

## Chapter 2

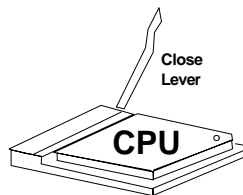
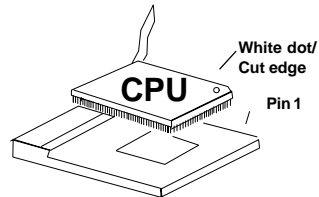
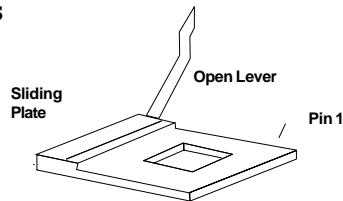
### HARDWARE INSTALLATION

#### Central Processing Unit: CPU

The mainboard operates with **Intel® Celeron™/Pentium® III (FC-PGA) processor**. The mainboard uses a CPU socket called Socket 370 for easy CPU installation. The CPU should always have a Heat Sink and a cooling fan attached to prevent overheating.

##### • 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.



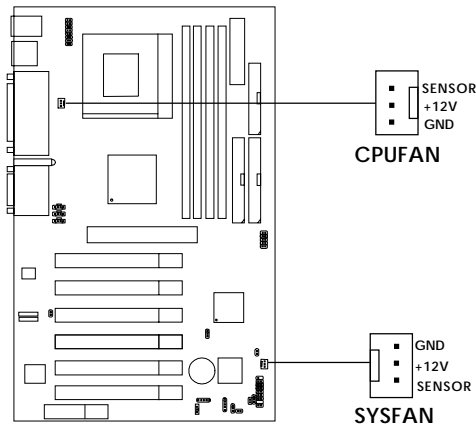
- **CPU Core Speed Derivation Procedure**

The BIOS can be used to set the CPU Host Bus Frequency Clock.

$$\begin{array}{lll} \textbf{If} & \text{CPU Clock} & = 66\text{MHz} \\ & \text{Core/Bus ratio} & = 3.5 \\ \textbf{then} & \text{CPU core speed} & = \text{Host Clock} \times \text{Core/Bus ratio} \\ & & = 66\text{MHz} \times 3.5 \\ & & = 233\text{MHz} \end{array}$$

**• Fan Power Connectors: CPUFAN & 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.



**CPUFAN:** Processor Fan

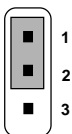
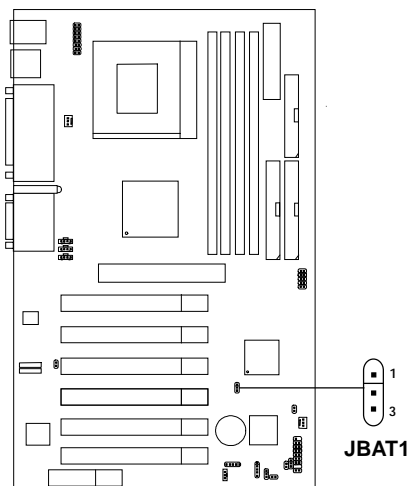
**SYSFAN:** System Fan

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.

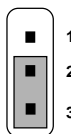
**Note:** Always consult your reseller for proper CPU cooling fan.

