

# **MAINBOARD**

## **User's Manual**

**(for board version 1.1 and later)**

**Rev: 1.02**

**Date: December - 98**

\* All other product names are trademarks or copyrights of their respective owners.

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## FCC & DoC Compliance Statement

This device complies with Part 15 of the FCC rules, operation is subject to the following two conditions.

1. This device may not cause harmful interference and,
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with 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 residential installations. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interface to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television equipment 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:

- Reorient or relocate the receiving antenna.
- Move the equipment away from the receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for additional suggestions.

The FCC requires the user to be notified that any change or modifications to the equipment by the user not expressly approved by the grantee or manufacturer could void the user's authority to operate such equipment. The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations.



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# INTRODUCTION

## Product Description

Designed as a flexible, high-performance and cost-effective solution for System Integrators and End Users alike, this mainboard provides the power and expandability to meet the requirements of the most advanced operating systems and software applications.

This mainboard is designed to provide Pentium ®-based (FSB 100MHz) system by utilizing the VIA MVP3 AGPset on ATX AGP/PCI Platform. By incorporating such advanced features as Ultra DMA/33 Bus Mastering IDE and Universal Serial Bus (USB) onto the mainboard, optimum system performance is assured and system design and implementation is simplified.

Fully “Plug & Play” compatible via an Award BIOS, this mainboard facilitates easy system configuration and peripheral setup. Advanced BIOS features include Temperature Monitoring and Alert functions designed to prevent the CPU from overheating. Also, the Award BIOS supports ACPI Readiness and is compatible with the PC’97 specification. With support for up to 512KB or 1MB Pipelined Burst SRAM L2 cache and 512MB of **EDO** or **SDRAM** System RAM, this mainboard is the ideal foundation for high-end computer systems.

## Item Checklist

Your mainboard package should include the items listed below. Damaged or missing items should be reported to your vendor.

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> The mainboard                  | <input checked="" type="checkbox"/> CD-ROM containing |
| <input checked="" type="checkbox"/> Floppy disk drive ribbon cable | VIA PCI Bridge driver,                                |
| <input checked="" type="checkbox"/> IDE ribbon cable               | VIA VxD driver,                                       |
| <input checked="" type="checkbox"/> Fan adaptive cable             | VIA PCI Mini-port driver                              |
| <input checked="" type="checkbox"/> This User’s Manual             | Bus Master IDE driver,                                |
|  | support software for updating the                     |
|  | FLASH BIOS and IDE drivers                            |
|  | Trend ® PC-cillin Anti-Virus                          |
|  | Software  |

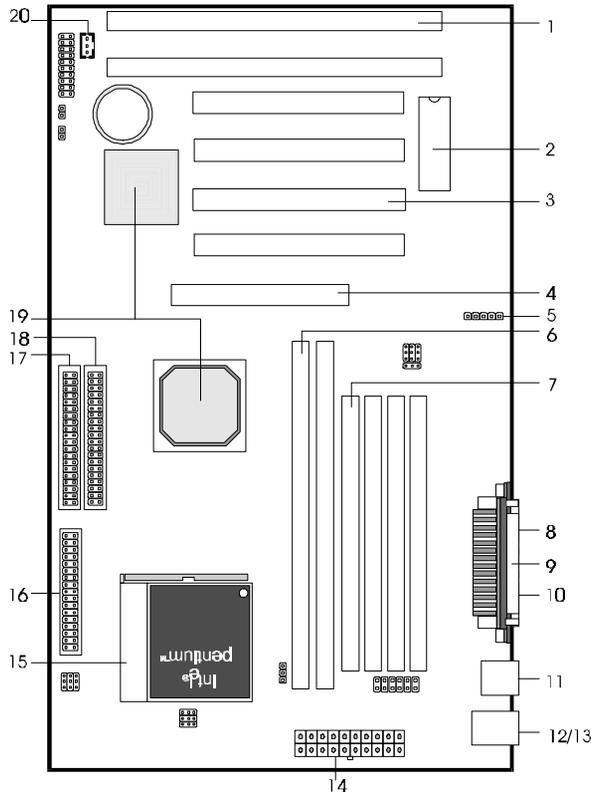
# INTRODUCTION

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## Specifications

<b>Processor</b>	ZIF socket 7 support AMD® K6 / K6-2 (FSB 100MHz) up to 400 MHz, CYRIX® MII up to PR300, INTEL® Pentium MMX up to 233 MHz,
<b>Chipset</b>	VIA ® MVP3 AGPset
<b>BIOS</b>	Award ® BIOS, support DMI, Green PC, Plug-and-Play, ACPI, Boot from CD-ROM, LS-120 120MB F.D.D., ZIP Devices Support Symbios® SCSI BIOS
<b>Cache Memory</b>	On board 512 KB /1 MB Write-back, Pipelined Burst L2 Cache
<b>System Memory</b>	4×SIMM+2×DIMM MAX. 512MB Support SDRAM, EDO, FPM DRAM module
<b>On-board I/O Features</b>	1×FDC Port ( LS120) 1×Parallel Port (EPP, ECP Port) 2×Serial Port (16550 Fast UART Compatible) 2×USB ports 1×IrDA TX/RX Header 1×Wake-On-LAN connector
<b>Advanced Features</b>	1. Wake-up on LAN 2. Modem Ring-in Remote Power on 3. Hardware Monitoring (Fan, Temperature, Voltage)
<b>PCI Bus Master IDE</b>	2×PCI Bus Master IDE Port UltraDMA/33 Mode up to 33MB/s transfer rate
<b>Power Connector</b>	ATX 20-pin Power Connector
<b>Expansion Slots</b>	1×32-bit AGP slot, 4×32-bit PCI Slots, 2×16-bit ISA Slots
<b>Form Factor</b>	ATX Size ( 185mm x 305mm)

Board Level Feature



- |                            |                                     |
|----------------------------|-------------------------------------|
| 1. ISA slots               | 11. USB connectors                  |
| 2. Mainboard BIOS          | 12. PS/2 Mouse connector(top)       |
| 3. PCI slots               | 13. PS/2 Keyboard connector(bottom) |
| 4. AGP slot                | 14. ATX power connector             |
| 5. Infrared (IR) connector | 15. CPU socket ( Socket 7)          |
| 6. DRAM DIMM sockets       | 16. Floppy connector                |
| 7. DRAM SIMM sockets       | 17. Secondary IDE connector         |
| 8. COM2 connector          | 18. Primary IDE connector           |
| 9. Printer port connector  | 19. Via® MVP3 AGPset                |
| 10. COM1 connector         | 20. Wake-up On LAN connector        |

\* Board Size: ATX Size : 185mm x 305mm

# INTRODUCTION

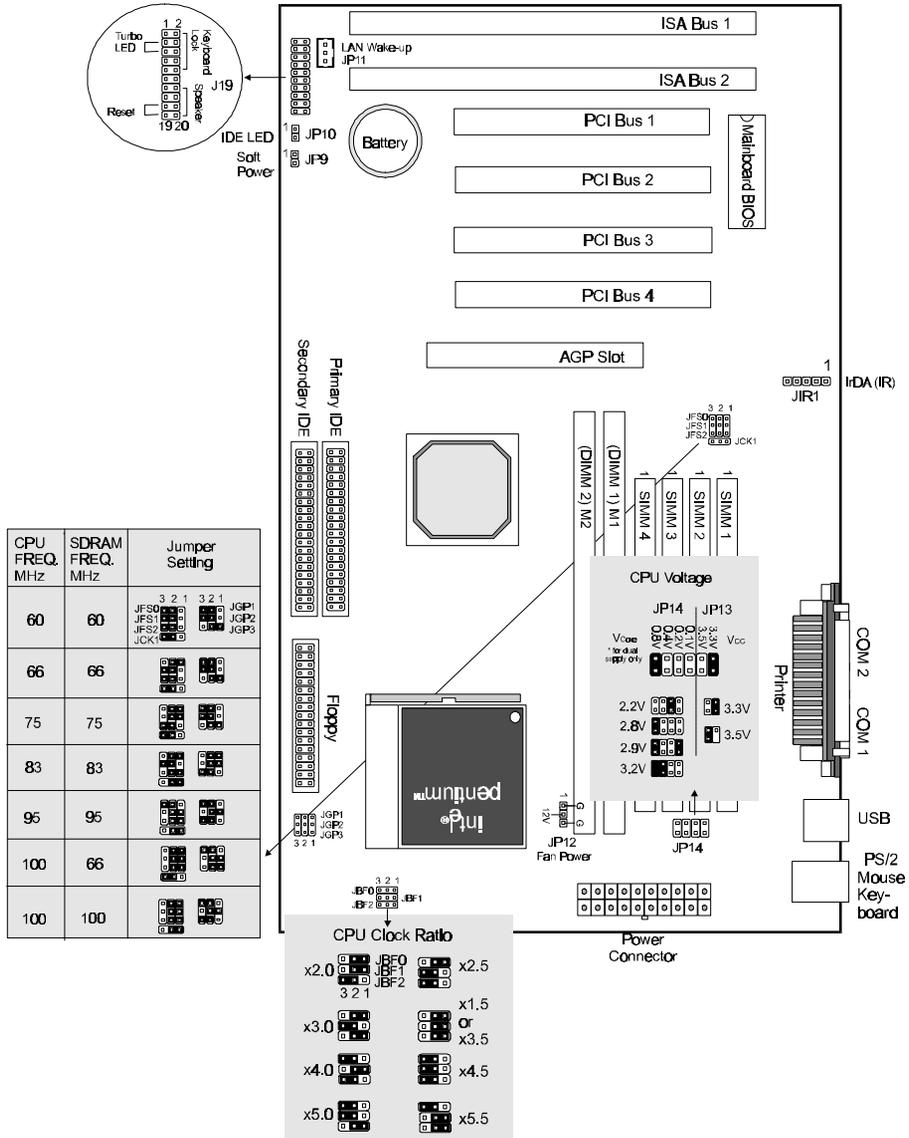
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1. **ISA SLOTS:** (2) 16-bit ISA slots.
2. **MAINBOARD BIOS:** Award BIOS supporting “Plug and Play”, DMI, Green PC specification, Enhanced IDE and Multi-I/O. The BIOS is FLASH Upgradeable via the AWDFLASH Utility.
3. **PCI SLOTS:** (4) 32-bit PCI slots are provided.
4. **AGP SLOTS:** (1) Accelerated Graphics Port for high performance graphics capabilities, especially 3D.
5. **BACK INFRARED (IR) CONNECTOR:** UART2 can also be used for the optional Infrared Module, enabling wireless communication capability. A supplied bracket with a single customized cable connects directly to the infrared pin-header on the mainboard
6. **DRAM DIMM SOCKETS:** (2) 168-pin DIMM sockets are provided to support a maximum RAM memory capacity of 512 MB.DIMM types 3.3V Extended Data Output (EDO) DRAMs and SDRAM.
7. **DRAM SIMM SOCKETS:** (4) 72-pin SIMM sockets are provided to support a maximum RAM memory capacity of 512 MB.DIMM types of either Fast Page Mode (FPM) or Extended Data Output (EDO) DRAM are supported and automatically detected by the BIOS.
8. **COM2 CONNECTOR:** High-speed UART compatible serial port. COM2 can be directed to the Infrared Module for wireless connection capability
9. **PRINTER PORT CONNECTOR:** EPP and ECP compatible parallel port.
10. **COM1 CONNECTOR:** High-speed UART compatible serial port.
11. **USB CONNECTORS:** These connectors permit the connection of two USB peripheral devices directly to the port without an external hub. USB is a new technology supporting keyboards, mouse, printers, fax modems and other telephony devices.
12. **PS/2 MOUSE CONNECTOR:** Supports PS/2 style mice
13. **PS/2 KEYBOARD CONNECTOR:** Supports PS/2 style keyboards.
14. **ATX POWER CONNECTOR:** 20-pin ATX Power Connector.
15. **CPU SOCKET:** ZIF Socket 7 mainboard supports CPU speeds up to 300MHz for AMD K6-2 (100MHz CPU), AMD K6 up to 300MHz and Cyrix MII CPU up to PR300, Intel Pentium CPU up to 233MHz.
16. **FLOPPY CONNECTOR:** Built-in floppy controller supports (2) 5.25" or 3.5" (1.44MB or 2.88MB) floppy drives.
17. **SECONDARY IDE CONNECTOR:** Connector for second IDE channel.

