

## Chapter 2

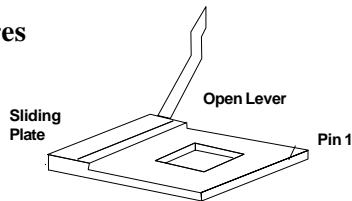
### HARDWARE INSTALLATION

#### 2.1 Central Processing Unit: CPU

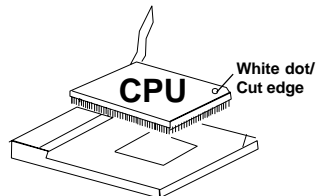
The ATX SI20 mainboard operates with **Intel® Pentium® processor/ Pentium® processor with MMX™ technology, Cyrix® 6x86/6x86L/6x86MX** and **AMD® K5/K6** processors. It could operate with 2.1V to 3.5V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation, and jumper (SW1 jumpers) to set the proper speed for the CPU. The CPU should always have a cooling fan attached to prevent overheating.

##### 2.1-1 CPU Installation Procedures

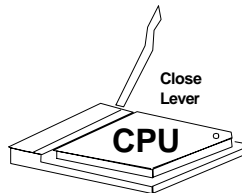
1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.



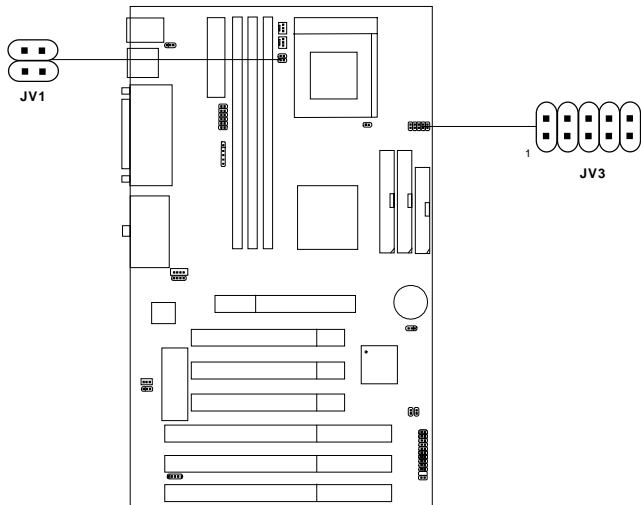
2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then, insert the CPU. It should insert easily.



3. Press the lever down to complete the installation.











2.1-2 CPU Voltage Setting: JV1 & JV3

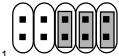
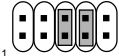
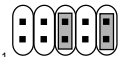
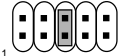
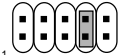


a. CPU Single or Dual Voltage Setting: JV1

CPU Voltage	JV1
Single	
Dual	

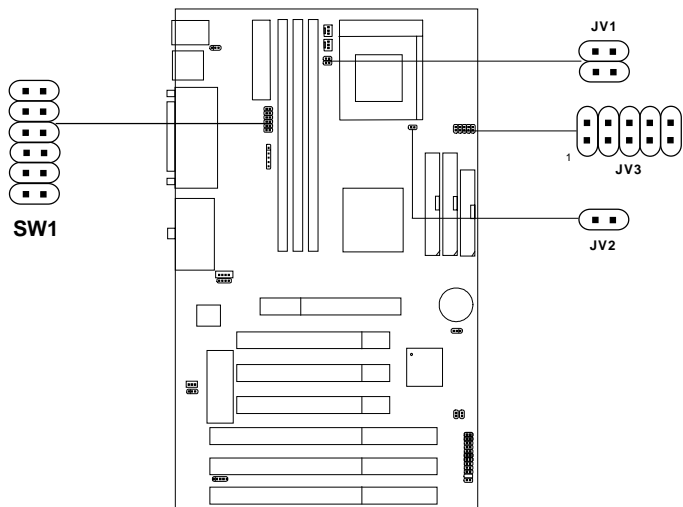
b. CPU Vcore Voltage Setting: JV3

V I/O	Vcore	JV3
3.5	3.5	
3.3	3.4	
3.3	3.3	
3.3	3.2	
3.3	3.1	
3.3	3.0	
3.3	2.9	
3.3	2.8	