## 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**



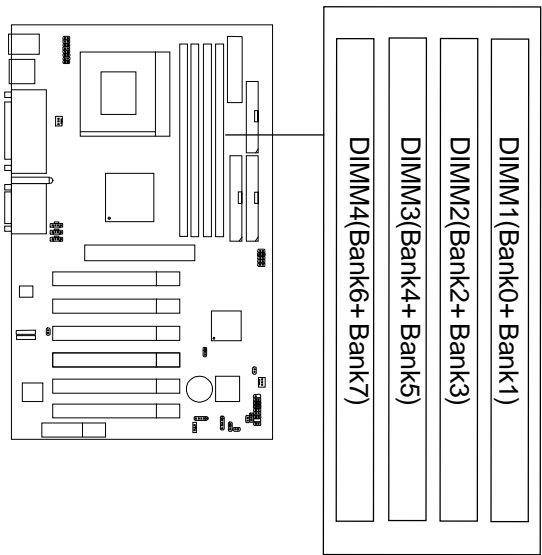
**Clear Data**

**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.

# Memory Installation

- Memory Bank Configuration

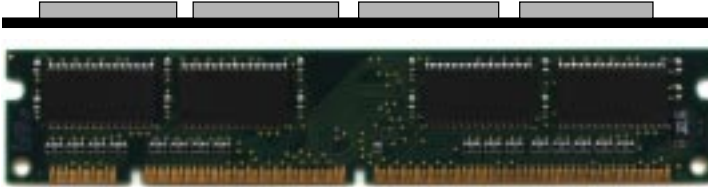
The mainboard supports a maximum memory size of 2GB (256-bit technology) SDRAM: It provides four 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 512 Mbytes DIMM memory module.



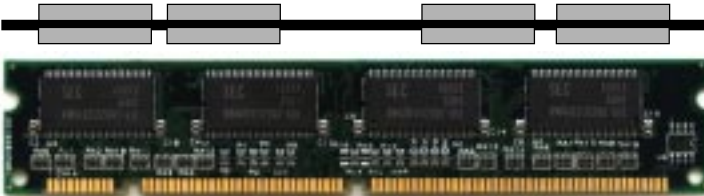
There are three kinds of DIMM specification supported by this mainboard: PC133, PC100 and PC66. If you use 66MHz CPU Bus Frequency, these four DIMM Specs. is supported. If you use 100 MHz CPU Bus Frequency, only PC100 DIMM Specs. is supported. If you use 133 MHz CPU Bus Frequency, only PC133 DIMM Specs. is supported.

- **Memory Installation Procedures**

- A. How to install a DIMM Module**

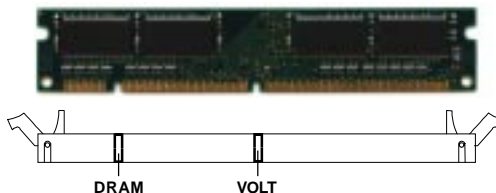


**Single Sided DIMM**



**Double Sided DIMM**

1. The DIMM slot has 2 Notch Keys “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.

### ● Memory Population Rules

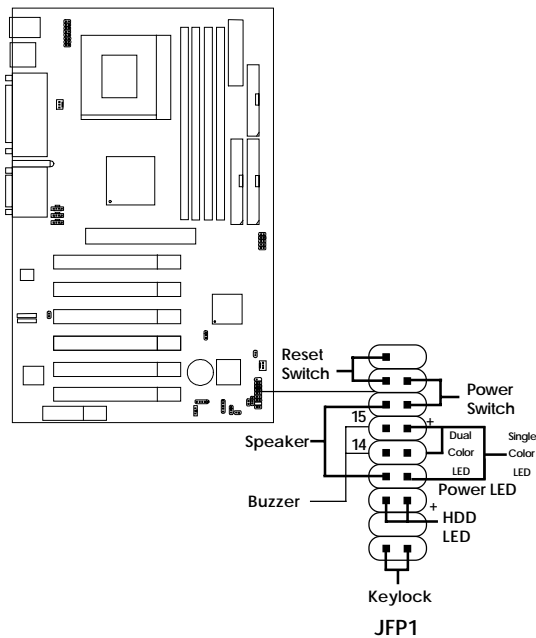
1. Supports only SDRAM DIMM.
2. To operate properly, at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM 2, DIMM 3 or DIMM4 in any order.
4. Supports 3.3 volt DIMM.
5. The DRAM addressing and the size supported by the mainboard is shown below:

### 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
	4Mx4	ASYM	11	10	32MB	64MB
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
	16Mx4	ASYM	13	10	128MB	256MB
	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB

Case Connector: JFP1

The Keylock (reserved), Power Switch, Reset Switch, Power LED, Speaker, and HDD LED are all connected to the JFP1 connector block.





