ASUS ® P3W
Intel® 810 Motherboard

USER'S MANUAL

USER'S NOTICE

Product Name:	**ASUS P3W**
Manual Revision:	**1.02 E452**
Release Date:	**September 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/Cards (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:	Harkort Str. 25, 40880 Ratingen, BRD, Germany
Telephone:	MB/Other: +49-2102-9599-0 Notebook: +49-2102-9599-10
Fax:	+49-2102-9599-11
Email:	info@asuscom.de

Technical Support
Hotline:	MB/Other: +49-2102-9599-0 Notebook: +49-2102-9599-10
Email:	tsd@asuscom.de
WWW:	www.asuscom.de
FTP:	ftp.asuscom.de/pub/ASUSCOM

CONTENTS

CONTENTS

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.

Reprinted from the Code of Federal Regulations #47, part 15.193, 1993. Washington DC: Office of the Federal Register, National Archives and Records Administration, U.S. Government Printing Office.

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**   Product information and specifications
3) **HARDWARE SETUP**   Instructions on setting up the motherboard
4) **BIOS SETUP**   Instructions on setting up the BIOS software
5) **SOFTWARE SETUP**   Instructions on setting up the included software
6) **SOFTWARE REFERENCE** Reference material for the included software
7) **APPENDIX**   Optional items

1.2 Item Checklist

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) 40-pin 80-conductor ribbon cable for internal UltraDMA/66 or UltraDMA/ 33 IDE drives

☑ (1) Ribbon cable for (1) 5.25" and (2) 3.5" floppy disk drives

☑ (1) Serial COM2 connector with bracket

☑ (1) Bag of spare jumper caps

☑ (1) Support CD with drivers and utilities

☑ (1) This Motherboard User's Manual

☐ ASUS consumer infrared set (optional)

☐ ASUS IrDA-compliant infrared module (optional)

☐ ASUS S370 Series CPU card (optional)

☐ ASUS PCI-L101 Wake-On-LAN 10/100 ethernet card (optional)

2. FEATURES

2.1 The ASUS P3W Motherboard

The P3W motherboard from ASUS is carefully designed for the demanding PC user who wants many smart features in a small package. So what's so smart about the ASUS P3W motherboard?

2.1.1 Specifications

- **Latest Intel Processor Support!** Supports Intel Pentium® III (450MHz and faster), Pentium® II (233MHz to 450MHz), and Celeron™ (266MHz and faster) processors.

- **Latest Intel 810 Chipset!** Features 100/66MHz FSB Intel 810 chipset with the Accelerated Hub Architecture, which provides direct connections between the 810 chipset and subsystems such as IDE controllers, USB controllers, and PCI add-in cards.

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

- **Integrated Graphics!** Controller supports 3D hyper pipelined architecture, parallel data processing and compression, precise pixel interpolation, full 2D hardware acceleration, and motion video acceleration.

- **ASUS Graphics Driver!** You can gain about 12% performance over that of the standard graphics driver (2D high-end graphics WinMark) using ASUS' custom graphics driver. ASUS custom graphics driver also provides more features and provides selection of higher refresh rates and resolutions.

- **Versatile Memory Support!** DRAM controller supports asymmetrical addressing and three DIMM sockets support Intel PC100-compliant SDRAMs (16, 32, 64, 128, or 256MB) up to 512MB. (supports a maximum of 4 sides)

- **JumperFree™ Mode!** Allows processor settings and easy overclocking of frequency and Vcore voltage all through BIOS setup when JumperFree™ mode is enabled. Easy-to-use DIP switches instead of jumpers are included incase you want to manually adjust the processor's external frequency.

- **Smart Slots!** Six 32-bit PCI (rev 2.2) slots and one 16-bit ISA expansion slot for greater expansion flexibility. PCI supports up to 133MB/s maximum throughput. Each PCI slot can support a Bus Master PCI card (such as SCSI or LAN cards).

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

- **Integrated IDE!** Controller supports UltraDMA/66 up to 66MB/s, UltraDMA/33 up to 33MB/s, and PIO Mode 4 up to 17MB/s.

- **Peripheral Wake-Up!** Supports Wake-On-LAN, Wake-On-Ring, Keyboard Wake-Up, and BIOS Wake-Up.

2. FEATURES

- **AMR Slot!** Audio Modem Riser slot supports a very affordable audio and/or modem riser card.

- **Around-the-Clock Intrusion Detection!** Supports chassis intrusion monitoring through the ASUS ASIC. The onboard battery supports detection even when normal power is removed and through a new design, battery drain is even lower than the RTC used for keeping time!

- **Firmware Hub!** Provides security and other latest power computing features.

- **Monitoring for your PC's Health!** Provided ASUS PC Probe or Intel LDCM allows PC health monitoring.

- **Enhanced ACPI & Anti-Boot Virus Protection!** Programmable BIOS (Flash EEPROM), offering enhanced ACPI for Windows 98 compatibility, built-in firmware-based virus protection, and autodetection of most devices for virtually automatic setup.

- **Smart BIOS!** 4Mbit firmware gives a new easy-to-use interface which provides more control and protection over the motherboard. Provides Vcore and CPU/ SDRAM frequency adjustments, boot block write protection, and HD/SCSI/MO/ ZIP/CD/Floppy boot selection. Hardware random number generator supports new security software for data protection and secured Internet transactions.

2.1.2 Optional Component(s)

The following onboard component(s) are optional at the time of purchase:

- **No Messy Wires!** Integrated Consumer IR and Serial IR supports an optional remote control package for wireless interfacing with external peripherals, personal gadgets, or an optional remote controller.

2. FEATURES

2.1.3 Performance

- **UltraPerformance!** Onboard IDE Bus Master controller with two connectors that support four IDE devices in two channels. Supports UltraDMA/66, UltraDMA/33 (IDE DMA Mode 2), PIO Modes 3 & 4, and supports Enhanced IDE devices, such as Tape Backup, CD-ROM, CD-R/RW, and LS-120 drives.

- **Dual Speeds!** CPU frequency can operate at either 66MHz or 100MHz while system memory operates at either 100MHz or 66MHz. (100MHz CPU with 66MHz SDRAM setting not supported). For maximum performance, 100MHz/100MHz synchronous host/DRAM clock is recommended.

- **Double or Quadruple the IDE Transfer Speed!** IDE transfers using UltraDMA/33 Bus Master IDE can handle rates up to 33MB/s and up to 66MB/s using UltraDMA/66 technology. The best of all is that these new technology is compatible with existing ATA-2 IDE specifications so there is no need to upgrade current IDE devices or cables.

- **Concurrent PCI!** Concurrent PCI allows multiple PCI transfers from PCI master buses to memory to CPU.

- **SDRAM Optimized Performance!** ASUS smart series motherboards support the new generation memory, Synchronous Dynamic Random Access Memory (SDRAM), which increases the data transfer rate to 800MB/s max using PC100-compliant SDRAM.

- **ACPI Ready!** ACPI (Advanced Configuration and Power Interface) is also implemented on all ASUS smart series motherboards. ACPI provides more Energy Saving Features for future operating systems (OS) supporting 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!** **S**uspend-**T**o-**R**AM (STR) 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. (STR requires OS support and does not support ISA cards; ISA cards may fail to work coming out of STR mode.)

- **New Compliancy!** Both the BIOS and hardware levels of the motherboard meet PC'99 compliancy. The new PC'99 requirements for systems and components are based on the following high-level goals: Support for Plug and Play compatibility and power management for configuring and managing all system components, and 32-bit device drivers and installation procedures for Windows 95/98/NT. Color-coded connectors and descriptive icons make identification easy as required by PC'99.

- **Highest Audio Quality!** AC'97 DAC/ADC built into the audio codec reduces noise to improve audio quality and performance for a SNR (signal to noise ratio) of +90dB. These features greatly improve voice synthesis and recognition.

- **Extreme Graphics!** The integrated motion compensation allows for smooth MPEG1 or MPEG2 video playback. Fast 3D graphics engine allows for an exciting gameplay experience.

2. FEATURES

2.1.4 Intelligence

- **Fan Status Monitoring and Alarm!** To prevent system overheat and system damage, the CPU, power supply, and system fans can be monitored for RPM and failure. All the fans are set for its normal RPM range and alarm thresholds.

- **Temperature Monitoring and Alert!** CPU temperature is monitored by the ASUS ASIC through the CPU's internal thermal diode (on Pentium III, Deschutes Pentium II, and PPGA 370 Celeron in conjunction with the ASUS S370-D or S370-L CPU card, see *7.2 S370 Series CPU Cards*) to prevent system overheat and system damage. The temperature reported by the internal thermal diode is the actual processor core temperature as opposed to the less accurate surface temperature.

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

- **System Resources Alert!** Today's operating systems such as Windows 98, Windows 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.

- **Dual Function Power Button!** Through the BIOS, the power button can be defined as the "Standby" (a.k.a. Suspend or Sleep) button or as the Soft-Off (see ATX Power Switch Lead in *3.8 External Connectors* for more information) button. Regardless of the setting, pushing the power button for more than 4 seconds will enter the Soft-Off mode.

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

- **Message LED (requires ACPI OS support)!** Chassis 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.

- **Peripheral Power Up!** Keyboard or Mouse power up can be enabled or disabled through BIOS setup to allow the computer to be powered ON using your keyboard or mouse.

2. FEATURES

2.2 Motherboard Part Definitions

The following are part descriptions for the motherboard parts shown on the next page.

1   ATX Power Connector for connection to an ATX power supply
2   SEC CPU Socket
3   Intel 810 (GMCH0) Integrated Graphics Chipset
4   Three DIMM Sockets
5   Primary and Secondary IDE Connectors
6   Feature Setting DIP Switches
7   Floppy Disk Drive Connector
8   Four Mbit Firmware Hub (programmable BIOS)
9   ASUS ASIC with Integrated Hardware Monitor
10   Intel I/O Controller Hub (ICH)
11   Low Pin Count Multi-I/O Chipset
12   Wake-On-Ring Connector
13   Wake-On-LAN Connector
14   One ISA Slot
15   PCI to ISA Bridge
16   Six PCI Slots
17   AC'97 V2.1 Compliant Audio CODEC
18   Audio Modem Riser (AMR) Connector
19   Joystick, MIDI, Line Out, Line In, Microphone In Connectors
20   VGA Monitor Output Connector
21   Parallel Connector
22   Serial COM1 Connector
23   USB Connectors
24   PS/2 Mouse, PS/2 Keyboard Connectors

2.3 Motherboard Part Locations
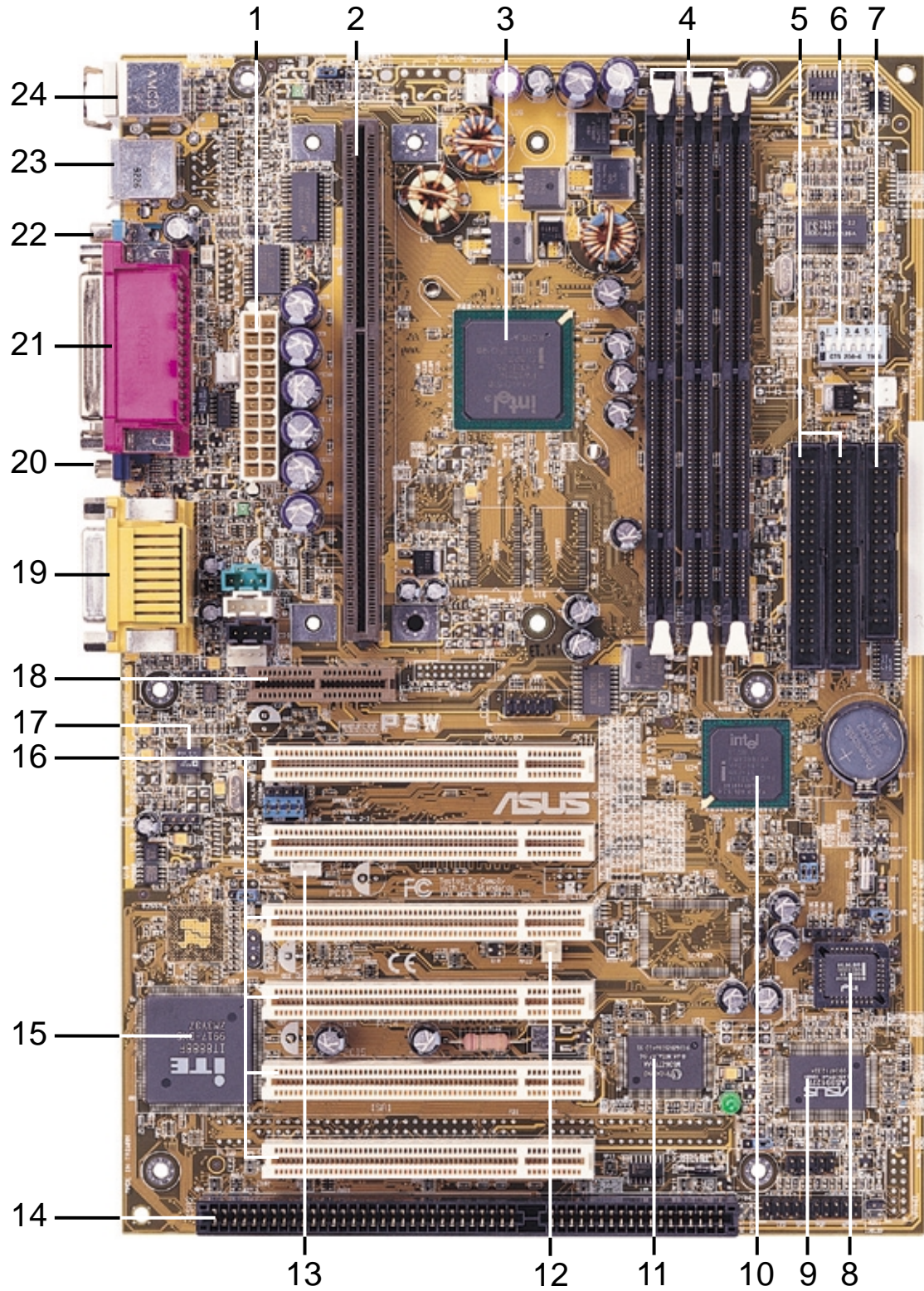
3. HARDWARE SETUP

3.1 Motherboard Layout
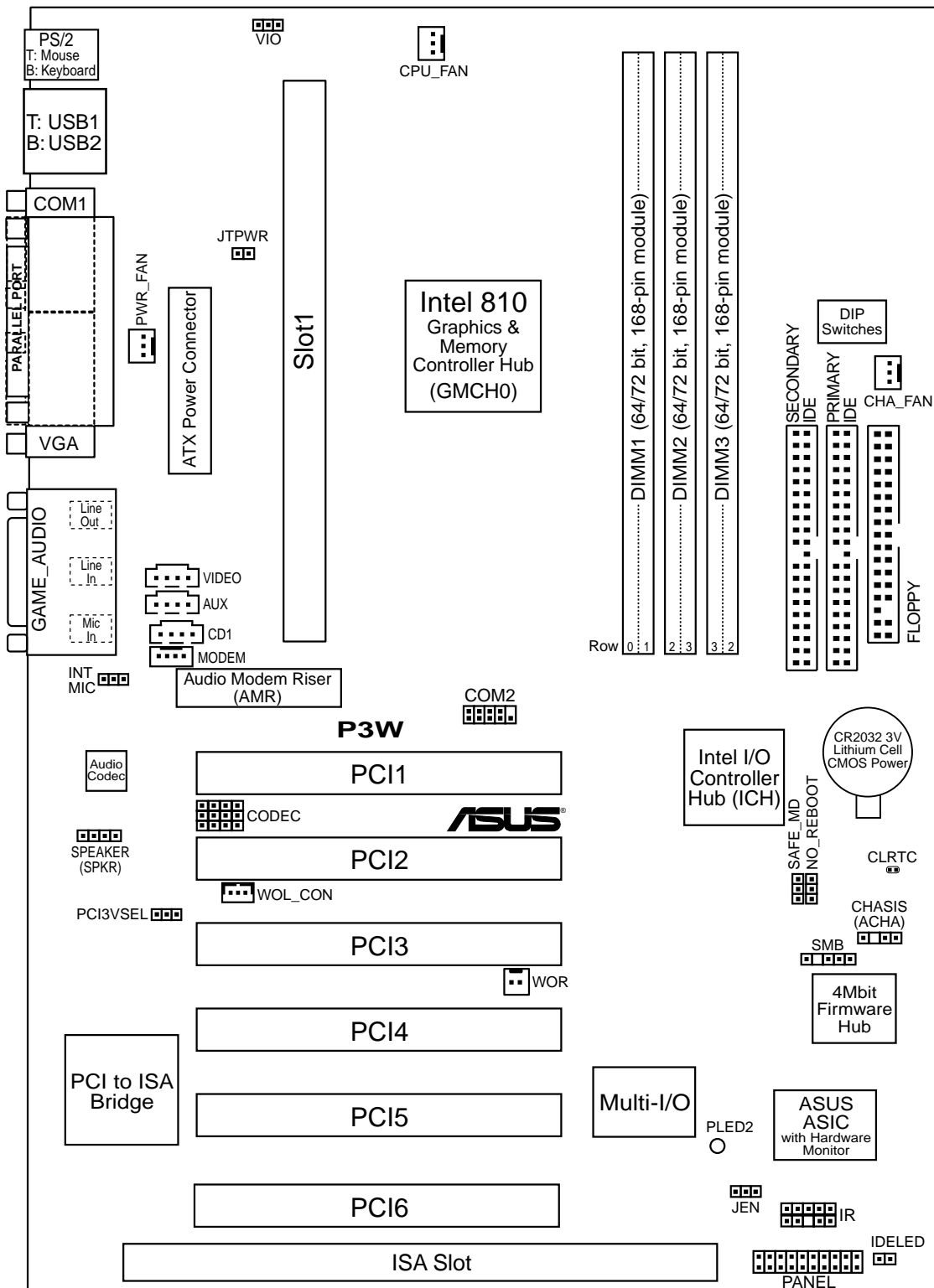
3. HARDWARE SETUP

3.2 Layout Contents

<u>Motherboard Settings</u>

1) JEN	p.18	JumperFree™ Mode Setting (Enable/Disable)
2) CODEC	p.19	Onboard Audio CODEC Setting (Enable/Disable)
3) SAFE_MD	p.20	Safe Mode Setting (Normal/Safe Mode)
4) NO_REBOOT	p.20	Automatic Timeout Reboot Setting (Normal/No Reboot)
5) PCI3VSEL	p.21	PCI 3 Volt Setting (Normal/STB)
6) VIO	p.21	I/O Voltage Setting (Normal/+3.66V)
7) SW2-6 (DSW)	p.22	CPU External Clock (Bus) Frequency Setting

<u>Expansion Slots</u>

1) DIMM1, DIMM2, DIMM3	p.25	168-Pin DIMM Memory Support
2) CPU Slot 1	p.26	Central Processing Unit (CPU) Socket
3) ISA	p.33	16-bit ISA Bus Expansion Slots
4) PCI1, 2, 3, 4, 5, 6	p.33	32-bit PCI Bus Expansion Slots
5) AMR	p.34	Audio Modem Riser Slot

<u>Connectors</u>

1) PS2KBMS	p.35	PS/2 Mouse Connector (6-pin female)
2) PS2KBMS	p.35	PS/2 Keyboard Connector (6-pin female)
3) USB	p.36	Universal Serial Bus Port Connectors (Two 4-pin female)
4) PRINTER	p.36	Parallel Port Connector (25-pin female)
5) COM1	p.36	Serial Port Connector (9-pin male)
6) VGA	p.37	Monitor (VGA) Output Connector (15-pin female)
7) GAME_AUDIO	p.37	Joystick/MIDI Connector (15-pin female)
8) GAME_AUDIO	p.37	Audio Port Connectors (Three 1/8" female)
9) PRIMARY/SECONDARY	p.38	Primary/Secondary IDE Connectors (Two 40-1 pins)
10) IDELED	p.38	IDE Device Activity LED Lead (2 pins)
11) FLOPPY	p.39	Floppy Drive Port Connector (34 pins)
12) CHA_, CPU_, PWR_FAN	p.39	Chassis, CPU, Power Supply Fan Connectors (Three 3-pin)
13) WOL_CON	p.40	Wake-On-LAN Connector (3 pins)
14) WOR	p.40	Wake-On-Ring Connector (2 pins)
15) VIDEO, AUX, CD1, MODEM	p.41	Internal Audio Connectors (Four 4-pins)
16) SPKR	p.41	Internal Speaker Connectors (4-pins)
17) INT MIC	p.42	Internal Microphone Connector (3 pins)
18) SMB	p.42	SMBus Connector (5-1 pins)
19) COM2	p.43	Serial Port Header (10-1 pin male)
20) IR	p.43	Infrared Module Connectors (10-1 pins)
21) ACHA	p.44	Chassis Intrusion Alarm Connector (4-1 pins)

3. H/W SETUP
Layout Contents

---

3. HARDWARE SETUP

3. H/W SETUP
Layout Contents

3. HARDWARE SETUP

3.3 Hardware Setup Procedure

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

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

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.

3. HARDWARE SETUP

Motherboard Feature Settings (DIP Switches–DSW)

Some of 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.

DSW
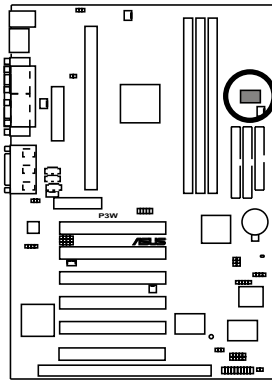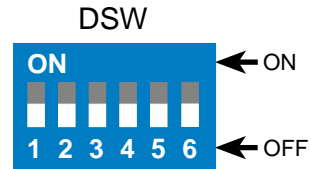
1. (Reserved)
2. Frequency Selection
3. Frequency Selection
4. Frequency Selection
5. Frequency Selection
6. Frequency Selection

P3W DIP Switches

1) JumperFree™ Mode Setting (JEN)

This jumper allows you to enable or disable the JumperFree™ mode. The JumperFree™ mode allows processor settings to be made through the BIOS setup (*see 4.4 Advanced Menu*).

NOTE: For JumperFree™ mode, DIP switches 2-6 must be set to OFF.

Setting	JEN	
Disable (Jumper)	[1-2]	
Enable (JumperFree)	[2-3]	(default)
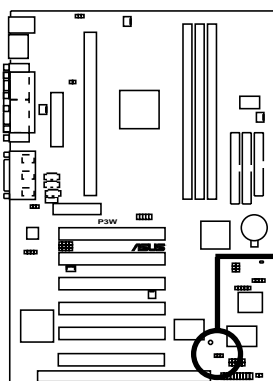
P3W Jumper Mode Setting
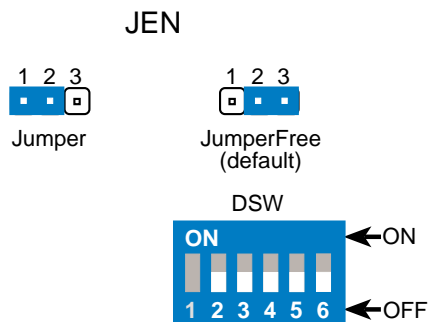
3. HARDWARE SETUP

2) Onboard Audio CODEC Setting (CODEC)

The onboard audio CODEC may be enabled or disabled using all of these jumpers. Disable the onboard audio CODEC if you are using an ISA or PCI audio card on any of the expansion slots or a primary AMR on the AMR slot (see AMR Slot later in this section). If using an ISA or PCI audio expansion card, **Onboard AC'97 Audio Controller** in *4.4.2 I/O Device Configuration* must also be disabled.

Setting	CODEC
Enable	[1-2] [1-2] [1-2] [1-2] (default)
Disable	[2-3] [2-3] [2-3] [2-3]
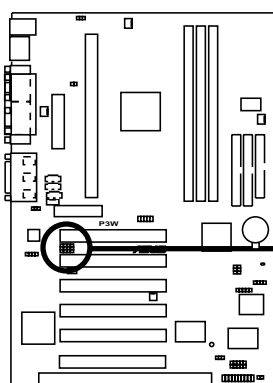
P3W Audio Codec Setting

Enable
(default)

Disable
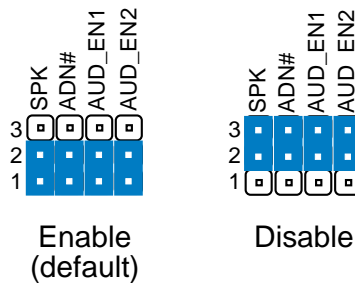
3) Safe Mode Setting (SAFE_MD)

For processors with locked frequency multiples, there is no way to exceed the specified multiple whether through motherboard settings or BIOS setup. With unlocked processors, exceeding the specified multiple is possible through BIOS setup. Exceeding the specified multiple may result in hanging during bootup. If this occurs, enable Safe Mode to force a multiple of 2 in order to enter BIOS setup to correct the problem.

Setting	SAFE_MD
Normal	[1-2] (default)
Safe Mode	[2-3]
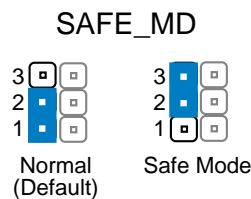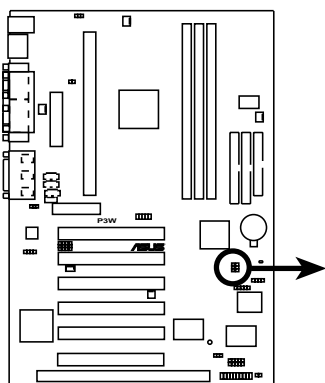
P3W Safe Mode Setting

4) Automatic Timeout Reboot Setting (NO_REBOOT)

The motherboard is set so that when the BIOS detects a hang (timeout) during bootup, the motherboard will automatically reboot. If rebooting is repeating ineffectively, set this jumper to *No Reboot* to disable auto-reboot.

Setting	NO_REBOOT
Normal	[1-2] (default)
No Reboot	[2-3]
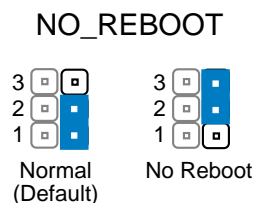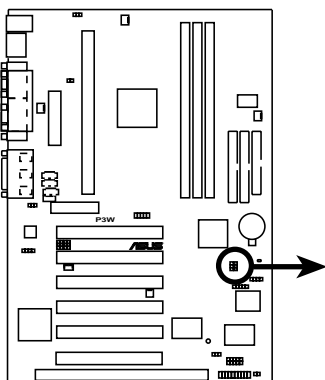
P3W Reboot Setting

3. HARDWARE SETUP

5) PCI 3 Volt Setting (PCI3VSEL)

This jumper allows you to select the voltage supplied to PCI devices. If you have PCI devices that require auxiliary power, set this jumper to *STB*.

