

## Chapter 2

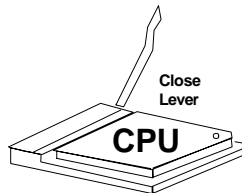
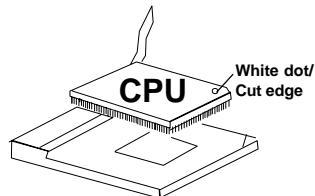
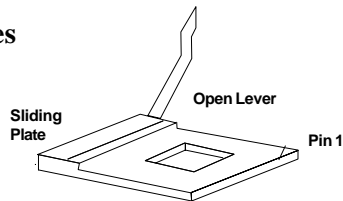
### HARDWARE INSTALLATION

#### 2.1 Central Processing Unit: CPU

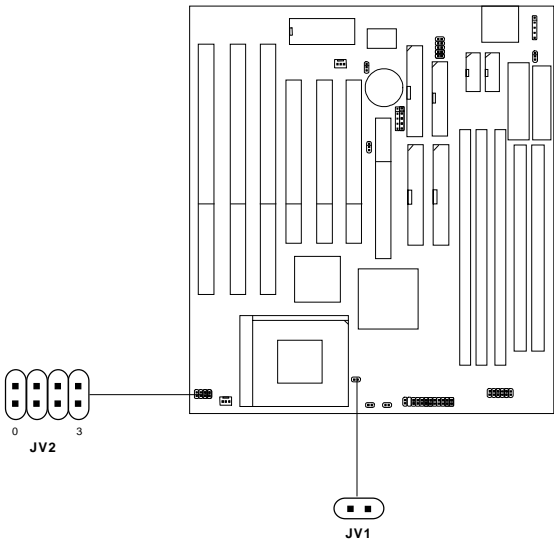
The **Baby AT SI19** mainboard operates with **Intel®Pentium®processor/ Pentium®processor with MMX™technology, Cyrix®6x86/6x86L/6x86MX** and **AMD®K5/K6** processors. It could operate with 2.1V to 3.5V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation, a switch (SW1/SW2) 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 & JV2**











**CPU Single or Dual Voltage Setting: JV1**

CPU Voltage	JV1
Single	
Dual	

CPU Vcore Voltage Setting: JV2

V I/O	Vcore	JV2
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	JV2
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 & JV2

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 (Cyrix®processors)** and **Table 2.3 (AMD®processors)** for proper setting.

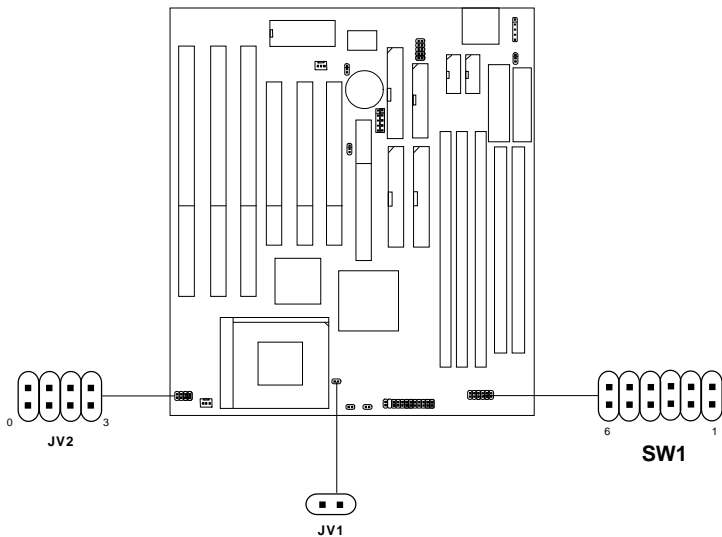


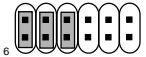








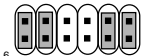




Table 2.1 Intel® processors

Intel® Pentium® processors

CPU Type	CPU Voltage				CPU Speed
	Vi/o	Vcore	JV1	JV2	SW1
90MHz	3.3				
100MHz					
120MHz					
133MHz					
150MHz					
166MHz					
200MHz					

Intel® Pentium® processors with MMX™ technology










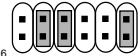
166MHz	3.3	2.8			
200MHz					
233MHz					

**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	JV2	SW1
6x86 PR150	3.5				
6x86 PR166					
6x86L PR166	3.3	2.8			
6x86 PR200	3.5				
6x86L PR200	3.3	2.8			

b. Cyrix® 6x86MX Processors

CPU Type	CPU Voltage					CPU Speed
	VI/O	Vcore	JV1	JV2		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 **Section 2.1-3** and look for the proper voltage settings.