### **Power Switch**

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

### **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.

### **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.

### **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.

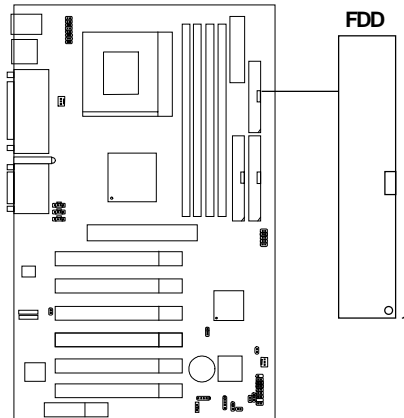
Open pin 14-15:    On-board Buzzer Disabled.

### **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.

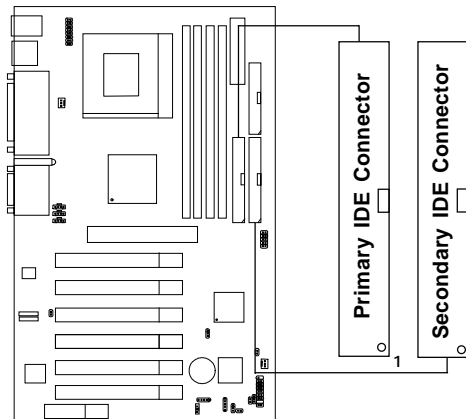
## Floppy Disk Connector: FDD

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



## Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA/33/66/100 Controller that provides PIO mode 0~5, Bus Master, and Ultra DMA/33/66/100 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.

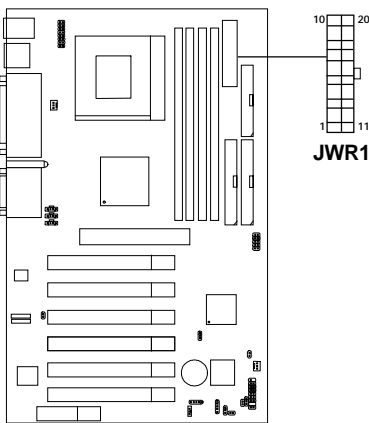
### **IDE2** (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

Power Supply

• 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.



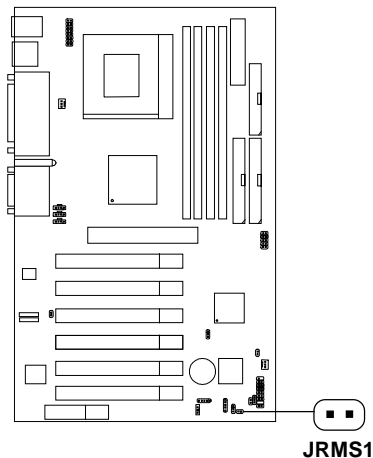
PIN DEFINITION

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.

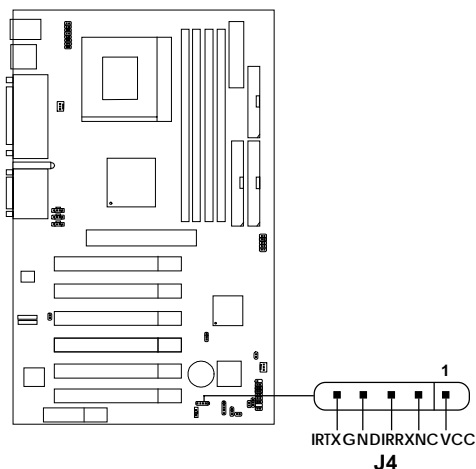
- **Remote Power On/Off Switch: JRMS1**

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 used for ATX type power supply only.