18. **PRIMARY IDE CONNECTOR:** Connector for first IDE channel. The on-board PCI Bus Mastering IDE controller features support for DMA Mode 2, PIO Modes <sup>3</sup>/<sub>4</sub>, and Ultra DMA/33 (33MB/sec) for faster data transfer rates. (2) Connectors are provided for support of up to (4) IDE devices on two channels. Other ATAPI and Enhanced IDE devices such as Tape Drives and CD-ROMs are also supported.
19. **CHIPSET:** VIA<sup>®</sup> MVP3 AGPset can support Socket 7 100MHZ CPUs.
20. **Wake-up On LAN connector:** The wake-up On LAN connector will allow the network to wake up a Soft Power Down(Soft-Off) PC.

# INTRODUCTION

## Comprehensive Mainboard View



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# INSTALLATION

## *Static Precautions*

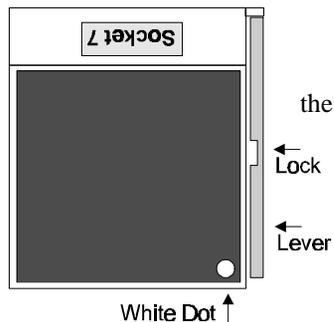
Static electricity can be a serious danger to the electronic components on this mainboard. To avoid damage caused by electrostatic discharge, observe the following precautions:

- ✓ Don't remove the mainboard from its anti-static packaging until you are ready to install it into a computer case.
- ✓ Before you handle the mainboard in any way, touch a grounded, anti-static surface, such as an unpainted portion of the system chassis, for a few seconds to discharge any built-up static electricity.
- ✓ Handle add-in cards and modules by the edges or mounting bracket.

## Installing the CPU

- ✓ **WARNING:** Use of a CPU Cooling Fan is required to prevent CPU from overheating. The Fan should be installed first before inserting the CPU into its socket.

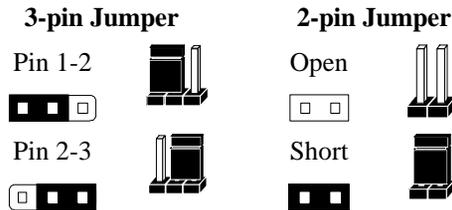
1. Locate the ZIF (Zero Insertion Force) Socket 7.
2. First open the socket by pulling the lever sideways, then upwards. Notice how the lever locks in place when pressed all the way down.
3. The CPU must be inserted with the correct orientation. One corner of the CPU has a "Notch" and looks different than the other three. This corner is also missing a pin unlike the other three and is marked with a white dot on top of the CPU. Align this corner towards the end of the lever as shown in the figure below. Insert the CPU, press it down, and close the lever until it locks into place.



# INSTALLATION

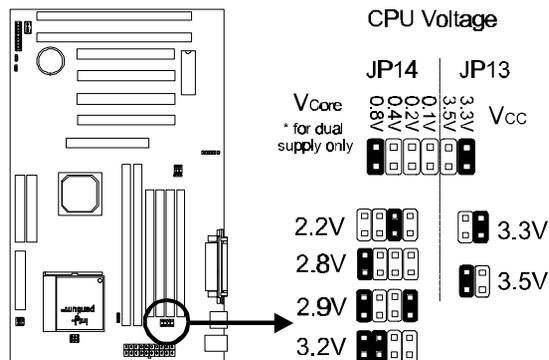
## Setting the Jumpers

Jumpers are used on this mainboard to select various settings and features. A 2-pin jumper has two settings: Open and Short (or Closed). The jumper is closed by placing the Jumper Cap across the two pins, thereby connecting them. 3-pin jumpers can be set to pins 1-2 or 2-3 connected. Pin-1 is labeled on the circuit board.



### *CPU Voltage Selection Jumper (JP13 and JP14)*

Locate Jumper blocks JP13 and JP14 on the mainboard. Set these jumper blocks in accordance with your specific CPU type. The Intel MMX CPU is an example of a dual supply chip (2.8V & 3.3V). When single supply CPUs are used, this setting is not relevant and should be left on the default. (Refer to the CPU documentation)



- If you are uncertain about the speed or voltage requirements of your particular CPU, you should obtain Technical Documentation from the manufacturer. Such information is available via the Intel, Cyrix and AMD WWW sites.

Refer to the following table for more CPU Vcore Voltage Selection jumper setting (JP14) :

Vcore	Jumper Setting	Vcore	Jumper Setting
2.0V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <span>0.8V</span> <span>0.4V</span> <span>0.2V</span> <span>0.1V</span> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> </div> </div>	2.7V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <span>0.8V</span> <span>0.4V</span> <span>0.2V</span> <span>0.1V</span> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> <div style="text-align: center;">■</div> <div style="text-align: center;">■</div> </div> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> <div style="text-align: center;">■</div> <div style="text-align: center;">■</div> </div> </div>
2.1V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> </div> </div>	2.8V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> </div> </div>
2.2V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> </div> </div>	2.9V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> </div> </div>
2.3V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> <div style="text-align: center;">■</div> </div> </div>	3.0V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> </div> </div>
2.4V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> </div> </div>	3.1V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> </div> </div>
2.5V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> </div> </div>	3.2V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> <div style="text-align: center;">□</div> </div> </div>
2.6V	<div style="display: flex; flex-direction: column; align-items: center;"> <div style="display: flex; justify-content: space-around; width: 100%;"> <div style="text-align: center;">□</div> <div style="text-align: center;">■</div> <div style="text-align: center;">■</div> <div style="text-align: center;">□</div> </div> </div>		

### ***CPU & SDRAM Clock Selection Jumper (JFS0-2, JCK1, JGP1-3 & JBF0-2)***

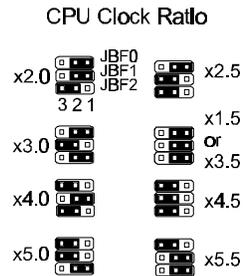
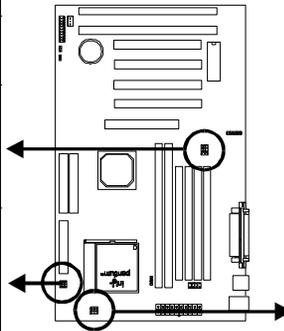
After installing the CPU, you must set the clock selection jumpers to match the frequency of the CPU. Find the Jumper Blocks labeled JFS0-2, JCK1, JGP1-3 and JBF0-2. Set the jumpers according to the illustration and table next page for your CPU frequency.

**Note:** If you are using a CPU with 100MHz system bus, you must also set these jumpers according to your SDRAM specifications. Earlier SDRAMs may not support 100MHz.

# INSTALLATION

- This jumper automatically sets the ISA Clock as well.
- The Internal (Core) frequency corresponds to the number marked on the CPU. The External Frequency when multiplied with the Ratio gives the CPU's internal frequency.

CPU FREQ. MHz	SDRAM FREQ. MHz	Jumper Setting																														
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<b>Jumper setting for CPU:</b>			
<u>CPU Model</u>	<u>CPU Clock</u>	<u>Bus Clock (JFS0-2, JCK1, JGP1-3)</u>	<u>Ratio (JBF0-2)</u>
AMD-K6-2-400MHz	400MHz	100MHz	×4.0
AMD-K6-2-350MHz	350MHz	100MHz	×3.5
AMD-K6-2-300MHz	300MHz	100MHz	×3.0
AMD-K6-2-266MHz	250MHz	100MHz	×2.5
AMD-K6-2-380MHz	380MHz	95MHz	×4.0
AMD-K6-2-333MHz	333MHz	95MHz	×3.5
AMD-K6-300MHz	300MHz	66MHz	×4.5
AMD-K6-266MHz	266MHz	66MHz	×4.0

## INSTALLATION

AMD-K6-233MHz	233MHz	66MHz	x3.5
AMD-K6-200MHz	200MHz	66MHz	x3.0
AMD-K6-166MHz	166MHz	66MHz	x2.5
AMD-K5-PR200		66MHz	x3.0
AMD-K5-PR166		66MHz	x2.5
AMD-K5-PR133		66MHz	x1.5
Intel Pentium MMX-233	233MHz	66MHz	x3.5
Intel Pentium MMX-200	200MHz	66MHz	x3.0
Intel Pentium MMX-166	166MHz	66MHz	x2.5
Intel Pentium MMX-150	150MHz	60MHz	x2.5
Intel Pentium -200	200MHz	66MHz	x3.0
Intel Pentium -166	166MHz	66MHz	x2.5
Intel Pentium -150	150MHz	60MHz	x2.5
Intel Pentium -133	133MHz	66MHz	x2.0
Intel Pentium -120	120MHz	60MHz	x2.5
Cyrix MII PR333	333MHz	83MHz	x3.0
Cyrix MII PR300	300MHz	66MHz	x3.5
Cyrix MII PR266	266MHz	83MHz	x2.5
Cyrix 6x86MX PR233 (M2)	233MHz	75MHz	x2.5
Cyrix 6x86MX PR200 (M2)	150MHz	75MHz	x2.0
Cyrix 6x86MX PR200 (M2)	166MHz	66MHz	x2.5
Cyrix 6x86MX PR166 (M2)	133MHz	66MHz	x2.0
Cyrix 6x86MX PR166 (M2)	150MHz	60MHz	x2.5
Cyrix 6x86 P200+	150MHz	75MHz	x2.0
Cyrix 6x86 P166+	133MHz	66MHz	x2.0
Cyrix 6x86 P150+	120MHz	60MHz	x2.0
IDT C6-200	200MHz	66MHz	x3.0
IDT C6-180	180MHz	60MHz	x3.0
IDT C6-150	150MHz	75MHz	x2.0