V	I/O	Vcore	JV3
3.3		2.7	
3.3		2.6	
3.3		2.5	
3.3		2.4	
3.3		2.3	
3.3		2.2	
3.3		2.1	
3.3		2.0	

2.1-3 CPU Speed and Voltage Setting: SW1, JV1 & JV3









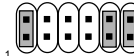



To adjust the speed and voltage of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU specifications*). Then refer to **Table 2.1 (Intel®processors)**, **Table 2.2 (Cyrrix®processors)** and **Table 2.3 (AMD®processors)** for proper setting.





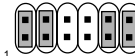


**Note: Short JV2**, if you’re using Intel®Pentium®Overdrive™ Processor. Otherwise, leave it open.

Table 2.1 Intel® processors

Intel® Pentium® processors

CPU Type	CPU Voltage				CPU Speed
	VI/O	Vcore	JV1	JV3	SW1
90MHz	3.3				
	3.5				
100MHz	3.3				
120MHz					
133MHz	3.5				
150MHz					
166MHz					
200MHz					

Intel® Pentium® processors with MMX™ technology











166MHz	3.3	2.8			
200MHz					
233MHz					

**Note:** If you encounter a CPU with different voltage, just go to page 2-2 and look for the proper voltage settings.


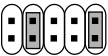


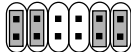







Table 2.2 Cyrix® Processor

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

a. Cyrix® 6x86/6x86L Processor

CPU Type	CPU Voltage				CPU Speed
	VI/O	Vcore	JV1	JV3	SW1
6x86 PR150	3.5				
6x86 PR166					
6x86L PR166	3.3	2.8			
6x86 PR200	3.5				
6x86L PR200					

b. Cyrix® 6x86MX Processors

CPU Type	CPU Voltage					CPU Speed				
	VI/O	Vcore	JV1	JV3		SW1				
6x86MX PR166	3.3	2.9			60 x 2.5					
					66 x 2					
6x86MX PR200					66 x 2.5					
					75 x 2					
6x86MX PR233					*66 x 3					
					75 x 2.5					
					**83x2					
6x86MX PR266					*66 x 3.5					
					*75 x 3					
					**83x2.5					

**Note:** If you encounter a CPU with different voltage, just go to **page 2-2** and look for the proper voltage settings.

\* This type of CPU is for future support.








\*\* We do not guarantee that 75MHz and 83MHz clock CPU will work properly. The SiS® 5591/5595 chipset specification only supports up to 66/75MHz clock.









Table 2.3 AMD® Processor

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

a. AMD® K5 Processor

CPU Type	CPU Voltage				CPU Speed
	VI/O	Vcore	JV1	JV3	SW1
PR90	3.5				
PR100					
PR120					
PR133/PR150					
PR166					

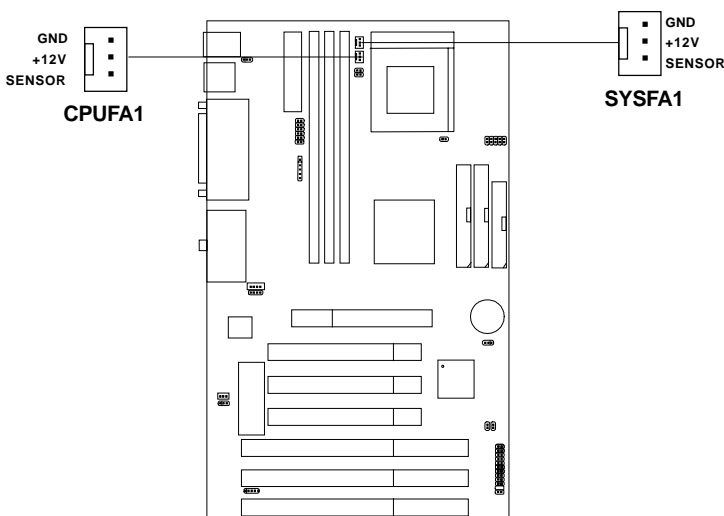
b. AMD® K6 Processor

PR166	3.3	2.9			
PR200					
PR233	3.3	3.2			

**Note:** If you encounter a CPU with different voltage, just go to **page 2-2** and look for the proper voltage settings.

