

Chapter 2

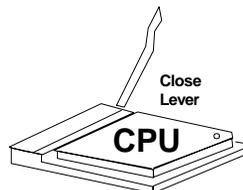
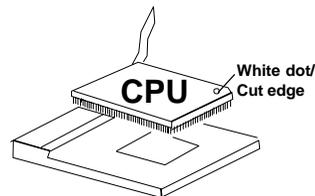
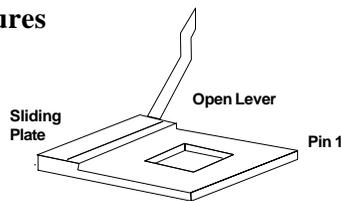
Hardware Installation

2.1 Central Processing Unit: CPU

The **Baby AT VII4** mainboard operates with **Intel® Pentium® processor/ Pentium® processor w/MMX™ technology, Cyrix®/IBM 6x86/6x86L/ 6x86MX, AMD® K5/K6/K6-2** and **IDT™ Winchip** processors. It could operate with 1.8V to 3.52V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation. The CPU should always have a cooling fan attached to prevent overheating.

2.1-1 CPU Installation Procedures

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



2.1-2 CPU Core Speed Derivation Procedures

1. The **DIP Switch SW1** is used to adjust the CPU, AGP, and PCI clock frequency.

SW1					Clock		
1	2	3	4	5	CPU	AGP	PCI
ON	ON	OFF	OFF	ON	133.3	88.7	44.3
ON	OFF	ON	OFF	ON	124	82.7	41.3
ON	ON	ON	OFF	ON	112	74.7	37.3
OFF	OFF	OFF	OFF	ON	100.2	66.6	33.3
ON	OFF	OFF	OFF	ON	95.25	63.5	31.7
OFF	ON	OFF	OFF	OFF	83.5	66.6	33.3
OFF	OFF	ON	ON	ON/OFF	75	75	37.5
OFF	ON	ON	ON	ON/OFF	66.8	66.6	33.4

a. The **JP3** jumper setting is used to set the DRAM clock for CPU or AGP.

JP3	DRAM Clock
	CPU Clock
	AGP Clock



We provide CPU Bus Frequency setting for over 100Mhz. But setting the Bus Frequency over 100MHz may cause unstable or damaging result. We do not guarantee overclocking. (Damages resulting from overclocking will not be covered by the warranty or entertained by our technical support)

2. The SW2 (6, 7, & 8) 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:

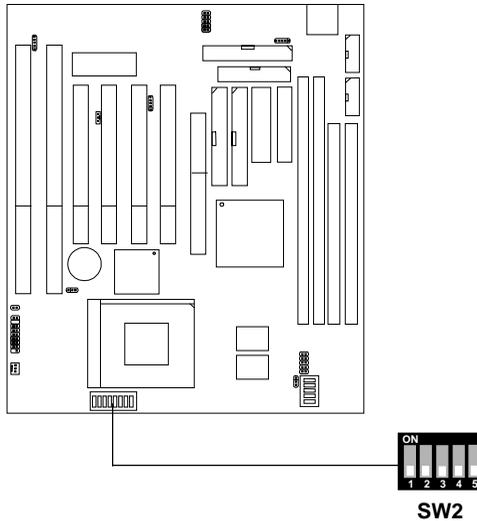
$$\begin{array}{lcl}
 \text{If} & \text{CPU Clock} & = 66\text{MHz} \\
 & \text{Core/Bus ratio} & = 3.5 \\
 \text{then} & \text{CPU core speed} & = \text{Host Clock} \times \text{Core/Bus ratio} \\
 & & = 66\text{MHz} \times 3.5 \\
 & & = 233\text{MHz}
 \end{array}$$

SW2			CPU
6	7	8	Core/Bus Ratio
OFF	OFF	OFF	1.5
ON	OFF	OFF	2.0
ON	ON	OFF	2.5
OFF	ON	OFF	3.0
OFF	OFF	OFF	3.5
ON	OFF	ON	4.0
ON	ON	ON	4.5
OFF	ON	ON	5.0
OFF	OFF	ON	5.5

2.1-3 Processor Voltage Setting

a. Vcore Voltage Setting: SW2

The Dip Switch SW2 (1-5) is used to set the processor Vcore voltage setting.

