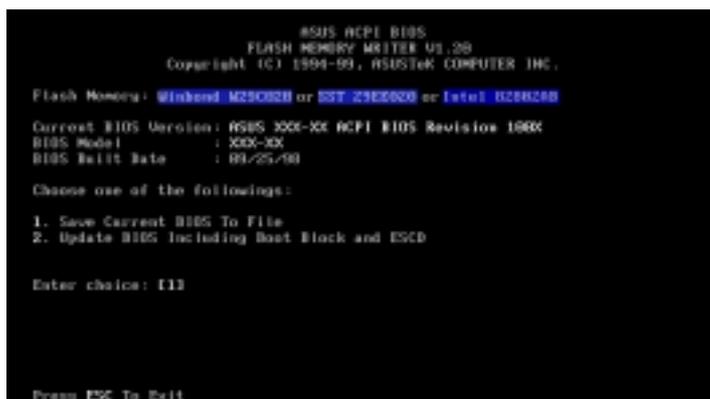
4.1.1 Upon First Use of the Computer System

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. Larger numbers represent 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 D:\AFLASH\AFLASH.EXE A:** (assuming D 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 is 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.



```
ASUS ACPI BIOS
FLASH MEMORY WRITER V1.20
Copyright (C) 1994-99, ASUSTek COMPUTER INC.

Flash Memory: Unknown M25C02B or SST 25C020B or Intel BC25C08B
Current BIOS Version: ASUS 3005-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XXX
BIOS Build Date     : 09/25/98

Choose one of the followings:
1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD

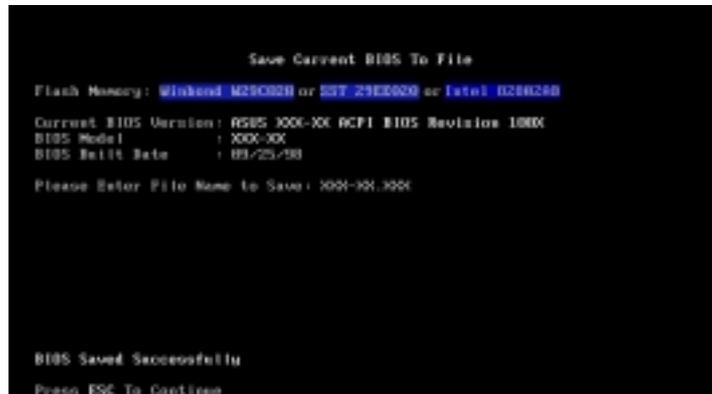
Enter choice: 11

Press ESC To Exit
```

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.

4. BIOS SETUP

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>.



4. BIOS SETUP

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

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W83C103 or SST 290003 or Intel ICH9L018
BIOS Version
CURRENT 3 ASUS 300-XX ACPI BIOS Revision 100X
Flash.ash3 ASUS 300-XX ACPI BIOS Revision 100X
BIOS Model
CURRENT 3 300-XX
Flash.ash3 300-XX
Date of BIOS Build
CURRENT 3 05/25/08
D0001.0003 05/23/08
Notice: Boot Block is Different. Check use of 3861.F18 is F206.
Are you sure (Y/N) ? [Y]
Press ESC To Return to Main Menu
```

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.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W83C103 or SST 290003 or Intel ICH9L018
BIOS Version
CURRENT 3 ASUS 300-XX ACPI BIOS Revision 100X
Flash.ash3 ASUS 300-XX ACPI BIOS Revision 100X
BIOS Model
CURRENT 3 300-XX
Flash.ash3 300-XX
Date of BIOS Build
CURRENT 3 05/25/08
D0001.0003 05/23/08
Notice: Boot Block is Different. Check use of 3861.F18 is F206.
Are you sure (Y/N) ? [Y]
Block Erasing -- Done
Programming -- 3FFFF
Flashed Successfully
Press ESC To Continue
```

8. Follow the onscreen instructions to continue.

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V1.20
Copyright (C) 1996-99, ASUS COMPUTER INC.
Flash Memory: Winbond W83C103 or SST 290003 or Intel ICH9L018
Current BIOS Version: ASUS 300-XX ACPI BIOS Revision 100X
BIOS Model : 300-XX
BIOS Build Date : 05/25/08
Choose one of the following:
1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD
Enter choice: [1]
You have flashed the EPROM. It is recommended that you turn off
the power, enter SETUP and Load Setup Defaults to have CMOS
updated with new BIOS when exits.
Press ESC To Exit
```

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:



4. BIOS SETUP

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 bootstrap.
- 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.



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.

4. BIOS SETUP

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:

```
DRAM are 72 bits wide      ESC : Quit      F10 : Select Item
Data Integrity Mode      : ECC      F1  : Help      F11/PD/+/- : Modify
                          F5  : Old Values (Shift+F2) : Color
                          F6  : Load BIOS Defaults
                          F7  : Load Setup Defaults
```

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:

```
DRAM are 64 (Not 72) bits wide  ESC : Quit      F10 : Select Item
Data Integrity Mode            : Non-ECC  F1  : Help      F11/PD/+/- : Modify
                               F5  : Old Values (Shift+F2) : Color
                               F6  : Load BIOS Defaults
                               F7  : Load Setup Defaults
```

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

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)

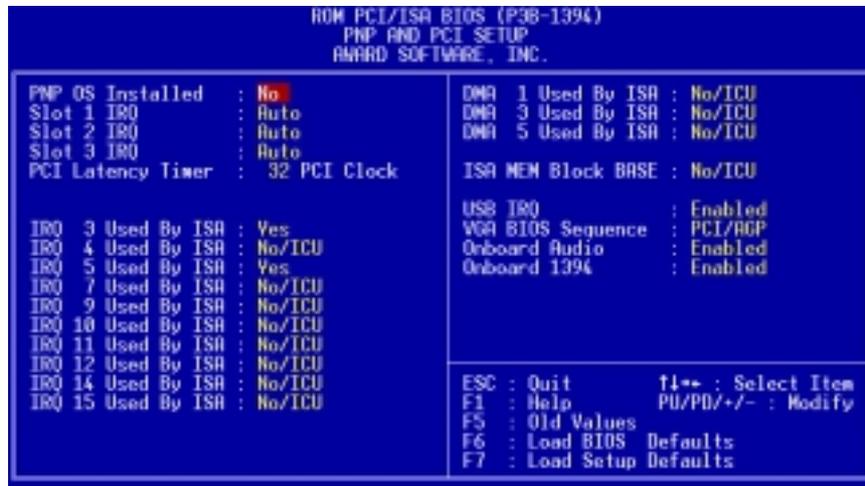
The onboard hardware monitor is able to detect the voltages put out by the voltage regulators. Set to *Ignore* only if necessary.

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. BIOS 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*.

4. BIOS SETUP

.....

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.

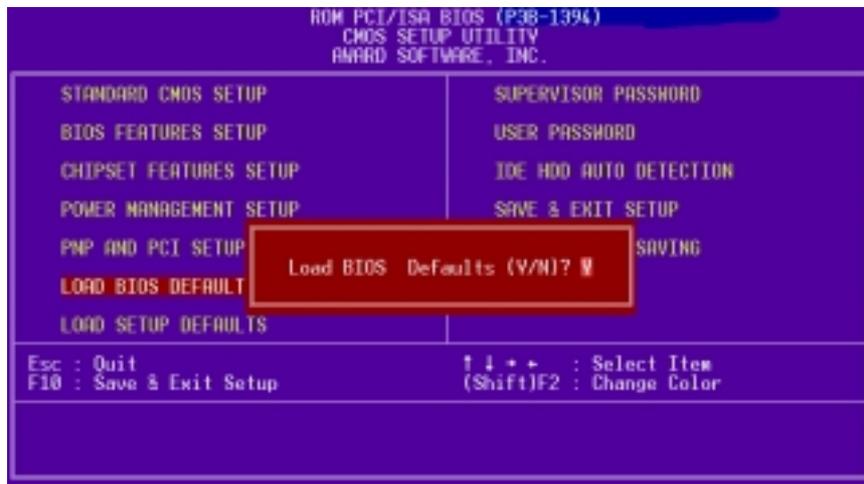
4. BIOS SETUP

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

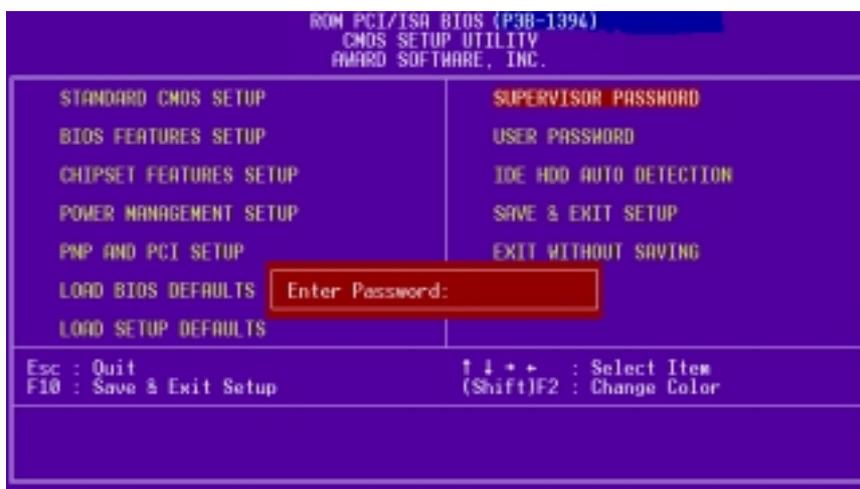
This “Load Setup Defaults” option allows you to load the default values to the system configuration fields. These default values are the optimized configuration settings for the system. To load these default values, highlight “Load Setup Defaults” on the main screen and then press <Enter>. The system 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. BIOS SETUP

4.10 Supervisor Password & User Password

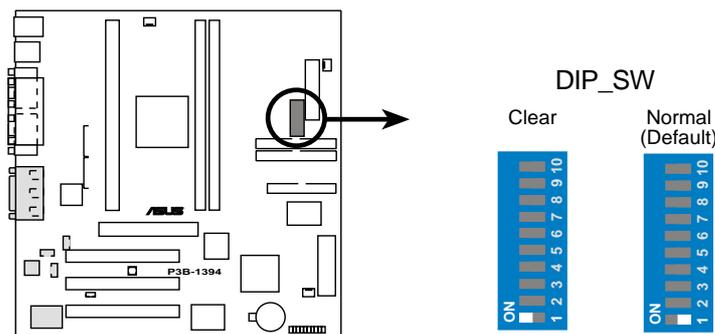
These two options set the system passwords. “Supervisor Password” sets a password that will be used to protect the system and the Setup utility; “User Password” sets a password that will be used exclusively on the system. By default, the system comes without any passwords. To specify a password, highlight 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) Select *Clear* through the DIP switches, (3) Turn ON your computer, (4) Hold down <Delete> during bootup and enter BIOS setup to re-enter user preferences.

