

**ASUS<sup>®</sup> MES-VM**

Socket 370 microATX Motherboard

**USER'S MANUAL**

# USER'S NOTICE

---

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

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

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

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

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

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

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

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

**Copyright © 1999 ASUSTeK COMPUTER INC. All Rights Reserved.**

Product Name:	<b>ASUS MES-VM</b>
Manual Revision:	<b>1.02 E339</b>
Release Date:	<b>March 1999</b>

# ASUS CONTACT INFORMATION

---

## ASUSTeK COMPUTER INC. (Asia-Pacific)

### *Marketing*

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

### *Technical Support*

Tel (English): +886-2-2894-3447 ext. 706  
Tel (Chinese): +886-2-2894-3447 ext. 701  
Fax: +886-2-2895-9254  
Email: tsd@asus.com.tw  
Newsgroup: news2.asus.com.tw  
WWW: www.asus.com.tw  
FTP: ftp.asus.com.tw/pub/ASUS

## ASUS COMPUTER INTERNATIONAL (America)

### *Marketing*

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

### *Technical Support*

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

## ASUS COMPUTER GmbH (Europe)

### *Marketing*

Address: Harkort Str. 25, 40880 Ratingen, BRD, Germany  
Telephone: 49-2102-445011  
Fax: 49-2102-442066  
Email: sales@asuscom.de

### *Technical Support*

Hotline: 49-2102-499712  
BBS: 49-2102-448690  
Email: tsd@asuscom.de  
WWW: www.asuscom.de  
FTP: ftp.asuscom.de/pub/ASUSCOM

# CONTENTS

---

<b>I. INTRODUCTION</b> .....	<b>7</b>
How this manual is organized .....	7
Item Checklist .....	7
<b>II. FEATURES</b> .....	<b>8</b>
The ASUS MES-VM Motherboard .....	8
Introduction to ASUS Smart Series Motherboards .....	9
Parts of the ASUS MES-VM Motherboard .....	11
<b>III. HARDWARE SETUP</b> .....	<b>12</b>
ASUS MES-VM Motherboard Layout .....	12
Hardware Setup Steps .....	14
1. Motherboard Settings .....	14
VGA Shared Memory with One DIMM .....	16
2. System Memory (DIMM) .....	16
DIMM Memory Installation .....	17
3. Central Processing Unit (CPU) .....	18
4. Expansion Cards .....	19
Expansion Card Installation Procedure .....	19
Assigning IRQs for Expansion Cards .....	19
Assigning DMA Channels for ISA Cards .....	20
ISA Cards and Hardware Monitor .....	20
5. External Connectors .....	21
Power Connection Procedures .....	29
<b>IV. BIOS SETUP</b> .....	<b>30</b>
Flash Memory Writer Utility .....	30
Main Menu .....	30
Managing and Updating Your Motherboard's BIOS .....	32
6. BIOS Setup Program .....	33
BIOS Menu Bar .....	34
Legend Bar .....	34
Main Menu .....	36
Primary Master/Slave & Secondary Master/Slave .....	37
Advanced (main menu) .....	42
Advanced (sub-menu 1/4) .....	43
Advanced (sub-menu 2/4) .....	45
Advanced (sub-menu 3/4) .....	47
Advanced (sub-menu 3/4-1/3) .....	48
Advanced (sub-menu 3/4-2/3) .....	49
Advanced (sub-menu 4/4) .....	50

# CONTENTS

---

Power Menu .....	51
Power (sub-menu 1/2) .....	53
Power (sub-menu 2/2) .....	54
Boot Menu .....	55
Exit Menu .....	57
<b>V. APPENDIX .....</b>	<b>59</b>
The ASUS PCI-L101 Fast Ethernet Card .....	59
Features .....	60
Software Driver Support .....	60
Question and Answer .....	60
Glossary .....	61

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

## ***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.

# I. INTRODUCTION

---

## How this manual is organized

This manual is divided into the following sections:

- |                            |  |
|----------------------------|--|
| <b>I. Introduction</b>     | Manual information and checklist                       |
| <b>II. Features</b>        | Information and specifications concerning this product |
| <b>III. Hardware Setup</b> | Instructions on setting up the motherboard             |
| <b>IV. BIOS Setup</b>      | Instructions on setting up the BIOS software           |
| <b>V. Appendix</b>         | Optional items and general reference                   |

## Item Checklist

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

- (1) ASUS Motherboard
- (1) IDE ribbon cable for master and slave drives
- (1) Ribbon cable for (1) 5.25" and (2) 3.5" floppy disk drives
- (1) Serial COM2 cable with bracket
- (1) Bag of spare jumper caps
- (1) Support CD with drivers and utilities
- (1) This Motherboard User's Manual
- ASUS IrDA-compliant infrared module (optional)
- ASUS PCI-L101 Wake-On-LAN 10/100 Fast Ethernet Card (optional)

## II. FEATURES

---

### The ASUS MES-VM Motherboard

The ASUS MES-VM motherboard is carefully designed for the demanding PC user who wants many intelligent features in a small package.

- **Intel Processor Support:** Supports Intel's Celeron processor designed for the Socket 370 and packaged in Plastic Pin Grid Array (PPGA).
- **SiS Chipset:** Features 100MHz FSB SiS' 620 chipset with SiS 6326 AGP 2X graphics built-in and support for ATA-66 which allows 66MHz IDE transfers.
- **Enhanced ACPI & Anti-Boot Virus BIOS:** Programmable BIOS (Flash EEPROM), offering enhanced ACPI for Windows 98 compatibility, built-in hardware-based virus protection, and autodetection of most devices for virtually automatic setup.
- **Versatile Memory:** Equipped with two DIMM sockets to support Intel PC100-compliant SDRAMs (8, 16, 32, 64, 128, or 256MB) up to 512MB.
- **Built-in Graphics:** Built-in AGP 2X graphics controller can use shared system memory or optional dedicated onboard 8MB SDRAM.
- **Onboard Audio and AC'97 CODEC (optional):** Features a 32-bit Crystal PCI audio onboard. Features an 18-bit stereo, full duplex, audio codec that conforms to AC'97 analog component specifications. Includes a complete online help to guide you through the audio software.
- **PCI & ISA Expansion:** Provides three 32-bit PCI expansion slots and one 16-bit ISA expansion slot .
- **Wake-On-LAN Connector:** Supports Wake-On-LAN activity through an optional ASUS PCI-L101 Fast Ethernet card or a similar ethernet card.
- **SB-Link™:** Features Creative's SB-Link™, allowing SB16 compatibility, using Intel's PC-PCI and serialized IRQ protocols, to AWE64D or compatible PCI audio cards.
- **Super Multi-I/O:** Provides two high-speed UART compatible serial ports and one parallel port with EPP and ECP capabilities.
- **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.)
- **IrDA:** Supports an optional infrared port module for wireless interface.



## II. FEATURES

---

### Introduction to ASUS Smart Series Motherboards

#### Performance

- **ATA-66 & Ultra DMA/33:** Comes with an onboard PCI Bus Master IDE controller with two connectors that support four IDE devices in two channels. Supports ATA-66, Ultra DMA/33, PIO Modes 3 & 4 and Bus Master IDE DMA Mode 2, and supports Enhanced IDE devices, such as Tape Backup, CD-ROM, CD-R/RW, and LS-120 drives.
- **66/100MHz Asynchronous & 100/100MHz Synchronous Host/DRAM Clock Support:** CPU frequency can operate at 66MHz or 100MHz while system memory operates at 100MHz or 66MHz. This can optimize the VGA performance under shared memory configuration.
- **Double or Quadruple the IDE Transfer Speed:** IDE transfers using UltraDMA/33 Bus Master IDE can handle rates up to 33MB/sec and up to 66MB/sec using SiS' ATA-66 technology. The best of all is that these new technology is compatible with existing ATA-2 IDE specifications so there is no need to upgrade current IDE devices or cables.
- **Concurrent PCI:** Concurrent PCI allows multiple PCI transfers from PCI master buses to memory to CPU.
- **SDRAM Optimized Performance:** ASUS smart series motherboards support the new generation memory, Synchronous Dynamic Random Access Memory (SDRAM), which increases the data transfer rate to 800MB/s max using PC100 SDRAM.
- **ACPI Ready:** ACPI (Advanced Configuration and Power Interface) is also implemented on all ASUS smart series motherboards. ACPI provides more Energy Saving Features for future operating systems (OS) supporting OS Direct Power Management (OSPM) functionality. With these features implemented in the OS, PCs can be ready around the clock, yet satisfy all the energy saving standards. To fully utilize the benefits of ACPI, an ACPI-supported OS such as the successor of Windows 95 must be used.
- **PC'98 Compliant:** Both the BIOS and hardware levels of the motherboard meets PC'98 compliancy. The new PC'98 requirements for systems and components are based on the following high-level goals: Support for Plug and Play compatibility and power management for configuring and managing all system components, and 32-bit device drivers and installation procedures for Windows 95/98/NT.

## II. FEATURES

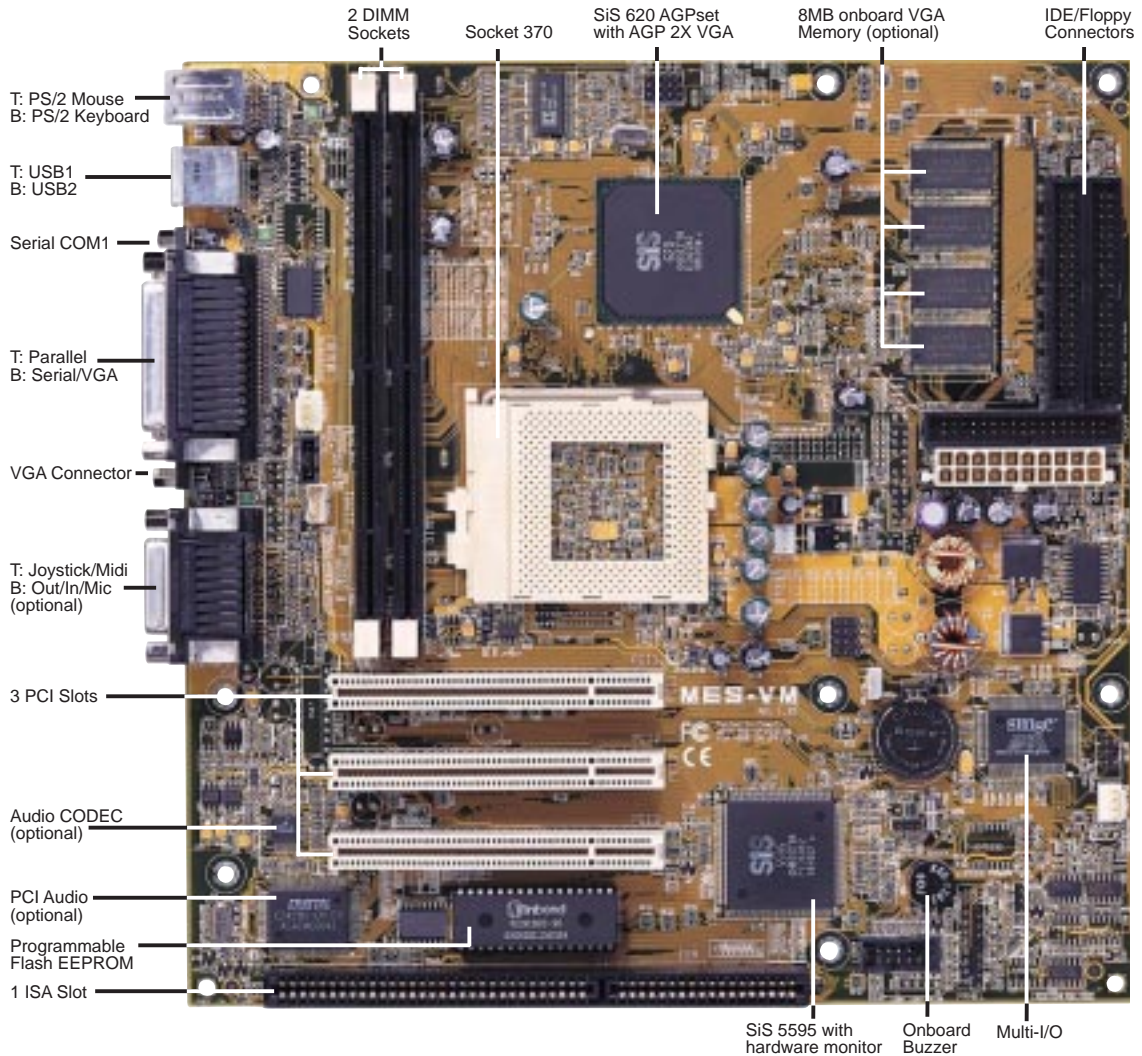
---

### Intelligence

- **Fan Status Monitoring and Alarm:** To prevent system overheat and system damage, the CPU, power supply, and system fans can be monitored for RPM and failure. All the fans are set for its normal RPM range and alarm thresholds.
- **Temperature Monitoring and Alert:** To prevent system overheat and system damage, this motherboard supports Socket 370 processor thermal sensing.
- **Voltage Monitoring and Alert:** System voltage levels are monitored to ensure stable current to critical motherboard components. Voltage specifications are more critical for future processors, so monitoring is necessary to ensure proper system configuration and management.
- **System Resources Alert:** Today's operating systems such as Windows 95, Windows NT, and OS/2, require much more memory and hard drive space to present enormous user interfaces and run large applications. The system resource monitor will warn the user before the system resources are used up to prevent possible application crashes. Suggestions will give the user information on managing their limited resources more efficiently.
- **Auto Fan Off:** The system fans will power off automatically **even in sleep mode**. This function reduces both energy consumption *and* **system noise**, and is an important feature to implement silent PC systems.
- **Dual Function Power Button:** The system can be in one of two states, one is Sleep mode and the other is the Soft-Off mode. Pushing the power button for less than 4 seconds places the system into Sleep mode. When the power button is pressed for more than 4 seconds, it enters the Soft-Off mode.
- **Remote Ring On (requires modem):** This allows a computer to be turned on remotely through an internal or external modem. With this benefit on-hand, any user can access vital information from their computer from anywhere in the world!
- **Message LED (requires ACPI OS support):** Chassis LEDs now act as information providers. Through the way a particular LED illuminates, the user can determine the stage the computer is in. A simple glimpse provides useful information to the user.
- **Keyboard Power Up:** Keyboard Power Up can be enabled or disabled to allow the computer to be powered on by pressing the space bar on the keyboard.