<u>Setting</u>	<u>PCI3VSEL</u>
Normal	[1-2]
Standby	[2-3] (default)

PCI3VSEL

1 2 3   1 2 3
Normal   Standby (STB)
         (Default)
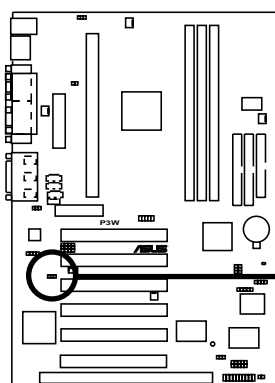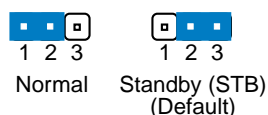
P3W PCI 3Volt Selection

6) I/O Voltage Setting (VIO)

This jumper allows you to select the voltage supplied to the DRAM, chipset, PCI, and the CPU's I/O buffer. The default voltage should be used unless processor overclocking requires a higher voltage.

<u>Setting</u>	<u>VIO</u>
Normal	[1-2] (default)
3.66V	[2-3]

VIO

1 2 3   1 2 3
Normal   3.66Volt
(default)
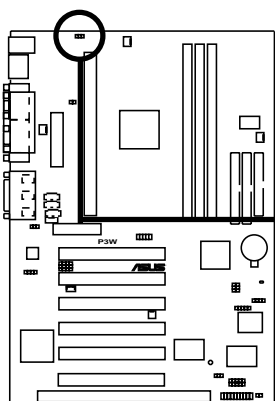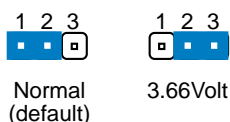
P3W I/O Voltage Setting

WARNING! Using a higher voltage may help when overclocking but may result in the shortening of your computer component's life. It is strongly recommended that you leave this setting on its default.

3. HARDWARE SETUP

7) CPU External Frequency Setting (DSW–SW2-6)

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. The CPU External Frequency multiplied by the Frequency Multiple equals the CPU's *Internal* frequency (the advertised CPU speed). **NOTE:** You may set the memory speed independently from the CPU External Frequency. Depending on your memory type, select the appropriate "SDRAM" speed along with the appropriate "CPU" speed.

IMPORTANT: When JumperFree mode is enabled, use BIOS setup in place of these switches (see **CPU Speed** in *4.4 Advanced Menu*).

NOTE: For JumperFree mode, DIP switches 2-6 must be set to OFF.

DSW

CPU → 66MHz SDRAM → 100MHz	69MHz 103MHz	70MHz 105MHz	71MHz 106MHz
CPU → 72MHz SDRAM → 108MHz	75MHz 112MHz	76MHz 114MHz	100MHz 100MHz
CPU → 104MHz SDRAM → 104MHz	109MHz 109MHz	111MHz 111MHz	117MHz 117MHz
CPU → 123MHz SDRAM → 123MHz	133MHz 133MHz	142MHz 142MHz	

P3W CPU External Clock (BUS) Frequency Selection
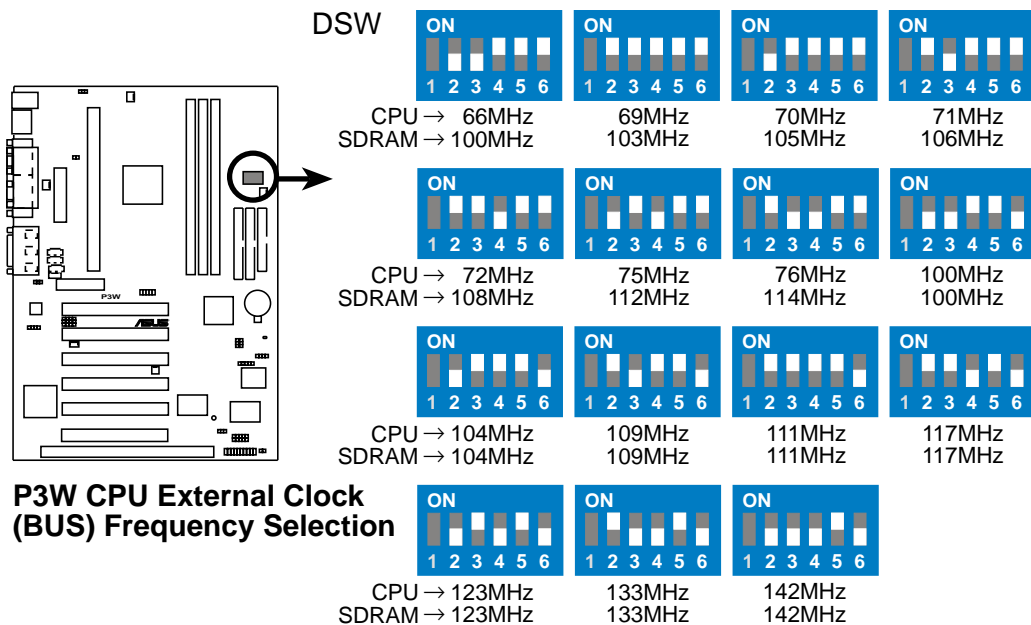
WARNING! CPU frequencies other than 66MHz and 100MHz are not guaranteed to be stable. Premature wearing of the processor may result when overclocking. Be sure that the DIMM you use can handle the specified SDRAM MHz or else bootup will not be possible.

3. HARDWARE SETUP

External Frequency Table

The following table is for use by experienced motherboard installers only. Overclocking can result in system instability or even shortening the life of the processor.

CPU (MHz)	SDRAM (MHz)	PCI (MHz)	Frequency Selection Switches				
			2	3	4	5	6
69.00	103.50	34.50	[ON]	[ON]	[ON]	[ON]	[ON]
70.00	105.00	35.00	[OFF]	[ON]	[ON]	[ON]	[ON]
71.00	106.50	35.50	[ON]	[OFF]	[ON]	[ON]	[ON]
66.82	**100.23**	**33.41**	**[OFF]**	**[OFF]**	**[ON]**	**[ON]**	**[ON]**
72.00	108.00	36.00	[ON]	[ON]	[OFF]	[ON]	[ON]
75.00	112.50	37.50	[OFF]	[ON]	[OFF]	[ON]	[ON]
76.60	114.90	38.40	[ON]	[OFF]	[OFF]	[ON]	[ON]
111.77	111.77	37.26	[ON]	[ON]	[ON]	[ON]	[OFF]
104.78	104.78	34.93	[OFF]	[ON]	[ON]	[ON]	[OFF]
109.51	109.51	36.50	[ON]	[OFF]	[ON]	[ON]	[OFF]
100.74	**100.74**	**33.57**	**[OFF]**	**[OFF]**	**[ON]**	**[ON]**	**[OFF]**
117.00	117.00	39.00	[ON]	[ON]	[OFF]	[ON]	[OFF]
123.75	123.75	41.25	[OFF]	[ON]	[OFF]	[ON]	[OFF]
133.33	133.33	44.44	[ON]	[OFF]	[OFF]	[ON]	[OFF]
142.50	142.50	47.50	[OFF]	[OFF]	[OFF]	[ON]	[OFF]

3. H/W SETUP
Motherboard Settings

NOTE: The PCI clock is equal to 1/3 the speed of the SDRAM. PCI's specification allows for up to 33MHz, therefore using PC100-compliant DIMM and setting SDRAM to about 100MHz is recommended. For updated processor settings, visit ASUS's web site (see ASUS CONTACT INFORMATION)

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) of 16, 32, 64, 128MB, or 256MB.

This chipset does not support ECC. However, ECC memory modules may still be used, but the ECC function will not be available.

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

Install memory in any combination as follows:

Location	168-pin DIMM SDRAM		Total Memory
DIMM1 (Rows 0&1)	Single-Sided Double-Sided	x1	
DIMM2 (Rows 2&3)	Single-Sided (must be occupied before DIMM3) Double-Sided (DIMM3 must be empty)	x1	
DIMM3 (Rows 3&2)	Single-Sided (DIMM2 must be single-sided) (Double-Sided DIMM cannot be used here!) (must be same or half DIMM2 memory size)	x1	
	Total System Memory (Max 512MB)	=	

3.5.1 General DIMM Notes

- ASUS motherboards support SPD (**S**erial **P**resence **D**etect) DIMMs. This is the memory of choice for best performance vs. stability.

- 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 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. DIMMs are longer and have different pin contact on each side and therefore have a higher pin density. SIMMs have the same pin contact on both sides.

P3W 168-Pin DIMM Sockets

88 Pins

60 Pins

20 Pins

Lock

FRONT
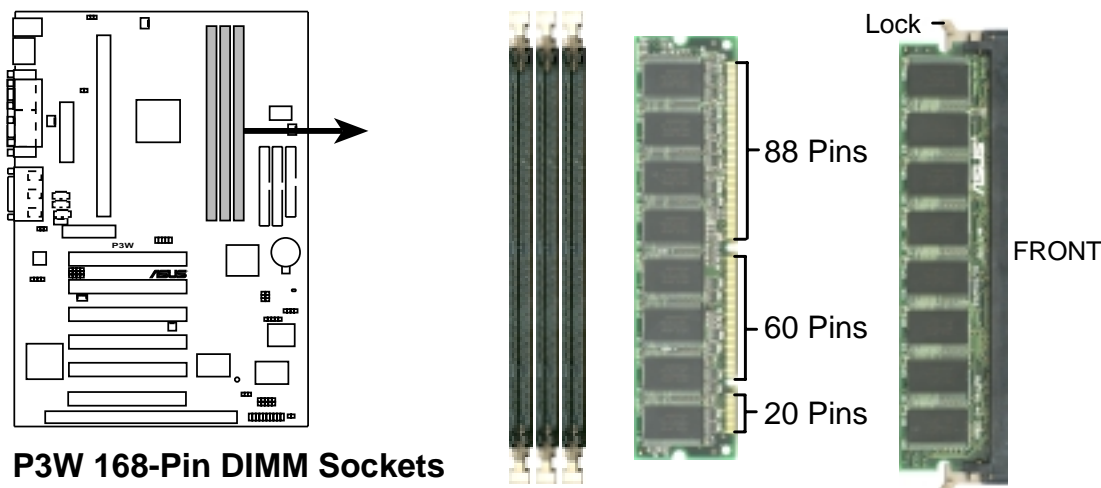
The DIMMs must be **3.3V Unbuffered** for this motherboard. To determine the DIMM type, check the notches on the DIMMs (see figure below).

168-Pin DIMM Notch Key Definitions (3.3V)

DRAM Key Position

Voltage Key Position

RFU — **Unbuffered**
Buffered

5.0V — Reserved
3.3V
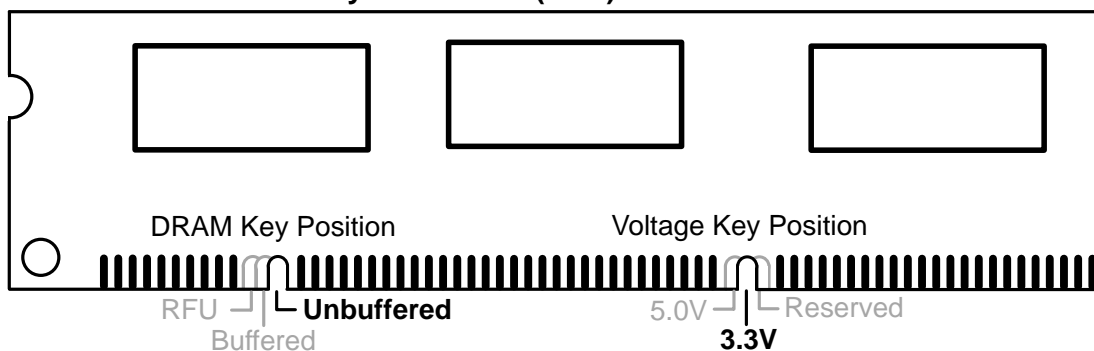
The notches on the DIMM module will shift between left, center, or right to identify the type and also to prevent the wrong type from being inserted into the DIMM slot on the motherboard. You must ask your retailer the correct DIMM type before purchasing. This motherboard supports four clock signals per DIMM slot.

3.6 Central Processing Unit (CPU)

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

Your motherboard provides a Slot 1 connector for a Pentium® III processor packaged in a Single Edge Contact Cartridge (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 Series 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.
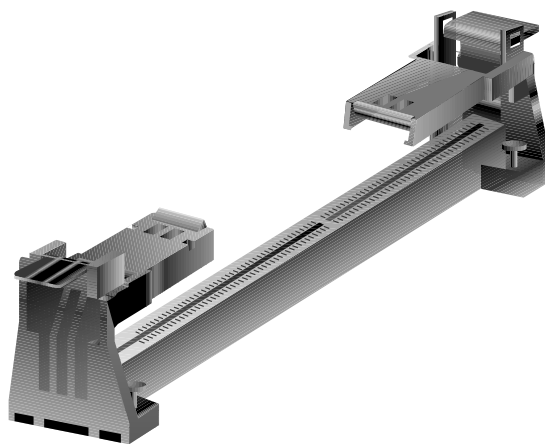
Universal Retention Mechanism (URM)

3. HARDWARE SETUP

3.6.2 Heatsinks

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

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

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.

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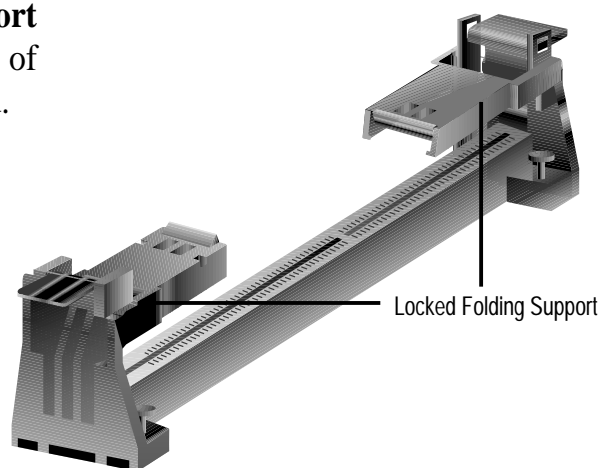
To unlock the support arms, simply flip them up to an upright position.

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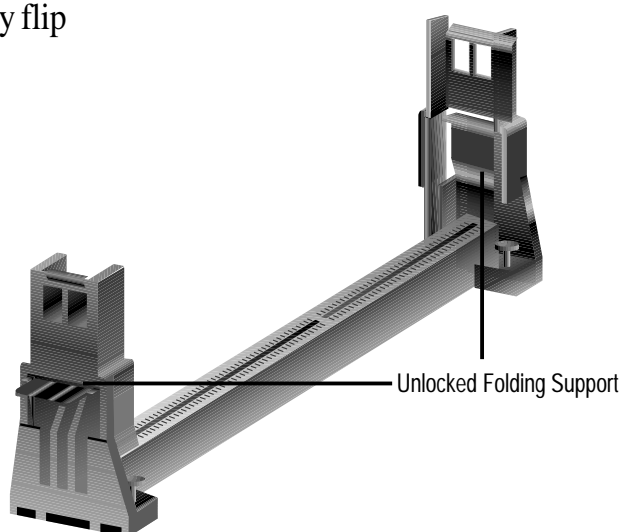
The URM is now ready for the installation of your processor.

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

Lock Arm   Lock Arm

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

Four Pins and metal clip

> **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.

> **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. 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.

SECC

Push lock inward

CPU fan cable to
fan connector

SECC2/SEPP

CPU fan cable to
fan connector
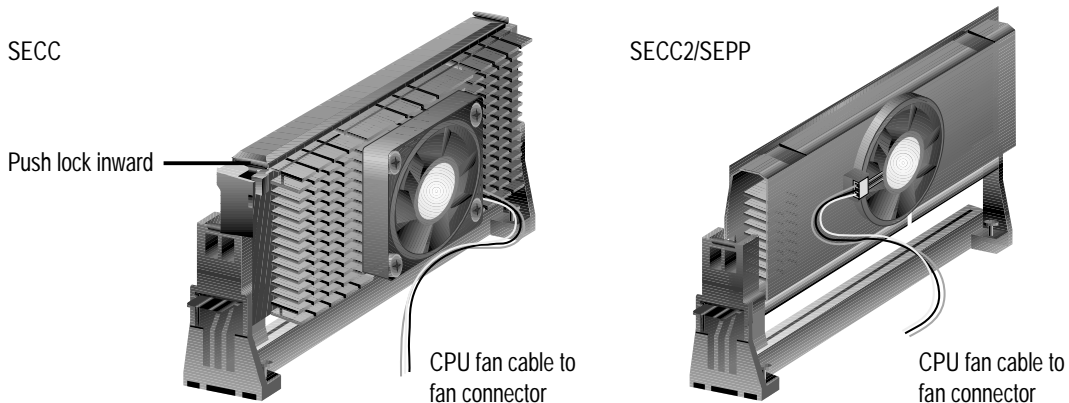
4. Secure the SECC2/SECC/SEPP

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.

SECC   SECC2/SEPP

Lock hole   Lock hole

CPU fan cable to fan connector   CPU fan cable to fan connector
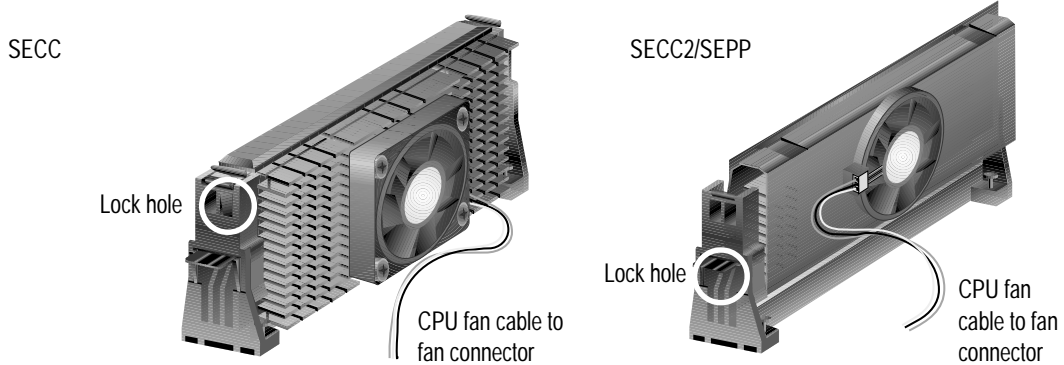
3.6.4 Recommended Heatsinks for Slot 1 Processors

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. H/W SETUP
CPU

3.6.5 Precautions

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

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

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

The thermal interface material should be continuous with no through-holes or debris.

Example of a correctly installed retention clip   **Example of an incorrectly installed retention clip**

3. 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 **4.4.3 PCI Configuration**)

7. Install the necessary software drivers for your expansion card.

3. H/W SETUP
Expansion Cards

3. HARDWARE SETUP

3.7.2 Assigning IRQs for Expansion Cards

Some expansion cards need 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 additional IRQ will be used. If your motherboard also has **MIDI** enabled, another IRQ will be used, leaving 4 IRQs free.

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

Standard Interrupt Assignments

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

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

3. HARDWARE SETUP

Interrupt Request Table

	INT-A	INT-B	INT-C	INT-D
PCI slot 1	shared	--	--	--
PCI slot 2	--	shared	--	--
PCI slot 3	--	--	shared	--
PCI slot 4	--	--	--	shared
PCI slot 5	shared	--	--	--
PCI slot 6	--	--	shared	--
Onboard VGA	shared	----	--	--
Onboard audio/AMR/SMBus	--	shared	--	--
USB	--	--	--	shared

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

Both ISA and PCI expansion cards may require 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 any 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 Manager** tab. Double-clicking on a specific hardware device gives you the **Resources** tab which shows the Interrupt number and address. Double-click **Computer** to see all the interrupts and addresses for your system. 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 does 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 a PCI slot that has a card in it that requires 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. To select a DMA channel, see **PCI/ PNP ISA DMA Resource Exclusion** in *4.4.3 PCI Configuration*. **NOTE:** The on-board audio by default uses DMA1.

> **IMPORTANT:** To avoid conflicts, reserve the necessary IRQs and DMAs for legacy ISA cards (see **PCI/PNP ISA IRQ Resource Exclusion** and **PCI/PNP DMA IRQ Resource Exclusion** in *4.4.3 PCI Configuration*). 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 Audio Modem Riser (AMR) Slot

This connector supports a specially designed audio and/or modem card called an AMR. Main processing is done through software and controlled by the motherboard's Intel I/O Controller Hub (ICH). This provides an upgradeable audio and/or modem solution at an incredibly low cost. There are two types of AMR, one defined as primary and another defined as secondary. This motherboard uses the primary channel so that a secondary AMR can coexist without the need to disable the onboard CODEC. The motherboard's onboard CODEC must be disabled when using a primary AMR.

NOTE: An AMR is not included with this motherboard.
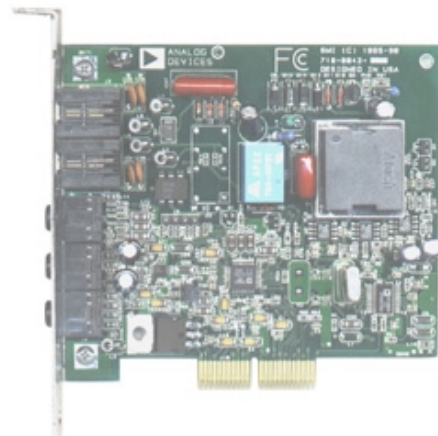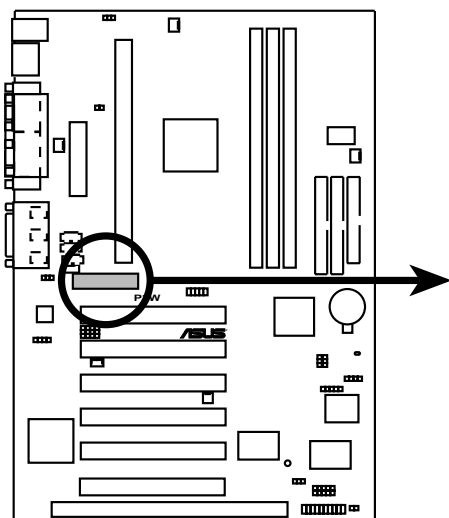
P3W Audio Modem Riser (AMR) Connector

3. HARDWARE SETUP

3.8 External Connectors

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

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

1) **PS/2 Mouse Connector (Green 6-pin PS2KBMS)**
    The system will direct IRQ12 to the PS/2 mouse if one is detected. If one is not detected, expansion cards can use IRQ12. See **PS/2 Mouse Function Control** in *4.4 Advanced Menu*.

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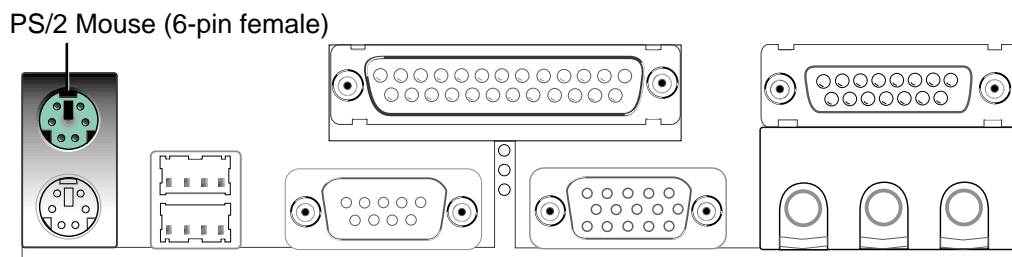
2) **PS/2 Keyboard Connector (Purple 6-pin PS2KBMS)**
    This connection is for a standard keyboard using an PS/2 plug (mini DIN). **This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.**

PS/2 Keyboard (6-pin female)
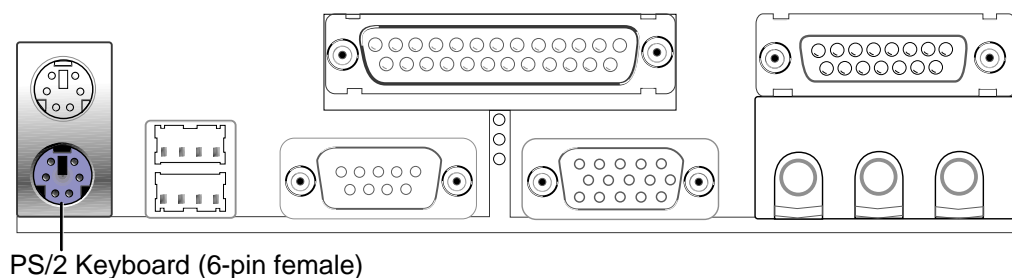
3) Universal Serial Bus Ports 1 & 2 (Two black 4-pin USB)
Two USB ports are available for connecting USB devices.

USB 1

Universal Serial Bus (USB) 2
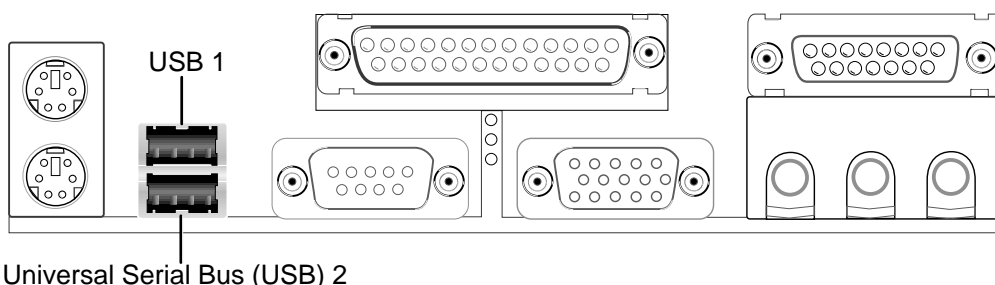
4) Parallel Port Connector (Burgundy 25-pin PRINTER)
You can enable the parallel port and choose the IRQ through **Onboard Parallel Port** (see *4.4.2 I/O Device Configuration)*.
NOTE: Serial printers must be connected to the serial port.

Parallel (Printer) Port (25-pin female)
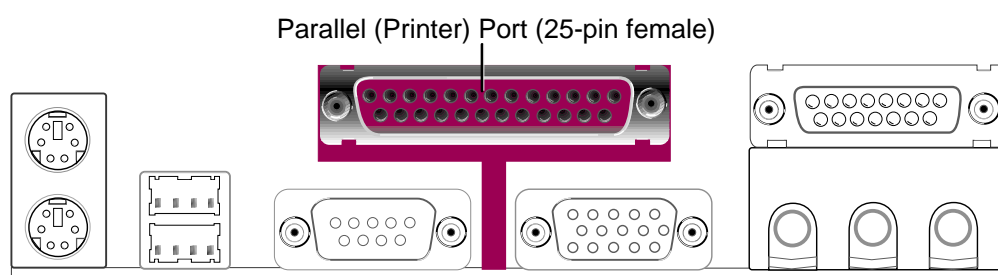
5) Serial Port COM1 Connector (Teal/Turquoise 9-pin COM1)
One serial port is ready for a mouse or other serial devices. A second serial port is available using a serial port bracket connected from the motherboard to an expansion slot opening. See **Onboard Serial Port 1** in *4.2.2 I/O Device Configuration* for settings.

