

# MS-5158

## Intel® 430TX Chipset

### FLASH BIOS

AMI® / AWARD®  
PnP BIOS, PC 97

### PCI IDE

Dual channel for  
4 HDD/ CD-ROM,  
Supports PIO Mode  
& Ultra DMA/33  
(up to 33MB/sec)

### CHIPSET

Intel® 430TX

### L2 CACHE

512K PB  
cache on  
board

### CPU SOCKET

ZIF Socket 7,  
Supports Intel®  
Pentium® processors,  
AMD® & Cyrix®  
processor

### USB CONN.

Double deck  
USB connectors

### SIZE & FORM FACTOR

30.5 x 18.6 cm,  
ATX double deck  
compatible with  
Intel® Venus  
mainboard

### CPU VOLTAGE REGULATOR

Switching Mode  
DC to DC converter  
on board, supports  
AMD® K6 and Cyrix®  
6x86MX processors

### SLOTS

4 16-bit ISA  
4 32-bit PCI  
(1 PCI/ISA shared)

### SUPER I/O

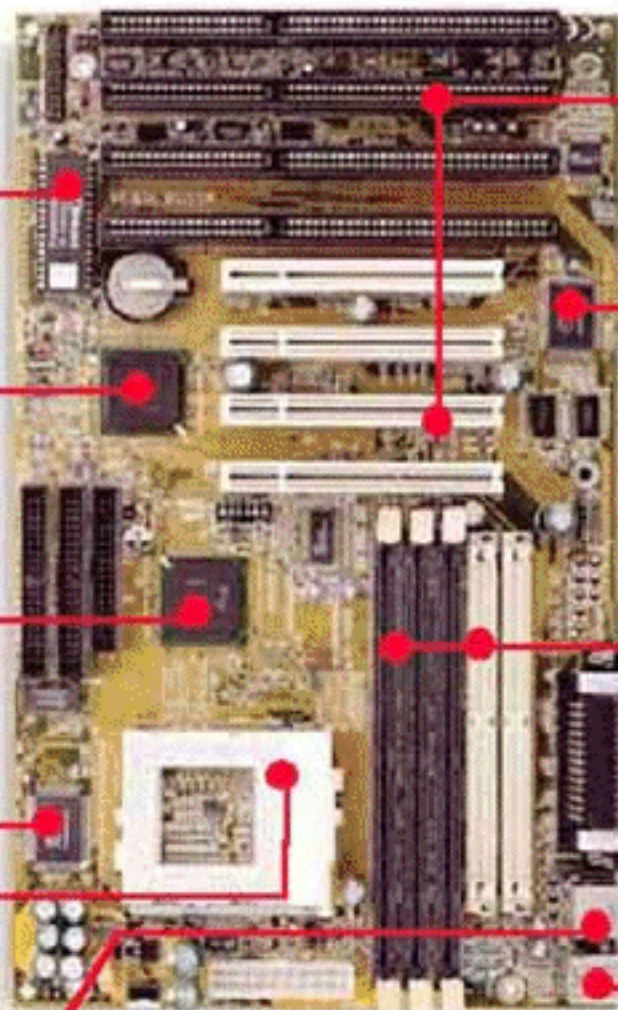
16550 Fast  
UART, EPP/  
ECP Printer Port  
& SIR/FIR/CIR  
Options

### MEMORY

72-pin SIMM x 2,  
168-pin DIMM x 3,  
Supports SDRAM,  
EDO & FP DRAM,  
Max. 256MB

### CONNECTOR

PS/2 K/B +  
PS/2 Mouse



## **Chapter 1**

### **INTRODUCTION**

The MS-5158 is a high-performance personal computer mainboard. This mainboard supports Intel® Pentium®/Pentium® with MMX™ technology processors, Cyrix® 6x86/6x86L/6x86MX processors and AMD® K5/K6 processors. The mainboard also supports four 32-bit PCI (Peripheral Component Interconnect) Local Bus standard slots.

The mainboard uses the highly integrated Intel® 83430TX chipset to support the PCI/ISA and Green standards, and to provide the Host/PCI bridge. The Intel® 82430TX chipset integrates all system control functions such as ACPI (Advanced Configuration and Power Interface). The ACPI provides more Energy Saving Features for the OSPM(OS Direct Power Management) function. The Intel® 82430TX chipset also improves the IDE transfer rate by supporting Ultra DMA/33 IDE that transfer data at the rate of 33MB/s.

The mainboard also supports the LM78 Hardware Monitor Controller which are optional functions. The LM78 function includes: CPU chassis/power fan control, CPU temperature detect and system voltage detect.

## **1.1 Mainboard Features**

### **CPU**

- Socket 7 supports Intel® Pentium® and Pentium® with MMX™ technology processors
- The Cyrix® 6x86/6x86L/6x86MX and AMD® K5/K6 processors are also supported.

### **Chipset**

- Intel® 82430TX chipset.

### **Cache Memory**

- Supports 512K pipelined burst cache memory.
- Supports Direct Map Organization and Write-Back cache policy.

### **Main Memory**

- Supports five memory banks using two 72-pin SIMM sockets and three 168-pin DIMM sockets (for unbuffered DIMM).
- Up to 256 Mbytes main memory.
- Supports EDO Hyper Page Mode DRAM, Standard Fast Page mode DRAM and SDRAM(Synchronous DRAM).

### **Slots**

- Four 32-bit PCI Bus slots (four 32-bit bus master PCI slots + four 16-bit ISA bus slots). One shared slot can be used as ISA or PCI.

### **On-Board IDE**

- Supports Bus Master and Ultra DMA/33 IDE.
- Supports up to 4 IDE drives.

### **On-Board Peripherals**

- On-Board Peripherals include:
  - 1 floppy port supports 2 FDD
  - 2 serial ports (COMA + COMB)
  - 1 parallel port supports ECP or EPP mode
  - USB Ports
  - IR (reserved)

**Dimensions**

- Standard ATX form factor
- 30cm(L) x 18.6cm(W) x 4 layer PCB
- Double deck I/O connectors, compatibles with Intel® Venus mainboard

**Mounting**

- 6 mounting holes

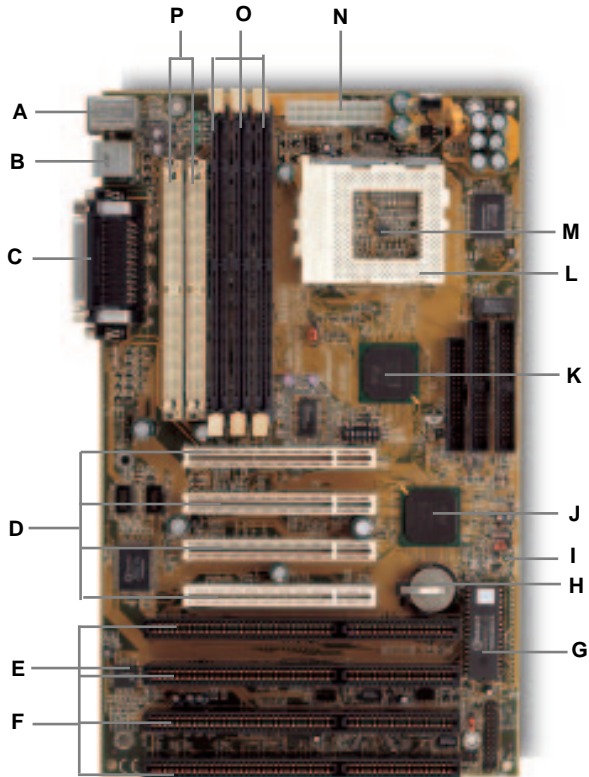
**LM78 System Hardware Monitor(optional)**

- CPU fan Rotation Speed Control
- CPU Fan Control/Power Fan Control (the fan will automatically stop when the system enters suspend mode)
- System Voltage Detect
- CPU Overheat Warning (reserved)
- Chassis Intrusion Detect(reserved)
- Display Actual Current Voltage

**Other Features**

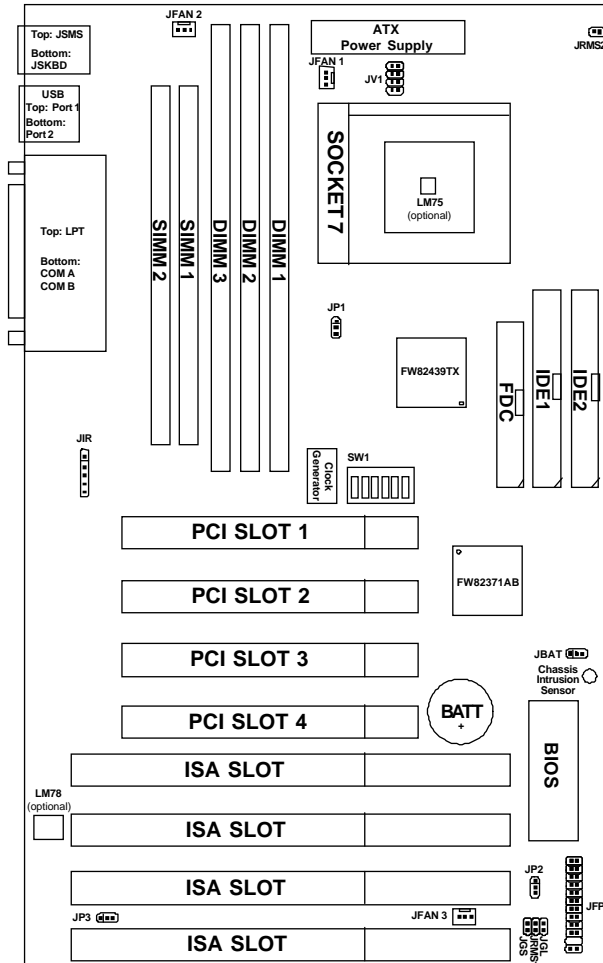
- Poly Fuse used by keyboard and USB devices
- Keyboard password wake up system(reserved)
- CPU Vcore voltage protect
- Meets ACPI specifications
- Power ON/OFF switch connector on board
- Soft Power-Off
- Ring Wake-Up
- Alarm Wake-Up

## 1.2 Parts of the Mainboard



|          |                                   |  |
|----------|-----------------------------------|--|
| <b>A</b> | <b>PS/2® Ports</b>                | <b>Top: Mouse</b><br><b>Bottom: Keyboard</b>                 |
| <b>B</b> | <b>USB Ports</b>                  | <b>Top: Port 1</b><br><b>Bottom: Port 2</b>                  |
| <b>C</b> | <b>COM/LPT Ports</b>              | <b>Top: Parallel Port</b><br><b>Bottom: Two Serial Ports</b> |
| <b>D</b> | <b>Four 32-Bit PCI SLOTS</b>      |  |
| <b>E</b> | <b>LM78</b>                       |  |
| <b>F</b> | <b>Four 16-Bit ISA SLOTS</b>      |  |
| <b>G</b> | <b>Flash BIOS</b>                 |  |
| <b>H</b> | <b>Coin Type Battery</b>          |  |
| <b>I</b> | <b>Chassis Intrusion Sensor</b>   |  |
| <b>J</b> | <b>Intel® 82371AB (PIIX 4)</b>    |  |
| <b>K</b> | <b>Intel® 82489TX</b>             |  |
| <b>L</b> | <b>CPU Socket 7</b>               |  |
| <b>M</b> | <b>ATX 20-Pin Power Connector</b> |  |
| <b>N</b> | <b>Three 168-PIN DIMM SOCKETS</b> |  |
| <b>O</b> | <b>Two 72-PIN SIMM SOCKETS</b>    |  |

### 1.3 Mainboard Layout



MS-5158

## Chapter 2

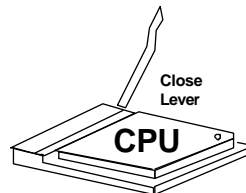
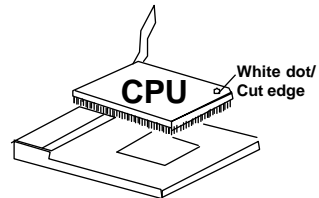
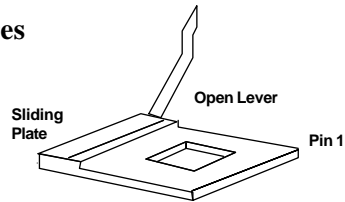
### HARDWARE INSTALLATION

#### 2.1 Central Processing Unit: CPU

The MS-5158 system board operates with **Intel® Pentium®/Pentium® with MMX™ technology, Cyrix® 6x86/6x86L/6x86MX** and **AMD® K5/K6** processors. It could operate with 2.1V to 3.5V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation, a DIP switch (SW1) to set the proper speed for the CPU and a Jumper block (JV1) for setting the CPU voltage. The CPU should always have a cooling fan attached to prevent overheating.

##### 2.1-1 CPU Installation Procedures

1. Pull the lever sideways away from the socket. Then raise the lever up to a 90-degree angle.
2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then, insert the CPU. It should insert easily.
3. Press the lever down to complete the installation.



### 2.1-2 CPU Core Speed Derivation Procedure

The mainboard uses two kind of Clock generator: ICS9148-04 and IMI643. These two clock generator have different clock frequency.