# INSTALLATION

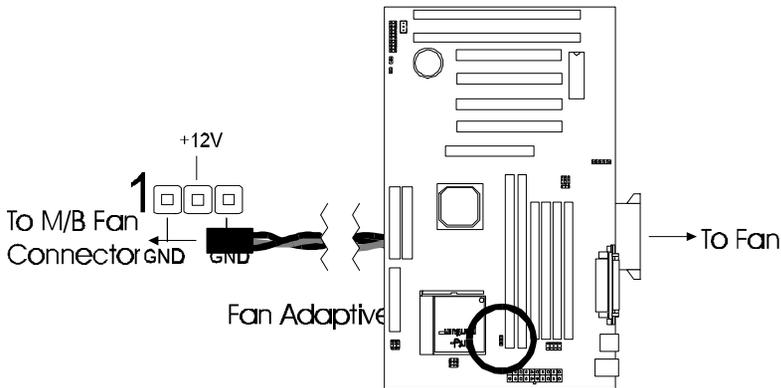
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## Connections

### *CPU Cooling Fan (JP12)*

This mainboard features a fan monitoring function to alert you when the cooling fan starts to malfunction. If you are using a fan with the standard 4-pin Molex-Type Power-Supply connector, you should use the fan adaptive cable provided

Plug the Molex-Type connector of the adaptive cable to the fan's power connector and plug the other 3-pin Header Connector to JP12, regardless of the polarity. If your Fan provides this 3-pin Header Connector, simply plug it into JP12.



## ***IDE Activity LED (JP10)***

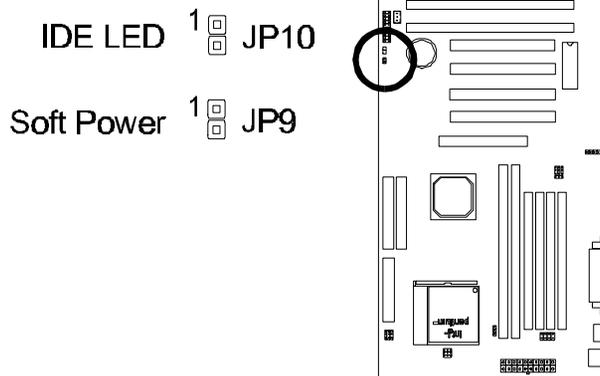
Hook the IDE LED lead to this jumper, with the RED lead corresponding to Pin1.

## ***Soft Power Switch (JP9)***

Connects to the Power Switch featured on ATX case design. This switch must be hooked up before the system can be powered on, unlike the traditional “Baby-AT” designs where the power switch is located on the power supply itself.

**Note:** Under the following two conditions, you have to press and hold the switch for longer than 4 seconds to power off your system, regardless of the “Soft-Off by PWRBTN” setting in the Power Management Setup of the BIOS (page 43 ).

- Shortly after the system is powered on, when the BIOS message is not yet appear.
- When CPU hangs.

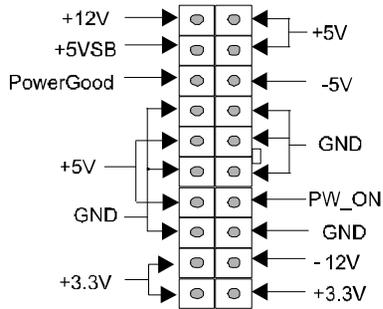
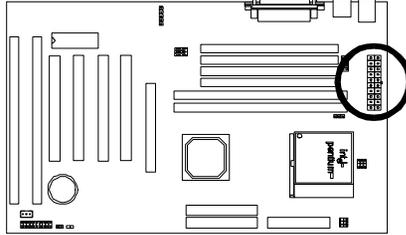


# INSTALLATION

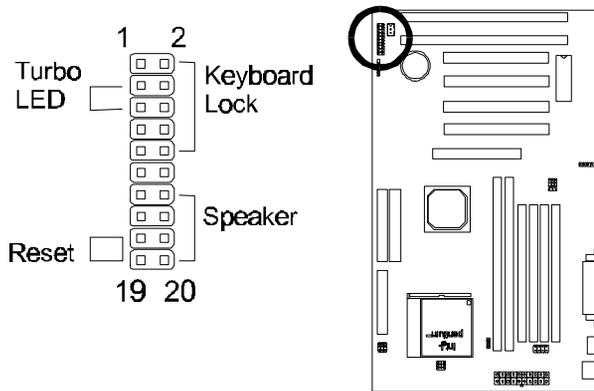
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## *Power Supply Connector*

This mainboard features an ATX Power Connector. This connector is keyed to prevent connection in the wrong direction. Line up the locking mechanism on the connector from the ATX Power Supply with the tab on the mainboard connector. Press down until the two connectors are locked.



## System Functions Jumper Block (J19)



**Pins [3 & 5] Turbo LED switch** - The Turbo function is not supported by this mainboard. Therefore, the Turbo LED will always remain lit as long as the system power is on.

**Pins [17 & 19] Reset switch lead** - Connects to the Reset Switch lead from the system case. The reset switch is used to “Cold-boot” the system without actually turning off the power, reducing wear and tear on the power supply.

**Pins [2, 6, 8, 10] Keyboard lock switch lead** - Pins 2 & 6 connect to the Power LED from the system case. Pins 8 & 10 connect to the case-mounted keylock switch.

**Pins [14 & 20] Speaker connector** - Connects to the Speaker lead from the system case.

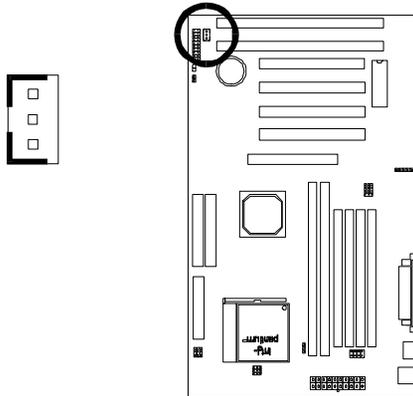
# INSTALLATION

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## *Wake-On-LAN Connector (JP11)*

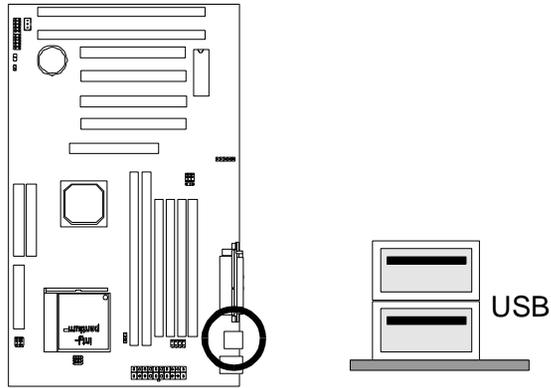
The Wake-On-LAN function will allow the network to power on a system or return it to full power out of suspend mode. To use the Wake-On-LAN function, you must enable the “Modem-Ring/LAN Resume” field in the **Power Management Setup** of the BIOS (page 43). Connect the cable that comes with your LAN card to this connector. Refer to the add-in card’s manual for details.

**Note:** Your LAN card must support Magic Packet in order to use the Wake-On-LAN function.



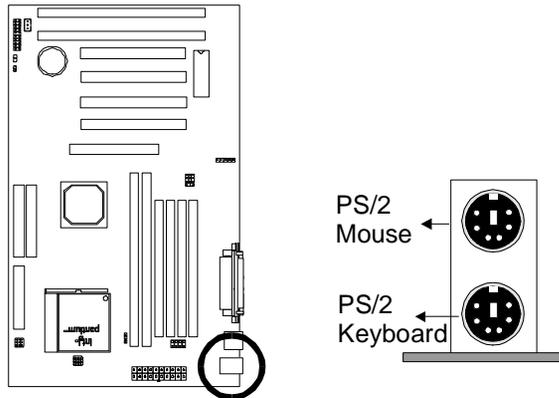
## *USB Connector*

This 8-pin connector permits connection of two USB peripheral devices directly to the system without an external hub.



## *PS/2 Keyboard and Mouse Connectors*

These two connectors are located on the back panel of the mainboard.



# INSTALLATION

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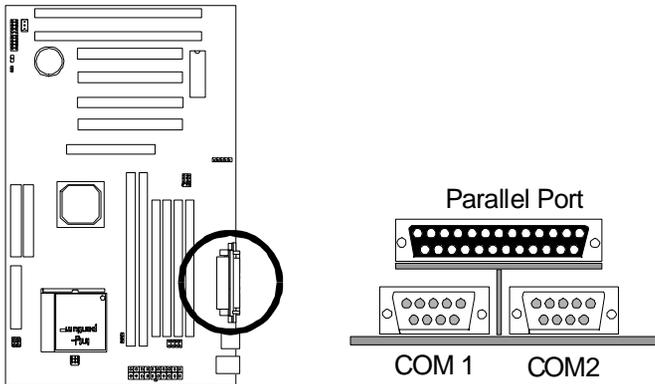
## *Serial and Parallel Ports*

A 25-pin D-Sub header is provided on the back panel for a multi-mode bi-directional parallel port.

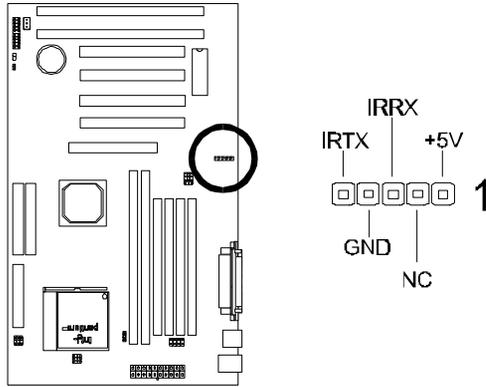
Two 9-pin D-Sub headers are also provided on the back panel for Serial ports.

