/ISUS® TUWE-M

Intel® 810E2 MicroATX Motherboard

USER'S MANUAL

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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.

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Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This Class B digital apparatus complies with Canadian ICES-003.

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

1. INTRODUCTION

1.1 How This Manual Is Organized

This manual is divided into the following sections:

1. INTRODUCTION	Manual information and checklist
2. FEATURES	Production information and specifications
3. HARDWARE SETUP	Intructions on setting up the motherboard.
4. BIOS SETUP	Intructions on setting up the BIOS
5. SOFTWARE SETUP	Intructions on setting up the included software
6. SOFTWARE REFERENCE	Reference material for the included software
7. APPENDIX	Optional items and general reference

1.2 Item Checklist

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

Package Contents

- ☑ (1) ASUS Motherboard
- ☑ (2) 40-pin 80-conductor ribbon cable for internal UltraDMA100/66/33 IDE drives
- ☑ (1) Ribbon cable for (1) 5.25" and (2) 3.5" floppy disk drives
- ☑ (1) COM 2 Bracket
- ☑ (1) Bag of spare jumpers
- ☑ (1) Support drivers and utilities
- ☑ (1) This Motherboard User's Manual
- ☑ (1) ASUS 2-port USB connector set with bracket

Optional Items

- ☐ ASUS IrDA-compliant infrared module

2. FEATURES

2.1 The ASUS TUWE-M

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

2.1.1 Core Specifications

- **Latest Intel Processor Support**

  P III® Tualatin™   100/133MHz FSB FC-PGA2
  P III® Coppermine™   100/133MHz FSB FC-PGA
  Celeron™   100/66MHz FSB FC-PGA

- **North Bridge System Chipset:** The Intel® 810E2 chipset supports the latest Intel® Tualatin™ processor and offers full backward compatibility to PIII® Coppermine™ and Celeron™ CPUs. The chipset supports industry standard 66/100/133 Front Side Busses (FSBs), and up to 512MB of PC100 SDRAM, and a 3D/2D hardware accelerator.

- **South Bridge System Chipset:** The Intel I/O Controller Hub 2 (ICH2) features support for UltraDMA/100, which allows burst mode data ASUS IrDA-compliant infrared module transfer rates of up to 100MB/sec; two USB controllers for a total of 4 USB ports.

- **Intel® Accelerated Hub Architecture:** Features a dedicated high speed hub link between the ICH2 and GMCH with a bandwidth of 266MB/sec – twice the maximum bandwidth of the PCI bus.

- **PC100 Memory Support:** Equipped with two Dual Inline Memory Module (DIMM) sockets to support PC100-compliant non-ECC SDRAMs (available in 64, 128, 256 densities) up to 512MB.

- **High-Speed Data Transfer Interface:** UltraDMA/100 increases the data transfer rate to 100MB/s. UltraATA/100 is backward compatible with both DMA/66 and DMA/33 with existing DMA devices and systems. (UltraDMA100/66 requires a 40-pin 80-conductor cable to be enabled.)

- **Super Multi-I/O:** Provides two high-speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. UART2 can also be directed from COM2 to the Infrared Module for wireless connections.

- **Onboard LAN:** Provides Intel's 82562ET chipset, an integrated Platform LAN Connect (PLC) device with 10BASE-T/100BASE-TX capabilities. Network connectivity is integrated through the Intel I/O Controller Hub 2 (ICH2), which offers enhanced bus mastering for high-speed data transfers. The bus mastering facility permits high-level command processing.

- **Smart BIOS:** 2Mb firmware provides Vcore and CPU/SDRAM frequency adjustments, boot block write protection, and HD/SCSI/MO/ZIP/CD/Floppy boot.

2. FEATURES

2.1.2 Connections

- **CPU socket:** Socket 370 for Intel™ PIII® processors.
- **PCI Expansion slots:** Provides three 32-bit PCI expansion slots, which can support Bus Master PCI cards, such as SCSI or LAN cards (PCI supports up to 133MB/s maximum throughput).
- **CNR support:** One **C**ommunication and **N**etworking **R**iser (CNR) slot provides interfaces to support very affordable multichannel audio, V.90 analog modem, Home PNA, 10/100 Ethernet networking, USB hub, as well as future technologies such as xDSL.
- **IDE connectors:** Dual-channel bus master IDE connectors support up to four Ultra DMA/100/66, PIO Modes 3 & 4 IDE devices. Both the primary (blue) and secondary (black) connectors are slotted to prevent incorrect insertion of the IDE ribbon cable.
- **Floppy disk connector:** Supports the floppy disk drive ribbon cable. One side of the connector is slotted to prevent incorrect insertion of the floppy disk cable.
- **LDTV header:** Supports flat panel LCD TV or monitor.
- **RJ-45:** Supports the onboard Intel NIC.
- **USB:** Supports up to four USB ports, two on the back panel and two midboard, for more peripheral connectivity options including PDAs, printers and scanners.
- **SMBus:** Features the **S**ystem **M**anagement **Bus** interface.
- **Special Audio connector:** A special onboard connector supports audio control from an external panel.
- **Serial ports:** Two 9-pin COM1 / COM2 ports are for pointers, printers, etc; one port is located on the back panel, and the other is a mid-board header.
- **IrDA:** Integrated IR supports a remote control package for wireless interfacing with external peripherals, personal gadgets, or an optional remote controller.
- **Microphone jack:** Pink jack connects a microphone.
- **Line In jack:** Light blue jack connects a tape player or other audio sources.
- **Line Out jack:** Lime jack connects a headphone or a speaker.
- **Game/MIDI connector.** This connector supports a joystick or a game pad for playing games, and MIDI devices for playing or editing audio files.
- **Parallel port:** 25-pin port connects a parallel printer or other devices.
- **PS/2 mouse port:** Green 6-pin connector is for a PS/2 mouse.
- **PS/2 keyboard port:** Purple 6-pin connector is for a PS/2 keyboard.
- **ATX power connector.** Supplies the MB with ATX 12V power.

2. FEATURES

2.1.3 Special Features

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

- **ACPI Ready: A**dvanced **C**onfiguration **P**ower **I**nterface (ACPI) provides more Energy Saving Features for operating systems that support OS Direct Power Management (OSPM) functionality. With these features implemented in the OS, PCs can be ready around the clock, yet satisfy all the energy saving standards. To fully utilize the benefits of ACPI, an ACPI-supported OS, such as Windows 98/2000/Millenium must be used.

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

- **Color-coded Connectors:** To enhance user accessibility to system components and to meet PC 99 compliancy, major connectors in this motherboard are color-coded.

- **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 vital information from their computers from anywhere in the world!

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

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

- **PC Health Monitoring:** Provides an easy way to test and manage system status information, such as CPU and system voltages, temperatures, and fan status through the onboard hardware ASUS ASIC and the bundled ASUS PC Probe.

2. FEATURES

2.1.4 Performance and Intelligence

- **Enhanced ACPI & Anti-Boot Virus Protection:** Programmable BIOS (Flash EEPROM), offering enhanced ACPI for Windows 98/2000 compatibility, built-in firmware-based virus protection, and autodetection of most devices for virtually automatic setup.

- **Message LED (requires ACPI OS support):** Message LEDs now act as information providers. Through the way a particular LED illuminates, the user can determine if a message has been received from a fax/modem. A simple glimpse provides useful information to the user. This function requires ACPI OS and driver support.

- **Wake-On-Ring:** Supports Wake-On-Ring through a PCI modem card or an external modem.

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

- **SMBus:** The System Management Bus interface conveys commands and information between SMBus devices.

- **Onboard LED:** The onboard LED will light up when there is standby power to the motherboard. This acts as a reminder to the user to turn OFF the power before plugging and unplugging devices so as not to damage the motherboard, peripherals, and/or components.

- **System Resources Alert:** Today's operating systems such as Windows 98/Millenium and Windows NT/2000, require much more memory and hard drive space to accomodate 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.

- **Suspend and Go:** Suspend-to-RAM (STR) provides maximum power savings as an alternative to leaving the computer ON and QuickStart™ so that you do not have to wait for a long time for system bootup.

- **Chassis Intrusion Detection:** Supports chassis-intrusion monitoring through the ASUS ASIC. A chassis intrusion event is kept in memory on battery power for more protection.

- **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 click.

- **Dual Function Power Button:** Pushing the power button for less than 4 seconds when the system is in the working state places the system into one of two states: sleep mode or soft-off mode, depending on the BIOS or OS setting (see **PWR Button < 4 Secs** in *4.5 Power Menu*). When the power button is pressed for more than 4 seconds, the system enters the soft-off mode regardless of the BIOS setting.

2. FEATURES

2.2 TUWE-M Motherboard Components

Location

Processor Support	Socket 370 Pentium III/Celeron/Tualatin CPUs	**2**
	Feature Setting DIP Switches	**8**
Chipsets	Intel 810E2 Memory Controller Hub	**3**
	Intel I/O Controller Hub 2 (ICH2)	**12**
	2Mbit Firmware Hub (FWH)	**11**
	Low Pin Count (LPC) Multi-I/O Chipset	**19**
	AC97 Audio CODEC	**16**
	Intel 82562 Onboard LAN chip	**15**
Main Memory	2 DIMM Sockets (max. 512MB PC100 SDRAM support)	**4**
Expansion Slots	3 PCI Slots	**17**
	1 CNR Slot	**14**
System I/O	USB Headers	**10**
	1 Floppy Disk Drive Connector	**5**
	2 IDE Connectors (ATA100 Support)	**6**
	1 Serial COM2 Header	**21**
	1 USB Connector (2 and 3)	**10**
	1 IrDA Connector	**9**
	1 ASUS Special Audio Connector	**18**
	1 LCDTV Header	**22**
	1 Parallel Port Connector	**24**
	1 Serial COM1 Port Connector	**(Bottom) 25**
	2 USB Port Connectors (0 and 1)	**(Bottom) 26**
	1 PS/2 Mouse Connector	**(Top) 27**
	1 PS/2 Keyboard Connector	**(Bottom) 27**
VGA and TV	1 VGA Monitor Output Connector	**(Bottom) 23**
Audio	1 Game/MIDI Connector	**(Top) 20**
	1 Line Out Connector	
	1 Line In Connector	**..(Bottom) 20**
	1 Microphone Connector	
Network Features	1 RJ-45 Connector	**(Top) 26**
Hardware Monitoring	System Voltage Monitoring (integrated in ASUS ASIC)	**13**
Power	ATX Power Supply Connector	**1**
Special Feature	Onboard LED	**7**
Form Factor	MicroATX	

2. FEATURES

2.2.1 Component Locations

3. HARDWARE SETUP

3.1 TUWE-M Motherboard Layout
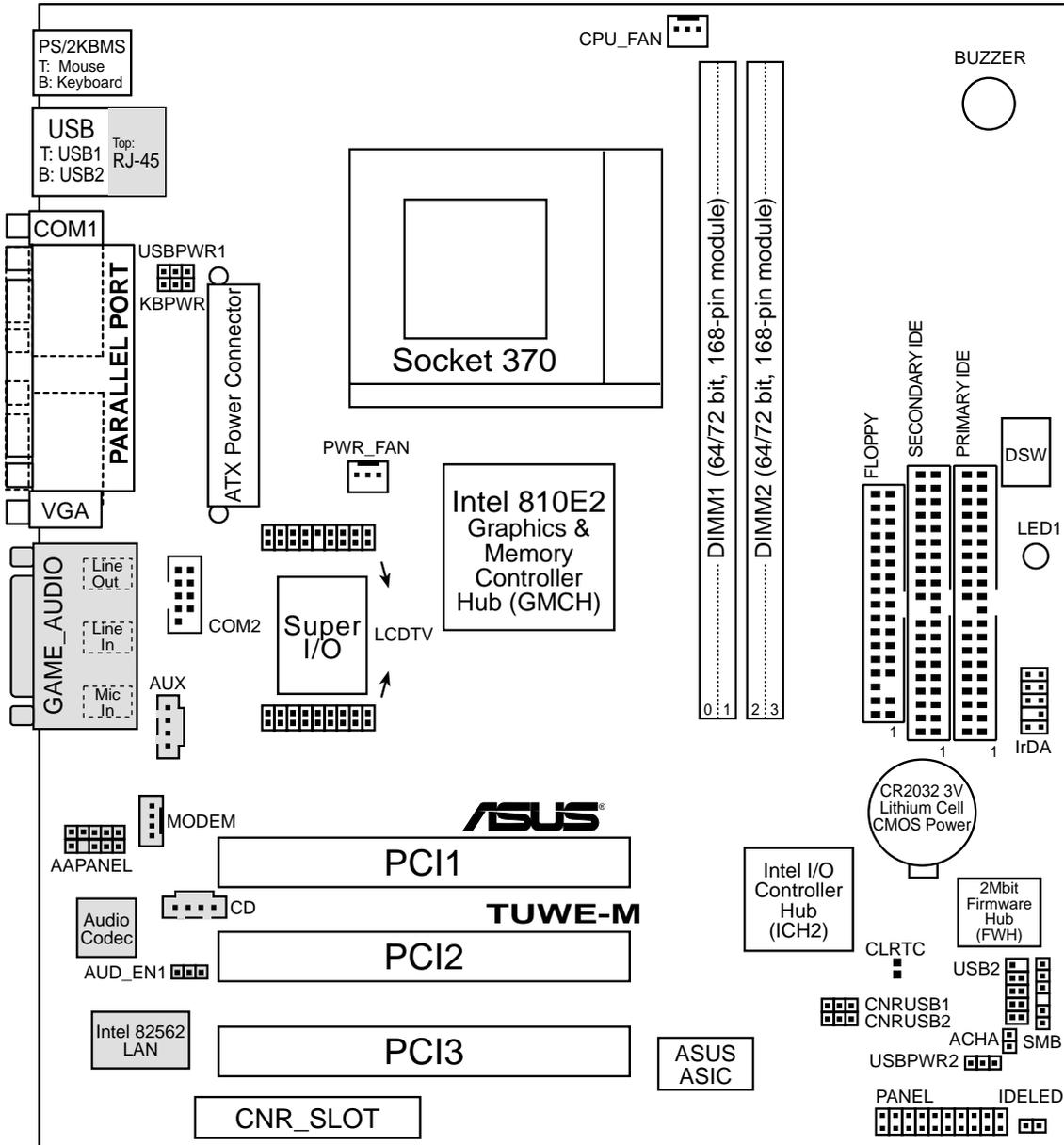
Grayed components are optional at the time of purchase.