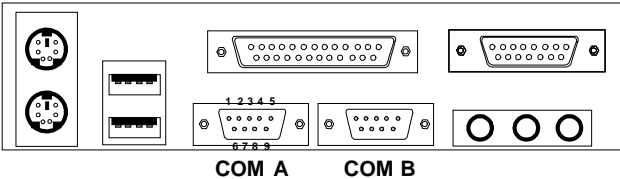
## IrDA Infrared Module Connector: J4

The mainboard provides one infrared (J4) connector for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You should configure the setting through the BIOS setup to use the IR function.



**Serial Port Connectors: COM A and COM B**

The mainboard provides two 9-pin male DIN connectors for serial port COM A & COM B. These port are 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**

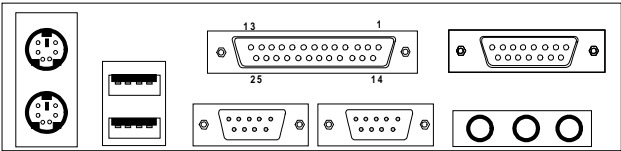
PIN	SIGNAL
1	<b>DCD</b> (Data Carry Detect)
2	<b>SIN</b> (Serial In or Receive Data)
3	<b>SOUT</b> (Serial Out or Transmit Data)
4	<b>DTR</b> (Data Terminal Ready)
5	<b>GND</b>
6	<b>DSR</b> (Data Set Ready)
7	<b>RTS</b> (Request To Send)
8	<b>CTS</b> (Clear To Send)
9	<b>RI</b> (Ring Indicate)

**Parallel Port Connector: LPT1**

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)**

**LPT 1**



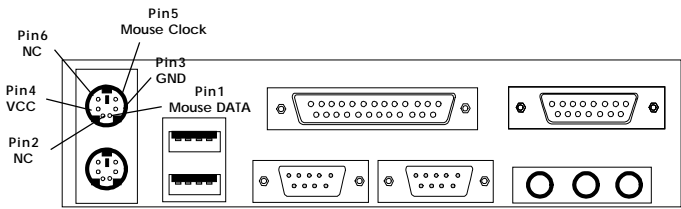
**PIN DEFINITION**

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		



Mouse Connector: JKBMS1

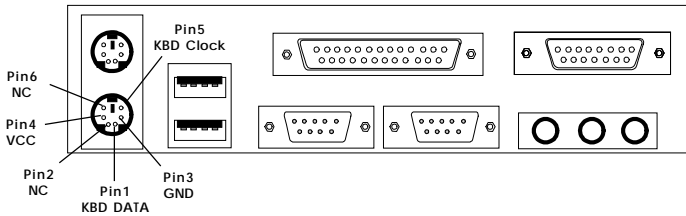
The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:



PS/2 Mouse (6-pin Female)

Keyboard Connector: JKBMS1

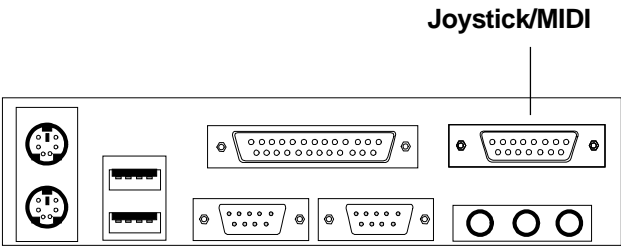
The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



PS/2 Keyboard (6-pin Female)

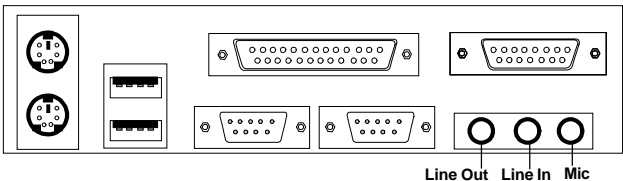
## Joystick/Midi Connectors

You can connect a joystick or game pad to this connector.