### \* **Modem Ring-In Power On**

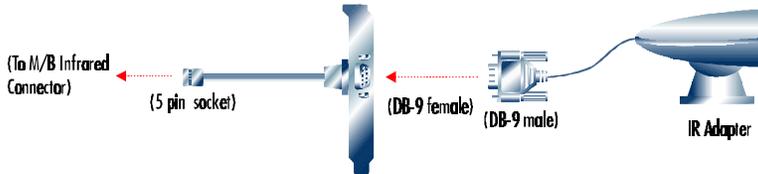
Install a modem (normally to COM2) and enable **Power on by Ring/LAN** function from BIOS setup. (Please refer to page 43). This allows the modem to remotely power on the system or return it to full power out of suspend/standby mode.



## *IrDA-compliant infrared module connector*



The IrDA connector bracket hooks directly to this connector on the mainboard. This connector provides support for the optional wireless transmitting and receiving infrared module. You must first configure through “UART2 Mode” in ***INTEGRATED PERIPHERALS SETUP*** where UART2 is directed, COM2 or IrDA.

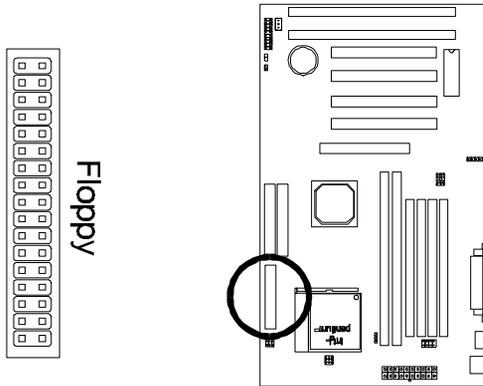


# INSTALLATION

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## *Floppy drives*

The on-board floppy controller supports (2) floppy disk drives with the floppy ribbon cable provided. Make sure the RED stripe on the ribbon cable is oriented towards Pin-1. Notice the “twist” between the sets of connectors on the floppy cable. The floppy drive “A” position is at the END of the cable, whereas floppy drive “B” is hooked to one of the connectors on the other side of the twist. The cable provides both “Edge” and “Pin” connectors for both the A and B positions to match the connector on your floppy drives.



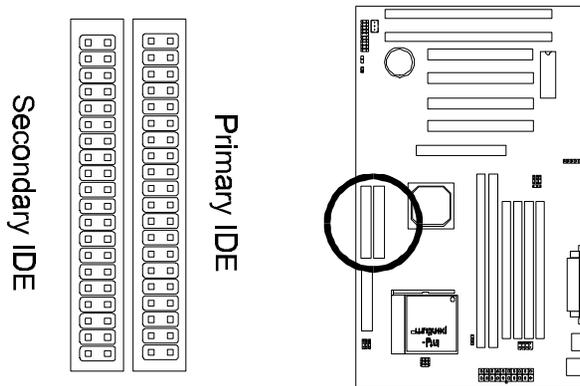
## *IDE Hard Drives and CD-ROMs*

The on-board Enhanced IDE controller can support up to (4) IDE hard drives or other ATAPI devices, such as CD-ROMs. This controller, as with all Enhanced IDE controllers, consists of both **Primary** and **Secondary** ports. Each port has an associated connector and cable which can support up to (2) ATAPI devices each.

All IDE devices have jumpers which allow the user to configure the device as either “Master” or “Slave”. A Master device is one that is ALONE on the IDE cable, whereas a Slave device is installed as a SECOND device on the same cable. Keep in mind that the Master device will appear *before* the Slave device in the CMOS Setup, as well as the Operating System software. *\*Refer to the device documentation for jumper settings.*

The Secondary IDE port can be used for up to (2) additional ATAPI devices. Normally it's recommended that you connect your first hard drive to the Primary port, and the first CD-ROM to the Secondary.

Make sure to align the RED stripe on the ribbon cable with Pin-1 on the mainboard IDE connector. On most hard drives and CD-ROMs, the RED stripe should be oriented towards the power connector of the device.



## INSTALLATION

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### System Memory (DRAM SIMM/DIMMs)

- This mainboard supports **72-pin SIMMs** and **168-pin DIMMs** of two types:
  - **SIMM:** 5 Volt **Fast Page Mode** (Asymmetric or Symmetric) or **EDO** (Extended Data Output)
  - **DIMM:** 3.3 Volt unbuffered **SDRAM** (Synchronous Dynamic Random Access Memory) or 3.3 Volt **EDO**.

• *To ensure reliability, it is recommended to use **PC100 SDRAM** for your 100 MHz clocked SDRAM performance requirement.*

- SIMM Sizes supported: **4MB, 8MB, 16MB, 32MB, 64MB, and 128MB**
- DIMM Sizes supported: **8MB, 16MB, 32MB, 64MB, and 128MB**
- A total of **(4)** SIMMs or **(2)** DIMMs can be installed for a maximum RAM capacity of **256MB**.

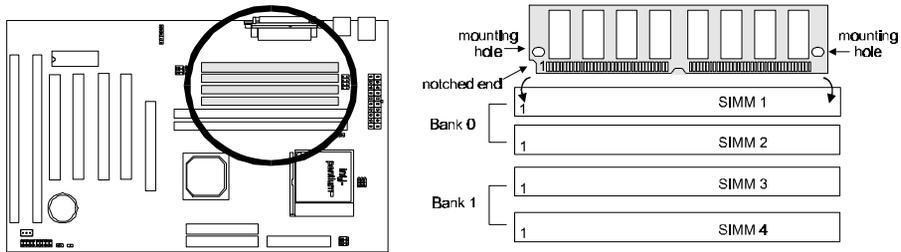
Do not mix both SIMM and DIMM modules on the same mainboard.

- Minimum RAM capacity is **8MB** (With (2) 4MB SIMMs Installed or (1) 8MB DIMM)
- SIMM/DIMMs speed requirements: 70ns or 60ns
- This mainboard contains (2) SIMM Banks and (2) DIMM Banks. The SIMM banks consists of (4) SIMM Sockets. **For SIMMs, memory must be installed two SIMMs at a time. Both SIMMs in a bank must be identical. DIMM modules, on the other hand, can be installed one at a time.**

## *Installing a SIMM*

The module must be oriented in the correct way. There is a notch in one end of the SIMM. Align this notch as shown in the diagram below. Slip a SIMM at a 45° angle into a socket. Gently push the SIMM to the upright position until the retainers on both sides of the socket lock the module in place.

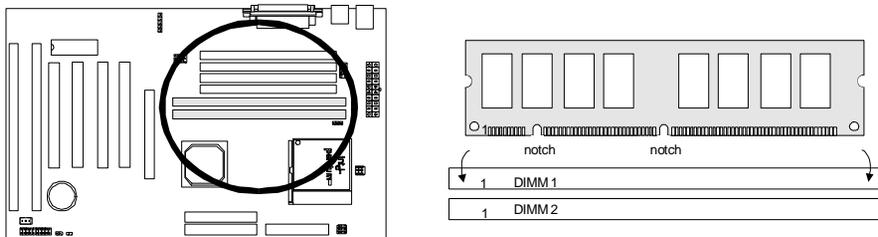
To remove a SIMM, push the retainers outwards to release the module then pull the module out of the socket.



## *Installing a DIMM*

The modules must be be oriented in the correct way. Notice the notches of the DIMM. Align these notches as shown in the diagram below. Firmly push the DIMM until the retainers on both sides of the socket lock the module in place.

To remove a DIMM, push the retainers outwards to release the module then pull the module out of the socket.



# INSTALLATION

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## *The Level-2 Cache (SRAM)*

Two cache sizes are available:

- **512KB Cache:** (1) 64Kx64 512K SRAM chips
- **1MB Cache:** (2) 64Kx64 512K SRAM chips

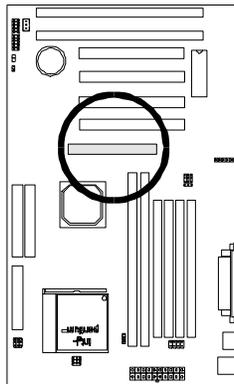
**The Level-2 Cache on this mainboard is *not* upgradeable.**

## Installing an AGP Card

This mainboard provides an AGP slot to support a new generation of graphics cards with high performance graphics capability.

**Note 1:** Make sure that the AGP card is firmly seated in the AGP slot. For the card that complies with the *AGP 1.x specifications*, a slightly more force may be required to fully insert the card into the slot. For cards that comply with AGP 2.0 and later specifications, the installation should be relatively easy.

**Note 2:** Before installing the AGP drivers under Windows 95/98, specific software support must be included in your system first. For detailed driver installation procedure, please refer to Appendix A.



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# MAINBOARD BIOS SETUP

## About the BIOS

The **Mainboard BIOS** (Basic Input/Output System) acts as the bridge between your *Hardware* (CPU, Disk Drives, Video, etc.) and Operating System *Software* (Windows 95, OS/2 and so on...) The BIOS Setup (also called CMOS Setup) is where many hardware configuration options are set and stored. This configuration information will remain in the BIOS until it is changed, or cleared by removing the battery for a while and then putting it back.

CMOS (Complementary Metal Oxide Semiconductor) refers to the chip in which the BIOS information is stored.

This mainboard features **Award BIOS**, which provides an easy to use Setup program to aid in hardware configuration. In this section we will look at the various menus and options contained in the Award BIOS Setup Program. This mainboard also features a "Flash" BIOS. A Flash BIOS can be upgraded via software, thereby eliminating the need to actually replace the "BIOS Chip" on the mainboard. Procedures for updating the BIOS follow this section.

The Award BIOS installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. This means that it supports Intel/Cyrix/AMD processors in a standard IBM-AT compatible input/output system.

### *Using Setup*

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit.

### *Getting Help*

Pressing F1 will display a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

# MAINBOARD BIOS SETUP

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## *A Final Note about Setup*

Not all systems have the same Setup. While the basic look and function of the Setup program remains the same for all systems, individual motherboard and chipset combinations require custom configurations. For example, you may find that your Setup main menu has a different number of entries from the main menu displayed in this manual. These are simply features not supported (or not user configurable) on your system.

The final appearance of the Setup program also depends on the Original Equipment Manufacturer (OEM) who built your system. If your OEM has decided that certain items should only be available to their technicians, those items may very well be removed from the Setup program.

- Shortly after the system is powered on, provided a CPU and sufficient RAM are installed, you will see the message: *Press **DEL** to enter **SETUP**.*
- Press the DEL key to enter the Award BIOS Setup program.

# MAINBOARD BIOS SETUP

## Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

ROM PCI/ISA BIOS (xxxxxxxx)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP / PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type ...	

Note that a brief description of each highlighted selection appears at the bottom of the screen.

