

## Chapter 2

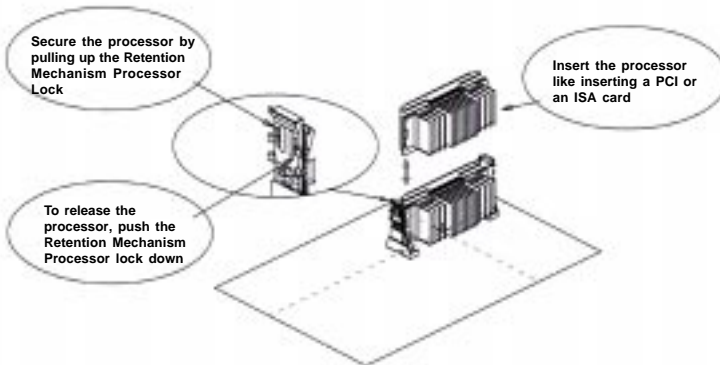
## HARDWARE INSTALLATION

### 2.1 Central Processing Unit: CPU

#### 2.1-1 Processor Installation Procedures

**Step 1:** Install the Retention Mechanism.

Attach the Retention Mechanism to the Mainboard. Push the Plastic lock to secure the Retention Mechanism into the mainboard.



**Step 2:** Install the Processor.

Insert the Processor like inserting a PCI or an ISA card.

**Step 3:** Lock the Processor.

Lock the processor by pulling up the Retention Mechanism processor lock shown above.

**Note:** The Retention Mechanism processor lock can only lock S.E.C.C. 2 and S.E.P.P. processor.

**2.1-2 CPU Core Speed Derivation Procedure**

1. The DIP Switch SW1 (1, 2, 3, and 4) 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:

$$\begin{array}{llll} \text{If} & \text{CPU Clock} & = & 66\text{MHz}/100\text{MHz} \\ & \text{Core/Bus ratio} & = & 4 \\ \text{then} & \text{CPU core speed} & = & \text{Host Clock} \times \text{Core/Bus ratio} \\ & & = & 66\text{MHz} \times 4/100\text{MHz} \times 4 \\ & & = & 266\text{MHz}/400\text{MHz} \end{array}$$

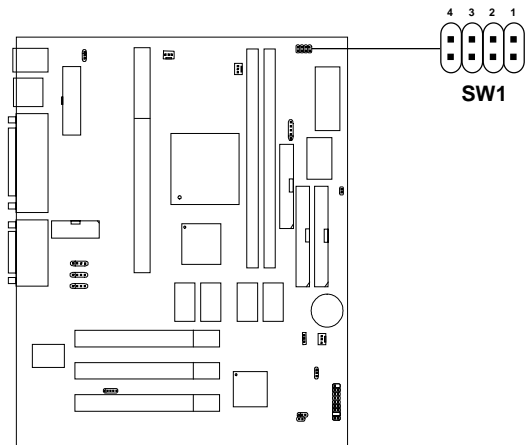
| SW1 |     |     |     | CPU            |
|-----|-----|-----|-----|----------------|
| 1   | 2   | 3   | 4   | Core/Bus Ratio |
| ON  | OFF | ON  | ON  | 2.5            |
| ON  | ON  | OFF | ON  | 3              |
| ON  | OFF | OFF | ON  | 3.5            |
| ON  | ON  | ON  | OFF | 4              |
| ON  | OFF | ON  | OFF | 4.5            |
| ON  | ON  | OFF | OFF | 5              |
| ON  | OFF | OFF | OFF | 5.5            |
| OFF | ON  | ON  | ON  | 6              |
| OFF | OFF | ON  | ON  | 6.5            |
| OFF | ON  | OFF | ON  | 7              |
| OFF | OFF | OFF | ON  | 7.5            |
| OFF | ON  | ON  | OFF | 8              |

ON - Short    OFF - Open





**Note:** The CPU Bus Frequency is set at 66MHz or 100MHz by CPU default.

**2.1-3 CPU Speed Setting: SW1**

To adjust the speed of the CPU, you must know the specification of your CPU (*always ask the vendor for CPU specification*). The mainboard can auto-detect between 66 or 100MHz CPU Bus Frequency.