\* This type of CPU is for future support.









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	JV2	SW1
PR90	3.5				
PR100					
PR120					
PR133/PR150					
PR166					

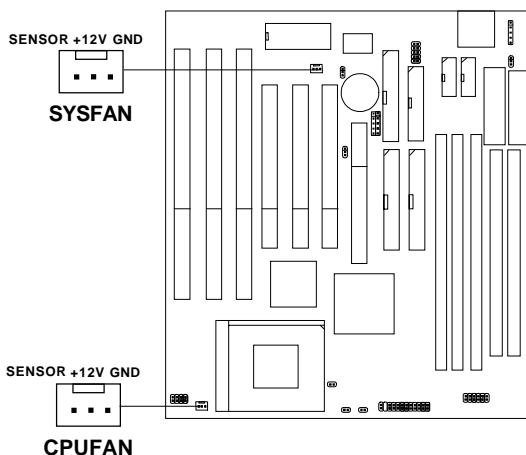
b. AMD® K6 Processor

PR166	3.3	2.9			
PR200					
PR233	3.3	3.2			

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

### 2.1-2 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 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.



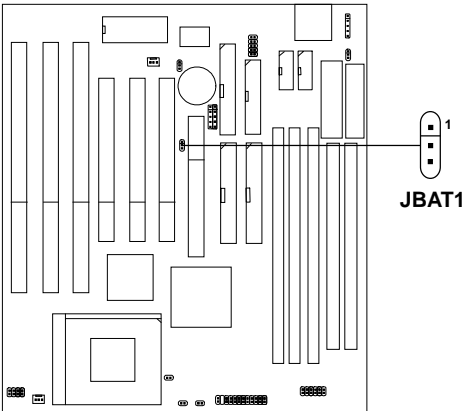
**CPUFAN** : processor fan



**SYSFAN** : 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 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.



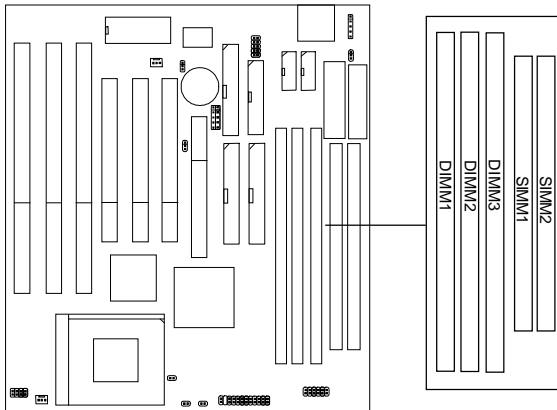
JBAT1	Function
	Keep Data
	Clear Data

**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. Otherwise, the CMOS will not be cleared.

## 2.3 Memory Installation

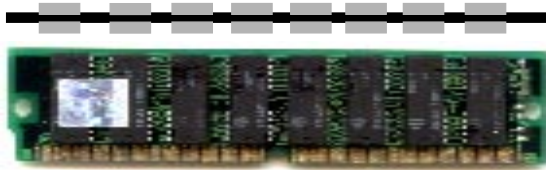
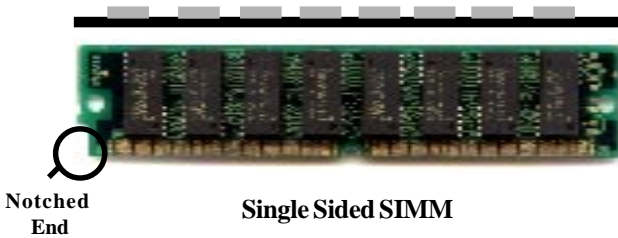
### 2.3-1 Memory Bank Configuration

The mainboard provides two 72-pin SIMMs (Single In-Line Memory Module) and three 168-pin DIMM(Double In-Line Memory) sockets. It supports six memory banks for a maximum of 384MB memory. Each bank supports up to 64MB memory. You can use SIMM from 4MB, 8MB, 16MB, 32MB, 64MB to 128MB, and DIMM from 8MB, 16MB, 32MB, 64MB to 128MB.