# MAINBOARD BIOS SETUP

## Standard CMOS Setup

This first menu is where the most basic hardware options are set. Information regarding the system clock, IDE hard disks and floppy drives is stored and configured in this section. To enter the Standard CMOS Setup, press the [ENTER] key with this menu highlighted.

Upon entering the Standard CMOS Setup screen, you will see a screen like that below.

Date (mm:dd:yy) : Fri, Apr 7 1998									
Time(hh:mm:ss) : 00:00:00									
<u>HARD DISKS</u>	<u>TYPE</u>	<u>SIZE</u>	<u>CYLS</u>	<u>HEAD</u>	<u>PRECOMP</u>	<u>LANDZ</u>	<u>SECTOR</u>	<u>MODE</u>	
Primary Master	: Auto	0	0	0	0	0	0	Auto	
Primary Slave	: Auto	0	0	0	0	0	0	Auto	
Secondary Master	: Auto	0	0	0	0	0	0	Auto	
Secondary Slave	: Auto	0	0	0	0	0	0	Auto	
Drive A : 1.44M , 3.5in.									
Drive B : None									
Floppy 3 Mode Support: Disabled									
Video : EGA / VGA									
Halt On : All Errors									
					Base Memory : 640K				
					Extended Memory : 15360K				
					Other Memory : 384K				
					Total Memory : 16384K				
ESC : Quit			↑ ↓ → ← : Select Item			PU / PD / + / - : Modify			
F1 : Help			(Shift) F2 : Change Color						

First, let's set the system **Date**. Use the arrow keys to move to and highlight the "Date" option. Select the Month by using the PgDn and PgUp keys. This is how most settings will be configured. Then, move to the day, year and time via the arrow keys to finish setting the system date and time. Keep in mind that the system time is set in 24-hour time. With this method, 1PM is represented as 13:00, 2PM as 14:00 and so on, with 00:00 corresponding to Midnight.

**Pri Master, Pri Slave, Sec Master, Sec Slave** - These four options relate to the (4) IDE hard drives, CD-ROMs or other ATAPI devices that can be controlled via the on-board IDE controller (review *IDE Hard Drives and CD-ROMs* on page 25). The "Pri Master" setting specifies the first device on the primary IDE channel, "Pri Slave" - the second. Sec Master and Sec Slave specify the devices on the secondary channel.

## MAINBOARD BIOS SETUP

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The first option available is the most important: **Type**. This is where you will specify the type of device and how it is represented in the BIOS Setup. If the device is a hard disk or CD-ROM, generally the *Auto* option is the best choice for fast and easy setup of the hard disk parameters. Here's an explanation of the *Auto* and *User* options:

- **Auto** - This option instructs the BIOS to automatically configure the hard disk by reading the parameters (cylinders, sectors, etc.) directly from the hard disk firmware. Use this option if you are configuring a new hard drive, or one that has already been formatted using the *Auto* option. Keep in mind that a hard drive is configured using a certain set of parameters, those same parameters must be used for the life of the drive, unless the drive is re-FDISKed using a different parameter set. (This procedure deletes the old partition(s) on the drive and creates a new one, using the new parameters).
- **User** - This option allows you to manually enter in the parameters of the hard drive. Generally, this option would be used only if the hard drive has already been formatted with a certain set of parameters, and assured consistency between the old and new parameters is desired.

TYPE	drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE	mode type

**Mode** - One of Enhanced IDE's most important features is LBA (Logical Block Addressing) Mode. This feature allows the use of larger hard drives by providing a way to bypass the cylinder limitations imposed by many Operating Systems. LBA Mode is used to extend a hard drive's useable capacity by "remapping" the cylinders in a way that is acceptable to these operating systems. For instance, a hard drive with the parameters of 2100 Cylinders, 16 Heads and 63 Sectors would be represented by LBA Mode as 525 Cylinders, 64 Heads and 63 Sectors. (Notice that the Cylinders have been divided, and the Heads have been multiplied, by a factor of 4.)

On hard drives smaller in capacity than 528MB, LBA support is not needed. The option on these devices is ignored, even if enabled. For hard drives greater than 528MB, LBA mode should be enabled. The following rules apply:

- Operating Systems that do not use the FAT file system do not need LBA Mode, and can use the Normal or Large Modes. Examples would be Netware and Unix.

## MAINBOARD BIOS SETUP

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- When configuring a new hard drive greater than 528MB in capacity, always make sure LBA mode is enabled.
- If you are using a hard drive that is over 528MB in capacity, but was already formatted without using LBA mode, LBA support will be ignored even if it is enabled. This assures correct access to the drive's data.
- **SCSI Hard Drives** are NOT entered into the Mainboard BIOS Setup in any way. The hard drive settings in the Standard CMOS Setup are only for drives connected to the IDE Controller. So, if only SCSI drives were installed, all these settings would be set to **Type: None**. SCSI Devices are configured via the SCSI controller's BIOS.

**Floppy Drives A: and B:** - Select the Type for the A: and/or B: floppy drives. Remember, floppy drive A: is the first drive, hooked to the END of the floppy ribbon cable. Floppy drive B: is hooked up after the twist. Available settings are listed below:

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

**Floppy 3 Mode Support:** - Enable this option **ONLY** for floppy drive(s) that support the Japanese standard (1.2MB on 3.5" Diskette). Options: Disabled (Default), Both, Drive A / B.

**Video** - This category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select their type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

**Halt On** - Determines if the system will prompt you if an error is detected during POST.

## MAINBOARD BIOS SETUP

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No errors	The system boot will not be stopped for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All,But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

**Memory** - This category is display-only. All memory detected by the POST (Power On Self Test) of the BIOS is shown as the following types:

**Base Memory** is the amount of conventional memory installed in the system. This value is typically 640K for systems with 640K or more memory installed on the motherboard. The **Extended Memory** is the amount of memory located above 1MB in the CPU's memory address map. **Other Memory** refers to the memory located in the region between 640K and 1MB. This region can be used for *shadowing* as well as *expanded memory* in DOS.

# MAINBOARD BIOS SETUP

## BIOS Features Setup

This menu provides access to more advanced BIOS configuration settings that deal with overall performance of the system and peripheral setup. This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

Anti-Virus Protection	: Enabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
External Cache	: Enabled	CC000-CFFFF Shadow	: Disabled
Quick Power On Self Test	: Disabled	D0000-D3FFF Shadow	: Disabled
Hard Disk Boot From	: Pri-IDE-M	D4000-D7FFF Shadow	: Disabled
Boot Sequence	: C, A	D8000-DBFFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	DC000-DFFFF Shadow	: Disabled
Boot Up Floppy Seek	: Enabled		
Boot Up NumLock Status	: On		
Gate A20 Option	: Fast		
Memory Parity/ECC Check	: Disabled		
Typematic Rate Setting	: Disabled		
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250		
Security Option	: System		
PCI / VGA Palette Snoop	: Disabled	ESC : Quit	↑ ↓ → ← : Select Item
OS Select For DRAM > 64MB	: Non-OS2	F1 : Help	PU/PD/+/- : Modify
HDD S.M.A.R.T. Capability	: Disabled	F5 : Old Values	(Shift) F2 : Color
Report No FDD For WIN 95	: No	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

**Anti-Virus Protection** – Enables/Disables the built-in anti-virus for protection against **boot virus** infection. Unlike traditional BIOS protection which generally consists of simply write protecting the hard disk partition table, this Anti-Virus protection provides more complete virus protection by taking control early in the boot process, detecting boot viruses before they have a chance to load.

## MAINBOARD BIOS SETUP

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**CPU Internal Cache** - Enables or Disables the Level-1 Internal Cache memory. Generally, this would only be *Disabled* for troubleshooting purposes.

**External Cache** - Enables or Disables the Level-2 External Cache memory. Generally, this would only be *Disabled* for troubleshooting purposes.

**Quick Power on Self Test** - Speeds up Power On Self Test (POST) after the computer is powered on. When set to Enable, the BIOS will shorten or skip some checks during POST.

**Hard Disk Boot From** - This option lets you choose to boot from Primary IDE Master (Pri-IDE-M), Primary IDE Slave (Pri-IDE-S), Secondary IDE Master (Sec-IDE-M), Secondary IDE Slave (Sec-IDE-S) or SCSI hard disk. Same as IDE options, the **Boot Sequence** in the next field is set to *C, A* when the *SCSI* is chosen.

**Boot Sequence** - When your system is powered on, the BIOS performs a variety of operations, then attempts to boot an Operating System from either a hard drive, floppy drive, CD-ROM or LS-120/ZIP. This setting determines the sequence that the BIOS will follow when searching devices for a bootable disk. Most users find the *C, A* setting to be most beneficial, since it takes the least amount of time to boot the system. If however, you want the ability to boot from a Floppy or CD-ROM drive, you would need to choose either the *A, C* or *CDROM, C, A* setting. For instance, if your boot sequence was set to *C, A* and for some reason you wanted to boot to your Floppy A: Drive, it would not be possible, since the BIOS would always boot from the C: drive first. In this case, this setting would need to be changed to *A, C* so that the system would first check the floppy drive for a bootable disk. This would slow bootup speed, however, since the floppy would be checked on every boot.

A,C	System will first search for boot sector on floppy disk, then hard disk.
C, A	System will first search hard disk drive then floppy disk drive for boot sector.
C, CDROM, A	System will first search for boot sector on hard disk drive , then CDROM drive, and then floppy disk drive.
CDROM, C, A	System will first search the CDROM drive, then hard disk drive and then floppy disk drive for boot sector.
C only	System will search for boot sector on hard disk drive only.
LS/ZIP, C	System will first search for boot sector on LS-120 IDE floppy drive or ZIP ATAPI drive, then hard disk.

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**Swap Floppy Drive** - The hardware connections determine which floppy is configured as drive A: and drive B: “Swapping” the floppy drives can be useful if your system has two floppy drives, and you want the ability to boot from both. For example: Since a PC cannot boot from the B: Floppy, you would need to “Swap” floppy drives A: and B: in order to set the second floppy drive to drive A:, thereby making it bootable.

**Boot Up Floppy Seek** - When enabled, BIOS will attempt to move the head of the floppy disk drive forth and back once during POST to see if the drive is working properly.

**Boot Up NumLock Status** - When *On*, the NumLock key will be automatically enabled when the system boots.

**Gate A20 Option** - This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard (*Normal*). Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset (*Fast*; default) to provide support for gate A20.

**Memory Parity/ECC Check** - When *Disabled* (Default), there will be no memory errors shown on the monitor for **Memory parity SERR# (NMI)**. When parity DRAM modules are used, select *Parity* or *ECC* (Error Checking and Correcting) to correct 1 bit memory errors in the memory.

**Typematic Rate Setting** - Determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. This feature is used to accelerate cursor movements with the arrow keys.

