

Chapter 2

HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

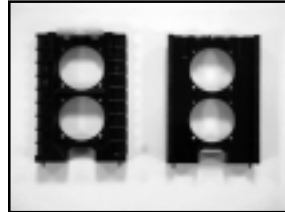
The mainboard operates with **Intel® Pentium® II Xeon™ processor**. The mainboard uses a CPU Slot called Slot 2 for easy CPU installation and a DIP switch (SW1) to set the proper speed for the CPU. The CPU should always have a Heat Sink attached to prevent overheating.

2.1-1 CPU Installation Procedures

Intel® Pentium® II Xeon™ processor Installation Procedures

Retention Mechanism

Plastic Guide that holds and secure the processor into the Slot 2 connector

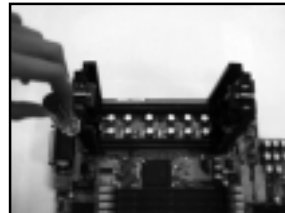


Retention Cap

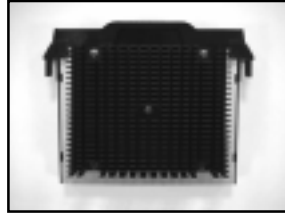
Plastic Guide that secure the processor to the Retention Mechanism.



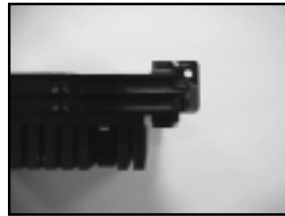
1. Secure the mainboard into the chassis. Then, connect the Retention Mechanism into the mainboard. Secure with screws.



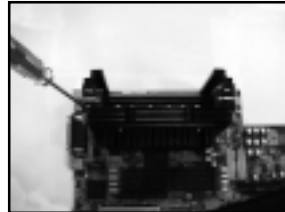
2. Connect the Retention Cap into the processor. Processor will only fit in one direction.



3. The Retention Cap got two mounting holes, which should match with the Retention Mechanism.



4. Insert the processor into the Slot 2.



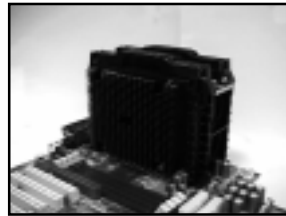
5. Secure with screws.



6. Repeat steps 2 to 5 for the second processor.



7. The installation is now complete.



Note: To install a single Intel Pentium II Xeon™ processor, refer to Chapter 2 section 2.1-4.

2.1-2 CPU Core Speed Derivation Procedure

The DIP Switch SW1 (1, 2, 3, and 4) is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

$$\begin{array}{llll} \text{If} & \text{CPU Clock} & = & 100\text{MHz} \\ & \text{Core/Bus ratio} & = & 4.5 \\ \text{then} & \text{CPU core speed} & = & \text{Host Clock} \times \text{Core/Bus ratio} \\ & & = & 100\text{MHz} \times 4.5 \\ & & = & 450\text{MHz} \end{array}$$

SW1				CPU
1	2	3	4	Core/Bus Ratio
OFF	ON	ON	ON	4
OFF	ON	OFF	ON	4.5
OFF	OFF	ON	ON	5
OFF	OFF	OFF	ON	5.5
ON	ON	ON	OFF	6

2.1-3 CPU Speed Setting: SW1

To adjust the speed of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU spec.*). Then look at **Table 2.1 (400 ~ 600MHz Intel® Pentium® II Xeon™ processor)** for setting.