COM 1
Serial Port (9-pin male)

3. H/W SETUP
Connectors
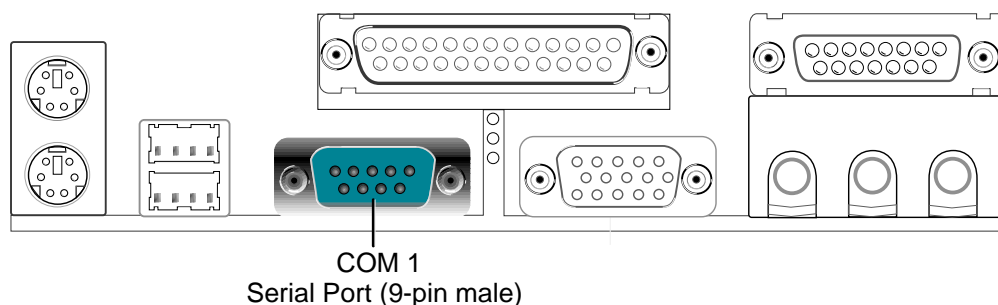
3. HARDWARE SETUP

6) Monitor Output Connector (Blue 15-pin VGA)

This connector is for output to a VGA-compatible device.
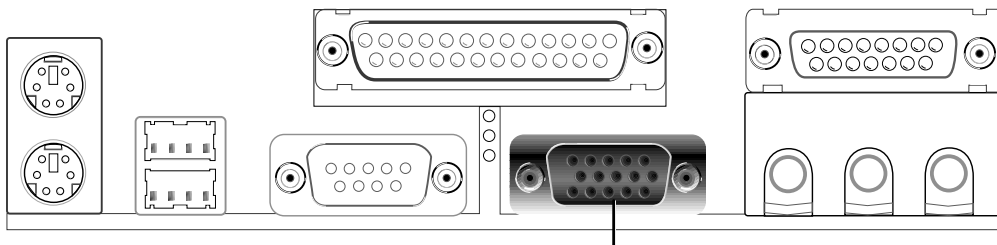
7) Joystick/MIDI Connector (Gold 15-pin GAME_AUDIO)

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

Joystick/MIDI (15-pin female)
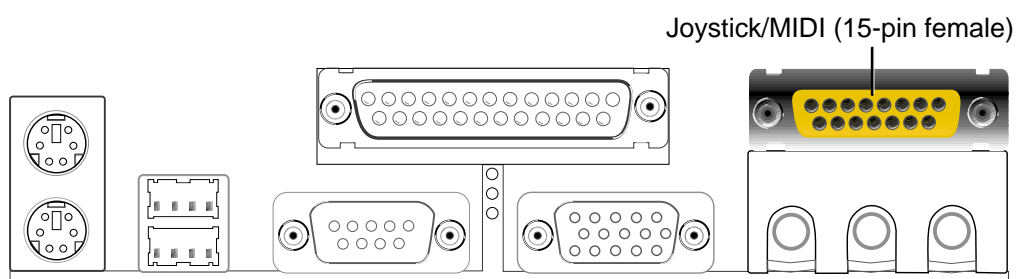
8) Audio Port Connectors (Three 1/8" GAME_AUDIO)

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

Line Out   Line In   Mic
1/8" Stereo Audio Connectors
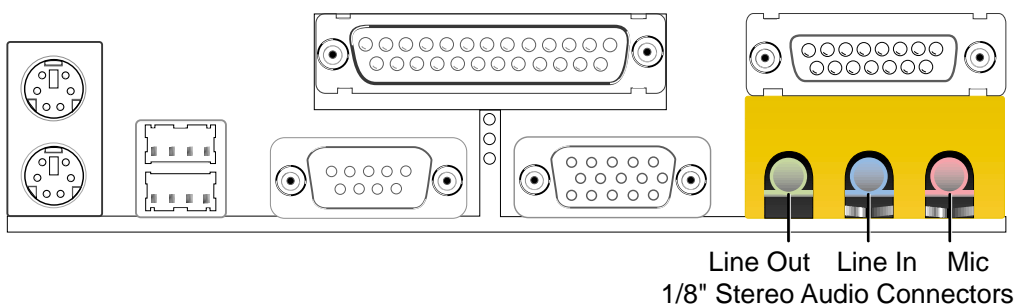
9) Primary / Secondary IDE Connectors (40-1 pin PRIMARY/SECONDARY)
These connectors support the provided IDE hard disk ribbon cable. After connecting the single end to the board, connect the two plugs at the other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Refer to your hard disk documentation for the jumper settings. BIOS now supports specific device bootup (see **Boot Sequence** in *4.6 Boot Menu*). **(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 *4.6 Boot Menu*.

IMPORTANT: UltraDMA/66 IDE devices must use an 80-conductor IDE cable.
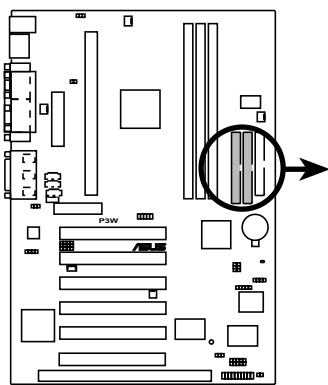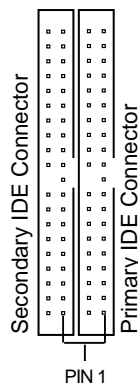
NOTE: Orient the red markings on the IDE ribbon cable to PIN 1

Secondary IDE Connector

Primary IDE Connector

PIN 1

P3W IDE Connectors

10) IDE Activity LED Lead (2-pin IDELED)
This lead supplies power to the cabinet's IDE activity LED. Read and write activity by devices connected to the Primary and/or Secondary IDE connectors will cause the LED to light up.
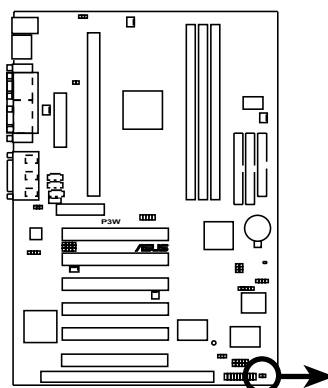
TIP: If the case-mounted LED does not light, try reversing the 2-pin plug.

IDELED

P3W IDE Activity LED

11) 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).**
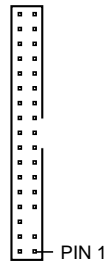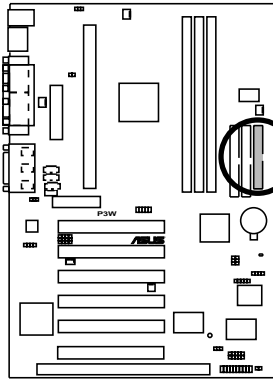
NOTE: Orient the red markings on the floppy ribbon cable to PIN 1

PIN 1

P3W Floppy Disk Drive Connector

12) Chassis, CPU, & Power Supply Fan Connectors (3-pin CHA_, CPU_, PWR_FAN)

These connectors support cooling fans of 350mA (4.2 Watts) or less. Orientate the fans so that the heat sink fins allow airflow to go across the onboard heat sink(s) instead of the expansion slots. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be positive, while the black should be ground. Connect the fan's plug to the board taking into consideration the polarity of the connector.

NOTE: The "Rotation" signal is to be used only by a specially designed fan with rotation signal. The Rotations per Minute (RPM) can be monitored using ASUS PC Probe Utility or Intel LDCM Utility (see *6. SOFTWARE REFERENCE*).

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

CPU Fan Power

Rotation
+12V
GND

Chassis Fan Power

Rotation
+12V
GND

Power Supply Fan

Rotation
+12V
GND
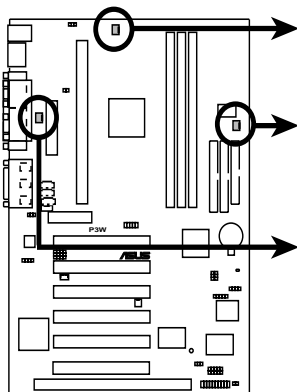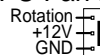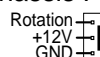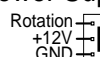
P3W 12-Volt Cooling Fan Power

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

This connector connects to a LAN card with a Wake-On-LAN output, such as the ASUS PCI-L101 Ethernet card. The connector powers up the system when a wakeup packet or signal is received through the LAN card.

IMPORTANT: This feature requires that **Wake On LAN** is set to *Enabled* (see *4.5.1 Power Up Control*) and that your system has an ATX power supply with at least 720mA +5V standby power.
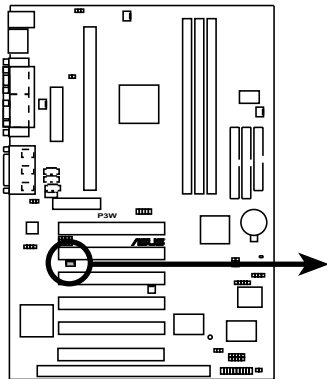
IMPORTANT: Requires an ATX power supply with at least 720mA +5 volt standby power

Ground

PME   +5 Volt Standby

WOL_CON
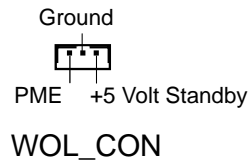
P3W Wake-On-LAN Connector

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

This connector connects to internal modem cards 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 *4.5.1 Power Up Control*).

1   2

Ground   RI#

WOR
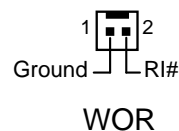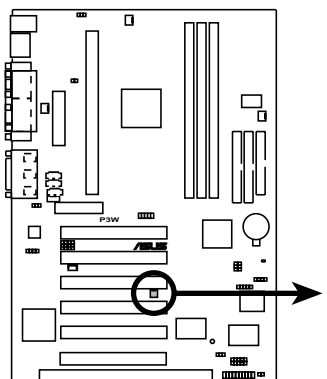
P3W Wake-On-Ring Connector

3. H/W SETUP
Connectors

3. HARDWARE SETUP

15) Internal Audio Connectors (4-pin VIDEO, AUX, CD1, MODEM)

These connectors allow you to receive stereo audio input from such sound sources 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 mono_in (such as a phone) and mono_out (such as a speaker) between the onboard audio and the voice modem card.

VIDEO (Green)
  Left Audio Channel
  Ground
  Right Audio Channel

AUX (White)
  Left Audio Channel
  Ground
  Right Audio Channel

CD1 (Black)
  Left Audio Channel
  Ground
  Right Audio Channel

MODEM
  Modem-In (to Modem)
  Ground
  Modem-Out (from Modem)

P3W Internal Audio Connectors
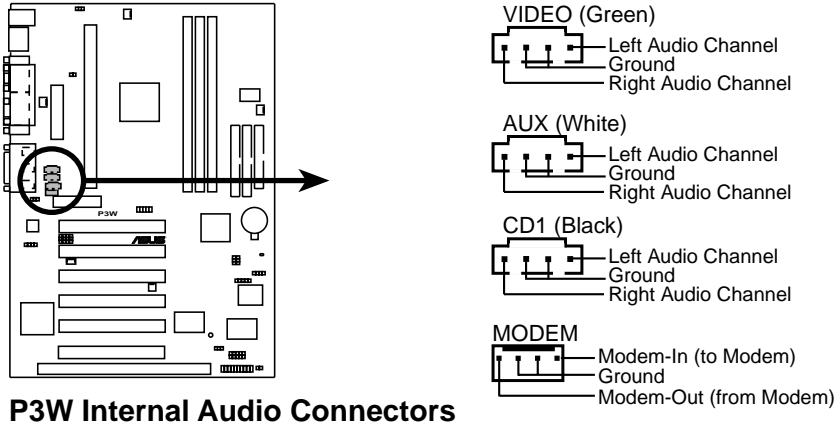
16) Internal Speaker Connector (SPKR)

This connector allows you to connect the internal chassis speaker to the onboard audio's output. This will allow you to use the chassis' built-in speaker to listen to sounds normally requiring separately purchased external speakers. The ground (GND) wire is usually the black wire and the speaker-out (SPKOUT) is usually the red wire. System beeps and warnings sent through the chassis speaker connector are also routed through this internal speaker connector so that there is no need for two speakers.

SPKR

1 [ ] [ ] [ ] [ ] 4

SPKOUT   GND

P3W Internal Speaker Connector
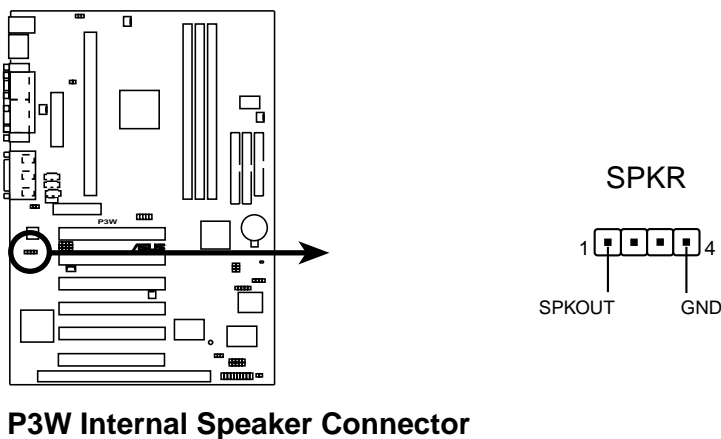
17) Internal Microphone Connector (3 pin INT MIC)

This connector allows you to connect a chassis mounted microphone to the motherboard instead of having to attach an external microphone to the ATX connectors.
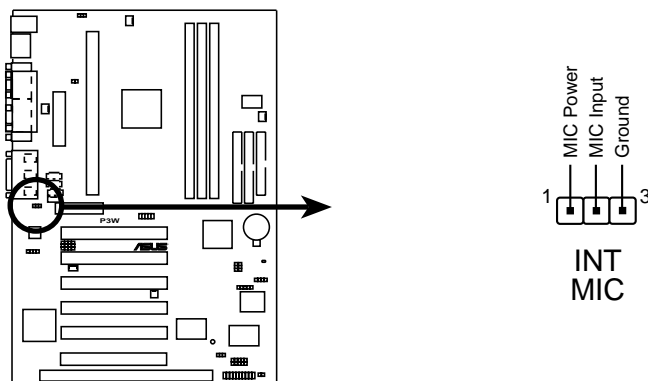
P3W Internal Microphone Connector

18) SMBus Connector (5-1 pin SMB)

This connector allows you to connect SMBus (System Management Bus) devices. SMBus devices communicate by means of the SMBus with an SMBus host and/or other SMBus devices. SMBus is a specific implementation of an I^2C bus, which is a multi-device bus; that is, multiple chips can be connected to the same bus and each one can act as a master by initiating data transfer.
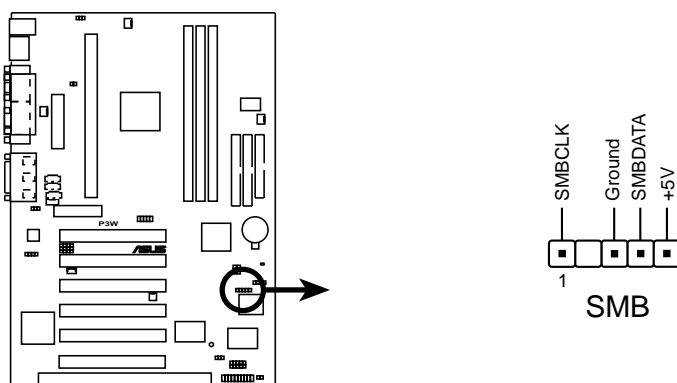
P3W SMBus Connector

3. HARDWARE SETUP

19) Serial Port COM 2 Header (10-1 pin COM2)

The optional serial port bracket can be used to add an additional serial port for additional serial devices.

Pin 1

to COM2 Header
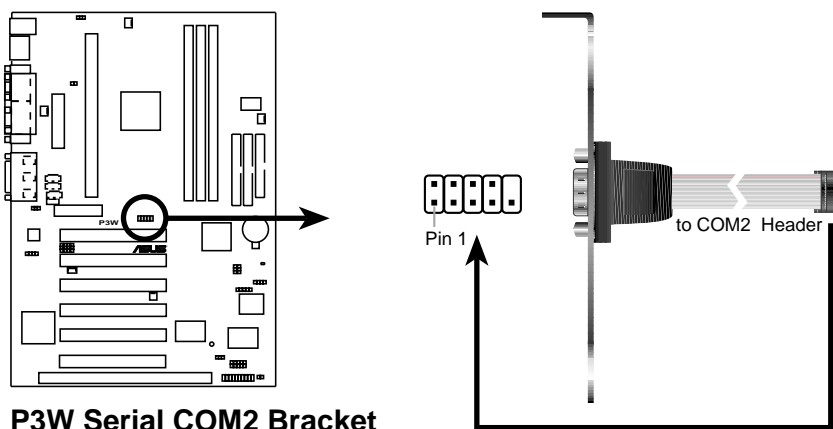
P3W Serial COM2 Bracket

20) Serial IR (SIR) (5-pin) and Consumer IR (CIR) (5-1 pin) Connectors

This connector supports an optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. You must also configure the setting through **UART2 Use Infrared** (see *4.4.2 I/O Device Configuration)* to select whether UART2 is directed for use with COM2 or IrDA. Use the five pins as shown in Back View and connect a ribbon cable from the module to the motherboard's SIR connector according to the pin definitions. An optional consumer infrared (CIR) set connects to the CIR and SIR connectors simultaneously for both wireless transmitting and remote control functions through one external infrared module. **Wake On PS2 KB/Mouse** in *4.5.1 Power Up Control* must be Enabled in order to use Consumer Infrared (CIR) power up.

+5V (NC) IRRX GND IRTX

SIR
CIR

(NC) GND CIRRX CIR+5V

Standard Infrared (SIR)
Front View   Back View

IRTX ———— ———— +5V
GND ———— ———— (NC)
          IRRX
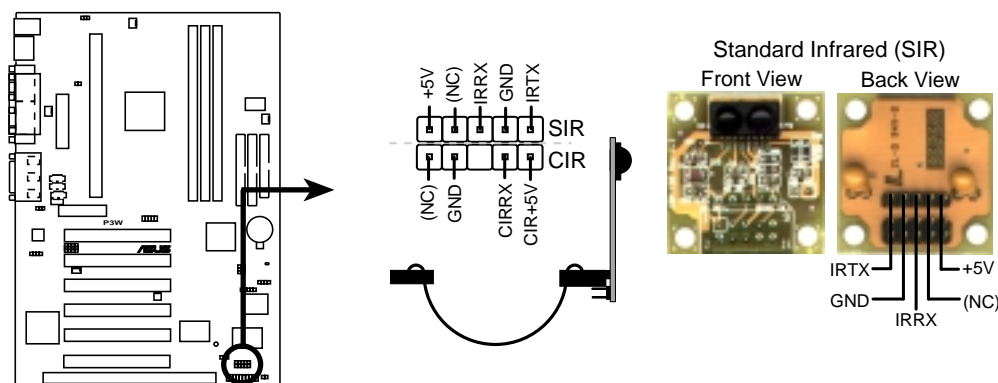
P3W Infrared Module Connector

3. HARDWARE SETUP

21) Chassis Intrusion Alarm Connector (4-1 pin ACHA)

This connector is for a chassis designed for chassis intrusion detection. After-market toggle switches may also be installed to the chassis panel or on any removable components. Two wires should be available from the chassis to connect to this. When any chassis component is removed, the contact should open and the motherboard will record a chassis intrusion event. If the chassis intrusion alarm connector is not used, a jumper cap must be placed over pins 2 and 3 to prevent unnecessary power loss.

+5Volt
(Power Supply Stand By)
Chassis Signal
Ground

1

ACHA
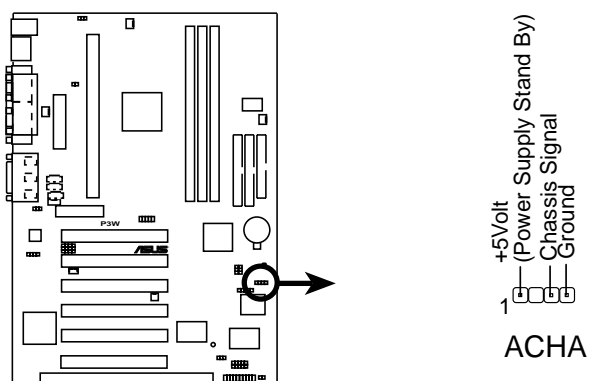
P3W Chassis Open Alarm Lead

3. HARDWARE SETUP

The following PANEL illustration is used for items 22-28
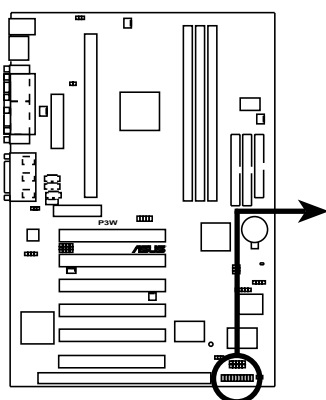
P3W System Panel Connectors
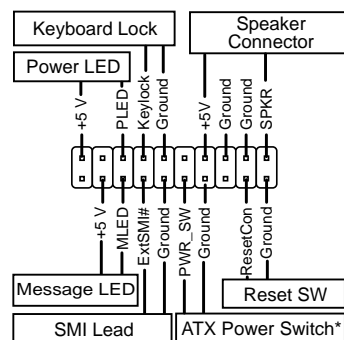
22) **System Power LED Lead (3-1 pin KEYLOCK)**
This 3-1 pin connector connects the system power LED, which lights when the system is powered on and blinks when it is in sleep mode.

23) **Keyboard Lock Switch Lead (2-pin KEYLOCK)**
This 2-pin connector connects to the case-mounted key switch to allow keyboard locking.

24) **System Warning Speaker Connector (4-pin SPEAKER)**
This 4-pin connector connects to the case-mounted speaker.

25) **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.

26) **ATX Power Switch Lead (2-pin PWR)**
The system power is controlled by a momentary switch connected to this lead. Pressing the button once will switch the system between ON and SOFT OFF. Pushing the switch while in the ON mode for more than 4 seconds will turn the system off. The system power LED shows the status of the system's power.

27) **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 is decreased to save electricity and expand the life of certain components when the system is not in use. This 2-pin connector connects to the case-mounted suspend switch. If you do not have a switch for the connector, you may use the "Turbo Switch." 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 presses depending on the position of the switch. Wake-up can be controlled by settings in the BIOS but the keyboard will always allow wake-up (the SMI lead cannot wake up the system).

28) **Message LED Lead (2-pin LED)**
This indicates whether a message has been received from a fax/modem. The LED will remain lit when there is no signal and blink when there is data transfer or waiting in the inbox. This function requires ACPI OS and driver support.

29) ATX Power Supply Connector (20-pin block 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 making sure that the pins are aligned.

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 support, your ATX power supply must supply at least 720mA +5VSB.

+3.3Volts	+3.3 Volts
-12.0Volts	+3.3 Volts
Ground	Ground
Power Supply On	+5.0 Volts
Ground	Ground
Ground	+5.0 Volts
Ground	Ground
-5.0 Volts	Power Good
+5.0 Volts	+5V Standby
+5.0 Volts	+12.0Volts
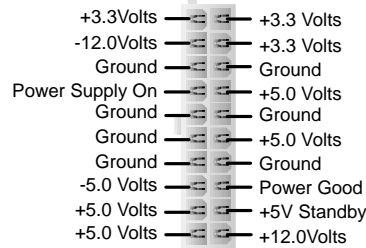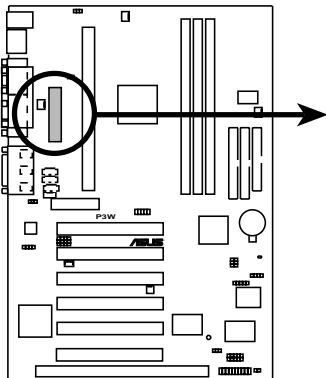
P3W ATX Power Connector

30) Thermal Sensor Connector (2-pin JTPWR)

If you have a power supply with thermal monitoring, connect its thermal sensor cable to this connector.
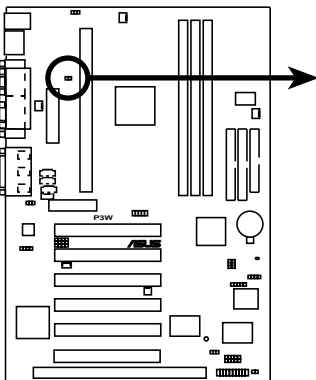
JTPWR

Power Supply
Thermal Sensor Connector

P3W Thermal Sensor Connector

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 LED on the monitor may light up or switch between orange and green after the system's if it complies with "green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, 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 are using Windows 95/98, 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 V1.28
          Copyright (C) 1994-99, ASUSTeK COMPUTER INC.

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel DZ802A0

Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model            : XXX-XX
BIOS Built 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: [1]




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.

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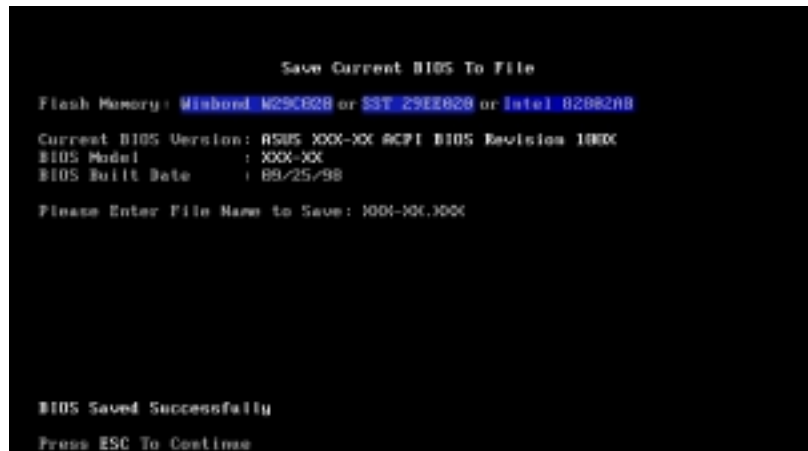
6. Type a filename and the path, for example, **A:\XXX-XX.XXX** and then press <Enter>.

4.1.2 Updating BIOS Procedures

WARNING! Only update your BIOS if you have problems with your motherboard and you know that the new BIOS revision will solve your problems. Careless updating can result in your motherboard having more problems!

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

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

7. The utility starts to program the new BIOS information into the flash ROM. The boot block will be updated automatically only when necessary. This will minimize the chance that a failed update will prevent your system from booting up. When the programming is finished, *Flashed Successfully* will be displayed.

8. Follow the onscreen instructions to continue.

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

4.2 BIOS Setup Program

This motherboard supports a programmable EEPROM that can be updated using the provided utility as described in *4.1 Managing and Updating Your BIOS*.

The utility is used if you are installing a motherboard, reconfiguring your system, or prompted to "**Run Setup**". This section describes how to configure your system using this utility.

Even if you are not prompted to use the Setup program, at some time in the future you may want to change the configuration of your computer. For example, you may want to enable the Security Password Feature or make changes to the power management settings. It will then be necessary to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the EEPROM.

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

The Setup program has been designed to make it as easy to use as possible. It is a menu-driven program, which means you can scroll through the various sub-menus and make your selections among the predetermined choices.