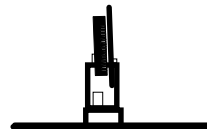
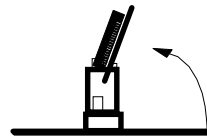
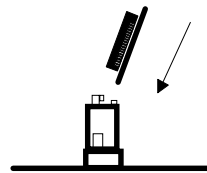
### 2.3-2 Memory Installation Procedures:

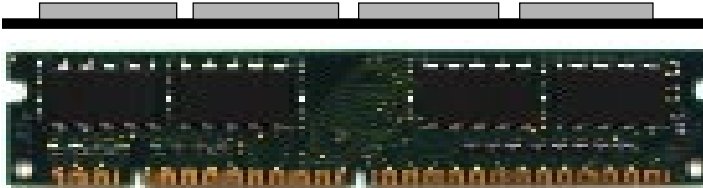
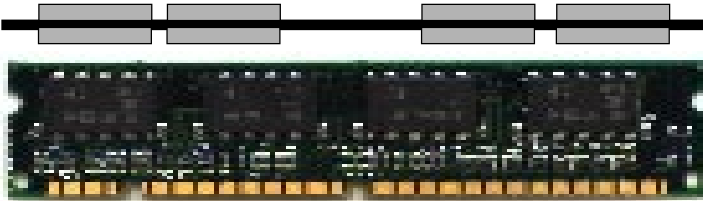
#### A. How to install SIMM Module



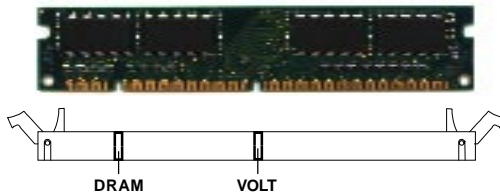
#### Double Sided SIMM

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 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. 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. This mainboard supports Table Free memory, so memory can be installed on (SIMM1 + SIMM2), (DIMM1), (DIMM2), or (DIMM3), in any order.
4. DIMM and SIMM cannot be used at the same time. Only one kind can be used at a time.
5. Use only 3.3v unbuffered DIMM.
6. Use only 5v EDO SIMM.
7. The DRAM addressing and the size supported by the mainboard is shown next page.

Table 2.3-1 EDO DRAM Memory Addressing

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
	2Mx8	ASYM	12	9	8MBx4	16MBx8
	4Mx4	SYMM	11	11	16MBx8	32MBx16
	4Mx4	ASYM	12	10	16MBx8	32MBx16
64M	2Mx32	ASYM	11	10	8MBx1	16MBx2
	2Mx32	ASYM	12	9	8MBx1	16MBx2
	2Mx32	ASYM	13	8	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