3. HARDWARE SETUP

3.2 Layout Contents

Motherboard Settings

Expansion Slots

Connectors

3. H/W SETUP
Layout Contents

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

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

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

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

LED1

ON
Standby
Power

OFF
Powered
Off

TUWE-M Onboard LED
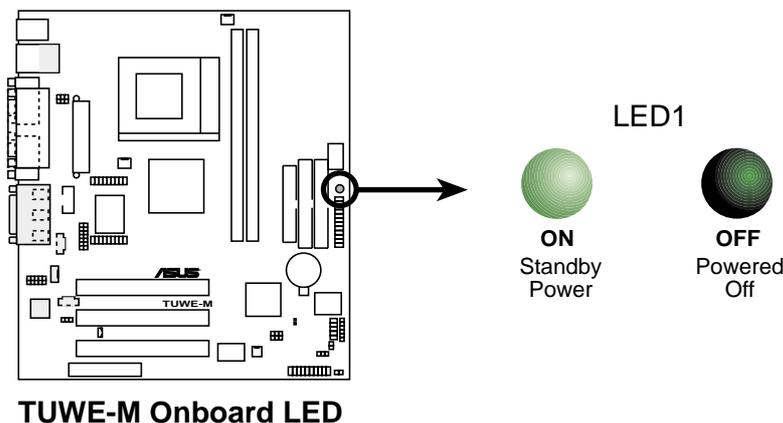
3. HARDWARE SETUP

Motherboard Feature Settings

The motherboard's onboard functions are either adjusted through jumpers or DIP switches. When using DIP switches, the white block represents the switch's position. The example below shows all the switches in the OFF position.

DSW

OFF ON

1. Frequency Selection
2. Frequency Selection
3. Frequency Selection
4. Frequency Selection
5. Frequency Selection.

TUWE-M DIP Switches
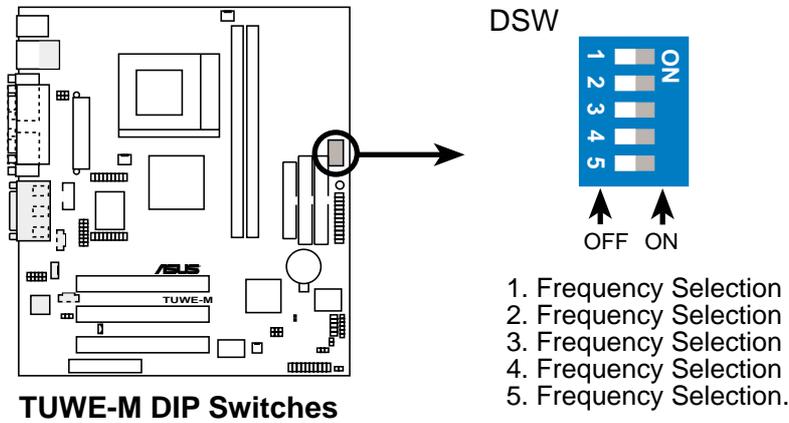
1) **Onboard PCI Audio Setting (AUDIO_EN)**
   The onboard PCI audio may be enable or disabled using this jumper.

AUD_EN1

1 2   2 3

Enable   Disable
(Default)

TUWE-M Audio Codec Setting
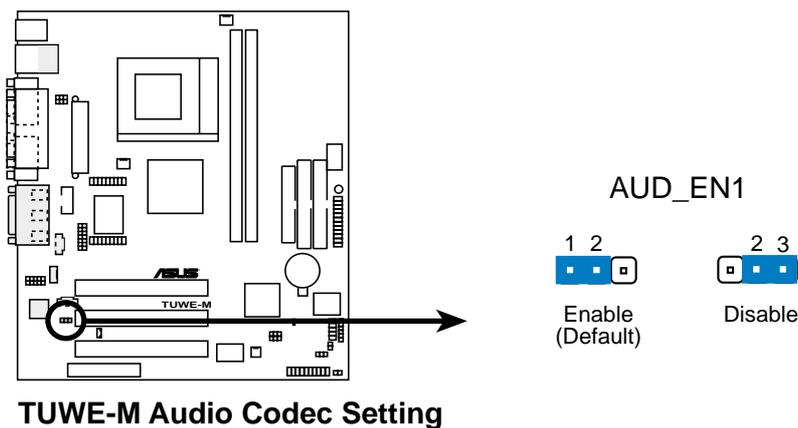
2) USB Device Wake Up (USBPWR01, USBPWR23)

These allow you to disable or enable the USB device wake up function. Set these jumpers to *Enable* if you wish to use your USB devices to wake up your computer. This feature requires an ATX power supply that can supply at least 2A on the +5VSB lead. The default is set to *Disable* because not all computers have the appropriate ATX power supply. Your computer will not power ON if you set this to *Enable* and do not have the appropriate ATX power supply. **NOTE:** This jumper must be set in conjunction with **Wake On USB for STR State** in *4.5.1 Power Up Control.*

NOTES

1. For suspend to RAM function, these jumpers must be set to *Enable*.
2. The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal working conditions or in the sleep mode.

Setting	USBPWR01, USBPWR23
Disable	[1-2] (default)
Enable	[2-3]

TUWE-M USB Device Wake Up
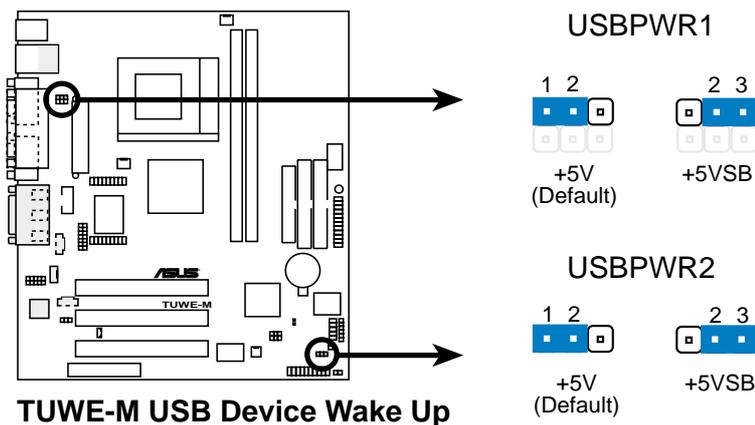
3. HARDWARE SETUP

3) USB/CNR Selection (CNRUSB1 / CNRUSB2)

This jumper switches the circuit power between the USB2 connector and the CNR slot. Note that the default is set to power the USB2 connector.

Setting	CNRUSB1 / CNRUSB2
Enable USB2	[1-2] (default)
Enable CNR	[2-3]
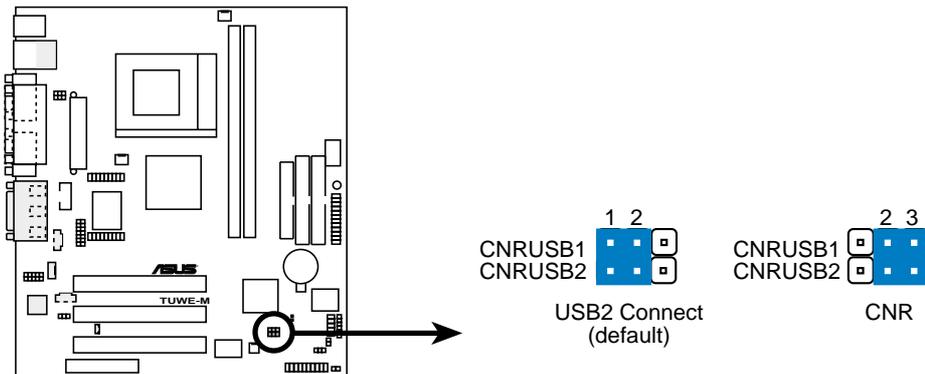
TUWE-M USB/CNR Selection

4) Keyboard Power Up (KBPWR)

This allows you to disable or enable the keyboard power up function. The jumper is set to *Enable*. Pressing the <Spacebar> powers up the PC. This feature requires an ATX power supply that can supply at least 300mA on the +5VSB lead. *Disable* this jumper to stop power-up from the keyboard. **NOTE:** This jumper must be set in conjunction with **Wake On PS2 KB/PS2 Mouse/CIR** in *4.5.1 Power Up Control.*

Setting	KBPWR
Enable	[1-2] (default)
Disable	[2-3]
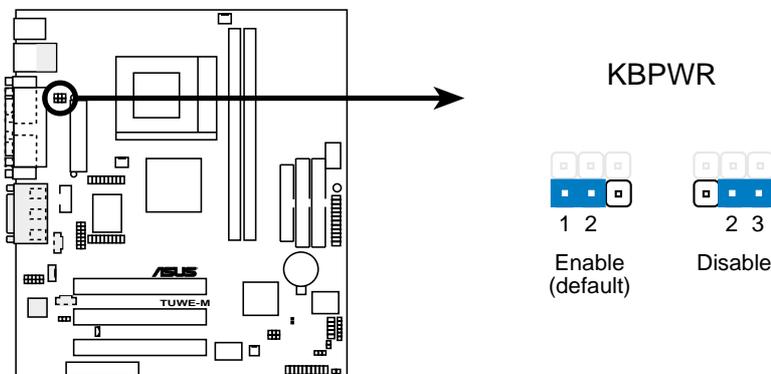
TUWE-M Keyboard Power Setting

3. HARDWARE SETUP

5) CPU External Frequency Setting (DSW)

This option tells the clock generator what frequency to send to the CPU, DRAM, AGP, and the PCI bus. This allows the selection of the CPU's *External* frequency.

DSW

CPU   66MHz 100MHz 133MHz
SDRAM 100MHz 100MHz 100MHz
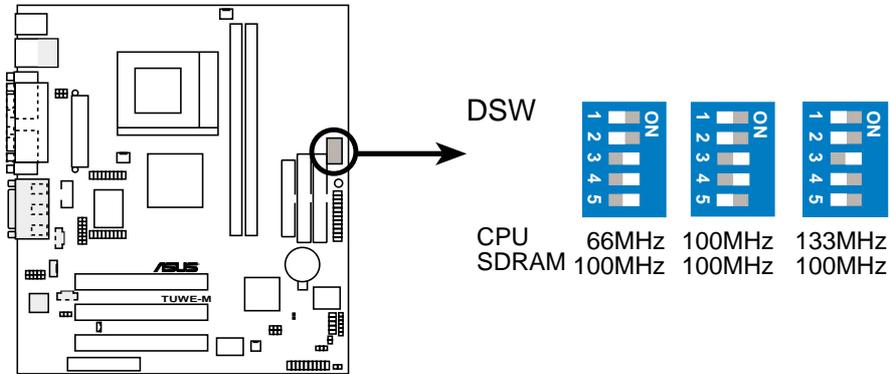
**TUWE-M CPU External
Clock (BUS) Frequency Selection**

Frequency Selection Table

SDRAM (MHz)	CPU (MHz)	1	2	3	4	5
105	70	[OFF]	[ON]	[ON]	[OFN]	[ON]
100	67	[OFF]	[OFF]	[ON]	[ON]	[ON]
112	75	[OFF]	[ON]	[OFF]	[ON]	[ON]
102	68	[ON]	[ON]	[ON]	[OFF]	[ON]
105	105	[OFF]	[ON]	[ON]	[ON]	[OFF]
110	110	[ON]	[OFF]	[ON]	[ON]	[OFF]
101	101	[OFF]	[OFF]	[ON]	[ON]	[OFF]
124	124	[OFF]	[ON]	[OFF]	[ON]	[OFF]
105	140	[OFF]	[ON]	[ON]	[OFF]	[OFF]
101	134	[OFF]	[OFF]	[ON]	[OFF]	[OFF]
112	150	[OFF]	[ON]	[OFF]	[OFF]	[OFF]
125	167	[OFF]	[OFF]	[OFF]	[OFF]	[OFF]

For updated processor settings, visit the ASUS web site: *www. asus.com.tw*

3. HARDWARE SETUP

3.5 System Memory (DIMM)

NOTE: No hardware or BIOS setup is required after adding or removing memory.

This motherboard uses only Dual Inline Memory Modules (DIMMs). Sockets are available for **3.3Volt** (power level) unbuffered Synchronous Dynamic Random Access Memory (SDRAM). One side (with memory chips) of the DIMM takes up one row on the motherboard.

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

Install memory in any combination as follows:

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

NOTE: Make sure the total installed memory does not exceeds 512MB. Otherwise, the system may hang during startup.

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

3.5.2 Memory Installation

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

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

TUWE-M 168-Pin DIMM Sockets
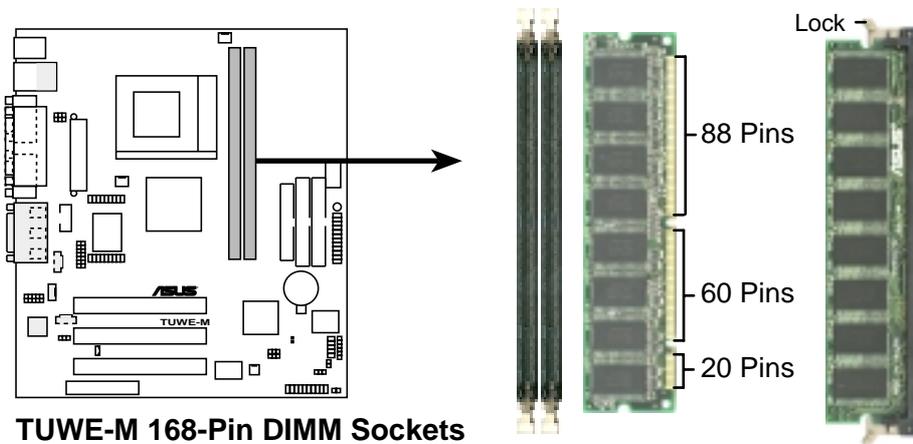
The DIMMs must be 3.3Volt unbuffered SDRAMs. To determine the DIMM type, check the notches on the DIMMs (see figure below).

168-Pin DIMM Notch Key Definitions (3.3V)
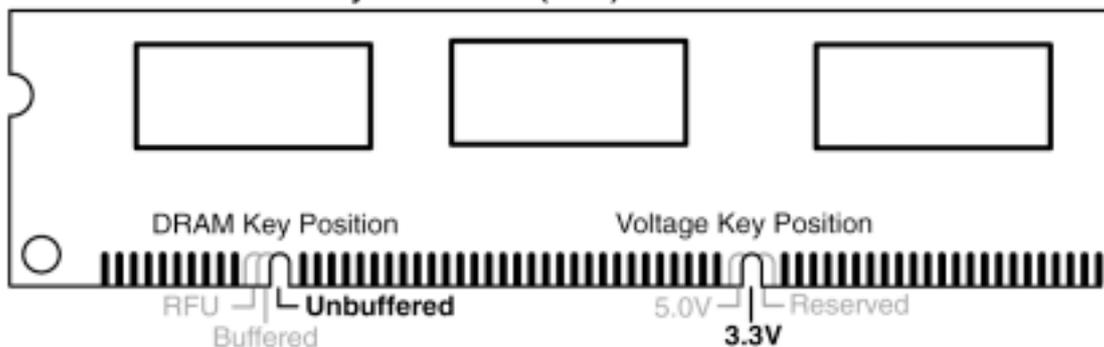
The notches on the DIMM will shift between left, center, or right to identify the type and also to prevent the wrong type from being inserted into the DIMM slot on the motherboard. You must tell your retailer the correct DIMM type before purchasing. This motherboard supports four clock signals per DIMM.