**a. 66MHz CPU Bus Frequency**

| CPU Type | SW1                                                                               |
|----------|-----------------------------------------------------------------------------------|
| 233MHz   |  |
| 266MHz   |  |
| 300MHz   |  |
| 333MHz   |  |

**Table 2.1 233 ~ 333MHz Intel® Pentium® II/III/Celeron™ processor**

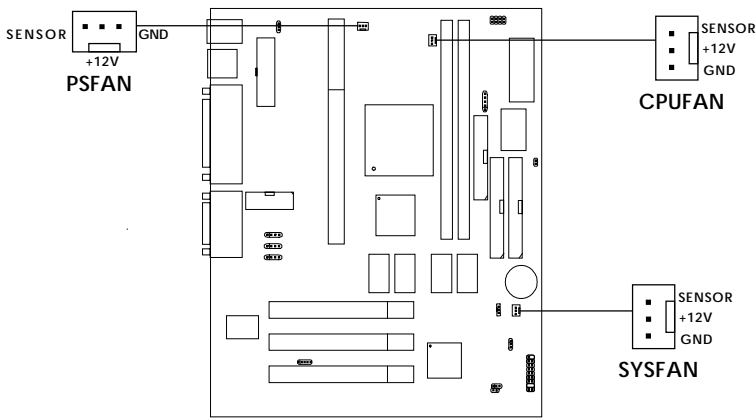
**b. 100MHz CPU Bus Frequency**

| CPU Type | SW1                                                                                 |
|----------|-------------------------------------------------------------------------------------|
| 350MHz   |    |
| 400MHz   |   |
| 450MHz   |  |
| 500MHz   |  |
| 550MHz   |  |

**Table 2.2 350 ~ 550MHz Intel® Pentium® II/III processor**

### 2.1-4 Fan Power Connectors: CPUFAN/PSFAN/SYSFAN

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 System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of this function.



**PSFAN:** Power Supply Fan

**CPUFAN:** Processor Fan

**SYSFAN:** System(Chassis) Fan

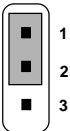
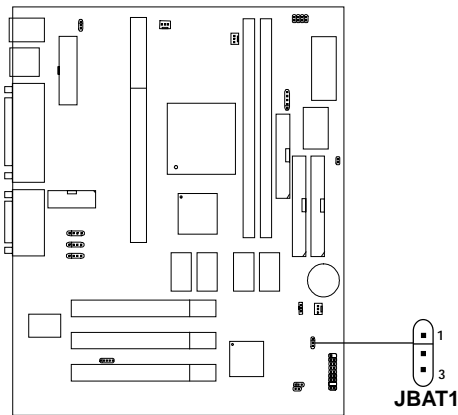
For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed.

**Note:**

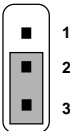
1. Always consult vendor for proper CPU cooling fan.
2. CPU FAN supports the FAN control. You can install PC Alert utility. This will automatically control the CPU FAN Speed according to the actual CPU temperature.

**2.2 Clear CMOS Jumper: JBAT1**

A battery must be used to retain the mainboard configuration in CMOS RAM. Short 1-2 pins of JBAT1 to store the CMOS data.