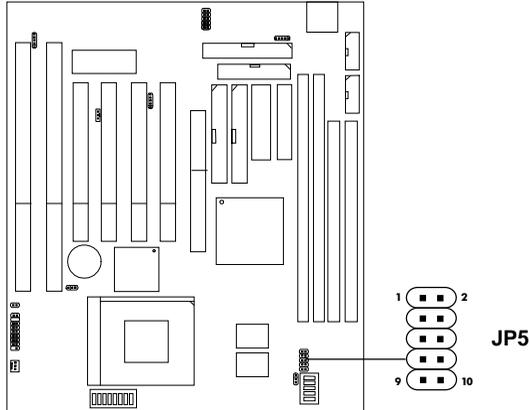


Note: Always consult vendor for proper CPU specification, before setting the processor voltage (Vcore/Vio). Improper setting may damage the processor and other components.

SW2					
1	2	3	4	5	Vcore
ON	ON	ON	ON	OFF	3.5
OFF	ON	ON	ON	OFF	3.40
ON	OFF	ON	ON	OFF	3.3
OFF	OFF	ON	ON	OFF	3.2
ON	ON	OFF	ON	OFF	3.1
OFF	ON	OFF	ON	OFF	3.0
ON	OFF	OFF	ON	OFF	2.9
OFF	OFF	OFF	ON	OFF	2.8
ON	ON	ON	OFF	OFF	2.7
OFF	ON	ON	OFF	OFF	2.6
ON	OFF	ON	OFF	OFF	2.5
OFF	OFF	ON	OFF	OFF	2.4
ON	ON	OFF	OFF	OFF	2.3
OFF	ON	OFF	OFF	OFF	2.2
ON	OFF	OFF	OFF	OFF	2.1
OFF	OFF	OFF	OFF	OFF	2.0
ON	ON	ON	ON	ON	2.05
OFF	ON	ON	ON	ON	2.0
ON	OFF	ON	ON	ON	1.95
OFF	OFF	ON	ON	ON	1.9
ON	ON	OFF	ON	ON	1.85
OFF	ON	OFF	ON	ON	1.8

b. Vi/o Voltage Setting: JP5

The Jumper Switch JP5 is used to set the processor Vi/o voltage setting.



VI/O	JP5
3.3V	
3.45V	
3.6V	
3.8V	
4.0V	

2.1-4 CPU Speed and Voltage Setting: SW1, SW2 & JP5

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.

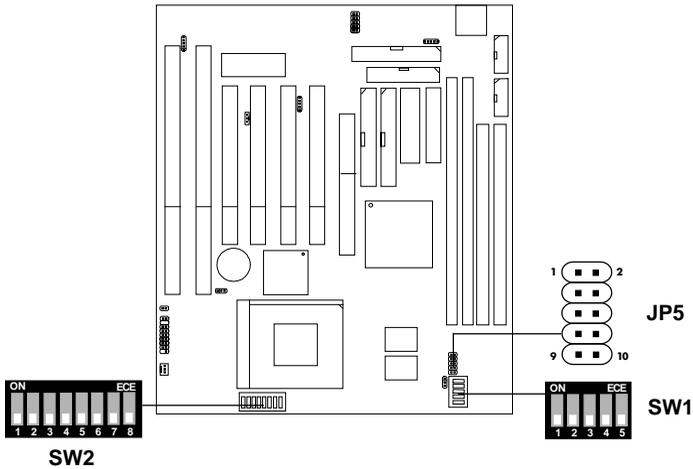
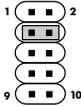
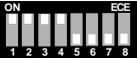
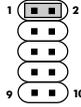


Table 2.1 Intel® processors

Intel® Pentium® processors

CPU Type	CPU Speed & Voltage				
	V/I/O	V/core	JP5	SW1	SW2
100MHz	3.5				
133MHz					
166MHz					
200MHz					

Intel® Pentium® processors with MMX™ technology

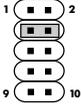
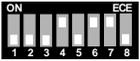
166MHz	3.3	2.8			
200MHz					
233MHz					

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

Table 2.2 Cyrix® processors

Cyrix® 6x86 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®. Cyrix® 6x86 processor should always use a more powerful fan (ask vendor for proper cooling fan).