1. The DIP Switch SW1 (4, 5, and 6) is used to adjust the CPU clock frequency.

#### A. Clock Generator: ICS9148-04

| <b>SW1</b> |          |          | <b>CPU</b>   |
|------------|----------|----------|--------------|
| <b>4</b>   | <b>5</b> | <b>6</b> | <b>Clock</b> |
| ON         | ON       | ON       | 50MHz        |
| ON         | OFF      | OFF      | 60MHz        |
| OFF        | OFF      | OFF      | 66.6MHz      |
| OFF        | ON       | OFF      | 75MHz        |
| ON         | OFF      | ON       | 83MHz        |

#### B. Clock Generator: IMI643

| <b>SW1</b> |          |          | <b>CPU</b>   |
|------------|----------|----------|--------------|
| <b>4</b>   | <b>5</b> | <b>6</b> | <b>Clock</b> |
| OFF        | OFF      | ON       | 50MHz        |
| ON         | ON       | OFF      | 55MHz        |
| ON         | OFF      | OFF      | 60MHz        |
| OFF        | OFF      | OFF      | 66.8MHz      |
| OFF        | ON       | OFF      | 75MHz        |
| ON         | ON       | ON       | 83MHz        |

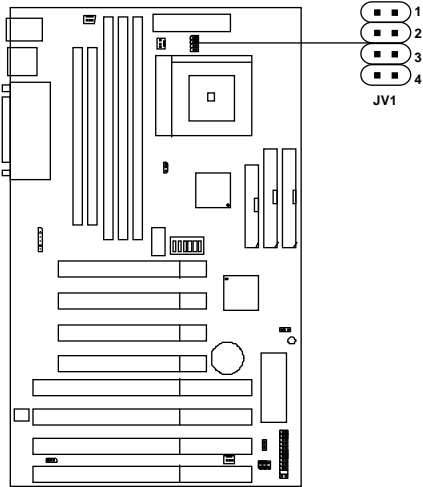
2. The DIP Switch SW1 (1, 2, and 3) is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

$$\begin{array}{llll}
 \text{If} & \text{CPU Clock} & = & 66\text{MHz} \\
 & \text{Core/Bus ratio} & = & 3/2 \\
 \text{then} & \text{CPU core speed} & = & \text{Host Clock} \times \text{Core/} \\
 & & & \text{Bus ratio} \\
 & & = & 66\text{MHz} \times 3/2 \\
 & & = & 100\text{MHz}
 \end{array}$$








| SW1 |     |     | CPU            |
|-----|-----|-----|----------------|
| 1   | 2   | 3   | Core/Bus Ratio |
| OFF | OFF | OFF | 1.5 /3.5       |
| ON  | OFF | OFF | 2              |
| ON  | ON  | OFF | 2.5            |
| OFF | ON  | OFF | 3              |
| ON  | OFF | ON  | 4              |
| ON  | ON  | ON  | 4.5            |

3. The PCI Bus Clock is the CPU Clock Frequency divided by 2.

**2.1-3 CPU Voltage Setting: JV1**

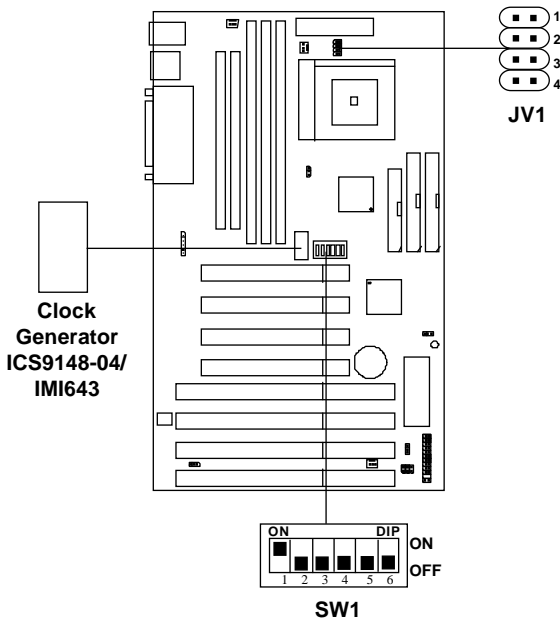


| <b>V I/O</b> | <b>Vcore</b> | <b>JV1</b> |
|--------------|--------------|------------|
| <b>3.5</b>   | <b>3.5</b>   |            |
| <b>3.3</b>   | <b>3.3</b>   |            |
| <b>3.3</b>   | <b>3.2</b>   |            |
| <b>3.3</b>   | <b>2.9</b>   |            |

| V I/O | Vcore | JV1   |
|-------|-------|---|
| 3.3   | 2.8   |    |
| 3.3   | 2.5   |    |
| 3.3   | 2.4   |    |
| 3.3   | 2.3   |    |
| 3.3   | 2.2   |    |
| 3.3   | 2.1   |   |
| 3.3   | 2.0   |  |

### 2.1-4 CPU Speed and Voltage Setting: SW1 & JV1

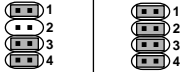
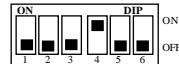

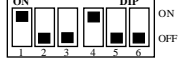




To adjust the speed and voltage of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU specifications*). This mainboard uses two different Clock Generator, so before adjusting SW1, check your clock generator. Then refer to **Table 2.1 (Intel® processors)**, **Table 2.2 (Cyrix® processors)** and **Table 2.3 (AMD® processors)** for proper setting.




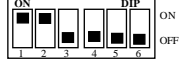

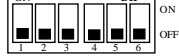
**Note:** The table provided can be used by both clock generator. The only difference with the **ICS9148-04** and **IMI643** Clock Generator is the CPU clock frequency of 50, 55, 83 MHz. Since these 3 frequencies are not supported by the current CPUs, so the jumper settings for both regulator are the same.

Table 2.1 Intel® processors

a. Intel® Pentium® processors

| CPU Type | CPU Voltage |       | CPU Speed   |   |
|----------|-------------|-------|---|---|
|          | VI/O        | Vcore | JV1   | SW1   |
| 90 MHz   | 3.38/3.52   |       |  |  |
| 100 MHz  |             |       |   |  |
| 120 MHz  |             |       |   |  |
| 133 MHz  |             |       |   |  |
| 150 MHz  |             |       |   |  |
| 166 MHz  |             |       |   |  |
| 200 MHz  |             |       |   |  |

b. Intel® Pentium® processors with MMX™ technology




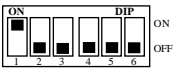

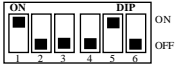

|         |     |     |   |   |
|---------|-----|-----|---|---|
| 166 MHz | 3.3 | 2.8 |  |  |
| 200 MHz |     |     |   |  |
| 233 MHz |     |     |   |  |

**Note:** If you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.


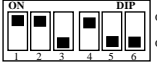





**Table 2.2 Cyrix® 6x86/6x86L/6x86MX processors**

Cyrix® CPU uses PR to rate the speed of their processors based on Intel® processor core speed. For example PR150 (120MHz) has 150MHz core speed of Intel® processors but has 120MHz core speed in Cyrix®. Cyrix® CPU should always uses a more powerful fan (ask vendor for proper cooling fan).

**a. Cyrix® 6x86/6x86L processors**

| CPU Type       | CPU Voltage |       |  | CPU Speed   |
|----------------|-------------|-------|--|---|
|                | VI/O        | Vcore | JV1  | SW1   |
| 6x86<br>PR150  | 3.5         |       |   |  |
| 6x86<br>PR166  |             |       |  |   |
| 6x86L<br>PR166 | 3.3         | 2.8   |   |  |
| 6x86<br>PR200  | 3.5         |       |   |  |
| 6x86L<br>PR200 |             |       |  |   |
|                | 3.3         | 2.8   |  |   |

**b. Cyrix® 6x86MX processors**


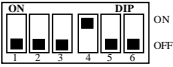
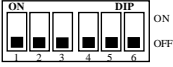

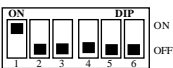

| CPU Type        | CPU Voltage |       |   |          | CPU Speed   |
|-----------------|-------------|-------|---|----------|---|
|                 | VI/O        | Vcore | JV1   |          | SW1   |
| 6x86MX<br>PR166 | 3.3         | 2.9   |  | 60 x 2.5 |  |
| 6x86MX<br>PR200 |             |       |   | 66 x 2.5 |  |
| 6x86MX<br>PR233 |             |       |   | 75 x 2.5 |  |
| 6x86MX<br>PR266 |             |       |   | 66 x 3   |  |
|                 |             |       |   | 75 x 3   |  |
|                 |             |       |   | 66 x 3.5 |  |

**Note:** If you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.






**Table 2.3 AMD® processors**

AMD® K5/K6 CPU uses PR to rate the speed of their processors based on Intel® processor core speed . For example PR133(100MHz) has 133MHz core speed of Intel® processors but has 100MHz core speed in AMD® K5 processor.

**a. AMD® K5 processors**

| CPU Type    | CPU Voltage |       |   | CPU Speed   |
|-------------|-------------|-------|---|---|
|             | VI/O        | Vcore | JV1   | SW1   |
| PR90        | 3.52        |       |  |  |
| PR100       |             |       |   |  |
| PR120       |             |       |   |  |
| PR133/PR150 |             |       |   |  |
| PR166       |             |       |   |  |

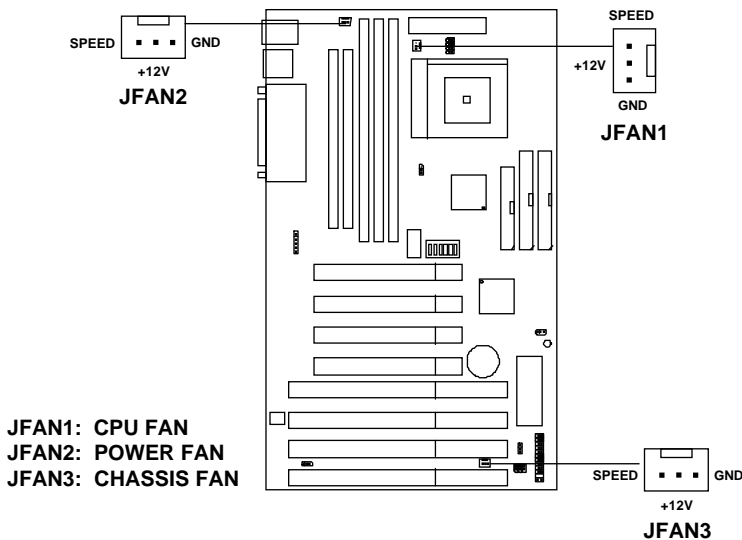
**b. AMD® K6 processors**

|       |     |     |   |   |
|-------|-----|-----|---|---|
| PR166 | 3.3 | 2.9 |  |  |
| PR200 |     |     |   |  |
| PR233 | 3.3 | 3.2 |  |  |

**Note:** If you encounter a CPU with different voltage, just go to **Section 2.1-3** and look for the proper voltage settings.

### 2.1-5 CPU Fan Power Connector: JFAN1 / JFAN2 & JFAN3 (Reserved)

These connectors support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has LM78 on board, you need to use a specially designed fan with speed sensor to take advantage of LM78's CPU fan control function.

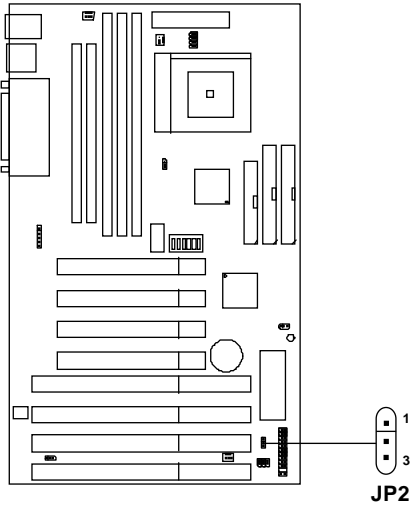


For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. LM78 will count and report the fan rotation speed.

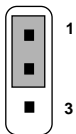
- Note:**
1. JFAN2 & JFAN3 are the Power and Chassis Cooling Fan Speed Connectors (reserved for LM78 System Hardware Monitor Option.)
  2. Always consult vendor for proper CPU cooling fan.

## **2.2 BIOS Reflash Boot Block Feature: JP2**

This jumper is for setting the Flash ROM BIOS.

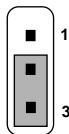


**JP2**



**PNP Setting  
(cannot update new BIOS)**

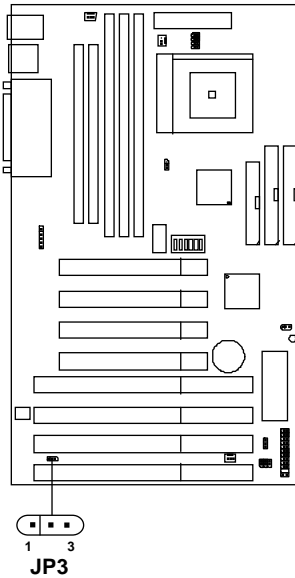
**JP2**



**Update NEW BIOS**

## 2.3 Internal Modem Ring Wake-up Connector: JP3

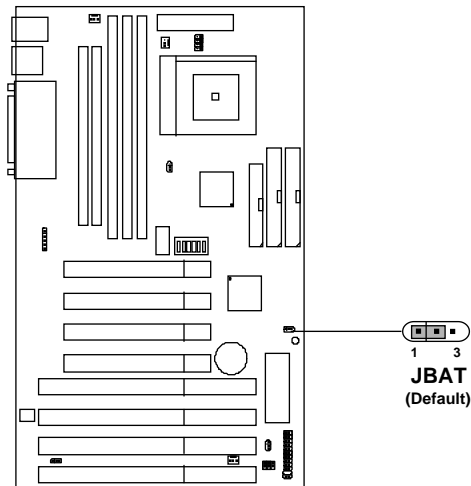
The JP3 connector is used for special internal modem that has 3 pins that support the ring power on function. The 3 pins of the internal modem should have the same pin definition with JP3.



|        |                   |
|--------|-------------------|
| Pin 1: | Standby 5V        |
| Pin 2: | Ring Single Input |
| Pin 3: | Ground            |

## 2.4 Battery Connector: JBAT

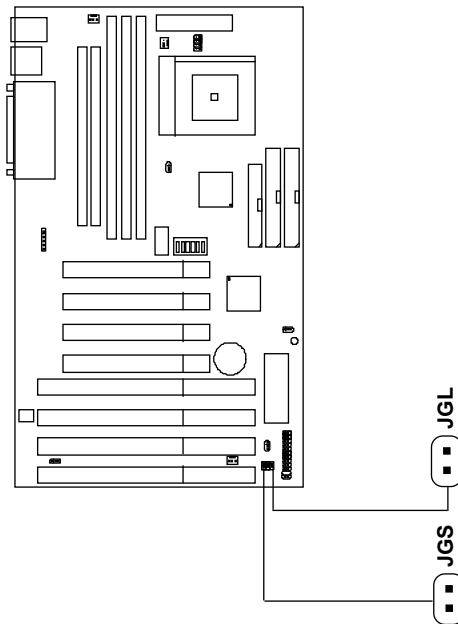
A battery must be used to retain the mainboard configuration in CMOS RAM. To retain the on-board battery you must always short pins 1,2 of JBAT.



**Note:** You can clear CMOS by shorting 2-3 pin, while the system is off. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on, it will damage the mainboard.

## 2.5 Power Saving Switch Connector: JGS/ Power Saving LED Connector: JGL

Attach a power saving switch to JGS. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up. JGL can be connected with LED to monitor the JGS. This will lit while the system is in suspend mode.

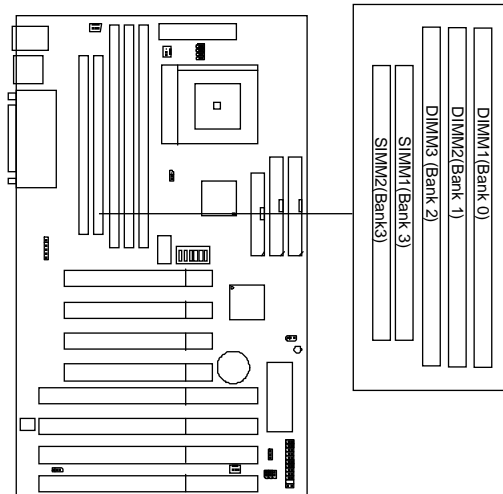


**Note:** To make JGS function, you must go to the BIOS power management and enable it there.

## 2.6 Memory Installation

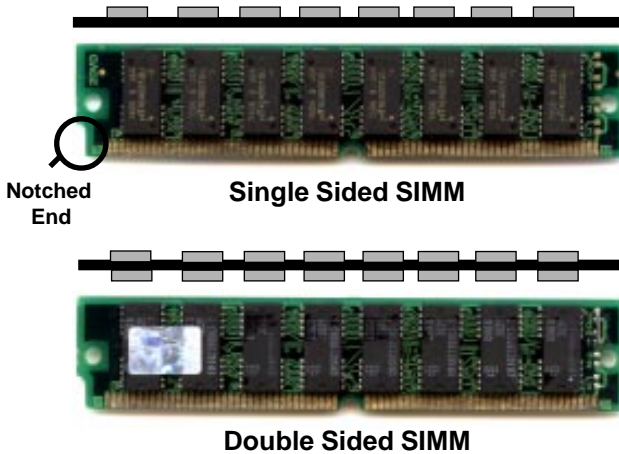
### 2.6-1 Memory Bank Configuration

The mainboard provides two 72-pin SIMMs (Single In-Line Memory Module) and three 168-pin DIMM(Double In-Line Memory) sockets. It supports five memory banks for a maximum of 256MB memory. You can use SIMM from 4MB, 8MB, 16MB, 32MB, 64MB to 128MB, and DIMM from 8MB, 16MB, 32MB, 64MB, 128MB to 256MB.