3. HARDWARE SETUP

3.6 Central Processing Unit (CPU)

The motherboard provides a ZIF Socket 370, for CPU installation. A fan and heat-sink should be attached to the CPU to prevent overheating. Purchase and install a fan and heatsink before turning on the system.

TUWE-M Socket 370

Pentium III
Celeron
(Coppermine)

FC-PGA

Gold Arrow →

Pentium III
(Tualatin)

FC-PGA2
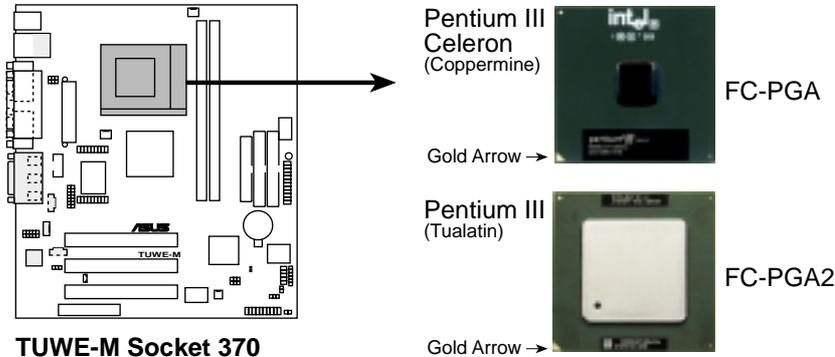
Gold Arrow →

1. Locate the Socket 370 and open it by pulling the lever gently sideways away from the socket. Then lift the lever upwards. The socket lever must be fully opened (90 to 100 degrees).

2. Insert the CPU with the correct orientation. The *gold arrow* of the CPU must be oriented toward the outer corner of the socket base nearest to the tip of the lever handle.

   CAUTION! The CPU fits in one orientation and should drop easily into place. *Do not force the CPU* into the socket to avoid bending the pins. If the CPU does not fit, check its alignment and look for bent pins.
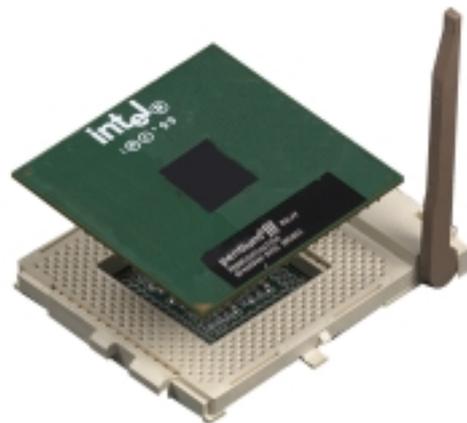
3. Once completely inserted, press the CPU firmly and close the socket lever until it snaps into its locked position.

4. Install an Intel fan heatsink. The heatsink should entirely cover the CPU. Care-fully attach the heatsink locking brace to the plastic clips on the socket base. With the added weight of the CPU fan and heatsink locking brace, no extra force is required to keep the CPU in place. Connect the CPU fan cable to the fan connec-tor (*See 3.1 Motherboard Layout / 3.8 Connectors*).

CAUTION! Take care not to scrape the motherboard surface when mounting a clamp-style processor fan, or else damage may occur. When mounting a heatsink onto your CPU, make sure that exposed CPU capacitors do not touch the heatsink, or else damage may occur! Refer to heatsink/CPU documentation. **NOTE:** Do not forget to set the correct Bus Frequency and Multiple (frequency multiple setting is available only on unlocked processors) for your Socket 370 processor or else boot-up may not be possible. Socket 370 processors provide internal thermal sensing: a socket mounted thermal resistor is not needed.

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3. HARDWARE SETUP

3.7 Expansion Cards

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

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

3.7.1   Installing an Expansion Card

1. Read the documentation that comes with the expansion card and make any necessary hardware settings for the card before installing it.
2. Remove the system unit cover and the bracket plate on the slot you intend to use. Keep the screw for later use.
3. Align the card connectors with the slot and press firmly until the card fits in place.
4. Secure the card to the slot with the screw you removed earlier.
5. Replace the system cover.
6. Change the necessary BIOS settings, if any.
    (see section *4.4.3 PCI Configuration* to change the settings.)
7. Install the necessary software drivers for the expansion card.
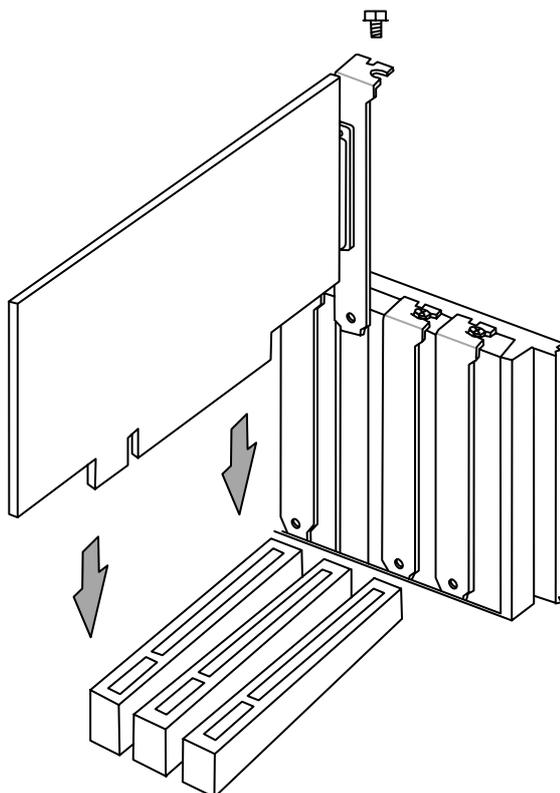
3.7.2 Assigning IRQs for Expansion Cards

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.

Standard Interrupt Assignments

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

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

3. H/W SETUP
Expansion Cards

3. HARDWARE SETUP

Interrupt Request Table for this Motherboard

Interrupt requests are shared as shown by the following table:

	A	B	C	D	E	F	G	H
PCI slot 1	—	—	—	—	—	shared	—	—
PCI slot 2	—	—	—	—	—	—	used	—
PCI slot 3	—	—	—	—	—	—	—	shared
Onboard VGA	used	—	—	—	—	—	—	—
Onboard USB controller HC0	—	—	—	used	—	—	—	—
Onboard USB controller HC1	—	—	—	—	—	—	—	shared
CNR LAN	—	—	—	—	shared	—	—	—
Onboard LAN	—	—	—	—	shared			
CNR Audio/Modem	—	shared	—	—	—	—	—	—
Onboard Audio	—	shared	—	—	—	shared	—	—

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

3.7.3 Communication and Networking Riser (CNR) Slot

This connector supports specially designed network, audio, or modem riser cards. Main processing is done through software and controlled by the motherboard's system chipset. This provides upgradeable network, audio, and/or modem solutions at an incredibly low cost.

NOTE: CNR LAN is not supported if this version of the motherboard features the Intel onboard LAN chipset.

A CNR is not included with this motherboard.
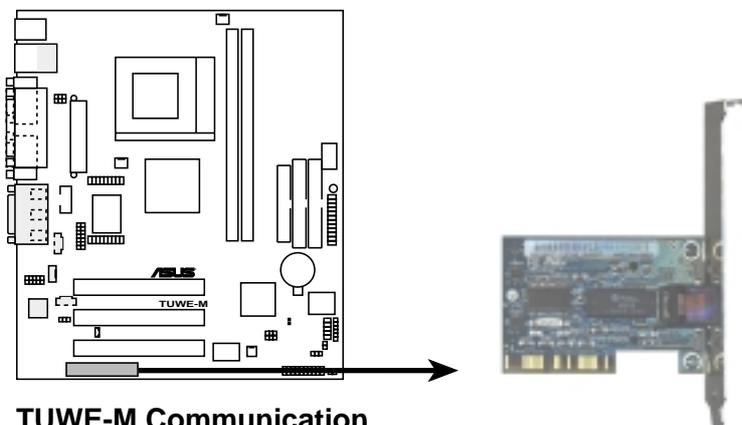
TUWE-M Communication & Networking Riser Connectors

3.8 External Connectors

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

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

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

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

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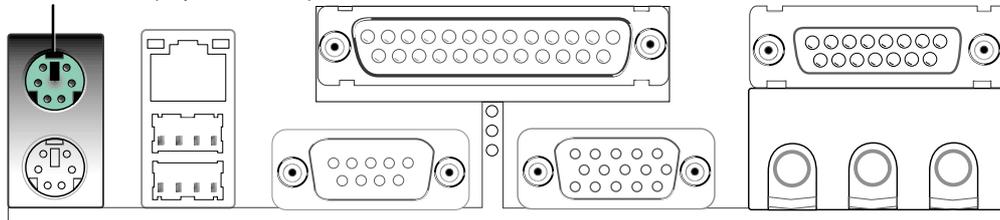
2) PS/2 Keyboard Connector (Purple 6-pin PS2KBMS)

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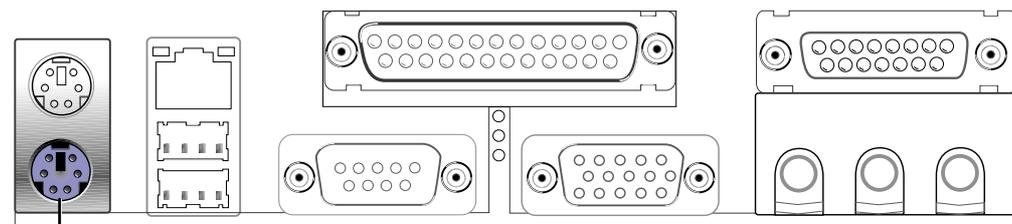
PS/2 Keyboard (6-pin female)

3. HARDWARE SETUP

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

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

Universal Serial Bus (USB)
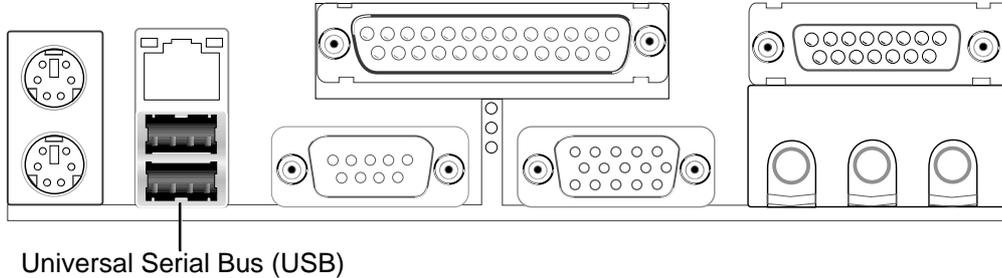
4) Parallel Port Connector (Burgundy 25-pin PRINTER)

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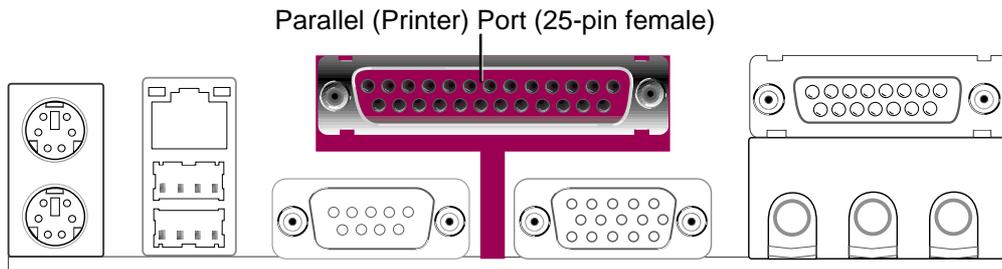
5) Monitor Output Connector (Blue 15-pin VGA)

This connector is for output to a VGA-compatible device.

VGA Monitor (15-pin female)
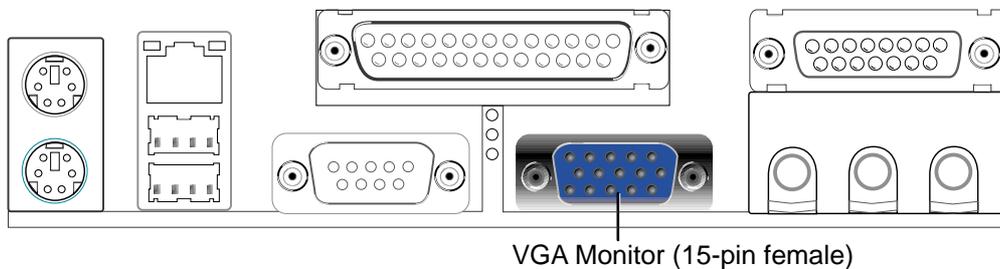
6) Serial Port Connectors (Teal/Turquoise 9-pin COM1, 10-1 pin COM2)

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

COM 1
Serial Port (9-pin male)

COM2

PIN 1

TUWE-M Serial COM2 Bracket
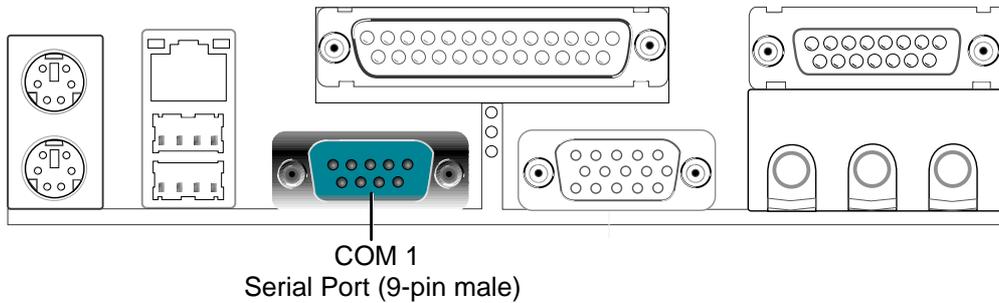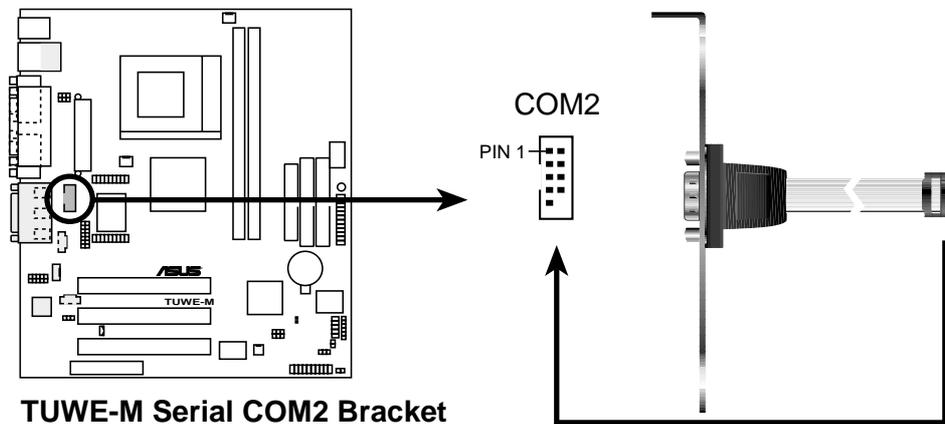
7) Game/MIDI Connector (Gold 15-pin GAME_AUDIO) (optional)