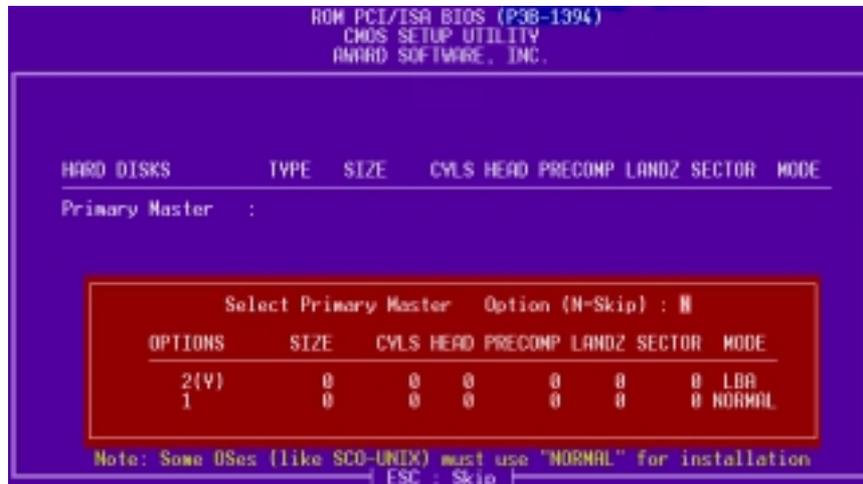


P3B-1394 Clear RTC RAM

4. BIOS SETUP

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.

4. BIOS SETUP
Hard Disk Detect

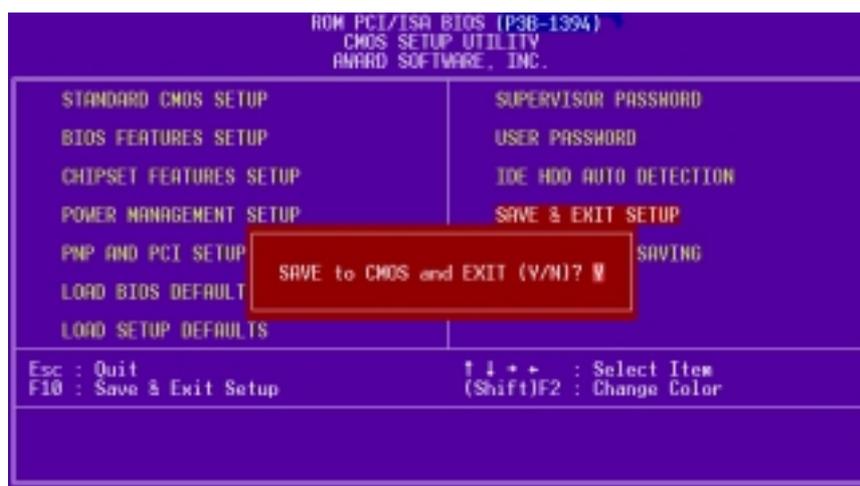
4. BIOS SETUP

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

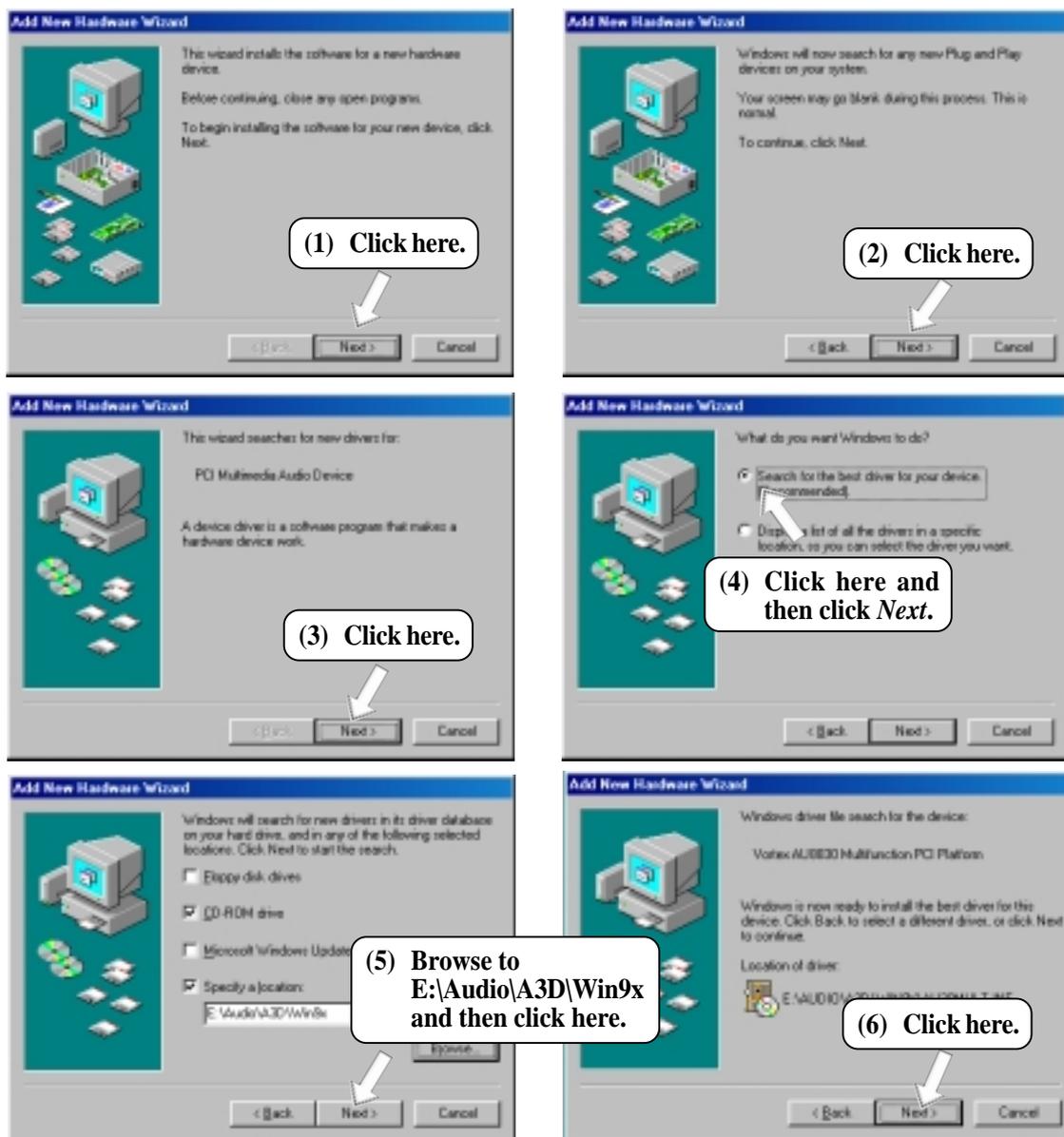
5.1 Operating Systems

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 motherboard, Windows will detect all plug-and-play devices. You can either follow the Add New Hardware Wizard to install the device drivers or click **Cancel** and follow the instructions later in this section.

Install Audio Device Driver



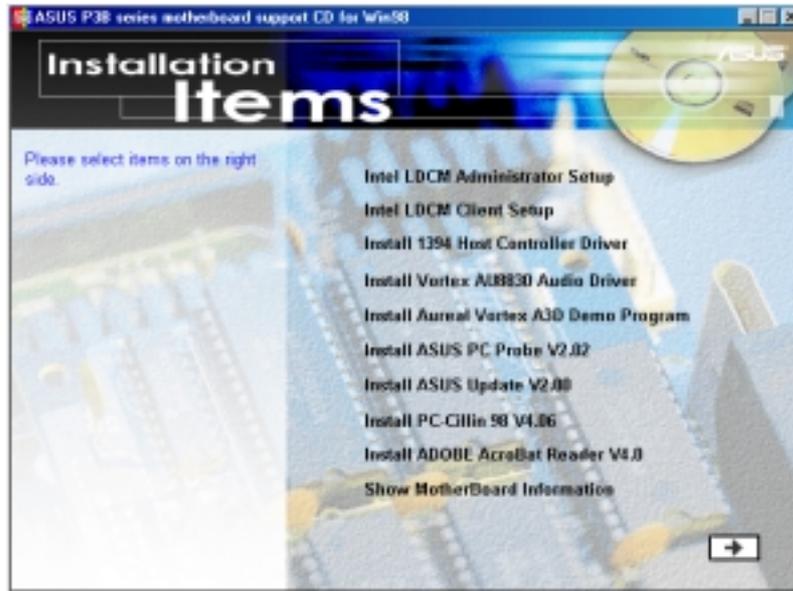
5. SOFTWARE SETUP

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 disc, just 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:**).