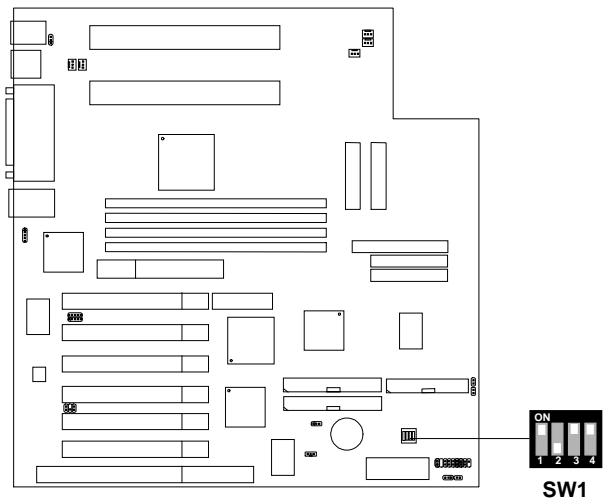
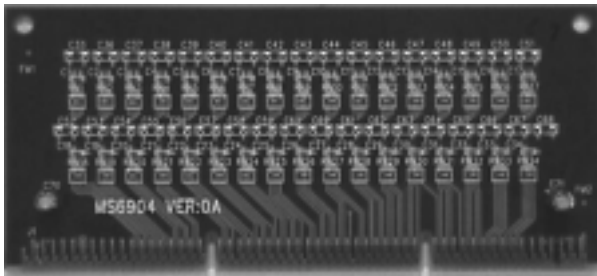


Table 2.1 400 ~ 600MHz Intel® Pentium® II Xeon™ processor

CPU SPEED (FSB 100MHz)	CORE/BUS RATIO SW1
400MHz	
450MHz	
500MHz	
550MHz	
600MHz	

2.1-4 CPU Terminator

The CPU terminator is used, when only one CPU is installed. You must always install the CPU terminator on the empty CPU 2 slot.



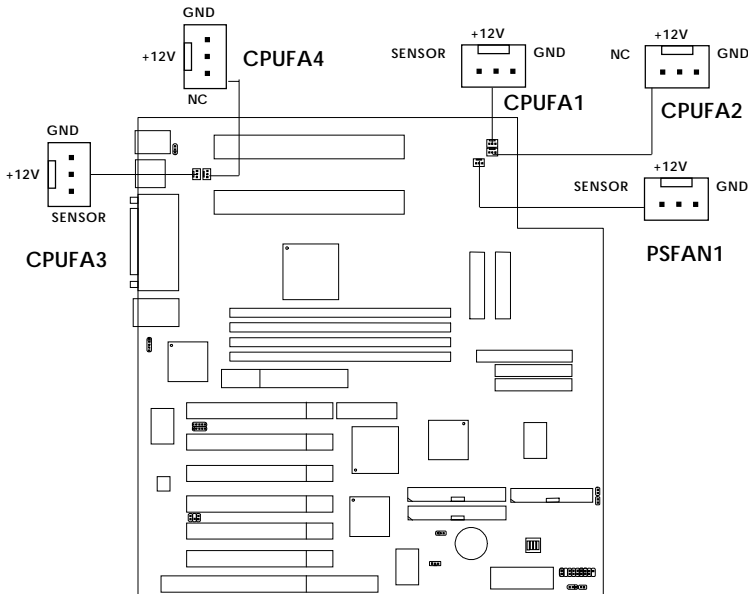
CPU Terminator

Important:

To use dual CPU, it is strongly advised that same CPU speed and CPU stepping is used: which means that if you install 400MHz in the 1st CPU slot, then you must also install 400MHz on the 2nd slot.

2.1-5 Fan Power Connectors: CPUFA1/CPUFA2/CPUFA3/CPUFA4/PSFAN1

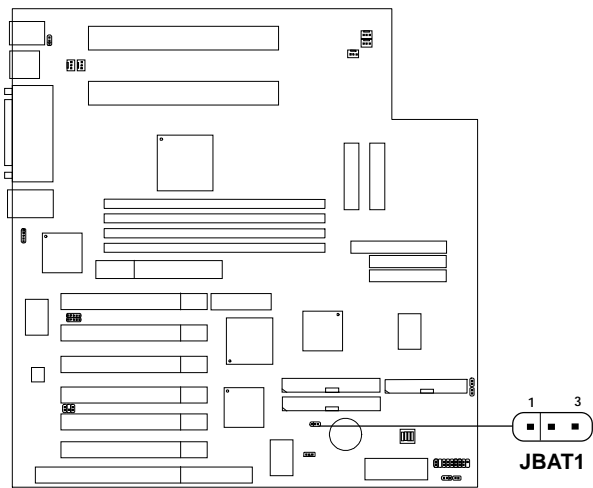
These connectors support system cooling fan with +12V. It supports three pin head connector. When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan speed monitor feature.