# II. FEATURES

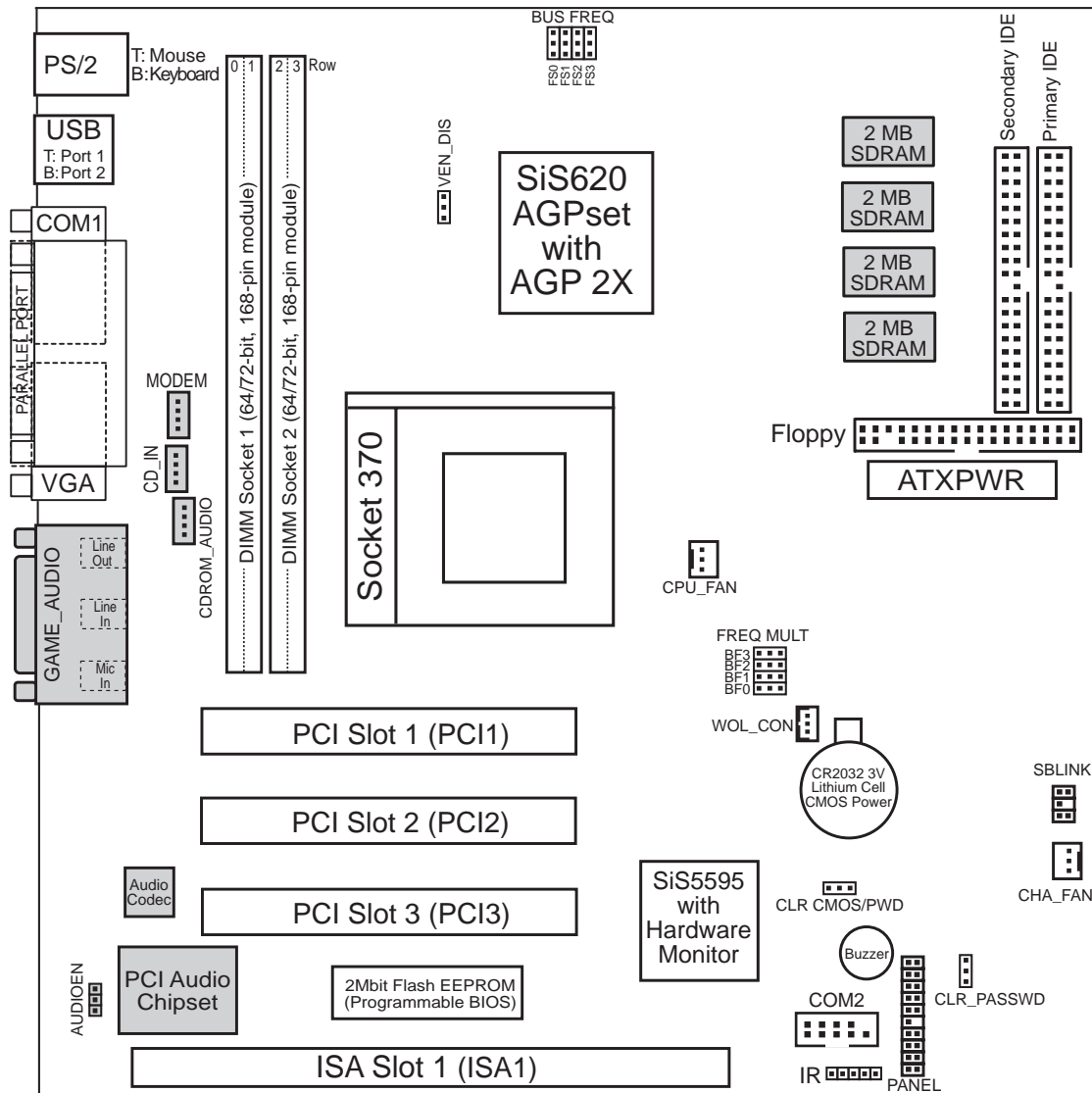
## Parts of the ASUS MES-VM Motherboard



II. FEATURES  
Motherboard Parts

# III. HARDWARE SETUP

## ASUS MES-VM Motherboard Layout



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

III. INSTALLATION  
Motherboard Layout

# III. HARDWARE SETUP

---

## Motherboard Settings

- |                       |   |
|-----------------------|---|
| 1) VEN_DIS/AUDIOEN    | p. 14 Video & Audio Settings (Enable/Disable)     |
| 2) FS0, FS1, FS2, FS3 | p. 15 CPU External Clock (BUS) Frequency Selector |
| 3) BF0, BF1, BF2, BF3 | p. 15 CPU:BUS Frequency Multiple                  |

## Expansion Slots

- |                     |  |
|---------------------|--|
| 1) DIMM1, DIMM2     | p. 16 168-Pin DIMM Memory Support          |
| 2) Socket 370       | p. 18 Central Processing Unit (CPU) Socket |
| 3) SLOT1            | p. 19 16-bit ISA Bus Expansion Slots*      |
| 4) PCI1, PCI2, PCI3 | p. 19 32-bit PCI Bus Expansion Slots       |

## Connectors

- |                           |  |
|---------------------------|--|
| 1) PS2KBMS                | p. 21 PS/2 Mouse Connector (6-pin female)                  |
| 2) PS2KBMS                | p. 21 PS/2 Keyboard Connector (6-pin female)               |
| 3) USB                    | p. 22 Universal Serial BUS Ports 1 & 2 (Two 4-pin female)  |
| 4) PRINTER                | p. 22 Parallel Port Connector (25-pin female)              |
| 5) COM1                   | p. 22 Serial Port COM1 Connector (9-pin male)              |
| 6) VGA                    | p. 22 Monitor (VGA) Output Connector (15-pin female)       |
| 7) GAME_AUDIO             | p. 23 Joystick/Midi Connector (15-pin female) (optional)   |
| 8) GAME_AUDIO             | p. 23 Audio Port Connectors (Three 1/8" female) (optional) |
| 9) MODEM/CD_IN/CDROM      | p. 23 Internal Audio Connectors (Three 4-pin)              |
| 10) PRIMARY/SECONDARY IDE | p. 24 Primary/Secondary IDE Connectors (Two 40-1pins)      |
| 11) FLOPPY                | p. 24 Floppy Disk Drive Connector (34-1pins)               |
| 12) WOL_CON               | p. 25 Wake-On-LAN Header (3 pins)                          |
| 13) SBLINK                | p. 25 SB-Link™ Connector (6-1 pins)                        |
| 14) IR                    | p. 26 IrDA-Compliant Infrared Module Connector (5 pins)    |
| 15) SPEAKER (PANEL)       | p. 26 System Warning Speaker Connector (4 pins)            |
| 16) SMI (PANEL)           | p. 27 SMI Switch Lead (2 pins)                             |
| 17) KEYLOCK (PANEL)       | p. 27 Keyboard Lock Switch Lead (2 pins)                   |
| 18) MSG.LED (PANEL)       | p. 27 System Message LED (2 pins)                          |
| 19) RESET (PANEL)         | p. 27 Reset Switch Lead (2 pins)                           |
| 20) PWR.LED (PANEL)       | p. 27 System Power LED Lead (3-1 pins)                     |
| 21) IDELED (PANEL)        | p. 27 IDE LED Activity Light (2 pins)                      |
| 22) PWR.SW (PANEL)        | p. 27 ATX Power & Soft-Off Switch Lead (2 pins)            |
| 23) CPU_FAN               | p. 28 CPU Fan Connector (3 pins)                           |
| 24) ATXPWR                | p. 28 ATX Power Supply Connector (20 pins)                 |

\*The onboard hardware monitor uses the address 290H-297H so legacy ISA cards must not use this address; otherwise, conflicts will occur.

# III. HARDWARE SETUP

## Hardware Setup Steps

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

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

### 1. Motherboard Settings

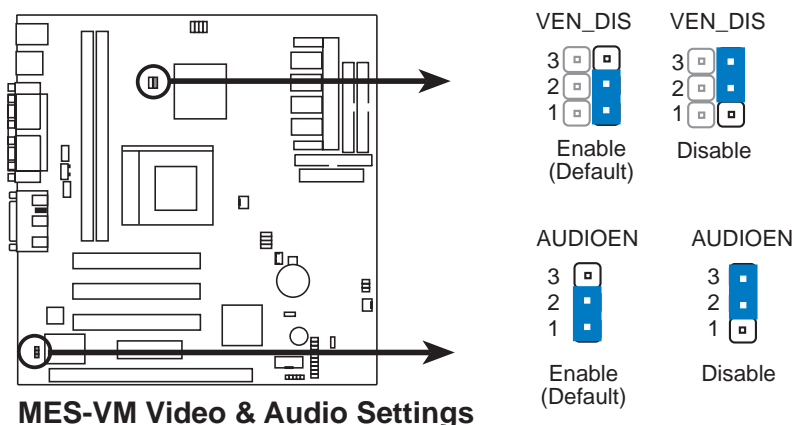
**WARNING!** Computer motherboards, baseboards and components, such as SCSI cards, contain very delicate Integrated Circuit (IC) chips. To protect them against damage from static electricity, you should follow some precautions whenever you work on your computer.

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.

#### 1. Video & Audio Settings (VEN\_DIS & AUDIOEN)

The built-in AGP VGA and the onboard 32-bit PCI audio may be enabled or disabled using these jumpers.

<u>Setting</u>	<u>VEN_DIS</u>	<u>Setting</u>	<u>AUDIOEN</u>
Enable	[1-2] (default)	Enable	[1-2] (default)
Disable	[2-3]	Disable	[2-3]

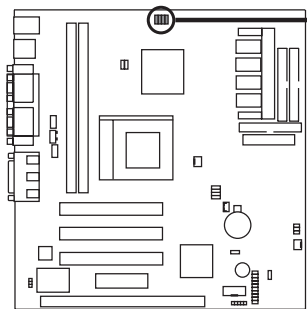


MES-VM Video & Audio Settings

# III. HARDWARE SETUP

## 2. CPU Bus Frequency Selector (FS0, FS1, FS2, FS3)

This option tells the clock generator what frequency to send to the CPU, DRAM, and the AGPset. This allows the selection of the CPU's *External* frequency (or *BUS Clock*). The BUS Clock multiplied by the BUS Ratio equals the CPU's *Internal* frequency (the advertised CPU speed). **NOTE:** You may set the memory speed independently from the CPU Bus Frequency. Depending on your memory type PC66 (66MHz) or PC100 (100MHz), select the appropriate "RAM" speed along with the appropriate "CPU" speed.



**MES-VM CPU Bus Frequency Settings**

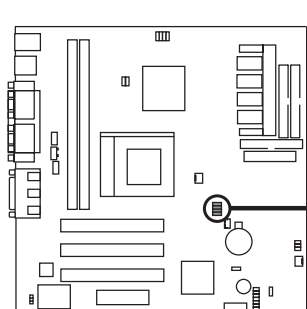
FS0	FS1	FS2	FS3	CPU	RAM	PCI
3	2	1		66MHz	66MHz	33MHz
3	2	1		75MHz	75MHz	30MHz
3	2	1		83MHz	83MHz	33MHz
3	2	1		95MHz	95MHz	31MHz
3	2	1		100MHz	100MHz	33MHz
3	2	1		112MHz	112MHz	37MHz
3	2	1		133MHz	133MHz	33MHz

FS0	FS1	FS2	FS3	CPU	RAM	PCI
3	2	1		66MHz	100MHz	33MHz
3	2	1		90MHz	90MHz	30MHz
3	2	1		95MHz	63MHz	31MHz
3	2	1		100MHz	66MHz	33MHz
3	2	1		100MHz	75MHz	30MHz
3	2	1		112MHz	74MHz	37MHz
3	2	1		133MHz	88MHz	33MHz

## 3. CPU Core:BUS Frequency Multiple (BF0, BF1, BF2, BF3)

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



**MES-VM CPU Core: Bus Frequency Multiple**

BF3	BF2	BF1	BF0	Ratio
3	2	1		2.0x(2/1)
3	2	1		2.5x(5/2)
3	2	1		3.0x(3/1)
3	2	1		3.5x(7/2)
3	2	1		4.0x(4/1)
3	2	1		4.5x(9/2)
3	2	1		5.0x(5/1)
3	2	1		5.5x(11/2)
3	2	1		6.0x(6/1)
3	2	1		6.5x(13/2)
3	2	1		7.0x(7/1)
3	2	1		7.5x(15/2)
3	2	1		8.0x(8/1)

**WARNING!** Frequencies above 100MHz exceed the specifications for the on-board chipset and are not guaranteed to be stable. PCI frequencies above 33MHz exceed the specifications for PCI cards and are not guaranteed to be stable.