To access the BIOS Setup program, press the <Delete> key after the computer has run through its POST.

NOTE: Because the BIOS software is constantly being updated, the following BIOS screens and descriptions are for reference purposes only and may not reflect your BIOS screens exactly.

4. BIOS SETUP
Program Information

4. BIOS SETUP

4.2.1 BIOS Menu Bar

The top of the screen has a menu bar with the following selections:

MAIN   Use this menu to make changes to the basic system configuration.

ADVANCED Use this menu to enable and make changes to the advanced features.

POWER   Use this menu to configure and enable Power Management features.

BOOT   Use this menu to configure the default system device used to locate and load the Operating System.

EXIT   Use this menu to exit the current menu or specify how to exit the Setup program.

To access the menu bar items, press the right or left arrow key on the keyboard until the desired item is highlighted.

4.2.2 Legend Bar

At the bottom of the Setup screen you will notice a legend bar. The keys in the legend bar allow you to navigate through the various setup menus. The following table lists the keys found in the legend bar with their corresponding alternates and functions.

Navigation Key(s)	Function Description
<F1> or <Alt + H>	Displays the General Help screen from anywhere in the BIOS Setup
<Esc>	Jumps to the Exit menu or returns to the main menu from a sub-menu
← or → (keypad arrow)	Selects the menu item to the left or right
↑ or ↓ (keypad arrow)	Moves the highlight up or down between fields
- (minus key)	Scrolls backward through the values for the highlighted field
+ (plus key) or spacebar	Scrolls forward through the values for the highlighted field
<Enter>	Brings up a selection menu for the highlighted field
<Home> or <PgUp>	Moves the cursor to the first field
<End> or <PgDn>	Moves the cursor to the last field
<F5>	Resets the current screen to its Setup Defaults
<F10>	Saves changes and exits Setup

4. BIOS SETUP

General Help

In addition to the Item Specific Help window, the BIOS setup program also provides a General Help screen. This screen can be called up from any menu by simply pressing <F1> or the <Alt> + <H> combination. The General Help screen lists the legend keys with their corresponding alternates and functions.

Saving Changes and Exiting the Setup Program

See *4.7 Exit Menu* for detailed information on saving changes and exiting the setup program.

Scroll Bar

When a scroll bar appears to the right of a help window, it indicates that there is more information to be displayed that will not fit in the window. Use <PgUp> and <PgDn> or the up and down arrow keys to scroll through the entire help document. Press <Home> to display the first page, press <End> to go to the last page. To exit the help window, press <Enter> or <Esc>.

Sub-Menu
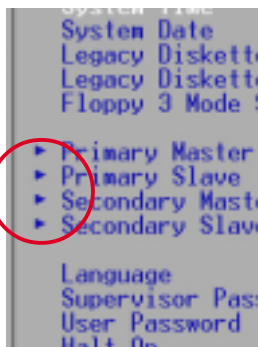
Note that a right pointer symbol (as shown in the left view) appears to the left of certain fields. This pointer indicates that a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. To call up a sub-menu, simply move the highlight to the field and press <Enter>. The sub-menu will then immediately appear. Use the legend keys to enter values and move from field to field within a sub-menu just as you would within a menu. Use the <Esc> key to return to the main menu.

Take some time to familiarize yourself with each of the legend keys and their corresponding functions. Practice navigating through the various menus and submenus. If you accidentally make unwanted changes to any of the fields, use the set default hot key <F5>. While moving around through the Setup program, note that explanations appear in the Item Specific Help window located to the right of each menu. This window displays the help text for the currently highlighted field.

NOTE: The item heading in square brackets represents the default setting for that field.

4. BIOS SETUP
Menu Introduction

4.3 Main Menu

When the Setup program is accessed, the following screen appears:

```
                    AwardBIOS Setup Utility
   Main    Advanced    Power    Boot    Exit

                                                  Item Specific Help
        System Time          [00:14:01]
        System Date          [02/29/2000]          <Enter> to select field:
        Legacy Diskette A    [1.44M, 3.5 in.]      <+>,<-> to change value.
        Legacy Diskette B    [None]
        Floppy 3 Mode Support [Disabled]

     ▶  Primary Master       [Auto]
     ▶  Primary Slave        [Auto]
     ▶  Secondary Master     [Auto]
     ▶  Secondary Slave      [Auto]

        Language             [English]
        Supervisor Password  [Disabled]
        User Password        [Disabled]
        Halt On              [All Errors]
        Installed Memory     128MB


   F1  Help   ↑↓  Select Item   -/+    Change Values     F5   Setup Defaults
   ESC Exit   ←→  Select Menu   Enter  Select ▶ Sub-Menu  F10  Save and Exit
```

System Time [XX:XX:XX]

Sets your system to the time that you specify (usually the current time). The format is hour, minute, second. Valid values for hour, minute and second are **Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59)**. Use the <Tab> or <Shift> + <Tab> keys to move between the hour, minute, and second fields.

System Date [XX/XX/XXXX]

Sets your system to the date that you specify (usually the current date). The format is month, day, year. Valid values for month, day, and year are **Month: (1 to 12), Day: (1 to 31), Year: (**100 year range**)**. Use the <Tab> or <Shift> + <Tab> keys to move between the month, day, and year fields.

Legacy Diskette A [1.44M, 3.5 in.], Legacy Diskette B [None]

Sets the type of floppy drives installed. Configuration options: [None] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

Floppy 3 Mode Support [Disabled]

This is required to support older Japanese floppy drives. Floppy 3 Mode support will allow reading and writing of 1.2MB (as opposed to 1.44MB) on a 3.5-inch diskette. Configuration options: [Disabled] [Drive A] [Drive B] [Both]

4. BIOS SETUP

4.3.1 Primary & Secondary Master/Slave

```
                    AwardBIOS Setup Utility
  Main

        Primary Master  [Auto]              Item Specific Help

   Type                    [Auto]           <Enter> to select the
                                            type of the IDE drive.
   Cylinders               [ 1023]          [User Type HDD] allows
   Head                    [ 64]            you to set each entry on
   Sector                  [63]             your own.
   CHS Capacity            2111MB
   Maximum LBA Capacity    2111MB

   Multi-Sector Transfers  [Maximum]
   SMART Monitoring        [Disabled]
   PIO Mode                [4]
   ULTRA DMA Mode          [2]




  F1   Help    ↑↓  Select Item   -/+    Change Values    F5   Setup Defaults
  ESC  Exit    ←→  Select Menu    Enter  Select ► Sub-Menu  F10  Save and Exit
```

NOTE: Before attempting to configure a hard disk drive, make sure you have the configuration information supplied by the manufacturer of the drive. Incorrect settings may cause your system to not recognize the installed hard disk. To allow the BIOS to detect the drive type automatically, select [Auto].

Type [Auto]

Select [Auto] to automatically detect an IDE hard disk drive. If automatic detection is successful, the correct values will be filled in for the remaining fields on this sub-menu. If automatic detection fails, your hard disk drive may be too old or too new. You can try updating your BIOS or enter the IDE hard disk drive parameters manually.

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).

Other options for the **Type** field are:
— —
[None] - to disable IDE devices

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, you should enter the correct ones manually by setting [User Type HDD].

[User Type HDD]

```
                        AwardBIOS Setup Utility
  Main

      Primary Master   [User Type HDD]           Item Specific Help

  Type                    [User Type HDD]      <Enter> to select the
  Translation Method      [LBA]                type of the IDE drive.
                                               [User Type HDD] allows
  Cylinders               [ 1023]              you to set each entry on
  Head                    [ 64]                your own.
  Sector                  [63]
  CHS Capacity            2111MB
  Maximum LBA Capacity    2111MB

  Multi-Sector Transfers  [Maximum]
  SMART Monitoring        [Disabled]
  PIO Mode                [4]
  ULTRA DMA Mode          [2]


  F1   Help    ↑↓  Select Item   -/+    Change Values    F5   Setup Defaults
  ESC  Exit    ←→  Select Menu    Enter  Select ► Sub-Menu  F10  Save and Exit
```

Manually enter the number of cylinders, heads and sectors per track for your drive. Refer to your drive documentation or look on the drive for this information. If no drive is installed or if you are removing a drive and not replacing it, select [None].

Translation Method [LBA]
Select the hard disk drive type in this field. When Logical Block Addressing is enabled, 28-bit addressing of the hard drive is used without regard for cylinders, heads, or sectors. Note that LBA Mode is necessary for drives with greater than 504MB in storage capacity. Configuration options: [LBA] [LARGE] [Normal] [Match Partition Table] [Manual]

Cylinders
This field configures the number of cylinders. Refer to your drive documentation to determine the correct value to enter into this field. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD] and the **Translation Method** field must be set to [Manual].

4. BIOS SETUP

Head

This field configures the number of read/write heads. Refer to your drive documentation to determine the correct value to enter into this field. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD] and the **Translation Method** field must be set to [Manual].

Sector

This field configures the number of sectors per track. Refer to your drive documentation to determine the correct value to enter into this field. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD] and the **Translation Method** field must be set to [Manual].

CHS Capacity

This field shows the drive's maximum CHS capacity calculated automatically by the BIOS from the drive information you entered.

Maximum LBA Capacity

This field shows the drive's maximum LBA capacity calculated automatically by the BIOS from the drive information you entered.

Multi-Sector Transfers [Maximum]

This option automatically sets the number of sectors per block to the highest number supported by the drive. This field can also be configured manually. Note that when this field is automatically configured, the set value may not always be the fastest value for the drive. Refer to the documentation that came with your hard drive to determine the optimal value and set it manually. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD]. Configuration options: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors] [32 Sectors] [Maximum]

SMART Monitoring [Disabled]

This allows the enabling or disabling of the S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) system which utilizes internal hard disk drive monitoring technology. This feature is normally disabled because system resources used in this feature may decrease system performance. Configuration options: [Disabled] [Enabled]

PIO Mode [4]

This option lets you set a PIO (Programmed Input/Output) mode for the IDE device. Modes 0 through 4 provide successively increased performance. Configuration options: [0] [1] [2] [3] [4]

Ultra DMA Mode [Disabled]

Ultra DMA capability allows improved transfer speeds and data integrity for compatible IDE devices. Set to [Disabled] to suppress Ultra DMA capability. **NOTE:** To make changes to this field, the **Type** field must be set to [User Type HDD]. Configuration options: [0] [1] [2] [3] [4] [Disabled]

4. BIOS SETUP
Master/Slave Drives

Other options for "Type:" are:

[CD-ROM] - for IDE CD-ROM drives

[LS-120] - for LS-120 compatible floppy disk drives

[ZIP-100] - for ZIP-100 compatible disk drives

[MO] - for IDE magneto optical disk drives

[Other ATAPI Device] - for IDE devices not listed here

After using the legend keys to make your selections on this sub-menu, press the <Esc> key to exit back to the Main menu. When the Main menu appears, you will notice that the drive size appear in the field for the hard disk drive that you just configured.

── ──

Language [English]
This allows selection of the BIOS' displayed language. Currently only English is available.

Supervisor Password [Disabled], User Password [Disabled]
These fields allow you to set the passwords. To set the password, highlight the appropriate field and press <Enter>.

Type in a password and press <Enter>. You can type up to eight alphanumeric characters. Symbols and other keys are ignored. To confirm the password, type the password again and press the <Enter>. The password is now set to [Enabled]. This password allows full access to the BIOS Setup menus.

To clear the password, highlight this field and press <Enter>. The same dialog box as above will appear. Press <Enter> and the password will be set to [Disabled].

A Note about Passwords
The BIOS Setup program allows you to specify passwords in the Main menu. The passwords control access to the BIOS during system startup. The passwords are not case sensitive. In other words, it makes no difference whether you enter a password using upper or lowercase letters.

The BIOS Setup program allows you to specify two separate passwords: a Supervisor password and a User password. When disabled, anyone may access all BIOS Setup program functions. When enabled, the Supervisor password is required for entering the BIOS Setup program and having full access to all configuration fields.

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) Short the solder points, (3) Turn ON your computer, (4) Hold down <Delete> during bootup and enter BIOS setup to re-enter user preferences.

Short solder points
to Clear CMOS

CLRTC
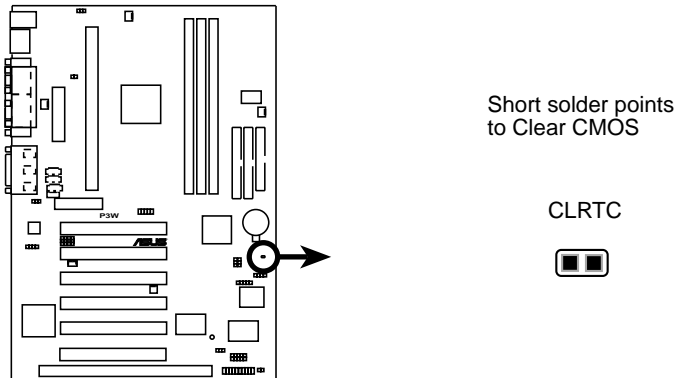
P3W Clear RTC RAM

Halt On [All Errors]

This field determines which types of errors will cause the system to halt. Configuration options: [All Errors] [No Error] [All but Keyboard] [All but Disk] [All but Disk/Keyboard]

Installed Memory [XXX MB]

This field displays the amount of conventional memory detected by the system during bootup. You do not need to make changes to this field. This is a display only field.

4. BIOS SETUP
Main Menu

4. BIOS SETUP

4.4 Advanced Menu

```
                    AwardBIOS Setup Utility
  Main   Advanced   Power    Boot     Exit
┌──────────────────────────────────────┬──────────────────────┐
│                                       │ Item Specific Help   │
│ CPU Speed                 [Manual]    │                      │
│ CPU Core:Bus Freq. Multiple [2.0x]    │ To make changes to the│
│ CPU/SDRAM/PCI Freq. Ratio [3/3/1]     │ first 5 fields, the  │
│ CPU Bus Frequency (MHz)   [100.90]    │ motherboard must be set│
│ CPU Vcore                 [2.00V]     │ to jumperfree mode.  │
│ CPU Level 1 Cache         [Enabled]   │                      │
│ CPU Level 2 Cache         [Enabled]   │ To set the following 4│
│ CPU Level 2 Cache ECC Check [Disabled]│ fields, the CPU speed│
│ BIOS Update               [Enabled]   │ must be set to [Manual].│
│ PS/2 Mouse Function Control [Auto]    │ If your CPU has a locked│
│ USB Legacy Support        [Auto]      │ frequency multiple,  │
│ OS/2 Onboard Memory > 64M [Disabled]  │ setting the frequency│
│ ▶ Chip Configuration                  │ multiple in BIOS setup│
│ ▶ I/O Device Configuration            │ will have no effect. │
│ ▶ PCI Configuration                   │                      │
│ ▶ Shadow Configuration                │                      │
│                                       │                      │
├──────────────────────────────────────┴──────────────────────┤
│ F1  Help  ↑↓ Select Item   -/+ Change Values  F5  Setup Defaults│
│ ESC Exit  ←→ Select Menu  Enter Select ▶ Sub-Menu F10 Save and Exit│
└──────────────────────────────────────────────────────────────┘
```
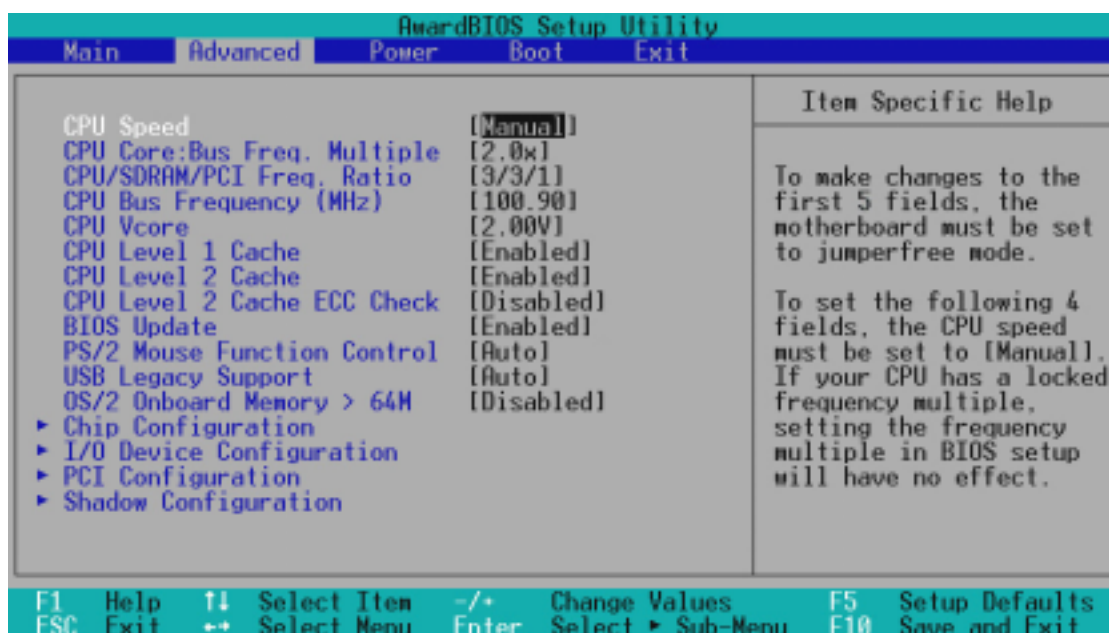
CPU Speed [Manual]
When the motherboard is set to JumperFree™ mode, this field allows you to select the internal speed of your CPU. Once a specific CPU speed is selected, the correct values will be filled in for the subsequent 3 fields. Select [Manual] if you want to make changes to the subsequent 3 fields. Configuration options: [Manual] [300MHz] [350MHz]...[733MHz]

CPU Core:Bus Freq. Multiple (when CPU Speed is set to [Manual])
This field is for unlocked processors only. If your socket 370 processor's Frequency Multiple is locked, setting the Frequency Multiple here will have no effect. This field sets the frequency multiple between the CPU's *internal* frequency and *external* frequency. This must be set in conjunction with **CPU Bus Frequency** to match the speed of your CPU. Configuration options: [2.0x] [2.5x] [3.0x]...[7.0x] [7.5x] [8.0x]

CPU/SDRAM/PCI Freq. Ratio (when CPU Speed is set to [Manual])
This field determines whether the memory clock frequency is set to be in synchronous or asynchronous mode with respect to the **CPU Bus Frequency**. Each of the two memory data transfer methods leads to a set of 16 CPU Bus Frequency selections. Configuration options: [2/3/1] [3/3/1]

CPU Bus Frequency (MHz) (when CPU Speed is set to [Manual])
This feature tells the clock generator what frequency to send to the CPU, DRAM, and chipset. The bus frequency (external frequency) multiplied by the bus multiple equals the CPU's internal frequency (the **CPU speed**). The configuration options vary depending on the **CPU/SDRAM/PCI Freqency Ratio**.

4. BIOS SETUP

CPU Vcore (when CPU Speed is set to [Manual])
This field displays the core voltage supplied to the CPU. If you want to set it manually, always refer to the CPU documentation for the reasonable voltage range. Configuration options: [2.40V] [2.30V] [2.20V] [2.10V] [2.05V] [2.00V]

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. Configuration options: [Disabled] [Enabled]

CPU Level 2 Cache ECC Check [Disabled]
This function controls the ECC capability in the CPU level 2 cache. Configuration options: [Disabled] [Enabled]

BIOS Update [Enabled]
This functions as an update loader integrated into the BIOS to supply the processor with the required data. In the default position of [Enabled], the BIOS will load the update on all processors during system bootup. Configuration options: [Disabled] [Enabled]

PS/2 Mouse Function Control [Auto]
The default of [Auto] allows the system to detect a PS/2 mouse on startup. If detected, IRQ12 will be used for the PS/2 mouse. IRQ12 will be reserved for expansion cards only if a PS/2 mouse is not detected. [Enabled] will always reserve IRQ12, whether on startup a PS/2 mouse is detected or not. Configuration options: [Enabled] [Auto]

USB Legacy Support [Auto]
This motherboard supports Universal Serial Bus (USB) devices. The default of [Auto] allows the system to detect a USB device on startup. If detected, the USB controller will be enabled. If not detected, the USB controller will be disabled. When this field is set to [Disabled], the USB controller is disabled no matter whether you are using a USB device or not. Configuration options: [Disabled] [Enabled] [Auto]

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]. Configuration options: [Disabled] [Enabled]

4. BIOS SETUP
Chip Configuration

4. BIOS SETUP

4.4.1 Chip Configuration
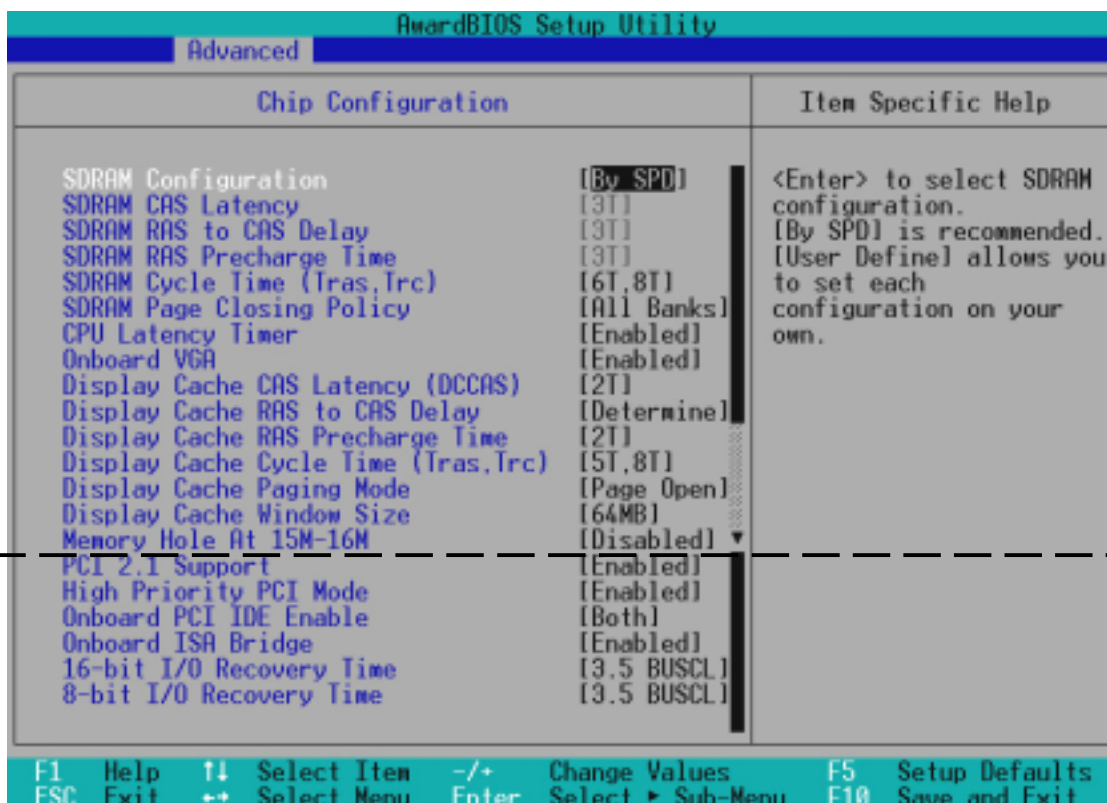
(scroll down to see more items, as shown here)

SDRAM Configuration [By SPD]
This sets the optimal timings for items 2–4, depending on the memory modules that you are using. Default setting is [By SPD], which configures items 2–4 by reading the contents in the SPD (Serial Presence Detect) device. The EEPROM on the memory module stores critical parameter information about the module, such as memory type, size, speed, voltage interface, and module banks. Configuration options: [User Define] [7ns (143MHz)] [8ns (125MHz)] [By SPD]

SDRAM CAS Latency
This controls the latency between the SDRAM read command and the time that the data actually becomes available. **NOTE:** To make changes to this field, the **SDRAM Configuration** field must be set to [User Define].

SDRAM RAS to CAS Delay
This controls the latency between the SDRAM active command and the read/write command. **NOTE:** To make changes to this field, the **SDRAM Configuration** field must be set to [User Define].

ASUS P3W User's Manual

SDRAM RAS Precharge Time

This controls the idle clocks after issuing a precharge command to the SDRAM. **NOTE:** To make changes to this field, the **SDRAM Configuration** field must be set to [User Define].

SDRAM Cycle Time (Tras, Trc) [5T, 7T]

This feature controls the number of SDRAM clocks used per access cycle. Configuration options: [5T, 7T] [6T, 8T]

SDRAM Address Setup Time [1T Delay]

Configuration options: [No Delay] [1T Delay]

SDRAM Page Closing Policy [All Banks]

This feature controls whether the graphic and memory controller hub will precharge one or all banks after a page miss. Configuration options: [One Bank] [All Banks]

CPU Latency Timer [Enabled]

Configuration options: [Disabled] [Enabled]

Onboard VGA [Enabled]

Leave on default setting if you want to use the onboard VGA. If this field is disabled, all **Display Cache** configurations will not be available. Configuration options: [Disabled] [Enabled]

Display Cache CAS Latency (DCCAS) [2T]

Configuration options: [2T] [3T]

Display Cache RAS to CAS Delay [Determined by DCCAS]

With the default setting [Determined by DCCAS], this field has the same configuration as **Display Cache CAS Latency (DCCAS)**. Configuration options: [Determined by DCCAS] [2T]

Display Cache RAS Precharge Time [2T]

Configuration options: [2T] [3T]

Display Cache Cycle Time (Tras, Trc) [5T, 8T]

Configuration options: [5T, 8T] [7T, 10T]

Display Cache Paging Mode [Page Open Mode]

Configuration options: [Page Open Mode] [Page Close Mode]

Display Cache Window Size [64MB]

This feature allows you to select the size of mapped memory for AGP graphic data. Configuration options: [64MB] [32MB]

4. BIOS SETUP
Chip Configuration

Memory Hole At 15M-16M [Disabled]

This field allows you to reserve an address space for ISA expansion cards that require it. Setting the address space to a particular setting will make that memory space unavailable to the system. Expansion cards can only access memory up to 16MB. Configuration options: [Disabled] [Enabled]

PCI 2.1 Support [Enabled]

This function allows you to enable or disable PCI 2.1 features including passive release and delayed transaction. Configuration options: [Disabled] [Enabled]

High Priority PCI Mode [Enabled]

This field allows you to give PCI slot 1 a higher priority. You may want to leave on the default setting if you are using an IEEE-1394 PCI card. Configuration options: [Disabled] [Enabled]

Onboard PCI IDE Enable [Both]

You can select to enable the primary IDE channel, secondary IDE channel, both, or disable both channels. Configuration options: [Both] [Primary] [Secondary] [Disabled]

Onboard ISA Bridge [Enabled]

If you are not using any ISA cards, you may disable this field. When this field is disabled, the **8-bit** and **16-bit I/O Recovery Time** configurations will not be available. Configuration options: [Disabled] [Enabled]

8-bit, 16-bit I/O Recovery Time [3.5 BUSCLK]

Leave on default setting.