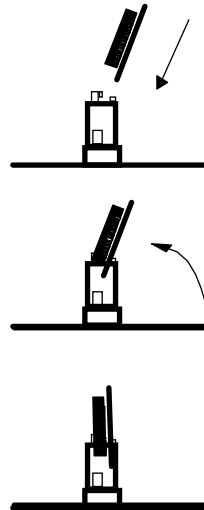


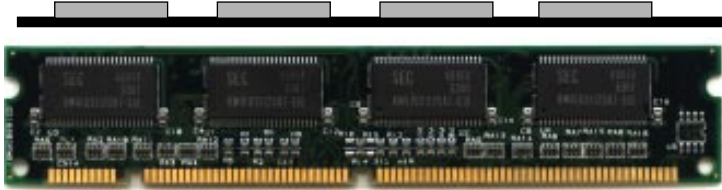
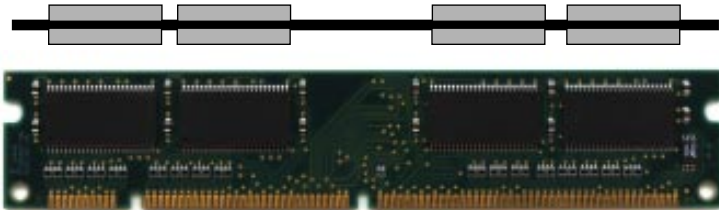
**2.6-2 Memory Installation Procedures:**

**A. How to install SIMM Module**

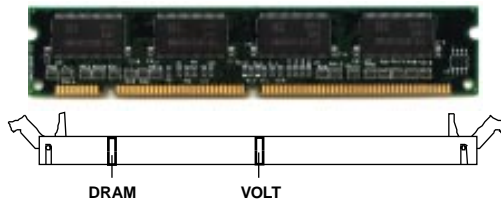


1. The SIMM slot has a “*Plastic Safety Tab*” and the SIMM memory module has a “*Notched End*”, so the SIMM memory module can only fit in one direction.
2. Insert the SIMM memory modules into the socket at 45-degree angle. Then, push into a vertical position so that it will snap into place.
3. The Mounting Holes and Metal Clips should fit over the edge and hold the SIMM memory modules in place.



**B. How to install DIMM Module****Single Sided DIMM****Double Sided DIMM**

1. The DIMM slot has two keys marked “VOLT and DRAM” , so the DIMM memory module can only fit in one direction.
2. Insert the DIMM memory module vertically into the DIMM slot. Then, push it in.



3. Close the plastic clip at the side of the DIMM slot.

**2.6-3 Memory Population Rules**

1. Make sure that the SIMM banks are using the same type and equal size density memory.
  2. To operate properly, at least two 72-pin SIMM module must be installed in the same bank or one 168-pin DIMM module must be installed. The system cannot operate with only one 72-pin SIMM module.
  3. Before using SIMM and DIMM modules, look at the chart below and the chart on the next page.
- A. 32MB SDRAM Configuration

| DIMM1 | DIMM2 | DIMM3 | SIMM1/SIMM2 |
|-------|-------|-------|-------------|
| D/S   | D/S   | D     | N           |
| D/S   | D/S   | S     | S           |
| D/S   | D/S   | N     | D/S         |

B. 64MB SDRAM Configuration

| DIMM1 | DIMM2 | DIMM3 | SIMM1/SIMM2 |
|-------|-------|-------|-------------|
| D/S   | D/S   | N     | N           |

**D-Double                  S-Single                  N-None**

4. Each RAS can not exceed 16 pcs of DRAM.
5. It is not recommended to mix 3V SDRAM with 5V EDO/FP, for it may cause unreliability.

**Table 2.6-1 Minimum (upgradeable) and Maximum Memory Size for each configuration for SIMM**

| DRAM Tech. | DRAM Density & Width | DRAM Addressing | Address Size |        | MB/SIMM                 |                         |
|------------|----------------------|-----------------|--------------|--------|-------------------------|-------------------------|
|            |                      |                 | Row          | Column | Single no. Side(S) pcs. | Double no. Side(D) pcs. |
| 4M         | 1Mx4                 | SYMM            | 10           | 10     | 4MBx8                   | 8MBx16                  |
| 16M        | 1Mx16                | SYMM            | 10           | 10     | 4MBx2                   | 8MBx4                   |
|            | 1Mx16                | ASYM            | 12           | 8      | 4MBx2                   | 8MBx4                   |
|            | 2Mx8                 | ASYM            | 11           | 10     | 8MBx4                   | 16MBx8                  |
|            | 4Mx4                 | SYMM            | 11           | 11     | 16MBx8                  | 32MBx16                 |
| 64M        | 4Mx4                 | ASYM            | 12           | 10     | 16MBx8                  | 32MBx16                 |
|            | 2Mx32                | ASYM            | 12           | 9      | 8MBx1                   | 16MBx2                  |
|            | 4Mx16                | SYMM            | 11           | 11     | 16MBx2                  | 32MBx4                  |
|            | 4Mx16                | ASYM            | 12           | 10     | 16MBx2                  | 32MBx4                  |
|            | 8Mx8                 | ASYM            | 12           | 11     | 32MBx4                  | 64MBx8                  |
|            | 16Mx4                | SYMM            | 12           | 12     | 64MBx8                  | 128MBx16                |

**Table 2.6-2 Minimum (upgradeable) and Maximum Memory Size for each configuration for DIMM**

| DRAM Tech. | DRAM Density & Width | DRAM Addressing | Address Size |        | MB/DIMM                 |                         |
|------------|----------------------|-----------------|--------------|--------|-------------------------|-------------------------|
|            |                      |                 | Row          | Column | Single no. Side(S) pcs. | Double no. Side(D) pcs. |
| 16M        | 1Mx16                | ASYM            | 12           | 8      | 8MBx4                   | 16MBx8                  |
|            | 2Mx8                 | ASYM            | 12           | 9      | 16MBx8                  | 32MBx16                 |
|            | 4Mx4                 | ASYM            | 12           | 10     | 32MB                    | 64MB                    |
| 64M        | 2Mx32                | ASYM            | 12           | 10     | 32MBx2                  | 64MBx4                  |
|            | 2Mx32                | ASYM            | 13           | 8      | 16MBx2                  | 32MBx4                  |
|            | 4Mx16                | ASYM            | 14           | 8      | 32MB                    | 64MB                    |
|            | 8Mx8                 | ASYM            | 14           | 9      | 64MB                    | 128MB                   |
|            | 16Mx4                | ASYM            | 14           | 10     | 128MB                   | 256MB                   |

### 2.7 Case Connector: JFP

The Turbo LED, Hardware Reset, Key Lock, Power LED, Power Saving LED, Sleep Switch, Speaker and HDD LED are all grouped in JFP connector block for easy installation.

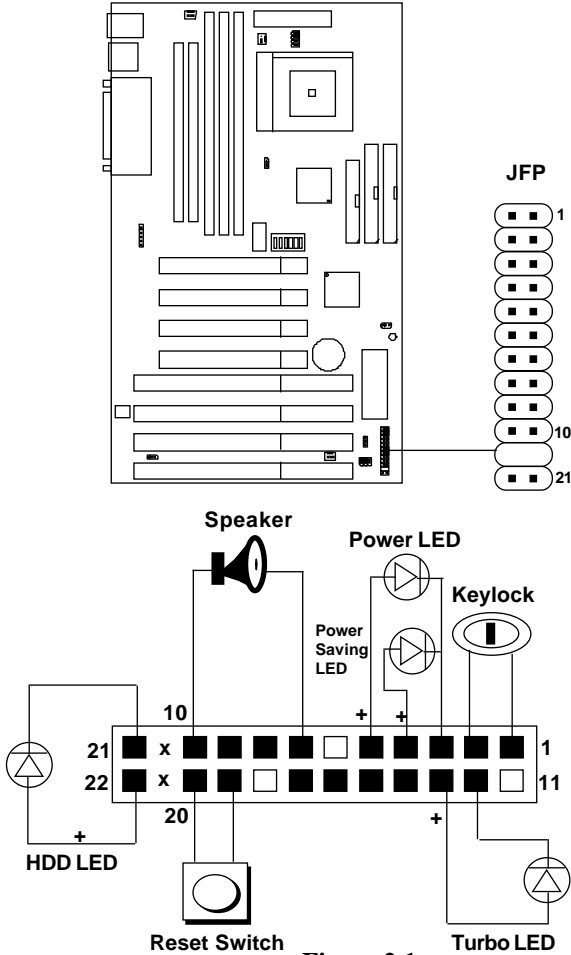


Figure 2.1

### **2.7-1 Turbo LED**

This mainboard is always on Turbo speed. Connecting a Turbo LED will just lit the LED. (See Figure 2.1)

### **2.7-2 Hardware Reset**

Reset switch are used to reboot the system rather than turning the power ON/OFF. Avoid rebooting the system when the HDD LED is lit. You can connect the Reset switch from the system case to this pin. (See Figure 2.1)

### **2.7-3 Keylock**

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin. (See Figure 2.1)

### **2.7-4 Power LED**

The Power LED is always lit while the system power is on. You can connect the Power LED from the system case to this pin. (See Figure 2.1)

### **2.7-5 Speaker**

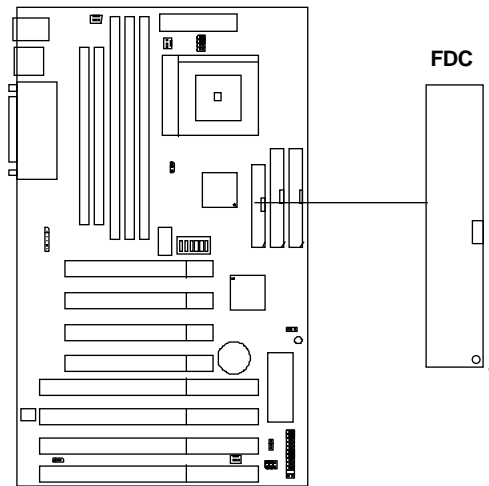
Speaker from the system case are connected to this pin. (See Figure 2.1)

### **2.7-6 HDD LED**

HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin. (See Figure 2.1).

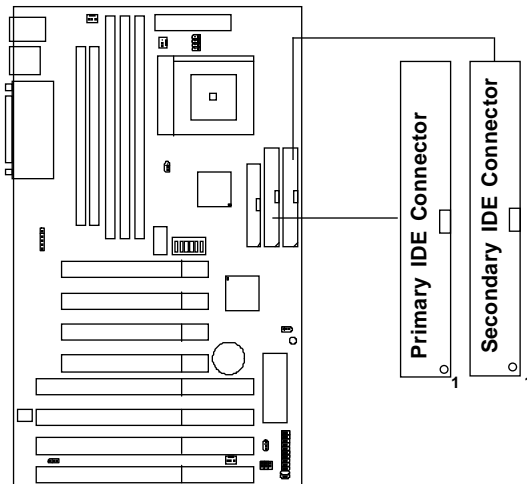
## **2.8 Floppy Disk Connector: FDC**

The mainboard also provides a standard floppy disk connector, FDC that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.



## 2.9 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides for two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2.



### IDE1(primary IDE connector)

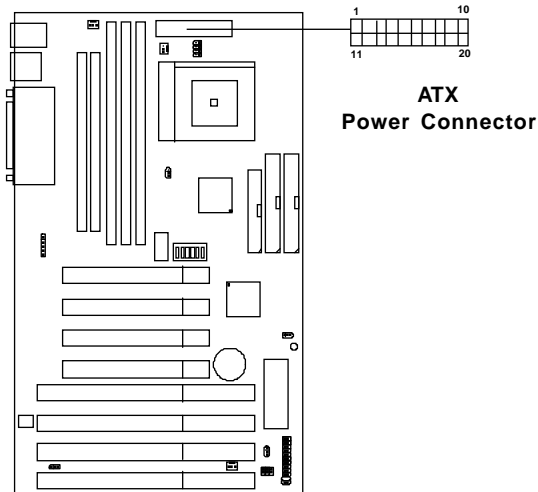
The first hard disk should always be connected to IDE1. IDE1 can connect a Master and a Slave drive.

### IDE2(secondary IDE connector)

IDE2 can connect a Master and a Slave drive.

**2.10 ATX 20-pin Power Connector: JWR1**

This type of connector already supports the remote ON/OFF function. However, you need to connect the **Remote Power On/OFF switch (JRMS1 or JRMS2)**.

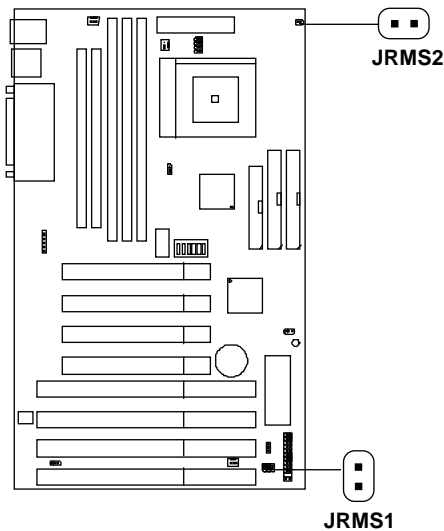


**ATX Power Connector Pin Description**

|           |           |           |           |           |           |           |           |           |           |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>20</b> | <b>19</b> | <b>18</b> | <b>17</b> | <b>16</b> | <b>15</b> | <b>14</b> | <b>13</b> | <b>12</b> | <b>11</b> |
| 5V        | 5V        | -5V       | GND       | GND       | GND       | PS_ON     | GND       | -12V      | 3.3V      |
| 12V       | 5V_SB     | PW_OK     | GND       | 5V        | GND       | 5V        | GND       | 3.3V      | 3.3V      |
| <b>10</b> | <b>9</b>  | <b>8</b>  | <b>7</b>  | <b>6</b>  | <b>5</b>  | <b>4</b>  | <b>3</b>  | <b>2</b>  | <b>1</b>  |

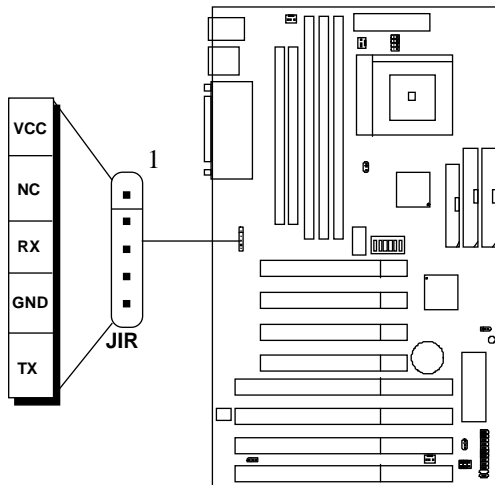
## 2.11 Remote Power On/Off Switch: JRMS1/JRMS2

Connect to a 2-pin push button switch to JRMS1 or JRMS2. Every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON. During ON stage: push once and the system goes to sleep mode, push it more than 4 seconds will change its status from ON to OFF. This is used for ATX type power supply. You can program this through BIOS. Refer to Soft-Off by PWR-BTTN in BIOS.