**Keep Data**



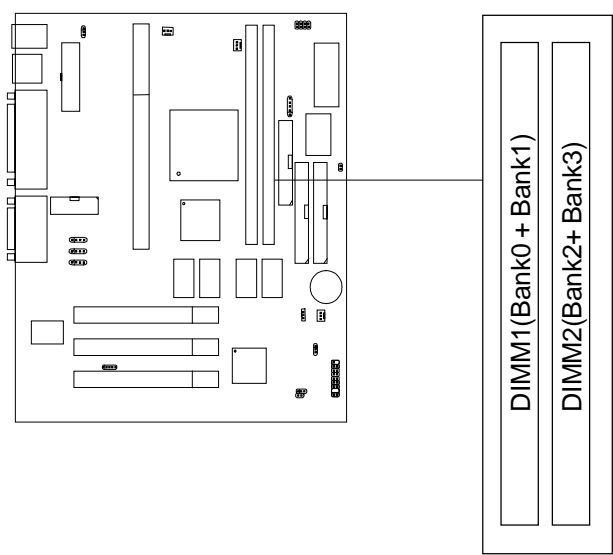
**Clear Data**

**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. Always unplug the power cord from the wall socket.

## 2.3 Memory Installation

### 2.3-1 Memory Bank Configuration

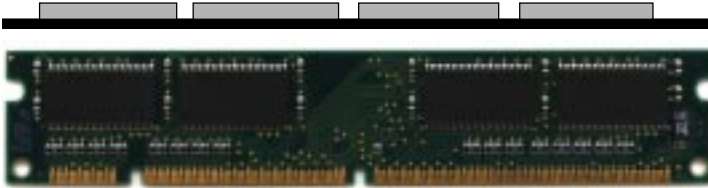
The mainboard supports a maximum memory size of 256MB (8M x 8) for SDRAM: It provides two 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 256 Mbytes DIMM memory module.



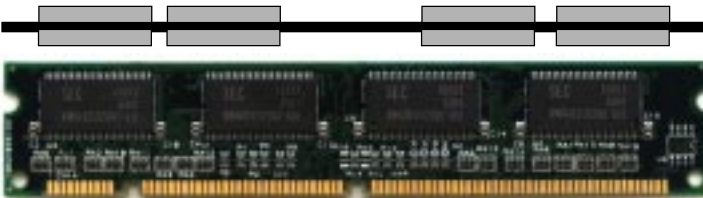
There are two kinds of DIMM specification supported by this mainboard: PC100 and PC66. If you use 66MHz CPU Bus Frequency, these two DIMM Specs. is supported. If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported.

### 2.3-2 Memory Installation Procedures

#### A. How to install a DIMM Module

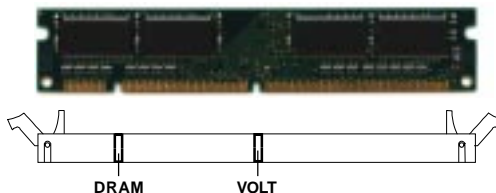


**Single Sided DIMM**



**Double Sided DIMM**

1. The DIMM slot has a two Notch Key “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. The plastic clip at the side of the DIMM slot will automatically close.

### 2.3-3 Memory Population Rules

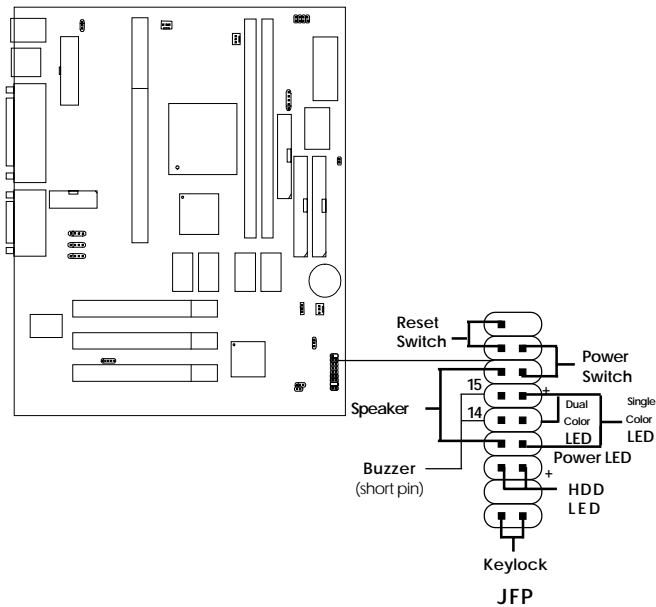
1. Supports only SDRAM DIMM.
2. To operate properly, at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free memory, so memory can be installed on DIMM1 or DIMM 2 in any order.
4. Supports 3.3 volt DIMM.
5. The DRAM addressing and the size supported by the mainboard is shown below:

**Table 2.3-1 SDRAM Memory Addressing**

| 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            | 11           | 8      | 8MBx4                   | 16MBx8                  |
|            | 2Mx8                 | ASYM            | 11           | 9      | 16MBx8                  | 32MBx16                 |
| 64M        | 2Mx32                | ASYM            | 11           | 9      | 32MBx2                  | 64MBx4                  |
|            | 2Mx32                | ASYM            | 12           | 8      | 16MBx2                  | 32MBx4                  |
|            | 4Mx16                | ASYM            | 11           | 10     | 32MB                    | 64MB                    |
|            | 4Mx16                | ASYM            | 13           | 8      | 32MB                    | 64MB                    |
|            | 8Mx8                 | ASYM            | 13           | 9      | 64MB                    | 128MB                   |
| 64M        | 2Mx32                | ASYM            | 12           | 8      | 16MB                    | 32MB                    |
|            | 4Mx16                | ASYM            | 13           | 8      | 32MB                    | 64MB                    |
|            | 8Mx8                 | ASYM            | 13           | 9      | 64MB                    | 128MB                   |

2.4 Case Connector: JFP

The Power Switch, Reset Switch, Power LED, Speaker, Keylock and HDD LED are all connected to the JFP connector block.



### **2.4-1 Power Switch**

Connect to a 2-pin push button switch. This switch has the same feature with JRMS1.

### **2.4-2 Reset Switch**

Reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin.

### **2.4-3 Power LED**

The Power LED is lit while the system power is on. Connect the Power LED from the system case to this pin. There are two types of LED that you can use: 3-pin single color LED or 2-pin dual color LED(ACPI request).

- a. 3 pin single color LED connect to pin 4, 5, & 6. This LED will lit when the system is on.
- b. 2 pin dual color LED connect to pin 5 & 6.

**GREEN** Color: Indicate the system is in full on mode.

**ORANGE** Color: Indicate the system is in suspend mode.

### **2.4-4 Speaker**

Speaker from the system case is connected to this pin.

If on-board Buzzer is available:

Short pin 14-15: On-board Buzzer Enabled.

Open pin 14-15: On-board Buzzer Disabled.

### **2.4-5 HDD LED**

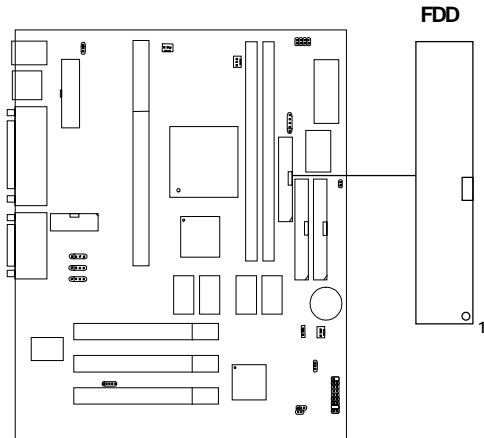
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

### **2.4-6 Keylock**

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

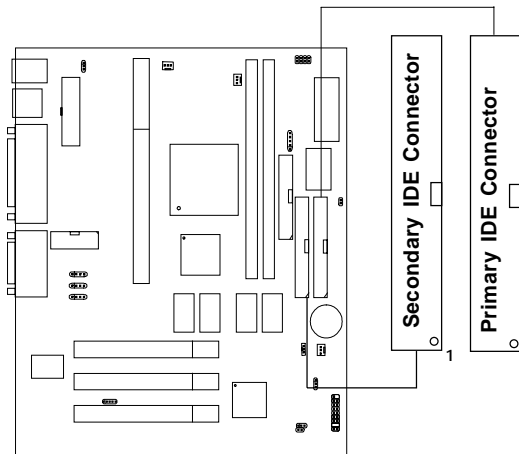
## 2.5 Floppy Disk Connector: FDD

The mainboard also provides a standard floppy disk connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.



## 2.6 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33 function. It has 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. These connectors support the provided IDE hard disk cable.



### IDE1(Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

### IDE2(Secondary IDE Connector)

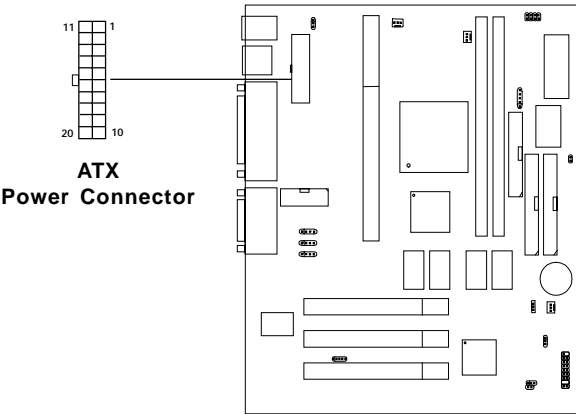
IDE2 can also connect a Master and a Slave drive.