5.3.1 Installation Menu



5. SOFTWARE SETUP

- **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:** 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.
- **Exit:** Exits the CD installation menu. (Click RIGHT ARROW on the lower-right corner of the main menu.)

Additional 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.

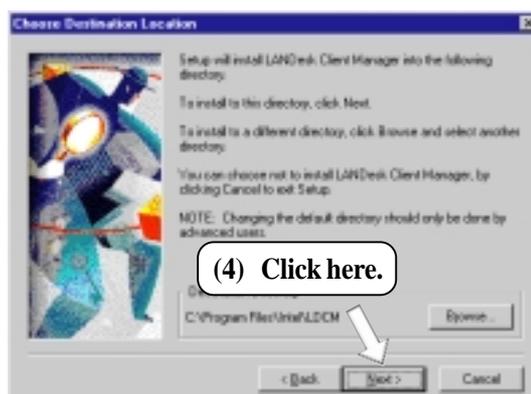
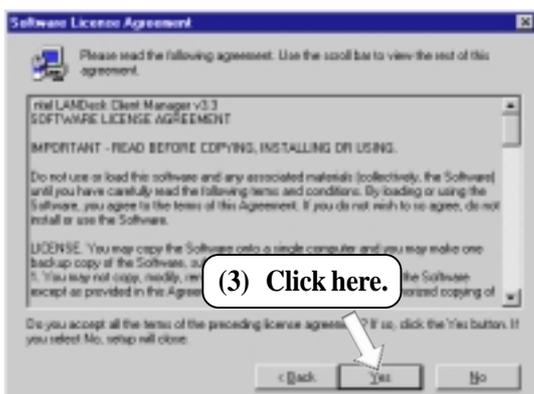
NOTE: The screen displays in this and the following section may not reflect exactly the screen contents displayed on your screen.

5. SOFTWARE SETUP

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**.

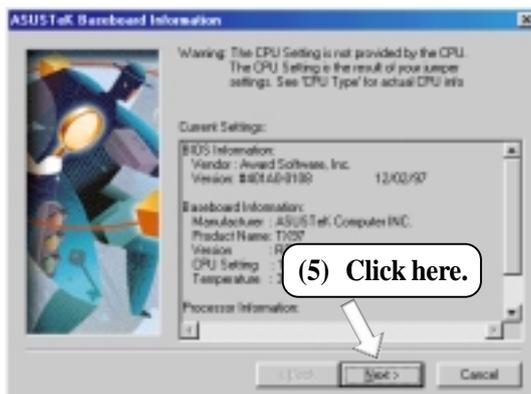
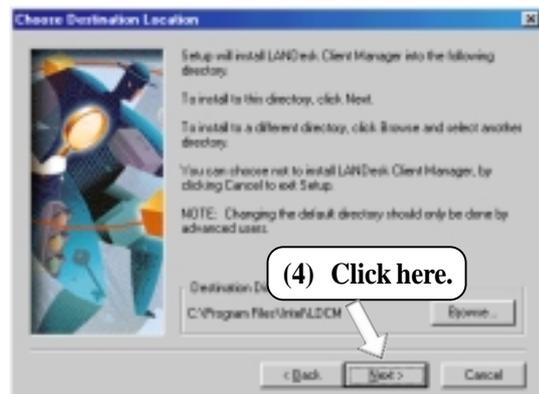
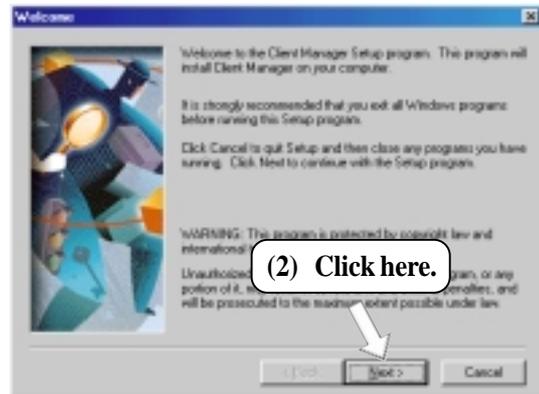


5. SOFTWARE SETUP

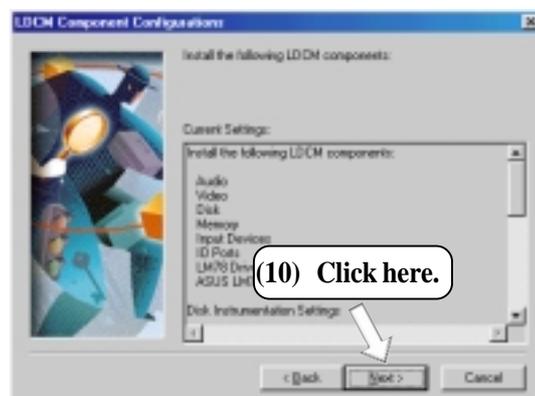
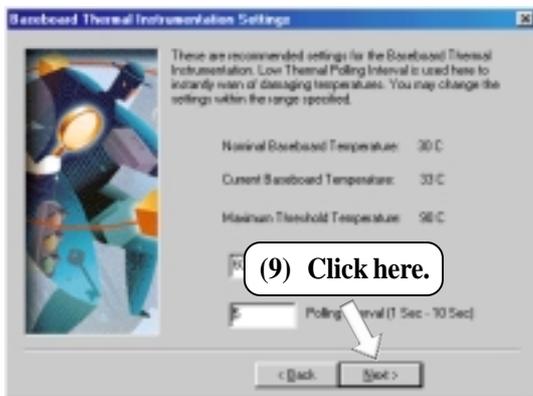
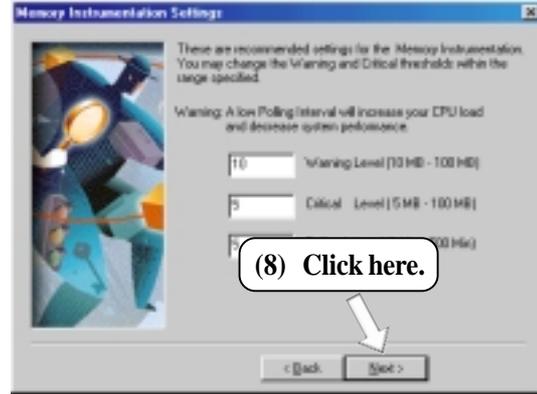
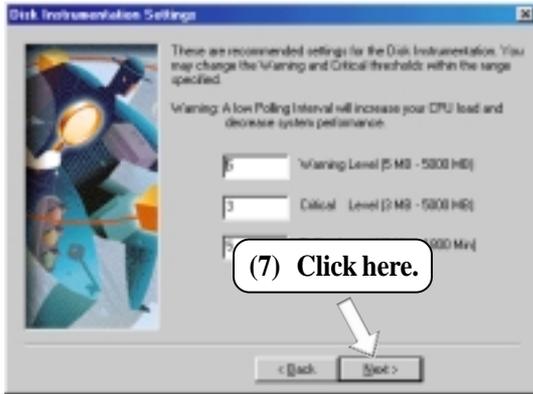
5.5 Intel LDCM Client Setup

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*.



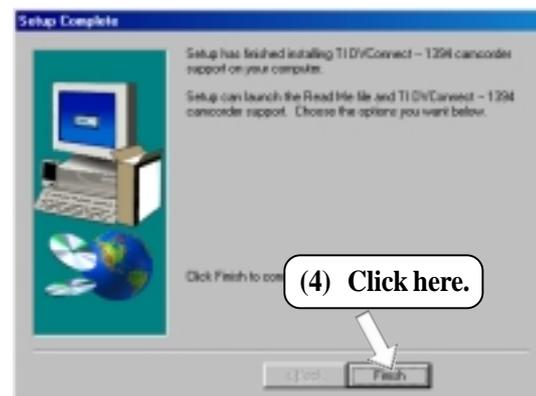
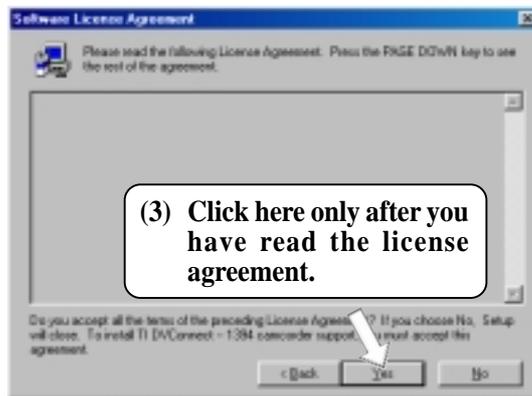
5. SOFTWARE SETUP



5. SOFTWARE SETUP

5.6 Install 1394 Host Controller Driver

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.