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

Game/MIDI (15-pin female)
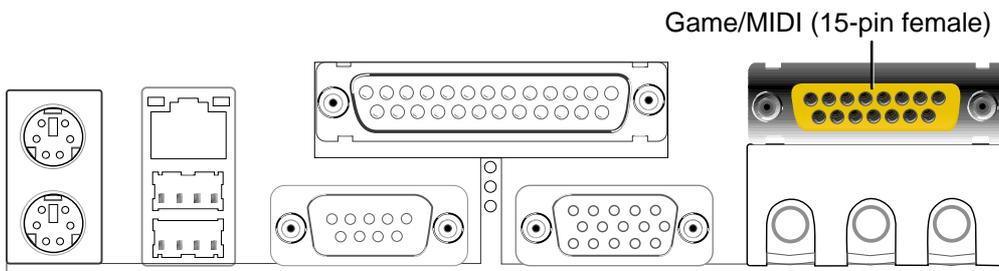
8) Audio Port Connectors (Three 1/8" Line_In, Line_Out, Mic) (optional)
Line Out (lime) can be connected to headphones or preferably powered speakers. **Line In** (light blue) allows tape players or other audio sources to be recorded by your computer or played through the **Line Out** (lime). **Mic** (pink) allows microphones to be connected for inputting voice. **See** *Section 6.3* in *Software Reference, Multi-Channel Audio Feature Setup* for information about using Line Out, Line In and Mic for audio output.

Line Out   Line In   Mic
1/8" Stereo Audio Connectors
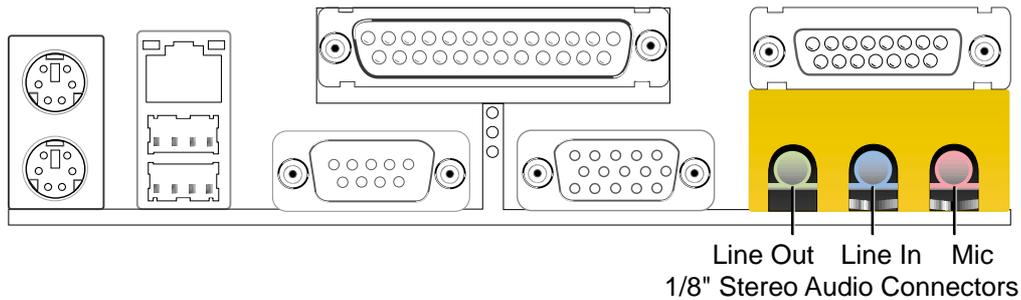
9) Fast-Ethernet Port Connector (RJ45) (optional)
The RJ45 connector is located on top of the USB Ports 0 & 1. The connector allows the motherboard to connect to a Local Area Network (LAN) through a network hub.

RJ-45
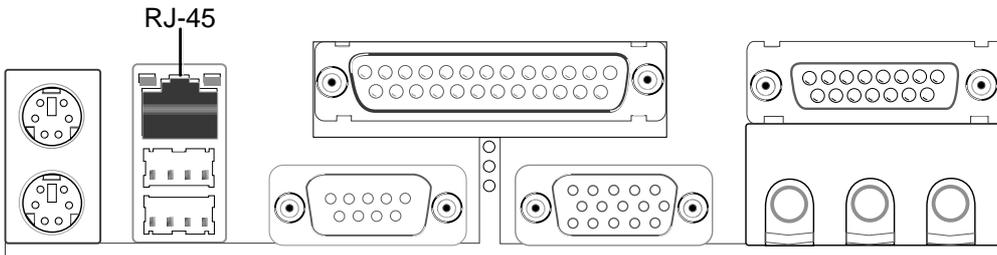
10) Floppy Disk Drive Connector (34-1pin FLOPPY)
This connector supports the provided floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drives. **(Pin 5 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 5 plugged).**

FLOPPY

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

PIN 1
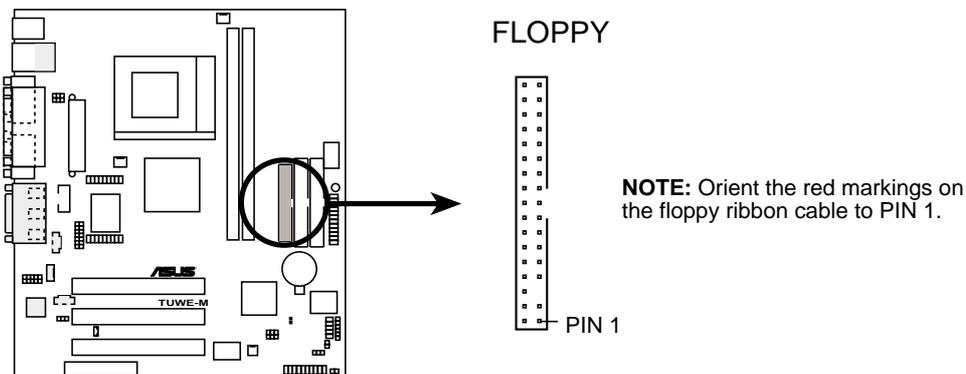
TUWE-M Floppy Disk Drive Connector

3. H/W SETUP
DMA Channels

3. HARDWARE SETUP

11) Primary (Blue) / Secondary IDE Connectors (Two 40-1pin IDE)

These connectors support the provided IDE hard disk ribbon cable. Connect the cable's blue connector to the motherboard's primary (recommended) or secondary IDE connector, and then connect the gray connector to your UltraATA/100 slave device (hard disk drive) and the black connector to your UltraATA/100 master device. It is recommended that non-UltraATA/100 devices be connected to the secondary IDE connector. If you install two hard disks, you must configure the second drive to Slave mode by setting its jumper accordingly. Please refer to your hard disk documentation for the jumper settings. BIOS now supports specific device bootup (see *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 *4.6 Boot Menu*.

IMPORTANT: UltraDMA/100 IDE devices must use a 40-pin 80-conductor IDE cable for 100MByte/sec transfer rates.

TUWE-M IDE Connectors

Secondary IDE Connector

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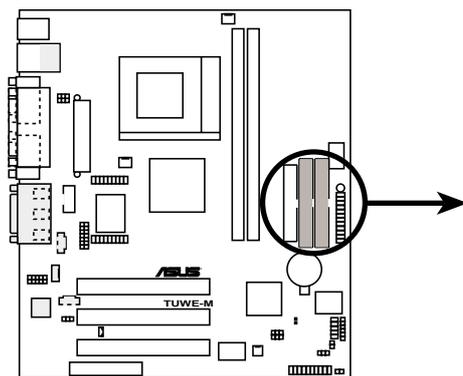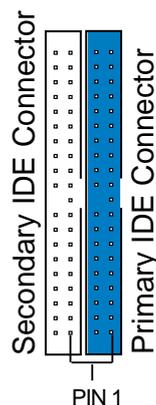
NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

PIN 1

12) IDE Activity LED (2-pin IDELED)

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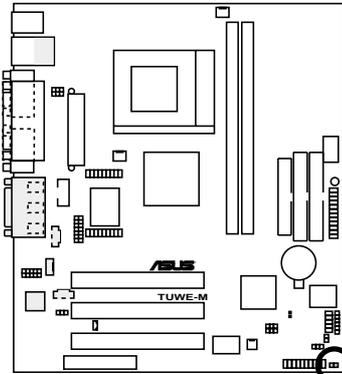
TIP: If the case-mounted LED does not light, try reversing the 2-pin plug.

IDELED

TUWE-M IDE Activity LED

13) CPU (CPU_FAN), Chassis (CHA_FAN) Fan Connectors (3 pins)

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 read directly from the ASUS iPanel or monitored using a utility such as ASUS PC Probe (or Intel LDCM.)

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

Rotation +12V GND

SYS_FAN

Rotation +12V GND
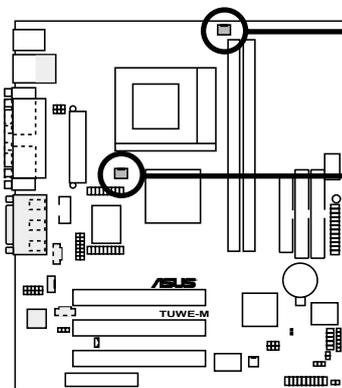
TUWE-M 12-Volt Cooling Fan Power

3. HARDWARE SETUP

14) Internal Audio Connectors (4-pin CD1, AUX, 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.

Right Audio Channel — AUX (White)
Ground
Left Audio Channel

Modem-Out — MODEM
Ground
Ground
Modem-In

CD1 (Black) — Left Audio Channel
Ground
Right Audio Channel
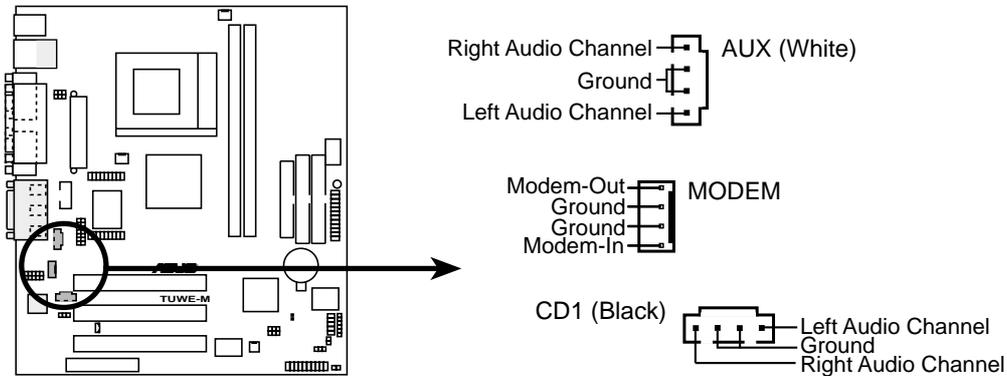
TUWE-M Internal Audio Connectors

15) Infrared Connector (10-1 pin IrDA)

This connector supports an optional wireless transmitting and receiving infrared module to the SIR connector or an optional consumer infrared connector set to the CIR and SIR connectors for both wireless transmitting and remote control functions through one external infrared module.

IrDA

IRTX — +5VSB
GND — CIRRX
IRRX — NC
— GND
+5 V — NC
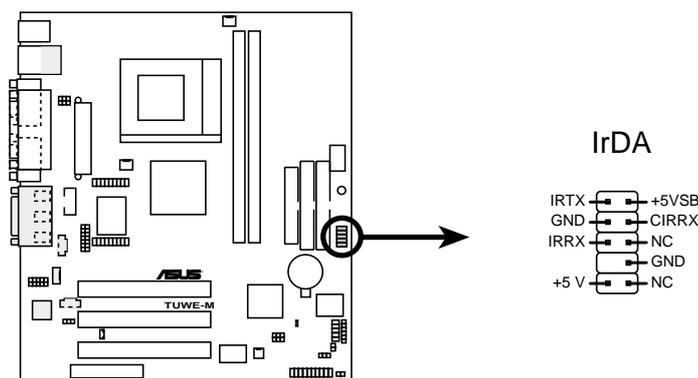
TUWE-M IrDA Connector

3. HARDWARE SETUP

16) ASUS Special Audio Connector (12-1 pin AUDIO)

Extra audio control is supported by an audio panel linked to this connector.
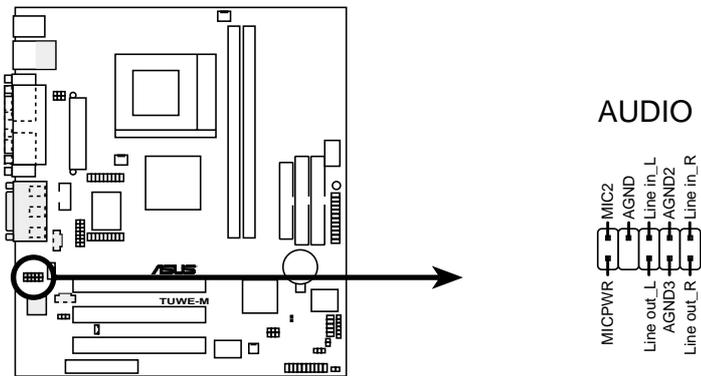
AUDIO

TUWE-M Audio Panel Connectors

3. HARDWARE SETUP

17) LCD-TV Headers (18-pin, 18-1 pin LCD TV)

These headers require optional modules for LCD or TV output.
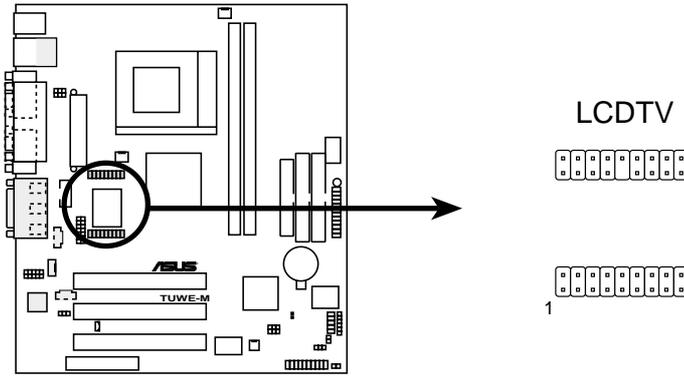
LCDTV

TUWE-M LCD-TV Headers

18) USB Header (10-1 pin USB2)

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

USB2

5   10

1   6

1: USB Power   6: USB Power
2: USBP2–   7: USBP3–
3: USBP2+   8: USBP3+
4: GND   9: GND
5: NC
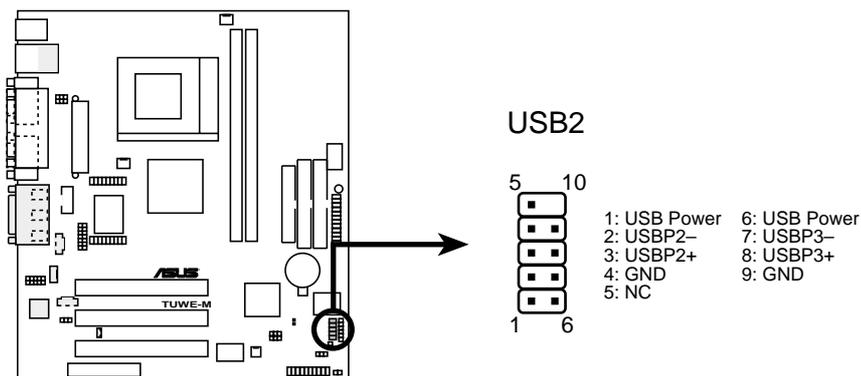
TUWE-M USB Headers

19) 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 (minimum recommended wattage: 200 watts; 235W for a fully-configured system) can supply at least 20 amperes on the +5-volt lead and at least 10mA (750mA recommended) on the +5-volt standby lead (+5VSB). Your system may become unstable/unreliable and may experience difficulty in powering up if your power supply is inadequate. For Wake-On-LAN support, your ATX power supply must supply at least 750mA +5VSB.