Set the jumpers by the Internal speed of your processor as follows:

Intel CPU Model	Freq.	Ratio	(BUS Freq. PC66 RAM)				(Freq. Multiple)				
			BUS F.	FS0	FS1	FS2	FS3	BF3	BF2	BF1	BF0
Celeron (PPGA)	466MHz	7.0x	66MHz	[2-3]	[2-3]	[2-3]	[1-2]	[2-3]	[1-2]	[2-3]	[1-2]
Celeron (PPGA)	433MHz	6.5x	66MHz	[2-3]	[2-3]	[2-3]	[1-2]	[1-2]	[2-3]	[2-3]	[1-2]
Celeron (PPGA)	400MHz	6.0x	66MHz	[2-3]	[2-3]	[2-3]	[1-2]	[1-2]	[2-3]	[2-3]	[2-3]
Celeron (PPGA)	366MHz	5.5x	66MHz	[2-3]	[2-3]	[2-3]	[1-2]	[2-3]	[1-2]	[1-2]	[1-2]
Celeron (PPGA)	333MHz	5.0x	66MHz	[2-3]	[2-3]	[2-3]	[1-2]	[2-3]	[1-2]	[1-2]	[2-3]
Celeron (PPGA)	300MHz	4.5x	66MHz	[2-3]	[2-3]	[2-3]	[1-2]	[2-3]	[1-2]	[2-3]	[1-2]

# III. HARDWARE SETUP

## 2. System Memory (DIMM)

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

This motherboard uses only Dual Inline Memory Modules (DIMMs). Sockets are available for **3.3Volt** (power level) unbuffered Synchronous Dynamic Random Access Memory (SDRAM) of either 8, 16, 32, 64, 128MB, or 256MB.

The SiS chipset does not support ECC function. ECC memory modules may be used but the ECC function will not be available.

Memory speed setup is recommended through “SDRAM Configuration” under *Chipset Features Setup* in BIOS SETUP.

*Install memory in any combination as follows:*

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

### *VGA Shared Memory with One DIMM*

When using only one DIMM as shared memory for the onboard VGA, it must be inserted into DIMM socket 1 (leaving DIMM socket 2 empty).

### General DIMM Notes

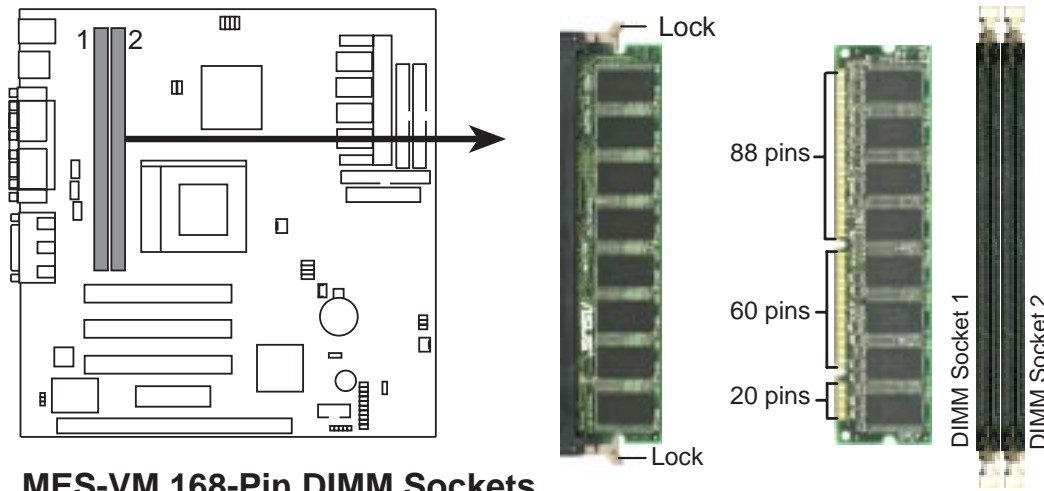
- **For the system CPU bus to operate at 100MHz, use only PC100-compliant DIMMs.** When this motherboard operates at 100MHz, most system will not even boot if non-compliant modules are used because of the strict timing issues involved under this speed. If your DIMMs are not PC100-compliant, set the CPU bus frequency to 66MHz RAM to ensure system stability.
- ASUS motherboards support SPD (Serial Presence Detect) DIMMs. This is the memory of choice for best performance vs. stability.
- Two possible memory chips are supported: SDRAM with and without ECC.
- SDRAM chips are generally thinner with higher pin density than EDO (Extended Data Output) chips.
- BIOS shows SDRAM memory on bootup screen.
- 8 chips/side modules do not support ECC, only 9 chips/side modules support ECC.
- Single-sided DIMMs come in 16, 32, 64, 128MB; double-sided come in 32, 64, 128, 256MB.



# III. HARDWARE SETUP

## *DIMM Memory Installation*

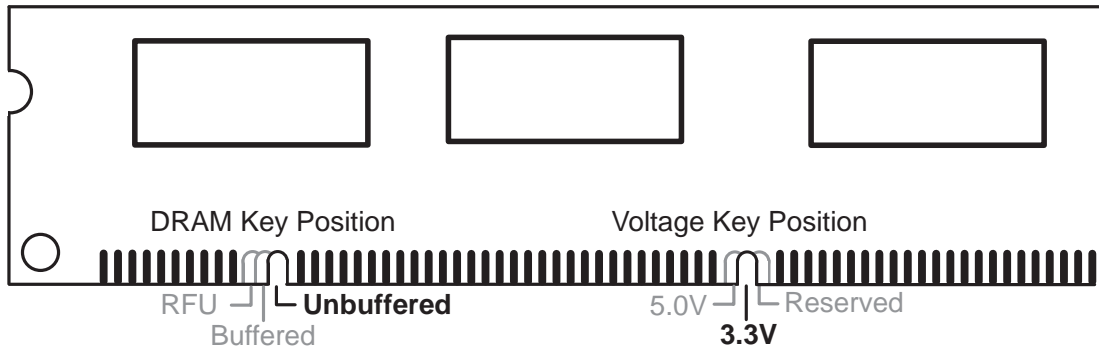
Insert the module(s) as shown. Because the number of pins are different on either side of the breaks, the module will only fit in the orientation as shown. DIMM modules are longer and have different pin contact on each side and therefore have a higher pin density. SIMM modules have the same pin contact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



**MES-VM 168-Pin DIMM Sockets**

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

### 168-Pin DIMM Notch Key Definitions (3.3V)



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

# III. HARDWARE SETUP

## 3. Central Processing Unit (CPU)

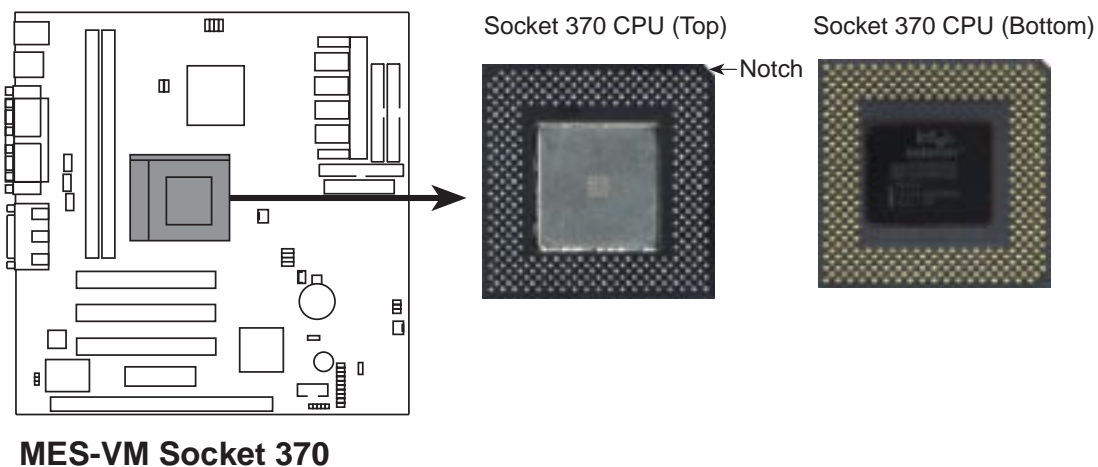
The motherboard provides a ZIF Socket 370. The CPU that came with the motherboard should have a fan attached to it to prevent overheating. If this is not the case then purchase a fan before you turn on your system.

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

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the lever sideways away from the socket then upwards to a 90-degree right angle. Insert the CPU with the correct orientation as shown. The notched corner should point towards the end the of the lever. Because the CPU has a corner pin for two of the four corners, the CPU will only fit in the one orientation as shown. The picture is for reference only; you should have a CPU fan that will cover the face of the CPU. With the added weight of the CPU fan, no force is required to insert the CPU. Once completely inserted, close the socket's lever while holding down the CPU.

**NOTE:** Do not forget to set the correct Bus Frequency and Multiple for your Socket 370 processor or else boot-up may not be possible. Socket 370 processors provide internal thermal sensing so that a socket mounted thermal resistor is not needed.

**CAUTION:** Be careful not to scrape the motherboard when mounting a clamp-style processor fan or else damage may occur to the motherboard.



# III. HARDWARE SETUP

---

## 4. Expansion Cards

**WARNING!** Make sure that you unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

### *Expansion Card Installation Procedure*

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

### *Assigning IRQs for Expansion Cards*

Some expansion cards need to use an IRQ to operate. Generally, an IRQ must be exclusively assigned to one use. In a standard design, there are 16 IRQs available but most of them are already in use, leaving 6 IRQs free for expansion cards. If your motherboard has **PCI** audio onboard, an extra IRQ will be used, leaving 5 IRQs free. If your motherboard has **ISA** audio onboard, an extra 3 IRQs will be used, leaving 3 IRQs free.

Both ISA and PCI expansion cards may require to use IRQs. System IRQs are available to cards installed in the ISA expansion bus first, then any remaining IRQs are available to PCI cards. Currently, there are two types of ISA cards. The original ISA expansion card design, now referred to as legacy ISA cards, requires that you configure the card's jumpers manually and then install it in any available slot on the ISA bus. You may use the Microsoft Diagnostics (MSD.EXE) utility located in the Windows directory to see a map of your used and free IRQs. If you use Windows 95, the **Resources** tab under **Device Manager** displays the resource settings being used by a particular device (to gain access, double-click the **System** icon under the **Control Panel** program). Ensure that no two devices share the same IRQs or your computer will experience problems when those two devices are in use at the same time.

# III. HARDWARE SETUP

---

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

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

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

## *Assigning DMA Channels for ISA Cards*

Some ISA cards, both legacy and PnP, may also need to use a DMA (Direct Memory Access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described earlier. You can select a DMA channel in the PCI and PnP configuration section of the BIOS Setup utility. **NOTE:** The on-board audio by default uses DMA1.

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

## *ISA Cards and Hardware Monitor*

The onboard hardware monitor uses the address 290H-297H so legacy ISA cards must not use this address or else conflicts will occur.

# III. HARDWARE SETUP

## 5. External Connectors

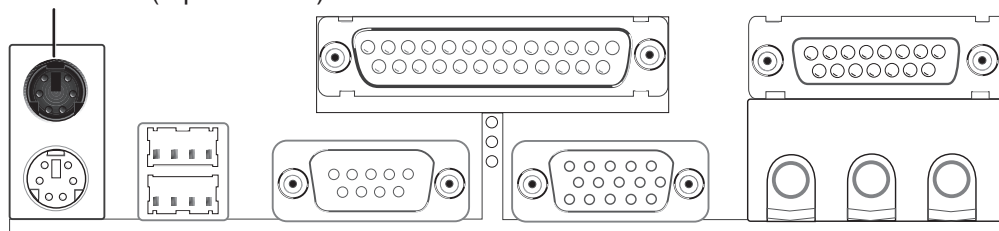
**WARNING!** Some pins are used for connectors or power sources. These are clearly distinguished from jumpers in the Motherboard Layout. Placing jumper caps over these connector pins will cause damage to your motherboard.

**IMPORTANT:** Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. The four corners of the connectors are labeled on the motherboard. Pin 1 is the side closest to the power connector on hard drives and floppy drives. 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 (6-pin PS2KBMS)

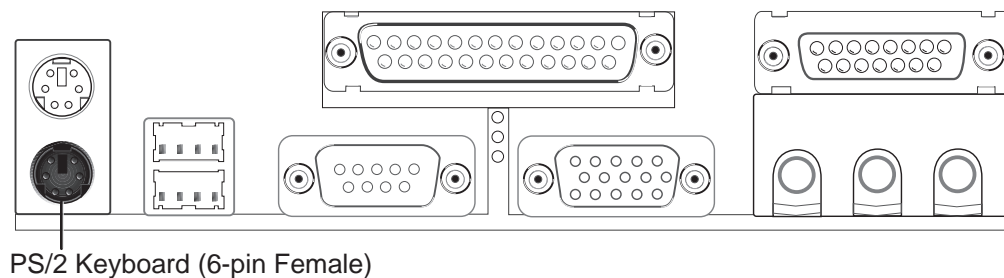
The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, expansion cards can use IRQ12. See “PS/2 Mouse Control” in *BIOS Features Setup* of the BIOS SETUP.