## Audio Port Connectors

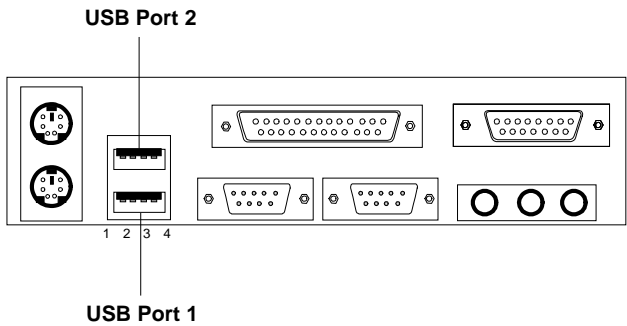
**Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for the microphones.



## 1/8" Stereo Audio Connectors

USB Connectors

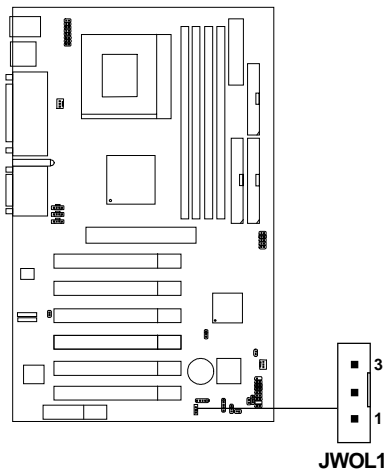
The mainboard provides a **UHCI (Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



PIN	SIGNAL
1	VCC
2	-Data
3	+Data
4	GND

Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is use with LAN add-on cards that supports Wake Up on LAN function. To use this function, set the “Wake-Up on LAN” to enable located at the BIOS Power Management Setup.



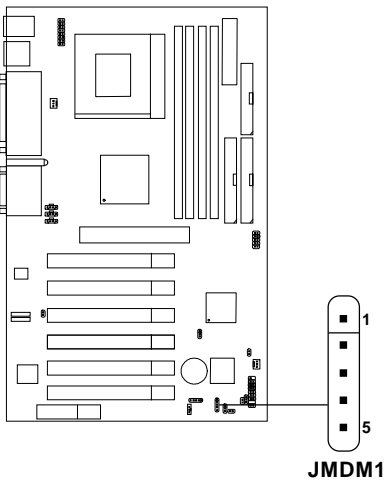
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

**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)

Modem Wake Up Connector: JMDM1

The JMDM1 connector is used for Modem add-on card that supports the Modem Wake Up function.



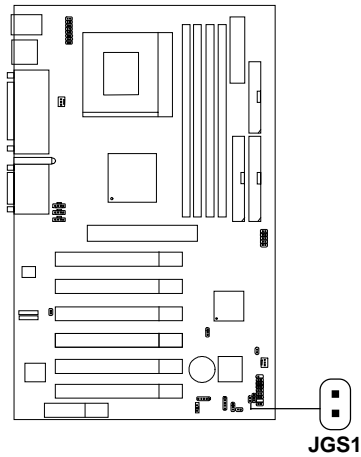
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

**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)

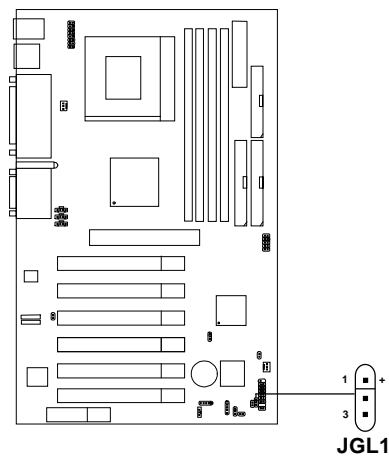
## Power Saving Switch Connector: JGS1

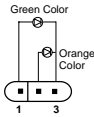
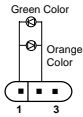
Attach a power saving switch to **JGS1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