4. BIOS SETUP

4.4.2 I/O Device Configuration

```
                    AwardBIOS Setup Utility
        Advanced

        I/O Device Configuration                    Item Specific Help

    Onboard AC97 Modem Controller    [Auto]         <Enter> to select.
    Onboard AC97 Audio Controller    [Auto]

    Onboard FDC Swap A & B           [No Swap]
    Floppy Disk Access Control       [R/W]

    Onboard Serial Port 1            [3F8H/IRQ4]
    Onboard Serial Port 2            [2F8H/IRQ3]
    UART2 Use Standard Infrared      [Disabled]

    Onboard Parallel Port            [378H/IRQ7]
    Parallel Port Mode               [ECP+EPP]
    ECP DMA Select                   [3]

    Onboard Game Port                [Disabled]
    Onboard MIDI I/O                 [Disabled]

    Onboard CIR I/O                  [Disabled]

    F1   Help    ↑↓  Select Item   -/+    Change Values   F5   Setup Defaults
    ESC  Exit    ←→  Select Menu   Enter  Select ► Sub-Menu  F10  Save and Exit
```

(scroll down to see more items, as shown here)

Onboard AC97 Modem Controller, Audio Controller [Auto]

[Auto] allows the motherboard's BIOS to detect whether you are using any modem/
audio device. If a modem/audio device is detected, the onboard modem/audio control-
ler will be enabled; if no modem/audio device is detected, the onboard modem/audio
controller will be disabled. If you have conflicts with the onboard modem/audio con-
troller, you may set the appropriate field to [Disabled]. Configuration options: [Auto]
[Disabled]

Onboard FDC Swap A & B [No Swap]

This field allows you to reverse the hardware drive letter assignments of your floppy
disk drives. Configuration options: [No Swap] [Swap AB]

Floppy Disk Access Control [R/W]

When set to [Read Only], this field protects files from being copied to floppy disks by
allowing reads from the floppy disk drive but not writes. The setup default [R/W]
allows both reads and writes. Configuration options: [R/W] [Read Only]

Onboard Serial Port 1 [3F8H/IRQ4], Onboard Serial Port 2 [2F8H/IRQ3]

These fields allow you to set the addresses for the onboard serial connectors. Serial
Port 1 and Serial Port 2 must have different addresses. Configuration options: [3F8H/
IRQ4] [2F8H/IRQ3] [3E8H/IRQ4] [2E8H/IRQ10] [Disabled]

UART2 Use Standard Infrared [Disabled]

When enabled, this field activates the onboard standard infrared feature and sets the second serial UART to support the infrared module connector on the motherboard. If your system already has a second serial port connected to the onboard COM2 connector, it will no longer work if you enable the infrared feature. See **IrDA-Compliant Infrared Module Connector** in *3.8 External Connectors.* Configuration options: [Disabled] [Enabled]

Onboard Parallel Port [378H/IRQ7]

This field sets the address of the onboard parallel port connector. If you disable this feature, **Parallel Port Mode** and **ECP DMA Select** configurations will not be available. Configuration options: [Disabled] [378H/IRQ7] [278H/IRQ5]

Parallel Port Mode [ECP+EPP]

This field allows you to set the operation mode of the parallel port. [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. Configuration options: [Normal] [EPP] [ECP] [ECP+EPP]

ECP DMA Select [3]

This field allows you to configure the parallel port DMA channel for the selected **ECP** mode. This selection is available only if you select [ECP] or [ECP+EPP] in **Parallel Port Mode** above. Configuration options: [1] [3] [Disabled]

Onboard Game Port [200H-207H]

This field sets the address of the onboard game port connector. Configuration options: [Disabled] [200H-207H] [208H-20FH]

Onboard MIDI I/O [Disabled]

This field sets the address of the onboard MIDI connector. Configuration options: [Disabled] [330H-331H] [300H-301H]

Onboard MIDI IRQ [xx]

This field is not available if you select [Disabled] for the **Onboard MIDI I/O** field. Configuration options: [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]
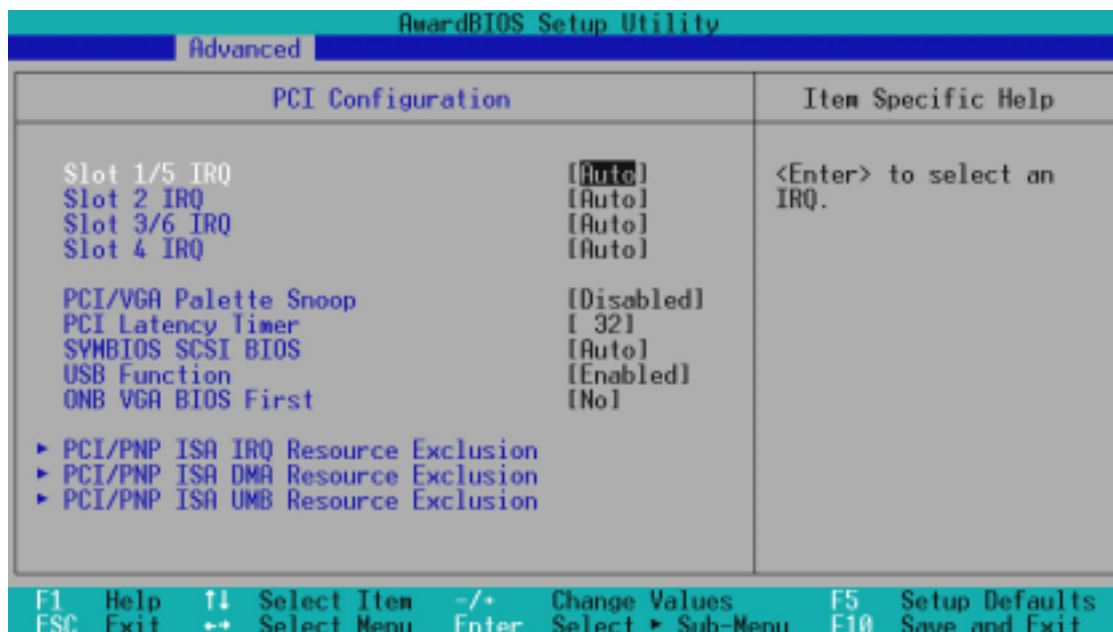
Onboard CIR I/O [Disabled]

This field sets the address of the onboard Consumer IR connector. Configuration options: [Disabled] [2E0-2E8H] [3E0-3E8H]

Onboard CIR IRQ [xx]

This field is not available if you select [Disabled] for the **Onboard CIR I/O** field. Configuration options: [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]

4. BIOS SETUP

4.4.3 PCI Configuration

```
                    AwardBIOS Setup Utility
         Advanced
┌────────────────────────────────────────────┬──────────────────────┐
│           PCI Configuration                 │  Item Specific Help  │
│                                             │                      │
│    Slot 1/5 IRQ              [Auto]         │  <Enter> to select an│
│    Slot 2 IRQ               [Auto]          │  IRQ.                │
│    Slot 3/6 IRQ             [Auto]          │                      │
│    Slot 4 IRQ               [Auto]          │                      │
│                                             │                      │
│    PCI/VGA Palette Snoop    [Disabled]      │                      │
│    PCI Latency Timer        [ 32]           │                      │
│    SYMBIOS SCSI BIOS        [Auto]          │                      │
│    USB Function             [Enabled]       │                      │
│    ONB VGA BIOS First       [No]            │                      │
│  ► PCI/PNP ISA IRQ Resource Exclusion       │                      │
│  ► PCI/PNP ISA DMA Resource Exclusion       │                      │
│  ► PCI/PNP ISA UMB Resource Exclusion       │                      │
│                                             │                      │
├────────────────────────────────────────────┴──────────────────────┤
│  F1  Help   ↑↓  Select Item   -/+    Change Values  F5  Setup Defaults│
│  ESC Exit   ↔   Select Menu   Enter  Select ► Sub-Menu F10 Save and Exit│
└────────────────────────────────────────────────────────────────────┘
```

Slot 1/5, Slot 2, Slot 3/6, Slot 4 IRQ [Auto]

These fields set how IRQ use is determined for each PCI slot. The default setting for each field is [Auto], which utilizes auto-routing to determine IRQ use. Configuration options: [Auto] [NA] [3] [4] [5] [7] [9] [10] [11] [12] [14] [15]

PCI/VGA Palette Snoop [Disabled]

Some nonstandard VGA cards, 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 default setting of [Disabled]. Configuration options: [Disabled] [Enabled]

PCI Latency Timer [32]

Leave on default setting for best performance vs. stability.

SYMBIOS SCSI BIOS [Auto]

[Auto] allows the motherboard's BIOS to detect whether you have a Symbios SCSI card. If the Symbios SCSI card is detected, the motherboard's Symbios BIOS will be enabled; if no Symbios SCSI card is detected, the onboard Symbios SCSI BIOS will be disabled.

[Disabled] will disable the motherboard's Symbios SCSI BIOS so that the BIOS on an external Symbios SCSI card can be used. If your Symbios SCSI card does not have a BIOS, the Symbios SCSI card will not function. Configuration options: [Auto] [Disabled]
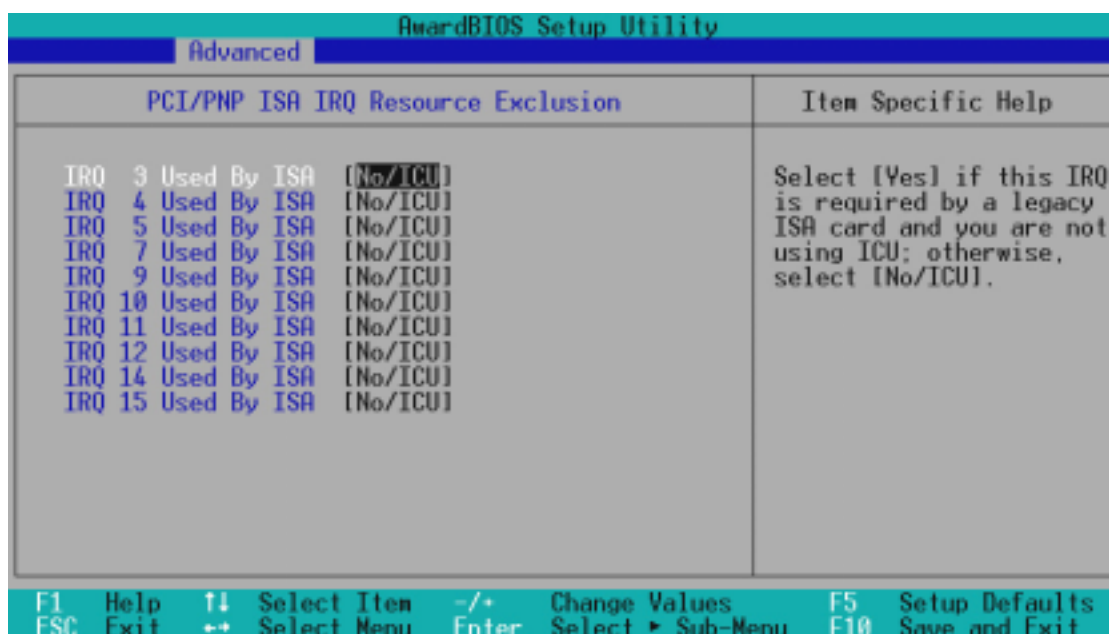
4. BIOS SETUP

USB Function [Enabled]

This motherboard supports Universal Serial Bus (USB) devices. Set to [Enabled] if you want to use USB devices. Configuration options: [Disabled] [Enabled]

ONB VGA BIOS First [No]

This field, when set to [Yes], gives priority to the onboard VGA BIOS over other VGA controllers. Configuration options: [No] [Yes]

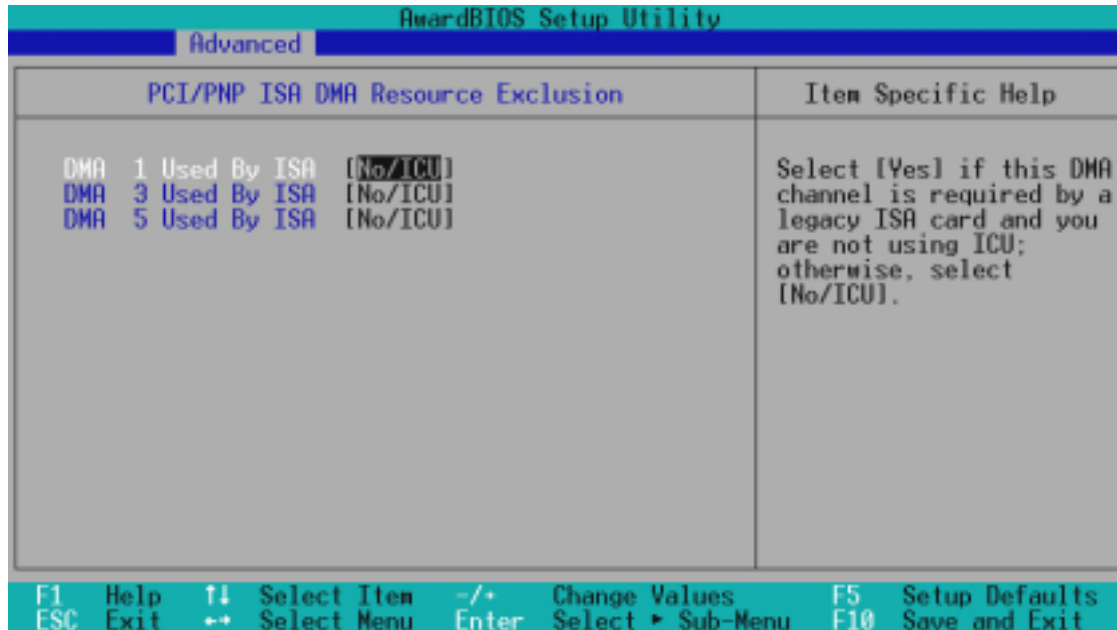## PCI/PNP ISA IRQ Resource Exclusion

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 card. The default value indicates either that the displayed IRQ is not used or that ISA Configuration Utility (ICU) is being used to determine if an ISA card 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]. Configuration options: [No/ICU] [Yes]

4. BIOS SETUP

PCI/PNP ISA DMA Resource Exclusion

```
                    AwardBIOS Setup Utility
        Advanced

        PCI/PNP ISA DMA Resource Exclusion          Item Specific Help

      DMA  1 Used By ISA    [No/ICU]           Select [Yes] if this DMA
      DMA  3 Used By ISA    [No/ICU]           channel is required by a
      DMA  5 Used By ISA    [No/ICU]           legacy ISA card and you
                                               are not using ICU;
                                               otherwise, select
                                               [No/ICU].




   F1   Help   ↑↓  Select Item   -/+   Change Values    F5   Setup Defaults
   ESC  Exit   ←→  Select Menu   Enter  Select ► Sub-Menu  F10  Save and Exit
```

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. The default setting indi-
cates 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]. Configuration options:
[No/ICU] [Yes]

PCI/PNP ISA UMB Resource Exclusion

```
                    AwardBIOS Setup Utility
        Advanced

        PCI/PNP ISA UMB Resource Exclusion          Item Specific Help

      ISA MEM Block BASE    [No/ICU]           This is for some ISA
                                               add-on cards whose UMB
                                               can't be auto-detected.








   F1   Help   ↑↓  Select Item   -/+   Change Values    F5   Setup Defaults
   ESC  Exit   ←→  Select Menu   Enter  Select ► Sub-Menu  F10  Save and Exit
```
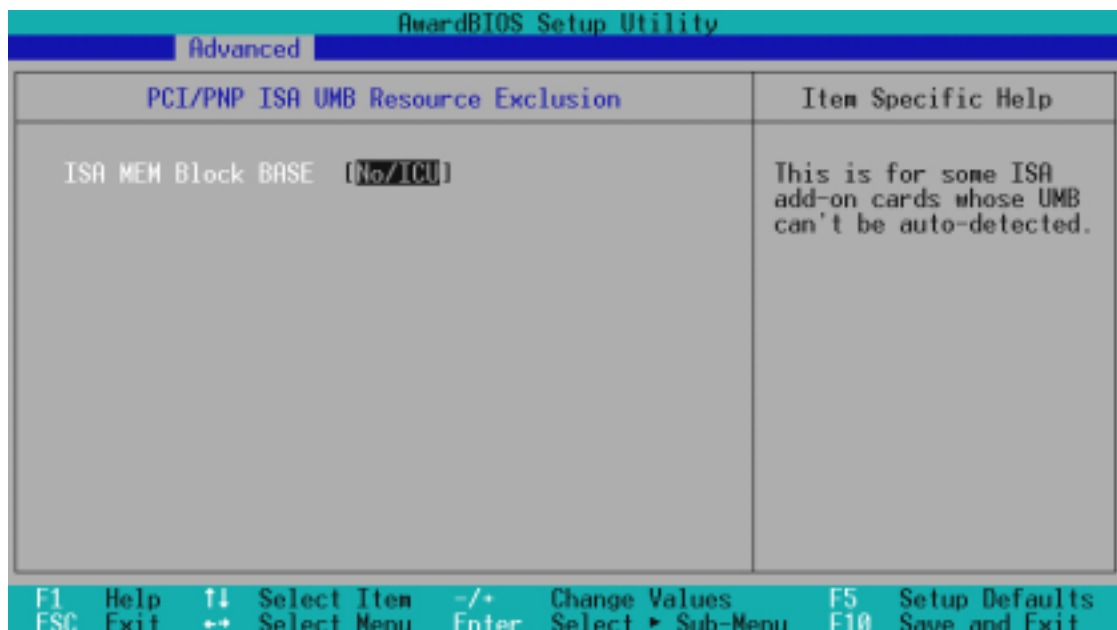
ISA MEM Block BASE [No/ICU]

This field allows you to set the base address and block size of a legacy ISA card that uses any memory segment within the C800 and DFFF 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 the use of this address range, you can increase the block size to 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]. Configuration options: [No/ICU] [C800] [CC00] [D000] [D400] [D800] [DC00]

4.4.4 Shadow Configuration

```
                        AwardBIOS Setup Utility
        Advanced

            Shadow Configuration                    Item Specific Help

   Video ROM BIOS Shadow    [Enabled]          Select [Enabled] to move
   D0000-D7FFF Shadow       [Disabled]         video BIOS from ROM to
   D8000-DBFFF Shadow       [Disabled]         RAM.
   DC000-DFFFF Shadow       [Disabled]




   F1   Help    ↑↓  Select Item   -/+     Change Values      F5   Setup Defaults
   ESC  Exit    ←→  Select Menu   Enter   Select ► Sub-Menu  F10  Save and Exit
```
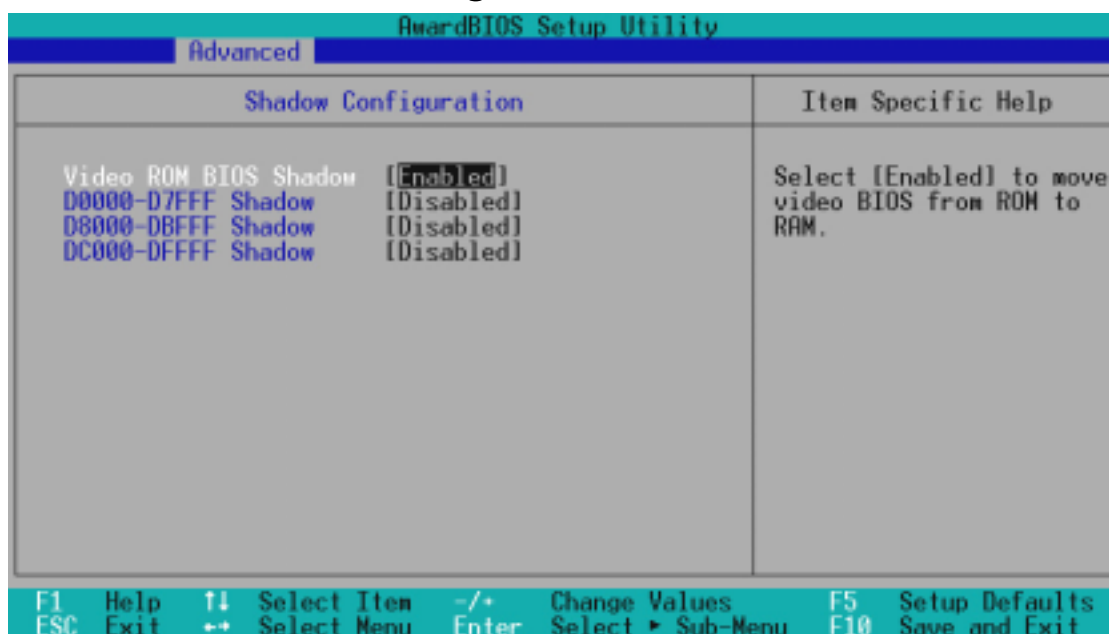
Video ROM BIOS Shadow [Enabled]

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. Configuration options: [Disabled] [Enabled]

D0000-DFFFF Shadow [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. Configuration options: [Disabled] [Enabled]

4.5 Power Menu

The Power menu allows you to reduce power consumption. This feature turns off the video display and shuts down the hard disk after a period of inactivity.

```
                    AwardBIOS Setup Utility
    Main    Advanced    Power    Boot    Exit

                                          ┌──────────────────────┐
                                          │  Item Specific Help  │
   Power Management        [User Define]  ├──────────────────────┤
   Video Off Option        [Suspend -> Off]
   Video Off Method        [DPMS OFF]      <Enter> to select the
   HDD Power Down          [Disabled]      power saving mode. You
   Suspend-to-RAM Capability [Disabled]    can select [User Define]
                                           to go to the suspend
   Suspend Mode            [Disabled]      mode entry below.
   PWR Button < 4 Secs     [Soft Off]

 ▶ Power Up Control
 ▶ Hardware Monitor




 F1   Help   ↑↓  Select Item   -/+   Change Values    F5   Setup Defaults
 ESC  Exit   ←→  Select Menu   Enter Select ▶ Sub-Menu  F10  Save and Exit
```

Power Management [User Define]

This option must be enabled to use any of the automatic power saving features. If this menu item is set to [Disabled], power management features will not function regardless of other field settings on this menu. 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; [Disabled] disables the power saving features; [User Define] allows you to set power saving options according to your preference. Configuration options: [User Define] [Disabled] [Min Saving] [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. Configuration options: [Always On] [Suspend -> Off]

Video Off Method [DPMS OFF]
This field defines the video off features. The DPMS (Display Power Management System) feature allows 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. Configuration options: [Blank Screen] [V/H SYNC+Blank] [DPMS Standby] [DPMS Suspend] [DPMS OFF] [DPMS Reduce ON]

HDD Power Down [Disabled]
Shuts down any IDE hard disk drives in the system after a period of inactivity as set in this user-configurable field. This feature does not affect SCSI hard drives. Configuration options: [Disabled] [1 Min] [2 Min] [3 Min]...[15 Min]

Suspend-to-RAM Capability [Disabled]
Suspend-to-RAM (STR) is an energy-saving feature. In Suspend-to-RAM state, all devices on the computer are turned off, except for the system RAM. Thus, the PC consumes less than 5 Watts of power. [Auto] allows the BIOS to detect if your power supply can supply at least 720mA on the +5VSB lead to support the STR function. If the power supply meets the requirement, the STR function will be enabled; if not, this function will be disabled. If the expansion cards you use on the motherboard do not support the STR function, you must leave this field on the default setting [Disabled]. Configuration options: [Auto] [Disabled]

Suspend Mode [Disabled]
Sets the time period before the system goes into suspend mode. Configuration options: [Disabled] [1~2 Min] [2~3 Min] [4~5 Min] [8~9 Min] [20 Min]...[1 Hour]

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. Configuration options: [Soft off] [Suspend]

4. BIOS SETUP

4.5.1 Power Up Control

```
                    AwardBIOS Setup Utility
                        Power

           Power Up Control                    Item Specific Help

     AC PWR Loss Restart        [Disabled]     <Enter> to select
     PWR Up On Modem Act        [Disabled]     whether or not to
     Wake On LAN                [Disabled]     restart the system after
     Wake On PS2 KB/PS2 Mouse/CIR [Disabled]   AC power loss.

     Automatic Power Up         [Disabled]




     F1   Help   ↑↓  Select Item   -/+   Change Values      F5   Setup Defaults
     ESC  Exit   ↔   Select Menu   Enter Select ► Sub-Menu  F10  Save and Exit
```

AC PWR Loss Restart [Disabled]

This allows you to set whether you want your system to reboot after the power has been interrupted. [Disabled] leaves your system off and [Enabled] reboots your system. Configuration options: [Disabled] [Enabled]

PWR Up On Modem Act [Disabled]

This allows either settings of [Enabled] or [Disabled] for powering up the computer when the modem receives a call while the computer is in Soft-off mode. **NOTE:** The computer cannot receive or transmit data until the computer and applications are fully running. Thus connection cannot be made on the first try. Turning an external modem off and then back on while the computer is off causes an initialization string that will also cause the system to power on. Configuration options: [Disabled] [Enabled]

Wake On LAN [Enabled]

Wake-On-LAN allows your computer to be booted from another computer via a network by sending a wake-up frame or signal. Configuration options: [Disabled] [Enabled]

> **IMPORTANT:** This feature requires an optional network interface with Wake-On-LAN and an ATX power supply with at least 720mA +5V standby power.

Wake On PS2 KB/Mouse [Disabled]

Set this field to [Enabled] if you wish to use your PS2 keyboard (by pressing the spacebar) or PS2 mouse (by clicking on the left button) to power up your computer. This feature requires an ATX power supply that can supply at least 300mA on the +5VSB lead. The default is set to [Disabled] because not all computers have the appropriate ATX power supply. Your computer will not power ON if you set this to [Enabled] and do not have the appropriate ATX power supply. Configuration options: [Disabled] [Enabled]

Automatic Power Up [Disabled]

This allows an unattended or automatic system power up. You may configure your system to power up at a certain time of the day by selecting [Everyday] or at a certain time and day by selecting [By Date]. Configuration options: [Disabled] [Everyday] [By Date]

4. BIOS SETUP
Power Up Control

4. BIOS SETUP

4.5.2 Hardware Monitor

```
                    AwardBIOS Setup Utility
                  Power

          HardWare Monitor                    Item Specific Help

   MB Temperature        33°C/91°F          <Enter> to switch
   CPU Temperature       41°C/107°F         between monitoring or
                                            ignoring.
   CPU Fan Speed         4560RPM
   Power Fan Speed       N/A
   Chassis Fan Speed     N/A

   VCORE Voltage         2.0V
   +3.3V Voltage         3.4V
   +5V   Voltage         5.1V
   +12V  Voltage        12.1V
   -12V  Voltage       -12.0V
   -5V   Voltage       - 5.1V


  F1   Help   ↑↓  Select Item   -/+   Change Values    F5   Setup Defaults
  ESC  Exit   ←→  Select Menu   Enter Select ► Sub-Menu F10  Save and Exit
```

MB Temperature, CPU Temperature [xxxC/xxxF]

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

CPU Fan, Power Fan, Chassis Fan Speed [xxxxRPM]

The onboard hardware monitor is able to detect the CPU fan speed, power supply fan speed, and the chassis fan speed in rotations per minute (RPM). The presence of the fans is automatically detected. Set to [Ignore] only if necessary.