PS/2 Mouse (6-pin Female)



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

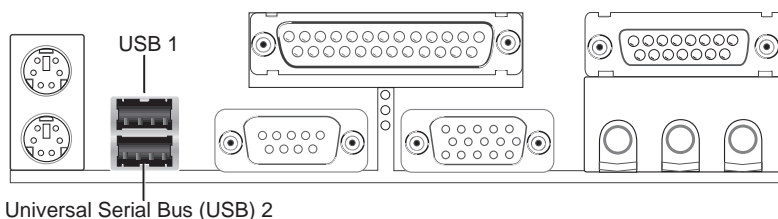
This connection is for a standard keyboard using an PS/2 plug (mini DIN). **This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.**



# III. HARDWARE SETUP

## 3. Universal Serial BUS Ports 1 & 2 (Two 4-pin USB)

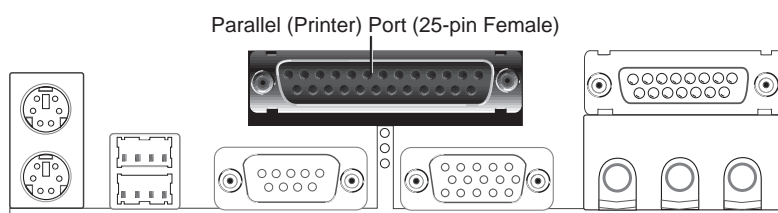
Two USB ports are available for connecting USB devices.



## 4. Parallel Port Connector (25-pin PRINTER)

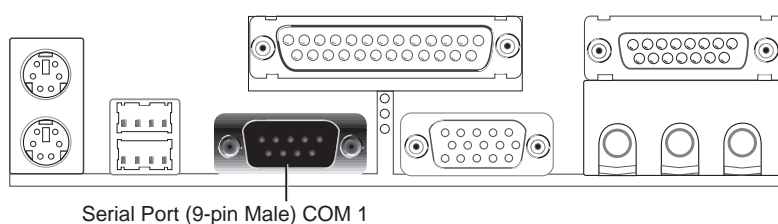
You can enable the parallel port and choose the IRQ through “Onboard Parallel Port” in *Chipset Features Setup* of BIOS SETUP.

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



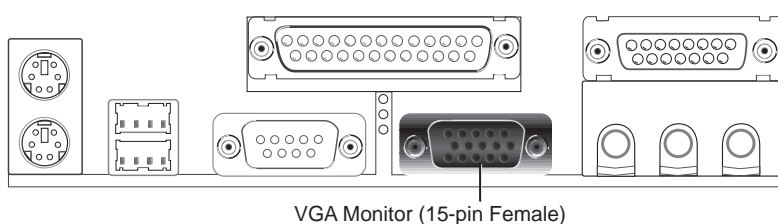
## 5. Serial Port COM1 Connector (9-pin COM1)

One serial port is ready for a mouse or other serial devices. A second serial port is available using a serial port bracket connected from the motherboard to an expansion slot opening. See “Onboard Serial Port” in *Chipset Features Setup* of BIOS SETUP for settings.



## 6. Monitor Output Connector (15-pin VGA)

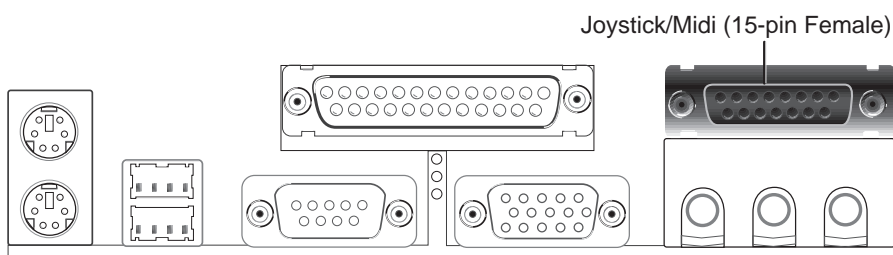
This connector is for output to a VGA-compatible device.



# III. HARDWARE SETUP

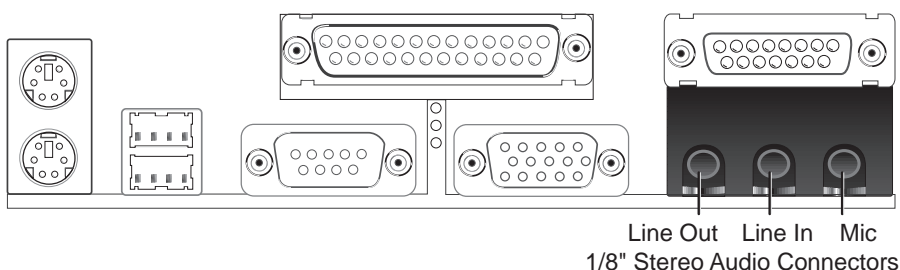
## 7. Joystick/Midi Connector (15-pin GAME\_AUDIO)

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



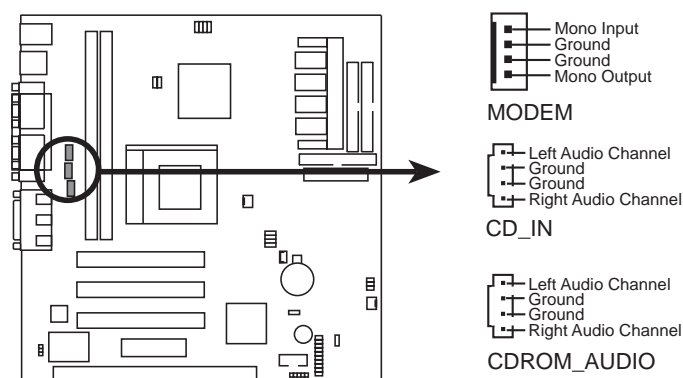
## 8. Audio Port Connectors (Three 1/8" GAME\_AUDIO)

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



## 9. Internal Audio Connectors (4-pin MODEM/CD\_IN/CDROM\_AUDIO)

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



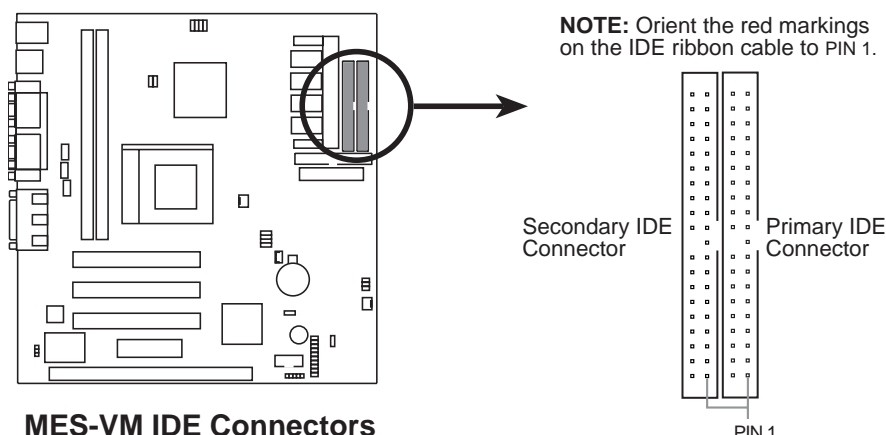
**MES-VM Internal Audio Connectors**

# III. HARDWARE SETUP

## 10. Primary / Secondary IDE Connectors (Two 40-1pin IDE)

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

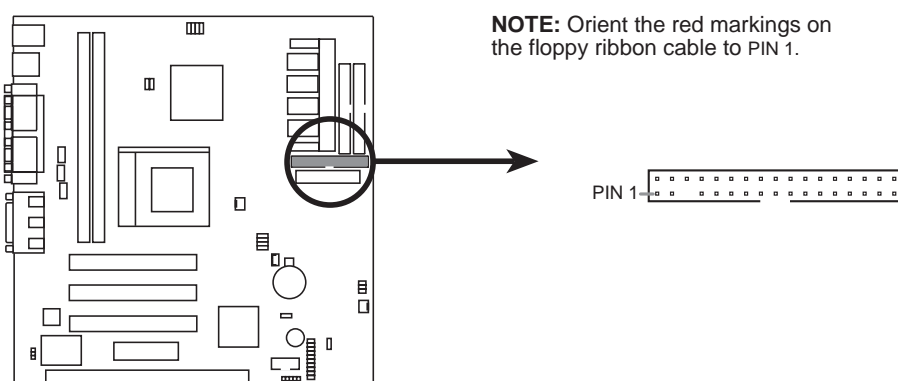
**TIP:** You may configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector. You may install one operating system on an IDE drive and another on a SCSI drive and select the boot disk through BIOS Features Setup.



MES-VM IDE Connectors

## 11. 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).**



MES-VM Floppy Disk Drive Connector

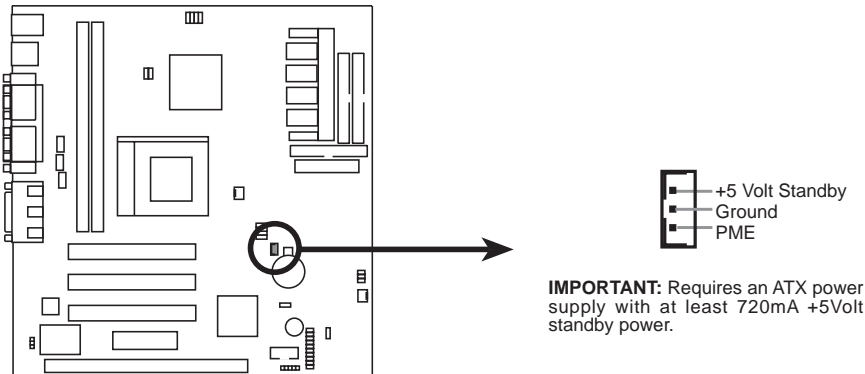


# III. HARDWARE SETUP

## 12. Wake-On-LAN Connector (3-pin WOL\_CON)

This connector connects to LAN cards with a Wake-On-LAN output, such as the ASUS PCI-L101 (see section on **ASUS LAN Card**). The connector powers up the system when a wakeup packet or signal is received through the LAN card.

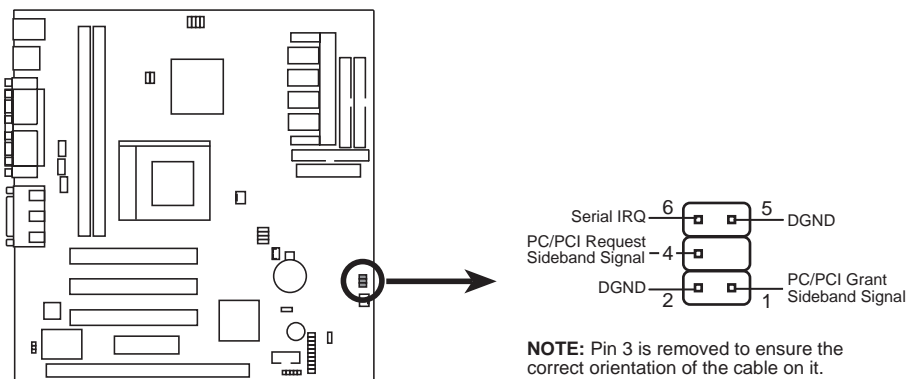
**IMPORTANT:** This feature requires that the **WAKE On LAN Power Up Control** is set to *Enabled* (see “Power Management Setup” under **BIOS SETUP**) and that your system has an ATX power supply with at least 720mA +5V standby power.



MES-VM Wake-On-LAN Connector

## 13. SB-Link™ Connector (6-1 pin SBLINK)

If you have a Sound Blaster compatible PCI audio card, you must link it to this connector. Otherwise, you will have compatibility issues under DOS environment.

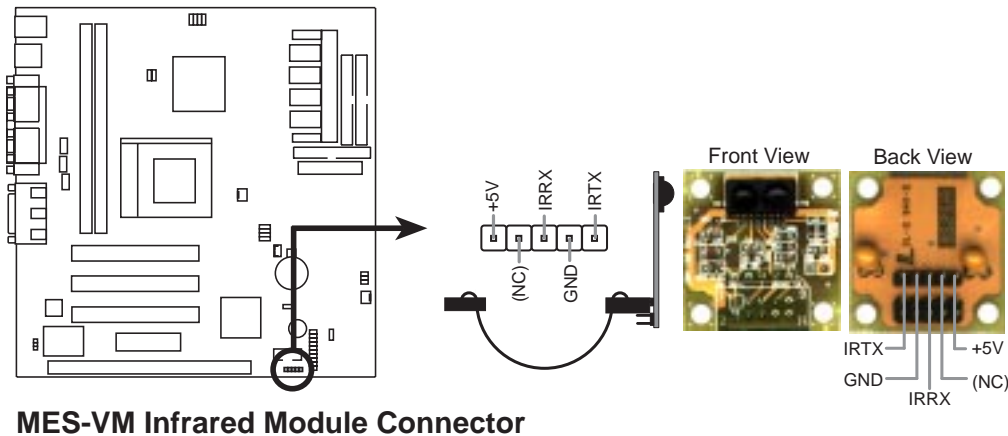


MES-VM SB-Link™ Connector

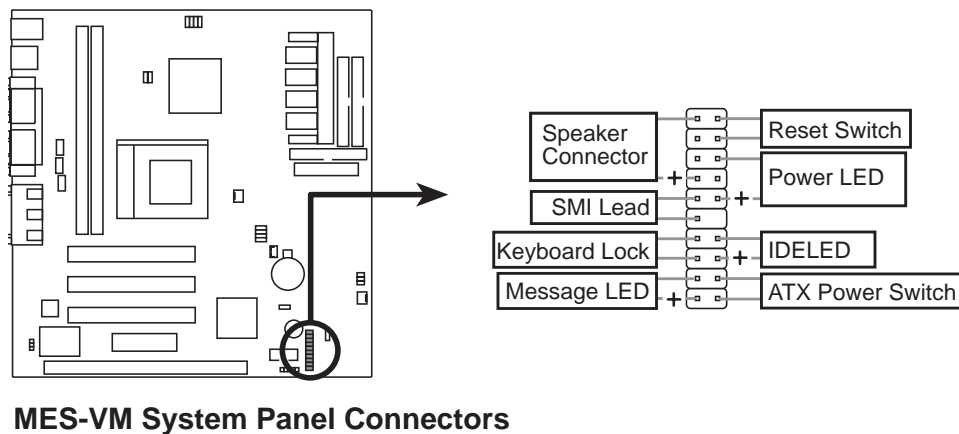
# III. HARDWARE SETUP

## 14. IrDA-Compliant infrared module connector (5-pin IR)

This connector supports the optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. You must also configure the setting through “UART2 Use Infrared” in *Chipset Features Setup* to select whether UART2 is directed for use with COM2 or IrDA. Use the five pins as shown on the Back View and connect a ribbon cable from the module to the motherboard according to the pin definitions.