### 2.1-2 Fan Power Connectors: CPUFA1/ SYSFA1

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 have a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan speed detect feature.



**CPUFA1** : processor fan

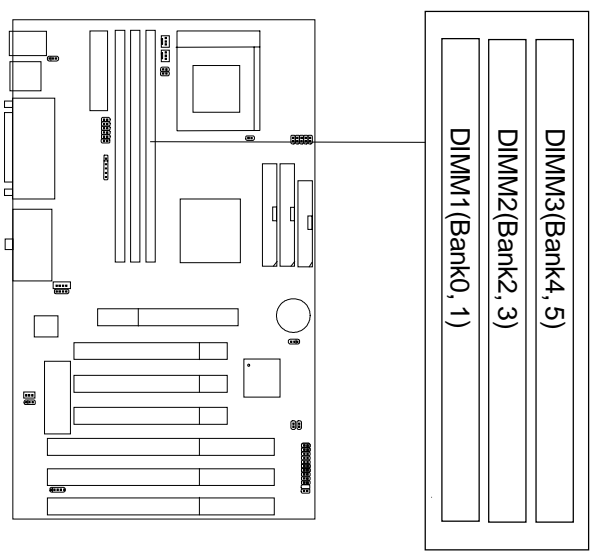
**SYSFA1** : system fan

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

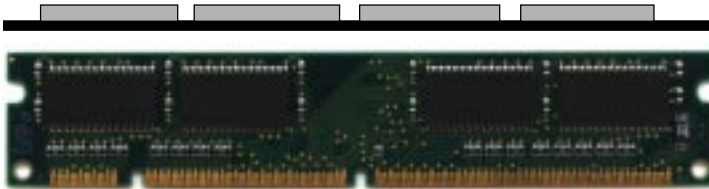
## 2.2 Memory Installation

### 2.2-1 Memory Bank Configuration

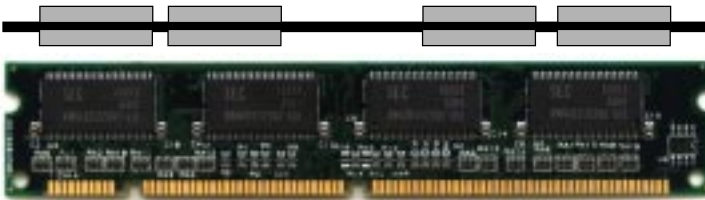
The mainboard supports a maximum of 768MB of memory for EDO and 384MB for SDRAM: It provides three 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. You can use DIMM from 8MB, 16MB, 32MB, 64MB to 128MB. It supports 8 MB to 256 Mbytes DIMM memory module. The memory module can be either SDRAM or EDO (Extended Data Output) Mode DRAM.



### 2.2-2 Memory Installation Procedures:

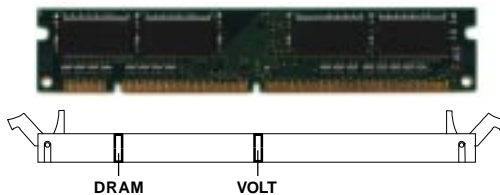


**Single Sided DIMM**



**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.

### 2.2-3 Memory Population Rules

1. This mainboard supports Table Free memory, so memory can be installed in DIMM1, DIMM2, or DIMM 3 in any order.
2. Use only 3.3v unbuffered DIMM.
3. The DRAM addressing and the size supported by the mainboard is shown next page.



**WARNING!**

There are some SDRAM DIMM's that will not function properly with this mainboard. Please refer to Chapter 5: Memory Compatibility Test for more information.