VCORE Voltage, +3.3V Voltage, +5V Voltage, +12V Voltage, -12V Voltage, -5V Voltage [xx.xV]

The onboard hardware monitor is able to detect the voltage output by the onboard voltage regulators. Set to [Ignore] only if necessary.

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

4.6 Boot Menu

```
                    AwardBIOS Setup Utility
  Main    Advanced    Power    Boot    Exit

                                             ┌─────────────────────┐
                                             │  Item Specific Help │
 1. Removable Device    [Legacy Floppy]      │                     │
 2. IDE Hard Drive      [None]               │ Boot Sequence       │
 3. ATAPI CD-ROM        [ASUS CD-S340]       │                     │
 4. Other Boot Device   [INT18 Device [Networ]│ <Enter> to select the│
                                             │ device.             │
 Plug & Play O/S        [No]                 │                     │
 Boot Virus Detection   [Enabled]            │ To select the boot  │
 Quick Power On Self Test [Enabled]          │ sequence, use the up or│
 Boot Up Floppy Seek    [Enabled]            │ down arrow. Press <+> to│
 Boot Up NumLock Status [On]                 │ move the device up the│
 Full Screen Logo       [Enabled]            │ list, or <-> to move it│
                                             │ down the list.      │
                                             └─────────────────────┘
 F1  Help    ↑↓ Select Item   -/+   Change Values    F5  Setup Defaults
 ESC Exit    ←→ Select Menu   Enter Select ► Sub-Menu F10 Save and Exit
```

Boot Sequence
The Boot menu allows you to select among the four possible types of boot devices listed using the up and down arrow keys. By using the <+> or <Space> key, you can promote devices and by using the <-> key, you can demote devices. Promotion or demotion of devices alters the priority which the system uses to search for a boot device on system power up. Configuration options: [Removable Devices] [IDE Hard Drive] [ATAPI CD-ROM] [Other Boot Device]

Removable Device [Legacy Floppy]
Configuration options: [Legacy Floppy] [LS120] [ZIP-100] [ATAPI MO]

IDE Hard Drive
This field allows you to select which IDE hard disk drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all connected IDE hard disk drives.

ATAPI CD-ROM
This field allows you to select which ATAPI CD-ROM drive to use in the boot sequence. Pressing [Enter] will show the product IDs of all your connected ATAPI CD-ROM drives.

Other Boot Device Select [Network]
Configuration options: [Network] [SCSI Boot Device]

4. BIOS SETUP

Plug & Play O/S [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. When [Yes] is selected, interrupts may be reassigned by the OS. When a non-PnP OS is installed or you want to prevent reassigning of interrupt settings, select the default setting of [No]. Configuration options: [No] [Yes]

Boot Virus Detection [Enabled]

Configuration options: [Disabled] [Enabled]

Quick Power On Self Test [Enabled]

Configuration options: [Disabled] [Enabled]

Boot Up Floppy Seek [Enabled]

Configuration options: [Disabled] [Enabled]

Boot Up NumLock Status [On]

Configuration options: [Off] [On]

Full Screen Logo [Enabled]

Configuration options: [Disabled] [Enabled]

4.7 Exit Menu

Once you have made all of your selections from the various menus in the Setup program, you should save your changes and exit Setup. Select **Exit** from the menu bar to display the following menu:
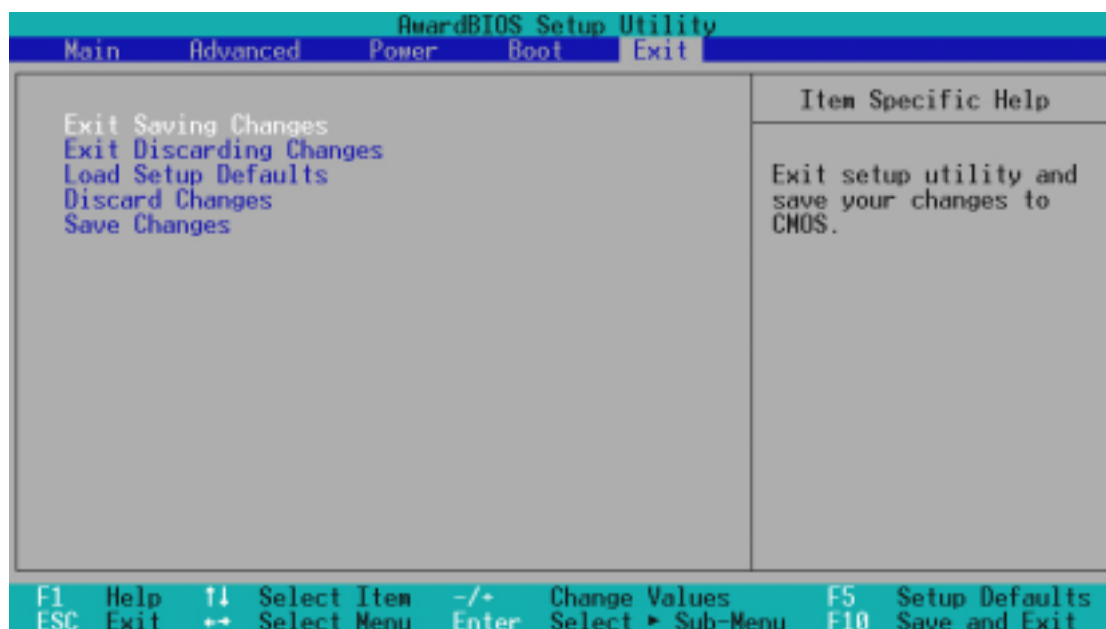
NOTE: Pressing <Esc> does not exit this menu. You must select one of the options from this menu or <F10> from the legend bar to exit this menu.

Exit Saving Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. Once this option is selected, a confirmation is asked. Select [Yes] to save changes and exit.

NOTE: If you attempt to exit the Setup program without saving your changes, the program will prompt you with a message asking if you want to save your changes before exiting. Pressing <Enter> will then save changes while exiting.

Exit Discarding Changes

This option should only be used if you do not want to save the changes you have made to the Setup program. If you have made changes to fields other than system date, system time, and password, the system will ask for confirmation before exiting.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When this option is selected or if <F5> is pressed, a confirmation is requested. Select [Yes] to load default values. You can now select **Exit Saving Changes** or make other changes before saving the values to the non-volatile RAM.

Discard Changes

This option allows you to discard the selections you made and restore the values you previously saved. After selecting this option, a confirmation is requested. Select [Yes] to discard any changes and load the previously saved values.

Save Changes

This option saves your selections without exiting the Setup program. You can then return to other menus and make changes. After selecting this option, all selections are saved and a confirmation is requested. Select [Yes] to save any changes to the non-volatile RAM.

4. BIOS SETUP
Exit Menu

(This page was intentionally left blank.)

5. SOFTWARE SETUP

5.1 ASUS Smart Motherboard 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 **D:\ASSETUP.EXE** (assuming that your CD-ROM drive is drive **D:**).

5.1.1 Support CD Main Menu
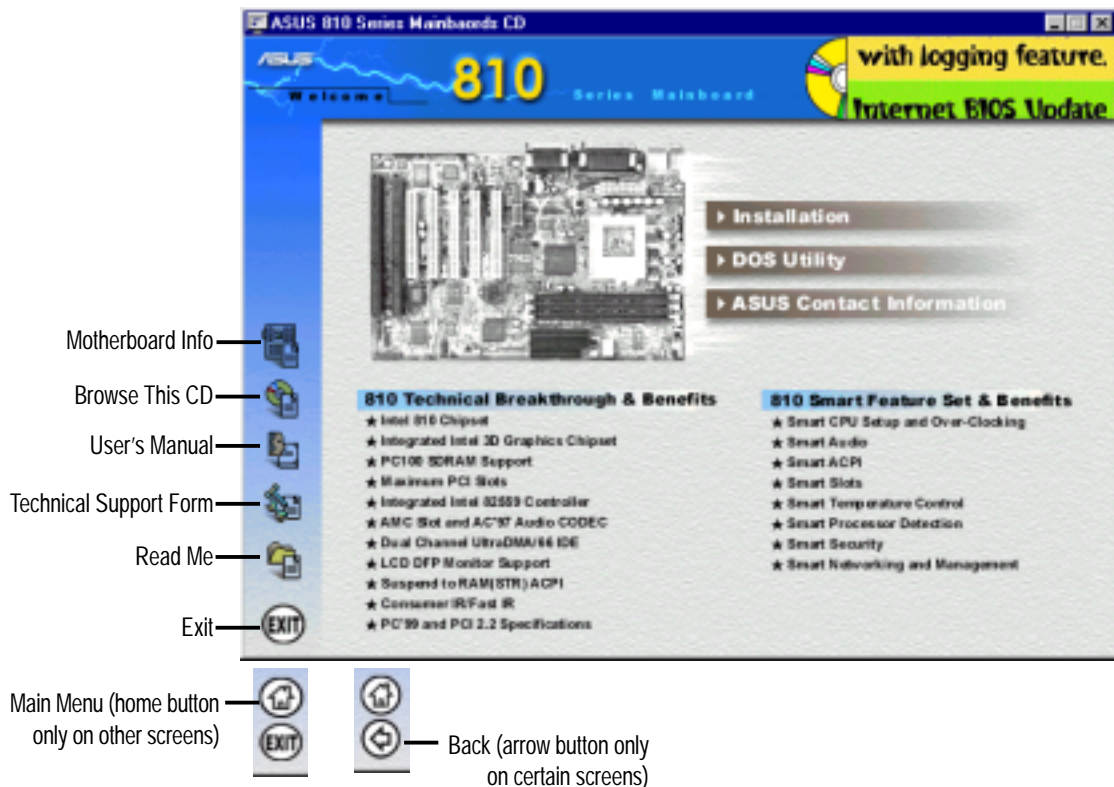
Navigation Button Descriptions

Motherboard Info displays information on your motherboard, BIOS, and CPU.

Browse This CD allows you to see the contents of the ASUS Support CD.

User's Manual displays the motherboard user's manual in pdf format.

Technical Support Form opens up a blank Technical Support Request Form for you to fill and print out when you run into technical difficulties and need technical assistance.

Read Me opens up a file containing additional notes.

Home returns you to the main menu of the support CD. (only on other screens)

Exit allows you to close the support CD.

Back returns you one screen back on the support CD.

5. SOFTWARE SETUP

5.1.2 Support CD Submenus

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

Installation Submenu
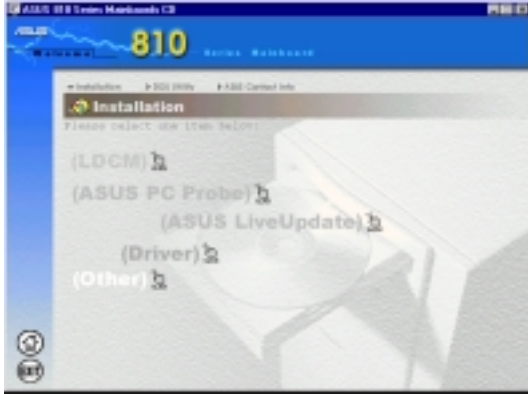
LDCM: Installs software to monitor PC system(s).

ASUS Probe: Installs a simple utility to monitor your computer's fan, temperature, and voltages.

ASUS LiveUpdate: Installs a program to help you update your BIOS or download a BIOS image file.

Driver: Installs the necessary drivers for your on-board components to work properly.

Other: Allows you to install additional software and utilities to help you make better use of your new motherboard.

Driver

Network Driver Setup: Not available on this moth-erboard.

VGA Driver Setup: Intel's 810 DC-100 System and Graphics Controller Driver.

Audio Driver Setup: Not available on this mother-board.

Other

INF Update Utility for 810 Chipset: This utility in-stalls INF files in Windows for the following items: System and Graphics, LPC Interface, SM Bus, PCI Bridge, Bus Master IDE, USB Host, Controllers

Intel Security Driver: Installs a security controller for your Windows 95/98. Read the Release Notes dur-ing installation and the Readme file at the end of the installation for more information.

YAMAHA S-YXG50: Installs Yamaha's software synthesizer for playing MIDI files on a personal com-puter through software alone without usinga hard-ware sound source such as a sound card. (YAMAHA, Soft Synthesizer, S-YXG50, Midplug, and XG studio are all trademarks of Yamaha Corp. Copyright 1996-1999 Yamaha Corporation, All Rights Re-served)

YAMAHA XGStudio: Installs Yamaha's XGStudio Mixer.

Microsoft DirectX 6.0 Driver: Installs Microsoft's DirectX 6.0 driver for Windows 95/98. Microsoft's DirectX is necessary for most multimedia applications to run.

5. SOFTWARE SETUP

PC-cillin 98: Installs Trend's PC-cillin virus protection software. View the online help for more information.

Adobe Acrobat Reader: 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.

Exit: Returns to the Installation menu.

DOS Utility Submenu
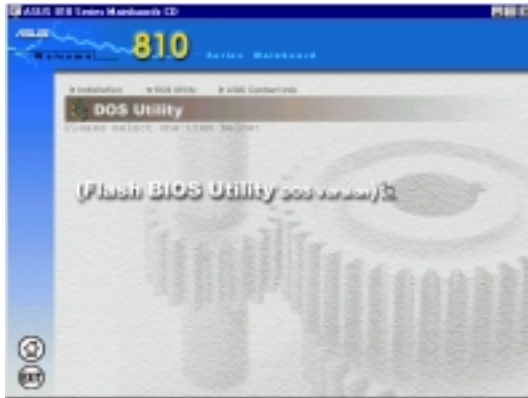
Flash BIOS Utility (DOS Version): Provides information on the Flash BIOS utility (AFLASH.EXE). Choose "Restart in MS-DOS mode" then type "aflash" from the AFLASH folder on the support CD.

ASUS Contact Information Submenu

This page gives Marketing and Technical Support contact information which is similar to the one in the beginning of this User's Manual.

5.2 Operating Systems

Although ASUS motherboards passed testing on several operating systems, the operating system shown in these sections will be that of Microsoft's Windows 98. 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.

5.3 Starting Windows For the First Time

When you start Windows 98 for the first time after installing 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**. When prompted to restart, select **No** and then follow the normal setup procedures later in this section.

IMPORTANT: Selecting **No** for the initial restart prompt is a necessary step because Windows may load an older display driver that is incompatible with the onboard VGA chip. Always use the driver available on the ASUS Support CD or an applicable driver update from your ASUS vendor or from the ASUS web site.

NOTE: Because there are various motherboard settings, options, and expansion cards, the following can only be used as a general reference and not an exact reflection of your system.

5. S/W SETUP
Windows 98

5. SOFTWARE SETUP

5.3.1 Intel 82802 Firmware Hub Device Found

(1) Click here.

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

(3) Insert the Windows 98 CD into your CD-ROM drive, browse to it, and then click here.

(4) Click here.
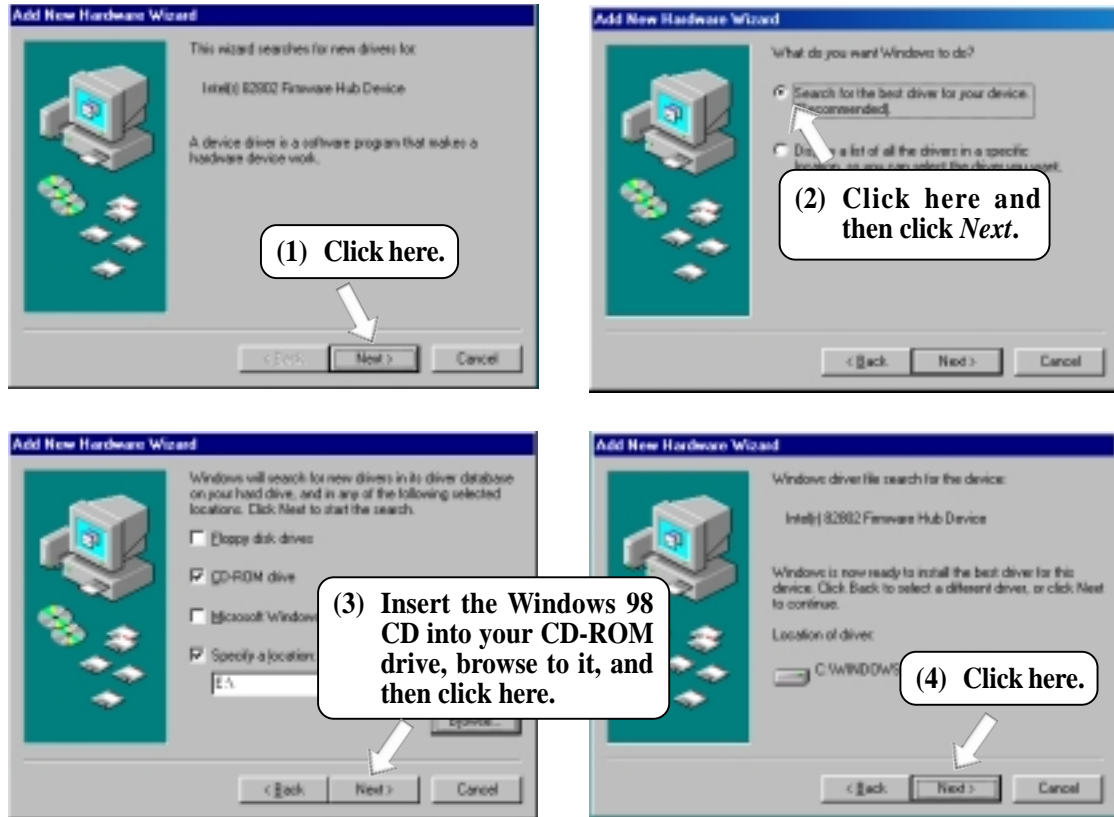
5.4 LDCM Local Setup

System Requirements

- Intel® Pentium® microprocessor or higher.
- Operating system: Microsoft Windows 95 (can be OEM Service Release 2), or Windows 98, or Windows NT 4.0 (Service Pack 4 or later).
- Microsoft Internet Explorer 4.01 or higher.
- Memory: 16 MB of RAM for Windows 95/98; 24 MB of RAM for Windows NT (32 MB recommended).
- Disk storage space: 100 MB of available hard disk space to install; 40-100 MB of available hard disk space to run (depending on cluster size).
- Hardware system: DM or SM BIOS is required for full LDCM functionality.
- Protocols: IP (Winsock-enabled) communication protocol loaded on the client. An IP stack is required on the client, regardless of whether the client accesses the network.
- Monitor resolution of 600x800, 256 colors or greater.

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.
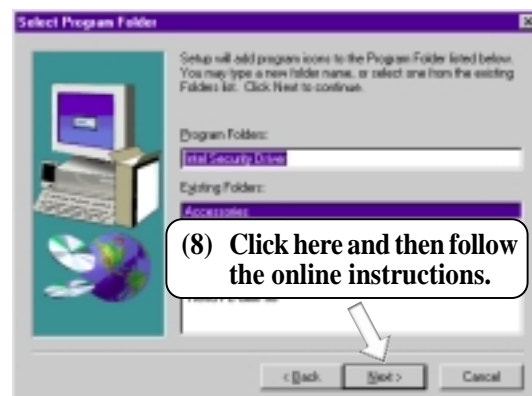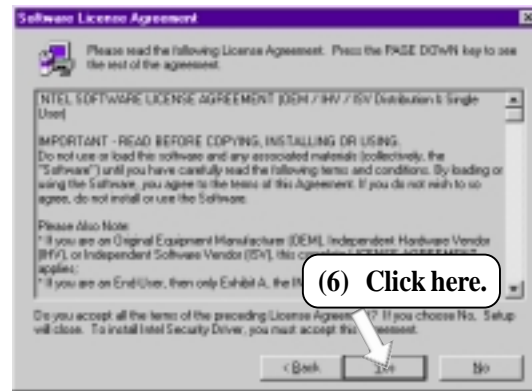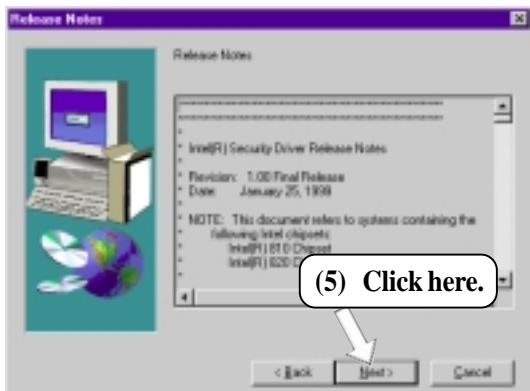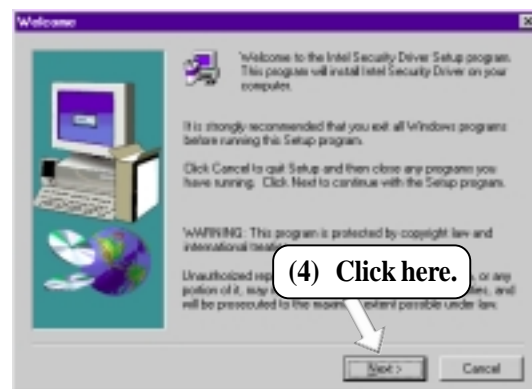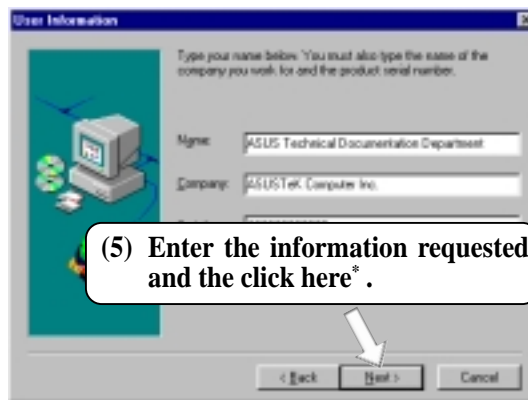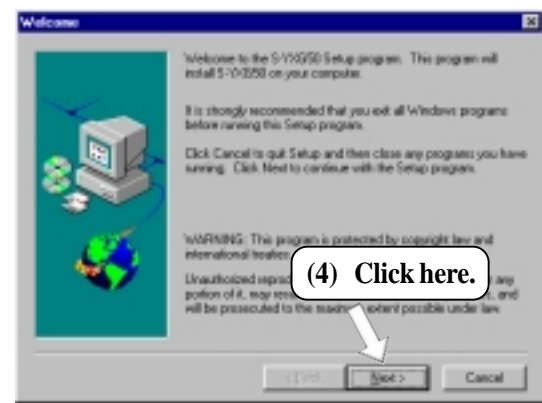
NOTE: LDCM will not run if another hardware monitoring utility, such as ASUS PC Probe, is installed. To uninstall any program, see *5.10 Uninstalling Programs*.

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

5. SOFTWARE SETUP

(5) Click here.

(6) Click here.

(7) Click here.

(8) Click here.

(9) Click here.

(10) Click here and then follow the online instruction to finish installing.

5. S/W SETUP
Windows 98

5.5 LDCM Administrator Setup

System Requirements

- Intel® Pentium® microprocessor or higher.
- Operating system: Microsoft Windows 95 (can be OEM Service Release 2), or Windows 98, or Windows NT 4.0 (Service Pack 4 or later).
- Microsoft Internet Explorer 4.01 or higher.
- Memory: 16 MB of RAM for Windows 95/98; 24 MB of RAM for Windows NT (32 MB recommended).
- Disk storage space: 100 MB of available hard disk space to install; 40-100 MB of available hard disk space to run (depending on cluster size).
- Hardware system: DM or SM BIOS is required for full LDCM functionality.
- Protocols: IP (Winsock-enabled) communication protocol loaded on the client. An IP stack is required on the client, regardless of whether the client accesses the network.
- Monitor resolution of 600x800, 256 colors or greater.

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.
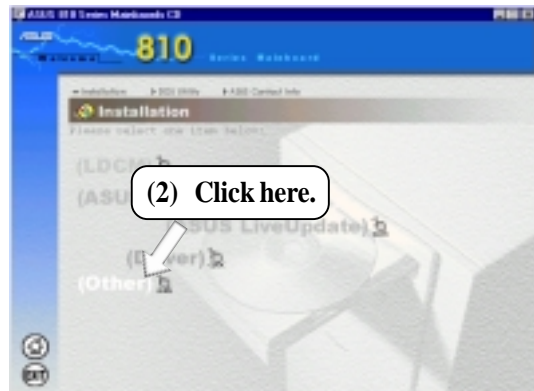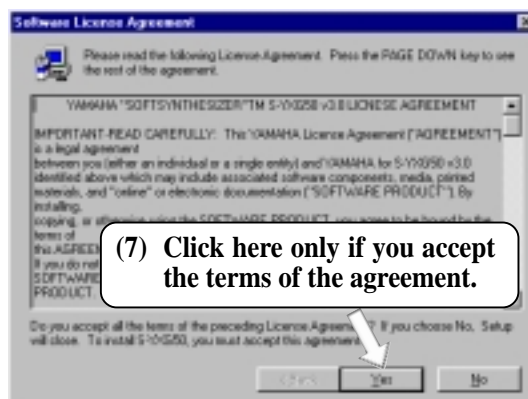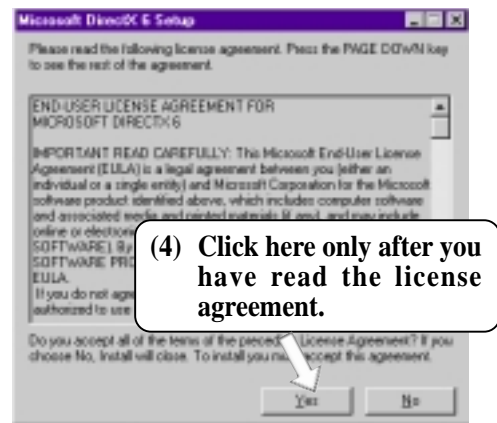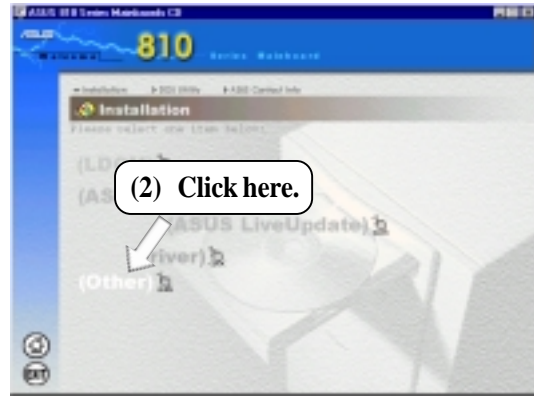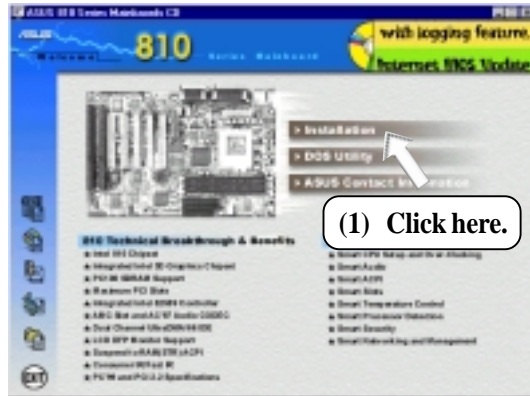
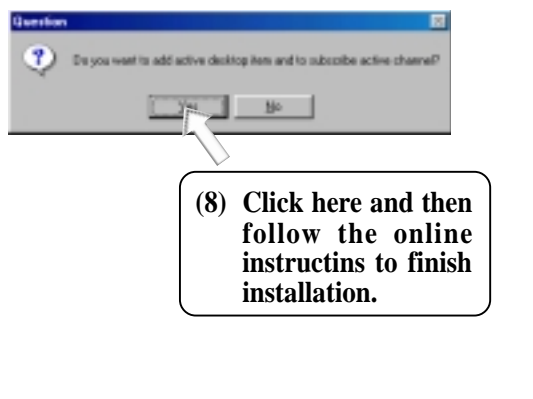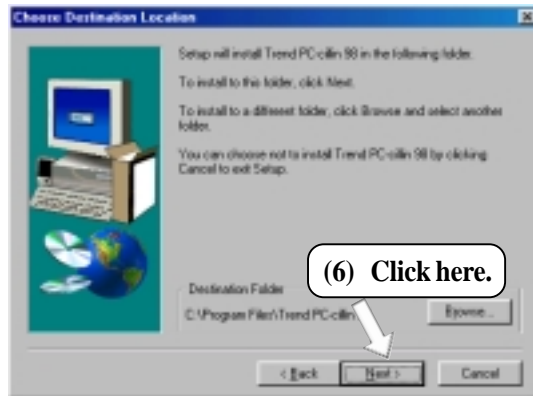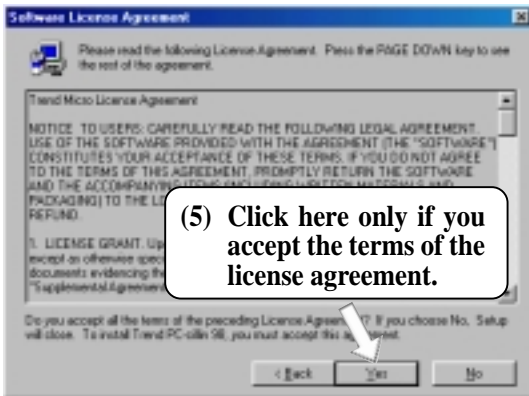**NOTE:** LDCM will not run if another hardware monitoring utility, such as ASUS PC Probe, is installed. To uninstall any program, see *5.10 Uninstalling Programs*.