The following PANEL illustration is used for items 14-20



## 15. System Warning Speaker Connector (4-pin SPEAKER)

This 4-pin connector connects to the case-mounted speaker. You may leave this disconnected if your motherboard has an onboard buzzer which can replace the chassis speaker. When connected, you will hear system warnings through both sources. **NOTE:** Some sound cards allow you to connect to the system speaker signal so that the warnings can be heard and adjusted through your multimedia system.

## III. HARDWARE SETUP

---

### 16. System Management Interrupt Lead (2-pin SMI)

This allows the user to manually place the system into a suspend mode or “Green” mode where system activity is decreased to save electricity and expand the life of certain components when the system is not in use. This 2-pin connector connects to the case-mounted suspend switch. If you do not have a switch for the connector, you may use the “Turbo Switch”. SMI is activated when it detects a *short to open* moment and therefore leaving it shorted will not cause any problems. This may require one or two presses depending on the position of the switch. Wake-up can be controlled by settings in the BIOS but the keyboard will always allow wake-up (the SMI lead cannot wake up the system). If you want to use this connector, set “Suspend Mode” under *Power Management Setup* of BIOS SETUP section to the preferred time after which the system must go into suspend mode when you press the switch.

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

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

### 18. 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 transfer or waiting in the inbox. This function requires ACPI OS and driver support.

### 19. 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.

### 20. System Power LED (3-1 pin PWR.LED)

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. Hard Disk Activity LED (2-pin IDELED)

This connector supplies power to the cabinet’s hard disk or IDE activity LED. Read and write activity by devices connected to the Primary or Secondary IDE connectors will cause the LED to light up.

### 22. ATX Power Switch / Soft Power Switch (2-pin PWR.SW)

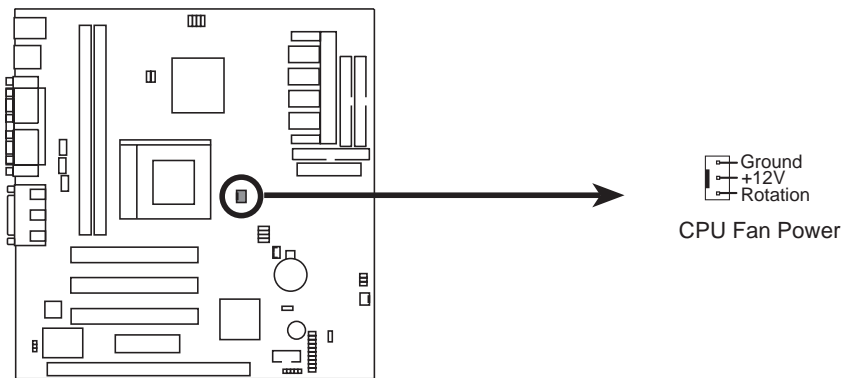
The system power is controlled by a momentary switch connected to this lead. Pressing the button once will switch the system between ON and SLEEP or ON and SOFT OFF depending on the “PWR Button” setting under *Power Management Setup* of BIOS SETUP section. Pressing the switch while in the ON mode for more than 4 seconds will turn the system off. The system power LED shows the status of the system’s power.

# III. HARDWARE SETUP

## 23. Chassis, CPU, & Power Supply Fan Connectors (3-pin CHA\_, CPU\_, PWR\_FAN)

These connectors support cooling fans of 500mAMP (6 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 this connector. **NOTE: The "Rotation" signal is to be used only by a specially designed fan with rotation signal.**

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

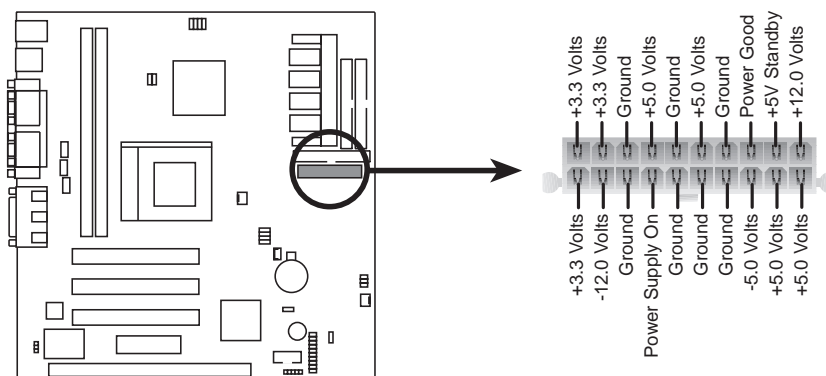


MES-VM Cooling Fan Connector

## 24. ATX Power Supply Connector (20-pin block ATXPWR)

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

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



MES-VM ATX Power Connector

# III. HARDWARE SETUP

---

## Power Connection Procedures

1. After all connections are made, close the system case cover.
  2. Be sure that all switches are off (in some systems, marked with ○).
  3. Connect the power supply cord into the power supply located on the back of your system case according to your system user's manual.
  4. Connect the power cord into a power outlet that is equipped with a surge protector.
  5. You may then turn on your devices in the following order:
    - a. Your monitor
    - b. External SCSI devices (starting with the last device on the chain)
    - c. Your system power. For ATX power supplies, you need to switch on the power supply if a switch is provided as well as press the ATX power switch on the front of the case.
  6. The power LED on the front panel of the system case will light. For ATX power supplies, the system LED will light when the ATX power switch is pressed. The LED on the monitor may light up or switch between orange and green after the system's if it complies with "green" standards or if it has a power standby feature. The system will then run power-on tests. While the tests are running, additional messages will appear on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck your jumper settings and connections or call your retailer for assistance.
  7. During power-on, hold down <Delete> to enter BIOS setup. Follow the instructions in the next section, BIOS SETUP.
- \* **Powering Off your computer:** You must first exit or shut down your operating system before switching off the power switch. For ATX power supplies, you can press the ATX power switch after exiting or shutting down your operating system. If you use Windows 95/98, click the **Start** button, click **Shut Down**, and then click **Shut down the computer?**. The power supply should turn off after Windows shuts down.

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

# IV. BIOS SETUP

## Flash Memory Writer Utility

**AFLASH.EXE:** This is the Flash Memory Writer utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM chip on the motherboard. 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. This file works only in DOS mode.

**NOTE:** The following screen displays are provided as examples only and may not reflect the screen contents displayed on your system.



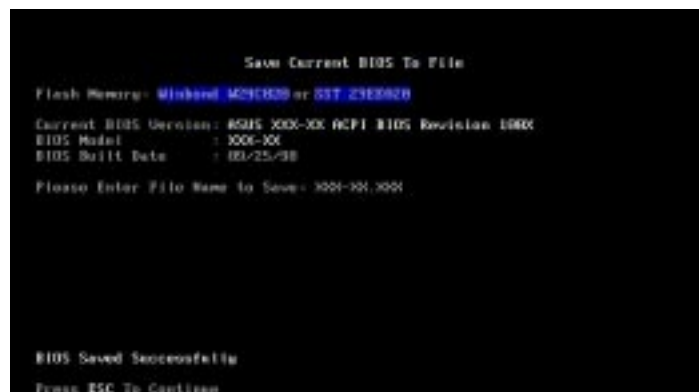
**IMPORTANT!** If “unknown” is displayed after **Flash Memory:**, the memory chip is either not programmable or is not supported by the ACPI BIOS and therefore, cannot be programmed by the Flash Memory Writer utility.

## Main Menu

### 1. Save Current BIOS To File

This option allows you to save a copy of the original motherboard BIOS in case you need to reinstall it. It is recommended that you save **AFLASH.EXE** and the BIOS file to a bootable floppy disk.

To save your current BIOS, type [1] at the **Main Menu** and then press <Enter>. The **Save Current BIOS To File** screen appears. Type a filename and the path, for example, **A:\XXX-XX.XXX** and then press <Enter>.



# IV. BIOS SETUP

## 2. Update BIOS Including Boot Block and ESCD

This option updates the boot block, the baseboard BIOS, and the ACPI extended system configuration data (ESCD) parameter block from a new BIOS file. See the next page for procedures on downloading an updated BIOS file.

To update your current BIOS, type [2] at the **Main Menu** and then press <Enter>. The **Update BIOS Including Boot Block and ESCD** screen appears. Type the filename of your new BIOS and the path, for example, **A:\XXX-XX.XXX**, and then press <Enter>.

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

The utility starts to program the new BIOS information into the flash ROM. When the programming is finished, *Flashed Successfully* will be displayed.

Follow the onscreen instructions to continue.

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29E020
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 1000
BIOS Model          : XXX-XX
BIOS Build Date     : 00/25/98
Please Enter File Name for NEW BIOS: A:\XXX-XX.XXX
```

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29E020
BIOS Version
CURRENT 3 ASUS XXX-XX ACPI BIOS Revision 1000
Flash.umd3 ASUS XXX-XX ACPI BIOS Revision 1000
BIOS Model
CURRENT 3 XXX-XX
Flash.umd3 XXX-XX
Date of BIOS Build
CURRENT 3 00/25/98
D0000,00013 00/25/98
Check sum of XXXX.XXX is C370.
Are you sure (Y/N) ? Y
Press ESC To Return to Main Menu
```

```
Update BIOS Including Boot Block and ESCD
Flash Memory: Winbond W29C020 or SST 29E020
BIOS Version
CURRENT 3 ASUS XXX-XX ACPI BIOS Revision 1000
Flash.umd3 ASUS XXX-XX ACPI BIOS Revision 1000
BIOS Model
CURRENT 3 XXX-XX
Flash.umd3 XXX-XX
Date of BIOS Build
CURRENT 3 00/25/98
D0000,00013 00/25/98
Check sum of XXXX.XXX is C370.
Are you sure (Y/N) ? Y
Programming -- 3FFF
Flashed Successfully
Press ESC To Return to Main Menu
```

```
ASUS ACPI BIOS
FLASH MEMORY WRITER V1.013
Copyright (C) 1994-98, ASUSTeK COMPUTER INC.
Flash Memory: Winbond W29C020 or SST 29E020
Current BIOS Version: ASUS XXX-XX ACPI BIOS Revision 1000
BIOS Model          : XXX-XX
BIOS Build Date     : 00/25/98
Choose one of the following:
1. Save Current BIOS To File
2. Update BIOS Including Boot Block and ESCD
Enter choice: [2]
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
```

# IV. BIOS SETUP

---

## Managing and Updating Your Motherboard's BIOS

### Upon First Use of the Computer System

1. Create a bootable system floppy disk by typing [FORMAT A:/S] from the DOS prompt without creating "AUTOEXEC.BAT" and "CONFIG.SYS" files.
2. Copy AFLASH.EXE to the just created boot disk.
3. Run AFLASH.EXE from this new disk and select option **1. Save Current BIOS to File**. See **1. Save Current BIOS To File** on the previous page for more details and the rest of the steps.

### Updating BIOS Procedures (only when necessary)

1. Download an updated ASUS BIOS file from the Internet (WWW or FTP) or a BBS (Bulletin Board Service) (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>. See **2. Update BIOS Including Boot Block and ESCD** on the previous page for more details and the rest of the steps.

**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 service.



# IV. BIOS SETUP

---

## 6. BIOS Setup Program

This motherboard supports a programmable EEPROM which can be updated using the provided AFlash Memory Writer utility as described previously in this section.

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

Even if you are not prompted by a message instructing you 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 turn on the computer, the system provides you with the opportunity to run this program. This appears during the Power-On Self Test (POST). Press <Delete> to call up the Setup utility. If you are a little bit late pressing the mentioned key(s), POST will continue with its test routines, thus preventing you from calling up Setup. If you still need to call Setup, reset the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the Reset button on the system 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 various predetermined choices. If you accidentally change a setting and do not know which one to switch back to, the Setup program has a hot key that allows you to return to the previous value. The hot keys are discussed in more detail later in this Section.

**To access the BIOS Setup program, press the [Delete] key after the computer has booted 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 exactly reflect your BIOS screens.

# IV. BIOS SETUP

---

## 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. Use this menu to set a password to control bootup and control access to the BIOS setup menu.
- 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.

## 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> or <Alt + X>	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 arrows)	Moves the cursor 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

# IV. 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

Refer to the Exit Menu Section of this Section for detailed information on saving changes and exiting the setup program.

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

## Sub-Menus

Note that a right pointer symbol 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 cursor to highlight 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.