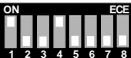
Cyrix® 6x86/6x86L processors

CPU Type	CPU Speed & Voltage				
	VIO	Vcore	JP5	SW1	SW2
6x86 PR166	3.5				
6x86L PR166	3.4	2.8			
6x86L PR200					

Cyrix® 6x86MX processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
PR166 (66x2)	3.4	2.9			
PR200 (75x2)					
PR233 (75x2.5)					

Cyrix® 6x86MII processors

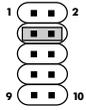
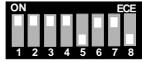
MII 300 (66x3.5)	3.4	2.9			
MII 300 (75x3)					
MII 333 (83x3)					

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

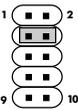
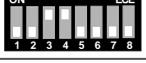
Table 2.3 AMD® processors

AMD® K5 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.

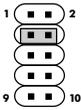
AMD® K5 processors

CPU Type	CPU Speed & Voltage				
	VIO	Vcore	JP5	SW1	SW2
PR133	3.5				
PR166					

AMD® K6 processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
166MHz	3.4	2.9			
200MHz					
233MHz	3.4	3.2			
266MHz	3.4	2.2			
300MHz					

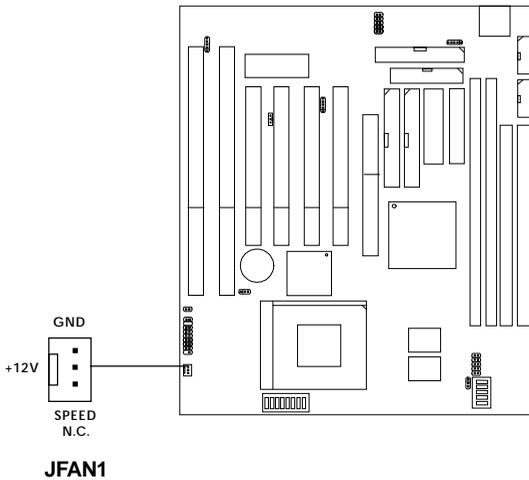
AMD® K6-2 processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
300MHz (100MHz FSB)	3.4	2.2			
350MHz (100MHz FSB)					
400MHz (100MHz FSB)					
333MHz (95MHz FSB)					
380MHz (95MHz FSB)					
300MHz (66MHz FSB)					
333MHz (66MHz FSB)					
366MHz (66MHz FSB)					

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

2.1-5 CPU Fan Connector: JFAN1

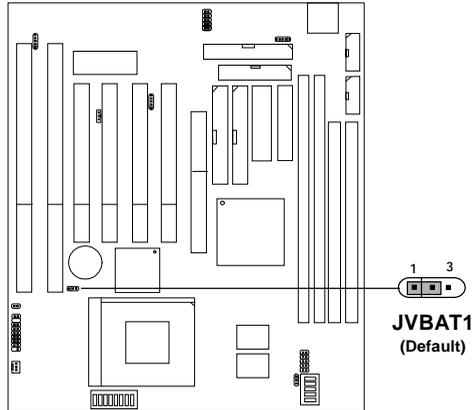
This connector supports fan with +12V. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V pin and the black one to GND.



Note: Always consult vendor for proper CPU cooling fan.

2.2 Clear CMOS Jumper: JVBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. To retain the on-board battery you must always short pins 1-2 of JVBAT1.