**Typematic Rate (Chars/Sec)** - When the typematic rate is enabled, this selection allows you to select the rate at which the keys are accelerated: Options are 6 (default), 8, 10, 12, 15, 20, 24 and 30.

**Typematic Delay (Msec)** - When the typematic rate is enabled, this selection allows you to select the delay (in msec) between when the key was first depressed and when the acceleration begins. Options are 250 (default), 500, 750 and 1000.

## MAINBOARD BIOS SETUP

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**Security Option** - This option enables password checking every time the computer is powered on *or* every time BIOS Setup is executed. If *System* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears only when the BIOS Setup program is executed. Refer to the section *Supervisor Password* for more information.

**PCI / VGA Palette Snoop** - This option must be set to *Enabled* if any ISA MPEG card installed requires VGA palette snooping. The settings are *Disabled* or *Enabled*.

**OS Select For DRAM > 64MB** - This should be set to **OS2** if you are running IBM OS/2 with more than 64MB of RAM in the system. Otherwise, the setting should be **Non-OS2**.

**HDD S.M.A.R.T. Capability** - Enables/disables **Self-Monitoring Analysis and Reporting Technology**, by which HDD within a computer can communicate it's predicted reliability status to its user and system administrator to provide comprehensive protection that can prevent system downtime and even the loss of valuable data.

**Report No FDD For WIN 95** - With the FDD in "STANDARD CMOS SETUP" set to NONE, set this option to *Yes* to release IRQ6 for passing Win95 logo. This option is irrelevant under normal operation.

**Video BIOS Shadow** - This option controls the location of the contents of the 32KB of Video ROM beginning at the C0000h memory location. The settings are:

Enabled	The contents of C0000h-C7FFFh are written to the same address in system memory (RAM) for faster execution.
Disabled	The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

**C8000-DFFFF Shadow** - These options control the location of the contents of the 16KB expansion card ROMs beginning at the specified memory location. If no adapter ROM is using the named ROM area, this area is made available to the local bus. Shadowing a ROM reduces the memory available between 640KB and 1024KB by the amount used for this purpose. The settings are *Enabled* or *Disabled*.

# MAINBOARD BIOS SETUP

## Chipset Features Setup

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

Bank 0/1 DRAM Timing	: FP/EDO 70 ns	OnChip USB	: Enabled
Bank 2/3 DRAM Timing	: FP/EDO 70 ns	USB Keyboard Support	: Disabled
Bank 4/5 DRAM Timing	: FP/EDO 70 ns		
SDRAM Cycle Length	: 3	Slot 1 Use IRQ No.	: Auto
DRAM Read Pipeline	: Enabled	Slot 2 Use IRQ No.	: Auto
Sustained 3T Write	: Enabled	Slot 3 Use IRQ No.	: Auto
Cache Rd+CPU Wt Pipeline	: Enabled	Slot 4 Use IRQ No.	: Auto
Cache Timing	: Fast		
Video BIOS Cacheable	: Enabled	** System Hardware Monitor **	
System BIOS Cacheable	: Enabled	CPU Overheat Alarm (> 72 °C)	: Disabled
Memory Hole At 15M-16M	: Disabled	CPU Fan Malfunction Alarm	: Disabled
AGP Aperture Size	: 256M	System 5V Alarm (< 4.7V)	: Disabled
AGP-2X Mode	: Disabled		
		ESC : Quit                    ↑ ↓ → ← : Select Item	
		F1 : Help                    PU/PD/+/- : Modify	
		F5 : Old Values            (Shift) F2 : Color	
		F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

**Bank 0/1, 2/3, 4/5 DRAM Timing** – FP/EDO DRAM timing is controlled by the DRAM timing registers. The timings programmed into this register are dependent on the system design. 60ns is the fastest rate. The 70ns timing is slower and may be required in certain system designs to support loose layouts or slower memory. Options are Turbo, Fast, Medium, Normal, FP/EDO 60 ns, FP/EDO 70 ns (default).

**SDRAM Cycle Length** - This item allows you to set the SDRAM Latency Timer. Options are 2, 3 (default).

## MAINBOARD BIOS SETUP

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**DRAM Read Pipeline** - This item allows you to enable/disable the read pipeline. Options are Disabled, Enabled (default).

**Sustained 3T Write** – This item allows you to enable or disable direct map write back / write through secondary cache.

**Cache Rd+CPU Wt Pipeline** - This item allows you to enable/disable the cache timing. Options are Disabled, Enabled (default).

**Cache Timing** - This item determines the SRAM timing. Options are Fast (default) and Fastest.

**Video BIOS Cacheable** - When *Enabled*, the Video BIOS cacheable will cause access to the video BIOS addressed at C0000H to C7FFFH to be cached. *\*Enabled* is the default.

**System BIOS Cacheable** - When *Enabled*, the Video BIOS cacheable will cause access to the System BIOS addressed at F0000H to FFFFFH to be cached. *\*Enabled* is the default.

**Memory Hole At 15M-16M** - In order to improve compatibility, certain space in memory can be reserved for old style ISA cards that map memory between 15M-16M. Do not enable this feature unless you use the old style ISA card, otherwise the memory size may be reduced to 15 MB for some operating systems. *\*Disabled* is the default.

**AGP Aperture Size** - Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See [www.apgforum.org](http://www.apgforum.org) for AGP information.

The Choices: 4M, 8M, 16M, 32M, 64M, 128M, 256M(default).

**AGP-2X Mode** - Set to *Enabled* if your AGP card supports the 2X mode, which uses a double-clocked data technique to transfer twice the data per each AGP clock.

**OnChip USB** -. If your system contains a Universal Serial Bus (USB) controller and you have a USB peripheral, select *Enabled*. The following option will become available:

**USB Keyboard Support** - Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

## MAINBOARD BIOS SETUP

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**Slot 1/2/3/4 Use IRQ No.** – By default, an IRQ is automatically assigned to PCI slots 1, 2, 3 and 4. You may also specify an IRQ for these slots.

**CPU Overheat Alarm (>72°C)** - When *Enabled*, once the CPU temperature exceeds 72 °C, a warning will be issued via the speaker and the operating CPU speed will be slowed down to ease the situation.

**CPU Fan Malfunction Alarm** - When *Enabled*, the system will issue a warning via the speaker when the CPU fan starts to malfunction.

**System 5V Alarm (<4.7V)** - When *Enabled*, you will be warned via the speaker if the system board operating voltage is below 4.7V.

## Power Management Setup

This menu contains configuration options that reduce power consumption when the system is not in use. Other “Green-PC” compliant peripherals are also supported. Power Management allows you to configure you system to use energy most efficiently, and yet still in a manner consistent with your own style of computer use.

ACPI function : Enabled Power Management : User Define PM Control by APM : Yes Video Off Option : Suspend -> Off Video Off Method : DPMS Support MODEM Use IRQ : 3 Soft-Off by PWRBTN : Instant-Off ** PM Timers ** HDD Power Down : Disabled Doze Mode : Disabled Suspend Mode : Disabled ** PM Events ** VGA : OFF LPT & COM : LPT/COM HDD & FDD : ON DMA/master : OFF Power on by Ring/LAN : Disabled Power on by RTC Alarm : Enabled Date (of Month) : 25 Timer (hh:mm:ss) : 21: 4: 0	Primary INTR : ON IRQ3 (COM 2) : Primary IRQ4 (COM 1) : Primary IRQ5 (LPT 2) : Primary IRQ6 (Floppy Disk) : Primary IRQ7 (LPT 1) : Primary IRQ8 (RTC Alarm) : Disabled IRQ9 (IRQ2 Redir) : Secondary IRQ10 (Reserved) : Secondary IRQ11 (Reserved) : Secondary IRQ12 (PS/2 Mouse) : Primary IRQ13 (Coprocesor) : Primary IRQ14 (Hard Disk) : Primary IRQ15 (Reserved) : Disabled
	ESC : Quit      ↑ ↓ → ← : Select Item F1 : Help      PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults

**ACPI Function** – This option allows you to enable/disable the Advanced Configuration and Power Interface which offers improved power management.

**Power Management** - This category allows you to select the type (or degree) of power saving and is directly related to the following modes: Doze Mode, Suspend Mode and HDD Power Down. There are four selections for Power Management, three of which have fixed mode settings:

Disabled	No power management. Disables all three modes.
Min Saving	Minimum power management. Doze Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = disabled.
Max Saving	Maximum power management – <b>ONLY AVAILABLE FOR SL CPUs.</b> Doze Mode = 10 sec., Suspend Mode = 10 sec., and HDD Power Down = disabled.

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User Defined (default)	Set each mode individually. When Enabled, each range is 10 sec. to 1 hr., except for HDD Power Down which ranges from 1 min. to 15 min.
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**PM Control by APM** - When set to Yes, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If APM is installed in your system, select Yes to give you better power savings.

**Video Off Option** - When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend → Off	Monitor blanked when the systems enters the Suspend mode.
All Modes → Off	Monitor blanked when the system enters any power saving mode.

**Video Off Method** - This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports, writing blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support	Select this option if your monitor support the Display Power Management Signaling standard.

**MODEM Use IRQ** - This item tells the Power Management BIOS which IRQ the MODEM is using, so that any activity on that interrupt can bring the system out of power saving mode. Options are NA, 3 (default), 4, 5, 7, 9, 10, and 11.

**Soft-Off by PWRBTN** - With *Instant-Off* selected, the ATX switch functions like a normal system power off button. With *Delay 4 Sec.* selected, you must hold down the ATX switch for more than 4 seconds to power off the system.

**PM Timers** - The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected.

<b>HDD Power Down</b>	When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
<b>Doze Mode</b>	When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.
<b>Suspend Mode</b>	When enabled and after the set time of system inactivity, all

## MAINBOARD BIOS SETUP

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	devices except the CPU will be shut off.
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**VGA** - When set to *On* , any event occurring at a VGA port will awaken a system which has been powered down. Default is off.

**LPT & COM** - When set to *On* , any event occurring at a LPT(printer) /COM(serial) port will awaken a system which has been powered down. Default is LPT/COM.

**HDD & FDD** - When set to *On* (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down

**DMA/master** - When set to *On*, any event occurring to the DMA controller will awaken a system which has been powered down. Default is OFF.

**Power on by Ring/LAN** - When set to *Enable*, any event occurring to the modem or the LAN card will power on the system or return it to full power out of suspend mode. Note: Your LAN card must support Magic Packet in order to use the LAN Resume function.

**Power on by RTC Alarm** - When enabled, the system will automatically power on or returns to full power out of suspend mode at the time and date of the month (0 for daily) specified.

**Primary INTR** - When set to *On* (default), any primary interrupt request (see below) will awake the system which has been powered down.