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2.7 Power Supply

2.7-1 ATX 20-pin Power Connector: JWR1

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard. This power connector supports instant power on function which means that system will boot up instantly when the power connector is inserted on the board.



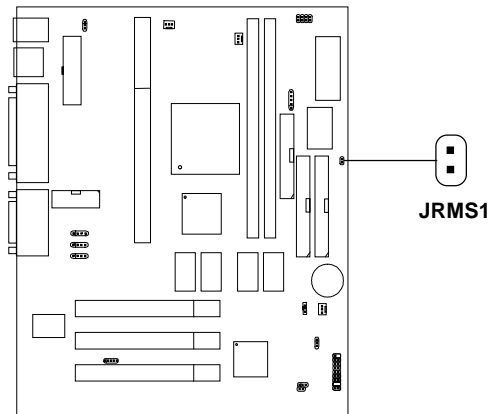
PIN DEFINITION

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

**Warning:** Since the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power connector to ensure that no damage will be done.

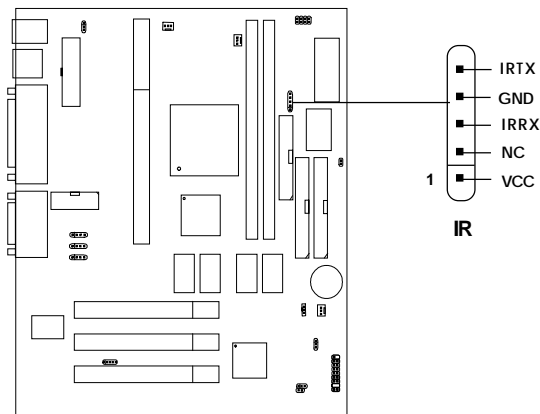
### 2.7-2 Remote Power On/Off Switch: JRMS1

Connect to a 2-pin push button switch. During OFF state, press once and the system turns on. **During ON stage, push once and the system goes to sleep mode: pushing it more than 4 seconds will change its status from ON to OFF.** If you want to change the setup, you could go to the BIOS Power Management Setup. This is only used for ATX type power supply.



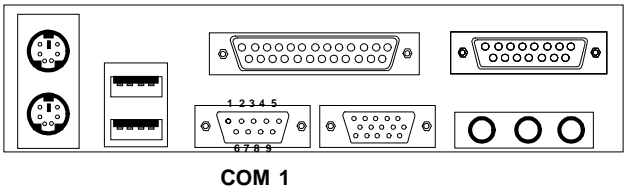
**2.8 IrDA Infrared Module Connector: IR**

The mainboard provides one 5-pin infrared (IR) connector for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function. FIR and Consumer IR are reserved functions.



**2.9 Serial Port Connectors: COM 1 and COM 2**

The mainboard has a 9-pin male DIN connector for serial port COM 1. This port is a 16550A high speed communication port that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.



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

**PIN DEFINITION**

| PIN | SIGNAL                                    |
|-----|-------------------------------------------|
| 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)                 |

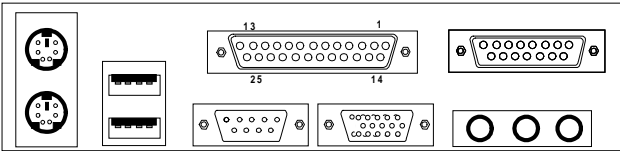
**Note:** There's another serial port connector (COM 2), which is located on the mainboard. Connect a serial port 9-pin male port into this connector.