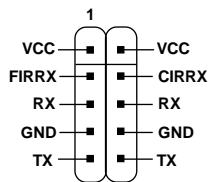


## 2.12 Infrared Module Connector: JIR

The mainboard provides a 5-pin infrared connector(IR) for IR module or 2 x 5-pin module (use only for W83977ATF). This connector is for optional wireless transmitting and receiving infrared module. If you want to use this function, you must configure the setting through BIOS setup.

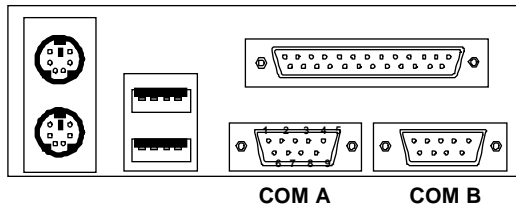


**Reserved for W83977ATF**



**2.13 Serial Port Connectors: COM A & COM B**

The mainboard has two serial ports COMA and COMB. These two ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into these connectors.



**Serial Ports (9-pin Male)**

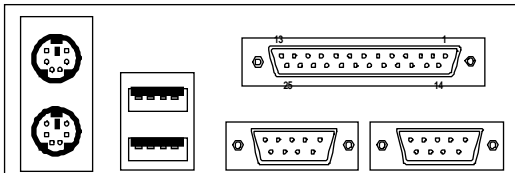
**PIN DEFINITION**

| <b>Pin #</b> | <b>Definition</b>                         |
|--------------|---|
| 1            | <b>DCD</b> (Data Carry Detect)            |
| 2            | <b>SIN</b> (Serial In or Receive Data)    |
| 3            | <b>SOUT</b> (Serial Out or Transmit Data) |
| 4            | <b>DTR</b> (Data Terminal Ready)          |
| 5            | <b>GND</b>                                |
| 6            | <b>DSR</b> (Data Set Ready)               |
| 7            | <b>RTS</b> (Request To Send)              |
| 8            | <b>CTS</b> (Clear To Send)                |
| 9            | <b>RI</b> (Ring Indicate)                 |

**2.14 Parallel Port Connector: LPT**

The mainboard provides a connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP).

**Parallel Port (25-pin Female)  
LPT**



**PIN DEFINITION**

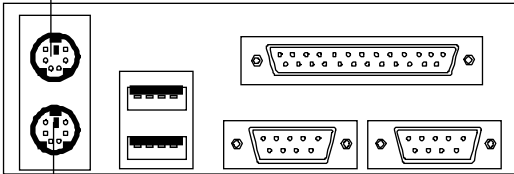
| <b>PIN #</b> | <b>DEFINITION</b> | <b>PIN #</b> | <b>DEFINITION</b> |
|--------------|-------------------|--------------|-------------------|
| 1            | STROBE            | 14           | AUTO FEED#        |
| 2            | DATA0             | 15           | ERR#              |
| 3            | DATA1             | 16           | INIT#             |
| 4            | DATA2             | 17           | SLIN#             |
| 5            | DATA3             | 18           | GND               |
| 6            | DATA4             | 19           | GND               |
| 7            | DATA5             | 20           | GND               |
| 8            | DATA6             | 21           | GND               |
| 9            | DATA7             | 22           | GND               |
| 10           | ACK#              | 23           | GND               |
| 11           | BUSY              | 24           | GND               |
| 12           | PE                | 25           | GND               |
| 13           | SELECT            |              |                   |

## **2.15 Keyboard Connector: PSKBC Mouse Connector: PSMSC**

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.

It also provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and are shown below:

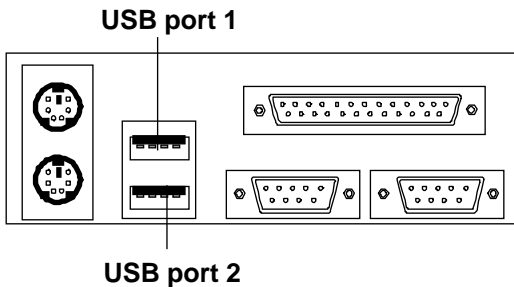
**PS/2® Mouse (6-pin Female)**



**PS/2® Keyboard (6-pin Female)**

## **2.16 USB Connectors: USB**

The mainboard provide **USB(Universal Serial Bus)** connectors for attaching USB devices like keyboard, mouse or etc. You can plug it directly to this connector.



## **Chapter 3**

### **AWARD® BIOS SETUP**

Award's® BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM), so that it retains the Setup information when the power is turned off.

## 3.1 Entering Setup

Power on the computer and press <Del> immediately to allow you to enter Setup. The other way to enter Setup is to power on the computer. When the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC>  
OR <DEL> KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

PRESS <F1> TO CONTINUE, <CTRL-ALT-ESC>  
OR <DEL> TO ENTER SETUP

## 3.2 Getting Help

### Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up 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 <F1> or <Esc>.



**Standard CMOS Setup**

This setup page includes all the items in a standard compatible BIOS.

**BIOS Features Setup**

This setup page includes all the items of Award® special enhanced features.

**Chipset Features Setup**

This setup page includes all the items of chipset special features.

**Power Management Setup**

This category determines the power consumption for system after setting the specified items. Default value is Disable.

**PCI Configuration Setup**

This category specifies the IRQ level for PCI and ISA devices.

**Supervisor Password/User Password**

Change set or disable password. This function allows the user access to the system and setup or just setup.

**Load Setup Defaults**

Chipset defaults indicates the values required by the system for the maximum performance.

**IDE HDD Auto Detection**

Automatically configure hard disk parameters.

**Save & Exit Setup**

Save CMOS value changes to CMOS and exit setup.

**Exit Without Saving**

Abandon all CMOS value changes and exit setup.

### 3.4 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

**ROM PCI/ISA BIOS (2A59IM4A)**  
**STANDARD CMOS SETUP**  
**AWARD SOFTWARE, INC.**

|   |      |      |      |                             |         |          |             |
|---|------|------|------|-----------------------------|---------|----------|-------------|
| Date(mm:dd:yy): Fri, Feb 28,1997  |      |      |      |                             |         |          |             |
| Time(hh:mm:ss): 00:00:00  |      |      |      |                             |         |          |             |
| HARD DISKS  | TYPE | SIZE | CYLS | HEADS                       | PRECOMP | LANDZONE | SECTOR MODE |
| Primary Master:   | Auto | 0    | 0    | 0                           | 0       | 0        | AUTO        |
| Primary Slave :   | Auto | 0    | 0    | 0                           | 0       | 0        | AUTO        |
| Secondary Master :  | Auto | 0    | 0    | 0                           | 0       | 0        | AUTO        |
| Secondary Slave :   | Auto | 0    | 0    | 0                           | 0       | 0        | AUTO        |
| Drive A : 1.44M,3.5in.  |      |      |      | Base Memory: 640K           |         |          |             |
| Drive B : None  |      |      |      | Extended Base Memory:15360K |         |          |             |
| Video : EGA/VGA   |      |      |      | Other Memory: 384K          |         |          |             |
| Halt On : All, but Keyboard   |      |      |      | Total Memory: 16384K        |         |          |             |
| ESC : Quit      ↑↓→← : Select Item      PU/PD/+/- : Modify<br>F1 : Help      (Shift)F2 : Change Color |      |      |      |                             |         |          |             |

**Date**

The date format is <day><month> <date> <year>.

|              |  |
|--------------|--|
| <b>Day</b>   | Day of the week, from Sun to Sat, determined by BIOS. Read-only. |
| <b>month</b> | The month from Jan. through Dec.                                 |
| <b>date</b>  | The date from 1 to 31 can be keyed by numeric function keys.     |
| <b>year</b>  | The year, depends on the year of the BIOS                        |

**Time**

The time format is <hour> <minute> <second>.

**PrimaryMaster/PrimarySlave  
SecondaryMaster/Secondary Slave**

These categories identify the types of 2 channels that have been installed in the computer. There are 45 pre-defined types and 4 user definable types for Enhanced IDE BIOS. Type 1 to Type 45 are pre-defined. Type User is user-definable.

Press PgUp/<+> or PgDn/<-> to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be  
“Type 1”.

If the controller of HDD interface is SCSI, the selection shall be  
“None”.

If the controller of HDD interface is CD-ROM, the selection shall be  
“None”.

|                 |                     |
|-----------------|---------------------|
| <b>CYLS.</b>    | number of cylinders |
| <b>HEADS</b>    | number of heads     |
| <b>PRECOMP</b>  | write precom        |
| <b>LANDZONE</b> | landing zone        |
| <b>SECTORS</b>  | number of sectors   |
| <b>MODEHDD</b>  | access mode         |

### 3.5 BIOS Features Setup

ROM PCI/ISA BIOS (2A59IM4A)  
 BIOS FEATURES SETUP  
 AWARD SOFTWARE, INC.

|                          |            |                                   |            |
|--------------------------|------------|-----------------------------------|------------|
| Virus Warning            | : Disabled | 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 |
| Boot Sequence            | : A,C,SCSI | D4000-D7FFF Shadow                | : Disabled |
| Swap Floppy Drive        | : Disabled | D8000-DBFFF Shadow                | : Disabled |
| Boot up Floppy Seek      | : Enabled  | DC000-DFFFF Shadow                | : Disabled |
| Boot up NumLock status   | : On       |                                   |            |
| Boot up System Speed     | : High     |                                   |            |
| Typematic Rate Setting   | : Disabled |                                   |            |
| Typematic Rate(char/sec) | : 6        |                                   |            |
| Typematic Delay(Msec)    | : 250      |                                   |            |
| Security Option          | : Setup    |                                   |            |
| PCI/VGA palette snoop    | : Disabled |                                   |            |
| OS select for DRAM>64MB  | : Non-OS2  |                                   |            |
|                          |            | Esc : Quit    ↑↓→← : Select item  |            |
|                          |            | F1 : Help      PU/PD/+/- : modify |            |
|                          |            | F5 : Old Value(Shift) F2 : Color  |            |
|                          |            | F6 : Load BIOS Defaults           |            |
|                          |            | F7 : Load Setup Defaults          |            |

#### Virus Warning

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear. For the meantime, you can run an anti-virus program to locate the problem.

#### **!WARNING!**

Disk Boot Sector is to be modified  
 Type "Y" to accept write or "N" to abort write  
 Award Software, Inc.

**Disabled** (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

**Enabled** Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

**Note:** *This function is available only for DOS and other OS that do not trap INT13.*

### **CPU Internal Cache**

The default value is Enabled. If your CPU is without Internal Cache then this item “CPU Internal Cache” will not be shown.

|                          |               |
|--------------------------|---------------|
| <b>Enabled</b> (default) | Enable cache  |
| <b>Disabled</b>          | Disable cache |

**Note:** The internal cache is built in the processor.

### **CPU External Cache**

Choose Enabled or Disabled. This option enables the level 2 cache memory.

### **Quick Power On Self Test**

This category speeds up Power On Self Test (POST) after you power on the computer. If this is set to Enabled, BIOS will shorten or skip some check items during POST.

|                           |                   |
|---------------------------|-------------------|
| <b>Enabled</b>            | Enable quick POST |
| <b>Disabled</b> (default) | Normal POST       |

### **Boot Sequence**

This category determines which drive the computer searches first for the disk operating system (i.e., DOS). The settings are A,C,SCSI/C,A,SCSI/C,CD-ROM,A/CD-ROM,C,A/D,A,SCSI/E,A,SCSI/F,A,SCSI/SCSI,A,C/SCSI,C,A/C only. Default value is A,C,SCSI.

### **Swap Floppy Drive**

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

### **Boot Up Floppy Seek**

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M are all 80 tracks.

**Enabled**(default) BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.

**Disabled** BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

### **Boot Up NumLock Status**

The default value is On.

**On**(default) Keypad is numeric keys.

**Off** Keypad is arrow keys.

### **Boot Up System Speed**

This selects the speed that the system will run at immediately after power up.

**High**(default) Sets the speed to high.

**Low** Sets the speed to low.

**Gate A20 Option**

- Normal** The A20 signal is controlled by keyboard controller or chipset hardware.
- Fast(default)** Default : Fast. The A20 signal is controlled by Port 92 or chipset specific method.

**Typematic Rate Setting**

This determines the typematic rate.

- Enabled** Enable typematic rate and typematic delay programming.
- Disabled(default)** Disable typematic rate and typematic delay programming. The system BIOS will use default value of this 2 items and the default is controlled by keyboard.

**Typematic Rate (Chars/Sec)**

- |             |                          |
|-------------|--------------------------|
| 6 (default) | 6 characters per second  |
| 8           | 8 characters per second  |
| 10          | 10 characters per second |
| 12          | 12 characters per second |
| 15          | 15 characters per second |
| 20          | 20 characters per second |
| 24          | 24 characters per second |
| 30          | 30 characters per second |

**Typematic Delay**

Choose the length of delay from the time you press a key and the character starts repeating. (Units are mil-secs)

### Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

|                        |   |
|------------------------|---|
| <b>System</b>          | The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt. |
| <b>Setup</b> (default) | The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.    |

### PCI VGA Palette Snooping

Choose Disabled or Enabled. Some graphic controllers which are not VGA compatible, take the output from a VGA controller and map it to their display as a way to provide the boot information and the VGA compatibility.

However, the color information coming from the VGA controller is drawn from the palette table inside the VGA controller to generate the proper colors, and the graphic controller needs to know what is in the palette of the VGA controller. To do this, the non-VGA graphic controller watches for the Write access to the VGA palette and registers the snoop data. In PCI based systems, where the VGA controller is on the PCI bus and a non-VGA graphic controller is on an ISA bus, the Write Access to the palette will not show up on the ISA bus if the PCI VGA controller responds to the Writes.

In this case, the PCI VGA controller should not respond to the Write. It should only snoop the data and permit the access to be forwarded to the ISA bus. The non-VGA ISA graphic controller can then snoop the data on the ISA bus. Unless you have the above situation, you should disable this option.

|                           |                       |
|---------------------------|-----------------------|
| <b>Disabled</b> (default) | Disables the function |
| <b>Enabled</b>            | Enables the function  |

### OS Selection for DRAM > 64MB

Allows OS/2® to be used with > 64 MB of DRAM. Settings are Non-OS/2® (default) and OS/2®. Set to OS/2® if using more than 64MB and running OS/2®.