Power Saving LED Connector: JGL1

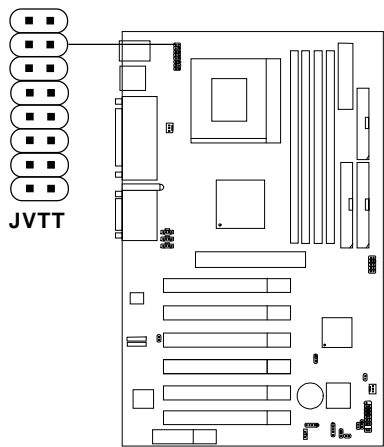
JGL1 can be connected with two-color LED. There are two types of LED that can be use: 3-pin LED or 2-pin LED. When the 2-pin LED is connected to JGL1, the light will turn green, when the system is On. During sleep mode, the 2-pin LED will change its color from Green to Orange. For 3-pin LED, when LED is connected to JGL1, this will light when the system is On and blinks when it is in suspend/sleep mode.



3-pin LED	2-pin LED
	
1-2 Single Color 1-3 Blink	1-2 Dual Color

CPU Termination Voltage Jumper:  
JVTT (reserved)

This jumper is a reserved function for future Coppermine CPU.



JVTT	Function
	For Celeron
	For Coppermine



## CNR1 (Communication Network Riser)

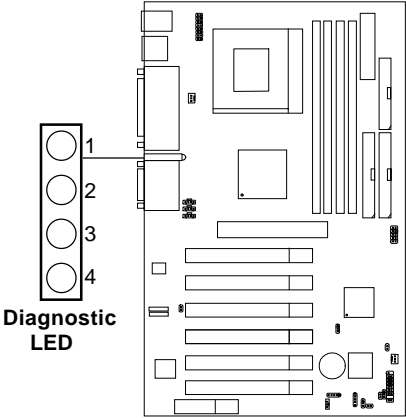
The Communication Network Riser specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, **which supports audio and modem only.**



CNR1

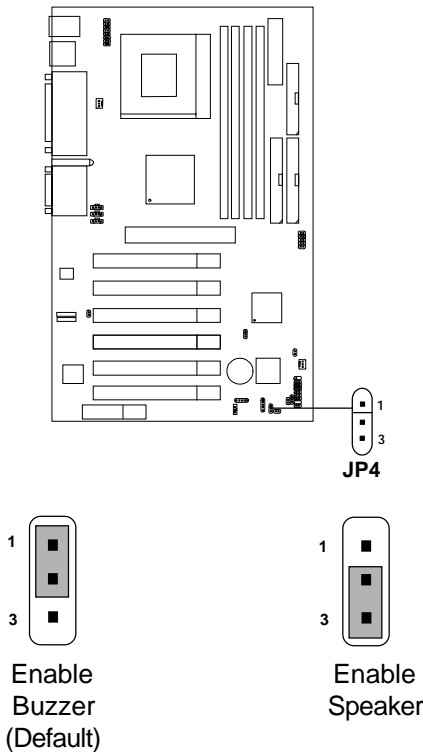
## **Diagnostic LED**

The mainboard provides a Special Diagnostic LED for users to be aware of their mainboard conditions. The LED helps user determine the problem of the mainboard. Refer to chapter 2-29 for Diagnostic LED & Smart D-LED voice function table.



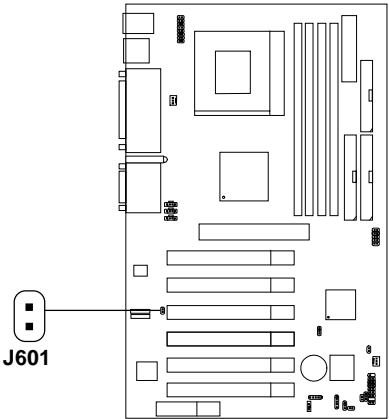
**Smart D-LED**  
**Voice Speaker Select Output Jumper: JSPK**

The mainboard provides a Smart D-LED voice function which help users be aware of their mainboard conditions. This jumper will enable the Smart D-LED voice through the case speaker/buzzer and transferred it to the audio speaker. Refer to chapter 2-29 for Diagnostic LED & Smart D-LED voice function table.