+3.3 Volts	+3.3 Volts
-12.0 Volts	+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	+12.0 Volts
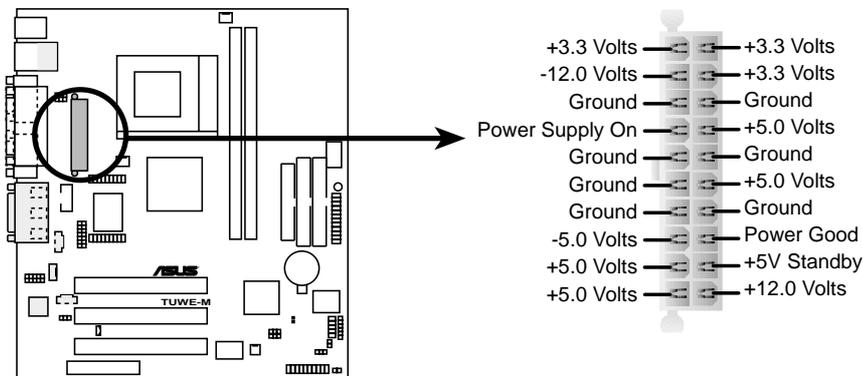
TUWE-M ATX Power Connector

The following is for items 20–26:

TUWE-M System Panel Connectors * Requires an ATX power supply.
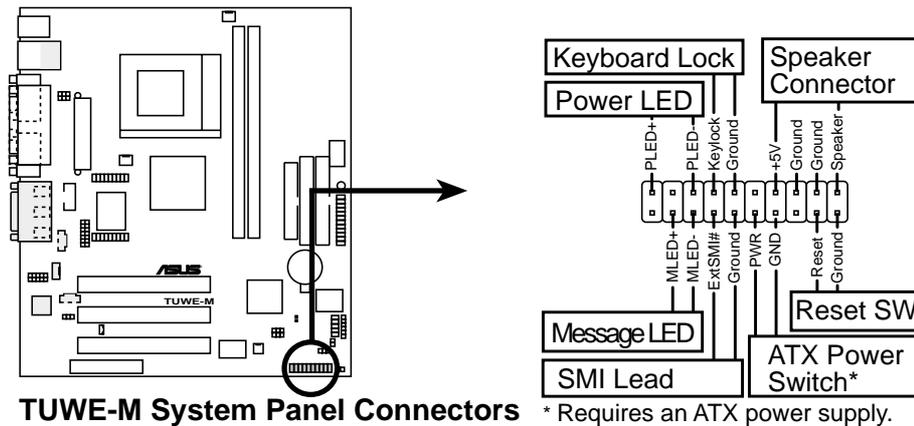
20) System Power LED Lead (3-1 pin PWRLED)

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.

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

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

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

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

23) System Message LED Lead (2-pin MSG.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 received. This function requires an ACPI OS and driver support.

24) 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.

25) ATX Power Switch Lead (2-pin PWRSW)

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.

26) 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.

3.9 Starting Up the First Time

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

2. Be sure that all switches are off (in some systems, marked with ○), and the power input voltage is set to comply with the standard used in your country (220V-240V or 110-120V).

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

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

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

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

Award BIOS Beep Codes

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

7. During power-on, hold down <Delete> to enter BIOS setup. Follow the instructions in *4. BIOS SETUP*.

*   **Powering Off your computer:** You must first exit or shut down your operating system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down your operating system. If you use Windows 9X, 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.

3. H/W SETUP
Powering Up

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.

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.
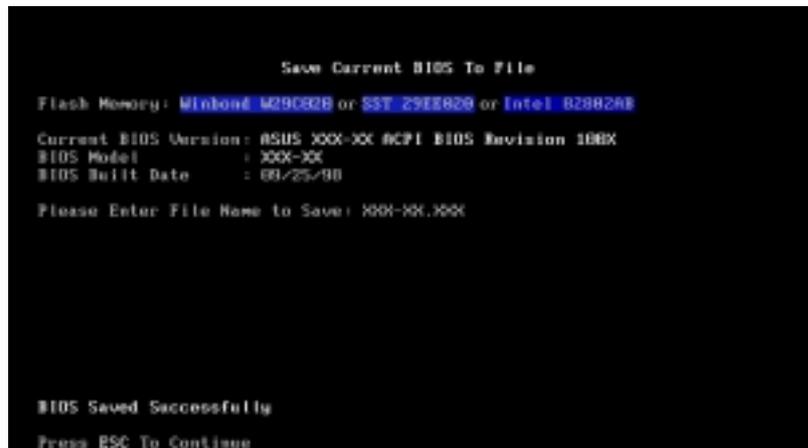
6. Type a filename and the path, for example, **A:\XXX-XX.XXX** and then press <Enter>.

4.1.2 Updating BIOS Procedures

WARNING! Only update your BIOS if you have problems with your mother-board 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>.
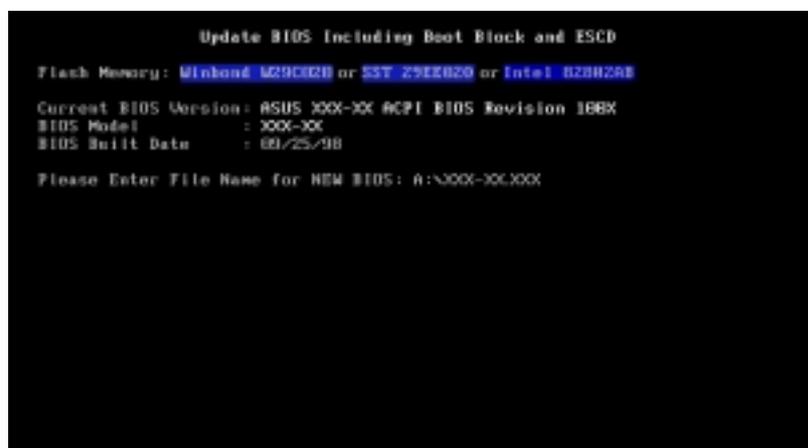
6. When prompted to confirm the BIOS update, press **Y** to start the up-
date.

7. The utility starts to program the new BIOS information into the flash
ROM. The boot block will be updated automatically only when neces-
sary. 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.

NOTE: When you see the message "Boot Block is different", you
may still press <Y> to update the BIOS. Yet if the update fails, your
system will run a greater risk of boot failure depending on whether
the boot block is damaged or not.

8. Follow the onscreen instructions to continue.

```
                          ASUS ACPI BIOS
                      FLASH MEMORY WRITER V1.28
                Copyright (C) 1994-99, ASUSTeK COMPUTER INC.

Flash Memory: Winbond W29C020 or SST 29EE020 or Intel 82802AB

Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 100X
BIOS Model          : XXX-XX
BIOS Built Date     : 05/29/98

Choose one of the followings:

1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD


Enter choice: [1]


You have flashed the EPROM;It is recommended that you turn off
the power, enter SETUP and LOAD Setup Defaults to have CMOS
updated with new BIOS when exits.

Press ESC To Exit
```

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

4.2 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.
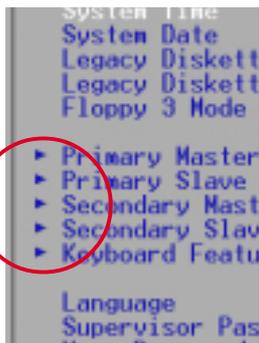
Take some time to familiarize yourself with each of the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus. If you accidentally make unwanted changes to any of the fields, use the set default hot key <F5>. While moving around through the Setup program, 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

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          [ :23:54]         │                          │
    System Date          [06/22/2000]      │ <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]            │                          │
  ▶ Keyboard Features                      │                          │
                                           │                          │
    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                 [ 1024]         [User Type HDD] allows
    Head                      [255]           you to set each entry on
    Sector                    [63]            your own.
    CHS Capacity              8422MB
    Maximum LBA Capacity      25590MB

    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              [ 1024]            you to set each entry on
  Head                   [255]              your own.
  Sector                 [63]
  CHS Capacity           8422MB
  Maximum LBA Capacity   25590MB

  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].

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.

— —

4.3.2 Keyboard Features

```
                    AwardBIOS Setup Utility
  Main

                 Keyboard Features               Item Specific Help

  Boot Up NumLock Status        [On]          Select Power-on state
  Keyboard Auto-Repeat Rate     [12/Sec]      for Numlock
  Keyboard Auto-Repeat Delay    [1/4 Sec]




  F1   Help     ↑↓  Select Item   -/+    Change Values      F5    Setup Defaults
  ESC  Exit     ←→  Select Menu    Enter  Select ► Sub-Menu  F10   Save and Exit
```
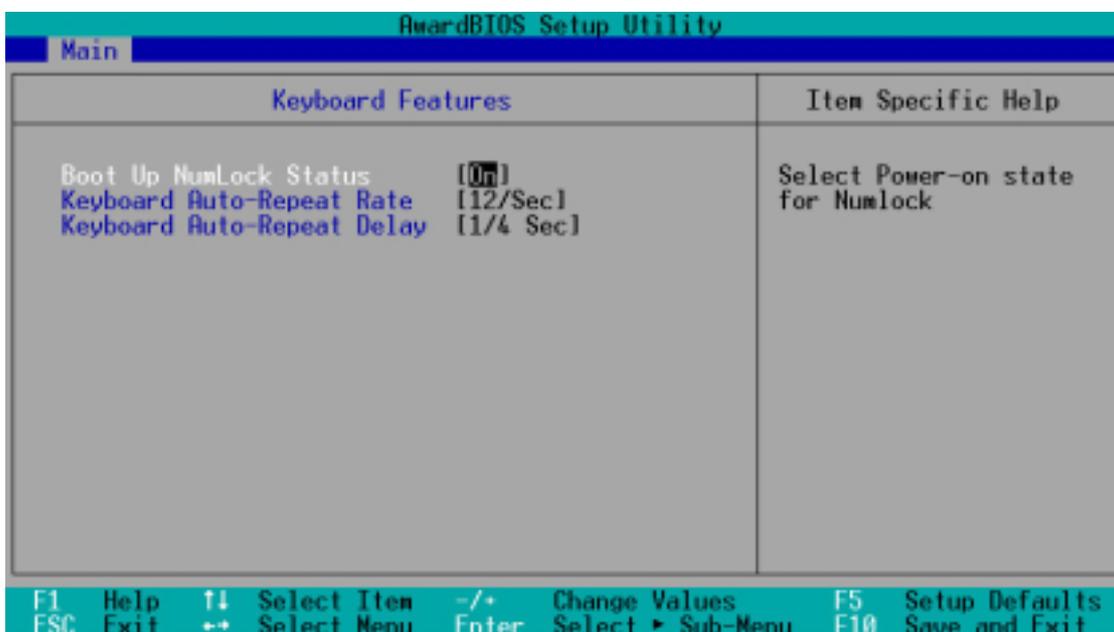
Boot Up NumLock Status [On]
This field enables users to activate the Number Lock function upon system boot. Configuration options: [Off] [On]

Keyboard Auto-Repeat Rate [12/Sec]
This controls the speed at which the system registers repeated keystrokes. Options range from 6 to 30 characters per second. Configuration options: [6/Sec] [8/Sec] [10/Sec] [12/Sec] [15/Sec] [20/Sec] [24/Sec] [30/Sec]

Keyboard Auto-Repeat Delay [1/4 Sec]
This field sets the time interval for displaying the first and second characters. Configuration options: [1/4 Sec] [1/2 Sec] [3/4 Sec] [1 Sec]

— —

4. BIOS SETUP

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.

TUWE-M Clear RTC RAM

R210

Short solder points
to Clear CMOS

Intel I/O
Controller
Hub
(ICH2)
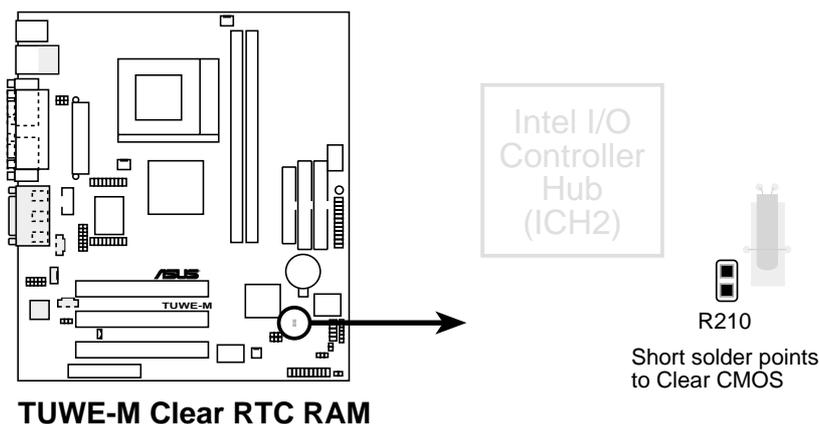
Halt On [All Errors]
This field determines which types of errors will cause the system to halt. Configuration options: [All Errors] [No Error] [All but Keyboard] [All but Disk] [All but Disk/Keyboard]

Installed Memory [XXX MB]
This display-only field displays the amount of conventional memory detected by the system during bootup. You do not need to make changes to this field.