---

**Video BIOS Shadow**

Determines whether video BIOS will be copied to RAM for faster execution. Video shadow will increase the video performance.

**Enabled** (default)

Video shadow is enabled

**Disabled**

Video shadow is disabled

**C8000 - CFFFF Shadow/E8000 - EFFFF Shadow**

Determines whether the optional ROM will be copied to RAM for faster execution.

**Enabled**

Optional shadow is enabled

**Disabled** (default)

Optional shadow is disabled

**Note:** For C8000-DFFFF optional-ROM on PCI BIOS , BIOS will automatically enable the shadow RAM. User does not have to select the item.

### 3.6 Chipset Features Setup

The Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Choose the “CHIPSET FEATURES SETUP” from the Main Menu and the following screen will appear.

ROM PCI/ISA BIOS(2A59IM4A)  
CMOS SETUP UTILITY  
CHIPSET FEATURES SETUP

|                            |             |                                   |
|----------------------------|-------------|-----------------------------------|
| Auto Configuration         | : Enabled   |                                   |
| DRAM Timing                | : 70ns      |                                   |
| DRAM Leadoff Timing        | : 10/6/4    |                                   |
| DRAM Read Burst (EDO/FP)   | : x333/x444 |                                   |
| DRAM Write Burst Timing    | : x333      |                                   |
| Fast EDO Lead Off          | : Disabled  |                                   |
| Refresh RAS# Assertion     | : 3         |                                   |
| Fast RAS to CAS Delay      | : 3         |                                   |
| DRAM Page IDLE Timer       | : 2         |                                   |
| DRAM Enhanced Paging       | : Enabled   |                                   |
| Fast MA to RAS# Delay      | : 2 Clks    |                                   |
| SDRAM (CAS Lat/RAS-to-CAS) | : 3/3       |                                   |
| SDRAM Speculative Read     | : Disabled  |                                   |
| System BIOS Cacheable      | : Disabled  |                                   |
| Video BIOS Cacheable       | : Disabled  |                                   |
| 8 Bit I/O Recovery Time    | : 1         | Esc : Quit    ↑↓→← : Select item  |
| 16 Bit I/O Recovery Time   | : 2         | F1 : Help      PU/PD/+/- : modify |
| Memory Hole at 15M-16M     | : Disabled  | F5 : Old Value(Shift) F2 : Color  |
| PCI 2.1 compliance         | : Disabled  | F6 : Load BIOS Defaults           |
|                            |             | F7 : Load Setup Defaults          |

**Note:** Change these settings only if you are familiar with the chipset.

### Auto Configuration

Choosing Enabled (default) will automatically configure chipset features using default settings. Choose Disable to customize setup.

### DRAM Timing

Sets the DRAM speed at 70ns (default) or 60ns. It will set the speed of the EDO/FP DRAM.

### DRAM Leadoff Timing

To be able to change the setting, Auto configuration must be disable. If the Bus Clock is 75MHz set it to 11/7/4, and if the Bus Clock is 66/60/55 MHz set it to 10/6/4. Default setting is 10/6/4.

### DRAM Read Burst (EDO/FP)

Under Auto config. the BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option which sets the Read Burst time for accessing the DRAM. The timing used depends on the type of DRAM and access time being used. The settings are x222/x333, x333/x444, or x444/x444.

**Note:** If the user chooses DRAM Read Burst (EDO/FP): x333/x444 it signifies that:

- a. 60ns EDO with 75 MHz Bus Clock is set at x333, if the Bus Clock is 66/60/55 MHz, then it is set at x222.
- b. 60ns FP with 75 MHz is set at x444, if the Bus Clock is 66/60/55, then it is set at x333.
- c. 70ns EDO and FP DRAM must increase the burst time. So you must set x222 to x333 and x333 to x444.

### DRAM Write Burst Timing

This option chooses the Write Burst Timing for accessing DRAM. See: DRAM Read Burst Option. Choose x222/x333/x444.

**Fast EDO Lead Off**

Under Auto config, the BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option. Choose Enable or Disable. If the system is using EDO DRAM, choose enable. But if the system is using both EDO and FP DRAM, choose Disable.

**Refresh RAS# Assertion**

The settings are 4 Clks or 5 Clks. Using 60 ns DRAM at 75 Mhz Bus Clock must be set to 5 Clks, while 66/60/55 Mhz Bus Clock must be set to 4 Clks. But if you use 70 ns DRAM, it must be set to 5 Clks.

**Fast RAS to CAS Delay**

The settings are 2 or 3. 2 RAS to CAS delay is set to 2 clock, while 3 RAS to CAS delay is set to 3 clock. The clock is dependent with the DRAM Timing and Bus Clock.

**DRAM Page IDLE Timer**

The settings are 2 Clks, 4 Clks, 6Clks, or 8 Clks. Default settings is 2 Clks.

**DRAM Enhanced Paging**

Choose Enable(default) or Disable.

**Fast MA to RAS# Delay**

The settings are 1 Clks or 2 Clks(default). During 1T, one bus clock is allowed, while 2T allows two bus clock for MA address setup time to RAS assertion. This is also dependent on DRAM Timing.

**SDRAM (CAS Lat/RAS-to-CAS)**

The settings are 3/3 or 2/2. This option is for SDRAM CAS latency time and RAS# to CAS# delay time. The default setting is 3/3.

### **SDRAM Speculative Read**

The settings are enable or disable. If you only use One Bank for SDRAM and there's no EDO or FP mix together, the setting is Enable. If two banks are used by SDRAM, it will automatically be set to disable. The default setting is enable.

### **System BIOS Cacheable**

By choosing Disabled (default) the system BIOS will be shadowed into DRAM only. Enabled will have the system BIOS shadowed and cacheable.

### **Video RAM Cacheable**

Same as system BIOS Cacheable

### **8-bit I/O recovery time: 1/2/3/4/5/6/7/NA**

### **16-bit I/O recovery time: 1/2/3/NA**

Choose the recovery time for 8-bit and 16-bit I/O cycles respectively.

**Note:** NA is not available and so the recovery time of 3.5 SYSCLOCK will be inserted.

### **Memory Hole At 15M-16M**

Choosing Enabled will enable a memory hole in the DRAM space. The CPU cycle matching the enabled hole will be passed on to the PCI. PCI cycles matching an enabled hole are ignored. Disabled (default) will disable this function.

**Note:** A selected (Enabled) hole is not remapped.

### **PCI 2.1 Compliance**

The Settings are Enable or Disable. During Enable, those PCI add-on cards with PCI 2.1 compliance will perform better. But some PCI card does not meet PCI 2.1 compliance, so the default setting is Disabled.

### 3.7 Power Management Setup

The Power Management Setup will appear on your screen like this:

```
ROM PCI/ISA BIOS (2A59IM4A)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.
```

|                                |              |                                  |
|--------------------------------|--------------|----------------------------------|
| Power Management               | :User Define | ** Reload Global Timer Events ** |
| PM Control by APM              | :Yes         | IRQ [3-7,9-15],NMI : Enabled     |
| Video Off Method               | :DPMS        | Primary IDE 0 : Enabled          |
| Video Off After                | :Standby     | Primary IDE 1 : Disabled         |
| Doze Mode                      | :Disabled    | Secondary IDE 0 : Disabled       |
| Standby Mode                   | :Disabled    | Secondary IDE 1 : Disabled       |
| Suspend Mode                   | :Disabled    | Floppy Disk : Enabled            |
| HDD Power Down                 | :Disabled    | Serial Port : Enabled            |
| Throttle Duty Cycle            | :62.5%       | Parallel Port : Enabled          |
| VGA Active Monitor             | :Enabled     |                                  |
| Soft-Off by PWR-BTTN           | :Delay 4sec  |                                  |
| CPUFAN Off In Suspend          | :Enabled     |                                  |
| Resume by Ring                 | :Disabled    |                                  |
| Resume by Alarm                | :Disalbed    |                                  |
| Date(of Month) Alarm           | :5           |                                  |
| Time(hh:mm:ss) Alarm           | :11:00:00    |                                  |
| ** Break Event From Suspend ** |              | Esc : Quit ↑↓→← : Select item    |
| IRQ 8 Clock Event : Disabled   |              | F1 : Help PU/PD/+/- : modify     |
|                                |              | F5 : Old Value(Shift) F2 : Color |
|                                |              | F6 : Load BIOS Defaults          |
|                                |              | F7 : Load Setup Defaults         |

#### Power Management

This category determines the power consumption for system after selecting below items. Default value is Disable. The following pages tell you the options of each item & describe the meanings of each options.

**Power Management**

|                    |  |
|--------------------|--|
| <b>Disable</b>     | Global Power Management will be disabled.                                      |
| <b>User Define</b> | Users can configure their own power management.                                |
| <b>Min Saving</b>  | Pre-defined timer values are used such that all timers are in their MAX value. |
| <b>Max Saving</b>  | Pre-defined timer values are used such that all timers are in their MIN value. |

**PM Control by APM**

|            |  |
|------------|--|
| <b>No</b>  | System BIOS will ignore APM when power managing the system.        |
| <b>Yes</b> | System BIOS will wait for APM's prompt before it enter any PM mode |

**Note :**Enable this for O.S. with APM like Windows® 95, Windows® NT, etc.

**Video Off Method**

|                       |   |
|-----------------------|---|
| <b>Blank Screen</b>   | The system BIOS will only blank off the screen when disabling video.                              |
| <b>V/H SYNC+Blank</b> | In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals from VGA card to monitor. |
| <b>DPMS</b>           | This function is enabled only for VGA card supporting DPMS.                                       |

**Note:** Green monitors detect the V/H SYNC signals to turn off its electron gun.

### Video Off After

The settings are N/A, Standby, Doze, or Suspend. This option is for choosing the setting in which the monitor will turn off.

**N/A** Always turn on.

**Doze** During Doze mode, the monitor will be turned off.

**Standby** During Standby mode, the monitor will be turned off.

**Suspend** During Suspend mode, the monitor will be turned off.

The default setting is Standby.

### Doze Mode

**Disable** System will never enter DOZE mode.

**1 Min/2 Min/** Defines the continuous idle time before the  
**4 Min/6 Min/** system enters DOZE mode.

**8 Min/10 Min/** If any item defined in the options of “Power  
**20 Min/30 Min/** Down and Resume events” is enabled & active,  
**40 Min/1 Hr** DOZE timer will be reloaded. When the system  
have entered Doze mode, any of the items  
enabled in “Wake Up Events in Doze and  
Standby” will trigger the system to wake up.

### Standby Mode

**Disable** System will never enter STANDBY mode.

**1 Min/2 Min/** Defines the continuous idle time before the  
**4 Min/6 Min/** system enters STANDBY mode.

**8 Min/10 Min/** If any item defined in the options of “Power  
**20 Min/30 Min/** Down and Resume events” is enabled & active,  
**40 Min/1 Hr** STANDBY timer will be reloaded. When the  
system has entered Standby mode , any of the  
items that are enabled in “Wake Up Events of  
Doze and Standby” will trigger the system to  
wake up.

**Suspend Mode**

|   |   |
|---|---|
| <b>Disable</b>  | System will never enter SUSPEND mode.   |
| <b>1 Min/2 Min/<br/>4 Min/6 Min/<br/>8 Min/10 Min/<br/>20 Min/30 Min/<br/>40 Min/1 Hr</b> | Defines the continuous idle time before the system enters SUSPEND mode.<br>If any item defined in the options of “Power Down & Resume Events” is enabled & active, SUSPEND timer will be reloaded. When the system has entered SUSPEND mode, any of the items enabled in the “Power Down & Resume Events” will trigger the system to wake up. |

**HDD Power Down**

|   |  |
|---|--|
| <b>Disable</b>  | HDD’s motor will not shut off.   |
| <b>1 Min/2 Min/<br/>3 Min/4 Min/<br/>5 Min/6 Min/<br/>7 Min/8 Min/<br/>9 Min/10 Min/<br/>11 Min/12 Min/<br/>13 Min/14 Min/<br/>15 Min</b> | Defines the continuous HDD idle time before the HDD enters the power saving mode (motor off). BIOS will turn off the HDD’s motor when time is out. |

**Throttle Duty Cycle**

This option will determine how much power will be used by the CPU , if the system goes into suspend mode.

**VGA Active Monitor**

During Enabled, if there’s no activity in the monitor screen the system will go into Power Saving Mode. During Disabled, the system will go into Power Saving Mode, whether there is activity in the monitor screen or not. The settings are Disabled and Enabled.

**Soft-Off by PWR-BTTN**

The settings are Delay 4 sec or Instant-off. During Delay 4 sec, if you push the switch one time, the system goes into suspend mode and if you push it more than 4 second, the system will be turned off. During instant-off, the system will turn off once you push the switch.

**CPUFAN Off In Suspend**

During Enabled, if the system goes into suspend mode, the CPU fan will stop. During Disabled, if the system goes into suspend mode the CPU fan will not stop.

**Note:** Only JFAN1 has this function.

**Resume by Ring**

During Disabled, the system will ignore any incoming call from the modem. During Enabled, the system will boot up if there's an incoming call from the modem.

**Note:** If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work.

**Resume by Alarm**

This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

- |                             |  |
|-----------------------------|--|
| <b>Date(of month) Alarm</b> | You can choose which month the system will boot up.                  |
| <b>Time(hh:mm:ss) Alarm</b> | You can choose what hour, minute and second the system will boot up. |

**Note:** If you have change the setting, you must let the system boot up until it goes to the operating system, before this function will work.

**IRQ 8 Clock Event**

|                           |                   |
|---------------------------|-------------------|
| <b>IRQ[3-7,9-15], NMI</b> | <b>: Enabled</b>  |
| <b>Primary IDE 0</b>      | <b>: Enabled</b>  |
| <b>Primary IDE 1</b>      | <b>: Disabled</b> |
| <b>Secondary IDE 0</b>    | <b>: Disabled</b> |
| <b>Secondary IDE 1</b>    | <b>: Disabled</b> |
| <b>Floppy Disk</b>        | <b>: Enabled</b>  |
| <b>Serial Port</b>        | <b>: Enabled</b>  |
| <b>Parallel Port</b>      | <b>: Enabled</b>  |

During Enabled, if any interrupt event occurs, the system will wake-up from suspend mode. During Disabled, the system will not monitor any interrupt event.

### 3.8 PNP/PCI Configuration Setup

You can manually configure the PCI Device's IRQ. The following pages tell you the options of each item & describe the meanings of each options.