(1) **Click here.**

(2) **Click here.**

(3) **Click here.**

(4) **Click here.**

Software License Agreement

Please read the following License Agreement. Press the PAGE DOWN key to see the rest of the agreement.

Intel LANDesk Client Manager v6.0
SOFTWARE LICENSE AGREEMENT

IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.

Do not use or load this software and any associated materials (collectively, the Software) until you have

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

LICENSE. Y
back up cop
1. You may
except as p

Do you accept all the terms of the preceding License Agreement? If you choose No, Setup will close. To install Client Manager, you must accept the agre

< Back   Yes   No

Select Components

Select the components you want to install, clear the components you do not want to install.

Components

☑ Backward Compatibility Console   3636 K
☑ Alert On LAN Proxy   2232 K

Description
Enables this computer to manage computers running Client Man

(6) Click here.

Space Required: 57424 K
Space Available: 218328 K

< Back   Next >   Cancel

Additional Language Support

If non-English computers need to connect to this computer, you need to install language support for those computers so they can view this client in their native language. Select the language(s) you want to install.

French
German
Italian
Japanese
Spanish

(7) Click here.

English is always installed.

< Back   Next >   Cancel

Warning

Setup has detected that Adobe Acrobat reader is not installed on this system or there are no viewers associated with Acrobat files. Acrobat reader is required in order to view the LDCM documentation.

OK

(8) Click here.

Setup Complete

Setup has finished copying files to your computer.

Before you can use the program, you must restart Windows or your computer.

⦿ Yes, I want to restart my computer now.

○ No, I will restart my computer later.

Remove any disks
complete setup.

(9) Click here.

< Back   Finish

---

5. S/W SETUP
Windows 98

5.6 ASUS PC Probe

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.
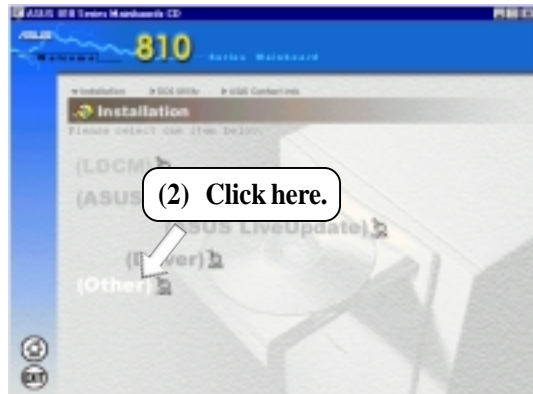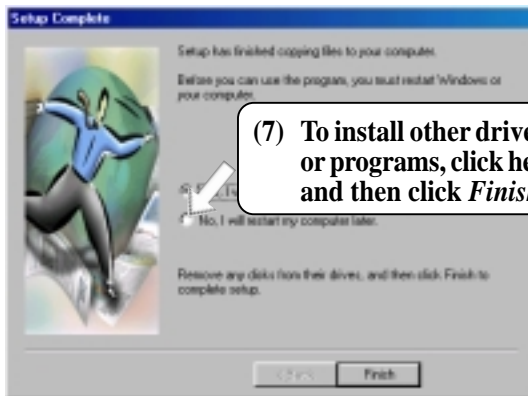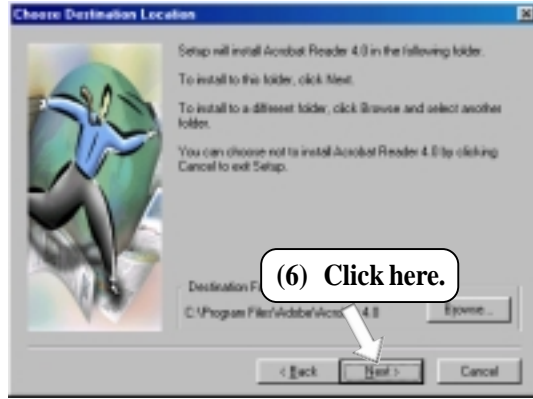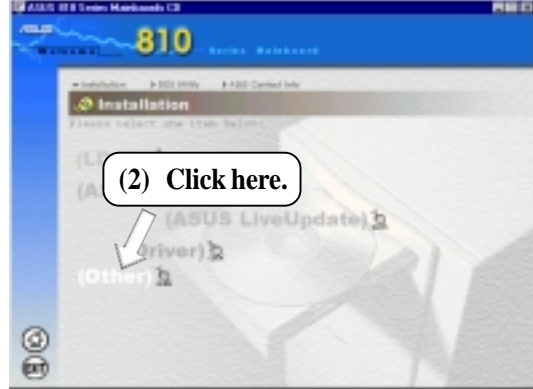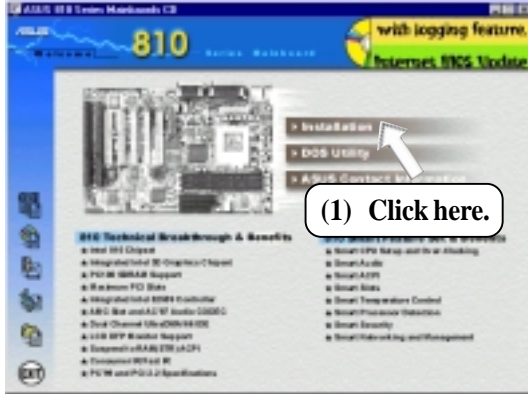
NOTE: ASUS PC Probe will not run if another hardware monitoring utility, such as LDCM, is installed. To uninstall any program, see *5.10 Uninstalling Programs*.

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here.

(6) Click here.

5. SOFTWARE SETUP

CPU Thermal Instrumentation Settings

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

Current CPU Temperature: 53 C

Maximum Threshold Temperature: 54 C

(7) Click here.

Polling Interval (1 Sec - 60 Sec)

< Back   Next >

ASUS Probe Configuration:

Install the following ASUS Probe components:

Current Settings:

Install the following ASUS Probe components:

Baseboard Thermal Instrumentation Settings
   Current Temperature: 37 C
   Critical Threshold : 60 C
   Polling Interval   : 5 Sec

CPU Thermal Instrumentation Settings
   Current T
   Current T
   Maximum
   Polling I

(8) Click here.

< Back   Next >   Cancel

Select Folder

Setup will add items to the folder in the Program Folders box. You can type a new folder name or select one from the Existing Folders list.

Program Folders:

ASUS Utility

Existing Folders:

Accessories
Adobe Acrobat 4.0
ASUS Utility
Internet Explorer
Online Services
StartUp
YAMAHA SoftSynth
YAMAHA XGstudio

(9) Click here.

< Back   Next >   Cancel

Setup Complete

ASUS Probe V2.10 Setup is now completed. You can launch ASUS Probe V2.10 now. Or you can choose to auto-execute ASUS Probe V2.10 each time Windows boots up. Choose the options you want below:

☑ Yes, I want to launch ASUS Probe V2.10 now.

☑ Yes, I want to auto-execute ASUS Probe V2.10.

Click Finish to

(10) Click here.

< Back   Finish

5.7 ASUS LiveUpdate

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

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here.

(6) Click here.
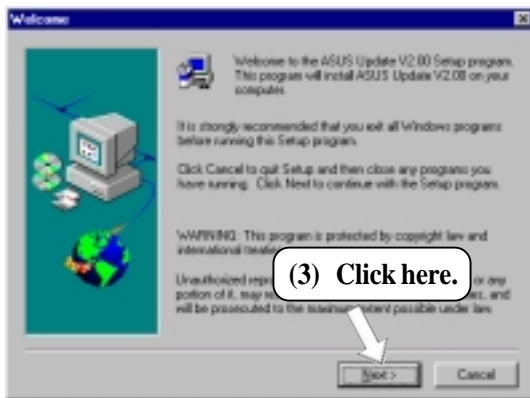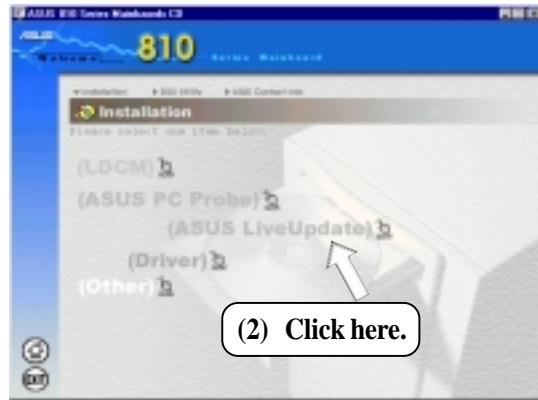
5.8 Drivers

5.8.1 VGA Driver 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: Before you install the VGA driver, make sure that the INF Update Utility is installed (see *5.9.1 INF Update Utility for 810 Chipset*)

(1) After your computer has re-started, double-click the CD drive icon and then click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here.

(6) Click here.

(7) Click here.

(8) Browse to E:\VGA\WIN98 and then click here.

(9) To install other drivers or software, click here, and then click *Finish*.

5. S/W SETUP
Windows 98

5.8.2 Audio Driver 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.

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here and then click *OK* to install other drivers and software.
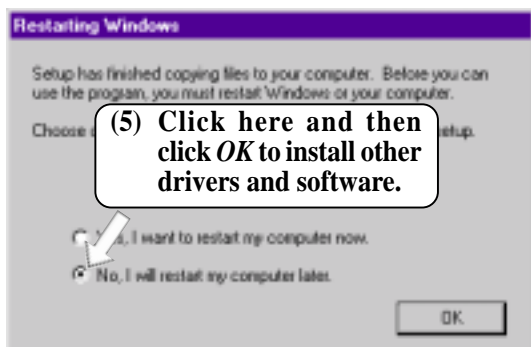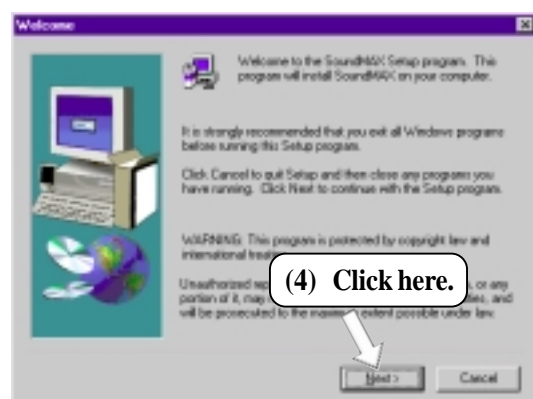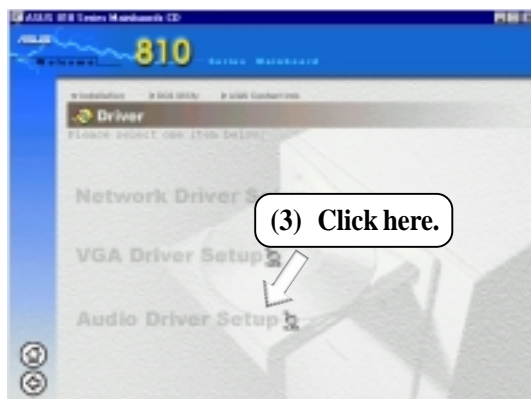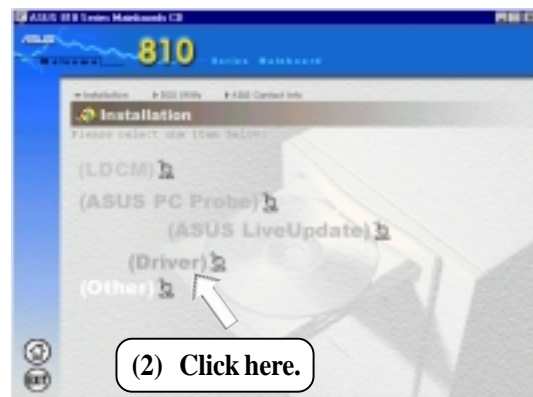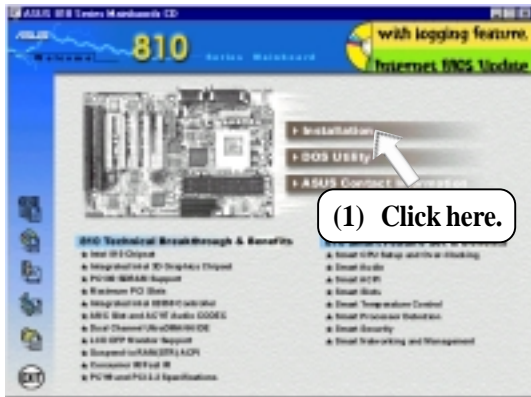
5. S/W SETUP
Windows 98

5.9 Other

5.9.1 INF Update Utility for 810 Chipset

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

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

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

(6) Click here.

(7) Click here to install the driver to the default folder.

(8) Click here and then follow the online instructions. Restart when prompted
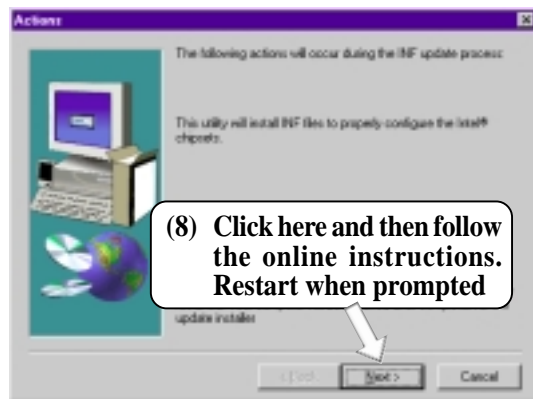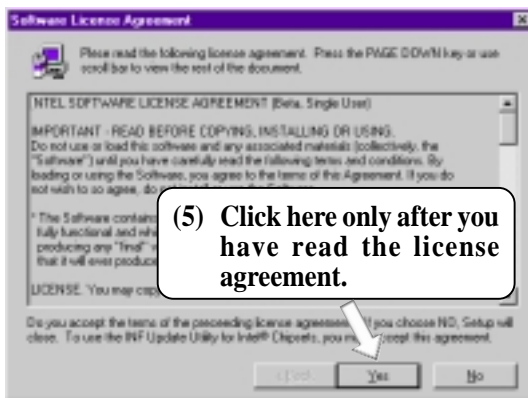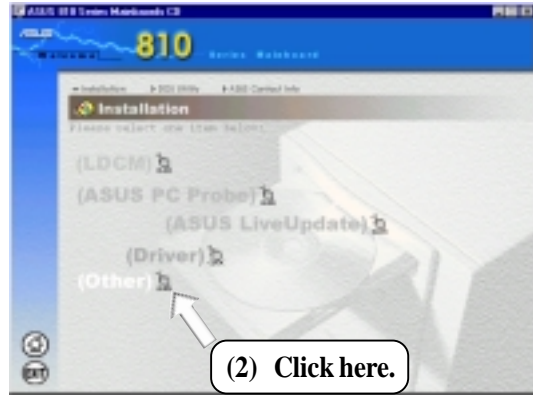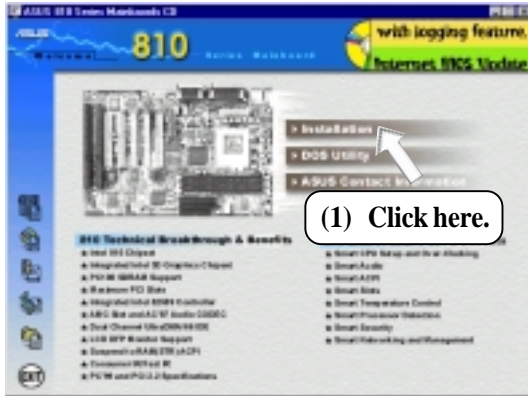
5. S/W SETUP
Windows 98

5.9.2 Intel Security 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.

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here.

(6) Click here.

(7) Click here.

**(8) Click here and then follow
the online instructions.**
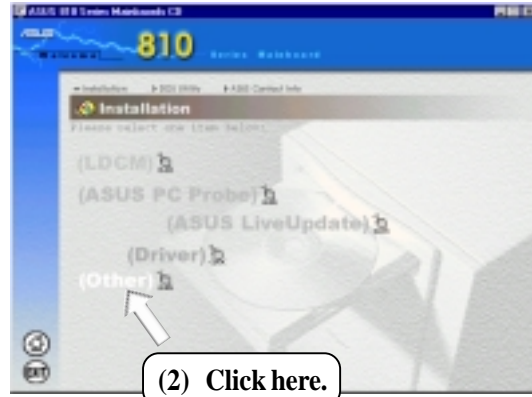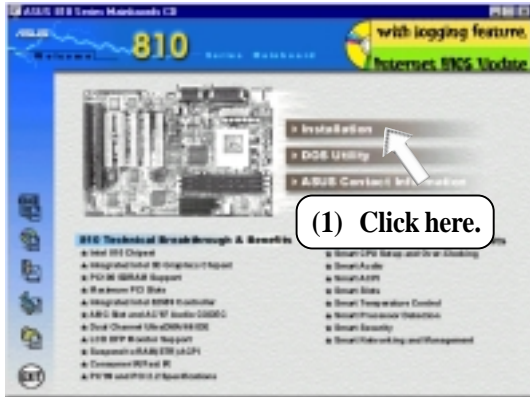
5. SOFTWARE SETUP

5.9.3 YAMAHA S-YXG50

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

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Enter the information requested and the click here* .

(6) Click here.

* The serial number can be found on the software license agreement card.

(7) Click here only if you accept the terms of the agreement.

(8) Click here and follow the online instructions to complete installation.

5. S/W SETUP
Windows 98

5. SOFTWARE SETUP

5.9.4 YAMAHA XGStudio

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

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

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

(6) Click here.

(7) Click here.

(8) Click here.

(9) Click here.
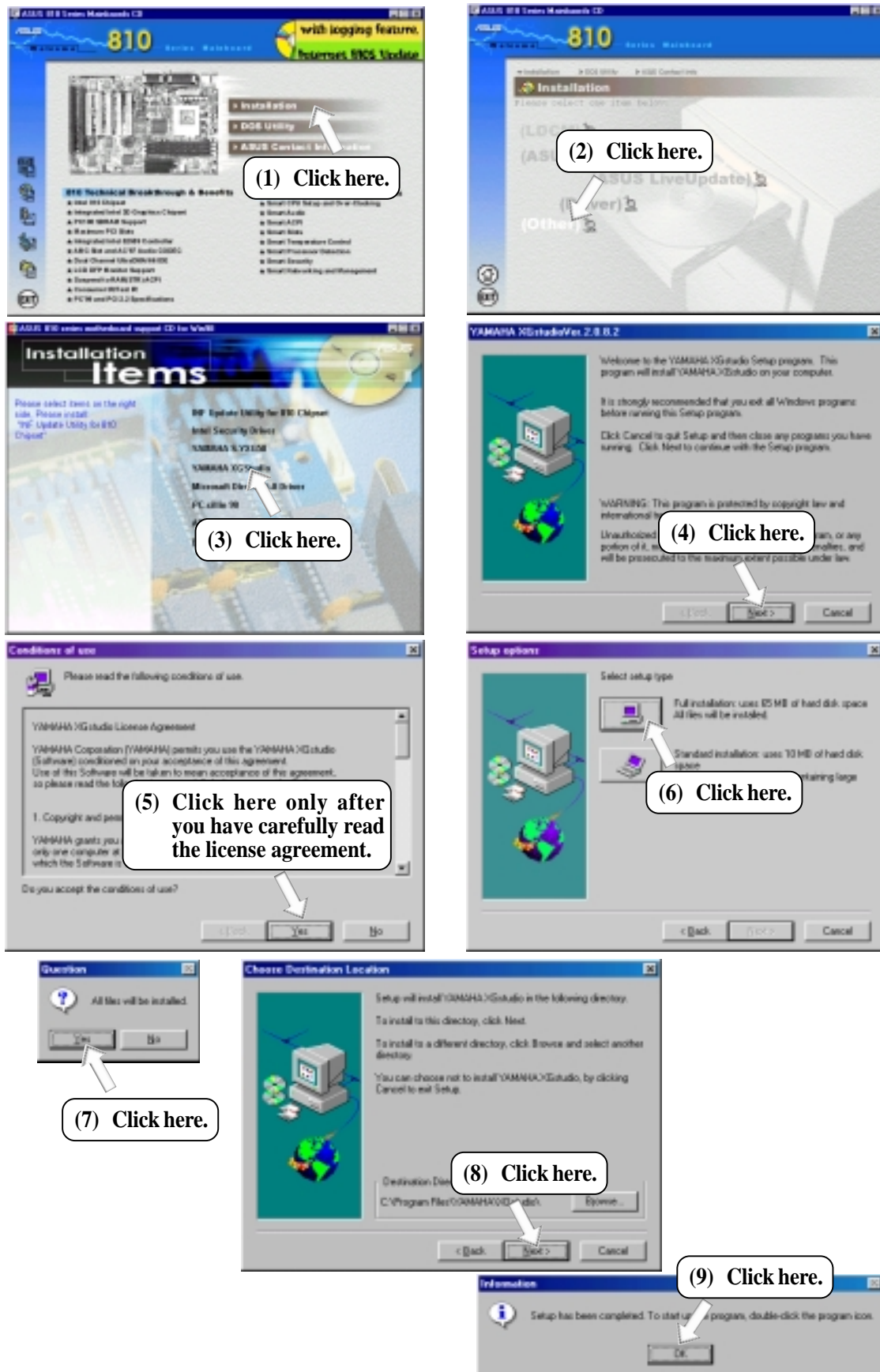
5.9.5 Microsoft DirectX 6.0 Driver

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.

(1)   Click here.

(2)   Click here.

(3)   Click here.

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

(5)   Click here.

(6)   Click here.

5.9.6 PC-cillin 98

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

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here only if you accept the terms of the license agreement.

(6) Click here.

(7) Click here.

(8) Click here and then follow the online instructins to finish installation.
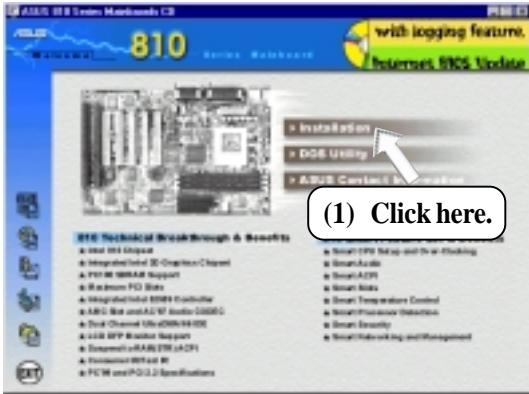
5. SOFTWARE SETUP

5.9.7 Adobe Acrobat Reader V4.0

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

(1) Click here.

(2) Click here.

(3) Click here.

(4) Click here.

(5) Click here only if you accept the terms of the license agreement.

(6) Click here.

(7) To install other drivers or programs, click here and then click *Finish*.

5. S/W SETUP
Windows 98

5.10 Uninstalling Programs

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

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

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

(3) **Click here.**

6. SOFTWARE REFERENCE

6.1 Display Properties

The motherboard's built-in 2D/3D AGP VGA supports professional graphics design, gaming, learning, and business applications.

NOTE: Depending on your system configuration, components, and options, your system may not show all of the settings displayed in the following pictures.

To open the Properties dialog box, right-click the desktop and select **Properties**, the **Settings** tab, and then the **Advanced** button.

General

The **Display box** displays the current font size of the selected monitor. To use a different font size, click the arrow, and then click the font size you want.

The **Compatibility** box allows you to specify when to apply changes to system color settings. **NOTE:** Some programs might not display colors correctly without being restarted after you make changes. To avoid this problem, close the program, change the color settings, and then open the program again.
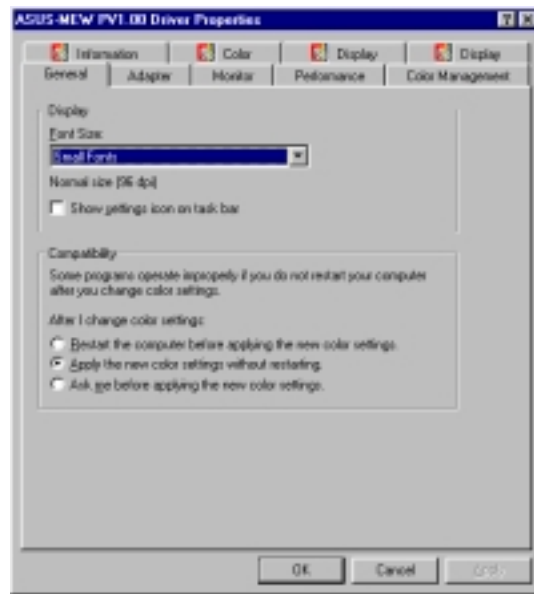
Adapter

Shows what type of display adapter you are currently using. To install the software for a new display adapter, click **Change**.