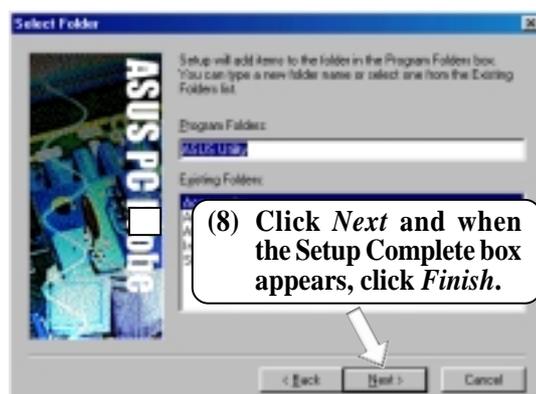
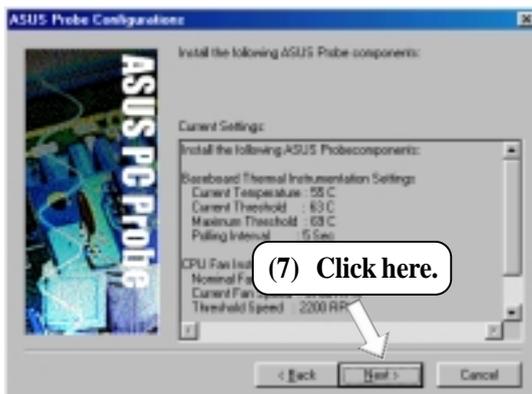
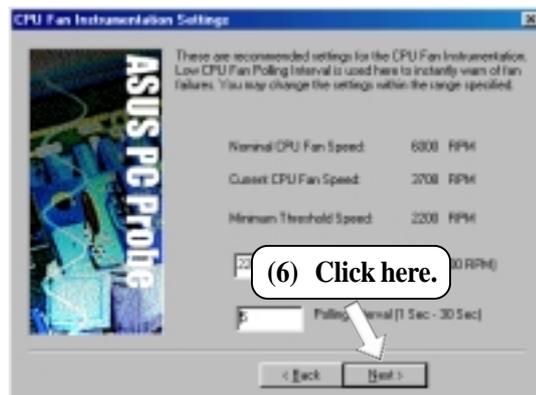
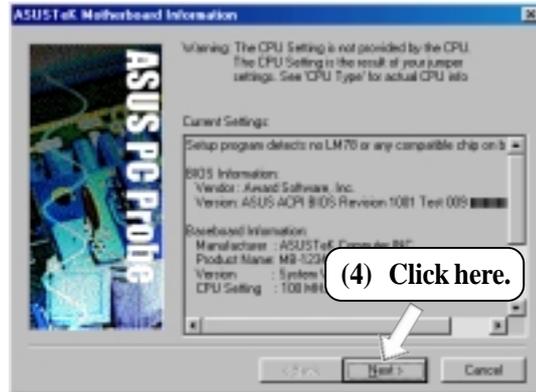
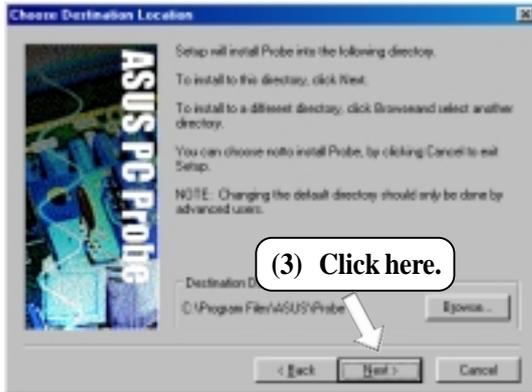


5. SOFTWARE SETUP

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.

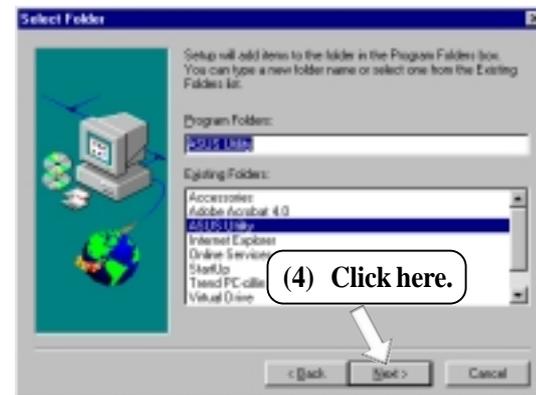
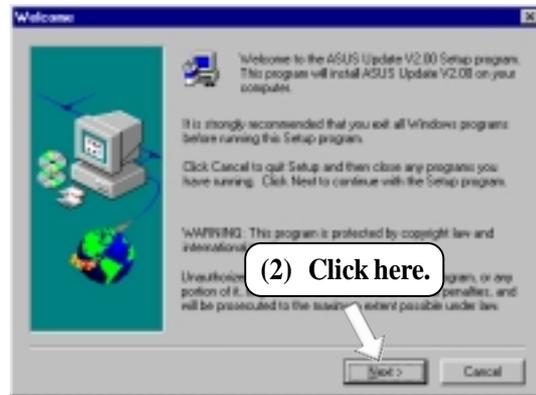
NOTE: ASUS PC Probe will not run if another hardware monitoring utility is installed. To uninstall any program, see *5.11 Uninstalling Programs*.



5. SOFTWARE SETUP

5.8 Install ASUS Update Vx.xx

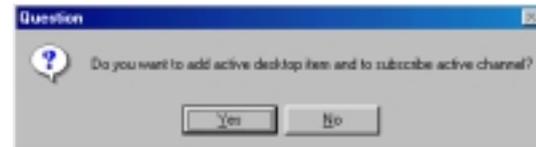
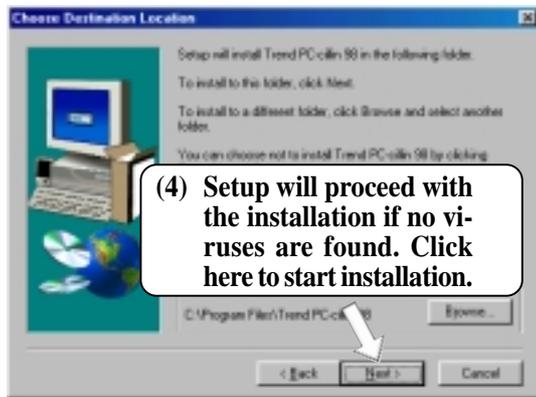
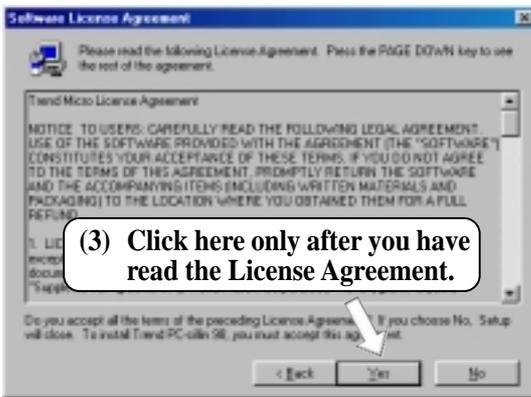
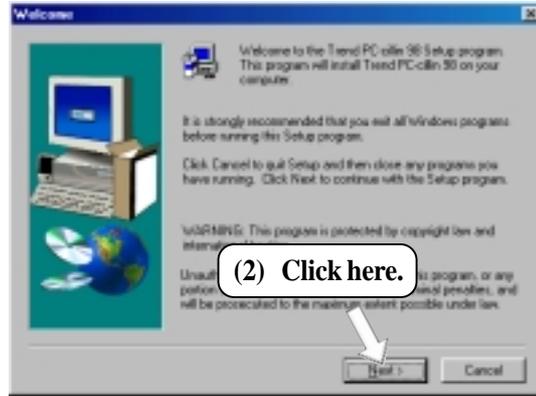
Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.



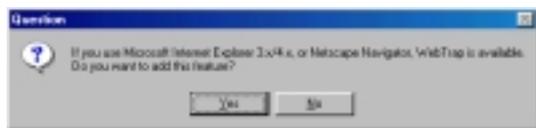
5. SOFTWARE SETUP

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.



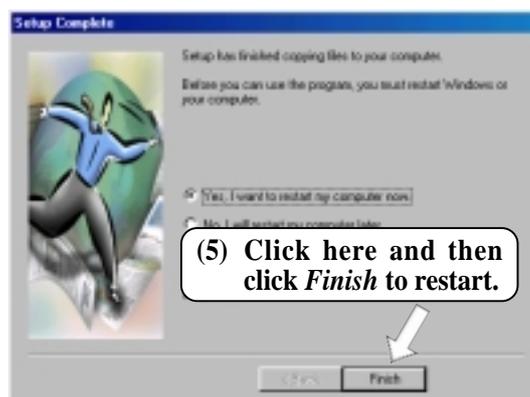
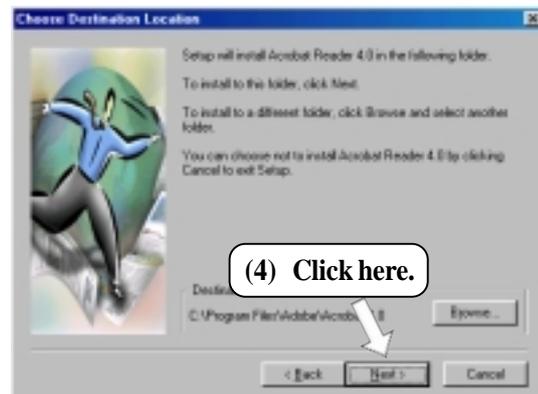
(6) & (7) Select the preferred features by clicking the appropriate buttons.