Following this option is a list of IRQs (**I**nterrupt **R**e**Q**uests). You can set each IRQ to be *Primary*, *Secondary* or *Disabled*. When set to *Secondary*, the interrupt request will neither prevent the system from going into a power management mode nor awaken it.

# MAINBOARD BIOS SETUP

## PNP/PCI Configuration Setup

The PCI Personal Component Interconnect Bus was developed by Intel and other industry leader partners primarily to address two important issues faced by PC hardware designers today: a) How to allow peripheral devices to take the fullest advantage of the power of Pentium and Pentium Pro chip technology, and b) Provide a simpler installation process for peripheral devices, such as Network cards, EIDE or SCSI controllers.

PCI accomplishes these goals with its 32-bit Data path Local Bus design, and support for Plug & Play. Unlike older expansion bus architectures, PCI provides peripherals with a direct connection to the CPU and memory. The PCI bus runs at 33Mhz and has a maximum transfer capability of 132MBps. With Plug & Play, the system BIOS automatically determines hardware resources for new peripherals, simplifying installation of multiple interface cards.

This Setup Menu provides configuration options for the PCI Bus and its assigned resources.

PNP OS Installed	: No	CPU to PCI Write Buffer	: Enabled
Resources Controlled by	: Manual	PCI Dynamic Bursting	: Enabled
Reset Configuration Data	: Enabled	PCI Master 0 WS Write	: Enabled
IRQ-3 assigned to	: PCI/ISA PnP	PCI Delay Transaction	: Enabled
IRQ-4 assigned to	: PCI/ISA PnP	PCI Master Read Prefetch	: Enabled
IRQ-5 assigned to	: PCI/ISA PnP	PCI#2 Access #1 Retry	: Disabled
IRQ-7 assigned to	: PCI/ISA PnP	AGP Master 1 WS Write	: Enabled
IRQ-9 assigned to	: PCI/ISA PnP	AGP Master 1 WS Read	: Disabled
IRQ-10 assigned to	: PCI/ISA PnP	PCI IRQ Activated By	: Level
IRQ-11 assigned to	: PCI/ISA PnP	SYMBIOS SCSI BIOS	: Auto
IRQ-12 assigned to	: PCI/ISA PnP	Assign IRQ For USB	: Enabled
IRQ-14 assigned to	: PCI/ISA PnP	Assign IRQ For VGA	: Enabled
IRQ-15 assigned to	: PCI/ISA PnP		
DMA-0 assigned to	: PCI/ISA PnP		
DMA-1 assigned to	: PCI/ISA PnP	ESC : Quit	↑ ↓ → ← : Select Item
DMA-3 assigned to	: PCI/ISA PnP	F1 : Help	PU/PD/+/- : Modify
DMA-5 assigned to	: PCI/ISA PnP	F5 : Old Values (Shift)	F2 : Color
DMA-6 assigned to	: PCI/ISA PnP	F6 : Load BIOS Defaults	
DMA-7 assigned to	: PCI/ISA PnP	F7 : Load Setup Defaults	

**PNP OS Installed** - Set to Yes if your operating system supports Plug & Play, such as Windows<sup>®</sup> 95, so that the resources are allocated by the O.S. instead of the BIOS.

## MAINBOARD BIOS SETUP

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**Resources Controlled By** - The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. This capability is specifically designed for a Plug and Play operating system such as Windows® 95. Choices are *Auto* and *Manual* (default).

**Reset Configuration Data** - In case of conflict after you configure your system, enable this option to clear ESCD (Extended System Configuration Data). This setting will automatically be set back to Disabled when the system reboots.

**IRQ3/4/5/7/9/10/11/12/14/15, DMA0/1/3/5/6/7 assigned to** - By default, all resources are assigned to the PCI Bus. If an ISA card requires a particular IRQ or DMA channel, those resources should be set to Legacy ISA so that the PCI Bus will not try to use them. Choices are *Legacy ISA* and *PCI/ISA PnP*.

**CPU to PCI Write Buffer** - When enabled, up to four D words of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data.

**PCI Dynamic Bursting** - When Enabled, data transfers on the PCI bus, where possible, make use of the high-performance PCI bus protocol, in which greater amounts of data are transferred at a single command.

**PCI Master 0 WS Write** - When Enabled, writes to the PCI bus are command with zero wait states.

**PCI Delay Transaction** - The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

**PCI Master Read Prefetch** - This item allows you enable/disable the PCI Master Read Prefetch.

**PCI#2 Access #1 Retry** - This item allows you enable/disable the PCI #2 Access #1 Retry.

## MAINBOARD BIOS SETUP

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**AGP Master 1 WS Write** - This implements a single delay when writing to the PCI Bus. By default, two-wait states are used by the system, allowing for greater stability.

**AGP Master 1 WS Read** - This implements a single delay when reading to the PCI Bus. By default, two-wait states are used by the system, allowing for greater stability.

**PCI IRQ Activated By** - This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer.

The choice: *Level* (default) and *Edge*.

**SYMBIOS SCSI BIOS** - When set to *Auto* (Default), the system will automatically sense the presence of any SCSI adapter that uses a Symbios SYM53C8XX SCSI chip:

If the SCSI adapter installed <b>has</b> its own BIOS on board:	The on-board SCSI BIOS will not be loaded. The adapter's own SCSI BIOS will be used.
If the SCSI adapter installed <b>doesn't have</b> its own BIOS and the card uses or is compatible with the SYM53C8XX chip:	The on-board SCSI BIOS will load and control the SCSI adapter.

\**Disabling*, the onboard SCSI BIOS prevents it from being active in any way.

**Assign IRQ For USB** - When disabled, the BIOS will not assign an IRQ for USB.

**Assign IRQ For VGA** - The *Enabled* option allows the BIOS to auto-route an IRQ for use by a VGA card. While most of the VGA cards do not need the IRQ assignment, certain VGA cards may need it.

## Load BIOS Defaults

Loads “Fail Safe” settings into the BIOS Setup program. These options are designed to slow the system down for troubleshooting purposes. To load the default values, highlight this option and press [ENTER]. Enter “Y” in the confirmation screen and press [ENTER] again. User-defined options in the **Standard CMOS Setup** are not affected.

## Load Setup Defaults

Loads the default values for best system performance into the BIOS Setup program. To load the default values, highlight this option and press [ENTER]. Enter “Y” in the confirmation screen and press [ENTER] again. User-defined options in the **Standard CMOS Setup** are not affected.

## Integrated Peripherals Setup

This menu is used to configure the integrated IDE subsystem and other peripherals.

<p>OnChip IDE First Channel : Enabled                      OnChip IDE Second Channel : Enabled                      IDE Prefetch Mode : Enabled                      IDE HDD Block Mode : Enabled                      IDE Primary Master PIO : Auto                      IDE Primary Slave PIO : Auto                      IDE Secondary Master PIO : Auto                      IDE Secondary Slave PIO : Auto                      IDE Primary Master UDMA : Auto                      IDE Primary Slave UDMA : Auto                      IDE Secondary Master UDMA : Auto                      IDE Secondary Slave UDMA : Auto                      Init Display First : PCI Slot</p>	<p>ECP Mode Use DMA : 3                      Parallel Port EPP Type : EPP 1.9</p>
<p>Onboard FDD Controller : Enabled                      Onboard Serial Port 1 : Auto                      Onboard Serial Port 2 : Auto                      InfraRed/COM2 Selected : UART COM2                      Onboard Parallel Port : 378/IRQ7                      Onboard Parallel Mode : ECP/EPP</p>	<p>ESC: Quit    ↑ ↓ → ←: Select Item                      F1 : Help    PU/PD/+/- : Modify                      F5 : Old Values (Shift) F2: Color                      F6 : Load BIOS Defaults                      F7 : Load Setup Defaults</p>

**OnChip IDE First Channel** - Enables or Disables the primary controller. Situations where this controller would be disabled are: *a) You are not using any IDE Drives* or *b) You are using an add-on IDE controller in a PCI Slot.*

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**OnChip IDE Second Channel** - Enables or Disables the secondary controller. Situations where this controller would be disabled are: *a) You are not using any IDE Drives* or *b) You are using IDE Drives ONLY on the primary controller* or *c) You are using an add-on IDE controller in a PCI Slot.*

PIO Mode	Timing
0	600 ns
1	383 ns
2	240 ns
3	180 ns
4	120 ns

**IDE Prefetch Mode** - Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI/IDE field, above, is Disabled

**IDE HDD Block Mode** - This allows your hard disk controller to use fast block mode to transfer multisector data to and from your hard disk drive (HDD). **Enabled** or **Disabled**. *Enabled* is the default.

**IDE PIO Primary/Secondary Master/Slave PIO Mode** - IDE Programmed I/O Mode - This setting relates to the speed at which the hard drive is able to transfer data, up to 16.6MB/second for Mode 4 drives. Available settings are *Auto*, *0*, *1*, *2*, *3*, or *4*. As with the **Type** setting, *Auto* is the preferred choice, in that the supported PIO Mode is read directly from the hard drive. Be sure not to use a PIO Mode higher than what the drive actually supports. This could result in loss of data.

**IDE Primary/Secondary Master/Slave UDMA (Ultra DMA) Mode** - The PCIset used for this mainboard improves the IDE performance by implementing UltraDMA/33 Bus Mastering IDE which can handle data transfer up to 33 Mbyte/sec. This UDMA technology implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. *\*Auto is default.*

**Init Display First** – When your system has an AGP card coexisting with other PCI or ISA display cards, choosing this option tells your system to use the AGP card, PCI card is default.

**Onboard FDD Controller** - Enables or Disables the on-board Floppy Disk Controller. If you want to use a separate controller card to connect the floppy disk drives, change this setting to Disabled.

## MAINBOARD BIOS SETUP

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**Onboard Serial Port 1** - With this option, the on-board Serial Port 1 can be Disabled, or set to Auto (default), 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4 or 2E8/IRQ3.

**Onboard Serial Port 2** - With this option, the on-board Serial Port 2 can be Disabled, or set to Auto (default), 3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4 or 2E8/IRQ3.

**InfraRed/COM2 Selected** - By default, this field is set to UART COM2, which directs the second serial port UART to support the COM2 serial port. Choosing **SHARP IR (ASKIR)** or **IrDA SIR (HPSIR)** will activate the on-board infrared feature and redirect the second serial port UART to support the infrared module connector on the mainboard.

**Onboard Parallel Port** - With this option, the on-board Parallel Port can be Disabled, or set to 378/IRQ7 (\*Default), 3BC/IRQ7 or 278/IRQ5.

**Onboard Parallel Mode** - Sets the operating mode of the parallel port. Options are: *Normal*, *EPP (Enhanced Parallel Port) / Normal*, *ECP (Extended Capability Port)* and *ECP/EPP (default)*.