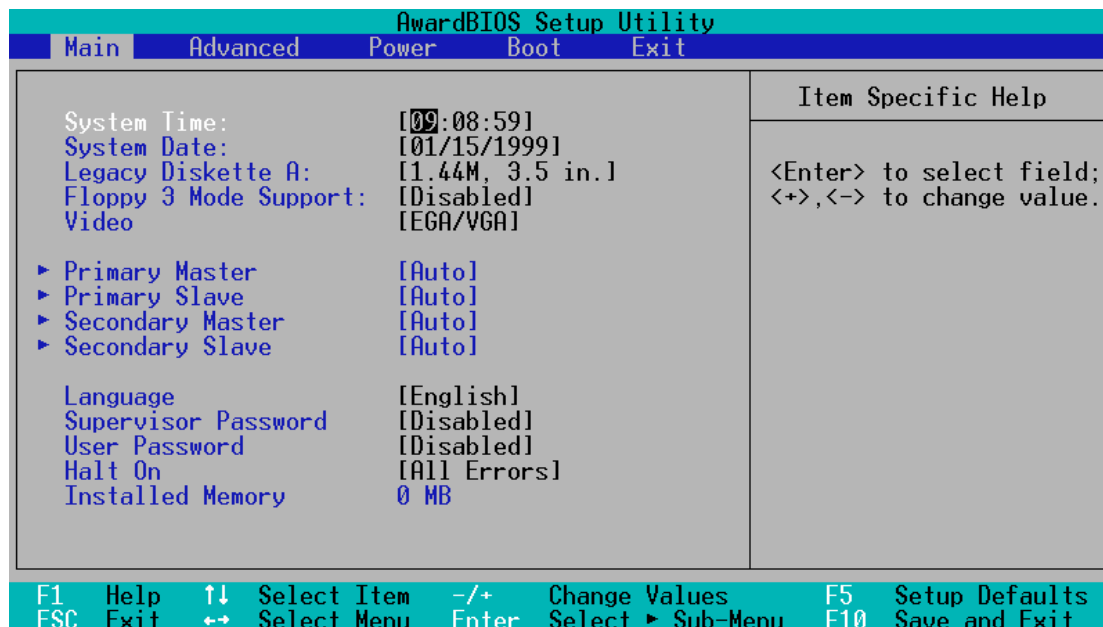
Take some time to familiarize yourself with each of the legend keys and their corresponding functions. Practice navigating through the various menus and sub-menus. If you accidentally make unwanted changes to any of the fields, use the set default hot key. While moving around through the Setup program,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

# IV. BIOS SETUP

## Main Menu

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



### System Time: [XX:XX:XX]

Sets your system to the time that you specify (usually the current time). The format is hour, minute, second. Follow the hour, minute and second format. Valid values for hour, minute and second are: **(Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59))**. 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. Follow the month, day and year format. 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.]

Sets the type of floppy drive installed. The configuration options are: [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 (opposed to 1.44MB) in a 3.5inch diskette. The configuration options are: [Disabled] [Drive A] [Drive B] [Both].

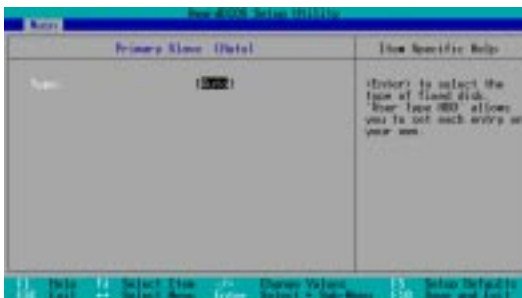
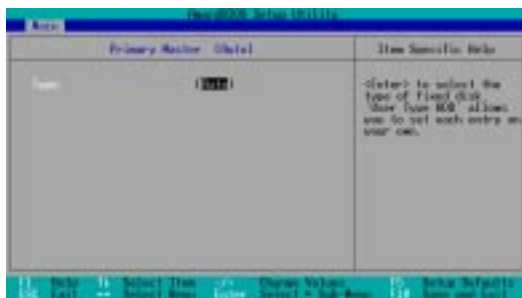
# IV. BIOS SETUP

## Video: [EGA/VGA]

This field allows setting of display type. Use *MONO* for black and white monitors, otherwise use the *EGA/VGA* setting. The configuration options are: [EGA/VGA] [MONO].

## Primary Master/Slave & Secondary Master/Slave

These fields are used to configure IDE devices. The arrow head icon indicates that this field contains a sub-menu. Move the cursor to highlight the field representing the appropriate channel you wish to setup and press the Enter key to enter the sub-menu.



**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. Other options are:

-----

# IV. BIOS SETUP

---

**[None]** - to disable IDE devices

**[Auto]** - to automatically detect IDE hard disk drives

This will enable auto detection of your IDE hard disk during bootup. This will allow you to change your hard disks (with the power off) and then power on without having to reconfigure your hard disk type. If you use older hard disks that do not support this feature, then you must configure the hard disk in the standard method as described earlier by the “User” option.

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

**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]** - to enter IDE hard disk parameters manually

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].

**[User Type HDD] 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 Logical Block Access may decrease the access speed of the hard disk. However, LBA Mode is necessary for drives with greater than 504MB in storage capacity. The configuration options are: [LBA] [LARGE] [Normal] [Match Partition Table] [Manual]

**[User Type HDD] 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**.

**[User Type HDD] 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**.

## IV. BIOS SETUP

---

### **[User Type HDD] 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**.

### **[User Type HDD] CHS Capacity:**

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

### **[User Type HDD] Maximum LBA Capacity:**

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

### **[User Type HDD] 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**. The configuration options are: [Disabled] [2 Sectors] [4 Sectors] [8 Sectors] [16 Sectors] [32 Sectors] [Maximum]

### **[User Type HDD] 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. The configuration options are: [Disabled] [Enabled]

### **[User Type HDD] PIO Mode:**

When enabled, this option speeds up communication between the system and the IDE controller by using enhanced I/O transfer modes (PIO Modes). The configuration options are: [0] [1] [2] [3] [4]

### **[User Type HDD] Ultra DMA Mode: [Disable]**

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

## IV. BIOS SETUP

---

Other options for “Type:” are:

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

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

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

**[MO]** - for IDE magneto optical disk drives

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

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

---

### **Language [English]**

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

### **Supervisor Password [Disabled] / User Password [Disabled]**

This field allows you to set the password. 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 and certain Security menu options 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.

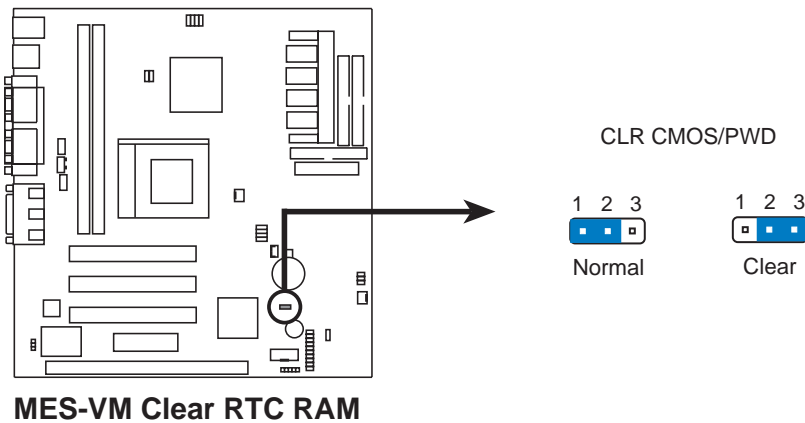
The BIOS Setup program allows you to specify two separate passwords: a Supervisor password and a User password. When disabled, anyone may access all BIOS Setup program functions. When enabled, the Supervisor password is required for entering the BIOS Setup program and having full access to all Security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



# IV. BIOS SETUP

## 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.



## Halt On: [All Errors]

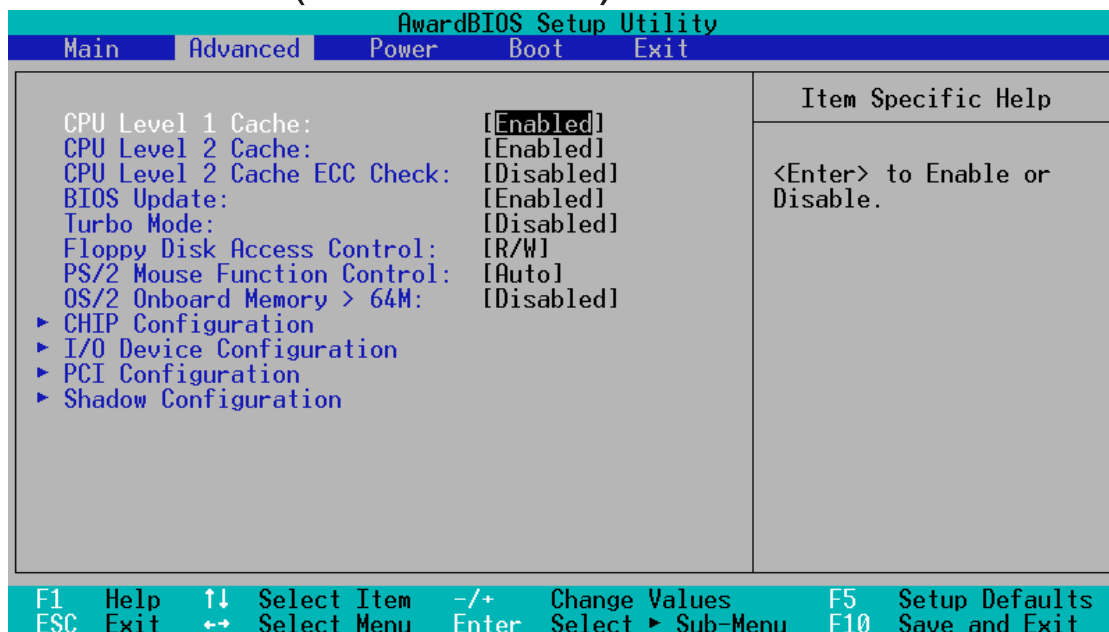
This field determines which types of errors will cause the system to halt. The configuration options are: [All Errors] [No Errors] [All,But Keyboard] [All,But Diskette] [All,But Disk/Key]

## Installed Memory [XXX MB]

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

# IV. BIOS SETUP

## Advanced (main menu)



### CPU Level 1 Cache / CPU Level 2 Cache: [Enabled]

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

### CPU Level 2 Cache ECC Check: [Disabled]

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

### BIOS Update: [Enabled]

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

### Turbo Mode: [Disabled]

(Leave on default setting.)

### Floppy Disk Access Control: [R/W]

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

### PS/2 Mouse Function Control: [Auto]

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

### OS/2 Onboard Memory > 64M: [Disabled]

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

# IV. BIOS SETUP

- Chip Configuration (sub-menu item)
- I/O Device Configuration (sub-menu item)
- PCI Configuration (sub-menu item)
- Shadow Configuration (sub-menu item)

## Advanced (sub-menu 1/4)



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

## Chip Configuration

### SDRAM Configuration: [By SPD]

This sets the optimal timings of settings for items 2–5, depending on the memory modules that you are using. Default setting is *By SPD*, which configures items 2–5 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. The configuration options are: [User Define] [7ns (143MHz)] [8ns (125MHz)] [By SPD]

### SDRAM CAS Latency: [2T]

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

### SDRAM RAS to CAS Delay: [2T]

This controls the latency between SDRAM active command and the read/write command. Leave on default setting which is controlled by SPD.

### SDRAM RAS Precharge Time: [2T]

This controls the idle clocks after issuing a precharge command to SDRAM. Leave on default setting which is controlled by SPD.

# IV. BIOS SETUP

---

## **Refresh RAS Assertion: [5T]**

(Leave on default setting.)

## **Refresh Queue Depth: [12]**

The configuration options are: [0] [4] [8] [12].

## **VGA Shared Memory Size: [8MB]**

You can choose the amount of user-installed DIMM memory to allocate to the onboard VGA. This option is relevant only to motherboards with onboard VGA with no VGA memory onboard. The configuration options are: [2MB] [4MB] [8MB].

## **Video Memory Cache Mode: [USWC]**

USWC (uncacheable, speculative write combining) is a new cache technology for the video memory of the processor. It can greatly improve the display speed by caching the display data. You must set this to UC (uncacheable) if your display card cannot support this feature, otherwise your system may not boot. The configuration options are: [UC] [USWC].

## **Graphics Aperture Size: [64MB]**

Memory-mapped, graphics data structures can reside in a Graphics Aperture.

## **PCI 2.1 Support: [Enabled]**

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

## **Onboard PCI IDE Enable: [Both]**

You can select to enable the primary IDE channel, secondary IDE channel, both, or disable both channels. The configuration options are: [Both] [Primary] [Secondary] [Disable]

## **ISA Bus Clock: [PCICLK/4]**

(Leave on default setting.)

## **ROM Cycle Wait State: [1-Wait]**

The configuration options are: [4-Wait] [1-Wait].

## **16-bit I/O Recovery Time: [3 BUSCLK]**

(Leave on default setting.)

## **8-bit I/O Recovery Time: [5 BUSCLK]**

(Leave on default setting.)

## **Memory Hole At 15M–16M: [None]**

Enabling this feature reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. The configuration options are: [None] [15M-16M] [14M-16M] [12M-16M].

# IV. BIOS SETUP

## Advanced (sub-menu 2/4)

AwardBIOS Setup Utility	
Advanced	
I/O Device Configuration	Item Specific Help
Onboard FDC Controller: [Enabled]	<Enter> to Enable or Disable the onboard floppy disk controller.
Onboard Serial Port 1: [3F8H/IRQ4]	
Onboard Serial Port 2: [2F8H/IRQ3]	
UART2 Use Infrared: [Disabled]	
Onboard Parallel Port: [378H/IRQ7]	
Parallel Port Mode: [ECP+EPP]	
ECP DMA Select: [3]	
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults ESC Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit	

### I/O Device Configuration

#### Onboard FDC Controller: [Enabled]

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

#### Onboard Serial Port 1: [3F8H/IRQ4]

This allows you to set the address for the onboard serial connector. Serial Port 1 and Serial Port 2 must have different addresses. The configuration options are: [3F8H/IRQ4] [2F8H/IRQ3] [3E8H/IRQ4] [2E8H/IRQ10] and [Disabled].