**Smart D-LED Voice Mode Tool: J601**

This jumper works through a recorded voice which helps user identify the cause of any possible failure. The recorded voice can either be in English or Chinese language. Refer to chapter 2-29 for Diagnostic LED & Smart D-LED voice function table.



**Chinese  
Mode**



**English  
Mode**

**Note:** Smart D-LED voice mode tool cannot be Disabled.

Diagnostic LED &amp; Smart D-LED Voice Function Table

D-LED 1 2 3 4	DESCRIPTION	POSSIBLE PROBLEM/VOICE CONTEXT
0 0 0 0	System Power ON This will start the BIOS Initialization	<i>The processor might be damaged or not installed properly**</i>
1 0 0 0	Early Chipset Initialization	<i>Please check local vendor**</i>
0 1 0 0	Memory Detection Test Testing Onboard memory size	<i>The memory module might be damaged or not installed properly**</i>
1 1 0 0	Decompressing BIOS image to RAM for fast booting	<i>Please check local vendor**</i>
0 0 1 0	Initializing Keyboard Controller	<i>The keyboard might be damaged or not plug-in properly**</i>
1 0 1 0	Test shadow memory	<i>Please check local vendor**</i>
0 1 1 0	Processor Initialization This will show information regarding the processor e.g. brand name, system bus, etc.,	<i>Please check local vendor**</i>
1 1 1 0	Testing RTC (Real Time Clock)	<i>Low lithium battery**</i>
0 0 0 1	Initializing Video Interface This will start detecting CPU clock, checking type of video onboard. Then detect and initialize the video adapter	<i>The VGA card might be damaged or not installed properly**</i>
1 0 0 1	BIOS sign ON This will start showing information about logo, processor, brand name, etc.,	<i>Please check local vendor**</i>
0 1 0 1	Testing base and Extended memory Testing base memory from 240K to 640K and extended memory above 1MB using various patterns	<i>Please check local vendor**</i>
1 1 0 1	Assign Resources to all ISA	<i>Please check local vendor**</i>
0 0 1 1	Initializing Hard Drive Controller This will initialize IDE drive and controller	<i>Check IDE cable for proper installation**</i>
1 0 1 1	Initializing Floppy Drive Controller This will initialize Floppy Drive and controller	<i>The Floppy Drive Cable might not be installed*</i>
0 1 1 1	Assign IRQs to PCI devices	Stop
1 1 1 1	Operating System Booting	<i>System Available**</i>

1 = GREEN 0 = RED

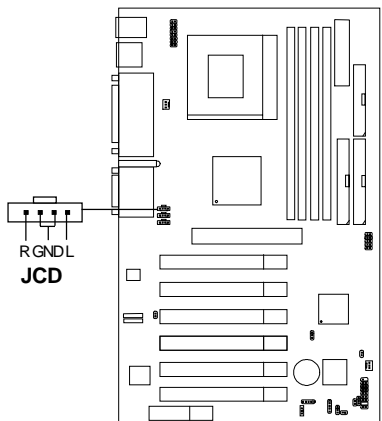
\*\* Smart D-LED voice context

\* No Smart D-LED voice context

**Note:** The system D-LED will hang when problem occurs during operation

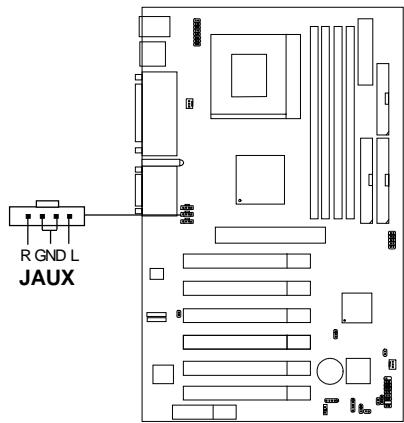
**CD-In Connector: JCD**

This connector is used for CD-ROM audio connector.