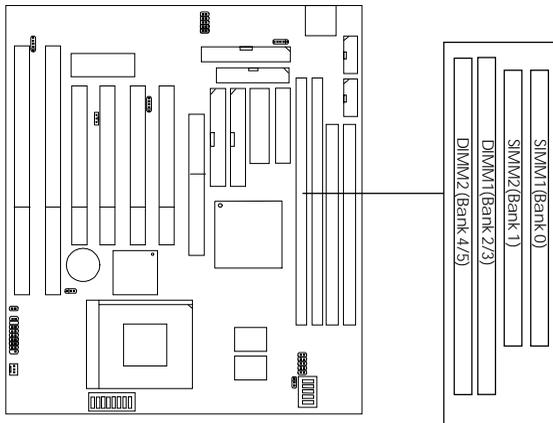
JVBAT1	Function
	Keep Data
	Clear Data

Note: You can clear CMOS by shorting 2-3 pin, while the system is off. Leave for about 5 to 10 seconds. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on for it will damage the mainboard. Always unplug the power cord from the wall socket.

2.3 Memory Installation

2.3-1 Memory Bank Configuration

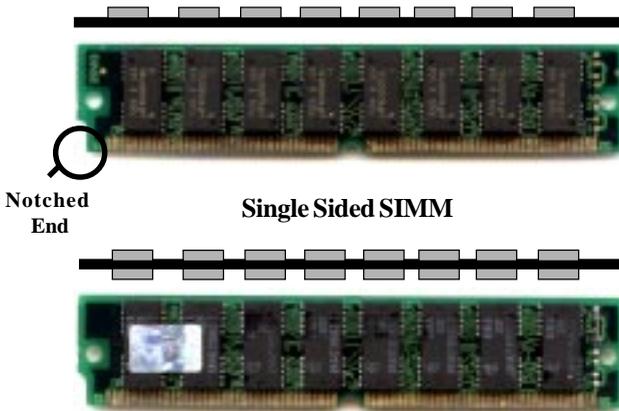
The mainboard provides two unbuffered 168-pin DIMM(Double In-Line Memory) or two 72-pin SIMM(Single In-Line Memory) sockets. It supports six memory banks for a maximum of 768MB memory. Each bank supports up to 128MB memory. You can use SIMM from 4MB, 8MB, 16MB, 32MB, 64MB to 128MB, and DIMM from 8, 16, 32, 64,128 to 256MB.



There are two kinds of DIMM specification supported by this mainboard: PC100 and PC66. PC100 DIMM Specs. can only be used with 100MHz CPU Bus Frequency processor.

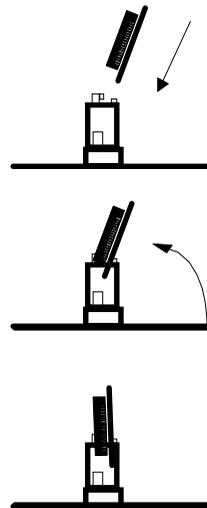
2.3-2 Memory Installation Procedures:

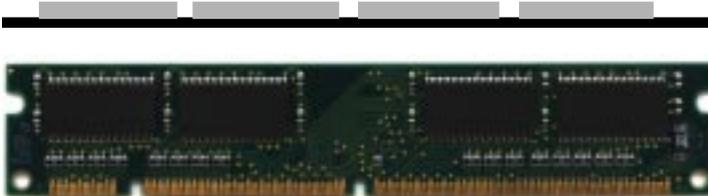
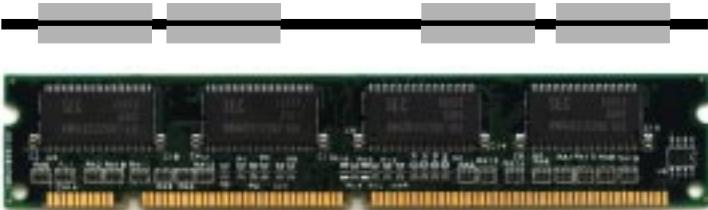
A. How to install SIMM Module



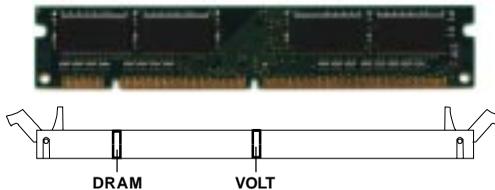
Double Sided SIMM

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 a DIMM Module**Single Sided DIMM****Double Sided DIMM**