5. SOFTWARE SETUP

5.10 Install ADOBE Acrobat Reader Vx.x

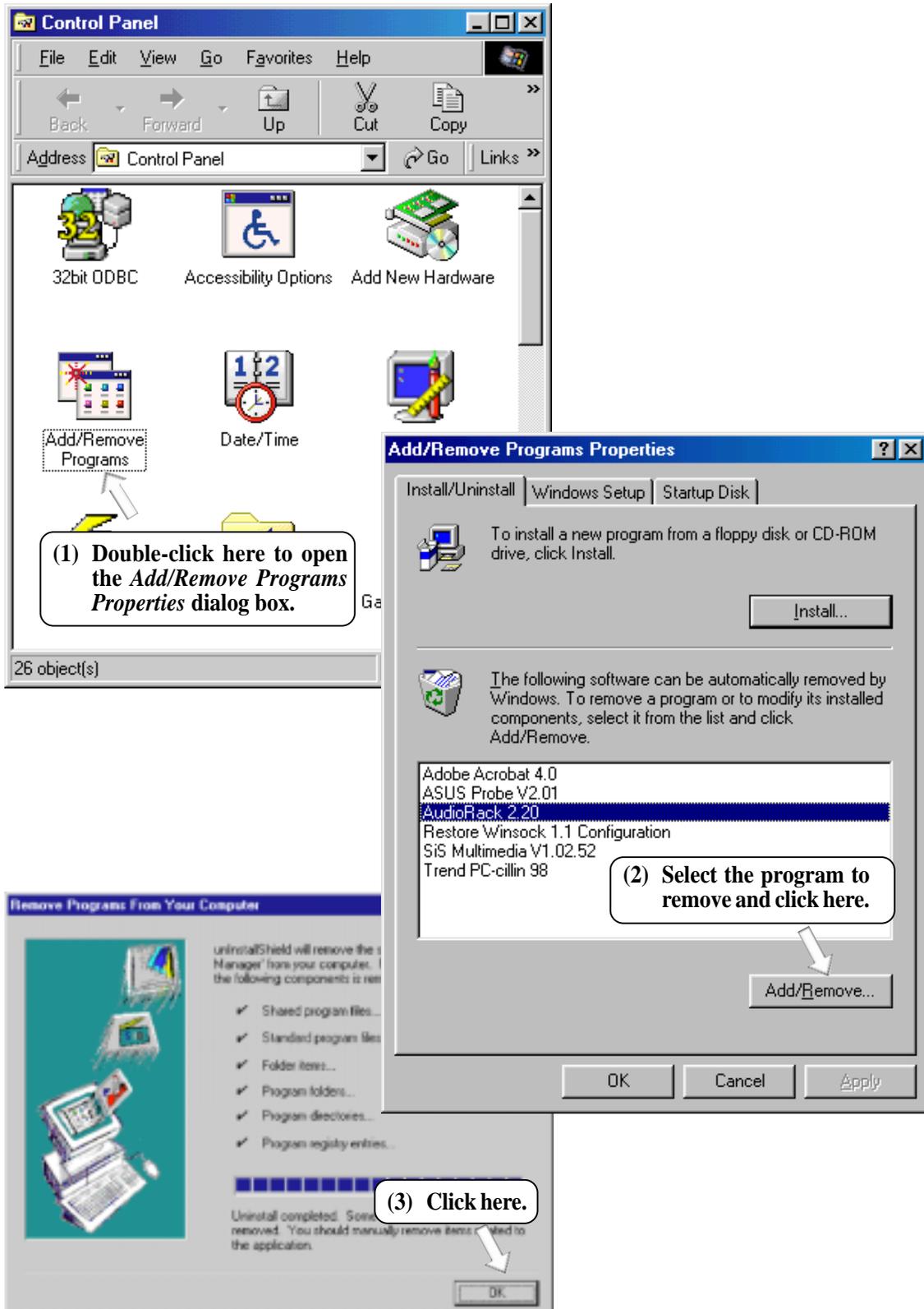
Insert the Support CD that came with your motherboard into your CD-ROM drive or double-click the CD drive icon in **My Computer** to bring up the setup screen.



5. SOFTWARE SETUP

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.



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. SOFTWARE SETUP

5.12.2 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.

(1) Click here.

(2) Select a language and then click here.

(3) Click here.

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

(5) Click here.

(6) Click here and then follow the online instructions to finish the installation.

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:

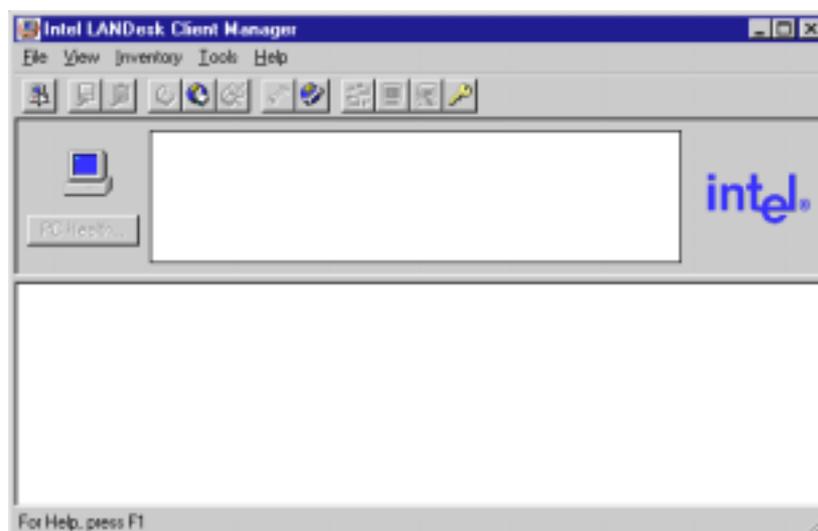
- Review system inventory
- View DMI-compliant component information
- Backup and restore system files
- Troubleshoot
- Monitor your computer's health
- Receive notifications for system events

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

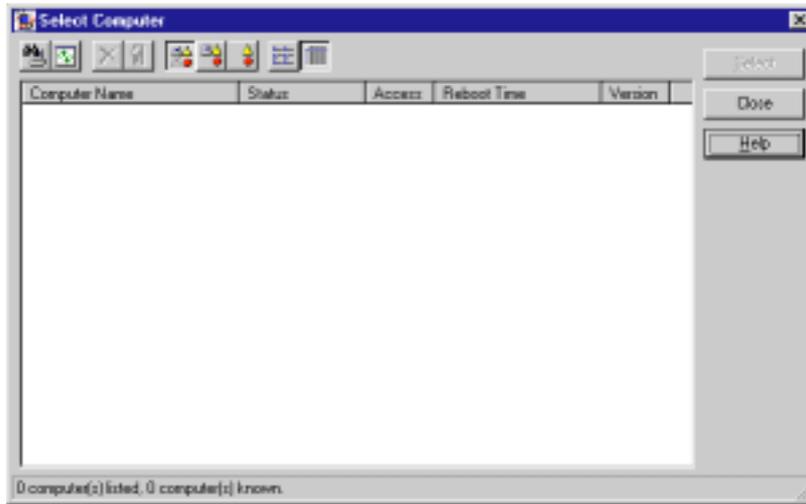
6.1.2 Using the Taskbar icons

Toolbar Descriptions

	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. SOFTWARE REFERENCE

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 <i>Unavailable</i> , not <i>Wake Pending</i> .)
	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.

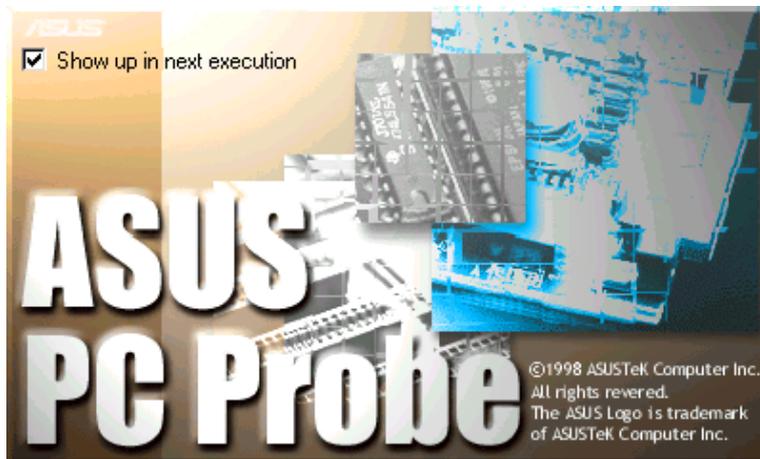
6. SOFTWARE REFERENCE

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.



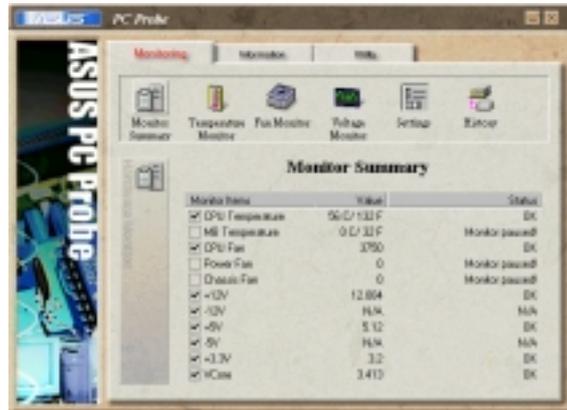
6. SOFTWARE REFERENCE

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.

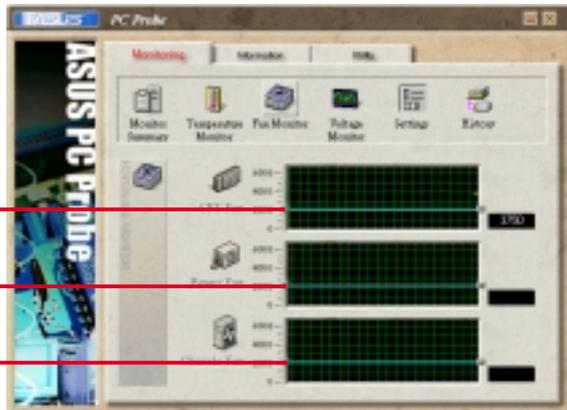
Temperature Warning threshold adjustment
(Move the slider up to increase the threshold level or down to decrease the threshold level)



Fan Monitor

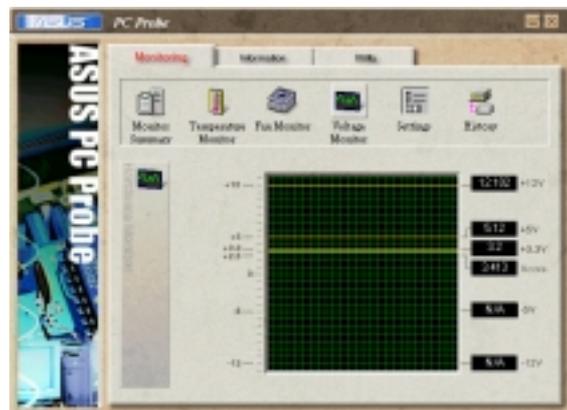
Shows the PC's fan rotation.