**ROM PCI/ISA BIOS (2A69HM4D)**  
**PNP/PCI CONFIGURATION SETUP**  
**AWARD SOFTWARE, INC.**

|                          |              |                          |                    |
|--------------------------|--------------|--------------------------|--------------------|
| PnP OS Installed         | :No          | PCI IDE IRQ Map To       | : PCI-Auto         |
| Resources Controlled By  | :Auto        | Primary IDE INT#         | : A                |
| Reset Configuration Data | :Disabled    | Secondary IDE INT#       | : B                |
| IRQ-3 assigned to        | :Legacy ISA  | Assign IRQ for VGA       | : Disabled         |
| IRQ-4 assigned to        | :Legacy ISA  | Used MEM base addr       | : C800             |
| IRQ-5 assigned to        | :PCI/ISA PnP | Used MEM Length          | : 8K               |
| IRQ-7 assigned to        | :PCI/ISA PnP |                          |                    |
| IRQ-9 assigned to        | :PCI/ISA PnP |                          |                    |
| IRQ-10 assigned to       | :PCI/ISA PnP |                          |                    |
| IRQ-11 assigned to       | :PCI/ISA PnP |                          |                    |
| IRQ-12 assigned to       | :PCI/ISA PnP |                          |                    |
| IRQ-14 assigned to       | :PCI/ISA PnP |                          |                    |
| 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 Value(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

When set to YES, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 95. When set to NO, BIOS will initialize all the PnP cards. So, for non-PnP operating system (DOS, Netware®), this option must set to NO.

**Resources Controlled By**

By Choosing “Auto”, the system BIOS will detect the system resource and automatically assign the relative IRQ and DMA Channel for each peripheral.

By Choosing “Manual”(default), the user will need to assign IRQ & DMA for add-on cards. Be sure that there is no conflict for IRQ/DMA and I/O ports.

**Note:** When choosing “Auto” you must be sure that all of the system add-on cards are PnP type.

**Reset Configuration Data**

The system BIOS supports the PnP feature so the system needs to record which resource is assigned and protect resources from conflict. Every peripheral device has a node which is called ESCD. This node records which resources are assigned to it. The system needs to record and update ESCD to the memory locations. These locations (4K) are reserved at the system BIOS.

If Disabled (default) is chosen the system’s ESCD will update only when the new configuration varies from the last one.

If Enabled is chosen the system will be forced to update the system’s ESCD. Then, this option will be auto-set to Disable.

|        |             |           |     |
|--------|-------------|-----------|-----|
| IRQ-3  | assigned to | : Legacy  | ISA |
| IRQ-4  | assigned to | : Legacy  | ISA |
| IRQ-5  | assigned to | : PCI/ISA | PnP |
| IRQ-7  | assigned to | : Legacy  | ISA |
| IRQ-9  | assigned to | : PCI/ISA | PnP |
| IRQ-10 | assigned to | : PCI/ISA | PnP |
| IRQ-11 | assigned to | : PCI/ISA | PnP |
| IRQ-12 | assigned to | : PCI/ISA | PnP |
| IRQ-14 | assigned to | : PCI/ISA | PnP |

IRQ-15 assigned to : PCI/ISA PnP  
DMA-0 assigned to : PCI/ISA PnP  
DMA-1 assigned to : PCI/ISA PnP  
DMA-3 assigned to : PCI/ISA PnP  
DMA-5 assigned to : PCI/ISA PnP  
DMA-6 assigned to : PCI/ISA PnP  
DMA-7 assigned to : PCI/ISA PnP

The above settings will be shown on the screen only if “Manual” is chosen for the *Resources Controlled By* function.

Legacy is the term which signifies that a resource is assigned to the ISA Bus and provides for non PnP ISA add-on card. PCI/ISA PnP signifies that a resource is assigned to the PCI Bus or provides for ISA PnP add-on cards and peripherals.

### PCI IDE IRQ Map To

- PCI-Auto:** This setting is for off-board PCI IDE card and is fully compatible with PCI specifications.
- PCI-Slot 1-5:** This setting is used if off-board PCI IDE card is not fully compatible with PCI specifications. You must specify which PCI slot the PCI IDE Card is installed in.
- ISA:** This setting is used if the off-board PCI IDE card uses an edge trigger and IRQ routes directly to the ISA Bus.

**Note:** The user will need to disable the on-board on-chipset PCI IDE controller when installing off-board PCI IDE add-on cards. (See the INTEGRATED PERIPHERALS SETUP) These two options choose the primary and secondary IDE Channel interrupts when the user installs off-board PCI IDE add-on cards.

**Assign IRQ for VGA**

Lets the user choose which IRQ to assign for VGA card.

**Used MEM base addr**

Lets the user choose the Legacy ISA addr. The settings are NA#, C800, CC00, D000, D400, D800 OR DC00.

**Used MEM Length**

Choose 8K, 16K, 32K, or 64K MEM length for the MEM used by the Legacy ISA address.

### **3.9 Load BIOS/Setup Defaults**

This Main Menu item loads the default system values. If the CMOS is corrupted the defaults are loaded automatically. Choose this item and the following message appears:

“ Load Setup Defaults (Y / N) ? N “

To use the Setup defaults, change the prompt to “Y” and press < Enter >

**Note:** The Setup defaults can be customized to increase performance. However the BIOS defaults can always be used as a back up if there is some problem with the mainboard operation.

### 3.10 Integrated Peripherals

ROM PCI/ISA BIOS (2A69HM4D)  
 INTEGRATED PERIPHERALS  
 AWARD SOFTWARE, INC.

|                                   |                                  |
|-----------------------------------|----------------------------------|
| IDE HDD Block Mode : Enabled      | Onboard Parallel Mode :ECP/EPP   |
| IDE Primary Master PIO :Auto      | ECP Mode Use DMA :3              |
| IDE Primary Slave PIO :Auto       | Parallel Port EPP Type :EPP1     |
| 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    |                                  |
| On-Chip Primary PCI IDE :Enabled  |                                  |
| On-Chip Primary PCI IDE :Enabled  |                                  |
| USB Keyboard Controller :Disabled |                                  |
| Onboard FDD controller :Enabled   |                                  |
| Onboard Serial Port 1 :3F8/IRQ4   |                                  |
| Onboard Serial Port 2 :2F8/IRQ3   |                                  |
| UART 2 Mode :ASKIR                | Esc : Quit ↑↓→← : Select item    |
| IR Function Duplex :Half          | F1 : Help PU/PD/+/- : modify     |
| RxD , TxD Active :Hi , Hi         | F5 : Old Value(Shift) F2 : Color |
| Onboard Parallel Port :378H/IRQ7  | F6 : Load BIOS Defaults          |
|                                   | F7 : Load Setup Defaults         |

#### IDE HDD Block Mode

**Enabled/Disabled** Enabled allows the Block mode access for the IDEHDD.

#### IDE Primary Master PIO

**Auto/Mode0/Mode1-4**

#### IDE Primary Slave PIO

**Auto/Mode0/Mode1-4**

#### IDE Secondary Master PIO

**Auto/Mode0/Mode1-4**

### **IDE Secondary Slave PIO** **Auto/Mode0/Mode1-4**

For these 4 IDE options, choose “Auto” to have the system BIOS auto detect the IDE HDD operation mode for PIO access.

**Note:** Some IDE HDD can not operate at the responding HDD’s mode. When the user has selected “Auto” and the system BIOS has accepted the HDD response mode, the user may degrade the HDD’s operation mode. Ex: IF the HDD reported it can operate in mode 4 but it is not operating properly, the user will have to manually change the operation mode to mode 3.

Choosing Mode 1-4 will have the system ignore the HDD’s reported operation mode and use the selected mode instead.

**Note:** According to ATA specs. Mode 4 transfer rate is > Mode 3 > Mode 2 > Mode 1 > Mode 0. If the user’s HDD can operate at Mode 3 the user can also select a slower Mode (i.e. Mode 0-2) but not a faster Mode (ie Mode 4).

### **On-Chip Primary PCI IDE** **Enabled/Disabled**

### **On-Chip Secondary PCI IDE** **Enabled/Disabled**

The system provides for a On-Board On-Chipset PCI IDE controller that supports Dual Channel IDE (Primary and Secondary). A maximum of 4 IDE devices can be supported. If the user install the Off-Board PCI IDE controller (i.e. add-on cards), the user must choose which channels will be disabled. This will depend on which channel will be used for the Off-Board PCI IDE add-on card.

**PCI Slot IDE 2nd Channel****Enabled/Disabled**

Choosing Enabled will allow the system to access the 2nd IDE channel without a device driver. If the Off-Board PCI IDE add-on card is installed, the 2nd IDE channel will need to be used.

**Onboard FDD Controller****Enabled/Disabled**

The system has an on-board Super I/O chip with a FDD controller that supports 2 FDDs for 360K/720K/1.2M/1.44M/2.8M. Choose “Enabled” to use the on-board FDD controller for accessing the FDD. Otherwise choose “Disabled” to use the off-board FDD controller.

**Onboard Serial Port 1**

**Disabled/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)**

**Onboard Serial Port 2**

**Disabled/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)**

The system has an On-board Super I/O chipset with 2 serial ports. The On-board serial ports can be selected as:

**Disabled**

|          |                 |
|----------|-----------------|
| 3F8/IRQ4 | COM 1 uses IRQ4 |
| 2F8/IRQ3 | COM 2 uses IRQ3 |
| 3E8/IRQ4 | COM 3 uses IRQ4 |
| 2E8/IRQ3 | COM 4 uses IRQ4 |

**Note:** Because the ISA Bus Interrupt accepts low to high edge trigger, the interrupt request line cannot be shared by multiple sources. If an off-board ISA add-on card with a serial port is installed the user may have to disable the on-board serial port because it will conflict with IRQ request line for the off-board serial port.

---

**UART 2 MODE****Standard/ASKIR/**

The system's built-in IR (Infrared) is on the on-board Super I/O chipset and it shares serial port 2 with UART 2. Only one option can be selected for serial port 2, either the IR or UART. Selecting the IR mode will prompt the following message:

**IR Function Duplex****Half/Full**

Users can choose between operating the IR in Half duplex or Full duplex mode. Half duplex designates one IR as a receiver and one as a transmitter. Full duplex mode designates that the two IRs receive and transmit data together simultaneously.

**RxD , TxD Active****Hi-Hi/Hi-Lo/****Lo-Hi/Lo-Lo**

The user can choose between the preceding RxD (Receive Data), TxD (Transmit Data) activity levels.

**Onboard Parallel Port****Disabled/  
(3BCH/IRQ7)/  
(278H/IRQ5)/  
(378H/IRQ5)**

There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

**Disable****3BCH/IRQ7**

Line Printer port 0

**278H/IRQ5**

Line Printer port 2

**378H/IRQ5**Line Printer port 1

---

**Onboard Parallel Mode**

SPP : Standard Parallel Port

EPP : Enhanced Parallel Port

ECP : Extended Capability Port

**SPP/(EPP/SPP)/  
ECP(ECP/EPP)**

To operate the onboard parallel port as StandardParallel Port only, choose “SPP.” To operate the onboard parallel port in the ECP and SPP modes simultaneously choose “ECP/SPP.” By choosing “ECP”, the onboard parallel port will operate in ECP mode only. Choosing “ECP/EPP” will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: “ECP Mode Use DMA” At this time the user can choose between DMA channels 3 or 1. The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: “Parallel Port EPP Type.” At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

**USB Controller**

**Enabled/Disabled**

Choosing Enabled, will enable the on-board USB port.

### 3.11 Supervisor/User Password Setting

This Main Menu item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program. Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

"Enter Password:"

2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters. For no password just press <Enter>.
3. After you enter the password, the following message appears prompting you to confirm the password:

"Confirm Password:"

4. Enter exactly the same password you just typed in to confirm the password and press <Enter>.
  5. Move the cursor to Save & Exit Setup to save the password.
  6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.
  7. Move the cursor to Save & Exit Setup to save the option you did. Otherwise, the old password will still be there when you turn on your machine next time.
-

### 3.12 IDE HDD Auto Detection

You can use this utility to automatically detect the characteristics of most hard drives.

When you enter this utility, the screen asks you to select a specific hard disk for Primary Master. If you accept a hard disk detected by the BIOS, you can enter “Y” to confirm and then press <Enter> to check next hard disk. This function allows you to check four hard disks and you may press the <Esc> after the <Enter> to skip this function and go back to the Main Menu.

**ROM ISA BIOS  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.**

| HARD DISKS         | TYPE | SIZE | CYLS | HEADS | PRECOMP | LANDZONE | SECTOR | MODE |
|--------------------|------|------|------|-------|---------|----------|--------|------|
| 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 |

| Select Primary Master |      |      |      | Option (N=Skip) : N |       |        |        |
|-----------------------|------|------|------|---------------------|-------|--------|--------|
| OPTIONS               | SIZE | CYLS | HEAD | PRECOMP             | LANDZ | SECTOR | MODE   |
| 2                     | 2112 | 1023 | 64   | 0                   | 4094  | 63     | LBA    |
| 1                     | 2113 | 4095 | 16   | 65535               | 4094  | 63     | NORMAL |
| 3                     | 2113 | 2047 | 32   | 65535               | 4094  | 63     | LARGE  |

[ESC: Skip]

## **Chapter 4**

### **AMI® BIOS USER'S GUIDE**

The system configuration information and chipset register information is stored in the CMOS RAM. This information is retained by a battery when the power is off. Enter the BIOS setup (if needed) to modify this information.

The following pages will describe how to enter BIOS setup, and all about options.

## 4.1 Enter BIOS Setup

Enter the AMI® Setup Program's Main Menu as follows:

1. Turn on or reboot the system. The following screen appears with a series of diagnostic check.

```
AMIBIOS (C) 1996 American Megatrends Inc.
```

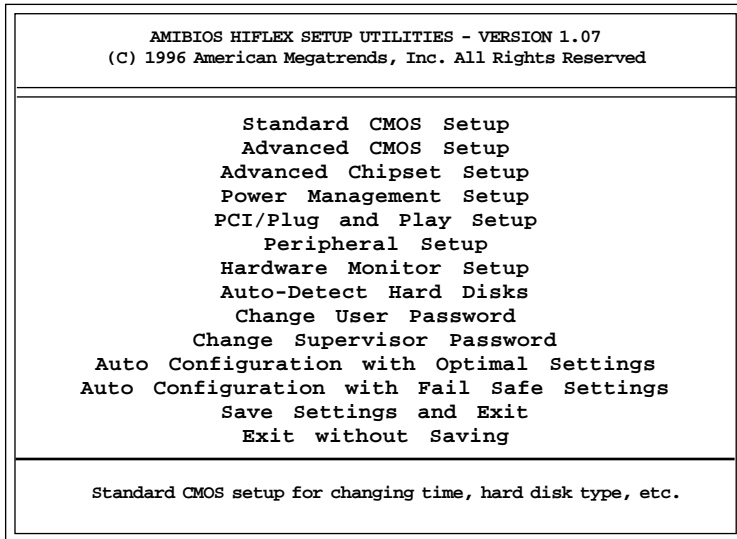
```
Hit <DEL> if you want to run setup
```

```
(C) American Megatrends Inc.
```

```
61-XXXX-001169-00111111-071592-i82440FX-H
```

2. When the "Hit <DEL>" message appears, press <DEL> key to enter the BIOS setup screen.
3. After pressing <DEL> key, the BIOS setup screen will appear.