Table 2.2-1 EDO DRAM Memory Addressing

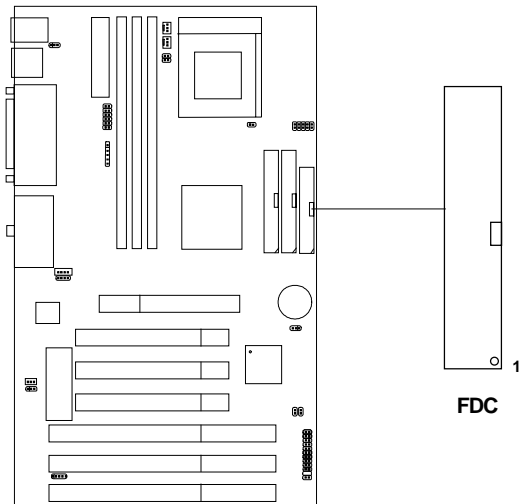
DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	SYMM	10	10	8MBx4	16MBx8
	1Mx16	ASYM	12	8	8MBx4	16MBx8
	2Mx8	ASYM	11	10	16MBx8	32MBx16
	2Mx8	ASYM	12	9	16MBx8	32MBx16
	4Mx4	SYMM	11	11	32MBx16	64MBx32
	4Mx4	ASYM	12	10	32MBx16	64MBx32
64M	2Mx32	ASYM	11	10	16MBx2	32MBx4
	2Mx32	ASYM	12	9	16MBx2	32MBx4
	2Mx32	ASYM	13	8	16MBx2	32MBx4
	4Mx16	SYMM	11	11	32MBx4	64MBx8
	4Mx16	ASYM	12	10	32MBx4	64MBx8
	8Mx8	ASYM	12	11	64MBx8	128MBx16

Table 2.2-2 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
64M	2Mx32	ASYM	11	8		
	4Mx16	ASYM	12	8		
	8Mx8	ASYM	12	9		
	16Mx4	ASYM	12	10		

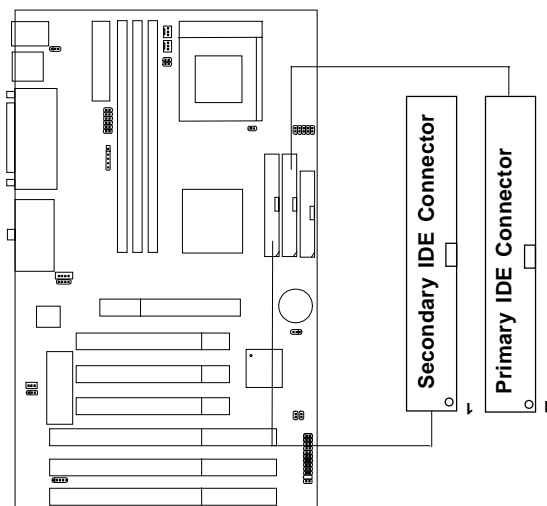
**2.3 Floppy Disk Connector: FDC**

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



## 2.4 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.

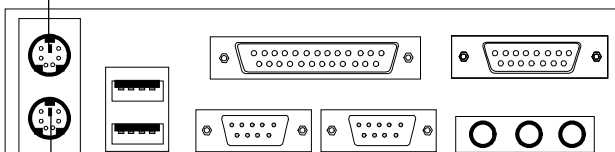


## 2.5 Keyboard Connector: JSKBD Mouse Connector: JSMS

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

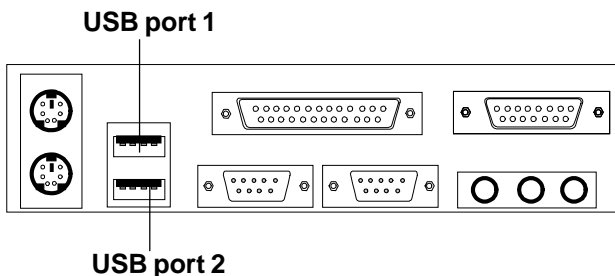
**PS/2<sup>®</sup> Mouse (6-pin Female)**