CPUFA1/2 : Processor#1 Fan Connector
CPUFA3/4 : Processor#2 Fan Connector
PSFAN1 : Power Supply Fan Connector

2.2 Clear CMOS Jumper: JBAT1

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



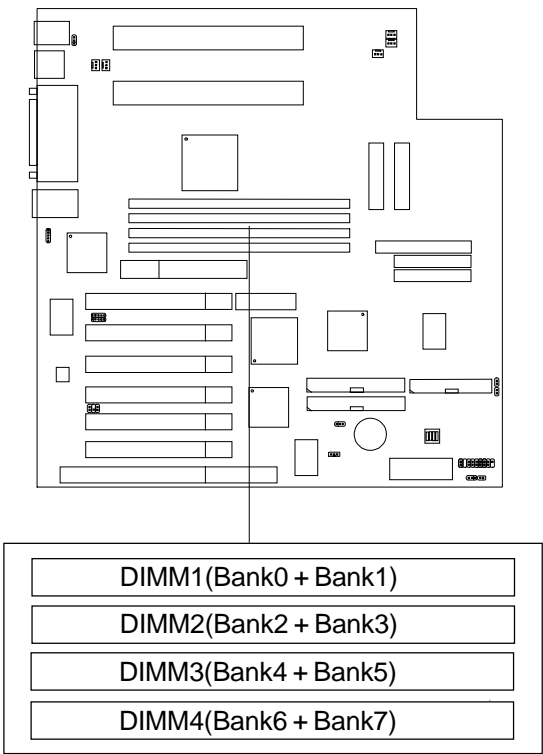
JBAT1	Function
	Keep Data
	Clear CMOS

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 which is provided by the power supply. Otherwise, the CMOS will not be cleared.