4. BIOS SETUP

4.4 Advanced Menu

```
                    AwardBIOS Setup Utility
   Main    Advanced    Power     Boot      Exit
 ┌─────────────────────────────────────┬──────────────────────────┐
 │                                      │  Item Specific Help      │
 │ CPU Internal Frequency    [850MHz]   │                          │
 │ Optimization Mode         [Normal]   │ To make changes to the   │
 │ CPU Level 2 Cache         [Enabled]  │ first 5 fields, the      │
 │ CPU Level 2 Cache ECC Check [Disabled]│ motherboard must be set │
 │ Processor Serial Number   [Disabled] │ to jumperfree mode.      │
 │ BIOS Update               [Enabled]  │                          │
 │ PS/2 Mouse Function Control [Auto]   │ To set the following 3   │
 │ USB Legacy Support        [Auto]     │ fields, the CPU Internal │
 │ OS/2 Onboard Memory > 64M [Disabled] │ Frequency must be set to │
 │ ► Chip Configuration                 │ [Manual].                │
 │ ► I/O Device Configuration           │                          │
 │ ► PCI Configuration                  │                          │
 │                                      │                          │
 ├──────────────────────────────────────┴──────────────────────────┤
 │ F1   Help    ↑↓  Select Item   -/+    Change Values   F5  Setup Defaults │
 │ ESC  Exit    ←→  Select Menu   Enter  Select ► Sub-Menu  F10 Save and Exit │
 └──────────────────────────────────────────────────────────────────┘
```

CPU Internal Frequency
If present, this field displays the internal frequency of the CPU.

Optimization Mode
The default setting, [Normal], balances optimal performance with system stability. To optimize the performance of motherboard circuits and the CPU, changing the setting to [Turbo Mode] tells the clock generator to increase the frequency to the SDRAM memory. Configuration options: [Normal Mode] [Turbo Mode]

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]

Processor Serial Number [Disabled]
This function is not normally available, except for old-style CPUs.

BIOS Update [Enabled]
An update loader is integrated into the BIOS to supply the processor with necessary 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, USB controller legacy mode will be enabled. If not detected, USB controller legacy mode will be disabled. When this field is set to [Disabled], USB controller legacy mode is disabled no matter whether you are using a USB device or not. Configuration options: [Disabled] [Enabled] [Auto]

OS/2 Onboard Memory > 64M [Disabled]

If using OS/2 operating systems with more than 64MB of DRAM installed, set this option to [Enabled]; otherwise, leave this on [Disabled]. Configuration options: [Disabled] [Enabled]

4.4.1 Chip Configuration

```
                          AwardBIOS Setup Utility
        ┌──────────┐
        │ Advanced │
        └──────────┘
        ┌────────────────────────────────────────┬────────────────────────┐
        │        Chip Configuration              │   Item Specific Help   │
        │                                        │                        │
        │ SDRAM Timing               [By SPD]    │  <Enter> to select SDRAM│
        │ SDRAM CAS Latency          [3T]        │  configuration.        │
        │ SDRAM RAS to CAS Delay     [3T]        │  [By SPD] is recommended.│
        │ SDRAM RAS Precharge Time   [3T]        │  [User Define] allows you│
        │ SDRAM Cycle Time (Tras,Trc)[7T,9T]     │  to set each            │
        │ SDRAM Page Closing Policy  [One Bank]  │  configuration on your  │
        │ CPU Latency Timer          [Enabled]   │  own.                   │
        │ Onboard VGA                [Enabled]   │                        │
        │ Graphics Window Size       [64MB]      │                        │
        │ Memory Hole At 15M-16M     [Disabled]  │                        │
        │ PCI 2.1 Support            [Enabled]   │                        │
        │ High Priority PCI Mode     [Disabled]  │                        │
        │ Onboard PCI IDE Enable     [Both]      │                        │
        │ Onboard LAN Controller     [Both]      │                        │
        │                                        │                        │
        ├────────────────────────────────────────┴────────────────────────┤
        │ F1   Help     ↑↓  Select Item   -/+    Change Values    F5  Setup Defaults│
        │ ESC  Exit     ←→  Select Menu   Enter  Select ► Sub-Menu F10 Save and Exit│
        └──────────────────────────────────────────────────────────────────┘
```

SDRAM Timing [By SPD]

This setting enables the user to adjust optimal timings for items 2-4, which depend on the memory modules that you are using. The default setting [By SPD] 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] [By SPD]

NOTE: These 3 fields will only be adjustable when **SDRAM Timing** is set to [User Define].

SDRAM CAS Latency

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

SDRAM RAS to CAS Delay

This controls the latency between the SDRAM active command and the read/write command.

SDRAM RAS Precharge Time

This controls the idle clocks after issuing a precharge command to the SDRAM.

SDRAM Cycle Time (Tras, Trc) [7T, 9T]

This feature controls the number of SDRAM clocks used for SDRAM parameters Tras and Trc. Tras specifies the minimum clocks required between active command and precharge command. Trc specifies the minimum clocks required between active command and re-active command. Configuration options: [5T, 7T] [7T, 9T]

4. BIOS SETUP

SDRAM Page Closing Policy [One Bank]
This feature controls that after a page miss whether the Graphics and Memory Controller Hub (GMCH) will issue "precharge only the bank" or "precharge all" command to a specific opened SDRAM bank. Configuration options: [One Bank] [All Banks]

CPU Latency Timer [Enabled]
This controls the GMCH's response to CPU deferrable cycles. Configuration options: [Disabled] [Enabled]

Onboard VGA [Enabled]
Select to enable the PCI channel for onboard VGA cards. Configuration options: [Disabled] [Enabled]

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

Memory Hole At 15M-16M [Disabled]
This field allows you to reserve an address space for ISA devices that require it. 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 [Disabled]
This field allows you to give PCI slot 1 a higher priority. You may want to enable this 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 LAN Controller [Enabled]
You can select to enable or disable the Intel LAN controller. Choose [Disable] if a PCI LAN card is used. Configuration options: [Enabled] [Disabled]

4. BIOS SETUP
Chip Configuration

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 as Standard Infrared  [Disabled]

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

    Onboard Game Port               [200H-207H]
    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.)

Onboard AC97 Modem Controller [Auto]
Onboard AC97 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 controller 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 controller, you may set the appropriate field to [Disabled]. Configuration options: [Disabled] [Auto]

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 IR is 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. 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]

Onboard Game Port [200H-207H]
This field sets the address of the Game port. 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 CIR I/O [Disabled]
This field sets the address of the onboard Consumer IR connector. Configuration options: [Disabled] [2E0-2E8H] [3E0-3E8H]

4. BIOS SETUP

4.4.3 PCI Configuration

```
                        AwardBIOS Setup Utility
        Advanced

               PCI Configuration                      Item Specific Help

      Slot  1  IRQ              [Auto]            <Enter> to select an
      Slot  2  IRQ              [Auto]            IRQ.
      Slot  3  IRQ              [Auto]

      PCI/VGA Palette Snoop     [Disabled]
      PCI Latency Timer         [ 32]
      SYMBIOS SCSI BIOS         [Auto]
      USB Function              [Enabled]
      Primary VGA BIOS          [PCI Card]
      Onboard LAN Boot Rom      [Disabled]

    ► PCI IRQ 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, Slot 2, Slot 3 [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 controller. If the Symbios SCSI controller is detected, the motherboard's Symbios BIOS will be enabled; if no Symbios SCSI controller 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 add-on 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]

Primary VGA BIOS [PCI Card]

If the computer has both PCI and onboard VGA controllers, this field allows you to select which of the controllers will act as your primary graphics controller. The default, [PCI Card], gives precedence to the PCI controller when detected. [Onboard] is for custom set ups. Configuration options: [PCI Card] [On-Board]

Onboard LAN Boot ROM [Disabled]

This field controls the onboard boot capability of the onboard Intel LAN controller. Configuration options: [Enabled] [Disabled]

PCI/PNP IRQ Resource Exclusion

```
                    AwardBIOS Setup Utility
      Advanced

      PCI/PNP IRQ Resource Exclusion          Item Specific Help

  IRQ  3 Reserved    [No]              Select [Yes] if this IRQ
  IRQ  4 Reserved    [No]              is required by a legacy
  IRQ  5 Reserved    [No]              card; otherwise, select
  IRQ  7 Reserved    [No]              [No].
  IRQ  9 Reserved    [No]
  IRQ 10 Reserved    [No]
  IRQ 11 Reserved    [No]
  IRQ 12 Reserved    [No]
  IRQ 14 Reserved    [No]
  IRQ 15 Reserved    [No]




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

IRQ XX Reserved [No]

These fields indicate whether or not the displayed IRQ for each field is being used by a specified device. The default value indicates that the displayed IRQ is not used. Configuration options: [No] [Yes]

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.
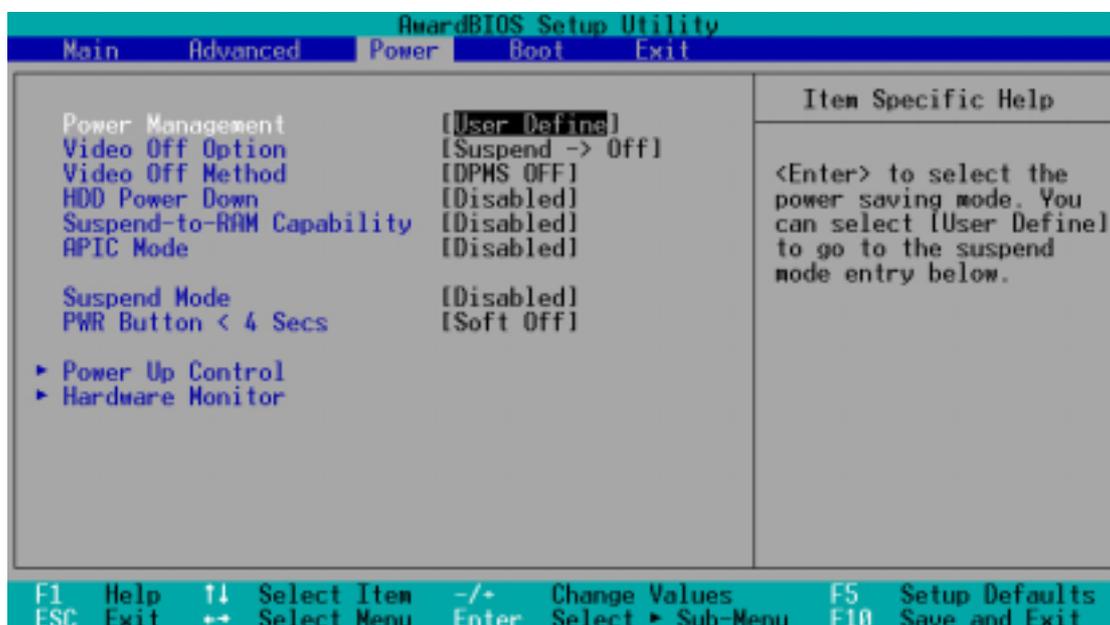
Power Management [User Define]

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.

4. BIOS SETUP

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]
This feature 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. Select [Enabled] if your power supply can supply at least 720mA on the +5VSB lead to support the STR function. 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]. **NOTE:** This field is only effective for Windows 98. Configuration options: [Disabled] [Enabled]

APIC Mode [Disabled]
Configuration options: [Disabled] [Enabled]

Suspend Mode [Disabled]
Sets the time period before the system goes into suspend mode. **NOTE:** This field is effective for DOS, Windows 9x, and Windows NT 4.0 environments. Configuration options: [Disabled] [1~2 Min] [2~3 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 External Modem Act:    [Disabled]    whether or not to
Wake On LAN or PCI Modem:        [Disabled]    restart the system after
Wake On PS2 KB/PS2 Mouse/CIR     [Disabled]    AC power loss.
Wake Up By PS2 Keyboard          [Space Bar]
Wake On USB for S3 or S4 State   [Disabled]

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. [Previous State] sets your system back to the state it is before the power interruption. Configuration options: [Disabled] [Enabled] [Previous State]

PWR Up On External Modem Act [Disabled]

This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external 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 or PCI Modem[Disabled]

Wake-On-LAN/PCI Modem 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 card with Wake-On-LAN and an ATX power supply with at least 720mA +5V standby power.

ASUS TUWE-M User's Manual

Wake On PS2 KB/PS2 Mouse/CIR [Disabled]

Set this field to [Enabled] if you wish to use your PS2 keyboard, PS2 mouse, or consumer IR device 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]

Wake Up By PS2 Keyboard [Space Bar]

When the previous setup item **Wake On PS2 KB/PS2 Mouse/CIR** is enabled, you may specify the key(s) to press to power up the computer. Configuration options: [Space Bar] [Ctrl-Esc] [Wakeup Key]

Wake On USB for S3 or S4 State [Disabled]

This field allows you to use your USB device/s, if any, to power up the computer from Suspend-to-RAM mode. This feature requires an ATX power supply that can supply at least 2A 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. **NOTE:** This feature must be set in conjunction with *USB Device Wake Up* in *3.4 Motherboard Settings*. 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]. **NOTE:** *Automatic Power Up* will not work if the system is powered down by operating systems, such as Windows 98, which have ACPI support enabled. 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     61°C/141°F        │  between monitoring or   │
  │                                        │  ignoring.               │
  │  CPU Fan Speed       7670RPM           │                          │
  │  Chassis Fan Speed   N/A               │                          │
  │                                        │                          │
  │  VCORE Voltage          1.66V          │                          │
  │  +3.3V Voltage          3.33V          │                          │
  │  +5V   Voltage          5.00V          │                          │
  │  +12V  Voltage         12.00V          │                          │
  │                                        │                          │
  │                                        │                          │
  │                                        │                          │
  │                                        │                          │
  ├────────────────────────────────────────┴──────────────────────────┤
  │  F1   Help   ↑↓  Select Item   -/+    Change Values    F5  Setup Defaults │
  │  ESC  Exit   ←→  Select Menu   Enter  Select ► Sub-Menu  F10 Save and Exit │
  └────────────────────────────────────────────────────────────────────┘
```

MB Temperature [xxxC/xxxF]
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 Speed [xxxxRPM]
Chassis Fan Speed [xxxxRPM]
The onboard hardware monitor is able to detect the CPU, power supply,
and chassis fan speeds in rotations per minute (RPM). The presence of the
fans is automatically detected. Set to [Ignore] only if necessary.

VCORE1 Voltage, +3.3V Voltage, +5V Voltage, +12V 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]         │
   3. ATAPI CD-ROM        [None]         │ Boot Sequence:
   4. Other Boot Device   [INT18 Device (Netw]
                                         │ <Enter> to select the
   Plug & Play O/S         [No]          │ device.
   Boot Virus Detection   [Enabled]      │
   Quick Power On Self Test[Enabled]     │ To select the boot
   Boot Up Floppy Seek    [Enabled]      │ sequence, use the up or
   Full Screen Logo       [Enabled]      │ down arrow. Press <+> to
                                         │ move the device up the
                                         │ 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 fields include **Removable Devices**, **IDE Hard Drive**, **ATAPI CD-ROM**, and **Other Boot Device**.

Removable Device [Legacy Floppy]

Configuration options: [Disabled] [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 [INT18 Device (Network)]

Configuration options: [Disabled] [SCSI/Onboard ATA Boot Device] [INT18 Device (Network)]

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]
This field allows you to set boot virus detection, ensuring a virus-free boot sector. The system halts and displays a warning message when it detects a virus. If this occurs, you can either allow the operation to continue or use a virus-free bootable floppy disk to restart and investigate your system. Configuration options: [Disabled] [Enabled]

Quick Power On Self Test [Enabled]
This field speeds up the Power-On-Self Test (POST) routine by skipping retesting a second, third, and fourth time. Configuration options: [Disabled] [Enabled]

Boot Up Floppy Seek [Enabled]
When enabled, the BIOS will seek the floppy disk drive to determine whether the drive has 40 or 80 tracks. Configuration options: [Disabled] [Enabled]

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:

```
                          AwardBIOS Setup Utility
    Main      Advanced      Power      Boot      Exit

                                              Item Specific Help

    Exit Saving Changes
    Exit Discarding Changes
    Load Setup Defaults                   Exit setup utility and
    Discard Changes                       save your changes to
    Save Changes                          CMOS.