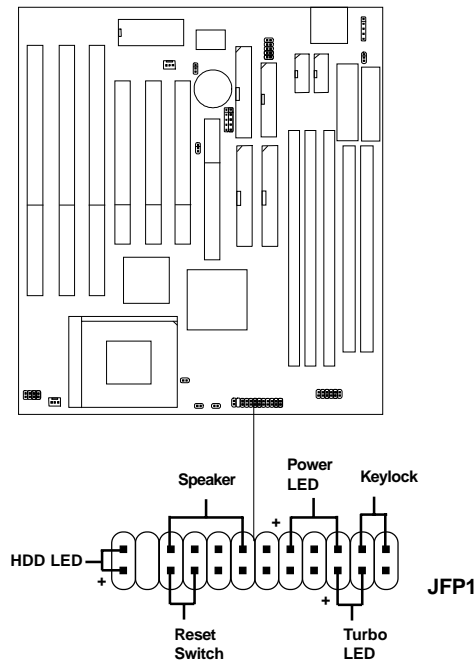
Table 2.3-2 SDRAM Memory Addressing

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		



2.4 Case Connector: JFP1

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



### **2.4-1 Turbo LED**

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

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

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

### **2.4-3 Keylock**

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

### **2.4-4 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.

### **2.4-5 Speaker**

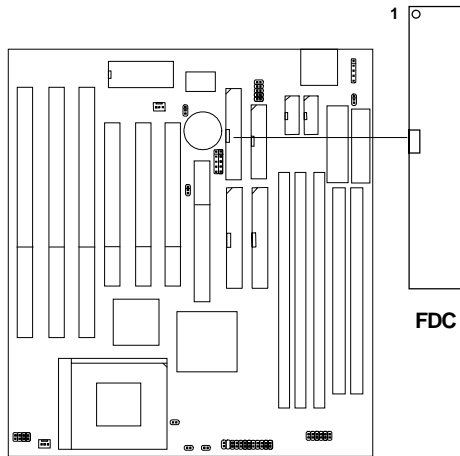
Speaker from the system case is connected to this pin.

### **2.4-6 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.

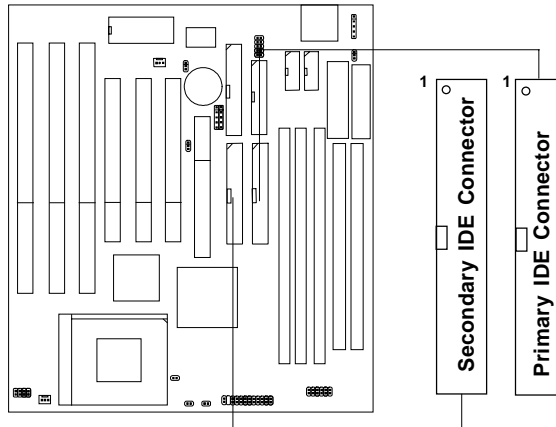
## 2.5 Floppy Disk Connector: FDC

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.



## 2.6 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)

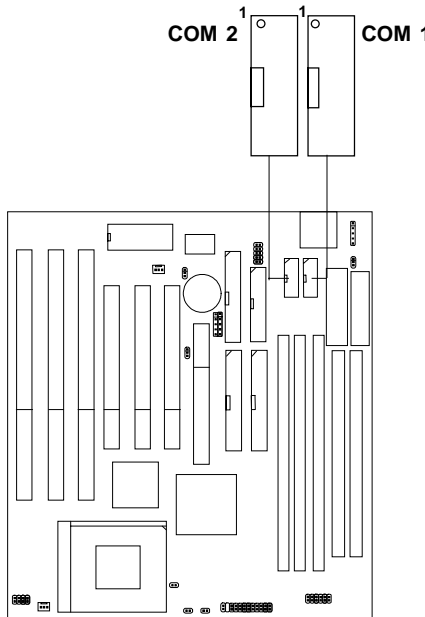
The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

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

IDE2 can also connect a Master and a Slave drive.

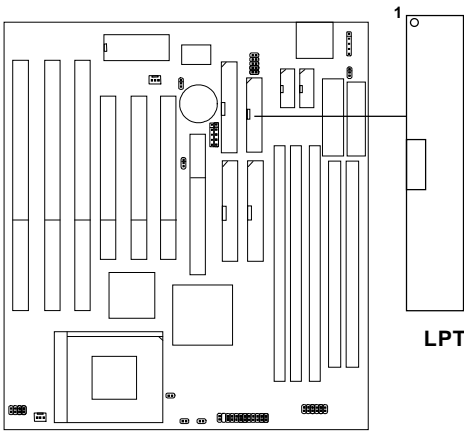
## 2.7 Serial Port Connectors: COM 1 & COM 2