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

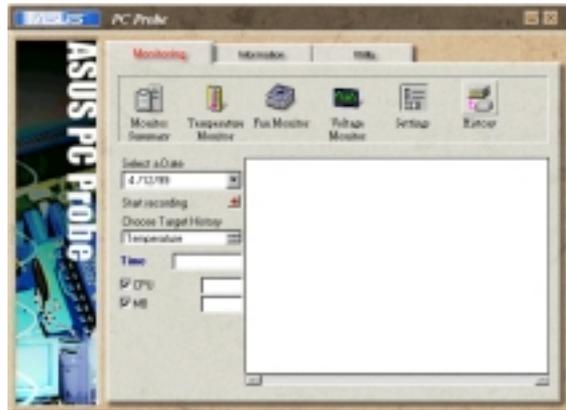
Settings

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



History

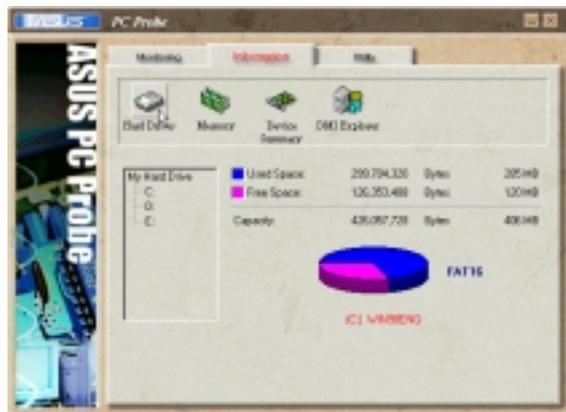
Lets you record the monitoring activity of a certain component of your PC by date, time, and target history.



Information

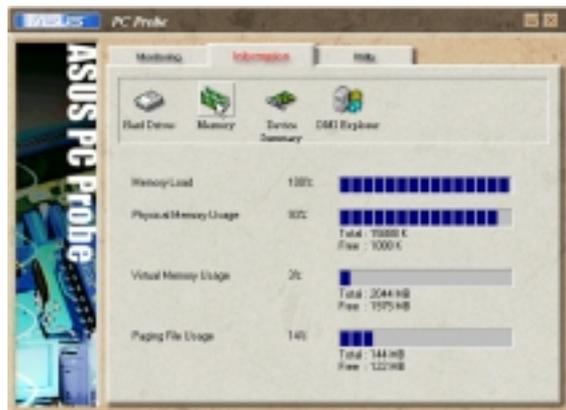
Hard Drives

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.



6. SOFTWARE REFERENCE

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.



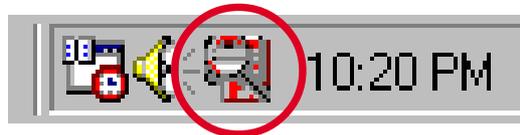
6. SOFTWARE REFERENCE

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.



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.



6. SOFTWARE REFERENCE

(This page was intentionally left blank.)

6. SOFTWARE REFERENCE

6.3 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.

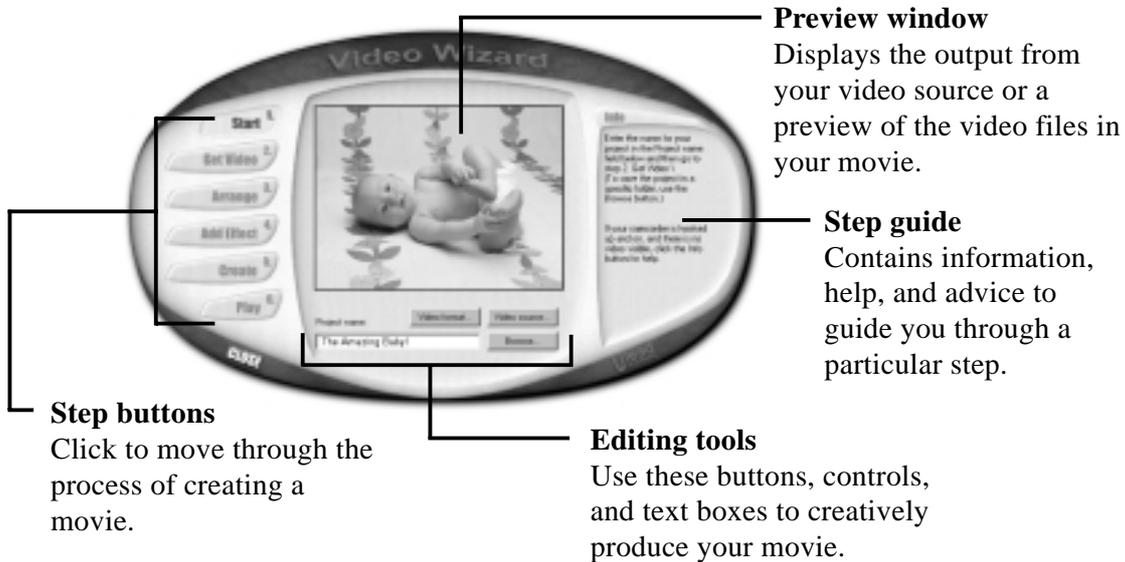


Ulead VideoStudio also has a special Task Guide Help to lead you through each step and an extensive on-line help, which you can access by pressing **F1** on your keyboard while the program is running. You can also find specific information about an item by moving the cursor over an item in the program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

6. SOFTWARE REFERENCE

6.3.1 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.



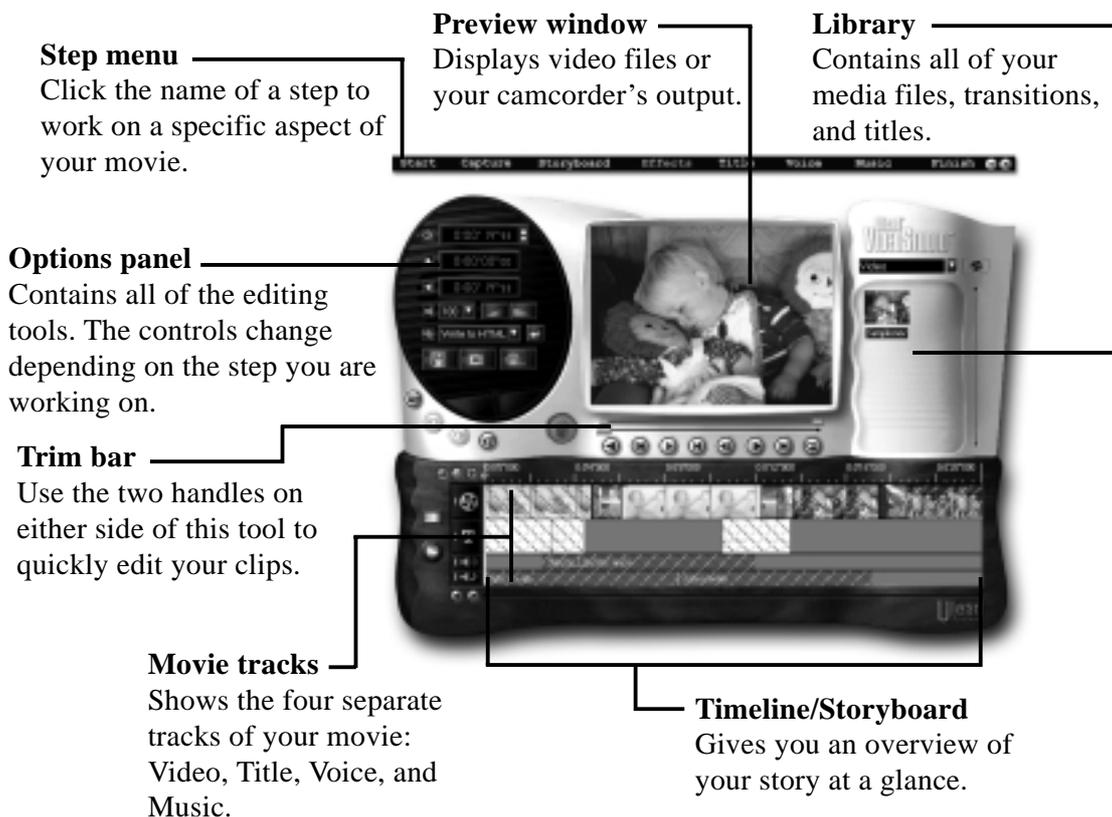
NOTE: Once your video source is connected to your computer, its output should immediately be visible in the **Preview window**. If it is not, please refer to your capture card's documentation to make sure it is correctly installed and that your camcorder is properly connected.

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

6.3.2 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.



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.



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.