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



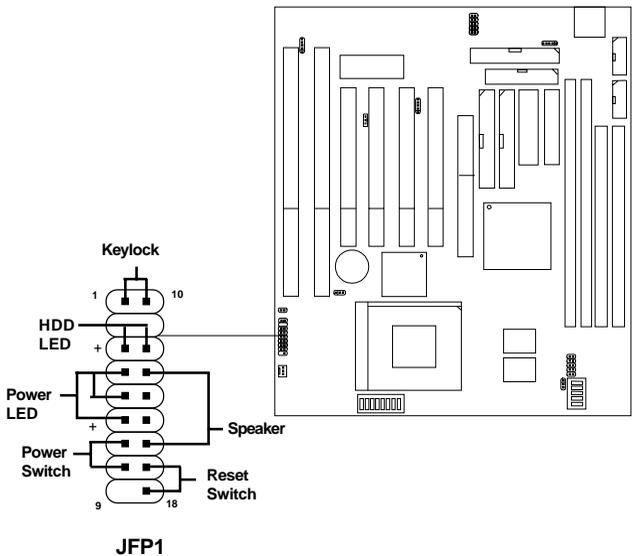
3. Close the plastic clip at the side of the DIMM slot.

2.3-3 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), or (DIMM2) in any order.
4. You can mix DIMM and SIMM memory module.
5. Use only 3.3v DIMM memory module.
6. Use only 5v EDO SIMM memory module.

2.4 Case Connector: JFP1

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

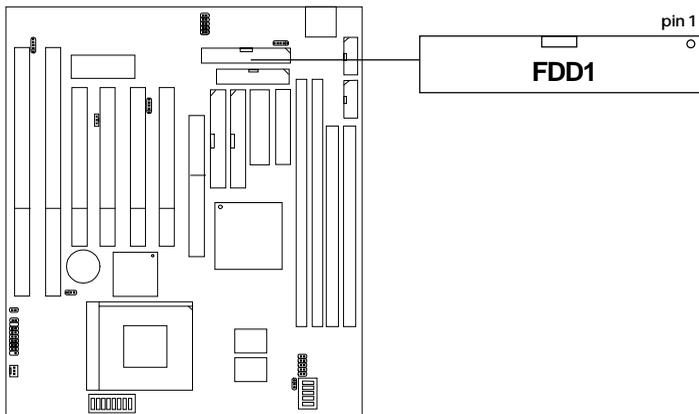
Speaker from the system case is connected to this pin.

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.

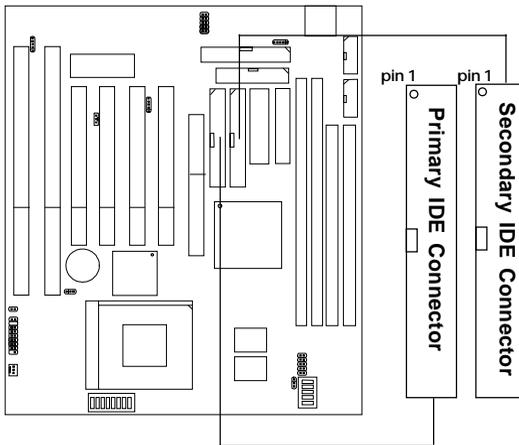
2.5 Floppy Disk Connector: FDD1

The mainboard also provides a standard floppy disk connector FDD1 that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.



2.6 Hard Disk Connectors: IDE1 & IDE2

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



IDE1(primary IDE connector)

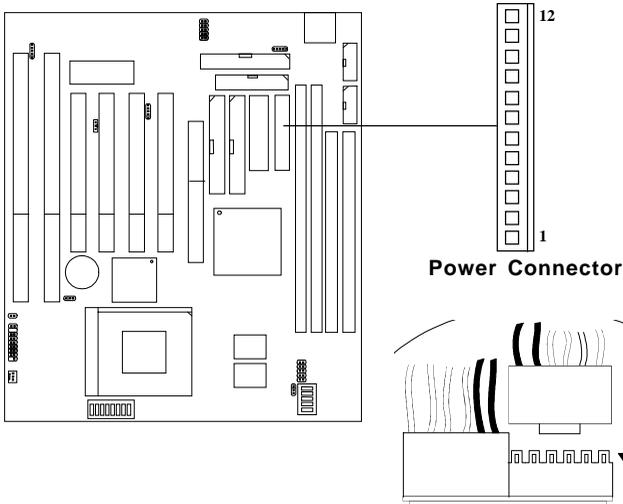
The first hard disk should always be connected to IDE1. IDE1 can connect a Master and a Slave drive.