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



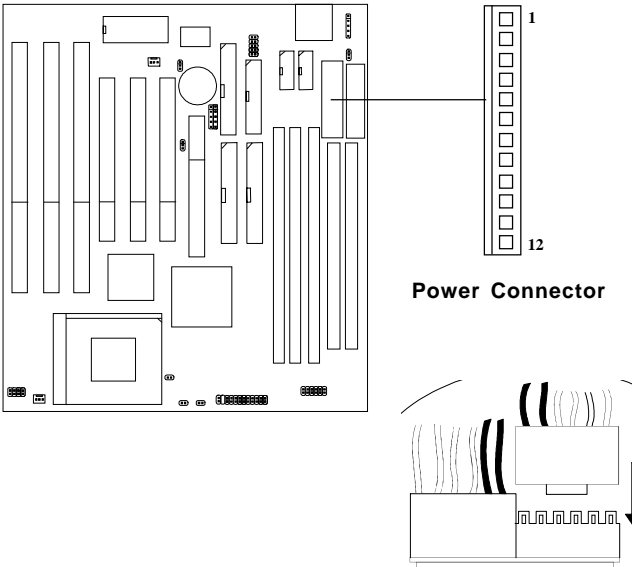
## **2.8 Parallel Port Connector: LPT**

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).



## 2.9 AT Power Supply Connector

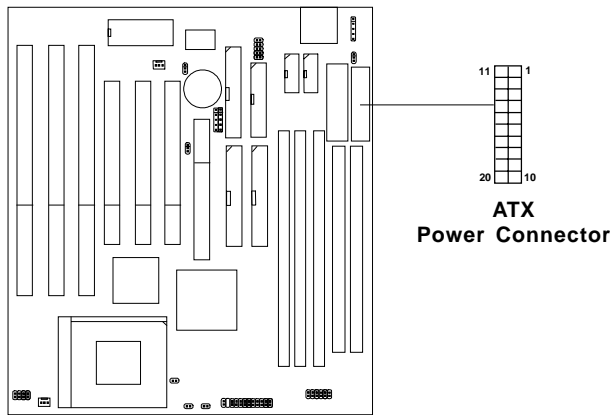
This is a standard 12-pin AT-type or PS/2 type connector. Be sure to attach the connectors with the two black wires at the center.



Pin	Description	Pin	Description
1	Power Good	7	Ground
2	+5V DC	8	Ground
3	+12V DC	9	-5V DC
4	-12V DC	10	+5V DC
5	Ground	11	+5V DC
6	Ground	12	+5V DC

2.10 ATX Power Supply Connector

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.



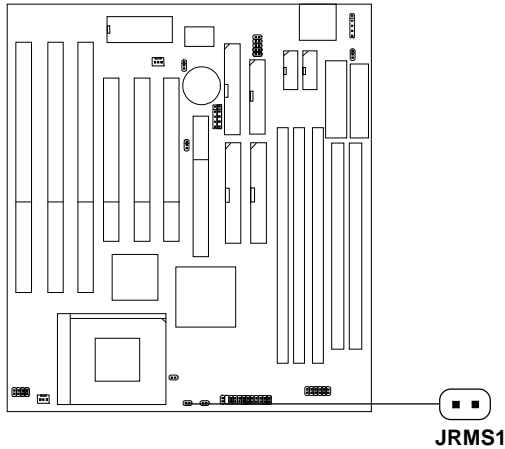
PIN DEFINITION

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



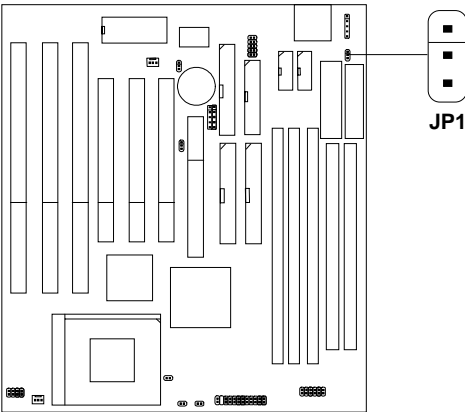
## 2.11 Remote Power On/Off Switch: JRMS1



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. This is used for ATX type power supply only.



2.12 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.

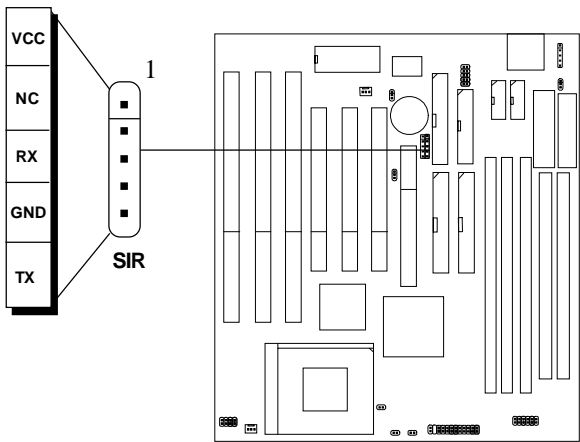


JP1	Feature
	Enable Keyboard Wake-up System Power Feature
	Disable Keyboard Wake-up System Power Feature

- 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.