**2.10 Parallel Port Connector: LPT**

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP). See connector and pin definition below:

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

**L P T**

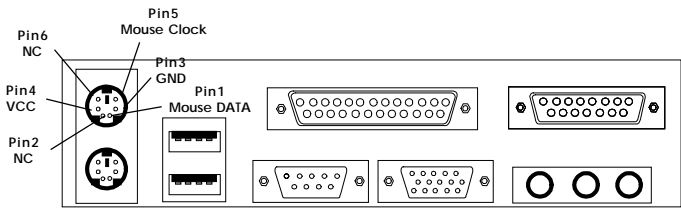


**PIN DEFINITION**

| PIN | SIGNAL | PIN | SIGNAL     |
|-----|--------|-----|------------|
| 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 |     |            |

2.11 Mouse Connector: JKBMS1

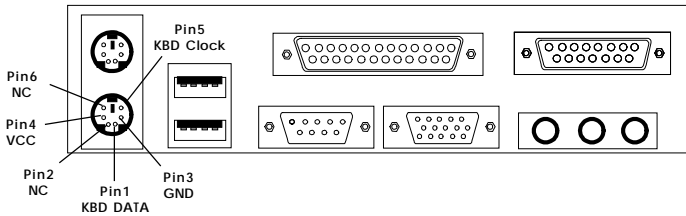
The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:



PS/2 Mouse (6-pin Female)

2.12 Keyboard Connector: JKBMS1

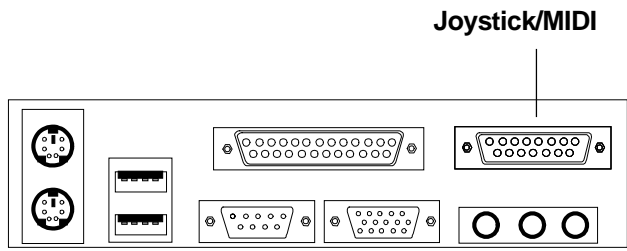
The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



PS/2 Keyboard (6-pin Female)

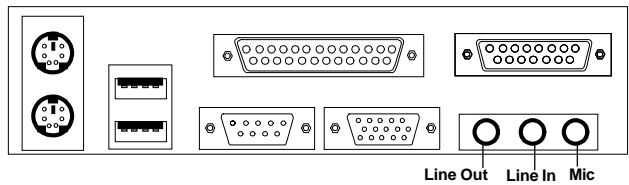
### 2.13 Joystick/Midi Connectors

You can connect joystick or game pads to this connector.



### 2.14 Audio Port Connectors

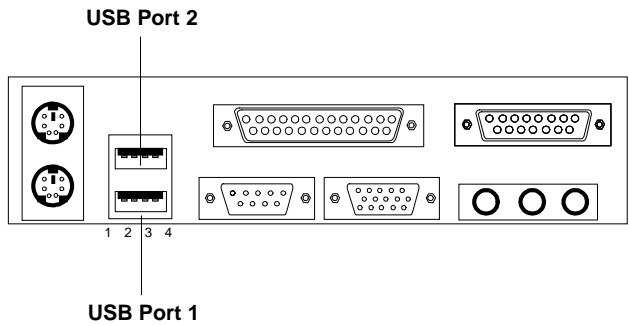
**Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape layer, or other audio devices. **Mic** is a connector for the microphones.



### 1/8" Stereo Audio Connectors

2.15 USB Connectors

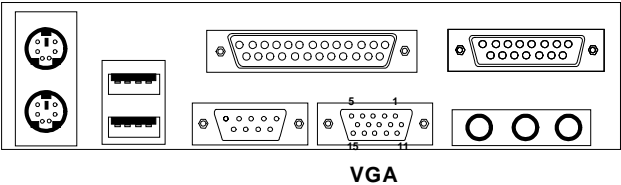
The mainboard provides a **UHCI(Universal Host Controller Interface)** **Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



| PIN | SIGNAL |
|-----|--------|
| 1   | VCC    |
| 2   | -Data0 |
| 3   | GND    |
| 4   | +Data0 |

**2.16 VGA DB 15 Pin Connector**

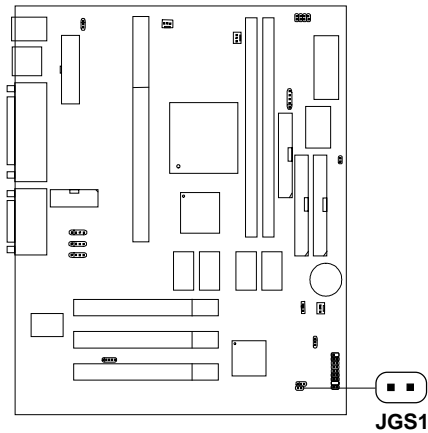
The mainboard provides a DB 15-pin connector to connect to a VGA monitor.