IDE2(secondary IDE connector)

IDE2 can connect a Master and a Slave drive.

2.7 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.

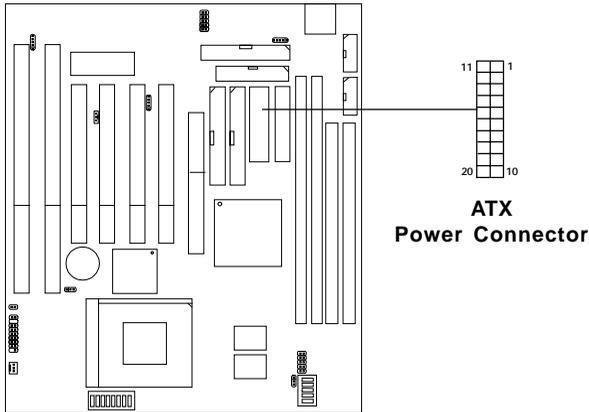


PIN DEFINITION

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

2.8 ATX 20-pin Power Connector

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

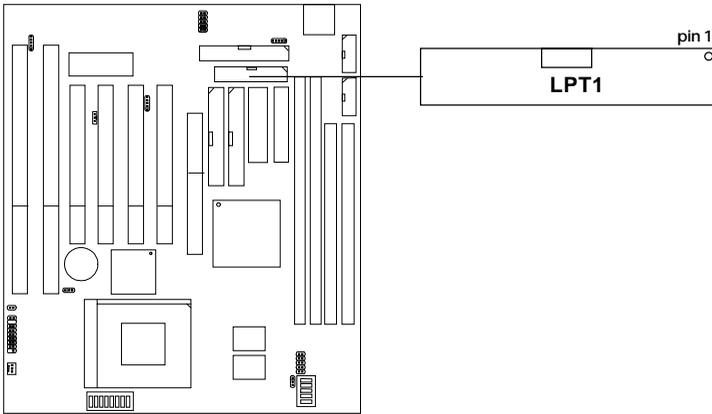


PIN DEFINITION

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

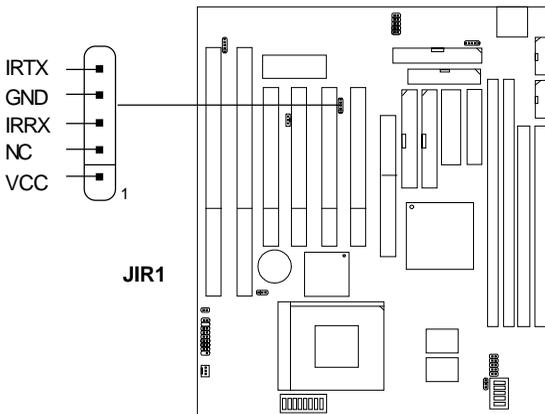
2.10 Parallel Port Connector: LPT1

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



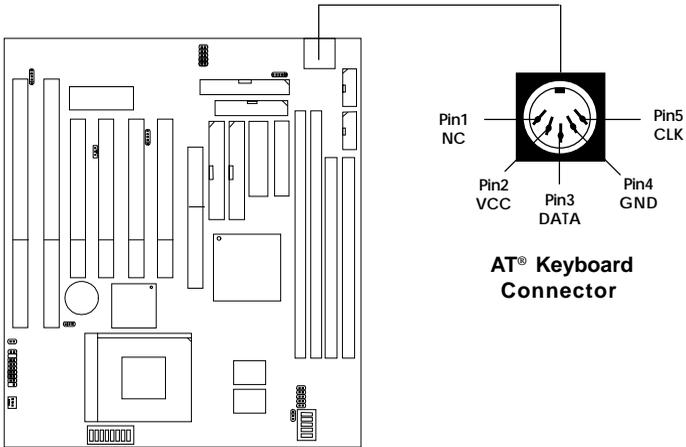
2.11 Infrared Module Connector: JIR1

The mainboard provides a 5-pin infrared connector(JIR1) 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.