2.3 Memory Installation

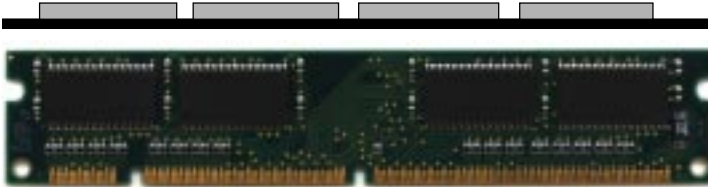
2.3-1 Memory Bank Configuration

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

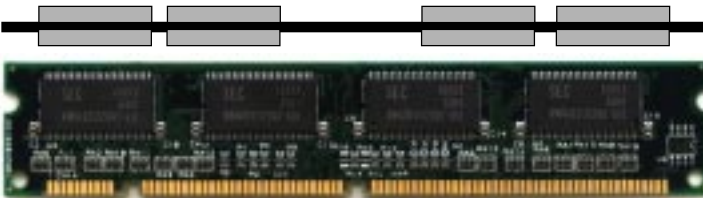


2.3-2 Memory Installation Procedures

A. How to install a DIMM Module

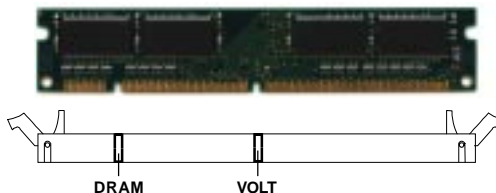


Single Sided DIMM



Double Sided DIMM

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



3. The plastic clip at the side of the DIMM slot will automatically close.

2.3-3 Memory Population Rules

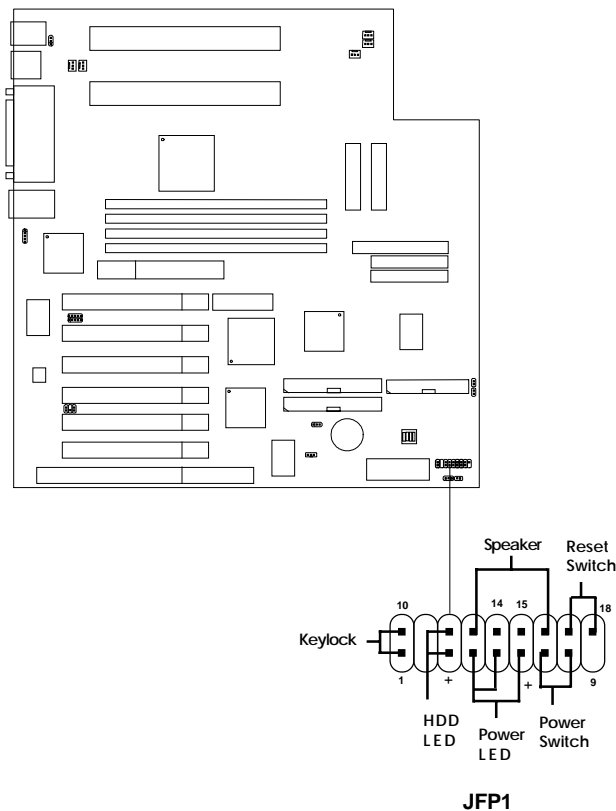
1. Supports SDRAM.
2. Supports **registered/unbuffered** DIMM.
3. To operate properly, at least one 168-pin DIMM module must be installed.
4. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM2, DIMM 3, or DIMM 4 in any order.
5. Supports only 3.3 volt DIMM.
6. The DRAM addressing and the size supported by the mainboard is shown below:

Table 2.3-1 SDRAM Memory Addressing

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	12	8	8MBx4	16MBx8
	2Mx8	ASYM	12	9	16MBx8	32MBx16
	2Mx8	ASYM	13	8	16MBx8	32MBx16
	4Mx4	ASYM	12	10	32MBx16	64MBx32
	4Mx4	ASYM	14	8	32MBx16	64MBx32
64M 2 bank	2Mx32	ASYM	12	9	16MBx2	32MBx4
	2Mx32	ASYM	13	8	16MBx2	32MBx4
	4Mx16	ASYM	12	10	32MBx4	64MBx8
	4Mx16	ASYM	14	8	32MBx4	64MBx8
	8Mx8	ASYM	14	9	64MBx8	128MBx16
	16Mx4	ASYM	14	10	128MBx16	256MBx32
64M 4 bank	2Mx32	ASYM	13	8	16MBx2	32MBx4
	4Mx16	ASYM	14	8	32MBx4	64MBx8
	8Mx8	ASYM	14	9	64MBx8	128MBx16
	16Mx4	ASYM	14	10	128MBx16	256MBx32

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 had 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.

Green Color:	Indicate the system is in full on mode.
Orange Color:	Indicate the system is in suspend mode.

2.4-5 Speaker

Speaker from the system case is connected to this pin.

If on-board speaker is available:

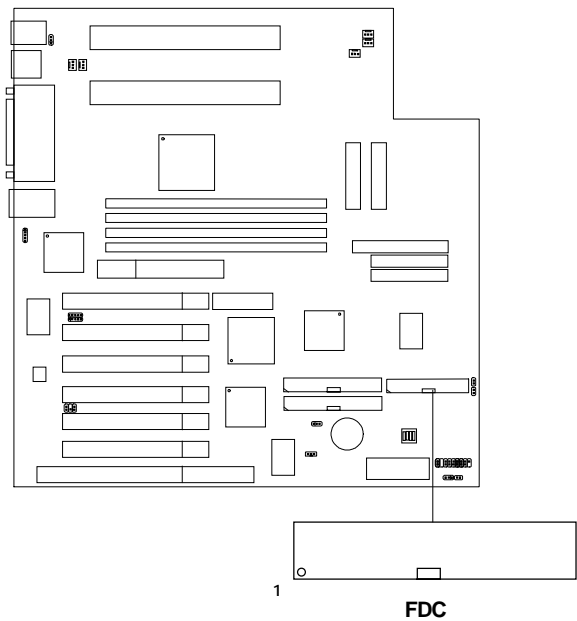
Short pin 14-15:	On-board speaker Enabled.
Open pin 14-15:	On-board speaker Disabled.

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.