#### Onboard Serial Port 2: [2F8H/IRQ3]

This allows you to set the address for the onboard serial connector. Serial Port 1 and Serial Port 2 must have different addresses. The configuration options are: [3F8H/IRQ4] [2F8H/IRQ3] [3E8H/IRQ4] [2E8H/IRQ10] and [Disabled].

#### UART2 Use Infrared: [Disabled]

When enabled, this field activates the onboard 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. By default, this field is set to *Disabled*, which leaves the second serial port UART to support the COM2 serial port connector. See **IrDA-compliant infrared module connector** under in **HARDWARE SETUP**. The configuration options are: [Disable] [Enabled].

## IV. BIOS SETUP

---

### **Onboard Parallel Port: [378H/IRQ7]**

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

### **Parallel Port Mode: [ECP+EPP]**

The port is both software and hardware compatible with existing parallel ports so that it may be used as a standard printer mode if ECP is not required. ECP mode provides an automatic high burst-bandwidth channel that supports DMA for ECP in both the forward (host to peripheral) and reverse (peripheral to host) direction. This field allows you to set the operation mode of the parallel port. The setting *Normal*, allows normal-speed operation but in one direction only; *EPP* allows bidirectional parallel port operation at maximum speed; *ECP* allows the parallel port to operate in bidirectional mode and at a speed faster than the maximum unidirectional data transfer rate; *ECP+EPP* allows normal speed operation in a two-way mode. The configuration options are: [Normal] [EPP] [ECP] [ECP+EPP].

### **ECP DMA Select: [3]**

The **DMA Channel** 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 the “Parallel Port Mode” above. The configuration options are: [1] [3] [Disabled].

# IV. BIOS SETUP

## Advanced (sub-menu 3/4)

AwardBIOS Setup Utility	
Advanced	
PCI Configuration	Item Specific Help
Slot 1 IRQ: [Auto]	<Enter> to select an IRQ.
Slot 2 IRQ: [Auto]	
Slot 3 IRQ: [Auto]	
PCI/VGA Palette Snoop: [Disabled]	
PCI Latency Timer: [ 32]	
SYMBIOS SCSI BIOS: [Auto]	
USB Function: [Disabled]	
USB IRQ: [Auto]	
ONB VGA BIOS First: [No]	
▶ PCI/PNP ISA IRQ Resource Exclusion	
▶ PCI/PNP ISA DMA Resource Exclusion	
▶ PCI/PNP ISA UMB Resource Exclusion	

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

### PCI Configuration

#### Slot X IRQ: [Auto]

Your motherboard may have between 2 and 5 PCI slots depending on the chipset. Each PCI must have a unique IRQ number to operate. The configuration options are: [Auto] [NA] [3] [4] [7] [9] [10] [11] [12] [14] [15]. Make sure you do not choose an IRQ number used by another device.

#### PCI/VGA Palette Snoop: [Disabled]

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

#### PCI Latency Timer: [32]

(Leave on default setting for best performance vs. stability.)

#### Symbios SCSI BIOS: [Auto]

*Auto* allows the BIOS to detect whether you have a Symbios SCSI card, if detected the onboard Symbios BIOS will be enabled, if not then it will be disabled. *Disabled* prevents the onboard Symbios BIOS to be enabled so that the external Symbios SCSI card's own BIOS can be used instead. **Note:** If your Symbios SCSI card does not have a BIOS, the Symbios SCSI card will not function. The configuration options are: [Auto] [Disabled].

#### USB Function: [Disabled]

The USB ports can be activated or deactivated using this field. The configuration options are: [Disabled] [Enabled].

# IV. BIOS SETUP

## USB IRQ: [Enabled]

*Enabled* reserves an IRQ# for the USB to work, *Disabled* does not allow the USB to have an IRQ# and therefore prevents the USB from functioning. If you are not using any USB devices, you may set this feature to *Disabled* to save an extra IRQ# for expansion cards. The configuration options are: [Auto] [NA] [3] [4] [7] [9] [10] [11] [12] [14] [15]. Make sure you do not choose an IRQ number used by another device.

## ONB VGA BIOS First:

You can select the search order for your VGA card(s). *PCI/AGP* will detect PCI VGA cards before AGP, and *AGP/PCI* will detect AGP cards before PCI VGA. The configuration options are: [No] [Yes].

## PCI/PNP ISA IRQ Resource Exclusion: (sub-menu item)

## PCI/PNP ISA DMA Resource Exclusion: (sub-menu item)

## PCI/PNP ISA UMB Resource Exclusion: (sub-menu item)

## Advanced (sub-menu 3/4-1/3)

AwardBIOS Setup Utility	
Advanced	
PCI/PNP ISA IRQ Resource Exclusion	Item Specific Help
IRQ 3 Used By ISA: [No/ICU]	Select 'Yes' if this IRQ is required by a legacy ISA card and you are not using ICU, else select 'No/ICU'.
IRQ 4 Used By ISA: [No/ICU]	
IRQ 7 Used By ISA: [No/ICU]	
IRQ 9 Used By ISA: [No/ICU]	
IRQ 10 Used By ISA: [No/ICU]	
IRQ 11 Used By ISA: [No/ICU]	
IRQ 12 Used By ISA: [No/ICU]	
IRQ 14 Used By ISA: [No/ICU]	
IRQ 15 Used By ISA: [No/ICU]	
F1 Help ↑↓ Select Item -/+ Change Values F5 Setup Defaults	
ESC Exit ↔ Select Menu Enter Select ► Sub-Menu F10 Save and Exit	

## PCI/PNP ISA IRQ Resource Exclusion

### IRQ XX Used By ISA: [No/ICU]

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



# IV. BIOS SETUP

## Advanced (sub-menu 3/4-2/3)

AwardBIOS Setup Utility	
Advanced	
PCI/PNP ISA DMA Resource Exclusion	Item Specific Help
DMA 1 Used By ISA: [No/ICU] DMA 3 Used By ISA: [No/ICU] DMA 5 Used By ISA: [No/ICU]	Select 'Yes' if this DMA is required by a legacy ISA card and you are not using ICU, else select 'No/ICU'.

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

### PCI/PNP ISA DMA Resource Exclusion

#### DMA x Used By ISA: [No/ICU]

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

# IV. BIOS SETUP

---

## Advanced (sub-menu 4/4)

### Shadow Configuration

#### Video ROM BIOS Shadow: [Enabled]

This field allows you to change the video BIOS location from ROM to RAM. Relocating to RAM enhances system performance, as information access is faster than the ROM. The configuration options are: [Disabled] [Enabled].

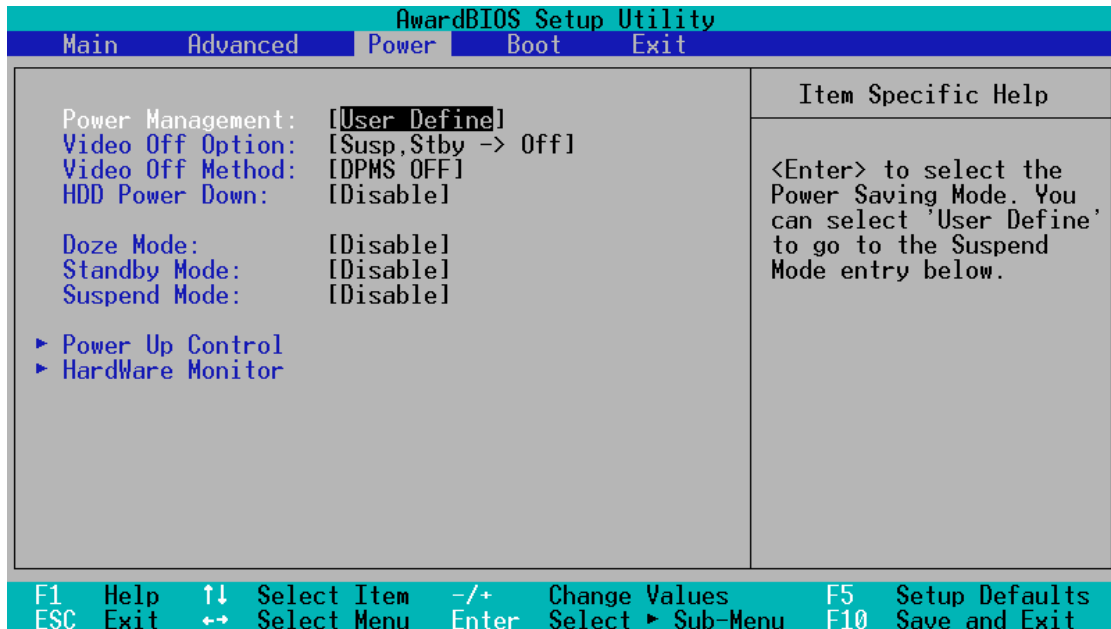
#### C8000-CBFFF to DC000-DFFFF: [Disabled]

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

# IV. BIOS SETUP

## Power Menu

The “Power Management Setup” option 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 Customized 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 “Doze, Standby, and Suspend Mode” fields will then be set to predefined values that ensure 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 this time the system inactivity period is longer; *Disable* disables the power saving features; *User Define* allows you to set power saving options according to your preference. The configuration options are: [User Define] [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`, in your `CONFIG.SYS`. 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” will appear in the “Control Panel.” Choose “Advanced” in the Power Management Field.

## IV. BIOS SETUP

---

### **Video Off Option: [Susp,Stby -> Off ]**

This field determines when to activate the video off feature for monitor power management. The configuration options are: [Always On] [Suspend -> Off] [Susp,Stby -> Off] [All Modes -> Off].

### **Video Off Method: [DPMS OFF]**

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

### **HDD Power Down: [Disable]**

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. The configuration options are: [Disable] [1 Min] [2 Min] [3 Min]...[15 Min].

### **Doze Mode: [Disable]**

Sets the time period for the system to go into doze (or sleep) mode. The configuration options are: [Disable] [20 Sec] [1 Min] [5 Min] [10 Min] [15 Min]...[40 Min].

### **Standby Mode: [Disable]**

Sets the time period for the system to go into standby mode. The configuration options are: [Disable] [20 Sec] [1 Min] [5 Min] [10 Min] [15 Min]...[40 Min].

### **Suspend Mode: [Disable]**

Sets the time period for the system to go into suspend mode. The configuration options are: [Disable] [20 Sec] [1 Min] [5 Min] [10 Min] [15 Min]...[40 Min].

# IV. BIOS SETUP

## Power (sub-menu 1/2)

AwardBIOS Setup Utility	
Power	
Power Up Control	Item Specific Help
AC PWR Loss Restart: [Disabled]	Restart the system or not after AC power loss.
PWR Up On Modem Act: [Enabled]	
Wake On LAN: [Enabled]	
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

### Power Up Control

#### AC PWR Loss Restart: [Disabled]

This allows you to set whether you want your system to boot up after the power has been interrupted. *Disabled* leaves your system off after reapplying power and *Enabled* boots up your system after reapplying power. The configuration options are: [Disabled] [Enabled].

#### PWR Up On Modem Act: [Enabled]

This allows either settings of *Enabled* or *Disabled* for powering up the computer (turns the ATX power supply on) when the modem receives a call while the computer is Soft-off.

**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. The configuration options are: [Disabled] [Enabled].

#### Wake On LAN: [Enabled]

Wake-On-LAN allows your computer to be booted from another computer via a network by sending a wake-up frame or signal. With this feature, network administrators can remotely boot an entire network of computer systems during off-peak hours for software updating or maintenance. The configuration options are: [Disabled] [Enabled].

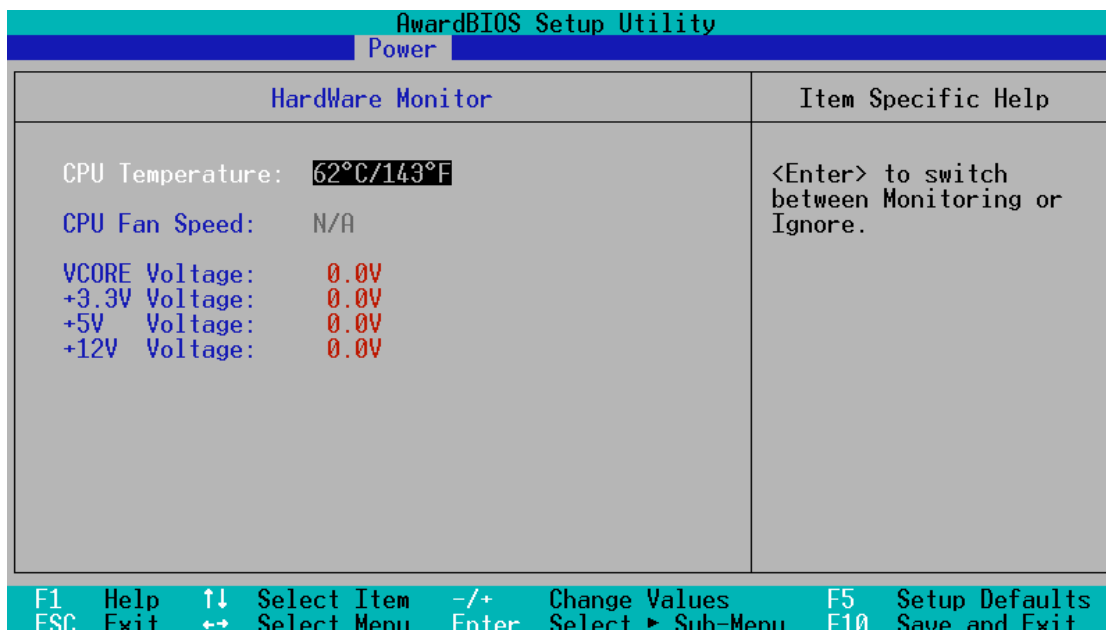
**IMPORTANT:** This feature requires an optional network interface with Wake-On-LAN and an ATX power supply with at least 720mA +5V standby power.