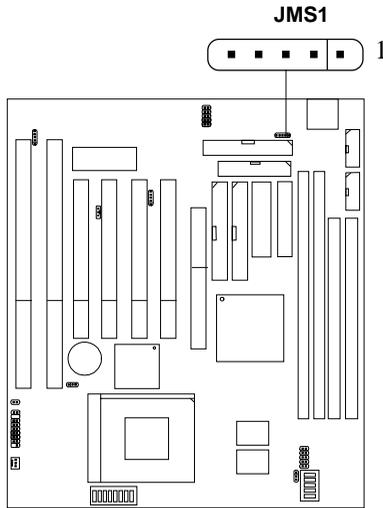
2.12 Keyboard Connector: ATKBC

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



2.13 Mouse Connector: JMS1

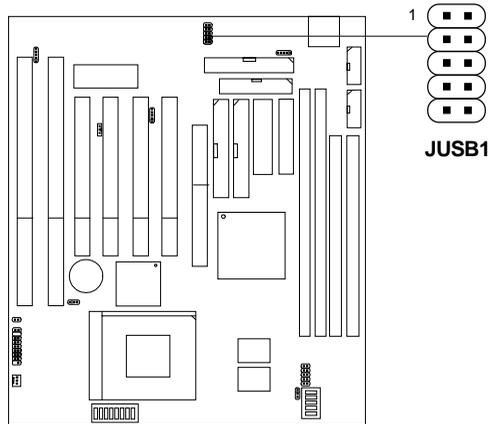
The mainboard provides a 5-pin connector for PS/2® mouse cable. You can plug a PS/2® style mouse to PS/2® mouse cable. The connector location is shown below.



Pin 1	VCC
Pin 2	-
Pin 3	GND
Pin 4	CLK
Pin 5	DATA

2.14 USB Connector: JUSB1

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

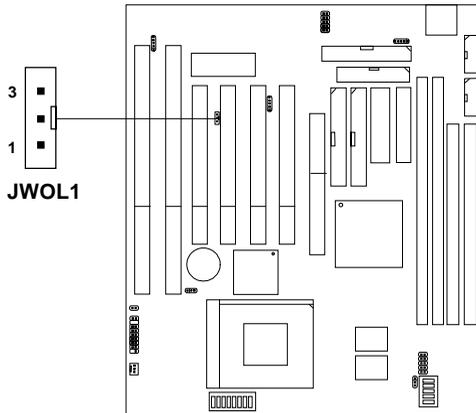


PIN	SIGNAL	DESCRIPTION
1/10	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data 0	Positive Data Channel 0
4/5	GND	Ground
6/7	GND	Ground
8	+Data 1	Positive Data Channel 1
9	-Data 1	Negative Data Channel 1

USB Port Description

2.15 Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports Wake Up on LAN function.



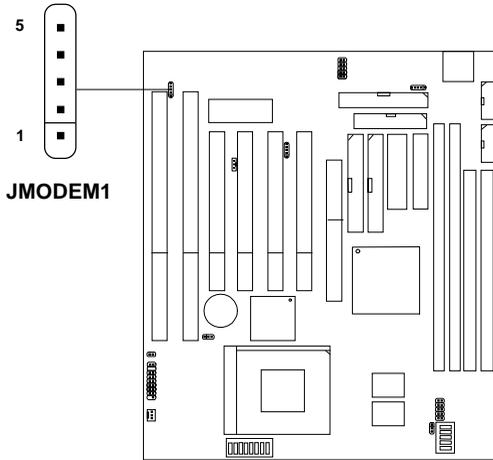
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

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 Modem Wake Up Connector: JMODEM1

The JMODEM1 connector is for use 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)