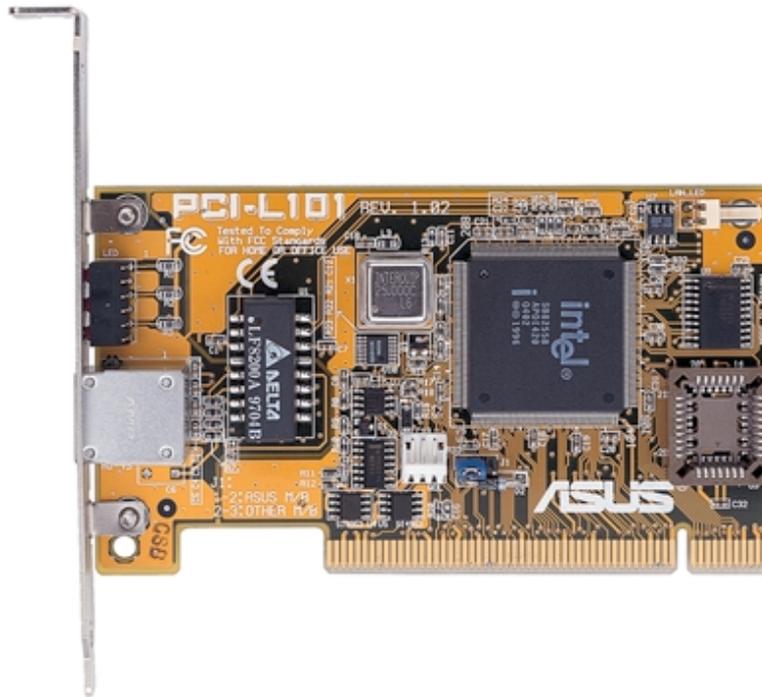
8. Finish

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

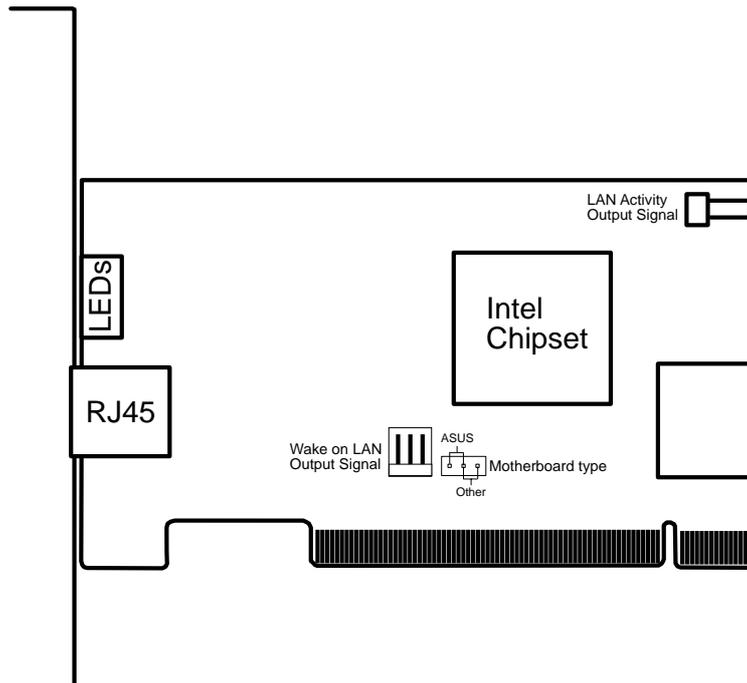
- * Watch it on your computer.
- * Post it to your Web site.
- * Put the movie on a CD-ROM.
- * Record it back to video tape.
- * Send it by e-mail.
- * Create a multimedia greeting card.

7. APPENDIX

7.1 PCI-L101 Fast Ethernet Card



7. APPENDIX
ASUS LAN Card



If you are using the ASUS PCI-L101 on an ASUS motherboard, leave the jumper on its default 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?

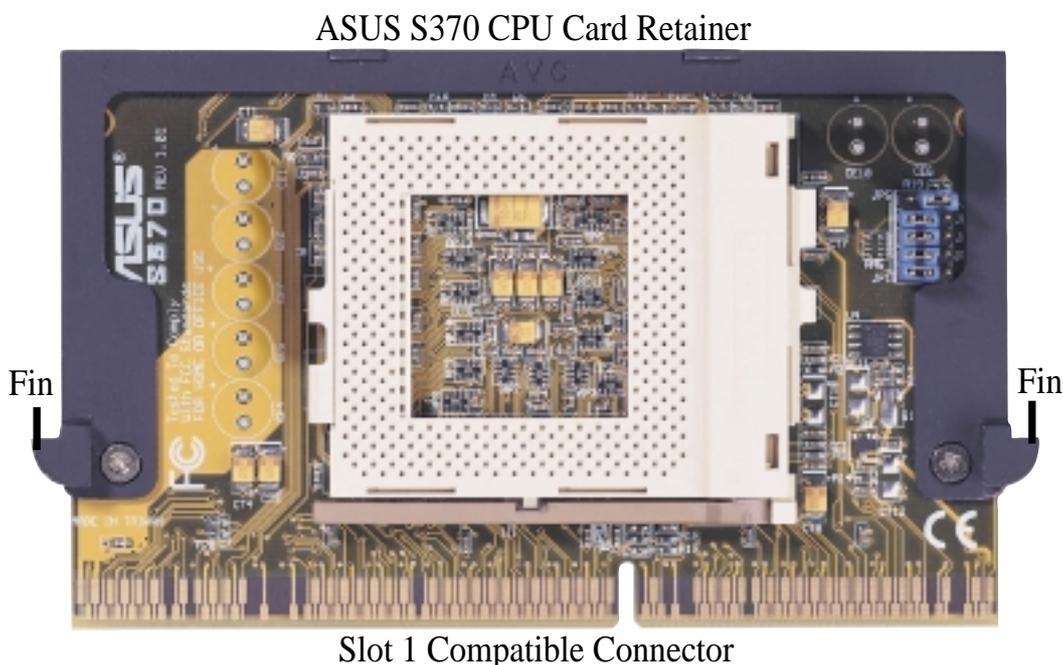
A: To enable Wake-On-LAN function, your system requires Ethernet LAN adapter card that can activate Wake-On-LAN function, a client with Wake-On-LAN capability, and software such as LDCM Rev. 3.10 or up that can trigger wake-up frame.

7. APPENDIX

7.2 S370 CPU Card

The optional ASUS S370 CPU card allows Slot 1 motherboards to accept socket 370 processors. The ASUS S370 CPU card gives Slot 1 motherboard owners an inexpensive way to upgrade their Pentium II computers using lower costing socket 370 processors. Since socket 370 processors are based on the Pentium II design, the only difference is the connector and the amount of internal cache within the processor.

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



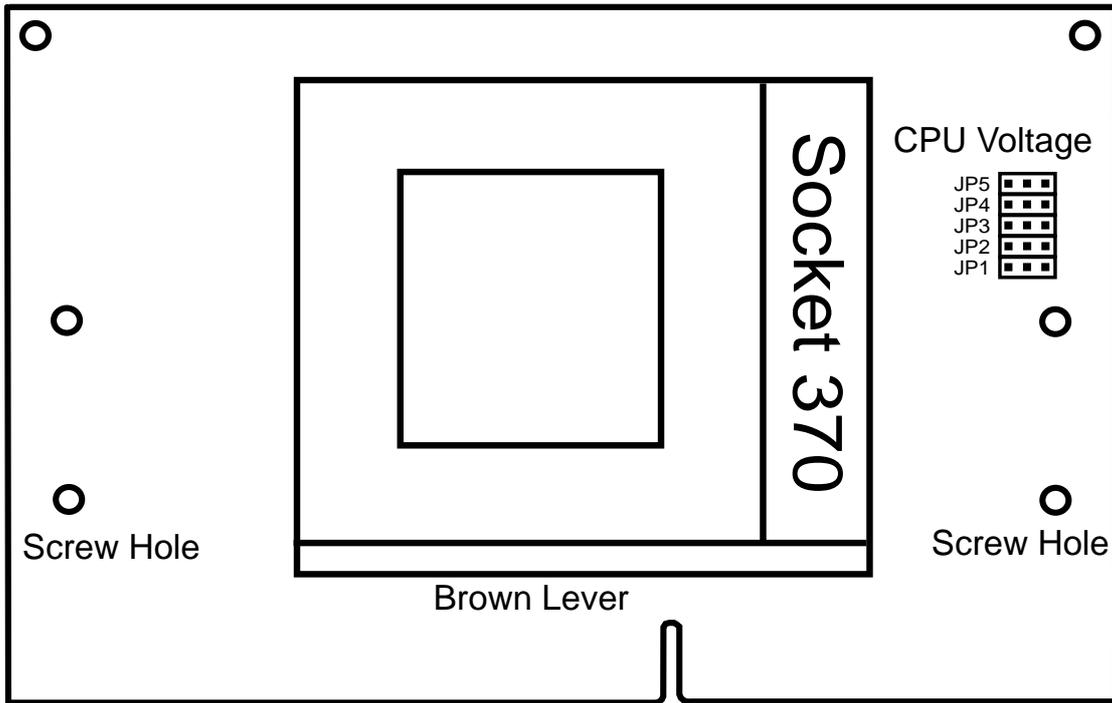
7.2.1 Using the ASUS S370

The general procedure for using the ASUS S370 CPU card:

1. 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. See the reverse side of the ASUS S370 CPU card or the next page for voltage settings.
2. 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.
3. Insert the ASUS S370 CPU card into Slot 1 on the motherboard. The two fins on the sides of the ASUS S370 CPU card must catch on the retention mechanism so that it locks in place.
4. Connect the socket 370 processor's fan connector to the motherboard.
5. Make sure that no wires or objects come in contact with the fan.

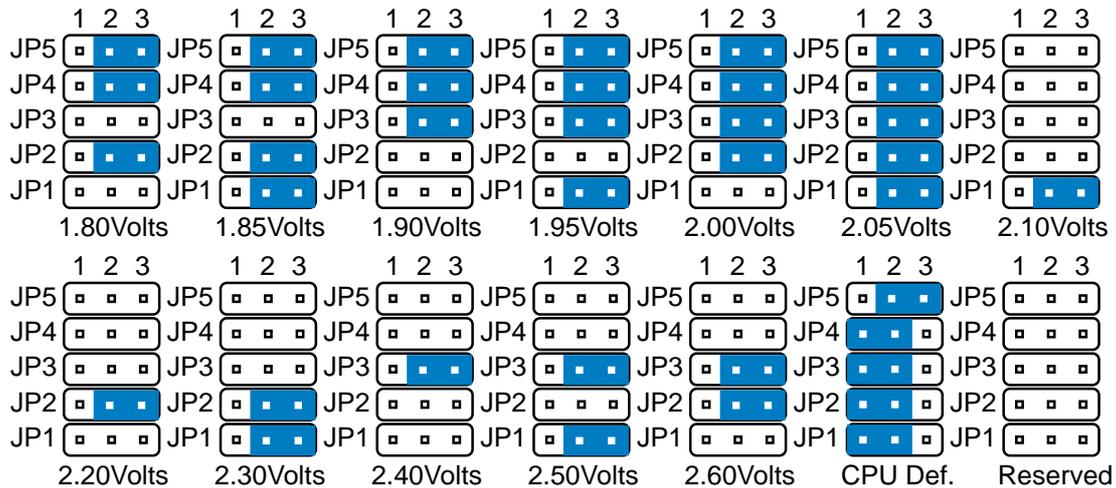
7. APPENDIX

7.2.2 Setting up the ASUS S370



7.2.3 ASUS S370 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.



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

AGP (Accelerated Graphics Port)

An interface specification that enables high-performance 3D graphics on mainstream PCs. AGP offers a higher throughput than PCI by providing the graphics controller with direct access to system memory.