6. SOFTWARE REFERENCE

Monitor

Shows what type of monitor you are currently using. To install the software for a new monitor, click **Change**.
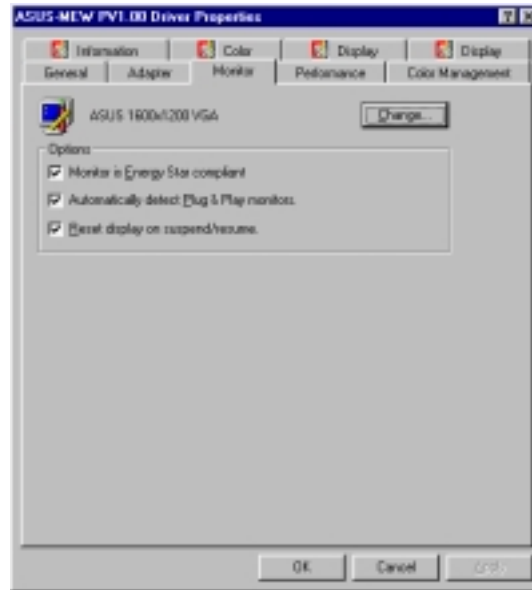
Performance

Specifies the degree of acceleration you want for your graphics hardware. Full acceleration is the fastest and is recommended for most computers. If your ocmputer is having problems and you suspect graphics acceleration to be the cause, use the highest setting at which you do not have problems.

Color Management

Lists all the color profile currently associated with your monitor. Click a profile to make it the active profile. Otherwise, the default profile is the active profile.
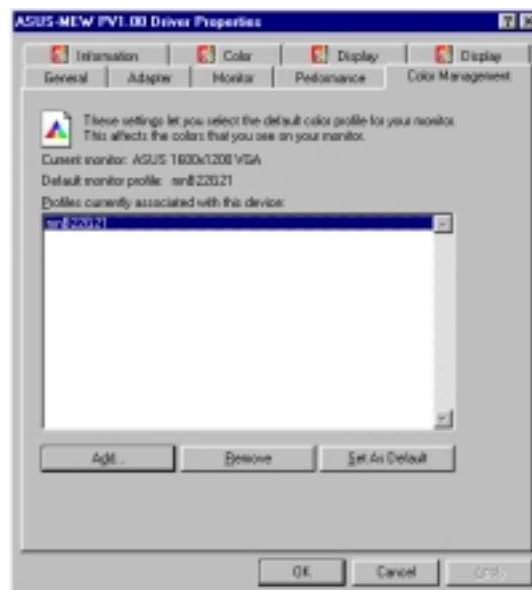
6. SOFTWARE REFERENCE

Information

Gives information on your graphics device such as chipset, memory, BIOS, and drivers. Internet links are also available for easy access to the ASUS Web page for new updated drivers and notices.

Color (Desktop)

Allows you to adjust the quality of your display according to your preference. Gamma correction is available only in 16-bit color and 24-bit color (true color, 16.7M-color) modes. In 16-color and 8-bit color (standard color, 256-color) modes, the gamma correction function is not supported.

Color (Direct3D/Game)

This is the same as the color adjustments for the desktop but this applies to direct3D applications and games.
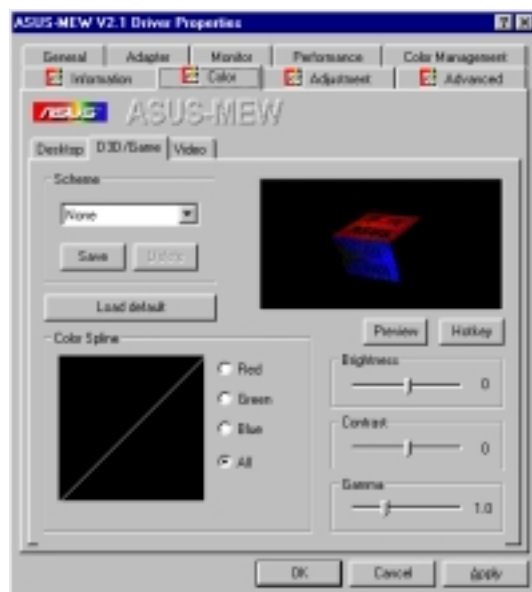
6. SOFTWARE REFERENCE

Color (Video)

Lets you make color settings for videos.

Adjustment

Allows you to adjust the display position, size, and refresh rate.

Change refresh rate

Allows you to adjust the default refresh rates for each resolution and color settings.

Change current refresh rate

Allows you to adjust the currently displayed resolution refresh rate.
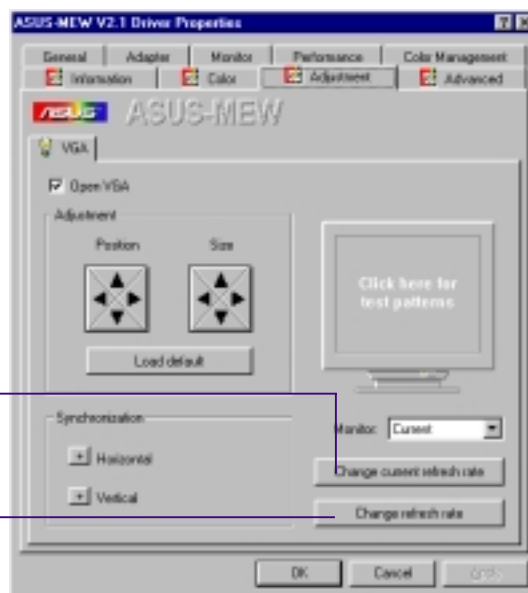
Advanced

Allows you to assign hot keys to enable the **O**n**S**creen **D**isplay (OSD). To use this function, select **Enable OSD**. You may want to change the default hot key (CTRL+ALT+O) if it conflicts with the hot keys of other games, video players, or Windows programs.

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 or not to show the screen the next time you open PC Probe. To bypass this startup screen, clear the **Show up in next execution** check box.
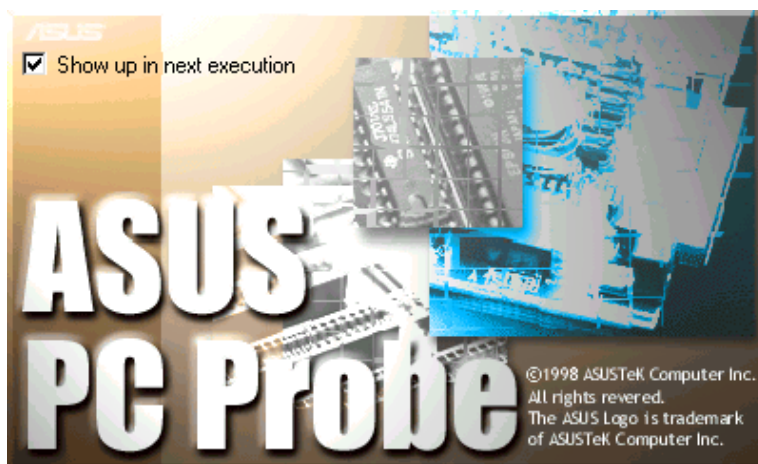
To open **ASUS PC Probe**, click the Windows **Start** button, point to **Programs**, and then **ASUS Utility**, and then click **Probe Vx.xx**.

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.
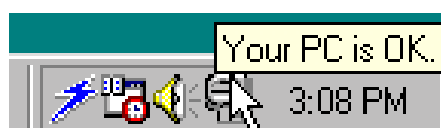
6. SOFTWARE REFERENCE

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)
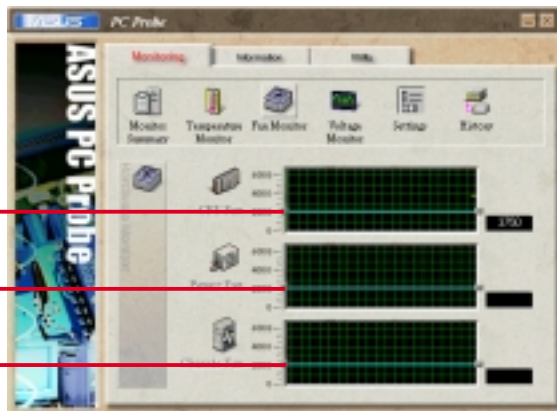
Voltage Monitor

Shows the PC's voltages.

---
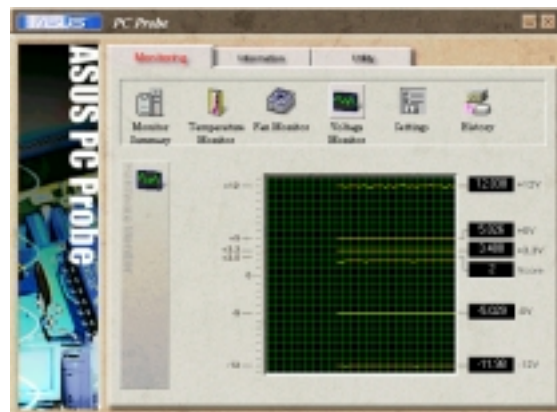
6. SOFTWARE REFERENCE

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

CPU Cooling System Setup
Lets you select when to enable software CPU cooling. When **When CPU Overheated** is selected, the CPU cooling system is enabled whenever the CPU temperature reaches the threshold value.

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

Information

Hard Drives
Shows the used and free space of the PC's hard disk drives and the file allocation table or file system used.

Memory
Shows the PC's memory load, memory usage, and paging file usage.

Device Summary
Shows a summary of devices in your PC.

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

Utility
Lets you run programs outside of the ASUS Probe modules. To run a program, click **Execute Program**.

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.
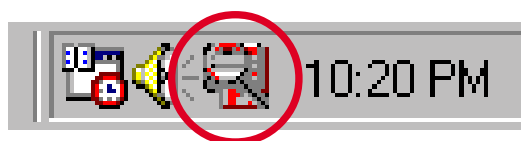
6.3 ASUS LiveUpdate

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

1. Start ASUS Update V2.00.
Launch the utility from **Start | Programs | ASUS Utility | ASUS LiveUpdate V1.00.**
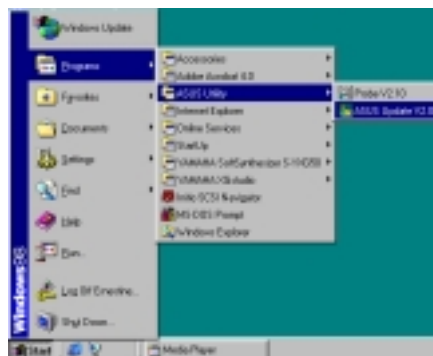
2. Select an update method.

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

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

6. SOFTWARE REFERENCE

6.4 Using Yamaha XGstudio Player

To start the Yamaha XGstudio, click **Start**, point to **Programs**, point to **YAMAHA XGstudio**, and then click **XGstudio Player**.

6.4.1 Yamaha XGstudio Player Control Panel

POWER
Closes the player. **NOTE:** You can also close the player by pressing <Alt>+<F4>.

—
Minimizes the player to an icon.

SONG
Displays the *Set Play List* dialog box where you can create a list of songs to play automatically. NOTE: You can also display the Set Play List dialog box by pressing <Ctrl>+<O>.

►
Loads and plays the MIDO file currently selected in *Play List*. When all the songs in the Play List have finished, playing stops automatically and the song at the beginning of the list is designated as the current-play song.

II
Pauses the playing of a song. Click this button again or click **►** to resume playing.

■
Stops the playing of a song and returns the start-play location to the beginning of the song.

I◄◄
Designates the first song in the Play List as the new current-play song.

◄◄
Designates the song just before the currently playing song as the new current-play song.

►►
Designates the song after the song currently playing as the new current-play song.

►►I
Designates the last song in the Play List as the new current-play song.

Soft Synthesizer
Displays the control panel for the Soft Synthesizer features.

▲
Speeds up the tempo of the song being played.

▼
Slows down the tempo of the song being played.
NOTE: The tempo is reset to 0 for each new song.

SET
Displays the *Set Sound Source* dialog box.

?
Displays Help. **NOTE:** You can also display Help by pressing <F1>.

Increases/decreases the volume level of the song being played by dragging the slider up/down.

For detailed instructions and references to software and utilities, use the programs' online help and electronic documentations.

6. SOFTWARE REFERENCE

6.5 Using Yamaha XGstudio Mixer

To start the Yamaha XGstudio, click **Start**, point to **Programs**, point to **YAMAHA XGstudio**, and then click **XGstudio Mixer**.

6.5.1 Yamaha XGstudio Mixer Control Panel
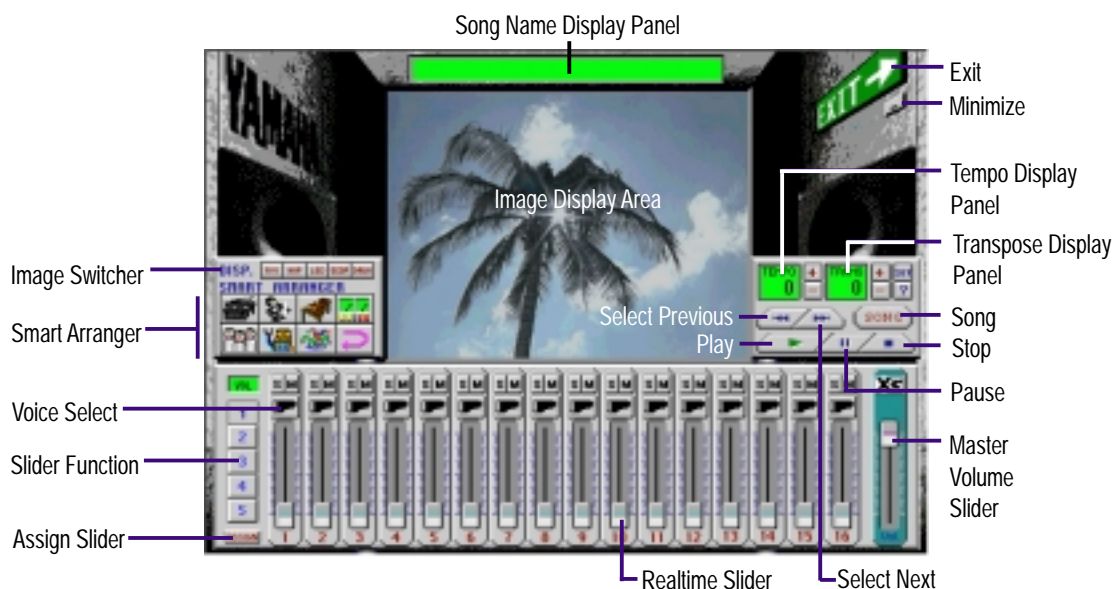
Image Switcher

(AVI file): Video image
Displays the AVI file with the same name as the MIDI file being played. If one is not available, the preset DEFAULT.AVI file is played.

(BMP file): Still image
Displays the BMP file with the same name as the MIDI file being played. If one is not available, the preset DEFAULT.BMP file is played

(LED velocity meter): Animation
Displays the volume (amount of velocity) of each MIDI channel.

(SCOPE velocity meter): Animation
Displays the volume (amount of velocity) of each MIDI channel graphically in a radio chart.

(drum and percussion): Animation
Displays animation with lights that match the drums and percussion used in the drum channel (10ch).

6. SOFTWARE REFERENCE

Smart Arranger
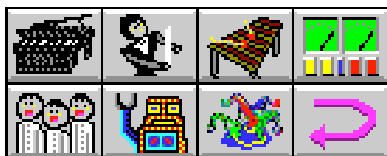
The Smart Arranger allows you to easily change the mood of a song. You can switch between seven ensemble voice sets with these buttons. To return to the original voice set, click .

 Piano   **Orchestra**   **Mallet**   **Techno**
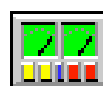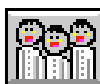
 Choir   **Robot**   **Nature**   **Return**

6.6 Hardware Information

(1) Click here.

7. APPENDIX

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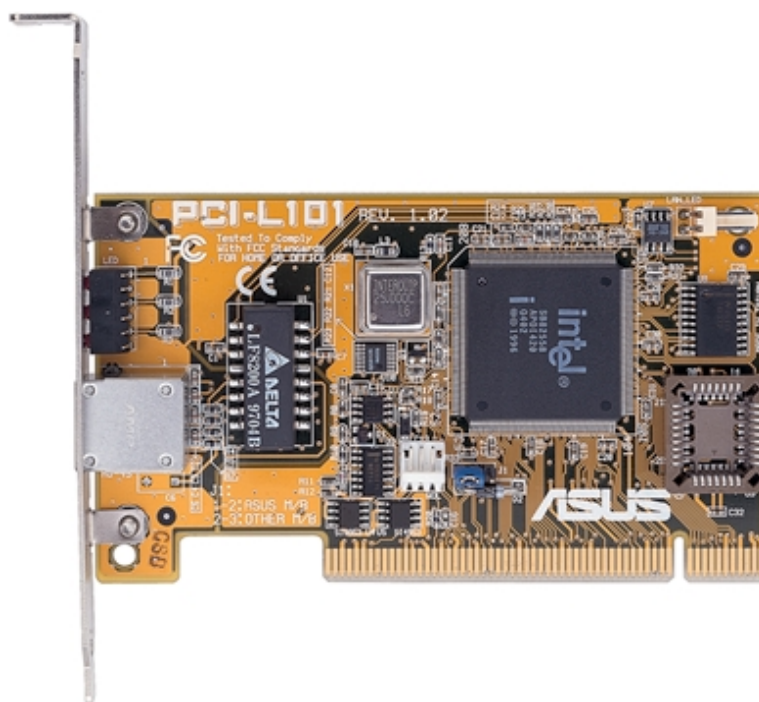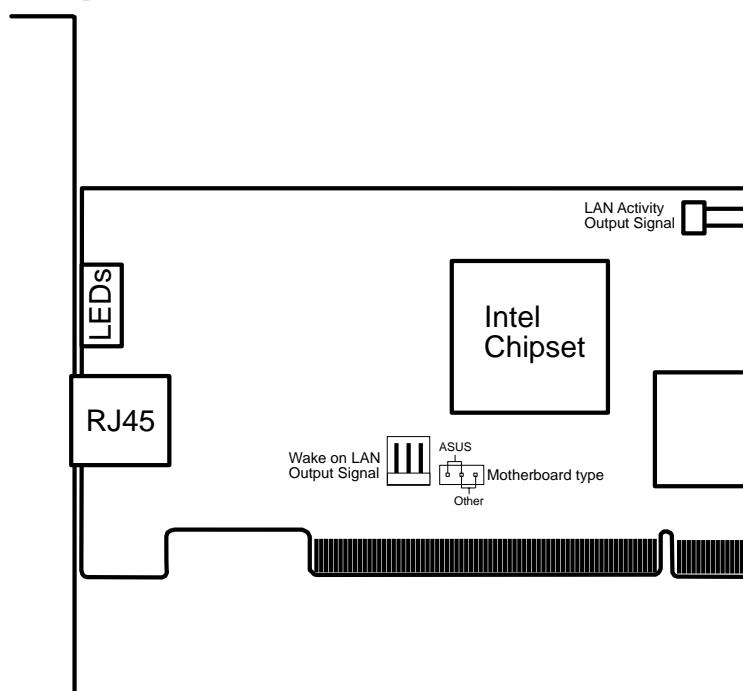
If you are using the ASUS PCI-L101 on an ASUS motherboard, leave the jumper on its defaut setting of "ASUS." If you are using another brand of motherboard, set the jumper to "Other." Connect the Wake on LAN (WOL) output signal to the motherboard's WOL_CON in order to utilize the wake on LAN feature of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

7. APPENDIX

7.1.1 Features

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

7.1.2 Software Driver Support

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

7.1.3 Question and Answer

Q: What is Wake-On-LAN ?

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

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

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

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

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

7. APPENDIX

7.2 S370 Series CPU Cards

The optional ASUS S370 Series CPU Cards allow Slot 1 motherboards to accept socket 370 processors. The ASUS S370 Series CPU Cards give 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 are pictures of the ASUS S370 Series CPU Cards with black plastic retainers attached to the edge. The retainer fins are used to hold the ASUS S370 Series CPU Cards in place using the motherboard's Slot 1 retention mechanisms.

ASUS S370 CPU Card (standard model)
• Better Support with Full Retainer
• Low Cost

CPU Voltage Jumpers
Retainer
Socket 370
Retainer Fin

Slot 1 Compatible Connector
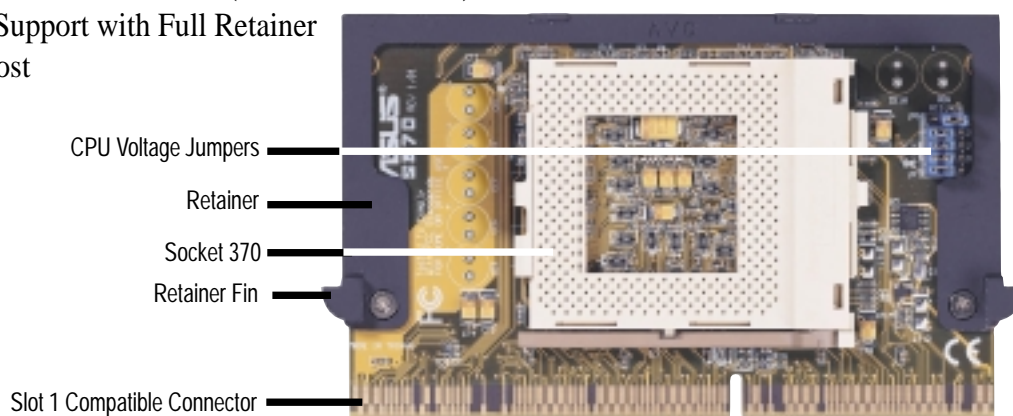
ASUS S370-L CPU Card (for smaller cases)
• Low Profile / Low Cost
• CPU Temperature Sensing
  (on supported motherboards)
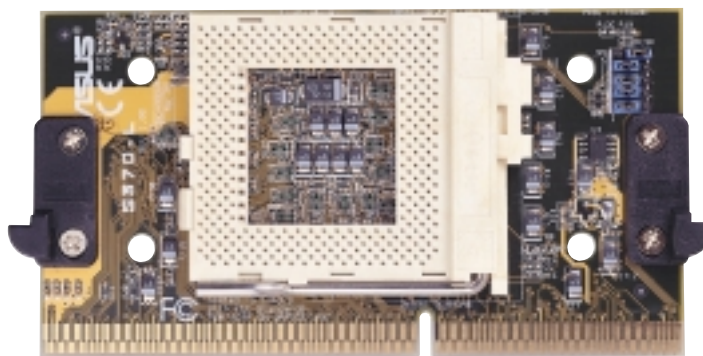
ASUS S370-D CPU Card (performance model)
• Better Support with Full Retainer
• CPU Temperature Sensing
  (on supported motherboards)
• Better Components
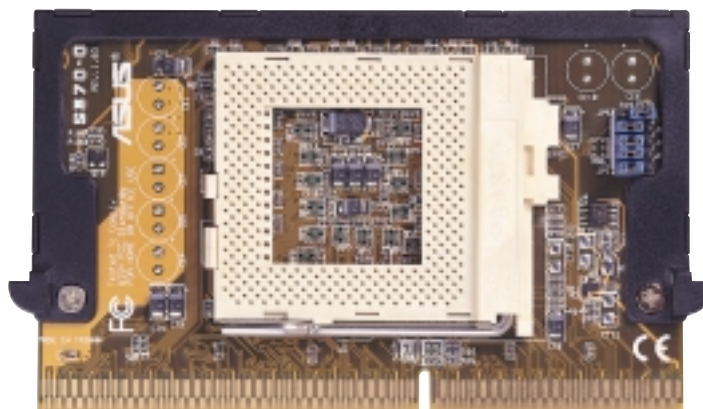
7. APPENDIX

7.2.1 Using the ASUS S370 Series CPU Card

The general procedure for using the ASUS S370 Series CPU Card is as follows:

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 Series CPU Card or this 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 Series CPU Card into Slot 1 on the motherboard. The retainer fin on each side of the ASUS S370 Series 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.

7.2.2 S370 Series CPU Card Jumper Settings

The only set of jumpers on the ASUS S370 Series CPU Card is used for setting the voltage sent to the CPU. 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.

Jumper settings (JP5, JP4, JP3, JP2, JP1 — pins 1 2 3):

Voltage	Settings
1.80 Volts	
1.85 Volts	
1.90 Volts	
1.95 Volts	
2.00 Volts	
2.05 Volts	
2.10 Volts	
2.20 Volts	
2.30 Volts	
2.40 Volts	
2.50 Volts	
2.60 Volts	
CPU Def.	
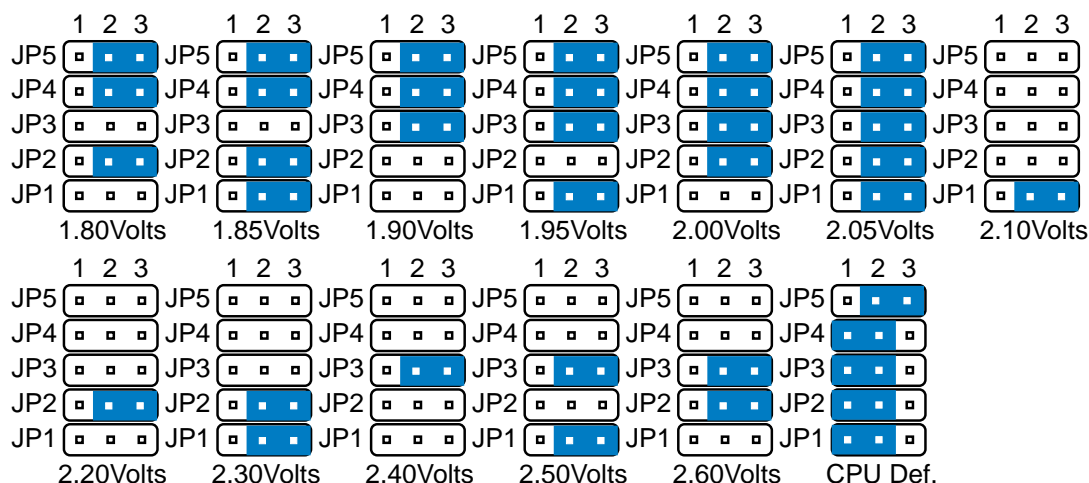
Socket 370 CPU Voltage

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.

INDEX

INDEX

INDEX

INDEX

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 [DVD]

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

/SUS® 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

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

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
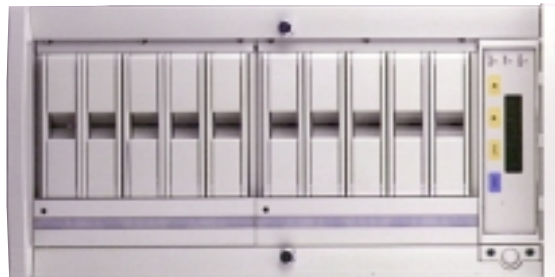
ASUS PCI-DA2100/2200 Series SCSI RAID Card

- 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