**PS/2<sup>®</sup> Keyboard (6-pin Female)**

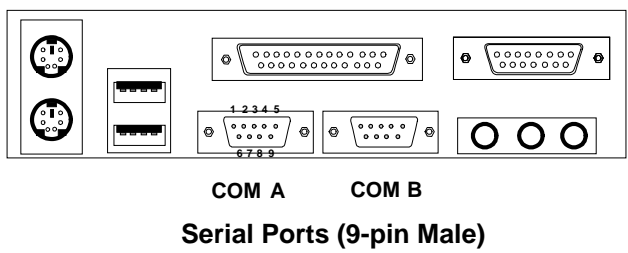
## 2.6 USB Connectors: USB

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.



2.7 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.



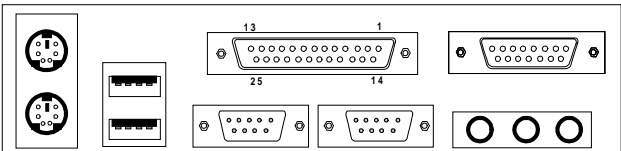
PIN DEFINITION

Pin #	Definition
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)

2.8 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

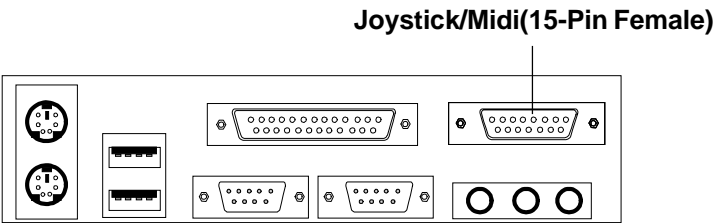


PIN DEFINITION

PIN #	DEFINITION	PIN #	DEFINITION
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		

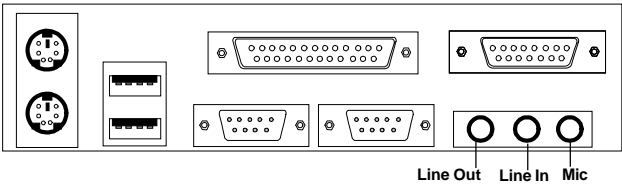
2.9 Joystick/Midi Connectors

You can connect joystick or game pads to this connector.



2.10 Audio Port Connectors

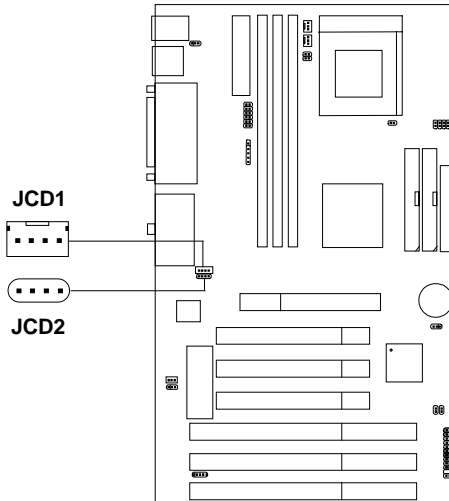
**Line Out** are connectors for Speakers or Headphones. **Line In** are used for outside CD player, Tape layer, or other audio devices. And **Mic** are connector for the microphones.



**1/8" Stereo Audio Connectors**

## 2.11 CD Line-In: JCD1 or JCD2

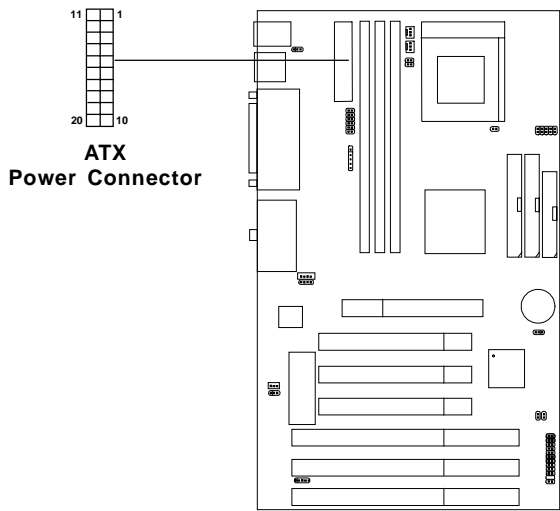
The mainboard provides two different CD Line-in connectors to let you connect two different kinds of cables whichever is provided by the CD-ROM.