| Analog Video Display Connector(DB15-S) |                    |
|----------------------------------------|--------------------|
| Pin                                    | Signal Description |
| 1                                      | Red                |
| 2                                      | Green              |
| 3                                      | Blue               |
| 4                                      | Not used           |
| 5                                      | Ground             |
| 6                                      | Ground             |
| 7                                      | Ground             |
| 8                                      | Ground             |
| 9                                      | Not used           |
| 10                                     | Ground             |
| 11                                     | Not used           |
| 12                                     | SDA                |
| 13                                     | Horizontal Sync    |
| 14                                     | Vertical Sync      |
| 15                                     | SCL                |

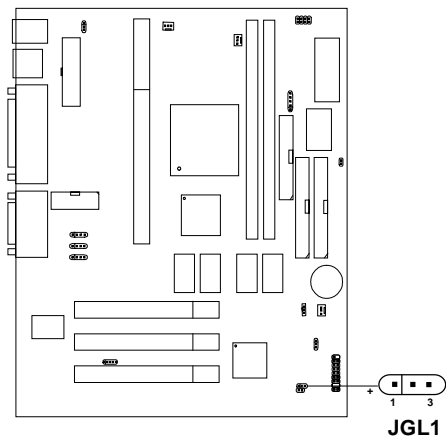
## 2.17 Power Saving Switch Connector: JGS1

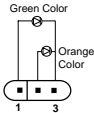
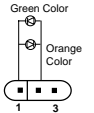
Attach a power saving switch to **JGS1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



2.18 Power Saving LED Connector: JGL1

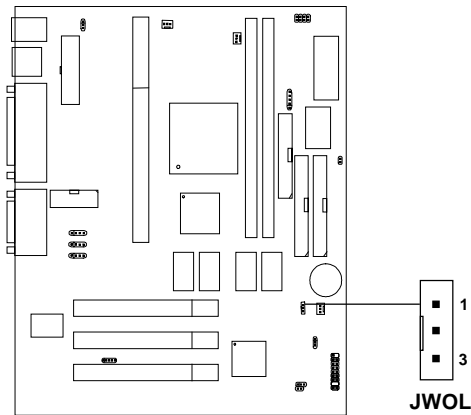
JGL1 can be connected with two-color LED. There are two types of LED that you can use: 3-pin LED or 2-pin LED(ACPI request). When the 2-pin LED is connected to JGL1: the light will turn color green, when system is On; during sleep mode, the 2-pin LED will change color from Green to Orange. For 3-pin LED, when LED is connected to JGL1 this will light when the system is On and blinks when it is in suspend/sleep mode. See page 3-21 (Power status LED) for further instruction.



| 3-pin LED                                                                           | 2-pin LED                                                                           |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |
| 1-2 Single Color<br>1-3 Blink                                                       | 1-2 Dual Color                                                                      |

2.19 Wake-Up on LAN Connector: JWOL

The JWOL connector is for use with LAN add-on cards that supports Wake Up on LAN function. To use this function, you need to set the “Wake-Up on LAN” to enable at the BIOS Power Management Setup.



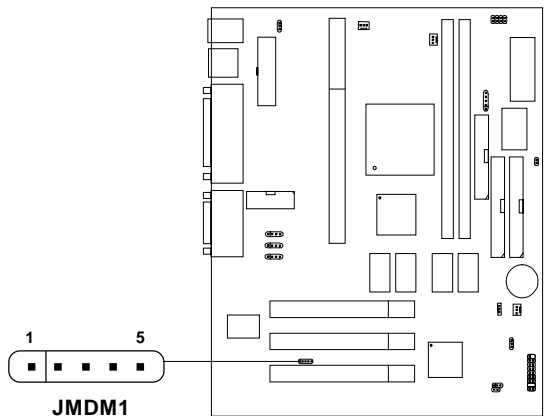
| PIN | SIGNAL    |
|-----|-----------|
| 1   | 5VSB      |
| 2   | GND       |
| 3   | MP_WAKEUP |

**Note:** LAN wake-up signal is active “high”.

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(Power supply with 750mA 5V Stand-by)

2.20 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for used with Modem add-on card that supports the Modem Wake Up function. To use this function, you need to set the “Power On by Ring” to enable at the BIOS Power Management Setup.