**Note:** *If you don't want to modify CMOS original setting, then don't press any key during the system boot.*



4. Use the <UP> and <DOWN> key to move the highlight scroll up or down.
5. Use the <ENTER> key to select the option.
6. To exit, press <ESC>. To save and exit, press <F10>.
7. Section 4.2 to 4.8 will explain the option in more details.

## 4.2 Standard CMOS Setup

1. Press <ENTER> on "Standard CMOS Setup" of the main menu screen .

```

AMIBIOS SETUP - STANDARD CMOS SETUP
(C)1996 American Megatrends, Inc. All Rights Reserved

```

---

```

Date (mm/dd/yyyy): Fri June 20, 1997
Time (hh/mm/ss): 17:09:25

```

```

Floppy Drive A:          1.44 MB 3 1/2
Floppy Drive B:          Not Installed

```

|            | Type  | Size | Cyln | Head | WPcom | Sec | LBA Mode | Blk Mode | PIO Mode | 32Bit Mode |
|------------|-------|------|------|------|-------|-----|----------|----------|----------|------------|
| Pri Master | :Auto |      |      |      |       |     | ON       | ON       | AUTO     | ON         |
| Pri Slave  | :Auto |      |      |      |       |     | ON       | ON       | AUTO     | ON         |
| Sec Master | :Auto |      |      |      |       |     | ON       | ON       | AUTO     | ON         |
| Sec Slave  | :Auto |      |      |      |       |     | ON       | ON       | AUTO     | ON         |

```

Boot Sector Virus Protection Disabled

```

---

```

Time is 24 hour format:
Hour: 00-23 Minute: 00-59 Second: 00-59
(1:30AM = 01:30:00, 1:30PM = 13:30:00)
ESC:Exit :Sel
PgUp/PgDn:Modify
F2/F3:Color

```

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.
3. After you have finished with the Standard CMOS Setup, press <ESC> to go back to the main menu.

## 4.3 Advanced CMOS Setup

1. Press <ENTER> on “Advanced CMOS Setup” of the main menu

| AMIBIOS SETUP - ADVANCED CMOS SETUP                    |           |                    |
|--|-----------|--------------------|
| (C) 1996 American Megatrends, Inc. All Rights Reserved |           |                    |
| Ist Boot Device  | FLOPPY    | Available Options: |
| 2nd Boot Device  | IDE-0     | Enabled            |
| 3rd Boot Device  | CD-ROM    | Disabled           |
| 4th Boot Device  | Disabled  |                    |
| Try Other Boot Devices                                 | Yes       |                    |
| Quick Boot   | Enabled   |                    |
| BootUp Num-Lock  | On        |                    |
| Floppy Drive Seek                                      | Enabled   |                    |
| Floppy Access Control                                  | Normal    |                    |
| HDD Access Control                                     | Normal    |                    |
| PS/2 Mouse Support                                     | Enabled   |                    |
| System Keyboard  | Absent    |                    |
| Primary Display  | VGA/EGA   |                    |
| Password Check   | Setup     |                    |
| Boot to OS/2   | No        |                    |
| Internal Cache   | Writeback |                    |
| External Cache   | Writeback |                    |
| System BIOS Cacheable                                  | Enabled   |                    |
| C000, 32k Shadow                                       | Enabled   |                    |
| C800, 16k Shadow                                       | Disabled  |                    |
| CC00, 16k Shadow                                       | Disabled  |                    |
| D000, 16k Shadow                                       | Disabled  |                    |
| D400, 16k Shadow                                       | Disabled  |                    |
| D800, 16k Shadow                                       | Disabled  |                    |
| DC00, 16k Shadow                                       | Disabled  |                    |
|  |           | ESC:Exit :Sel      |
|  |           | PgUp/PgDn:Modify   |
|  |           | F2/F3:Color        |

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.
3. After you have finished with the Advanced CMOS Setup, press <ESC> to go back to the main menu.

**Description of the item on screen follows:****1st Boot Device/2nd Boot Device/3rd Boot Device/  
4th Boot Device**

This option sets the sequence of boot drives.

The settings are:

|            |  |
|------------|--|
| IDE0       | The system will boot from the first HDD.       |
| IDE1       | The system will boot from the Second HDD.      |
| IDE2       | The system will boot from the Third HDD.       |
| IDE3       | The system will boot from the Fourth HDD.      |
| F(optical) | The system will boot from LS-120(120M Floppy). |
| SCSI       | The system will boot from the SCSI.            |
| Network    | The system will boot from the Network drive.   |
| CD-ROM     | The system will boot from the CD-ROM.          |
| Disable    | Disable this sequence.                         |

**Try other Boot Devices**

This option sets the device boot, if all the Four Boot Devices failed.

**Quick Boot**

Set this option to Enabled to permit AMI® BIOS to boot within 5 seconds. This option replaces the old ABOVE 1 MB Memory Test option. The Optimal default setting is Enabled. The Fail-Safe default setting is Disabled.

**Boot up Num Lock**

When this option is set to Off, AMI® BIOS turns off the Num Lock key when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard. The settings are On or Off. The optimal default and Fail-Safe default settings are On.

**Floppy Drive Seek**

When this option is set to Enabled, AMI® BIOS performs a Seek command on floppy drive A: before booting the system. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Disabled.

---

**Floppy Access Control**

This option sets the Floppy to Read-only or Normal(Full Access).

**HDD Access Control**

This option sets the HDD to Read-only or Normal(Full Access). During Read-only, if you try to write on the HDD, the system will halt.

**PS/2® Mouse Support**

When this option is set to Enabled, AMI® BIOS will auto-detect the presence of a PS/2® mouse and reserved an IRQ for the mouse. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Enabled.

**System Keyboard** (leave on the default setting of Absent)

**Primary Display**

This option configures the primary display subsystem in the computer. The settings are Mono(monochrome), 40CGA, 80CGA or VGA/EGA. The optimal and Fail-Safe default settings are VGA/EGA.

**Password Check**

This option specifies the type of AMI® BIOS password protection that is implemented. The Optimal and Fail-Safe default settings are Setup.

**Boot to OS/2®**

Set this option to Enabled only if your using an OS/2® and the memory size is 64MB.

**Internal Cache/External Cache**

This option Enabled or Disabled the Internal and the External Cache.

### System BIOS Cacheable

AMI® BIOS always copies the system BIOS from ROM to RAM for faster execution. Set this option to Enabled to permit the contents of the F0000h RAM memory segment to be written to and read from cache memory. The settings are Enabled or Disabled. The Optimal default setting is Enabled. The Fail-Safe default setting is Disabled.

### C000, 32K Shadow

These options specify how the contents of the video ROM are handled. The settings are:

**Disabled** - the Video ROM is not copied to RAM.

**Cached** - the contents of the video ROM are from C0000h - C7FFFh are not only copied from ROM to RAM; it can also be written to or read from cache memory.

**Shadow** - the Contents of the video ROM are from C0000h - C7FFFh are copied(shadowed) from ROM to RAM for faster execution.

The Optimal and Fail-Safe default setting is Cached.

### C800, 16k Shadow/CC00, 16k Shadow/D000, 16K Shadow/D400, 16k Shadow/D800, 16k Shadow/DC00, 16K Shadow

These options specify how the contents of the adaptor ROM named in the option title are handled. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards. The settings are;

**Disabled** - The specified ROM is not copied to RAM.

**Cache** - The contents of the ROM area are not only copied from ROM to RAM for faster execution, it can also be written to or read from cache memory.

**Shadow** - The contents of the ROM area are copied from ROM to RAM for faster execution.

The Optimal and Fail-Safe default settings are Disabled.

## 4.4 Advanced Chipset Setup

1. Press <ENTER> on “Advanced Chipset Setup” of the main menu screen.

| AMIBIOS SETUP - ADVANCED CHIPSET SETUP                 |             |                    |
|--|-------------|--------------------|
| (C) 1996 American Megatrends, Inc. All Rights Reserved |             |                    |
| Memory Hole  | Disabled    | Available Options: |
| DRAM Speed   | 60ns        | Enabled            |
| DRAM Read Burst Timing                                 | x2EDO X3FPM | Disabled           |
| DRAM Write Burst Timing                                | x3EDO X3FPM |                    |
| DRAM Lead off Timing                                   | 10/6/3      |                    |
| Memory Address Drive Strength                          | 10mA, 10mA  |                    |
| SDRAM CAS Latency/RAS to CAS                           | 3/3         |                    |
| Speculative Lead Off Timing                            | Disabled    |                    |
| DRAM Page Idle Timeout (HCLK's)                        | 2           |                    |
| Fast EDO Read Cycle Timing                             | Enabled     |                    |
| SDRAM Speculative Read Logic                           | Disabled    |                    |
| Enhanced Paging  | Enabled     |                    |
| DRAM Refresh RAS Cycles (HCLK's)                       | 4           |                    |
| DRAM Refresh Rate                                      | 31.2 us     |                    |
| 8-Bit I/O Recovery Time                                | Disabled    |                    |
| 16-Bit I/O Recovery Time                               | Disabled    |                    |
| CD-ROM Option  | 0           |                    |
| USB Keyboard/Mouse Support                             | Disabled    |                    |
|  |             | ESC:Exit :Sel      |
|  |             | PgUp/PgDn:Modify   |
|  |             | F2/F3:Color        |

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.
3. After you have finished with the Advanced Chipset Setup, press <ESC> to go back to the main menu.

**Description of the item on screen follows:****Memory Hole**

Choosing Enabled, will enable a memory hole in the DRAM space. The CPU cycle matching the enabled hole will be passed on the PCI. PCI cycles matching an Enabled hole are ignored. Disabled(default) will disable this function.

**DRAM Speed**

This option specifies the speed for the DRAM used in the computer for system memory. Sets the DRAM speed at 70ns (default) or 60ns. It will set the speed of the EDO/FP DRAM.

**DRAM Read Burst Timing**

Under Auto config, the BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option which sets the Read Burst time for accessing the DRAM. The timing used depends on the type of DRAM and access time being used.

**DRAM Write Burst Timing**

This option chooses the Write Burst Timing for accessing DRAM.

**DRAM Lead off Timing**

To be able to change the setting, Auto configuration must be disable. If the Bus Clock is 75MHz set it to 11/7/4, and if the Bus Clock is 66/60/55 MHz set it to 10/6/4. Default setting is 10/6/3.

**Memory Address Drive Strength**

Leave on the default setting of 10mA, 10mA.

**SDRAM CAS Latency/RAS to CAS**

The settings are 3/3 or 2/2. This option is for SDRAM CAS latency time and RAS# to CAS# delay time. The default setting is 3/3.

**Speculative Lead Off Timing**

Leave on the default setting of Disabled.

**DRAM Page Idle Timeout (HCLK's)**

The settings are 2 , 4 , 6, or 8 Clks. Default settings is 2 Clks.

**Fast EDO Read Cycle Timing**

The BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option. Choose Enable or Disable. If the system is using EDO DRAM, choose Enabled. But if the system is using both EDO and FP DRAM, choose Disabled.

**SDRAM Speculative Read Logic**

The settings are Enabled or Disabled. The default setting is enable.

**Enhanced Paging**

Leave on the default setting of Enabled.

**DRAM Refresh RAS Cycles (HCLS's)**

Leave on the default setting of 5.

**DRAM Refresh Rate**

Leave on the default setting of 15.6 us.

**8-Bit I/O Recovery Time / 16-Bit I/O Recovery Time**

Choose the recovery time for 8-bit and 16-bit I/O cycles respectively.

**CD-ROM Option**

Leave on the default setting of 0.

**USB Keyboard/Mouse Support**

Set this option to Enabled or Disabled USB keyboard/mouse. The Optional and Fail-Safe default settings are Disabled.

## 4.5 Power Management Setup

1. Press <ENTER> on "Power Management Setup" of the main menu screen.

| AMIBIOS SETUP - POWER MANAGEMENT SETUP<br>(C) 1996 American Megatrends, Inc. All Rights Reserved |             |                    |
|--|-------------|--------------------|
| Power Management / APM   | Enabled     | Available Options: |
| Instant On Support   | Disabled    | Enabled            |
| Green PC Monitor Power State   | Stand By    | Disabled           |
| Video Power Down Mode  | Suspend     |                    |
| Hard Disk Power Down Mode  | Stand By    |                    |
| Hard Disk Time Out (Minute)  | Disabled    |                    |
| Standby Time Out (Minute)  | 10          |                    |
| Suspend Time Out (Minute)  | 10          |                    |
| Slow Clock Ratio   | 37.5-50%    |                    |
| Display Activity   | Ignore      |                    |
| Serial port 1  | Monitor     |                    |
| Serial port 2  | Monitor     |                    |
| Parallel port  | Ignore      |                    |
| Floppy disk  | Ignore      |                    |
| Primary IDE 0  | Monitor     |                    |
| Primary IDE 1  | Monitor     |                    |
| Secondary IDE 0  | Ignore      |                    |
| Secondary IDE 1  | Ignore      |                    |
| Resume on Ring   | Disabled    |                    |
| Modem Use IO Port  | N/A         |                    |
| Modem Use IRQ  | N/A         |                    |
| Soft-Off by PWR-BTTN   | Instant-off | ESC:Exit :Sel      |
| RTC Alarm Resume From Soft Off   | Disabled    | PgUp/PgDn:Modify   |
| RTC Alarm Date   | N/A         | F2/F3:Color        |
| RTC Alarm Hour   | N/A         |                    |
| RTC Alarm Minute   | N/A         |                    |
| RTC Alarm Second   | N/A         |                    |

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.
3. After you have finished with the Power Management Setup, press <ESC> to go back to the main menu.

**Description of the item on screen follows:****Power Management/APM**

Set this option to Enabled to enable the Intel® 82371AB ISA power management features and APM(Advanced Power Management). The settings are Enabled, Inst-On(instant-on) or Disabled. The Optimal and Fail-Safe default settings are Disabled.

**Instant On Support** (leave on the default setting of Disabled)

**Green PC Monitor Power State**

This option specifies the power state that the green PC-compliant video monitor enters when AMI® BIOS places it in a power savings state after the specified period of display inactivity has expired. The settings are Off, Standby, Suspend or Disabled. The Optimal and Fail-Safe default settings are Standby.

**Video Power Down Mode**

This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Standby.

**Hard Disk Power Down Mode**

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Disabled.

**Hard Disk Timeout (Minute)**

This option specifies the length of a period of hard disk drive inactivity. When this length of time expires, the computer enters power-conserving state specified in the Hard Disk Power Down mode option (see the previous page). The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

---

**Standby Timeout (Minute)**

This option specifies the length of a period of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state. The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

**Suspend Timeout (Minute)**

This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

**Slow Clock Ratio**

This option specifies the speed at which the system clock runs in power saving states. The settings are expressed as a ratio between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state. The settings are 1:1, 1:2, 1:4, 1:8, 1:16, 1:32, 1:64 or 1:128. The Optimal and Fail-Safe defaults are 1:8.