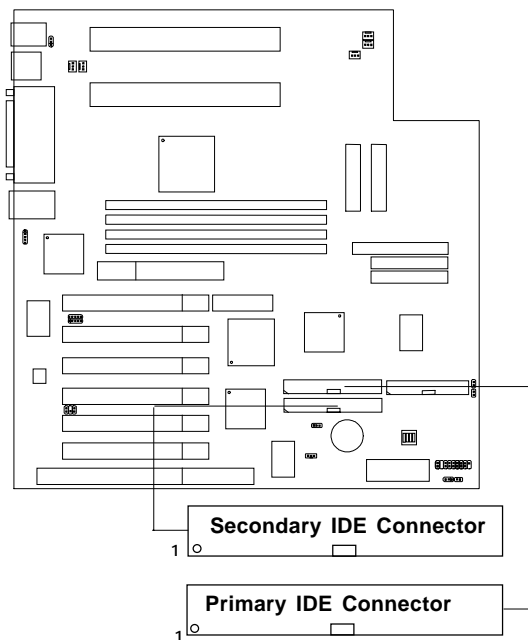
2.5 Floppy Disk Connector: FDC

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 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.

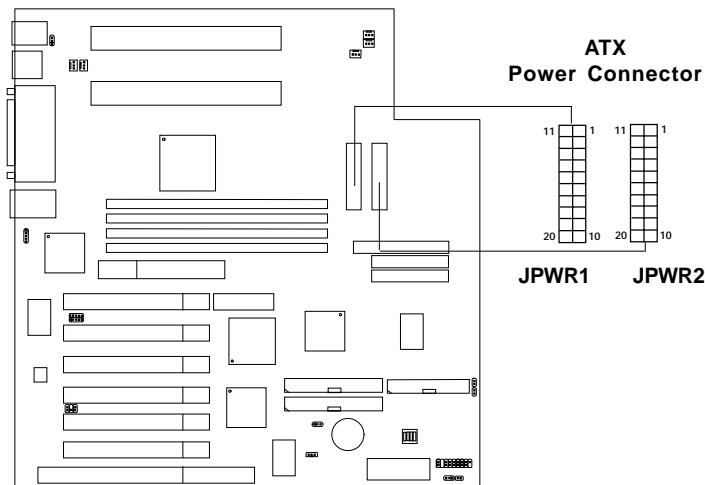
IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

2.7 Power Supply

2.7-1 ATX 20-pin Power Connector: JPWR1/JPWR2

There are two power supply connectors. **If the system power requirements exceed 300W, a power supply with two 20-pin connectors can be used. Avoid using two power supply.**



PIN DEFINITION

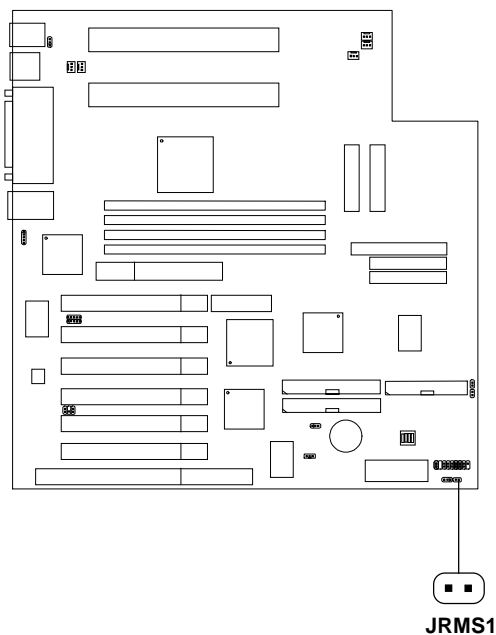
PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

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.