2.12 Power Supply

2.12-1 ATX 20-pin Power Connector: JPWR1

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.

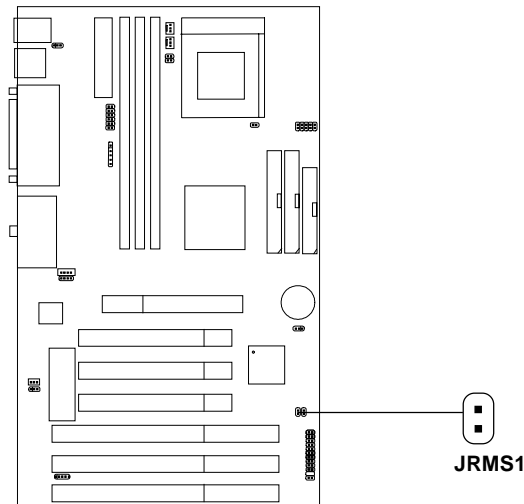


PIN DEFINITION

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

### 2.12-2 Remote Power On/Off Switch: JRMS1

Connect to a 2-pin push button switch. If Instant-on is Enabled, every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON. **If Instant-on is Disabled: During ON stage, push once and the system goes to sleep mode: pushing it more than 6 seconds will change its status from ON to OFF.** If you want to change the setup, you could go to the BIOS Integrated Peripherals Setup.

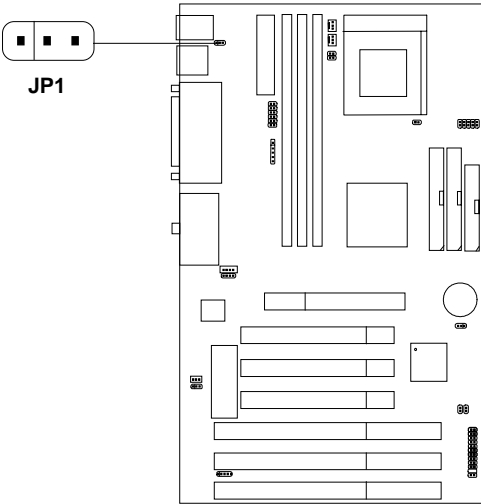


**Note:** If the system hang and you're unable to shut it down, try pressing the Power button switch more than five second or pushing the power button switch together with the reset switch.



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2.13 Keyboard Power-On Enabled: JP1

This is used to enable the keyboard power on feature. This mainboard supports keyboard power-on feature. The keyboard needs to have a power supply which can provide sufficient 5V standby power for both the keyboard and the mainboard.



JP1

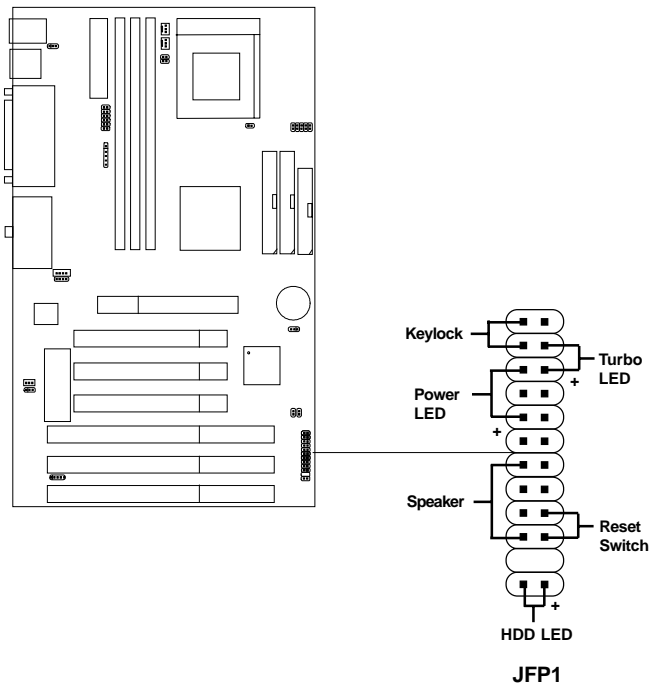
JP1	Feature
	<b>Enable Keyboard Wake-up System Power Feature</b>
	<b>Disable Keyboard Wake-up System Power Feature</b>