#### Automatic Power Up: [Disabled]

This allows automatic system power up. The configuration options are: [Disabled] [Enabled].

# IV. BIOS SETUP

## Power (sub-menu 2/2)



### Hardware Monitor

#### CPU Temperature: [xxx°C/xxx°F]

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

#### CPU Fan Speed: [xxxxRPM]

The onboard hardware monitor is able to detect the Chassis Fan Speed, CPU Fan Speed, and the Power Supply Fan Speed in Rotations Per Minute (RPM). The presence of this fan is automatically detected.

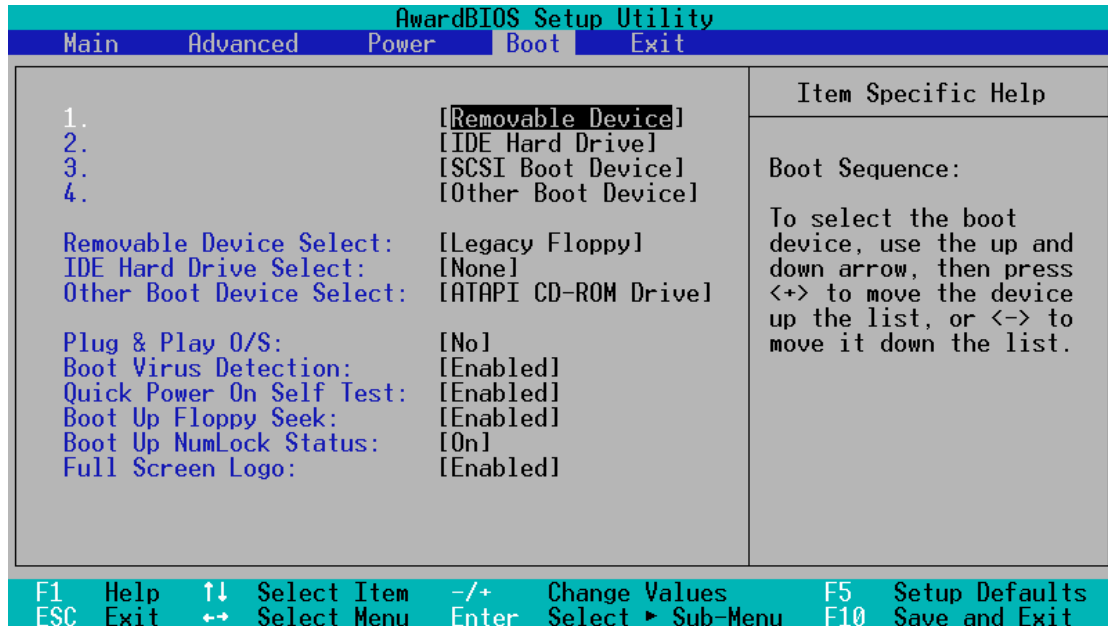
#### VCORE Voltage:/+3.3V Voltage:/+5V Voltage:/+12V Voltage: [xx.xV]

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 are out of range, an error message will appear: “Hardware Monitor found an error, enter POWER MANAGEMENT SETUP for details”. You will then be prompted to “Press **F1** to continue, **DEL** to enter SETUP”.

# IV. BIOS SETUP

## Boot Menu



### Boot Sequence

The Boot menu allows you to select among the three possible boot devices listed using the up and down arrow keys . By using the [+] or [Space] keys, 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. The configuration options are: [Removable Devices] [IDE Hard Drive] [SCSI Boot Device] [Other Boot Device].

#### Removable Device Select: [Legacy Floppy]

The configuration options are: [Legacy Floppy] [LS120] [ZIP-100] [ATAPI MO].

#### IDE Hard Drive Select: [None]

This option is reserved for future use and have no configuration options at this time.

#### Other Boot Device Select: [ATAPI CD-ROM Drive]

The configuration options are: [ATAPI CD-ROM Drive] [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. Thus interrupts may be reassigned by the OS when *Yes* is selected. When a non-PnP OS is installed or to prevent reassigning of interrupt settings, select the default setting of *No*. The configuration options are: [No] [Yes].

## IV. BIOS SETUP

---

### **Boot Virus Detection: [Enabled]**

The configuration options are: [Disabled] [Enabled].

### **Quick Power On Self Test: [Enabled]**

The configuration options are: [Disabled] [Enabled].

### **Boot Up Floppy Seek: [Enabled]**

The configuration options are: [Disabled] [Enabled].

### **Boot Up NumLock Status: [On]**

The configuration options are: [Off] [On].

### **Full Screen Logo: [Enabled]**

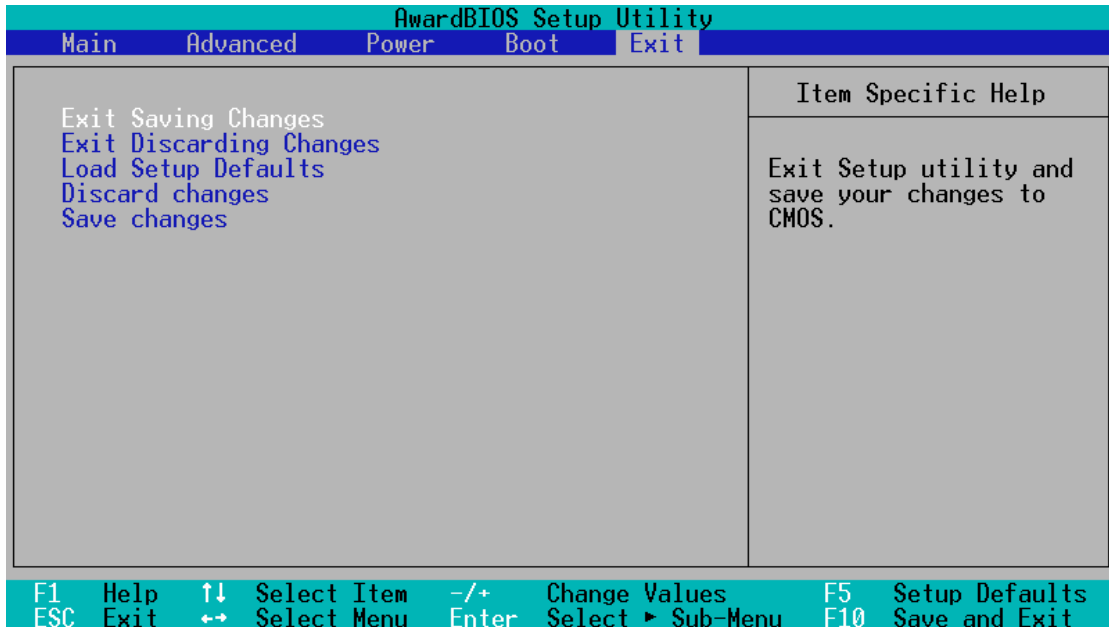
The configuration options are: [Disabled] [Enabled].



# IV. BIOS SETUP

## Exit Menu

Once you have made all of your selections from the various menus in the Setup program, you should save your changes and exit Setup. Select **Exit** from the menu bar to display the following menu:



**NOTE!** Pressing the [Esc] key does not exit this menu. You must select one of the options from this menu or a menu bar item 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 Notebook 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 the [Enter] key 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 the fields other than system date, system time and password, the system will ask for confirmation before exiting.

# IV. BIOS SETUP

---

## 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 [F9] 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

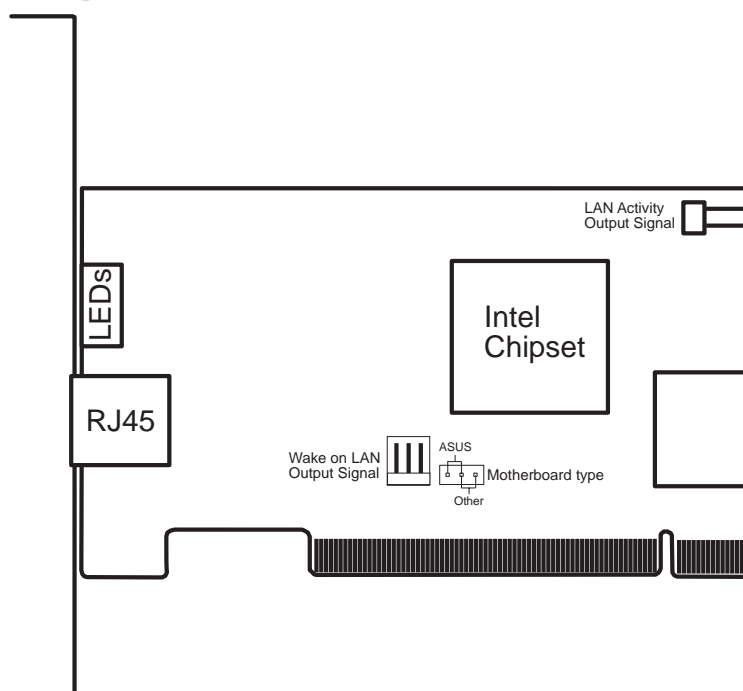
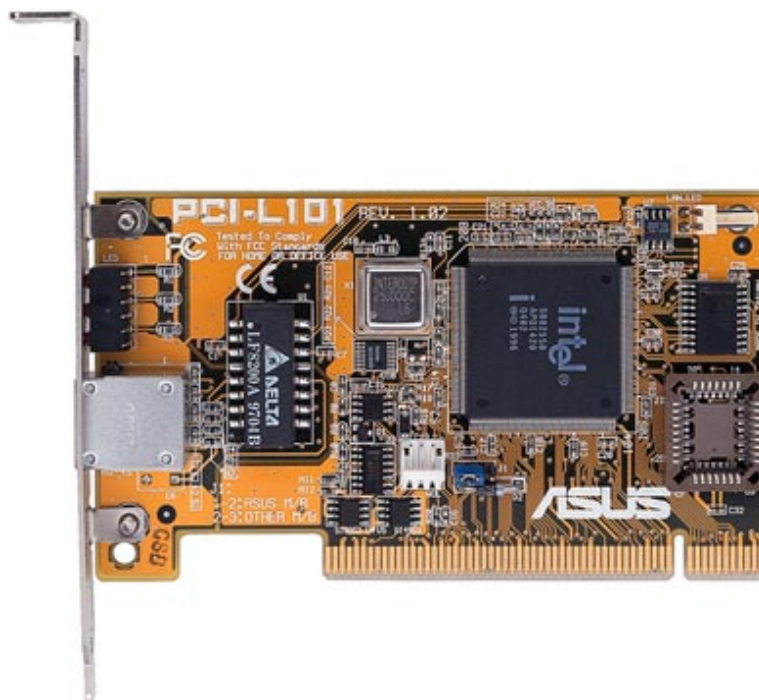
This option allows you to discard the selections you made and restore the values you previously saved. After selecting this option, all selections are updated and a confirmation is requested. Select **Yes** to discard any changes and load the previously saved values.

## 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.

# V. APPENDIX

## The ASUS PCI-L101 Fast Ethernet Card



If you are using the ASUS PCI-L101 on an ASUS motherboard, leave the jumper on its default setting of “ASUS.” If you are using another brand of motherboard, set the jumper to “Other.” Connect the Wake on LAN (WOL) output signal to the motherboard’s WOL\_CON in order to utilize the wake on LAN feature of the motherboard. Connect the LAN activity output signal (LAN\_LED) to the system cabinet’s front panel LAN\_LED in order to display the LAN data activity.

# V. APPENDIX

---

## Features

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

## Software Driver Support

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

## Question and Answer

Q: What is Wake-On-LAN ?

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

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

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

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

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

# V. APPENDIX

## Glossary

### **AGP (Accelerated Graphics Port)**

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

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

### **AUTOEXEC.BAT**

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

### **BIOS (Basic Input/Output System)**

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

### **Bit (Binary Digit)**

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

### **Boot**

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

### **Bus Master IDE**

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

# V. APPENDIX

---

## **Byte (Binary Term)**

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

## **COM Port**

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

## **CPU (Central Processing Unit)**

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

## **Device Driver**

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

## **DOS (Disk Operating System)**

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

## **Hardware**

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

## **IDE (Integrated Drive Electronics)**

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

## **LPT Port (Line Printer Port)**

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

## **MMX**

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

# V. APPENDIX

## **PCI Bus (Peripheral Component Interconnect Local Bus)**

PCI bus is a specification that defines a 32-bit data bus interface. PCI is a standard widely used by expansion card manufacturers.

## **Peripherals**

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

## **POST (Power On Self Test)**

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

## **PS/2 Port**

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

## **RAID (Redundant Array of Independent Disks)**

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

## **RAM (Random Access Memory)**

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

## **ROM (Read Only Memory)**

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

## **SCSI (Small Computer System Interface)**

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

## **System Disk**

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

## **Ultra DMA/33**

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

# V. APPENDIX

---

## **USB (Universal Serial Bus)**

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