**ECP Mode Use DMA** - Select a DMA channel for the parallel port to use during ECP mode. Options are 1 and 3. This field is available only when one of the two following options in **Onboard Parallel Port Mode** is selected: ECP or ECP/EPP.

**Parallel Mode EPP Type** - This item allows you to determine the IR transfer mode of onboard I/O chip. Options are 1.7 and 1.9 (default ; IEEE 1284 compliant).

### Supervisor Password and User Password Setting

Passwords can be set to provide protection for the BIOS configuration options, or to restrict access to the computer itself.

When enabled, *User Password* will require all users to enter a password in order to use the system, and/or enter the BIOS setup (but can't change its contents). A *Supervisor Password* is used to protect the stored CMOS options from being changed by unauthorized users.

Keep in mind that when set, a password is required only when *booting* the system. It will not provide protection to a system that is already booted.

The password check option is set in **BIOS FEATURES SETUP** by choosing either *System* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when the user enters the BIOS Setup). The password is stored in CMOS RAM, and can be cleared by removing the battery for a while then re-installing it back.

#### To set a password:

1. You must first set the *Supervisor* password by choosing *Supervisor Password* and pressing [ENTER]. Setup prompts for a password.
2. Enter a 1-8 character password using letters, numbers, or a combination of both. The specific characters are not shown as you enter them. Press [ENTER].
3. A confirmation box appears asking you to re-enter the password. Enter the password again. Press [ENTER]. Follow the same procedure to set the *User Password*.

#### Changing a Password:

Select the appropriate password option (Supervisor or User) from the main menu and press [ENTER]. Enter the current password and press [Enter]. The screen does not display the characters entered. Enter in the new password, then the confirmation. You cannot change the current password unless you know it.

#### Erasing a Password:

If you know the current password, but want to disable password checking, follow the procedure for changing the password. When Setup prompts for the new password, simply press [ENTER]. You will see a message indicating that the password is disabled.

## MAINBOARD BIOS SETUP

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If you do not know the current password, the CMOS must be cleared by removing the battery for a while then re-installing it back. \*This will clear all user-defined BIOS Setup options.

### **IDE HDD Auto Detection**

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk's parameters. See also "Standard CMOS Setup".

### **Save & Exit Setup / Exit Without Saving**

Select *Save & Exit Setup* to save into the CMOS memory all modifications specified during the current session. To save the configuration changes, highlight this option in the main menu and press [ENTER]. The system displays a confirmation message on the screen. Press the "Y" key and then [Enter]. Press the "N" key and then the [Enter] key to abort. The *Exit Without Saving* option allows the user to exit the BIOS Setup without updating any changes made during the current session.

## PCI Device Listing

This list of installed PCI devices appears after the **System Configuration** screen:

PCI device listing .....							
Bus No.	Device No.	Func No.	Vender ID	Device ID	Device Class	IRQ	
0	7	1	8086	7010	IDE Controller	14/15	
0	7	2	8086	8829	Serial bus controller	11	
0	9	0	1013	7333	Display controller	NA	

- Bus No.            Encoded value indicating 1 of 256 possible buses in a system.
- Device No.        Encoded value indicating 1 of 32 possible devices on a given bus.
- Func No.          Encoded value indicating 1 of 8 possible functions on a multifunction device.
- Vender ID        Identifies the manufacturer of the device. Valid vendor identifiers are allocated by the PCI SIG (Special Interest Group) to ensure uniqueness.
- Device ID        Identifies the particular device. This identifier is allocated by the vendor.
- Device Class     Specifies one of the following device classes: Mass storage controller, Network controller, Display controller, Multimedia device, Bridge device, Simple communication controller, Base system peripherals, Input device, Docking station, Processor and Serial bus controller.

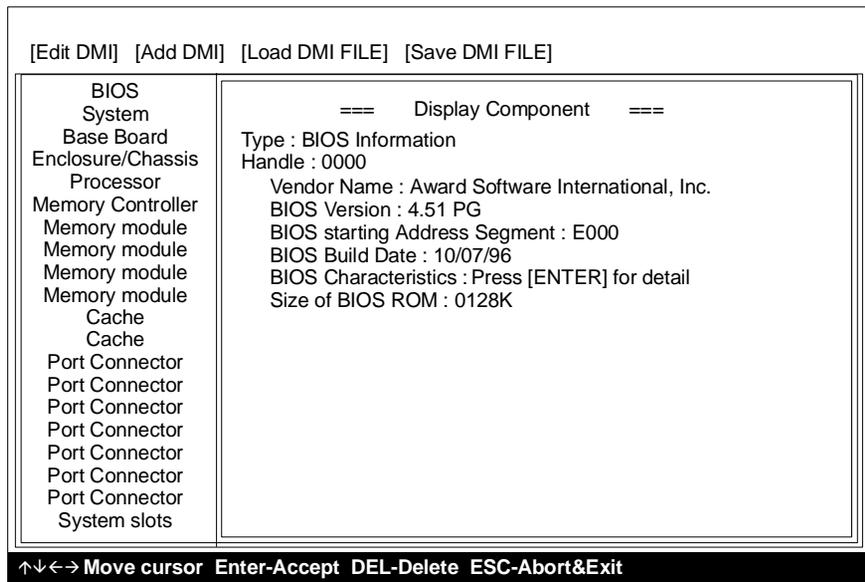
The PCI device listing is useful for troubleshooting purposes. More detailed information for each field may be obtained through the PCI specification documentation.

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# DESKTOP MANAGEMENT INTERFACE (DMI)

This mainboard supports the **Desktop Management Interface (DMI)**, which is a new method of providing enterprise management for personal computers. The main component of DMI is the Management Information Format Database (MIF), which contains information about the computer system and its components, such as BIOS version/vendor, CPU speed/type, memory size/type, L1/L2 cache, port connectors (IDE, floppy, 2S/1P, USB, keyboard, mouse, ), slots ... etc. Using DMI, remote PC management software is able to obtain various information about the system, including hardware profiles, capabilities, operational status, installation dates, and other information about the system and its components.

This DMI utility, DMICFG.EXE, allows you to add additional information, such as serial numbers, vendor information, and enclosure/chassis configurations, into the MIF.



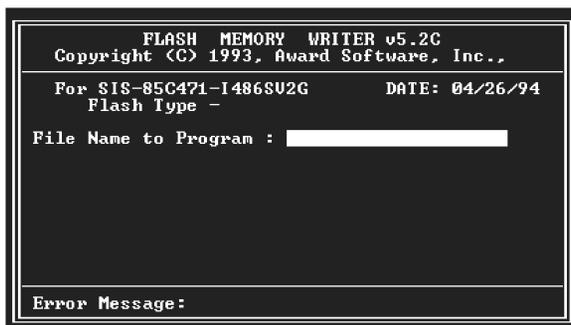
**Note:** The DMI utility must be run in real mode without the EMM386 memory manager loaded.

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# FLASH BIOS PROGRAMMING UTILITY

Updating the Award BIOS Code is made easy with the AWDFLASH Utility. Since this mainboard features FLASH BIOS, it is not necessary to change the actual BIOS chip in order to upgrade the System BIOS. The user can simply re-program the old BIOS using the AWDFLASH Utility as follows:

1. First, boot the system with DOS or to “Safe Mode” under Windows 95. If you are booting DOS from a hard drive or floppy disk, press [F5] when the message “Starting MS-DOS...” appears on the screen. If you are booting Windows 95, press the [F8] key, and select the “Safe mode command prompt” option. This will assure that the system is running in “*real mode*” with **no device drivers loaded**. *This is the only correct way to run the AWDFLASH Utility program.*
2. There are (2) important files needed to re-program the BIOS. The first is “AWDFLASH.EXE” which is the FLASH BIOS Programming Utility. The second file needed is the updated “BIN” file which contains the actual BIOS code. This file will have the extension [.bin], such as “P598GH.BIN”. Make sure these files are on the diskette or hard drive in the same directory.
3. Start the AWDFLASH Utility by changing to the directory where the two required files exist and typing: AWDFLASH and pressing [ENTER].
4. The AWDFLASH Utility Screen appears. You will be asked for the file name to program. Type in the name of the new BIOS (.bin) file and hit [ENTER].



5. The program will then ask if you want to backup the old BIOS. This is recommended in case there are any problems with the new “.bin” file. Enter the name of the new backup file (such as “backup.bin”) and press [ENTER].

## FLASH BIOS PROGRAMMING UTILITY

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6. At this time the system will prompt you for final confirmation before beginning programming. The Utility can be aborted at this time by hitting “n”. To begin programming, hit “y”... When the Flash programming starts, a bar indicator will show the progress of the programming operation. After successful completion, hit the reset button or power off the computer.

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# HARDWARE MONITORING UTILITY

Your mainboard has an advanced built-in hardware monitoring feature to keep track of CPU temperature, system board voltage and CPU fan speed. When an abnormal condition occurs, the system speaker will BEEP to warn the user to trouble shoot the failed part of the system.

**Note:**

When an application is using the speaker, the user may LOSE the WARNING BEEP!

The Hardware Monitor utility included with your mainboard is designed for Windows 95/Windows NT. With this utility installed, an error message will pop up under Windows 95/Windows NT in addition to the warning beep to alert the user when problem occurs.

The utility includes the following files:

- MONITOR.EXE Hardware monitor utility
- HMINSTALL.EXE Hardware monitor utility installation program
- Readme file

***Installation/Un-installation procedure:***

- Run HMINSTALL.EXE under Windows 95/Windows NT to install MONITOR.EXE to your fixed disk. MONITOR.EXE will then be executed automatically every time with Windows 95 bootup.

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# APPENDIX A

## VIA MVP3 Driver Installation

### *For AGP Implementation*

Before installing the AGP drivers under Windows 95/98, specific software support must be included in your system first:

**Note:** If your AGP card uses *Intel I740 AGP chip*, its driver must be v1.5 or later to be compatible with this mainboard.

### Windows 95

- A. Though Windows 95 OSR2.0 supports AGP, it is necessary that you first *upgrade OSR2.0 to OSR2.1 with a USB upgrade* to take full advantage of the AGP features.
- B. To access the advanced 3D features in Windows 95, you also need to first *install the Microsoft DirectX 5.0*.
- C. Then install the following VIA drivers:
  - 1) VIA PCI Bridge driver.
  - 2) VIA Bus Master driver.
  - 3) VIA VxD driver.

*Make sure all the above are included in your system before you install the display driver.*

### Windows 98

Install the VIA VxD driver before you install the display driver:

### *For IRQ Routing Table Correction in Windows 98*

Install the VIA PCI Mini-port driver.

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