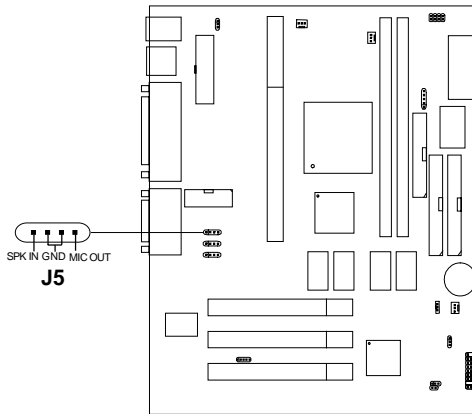
| PIN | SIGNAL     |
|-----|------------|
| 1   | NC         |
| 2   | GND        |
| 3   | MDM_WAKEUP |
| 4   | NC         |
| 5   | 5VSB       |

**Note:** Modem wake-up signal is active “low”.

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(Power supply with 750mA 5V Stand-by)

## 2.21 Modem-In: J5

The connector is for Modem with internal voice connector.

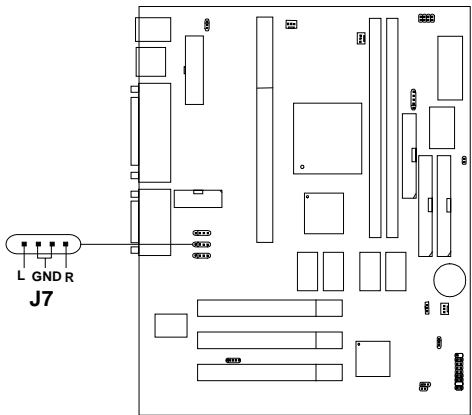


SPK\_IN is connected to the Modem Speaker Out connector.

MIC\_OUT is connected to the Modem Microphone In connector.

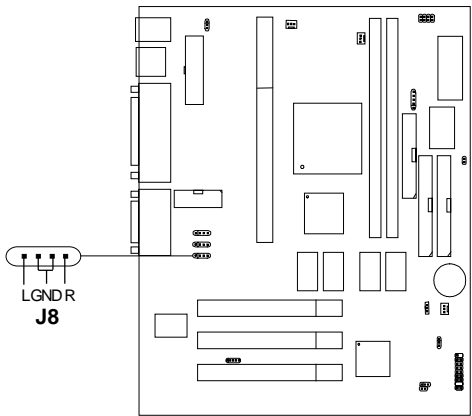
**2.22 AUX Line In Connector: J7**

This connector is used for DVD Add on Card with Line In connector.



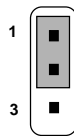
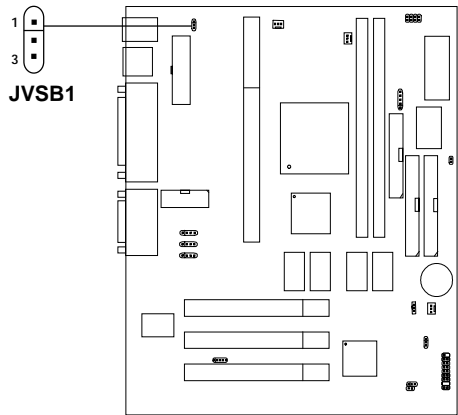
**2.23 CD-In Modem Connector: J8**

This connector is for Modem with internal voice connector.

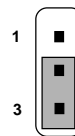


**2.24 Keyboard Power: JVSb1**

The JVSb1 jumper is for setting keyboard power. This function is provided by keyboard and PS/2 mouse Wake-up function which can be set through BIOS.



**5V Standby (default)**  
Enable keyboard  
power on function



**5V**  
Disable keyboard  
power on function

**Note:** To be able to use this function, you need a power supply that provide enough power for this feature.  
(Power supply with 750mA 5V Stand-by)