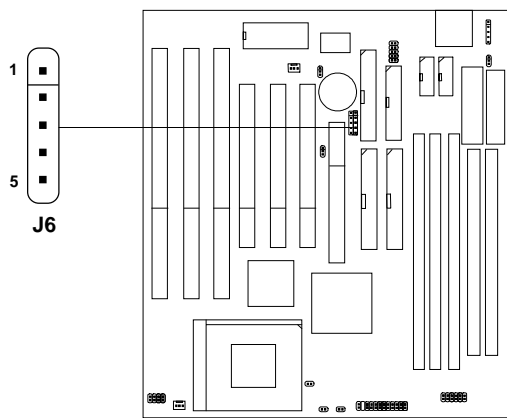
### 2.13 Infrared Module Connector: SIR

The mainboard provides a 5-pin infrared connector(SIR) 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.



2.14 Modem Wake Up Connector: J6

The J6 connector is for used with Modem add-on card that supports the Modem Wake Up function.



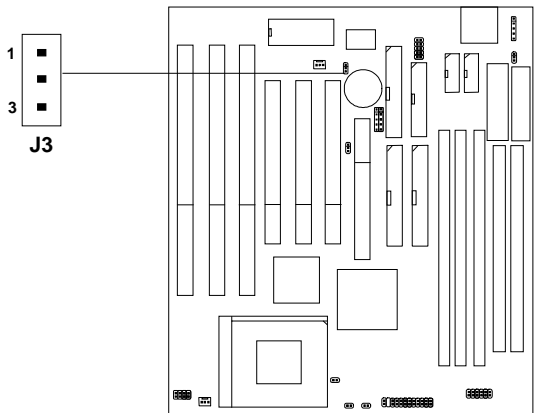
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

**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)

2.15 Wake-Up on LAN Connector: J5

The J5 connector is for use with LAN add-on cards that supports Wake Up on LAN function.



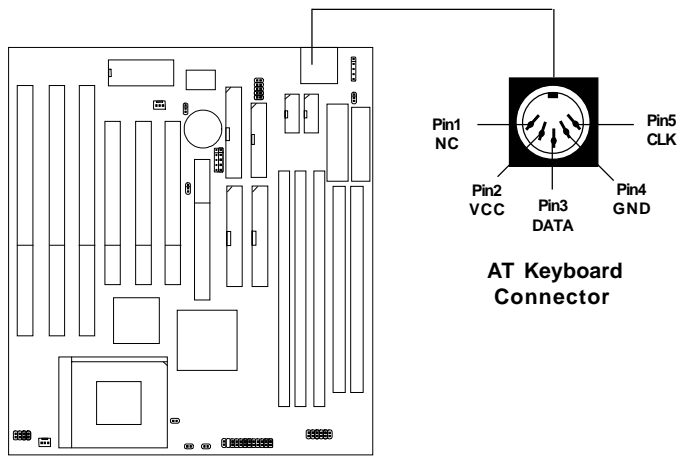
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

**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)

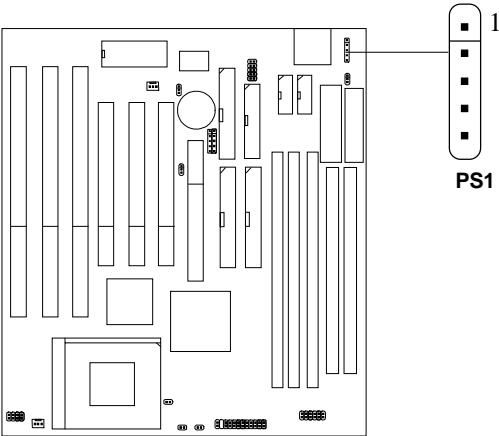
**2.16 Keyboard Connector: ATKB1**

The mainboard provides a standard AT style keyboard DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