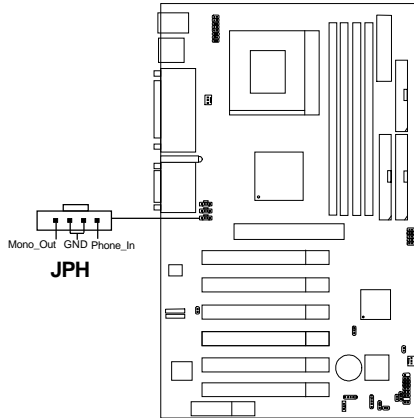
**AUX Line In Connector: JAUX**

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



## Modem-In: JPH

This connector is for Modem with internal voice connector.



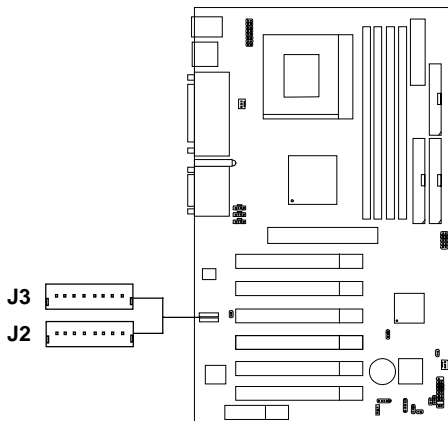
Mono\_Out is connected to the Modem Speaker Out connector.

Phone\_In is connected to the Modem Microphone In connector.



## IEEE 1394 Connector (optional)

The IEEE 1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.

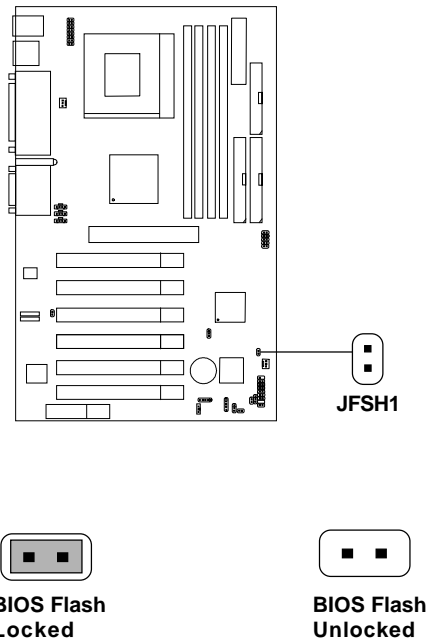


### Software Support

IEEE 1394 Driver is provided by Windows® 98 SE and Windows® 2000. Just plug in the IEEE 1394 connector into J3 & J2. These Operating System will install the driver for IEEE 1394.

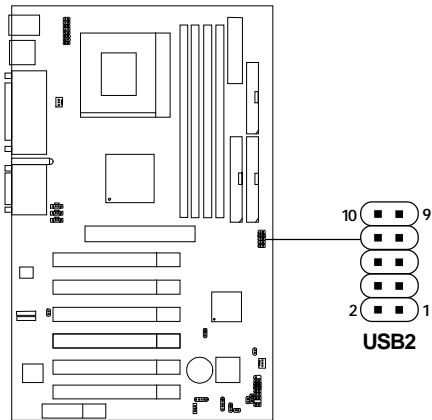
**BIOS Flash Jumper: JFSH1**

This jumper is used to locked/unlocked BIOS Flash. The BIOS flash jumper should be unlock when flashing/programming the BIOS.



USB Front Connector: USB2

The mainboard provides a **front Universal Serial Bus connector**. This is an optional USB connector for Front Panel.



Pin	Description	Pin	Description
1	VCC	6	USBD2+
2	GND	7	GND
3	USBD3-	8	USBD2-
4	GND	9	GND
5	USBD3+	10	VCC