    F1   Help   ↑↓  Select Item   -/+   Change Values   F5    Setup Defaults
    ESC  Exit   ←→  Select Menu   Enter Select ► Sub-Menu   F10   Save and Exit
```
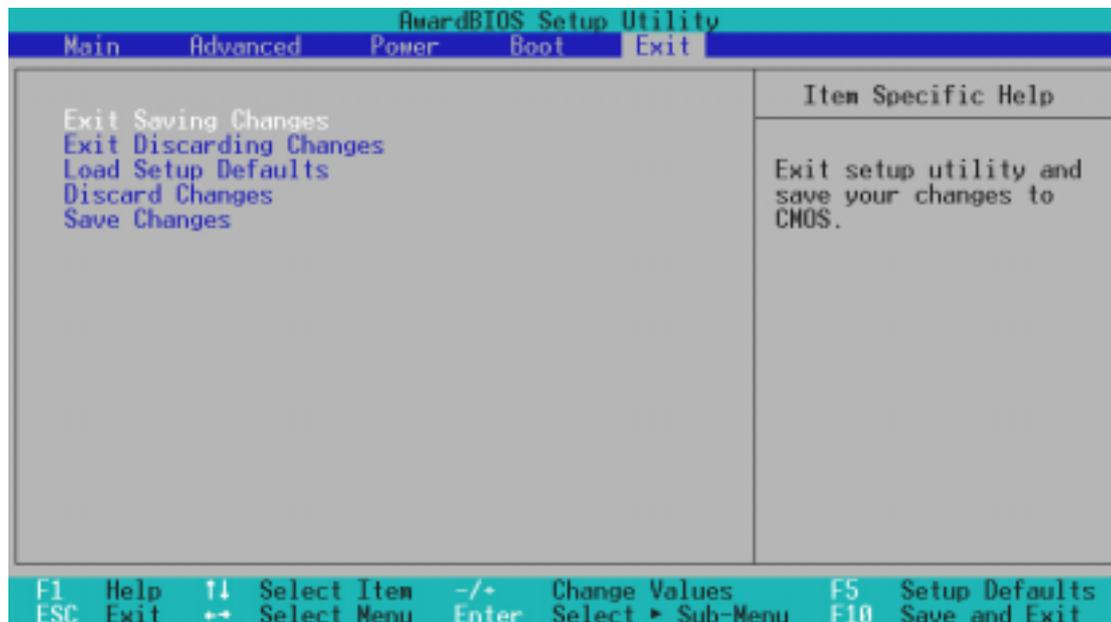
NOTE: Pressing <Esc> does not exit this menu. You must select one of the options from this menu or <F10> from the legend bar to exit this menu.

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.

5. SOFTWARE SETUP

5.1 Install Operating System

You should always use the latest operating system and updates when using new hardware to ensure full compliancy. You may use any version of Windows 98/2000/Millenium, but for Windows 95, you must use OSR 2.0 or later. For Windows NT 4.0, you must use Service Pack 3.0 or later.

5.2 Start Windows

When you start Windows 98 for the first time after installing your motherboard, Windows will detect all plug-and play devices. Follow the Add New Hardware Wizard to install all necessary device drivers. When prompted to restart, select **No** and then follow the setup procedures in this section.

NOTE: Because there are various motherboard settings, options, and expansion cards, the following can only be used as a general reference and may not reflect exactly the screen contents displayed on your screen.

5. SOFTWARE SETUP

5.3 TUWE-M 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 **E:\ASSETUP.EXE** (assuming that your CD-ROM drive is drive **E:**).

5.3.1 Installation Menu

- **Intel INF Update Utility:** Installs patch files for INF configuration.
- **Intel 81X Chipset Graphic Control Driver:** Installs the visual driver files.
- **Avance AC'97 Audio Driver and Application:** Installs a driver and player.
- **Intel Pro/100 LAN Driver:** Installs the network LAN driver.
- **Intel LDCM Administrator Setup:** Installs software to monitor PC systems on the network with the same bridge address if the Client software is also installed.
- **Intel LDCM Client Setup:** Installs software to monitor the Client system.
- **ASUS BIOS Flash Utility for LDCM:** Installs a network BIOS flash utility.
- **ASUS PC Probe:** Installs a utility to monitor temperatures, fan speeds and voltages.
- **ASUS Update Vx.xx:** Installs a utility to download and flash BIOS updates.
- **Microsoft DirectX Driver:** Installs the latest DirectX driver.

(Click the right arrow to view the next menu.)

- **PC-Cillin 2000Vx.xx:** Installs the latest PC-Cillin virus protection software.
- **Adobe Acrobat Reader Vx.x:** Installs the Adobe Acrobat Reader software.
- **Cyberlink Video and Audio Applications:** Installs Cyberlink PowerPlayer SE and Cyberlink VideoLive Mail.
- **ASUS Screen Saver:** Installs ASUS screen saver on the PC.
- **E-Color 3Deep:** Installs an internet color tuning application.
- **Show Motherboard Information:** Displays data about the motherboard, such as product name, BIOS version, and the CPU.
- **Browse Support CD:** View and explore the contents of the support CD.
- **ReadMe:** View the support CD file list and contact information.
- **Exit:** Exits the CD installation menu.

(Click the left arrow to return to the previous menu.)

5. S/W SETUP
Support CD

6. SOFTWARE REFERENCE

6.1 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.

6.1.1 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 start **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

6.1.2 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)
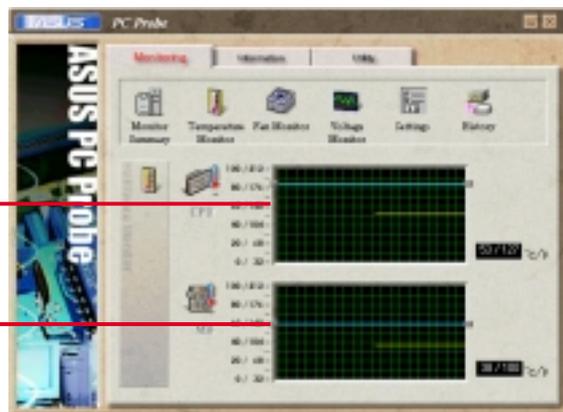
Fan Monitor

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)
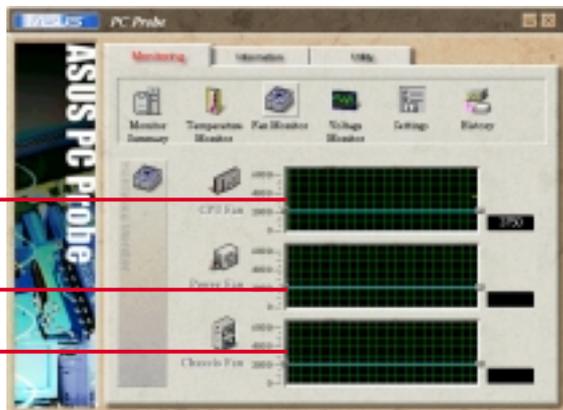
Voltage Monitor

Shows the PC's voltages.
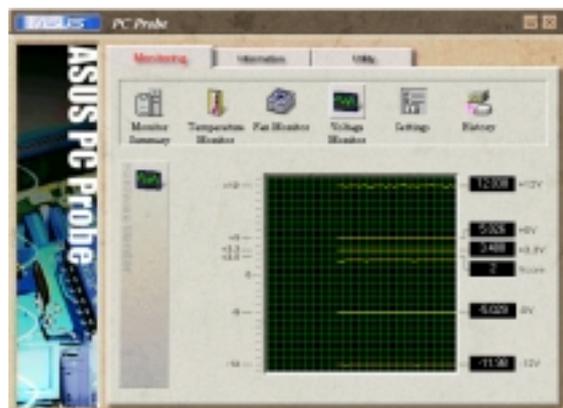
6. SOFTWARE REFERENCE

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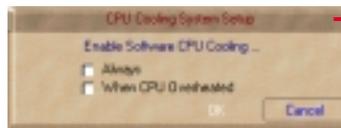
History
Lets you record the current monitoring activity of a certain component of your PC for future reference.
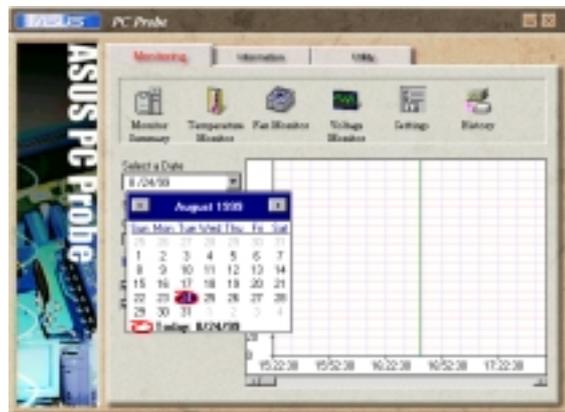
Information

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**.
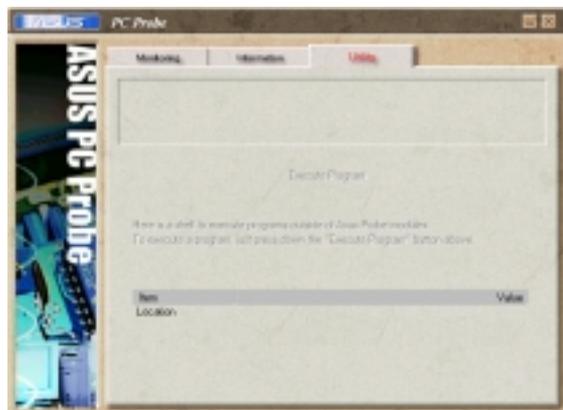
6. SOFTWARE REFERENCE

6.1.3 ASUS PC Probe Task Bar Icon

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

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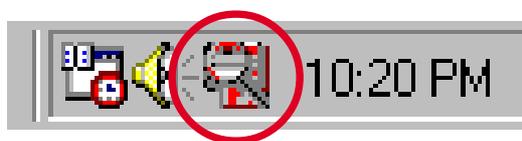
6. SOFTWARE REFERENCE

6.2 ASUS Live Update

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

1. Start ASUS Update
Launch the utility from your Windows Start menu:**Programs/AsusUpdate**

2. Select an update method.
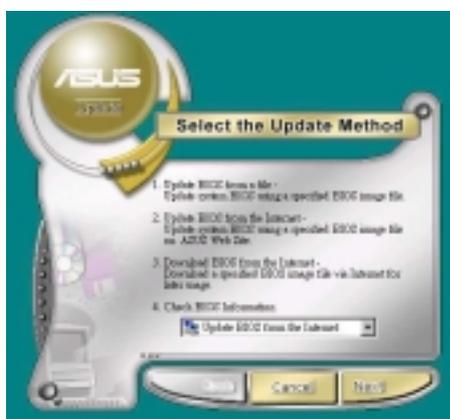
3. If you selected updating/downloading from the Internet, you will need to select an Internet site. Choose the site that is closest to you or click **Auto Select**.
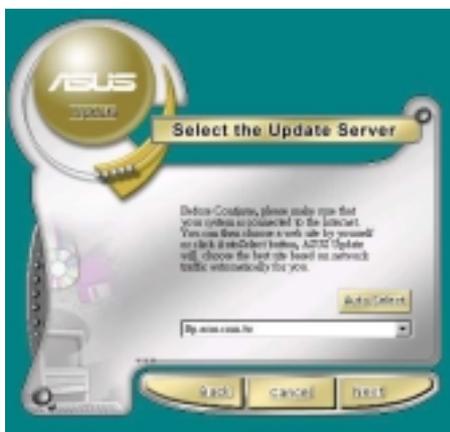
4. From the FTP site, select the BIOS version that you wish to download. Click Next.
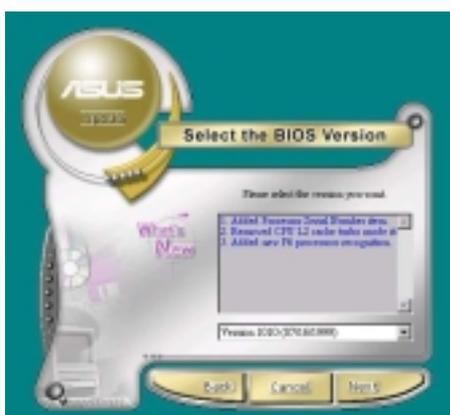
5. Follow the instructions on the succeeding screens to complete the update process. If you selected the option to update the BIOS from a file, a window pops up prompting you to locate the file. Select the file, click Save, then follow the screen instructions to complete the update process.

6. SOFTWARE REFERENCE

6.3 CyberLink PowerPlayer SE

CyberLink PowerPlayer SE is an intelligent software player that can automatically detect and playback all kinds of video/audio files, CD and MP3 files as well. This is the only software you need for all types of video and audio files. No need to waste time identifying your file types.

6.3.1 Starting CyberLink PowerPlayer SE

To start **CyberLink Power Player**, click the Windows **Start** button, point to **Programs**, and then **CyberLink PowerPlayer SE**, and then click **PowerPlayer**.

6.3.2 CyberLink PowerPlayer Control Panel
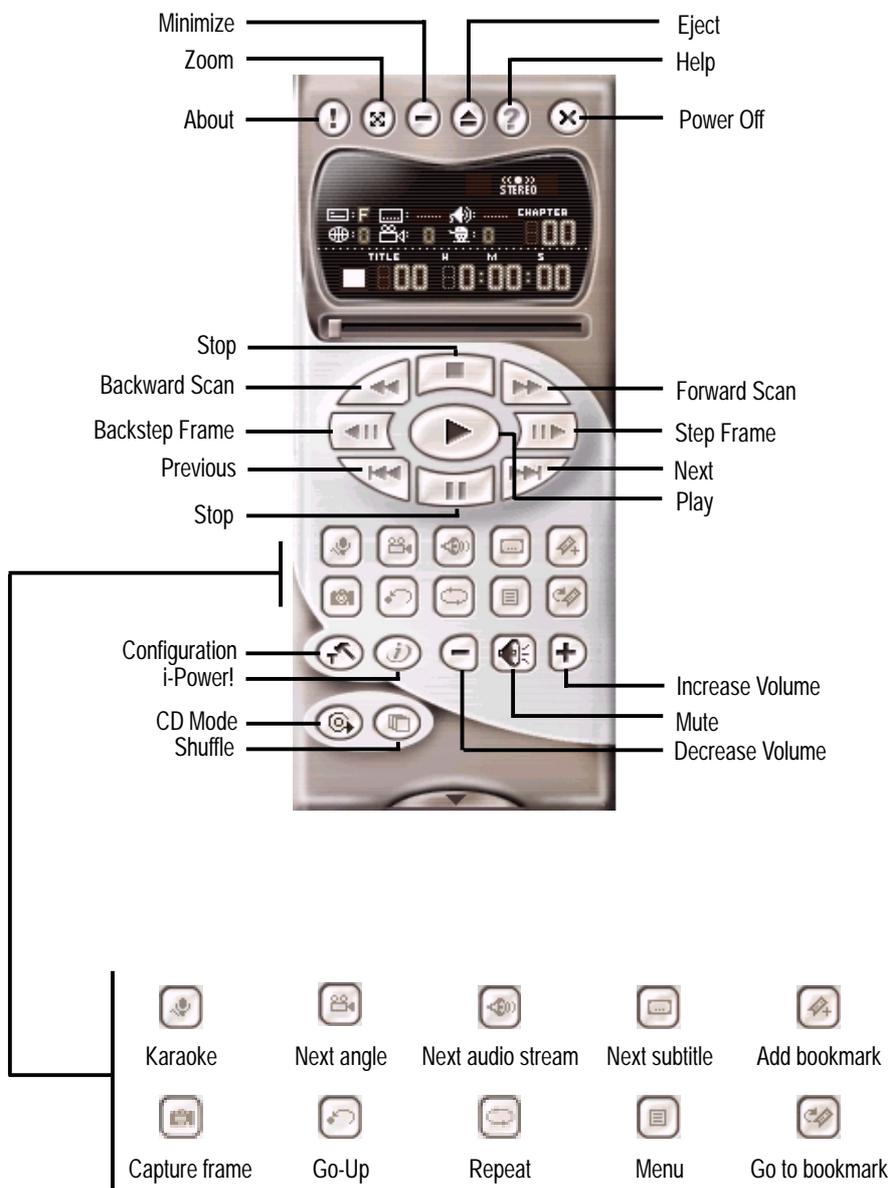
6.4 CyberLink VideoLive Mail

CyberLink's VideoLive Mail Plus Ver 3.0 (a.k.a. VLM 3) is a convenient and excellent way to create professional quality video mails from PC video/audio input devices and to send the mails to any recipients via VLM 3's built-in e-mail system through the Internet. VLM 3's mails comprise video, sound, or snapshot information; and thus may convey the most profound information to target audiences. It is very convenient for mail recipients who do not need to install additional software component in order to view VLM 3 mails.

VLM 3 works as a very applicant sales tool. It efficiently delivers profound and live product information to your target customers without costing a fortune. VLM 3 also helps corporate managers easily give vivid speeches and broadcast through corporate E-mail system. For personal or home users, VLM 3 easily records live video clips allowing users to send them to friends or family members across the Internet.

VLM 3 loads video messages from PC cameras, digital camcorders, analog camcorder via video capture cards, or from an existing AVI video clips, and captures audio messages from PC microphones. Video and audio messages are encoded at a very high compressed rate in a real-time mode. From data input, data conversion, to sending video mails via Internet, or saving data to disks, the whole procedure is done in an easy and continuous process.

VLM 3's video clip compression rate is up to 1:900, and its playback rate is up to 30 frame per second. VLM 3 provides CIF (352 x 288 pixel) display resolution, and support true color configuration. A one-minute video mail with QCIF (176 x 144) resolution takes up less than 500KB of memory, making it easy to transmit and save mail. Users may always adjust resolution and recording parameters for different purpose.

VLM 3 supports all the hardware devices that are compliant with Video for Windows standard. Video for Windows is a well-accepted and well-tested standard. Thus, users do not have to worry about compatibility issues.

6. SOFTWARE REFERENCE

6.4.1 Starting VideoLive Mail

To start **VideoLive Mail**, click the Windows **Start** button, point to **Programs**, and then **CyberLink VideoLive Mail**, and then click **VideoLive Mail x.x**. VLM 3's Setup Wizard will start and guide you through configuring the video and audio input peripherals and to setup the e-mail environment.

1. Setup Wizard first will prompt a dialog to confirm that you want to configure the hardware and E-mail setting. Click **Yes** to continue the system parameter configuration.

2. The e-mail configuration screen appears. You will need to enter your name and the e-mail address. Click **Next** to continue.

3. The Internet e-mail configuration screen appears. You may choose to use the VLM 3 built-in E-mail functionality (SMTP mail), or use MAPI compliant e-mail system. Consult your ISP or MIS staff for the E-mail server IP address if you are not sure. Click **Next** to continue.

4. Then the Video Configuration screen shows up. You may have to specify the video driver for VLM 3, if there are several video-input devices installed. Then configure the number of video frames to be captured per second. Note that the more frames you choose, the bigger the file size will be. Click **Next** to continue.