- Note:**
- a. To be able to use this function, you need a power supply that can provide enough power for the keyboard power on feature. (200mA for 5V Stand-by)
  - b. Consult power supply vendor about the 5V stand-by for your keyboard power consumption.



2.14 Case Connector: JFP1

The Turbo LED, Reset Switch, Key Lock, Power LED, Speaker and HDD LED are all connected to the JFP1 connector block.



**2.14-1 Turbo LED**

The Turbo LED is always ON. You can connect the Turbo LED from the system case to this pin.

**2.14-2 Reset Switch**

Reset switch is used to reboot the system rather than turning the power ON/OFF.

**2.14-3 Keylock**

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

**2.14-4 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.

**2.14-5 Speaker**

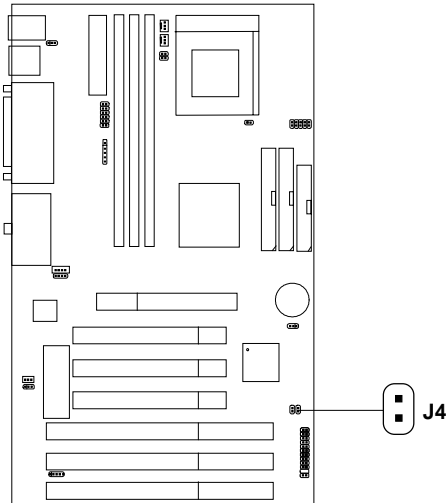
Speaker from the system case is connected to this pin.

**2.14-6 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.

## 2.15 Power Saving LED Connector: J4

J4 can be connected with LED to monitor the Power saving state. This LED will lit while the system is in suspend mode.

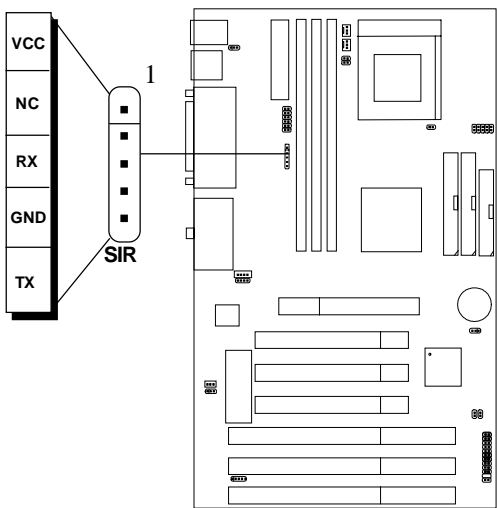


**Note:** To make the power saving function to work, you must go to the BIOS power management and enable it there.

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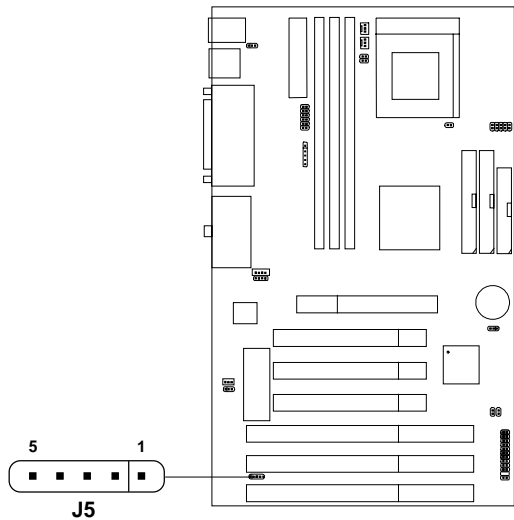
**2.16 Infrared Module Connector: JIR**

The mainboard provides a 5-pin infrared connector(IR) for IR module. 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.