Bus	Bus Frequency	Bus Speed
PCI	33MHz	133MB/s
AGP 1X	66MHz	200-300MB/s
AGP 2X	133MHz	528MB/s
AGP 4X	266MHz	1 GB/s

AUTOEXEC.BAT

AUTOEXEC.BAT is a special-purpose file that is automatically executed by DOS whenever the computer is turned ON or restarted. This file contains important commands that help configure the system to work with certain software and devices. Windows 95 and later has its own startup files and may not use or may ignore parts of the AUTOEXEC.BAT file.

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.

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.

7. APPENDIX

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.

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), and slot 2 (for Xeon) 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, ethernet, 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.

Endian

Endian is a byte order system used in data transfers. In big-endian architectures, the lower addresses are most significant. In little-endian architectures, the higher bytes are most significant. Mainframe computers, such as those by IBM, use a big-endian architecture. Modern PCs use the little-endian system.

Hardware

Hardware is a general term referring to the physical components of a computer system, including peripherals such as printers, modems, and pointing devices.

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.

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.

7. APPENDIX

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.

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.

Peripherals

Peripherals are devices attached to the computer via I/O ports. Peripheral devices allow your computer to perform an almost limitless variety of specialized tasks.

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.

RAID (Redundant Array of Independent Disks)

RAID can be set up to provide mirroring (for fault tolerance), parity (for data guarding), or striping (for data distribution over several drives for increased performance). A RAID card is required to setup a RAID system.

RAM (Random Access Memory)

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

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 parallel interface defined by the X3T9.2 committee of the American National Standards Institute (ANSI) for connecting many peripheral devices.

System Disk

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

7. APPENDIX

UltraDMA/33

UltraDMA/33 is a new specification to improve IDE transfer rates. Unlike traditional PIO mode, which only uses the rising edge of IDE command signal to transfer data, the DMA/33 uses both rising edge and falling edge. Hence, the data transfer rate is double of the PIO mode 4 or DMA mode 2. (16.6MB/s x2 = 33MB/s).

USB (Universal Serial Bus)

A new 4-pin serial peripheral bus that allows plug and play computer peripherals such as keyboard, mouse, joystick, scanner, printer and modem/ISDN to be automatically configured when they are attached physically without having to install drivers or reboot. With USB, the traditional complex cables from back panel of your PC can be eliminated.

OTHER ASUS PRODUCTS

ASUS[®]

Goes Mobile!

M8300/8200 Series

Thin & Light Convertible Notebook PC

13.3" or 12.1" TFT Color Display

233/266/300/333/366/400+MHz



F7400 Series

Professional Notebook PC

14.1" TFT Color Display

300/333/366/400+MHz

Built-in DVD/MPEG2 Decoder

L7300/7200 Series

All-in-One Compact Notebook PC

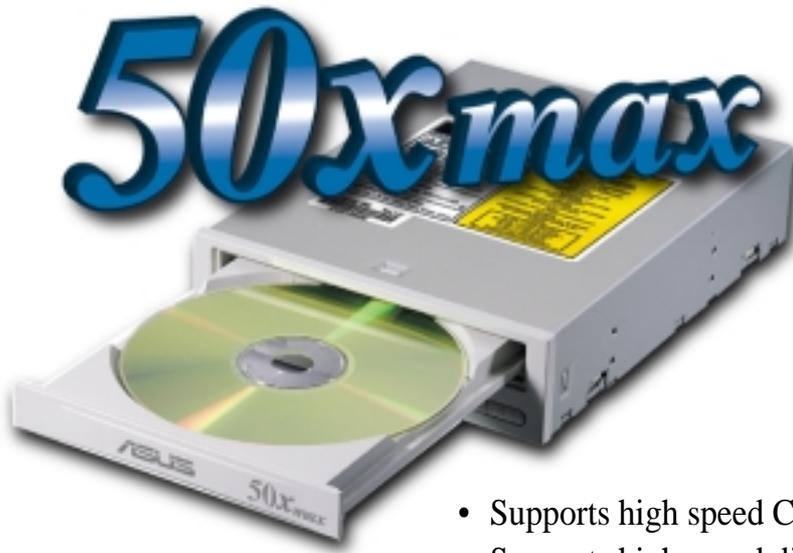
13.3" or 12.1" TFT Color Display

300/333/366/400+MHz



OTHER ASUS PRODUCTS

ASUS® Ultra-Fast CD-ROM



- Supports high speed CD-Audio playback
- Supports high speed digital audio extraction
- Supports UltraDMA/33 transfer mode
- Compatible with all CD formats
- Supports multi-read function (CD-R/CD-RW)



Drive Interface Type:	ATAPI/Enhanced IDE supporting PIO mode 4, multi-word DMA mode 2, UltraDMA/33
Disc Formats:	Audio CD, CD-ROM (mode 1 & mode 2), Mixed mode, CD-ROM/XA (mode 2, form 1 & form 2), Video CD, CD-I, Photo CD (single & multi-session), Karaoke CD, CD Extra, I-Trax, CD-R, CD-RW
Disk Size:	8 cm and 12 cm
OS Compatibility:	DOS 6.xx, Windows 3.x/95/98, OS/2 Warp, Netware, SCO UNIX
Cache Buffer Size:	128KB
Data Transfer Rate:	CD-S500 7500 KBps maximum CD-S450 6750 KBps maximum CD-S400 6000 KBps maximum
Access Time:	75ms

OTHER ASUS PRODUCTS

ASUS® Barebone Servers

	Pentium® III Pentium® II Support	PC100 ECC Max. Memory (GB)	Ultra2 SCSI Onboard (Channels)	5.25" Fixed Storage Devices	Hot-Swap Trays
AP100	1	1	1	3	0
AP200	2	1	1	3	0
AP2000	2	1	1	4	3 or 5*
AP2500	2	1	1	4	3 or 5*
AP3000	2 Xeon™	2	2	4	3 or 5*
AP6000	2	1	1	4	8**
AP7500	2	1	1	4	8**
AP8000	2 Xeon™	2	2	4	8**

* Three 1.6-inch or five 1-inch SCA-2 SCSI hard drives

** Eight 1.6-inch or 1-inch SCSI hard drives

Mid-Range Servers

AP6000
AP7500
AP8000

Value Servers

AP2000
AP2500
AP3000

Group Servers

AP100
AP200



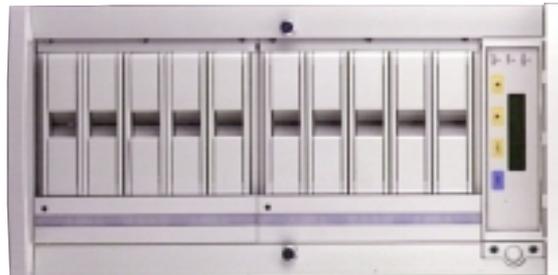
Rack Mountable

OTHER ASUS PRODUCTS

ASUS AR1000 RAID Sub-system

with DA3000 SCSI-to-SCSI RAID Controller

- Supports 5x86 RAID processor and two 72-pin SIMM sockets for up to 128MB cache memory
- Supports three Ultra2 SCSI channels; up to 80MB/sec data transfer rate
- Supports multiple Host/Drive channel capacity
- Redundant controller capacity
- Supports non-RAID, RAID levels 0, 1, 0+1, 3, 5
- On-line failure drive rebuilding
- Automatic rebuilding — supports local/global spare drive
- On-line expansion capacity
- Supports SAF-TE (SCSI Accessed Fault-Tolerant Enclosure) feature
- Provides LCD panel and RS-232 port to configure RAID
- Ten 1.0" or six 1.6" Ultra2 SCSI SCA-2 hot-swappable drive bays
- 19" rack mountable (height: 5U)
- LED for hard disk power and working status
- Two 8cm system fans and four 6cm drive fans
- Aluminum disk arrays for easy heat dissipation
- 350W redundant power supply



ASUS PCI-DA2100/2200 Series SCSI RAID Card

- PCI-DA2100 series support 4x86 DX4-100 processor
- PCI-DA2200 series support 5x86-133 processor
- One 72-pin SIMM socket supports up to 128MB cache memory
- RAID levels 0, 0+1, 3, 5, non-RAID
- PCI-DA2100A supports Ultra Wide SCSI interface and dual channels
- PCI-DA2200A supports Ultra2 SCSI interface and single channel
- PCI-DA2200B supports Ultra2 SCSI interface and dual channels
- Automatic bad sector reassignment
- Supports both global and local spare drive operation
- Background rebuilding
- PCI rev. 2.1 compliant
- Up to 8 logical drives and 8 partitions per logical drive; number of drives for each logical drive has no limitation