5. Then the Setup Wizard will then search for the GSM CODECS module for audio compression, and prompt you with the result. Click **Next** to continue.

6. Setup Wizard then tests the audio volume during playing and recording. Click **Next** when ready.

7. Configuration done. Click **Finish** to complete the environmental setting procedure.

6.4.2 CyberLink VideoLive Mail User Interface

6.5 3Deep Color Tuner

The 3-Deep color tuner is designed to match your CRT or LCD color monitor to maximize the color quality of all graphical applications. Users may also tune their internet applications to match "true" internet source colors with the color displayed on the monitor.

Simply run the setup program from the start menu and follow the instructions on the various setup/test screens.

6.5.1 3Deep Color Tuning

1. Select the type of monitor connected to the computer, either **CRT** or **LCD**.

2. Follow the instructions to manually adjust the **brightness** level of the monitor.

3. Select the faintest of the three colors: **blue**, **red** and **green**.
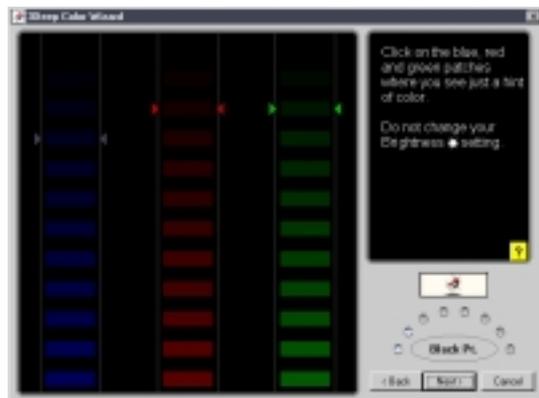
4. Select the color squares which most closely blend and match with the background.

5. The next step repeats the color matching process to achieve full color quality.
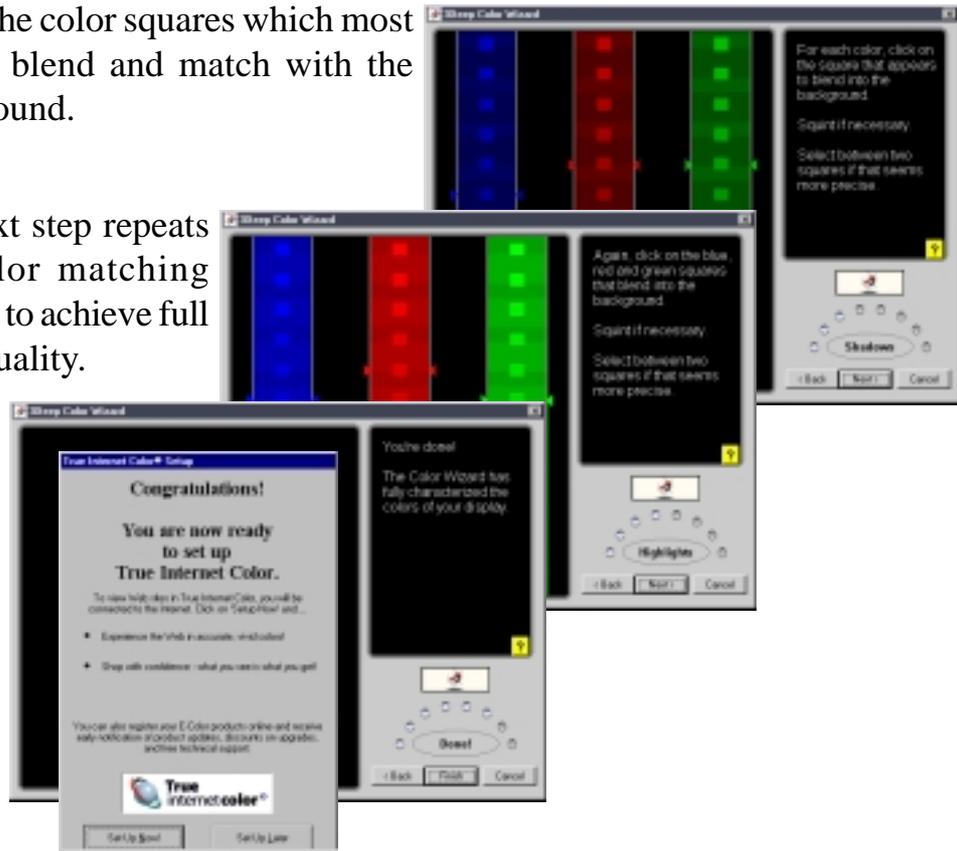
6. The tuning process is complete. Click on the bottom left button to connect to the internet and follow the instructions.

6.5.2 The 3Deep Control Panel

Using the Windows **Start button,** activate the **3Deep Control Panel** program from the **3Deep Applications** group on the **Main Program** menu. The control panel offers access to the **Color Wizard** tuning program, a **Game Gamma** setting and a **Tweak** slider for brightness adjustment.

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7. APPENDIX

7.1 Glossary

1394
1394 is the IEEE designation for a high performance serial bus tht offers data transfers at 100/200/400 Mbps. This serial bus defines both a back plane physical layer and a point-to-point cable-connected virtual bus. The primary application of the cable version is the integration of I/O connectivity at the back panel of personal computers using a low-cost, scalable, high-speed serial interface. The 1394 standard also provides new services such as live connect/disconnect capability for external devices including disk drives, printers and hand-held peripherals such as scanners and cameras. This is a new standard to complement the slower USB interface and to compete with the more expensive SCSI interface.

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

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

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

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

Backup. A copy of a file, directory, or volume on a separate storage device from the original. This copy is for the purpose of data retrieval in case the original is accidentally erased, damaged, or destroyed.

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

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

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

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

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

Cache Memory. A type of RAM that allows a faster from the CPU than a regular RAM. The cache memory eliminates the CPU wait state. When the CPU reads data from the main memory, a copy of this data is stored in the cache memory. The next time the same address, the data is transferred from the cache memory instead of from the main memory.

CODEC (Compressor/Decompressor). A software component that translates video or audio between its uncompressed form and the compressed form in which it is stored.

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

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

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

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

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

DRAM (Dynamic Random Access Memory)
A type of RAM that requires refresh cycles to prevent the loss of the data stored in it. There are several different types of DRAM such as, EDO DRAM (Extended Data Output DRAM), SDRAM (Synchronous DRAM), and RDRAM (Rambus DRAM) and DDR DRAM, (Double-Data Rate DRAM).

Flash ROM
 non-volatile memory device that retains its data even when power is removed. This device is similar to EPROM, but unlike EPROM which can be erased only using an ultra-violet light, flash ROM can be electrically erased. Flash ROM is normally used for system BIOS, which initiates hardware devices and sets up necessary parameters for the OS. Since the flash ROM contents can be modified, users can easily update the BIOS..

7. APPENDIX

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

I/O (Input/Output)
The data transfers from the input devices like a keyboard, mouse, or scanner, to the output devices like a printer or the monitor screen.

I/O Address
The specific memory location for a particular device. Two devices cannot share the same I/O address space.

IrDA (Infrared Data Association)
An internaltional organization that creates and promotes inter-operable, low cost, infrared data interconnection standards that support a walk-up, point-to-point model. The IrDA protocol is designed to support transmission of data between two devices over short-range point-to-point infrared at speeds between 9.6Kbps and 4Mbps.

ISP (Internet Service Provider)
A company that provides customer access to the Internet and the World Wide Web for a fee. The ISP also provides Internet utilities and services like e-mail, newsgroup, weather reports, and a host of others. The user can connect to the ISP using a modem installed in the computer and connected to a phone line.

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

MMX
A set of 57 new instructions designed to accelerate multimedia and communications applications, such as 3D video, 3D sound, video conference.

Modem
A device that allows a computer to talk to another computer through the phone system.

Network
An interconnected computer system linked by telephone wires, or other means.

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

PC100/133
This is an industry-standard designation for memory capacity as a measure of the speed of the memory bus. New platform requirements ensure that memory does not become a bottleneck to system performance.

PCI Bus (Peripheral Component Interconnect Local Bus)
PCI bus is a standard specification that defines a 32-bit data bus interface.

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

POST (Power On Self Test)
Powering on the computer initiates the POST, a series of software-controlled diagnostic tests. The POST checks system memory, the motherboard circuitry, the display, the keyboard, the diskette drive, and other I/O devices

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

RDRAM (Rambus DRAM)
Developed by Rambus, Inc., this type of memory can deliver up to 1.6GB of data per second. RDRAM is the first interface standard that can be directly implemented on high performance VLSI components such as, CMOS DRAMs, memory controllers, and graphics/video ICs.

RAM (Random Access Memory). The computer's primary storage area used to write, store, and retrieve information and program instructions which are passed to the CPU for processing. The information in RAM can be repeatedly re-written with new data. Compared to other storage media like magnetic tape, floppy disk, and hard disk, RAM has an extraordinarily fast access rate. RAM, however, is volatile, which means that the data stored in it are lost when the system power is turned off, or if power glitches occur. See also DRAM and SDRAM.

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

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

SDRAM (Synchronous DRAM)
A type of DRAM with access signals that are synchronized with the CPU clock, eliminating the delay associated with data transfers between the CPU and memory. SDRAM takes memory access away from the CPU control; internal registers in the memory accept the request, and lets the CPU do something else while the data requested is assembled for the next time the CPU talks to the memory.

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

System Disk
A system disk contains the core file of an operating system that boots up the operating system.

TCP/IP (Transmission Control Protocol/Internet Protocol). The communications protocol used by the UNIX system and the Internet. TCP checks for lost packets, puts the data from multiple packets into the correct order, and requests that missing or damaged packets be resent.

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

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

INDEX

INDEX