**2.17 Mouse Connector: PS1**

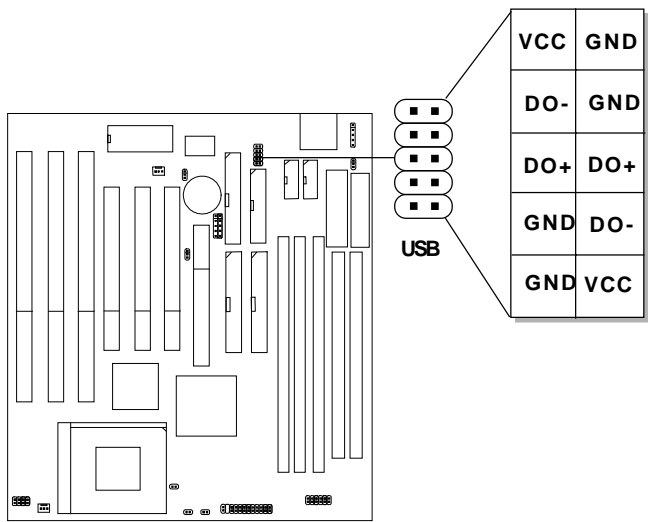
The mainboard provides a 5-pin connector for PS/2 mouse cable (optional). You can plug a PS/2 style mouse to PS/2 mouse cable. The connector location as shown below.



<b>Pin 1</b>	<b>VCC</b>
<b>Pin 2</b>	<b>-</b>
<b>Pin 3</b>	<b>GND</b>
<b>Pin 4</b>	<b>CLK</b>
<b>Pin 5</b>	<b>DATA</b>

2.18 USB Connector: USB1









Connect a USB cable to support USB device, such as keyboard and mouse.










**Table 2.1 Intel® processors**

Intel® Pentium® processors

CPU Type	CPU Voltage				CPU Speed
	V <sub>DD</sub>	V <sub>DDcore</sub>	V <sub>DDQ</sub>	V <sub>DDI</sub>	
90MHz	3.3	C - 0			
100MHz					
120MHz					
133MHz					
150MHz					
166MHz					
200MHz					












Intel® Pentium® processors with MMX® technology

166MHz	3.3	2.8			
200MHz					
233MHz					













**Table 2.2 Cyrix® Processor**

Cyrix® processor uses PR in its the speed of their processors based on Intel® Pentium® processor core speed. For example PR150 (100MHz) has 100MHz core speed of Intel® Pentium® processor but has 120MHz core speed in Cyrix® processor. Cyrix® processor should always use a more powerful fan (ask vendor for proper cooling fan).

a. Cyrix® 6x86/6x86L Processor

CPU Type	CPU Voltage				CPU Speed
	V <sub>DD</sub>	V <sub>DDcore</sub>	V <sub>DDQ</sub>	V <sub>DDI</sub>	
6x86 PR150	3.5	C - 0			
6x86 PR166					
6x86L PR166	3.3	2.8			
6x86 PR200	3.5	C - 0			
6x86L PR200					

b. Cyrix® 6x86MX Processor

CPU Type	CPU Voltage				CPU Speed				
	V <sub>DD</sub>	V <sub>DDcore</sub>	V <sub>DDQ</sub>	V <sub>DDI</sub>					
6x86MX PR166	3.3	2.9			60 x 2.5 				
6x86MX PR200					66 x 2 				
					66 x 3.5 				
					75 x 2 				
6x86MX PR233					766 x 3 				
					75 x 2.5 				
6x86MX PR266					81x2 				
					766 x 3.5 				
					75 x 3 				
					85x2.5 				











Note: If you encounter a CPU with different voltage, just go to Section 2.4-3 and look for the proper voltage scaling.

\* This type of CPU is for future supply.



**Table 2.3 AMD® Processors**

AMD® K5/K6 processor uses PR in its 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
	V <sub>DD</sub>	V <sub>DDcore</sub>	V <sub>DDQ</sub>	V <sub>DDI</sub>	
PR90	3.5	C - 0			
PR100					
PR120					
PR133/PR150					
PR166	3.5	C - 0			
PR200					

b. AMD® K6 Processor

PR166	3.5	2.9			
PR200					
PR233	3.3	3.2		