**Display Activity/Serial port 1/Serial port 2/Parallel port/Floppy disk/Primary IDE 0/Primary IDE 1/Secondary IDE 0/Secondary IDE 1**

When set to Monitor, these options enable event monitoring on the specified hardware interrupt request line. If set to Monitor and the computer is in a power saving state, AMI® BIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

AMI® BIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

The settings for each of these options are Monitor or Ignore. The Optimal and Fail-Safe default settings are Disabled for all the above options except IRQ3, IRQ4, IRQ7, IRQ12, IRQ14 or IRQ15. The Optimal default settings for these options is Monitor.

---

**Resume on Ring**

This function is ring wake up system, from system OFF to ON. During Disabled, the system will not turn on from modem ring wake up. And during Enabled, the system will boot up if there's an incoming call from the modem.

**Modem Use IO Port**

Leave on default setting of N/A.

**Modem Use IRQ**

This indicates which IRQ no. will be used by the MODEM (if there is a MODEM). The settings are 3, 4, 5, 7, 9, 10, or N/A.

**Soft-Off by PWR-BTTN**

The settings are Delay 4 sec or Instant-off. During Delay 4 sec, if you push the switch one time the system goes into suspend mode and if you push it more than 4 second, the system will turn off. And during Instant-off, the system will shut down once you push the switch.

**RTC Alarm Resume From Soft Off**

This function is for setting Date, Hour, Minute, and Second for your system to boot up. During Disabled, you can not use this function. And during Enabled, Choose the Date, Hour, Minute, and Second:

|                         |   |
|-------------------------|---|
| <b>RTC Alarm Date</b>   | You can choose the date that the system will boot up.           |
| <b>RTC Alarm Hour</b>   | You can choose the hour of the day that the system will boot up |
| <b>RTC Alarm Minute</b> | You can choose the minute that the system will boot up.         |
| <b>RTC Alarm Second</b> | You can choose the second that the system will boot up.         |

## 4.6 PCI/Plug and Play Setup

1. Press <ENTER> on “PCI/Plug and Play Setup” of the main menu screen.

| AMIBIOS SETUP - PCI/PLUG AND PLAY SETUP                |          |                    |
|--|----------|--------------------|
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| Plug and Play Aware O/S                                | No       | Available Options: |
| Reset NVRAM  | No       | Enabled            |
| PCI Latency Timer (PCI Clocks)                         | 64       | Disabled           |
| PCI VGA Palette Snoop                                  | Disabled |                    |
| PCI IDE Busmaster                                      | Disabled |                    |
| OffBoard PCI IDE Card                                  | Auto     |                    |
| OffBoard PCI IDE Primary IRQ                           | Disabled |                    |
| OffBoard PCI IDE Secondary IRQ                         | Disabled |                    |
| Assign IRQ to PCI VGA                                  | Yes      |                    |
| PCI Slot1 IRQ Priority                                 | Auto     |                    |
| PCI Slot2 IRQ Priority                                 | Auto     |                    |
| PCI Slot3 IRQ Priority                                 | Auto     |                    |
| PCI Slot4 IRQ Priority                                 | Auto     |                    |
| DMA Channel 0  | PnP      |                    |
| DMA Channel 1  | PnP      |                    |
| DMA Channel 3  | PnP      |                    |
| DMA Channel 5  | PnP      |                    |
| DMA Channel 6  | PnP      |                    |
| DMA Channel 7  | PnP      |                    |
| IRQ3   | ISA      |                    |
| IRQ4   | ISA      |                    |
| IRQ5   | PCI/PnP  | ESC:Exit :Sel      |
| IRQ7   | ISA      | PgUp/PgDn:Modify   |
| IRQ9   | PCI/PnP  | F2/F3:Color        |
| IRQ10  | PCI/PnP  |                    |
| IRQ11  | PCI/PnP  |                    |
| IRQ14  | PCI/PnP  |                    |
| IRQ15  | PCI/PnP  |                    |
| Reserved Memory Size                                   | Disabled |                    |
| Reserved Memory Address                                | C8000    |                    |

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.
3. After you have finished with the PCI/Plug and Play Setup, press <ESC> to go back to the main menu.

**Description of the item on screen follows:****Plug and Play Aware O/S**

Set this option to Yes if the operating system in this computer is aware of and follows the Plug and Play specification. Currently, only Windows® 95 is PnP-aware. The settings are Yes or No. The Optimal and Fail-Safe default settings No.

**Clear NVRAM**

During Enabled, this option will clear the NVRAM on every boot.

**PCI Latency Timer (PCI Clocks)**

This option specifies the latency timings (in PCI clocks) for all PCI devices on the PCI bus. The settings are 32, 64, 96, 128, 160, 192, 224 or 248. The Optimal and Fail-Safe default settings are 64.

**PCI VGA Palette Snoop**

When this option is set to Enabled, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and ISA) and the Bit settings are:

**Disabled** - Data read and written by the CPU is only directed to the PCI VGA device's palette registers.

**Enabled** - Data read and written by the CPU is directed to the both the PCI VGA device's palette registers and the ISA VGA device palette registers, permitting the palette registers of both devices to be identical.

This option must be set to Enabled if an ISA adapter card requires VGA palette snooping. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

**PCI IDE BusMaster**

Set this option to Enabled to specify that the IDE controller on the PCI local bus includes a bus mastering capability. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

**Offboard PCI IDE Card**

This option specifies if an offboard PCI IDE controller adapter card is installed in the computer. You must specify the PCI expansion slot on the mainboard where the offboard PCI IDE controller is installed. If an offboard PCI IDE controller is used, the onboard IDE controller is automatically disabled. The settings are Auto (AMI® BIOS automatically determines where the offboard PCI IDE controller adapter card is installed), Slot1, Slot2, Slot3 or Slot4. The Optimal and Fail-Safe settings are Auto.

If an offboard PCI IDE controller adapter card is installed in the computer, you must also set the Offboard PCI IDE Primary IRQ and Offboard PCI IDE Secondary IRQ options.

**Offboard PCI IDE Primary IRQ/  
Offboard PCI IDE Secondary IRQ**

These options specify the PCI interrupt used by the Primary (or Secondary) IDE channel on the offboard PCI IDE controller. The settings are Disabled, Hardwired, INTA, INTB, INTC or INTD. The Optimal and Fail-Safe default settings are Disabled.

**Assign IRQ to PCI VGA**

Choose the IRQ to be assigned to the PCI VGA display adapter card. The Optimal and Fail-Safe default settings No.

**DMA Channel 0/DMA Channel 1/DMA Channel 3/DMA Channel 5/DMA Channel 6/DMA Channel 7**

These options specify the bus that the specified DMA channel is used. These options allow you to reserve DMAs for legacy ISA adapter cards.

These options determine if AMI® BIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the ESCD NVRAM. If more DMAs must be removed from the pool, the end user can use these options to reserve the DMA by assigning an ISA/EISA setting to it.

**IRQ3/IRQ4/IRQ5/RQ7/IRQ9/IRQ10/IRQ11/IRQ14/IRQ15**

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.

These options determine if AMI® BIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMI® BIOS. All IRQs used by onboard I/O are configured as PCI/PnP. If all IRQs are set to ISA/EISA and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices. The settings are ISA/EISA or PCI/PnP. The Optimal and Fail-Safe default settings are IRQ3 through 7 are ISA/EISA. The Optimal and Fail-Safe default settings PCI/PnP.

**Reserved Memory Size**

This option specifies the size of the memory area reserved for legacy ISA adapter cards. The settings are Disabled, 16K, 32K, or 64K. The Optimal and Fail-Safe default settings are Disabled.

**Reserved Memory Address**

This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards.

## 4.7 Peripheral Setup

1. Press <ENTER> on “Peripheral Setup” of the main menu screen.

| AMIBIOS SETUP - PERIPHERAL SETUP                       |           |  |
|--|-----------|--|
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| OnBoard FDC  | Enabled   | Available Options:                               |
| OnBoard Serial PortA                                   | 3F8h/COM1 | Enabled  |
| OnBoard Serial PortB                                   | 2F8h/COM2 | Disabled   |
| IR Port Support  | Disabled  |  |
| IR Base Address Select                                 | 2E8       |  |
| IR IRQ Select  | 10        |  |
| OnBoard Parallel Port                                  | 378       |  |
| Parallel Port Mode                                     | Normal    |  |
| EPP Version  | N/A       |  |
| Parallel Port IRQ                                      | 7         |  |
| Parallel Port DMA Channel                              | N/A       |  |
| Onboard IDE  | Both      |  |
|  |           | ESC:Exit :Sel<br>PgUp/PgDn:Modify<br>F2/F3:Color |

2. Use <up> and <down> to choose the item and <PgUp> and <PgDn> keys to modify the highlighted item.
3. After you have finished with the Peripheral Setup, press <ESC> to go back to the main menu.

**Description of the item on screen follows:****Onboard FDC**

Choose Auto, for the BIOS to automatically detect the device

| If the ISA add-on card has | Onboard FDC to be set at |
|----------------------------|--------------------------|
| FDC exist                  | Disabled                 |
| none FDC exist             | Enabled                  |

Choose Enabled, Enabling onboard FDC.

Choose Disabled, Disabling onboard FDC.

The Optimal and Fail-Safe default settings are Auto.

**Onboard Serial Port A/Onboard Serial Port B**

Choose Enabled, for the BIOS to automatically detect the device.

| If the ISA add-on card has |                    |                    |                    | Onboard Serial port to be set at |                 |          |                 |
|----------------------------|--------------------|--------------------|--------------------|----------------------------------|-----------------|----------|-----------------|
| COM1<br>(I/O:3F8H)         | COM2<br>(I/O:3F8H) | COM3<br>(I/O:3E8H) | COM4<br>(I/O:2E8H) | PORT1                            | IRQ<br>ASSIGNED | PORT2    | IRQ<br>ASSIGNED |
| ✓                          | ✓                  | ✓                  | ✓                  | DISABLED                         | X               | DISABLED | X               |
| ✓                          | ✓                  | X                  | X                  | COM3                             | 4               | COM4     | 3               |
| X                          | X                  | ✓                  | ✓                  | COM1                             | 4               | COM2     | 3               |
| ✓                          | X                  | X                  | ✓                  | COM2                             | 3               | COM3     | 4               |
| X                          | ✓                  | ✓                  | X                  | COM1                             | 4               | COM4     | 3               |
| ✓                          | ✓                  | ✓                  | X                  | COM4                             | 3               | DISABLED | X               |
| ✓                          | ✓                  | X                  | ✓                  | COM3                             | 4               | DISABLED | X               |
| ✓                          | X                  | ✓                  | ✓                  | COM2                             | 3               | DISABLED | X               |
| X                          | ✓                  | ✓                  | ✓                  | COM1                             | 4               | DISABLED | X               |
| X                          | X                  | X                  | X                  | COM1                             | 4               | COM2     | 3               |
| ✓                          | X                  | X                  | X                  | COM2                             | 3               | COM3     | 4               |
| X                          | ✓                  | X                  | X                  | COM1                             | 4               | COM3     | 4               |
| X                          | X                  | ✓                  | X                  | COM1                             | 4               | COM2     | 3               |
| X                          | X                  | X                  | ✓                  | COM1                             | 4               | COM2     | 3               |

**Note:** *If the onboard serial port interrupt and ISA add-on card interrupt are in conflict, the serial port will not work properly. Please disable one of the devices.*

**IR Port Support**(leave on the default setting of Disabled)

### Onboard Parallel Port

Choose Auto, for the BIOS to automatically assigned onboard parallel port to available parallel port or disabled

| If the ISA add-on card has |                  |                  | Onboard parallel port |                 |
|----------------------------|------------------|------------------|-----------------------|-----------------|
| LPT1<br>I/O:378H           | LPT2<br>I/O:278H | LPT3<br>I/O:3BCH | PORT<br>ASSIGNED      | IRQ<br>ASSIGNED |
| ✓                          | ✓                | ✓                | Disabled              | X               |
| ✓                          | ✓                | X                | LPT3                  | 5               |
| ✓                          | X                | ✓                | LPT2                  | 5               |
| X                          | ✓                | ✓                | LPT1                  | 7               |
| ✓                          | X                | X                | LPT2                  | 5               |
| X                          | ✓                | X                | LPT1                  | 7               |
| X                          | X                | ✓                | LPT1                  | 7               |
| X                          | X                | X                | LPT1                  | 7               |

**Note:** *If the onboard parallel port interrupt and ISA add-on card interrupt are in conflict, the parallel port will not work properly. Please disable one of the devices.*

### Parallel Port Mode

This option allows user to choose the operating mode of the onboard parallel port. The settings are Normal, SPP/EPP or ECP mode.

**EPP Version**(leave on the default setting of N/A)

**Parallel Port IRQ**

If the onboard parallel mode is not on auto mode, the user can select the interrupt line for onboard parallel port. We suggest that the user select the interrupt for the onboard parallel port as shown below:

| <b>Onboard parallel port set at</b> | <b>Parallel Port IRQ</b> |
|-------------------------------------|--------------------------|
| LPT1(378H)                          | 7                        |
| LPT2(278H)                          | 5                        |
| LPT3(3BCH)                          | 5                        |

**Parallel Port DMA Channel**

This option allows user to choose DMA channel 1 to 3 for the onboard parallel port on ECP mode.

**Onboard IDE**

Set this option to enable or disable on board IDE controller.

## 4.8 Hardware Monitor Setup

This settings are use by LM78 chipset which is an optional function. To enable the best performance, leave all the setting on the default mode.

| AMIBIOS SETUP - PERIPHERAL SETUP                       |          |  |
|--|----------|--|
| (C) 1996 American Megatrends, Inc. All Rights Reserved |          |  |
| CPU Type   | Pentium  | Available Options:                               |
| CPU Current Voltage (V)                                | 3.3      |  |
| --- LM78 Setup ---                                     |          |  |
| CPU Thermal Setup (°C)                                 | 60       |  |
| CPU Current Temperature (°C)                           | 30       |  |
| Thermal Slow Clock Ratio                               | 75%      |  |
| CPU Temperature Display                                | yes      |  |
| System Temperature Set (°C)                            | 50       |  |
| System Current Temperature (°C)                        | 29       |  |
| Chassis Intrusion                                      | Disabled |  |
| Power FAN Message Display                              | No       |  |
| CPU FAN Message Display                                | Yes      |  |
| System Temperature Display                             | Yes      |  |
|  |          | ESC:Exit :Sel<br>PgUp/PgDn:Modify<br>F2/F3:Color |

**Description of the item on screen follows:****CPU Thermal Setup**

This is for setting the CPU temperature. You must leave this on the default setting of 60.

**CPU Current Temperature**

This will show the CPU Current temperature.

**Thermal Slow Clock Ratio**

This will show the thermal slow clock ratio

**CPU Temperature Display**

If set to yes, during boot-up this will show the CPU temperature.

**System Temperature Set**

This is for setting the system temperature. You must leave this on the default setting of 50.

**System Current Temperature**

This will show the current temperature of the system.

**Chassis Intrusion**

During Enabled, the on-board chassis intrusion sensor will monitor any intrusion on the chassis.

**Power FAN Message Display/CPU FAN Message Display**

If set to yes, if any of the fan malfunction then it will show warning messages.

**System Temperature Display**

If set to yes, if the temperature gets to high or to low, this will show warning messages.