2.17 Modem Wake Up Connector: J5

The J5 connector is for used with Modem add-on card that supports the Modem Wake Up function.



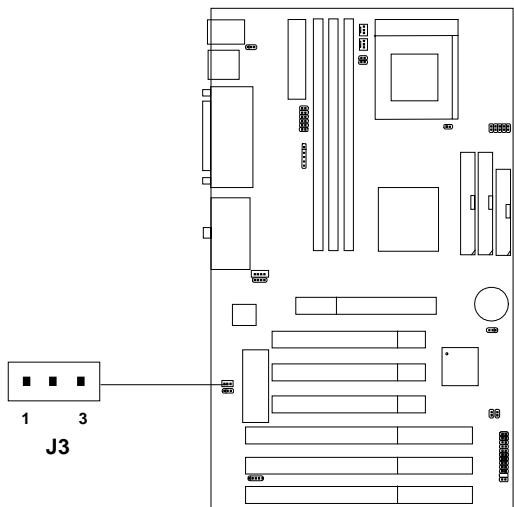
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

**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.  
(750 ma power supply with 5V Stand-by)

2.18 Wake-Up on LAN Connector: J3

The J3 connector is for use with LAN add-on cards that supports Wake Up on LAN function.



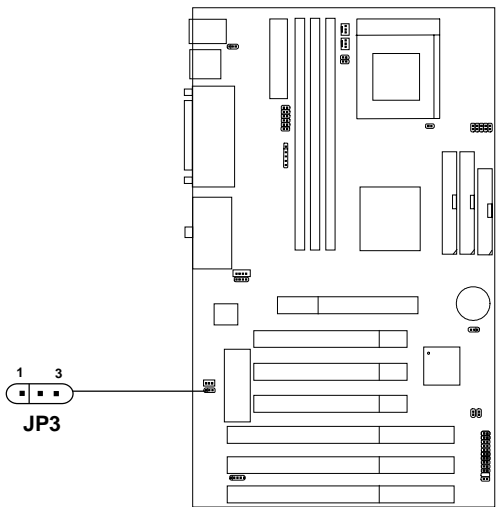
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

**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.  
(750 ma power supply with 5V Stand-by)

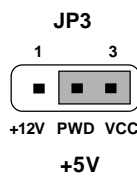
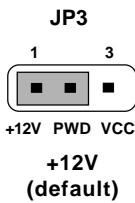
## 2.19 Flash ROM Programming Voltage: JP3

This jumper is for setting the voltage of the Flash ROM BIOS.



1 3  
JP3

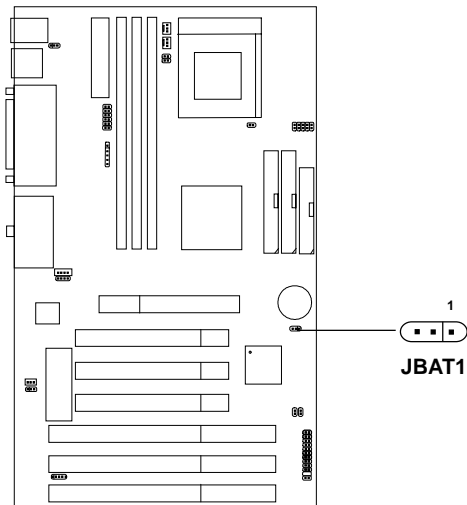
### Voltage Setting





**Note:** Short 1-2 pin, if you're using Intel® flash ROM or if you want to flash the ROM data.

2.20 External Battery Connector: JBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. If you use the on-board battery, you must short 1-2 pins of JBAT1 to keep the CMOS data.



JBAT1	Function
	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. To be able to clear the CMOS, you need to unplug the power plug of the system, because there's a 3V standby power for the chipset which is provided by the power supply. Otherwise, the CMOS will not be cleared.