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

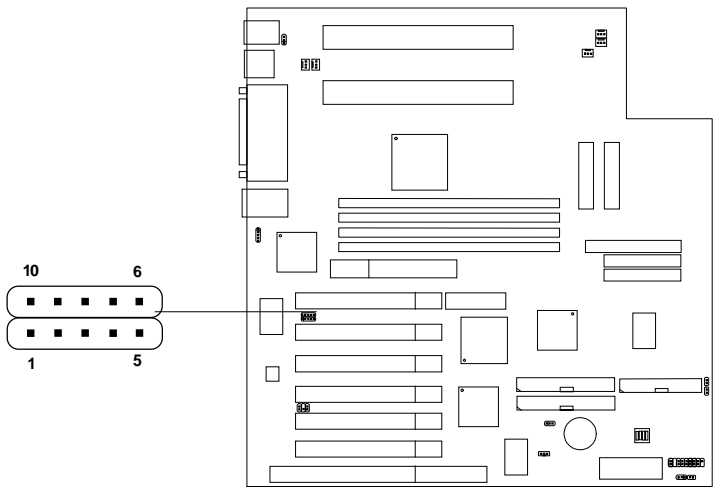
2.7-2 Remote Power On/Off Switches: JRMS1

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 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.



2.8 IrDA Infrared Module Connector: IR1

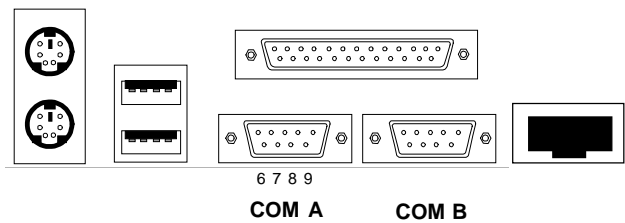
The mainboard provides two 5-pin infrared (IR) connectors for IR modules. These connectors are for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function. FIR and Consumer IR are reserved functions for future Super I/O chipset.



Pin	Definition	Pin	Definition
1	VCC	6	NC
2	NC	7	NC
3	IRRX	8	NC
4	GND	9	CIRRX
5	IRTX	10	NC

2.9 Serial Port Connectors: COM A & COM B

The mainboard has two 9-pin male DIN connectors for serial ports COM A and COM B. 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.

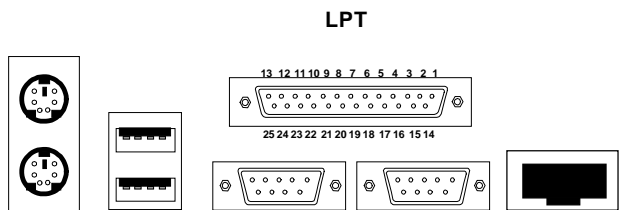


PIN DEFINITION

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

2.10 Parallel Port Connector: LPT

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

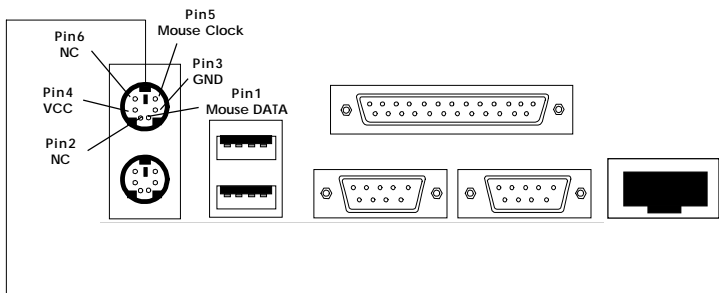


PIN DEFINITION

PIN	SIGNAL	PIN	SIGNAL
1	STROBE	14	AUTO FEED#
2	DATA0	15	ERR#
3	DATA1	16	INIT#
4	DATA2	17	SLIN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT		

2.11 Mouse Connector: JKBMS1

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

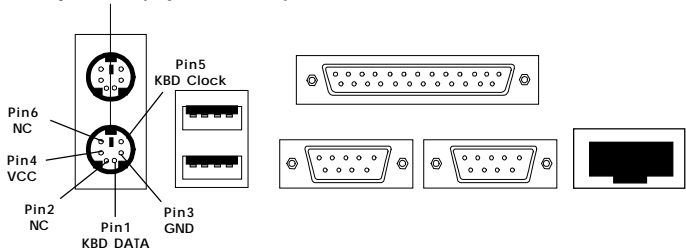


PS/2[®] Mouse (6-pin Female)

2.12 Keyboard Connector: JKBMS1

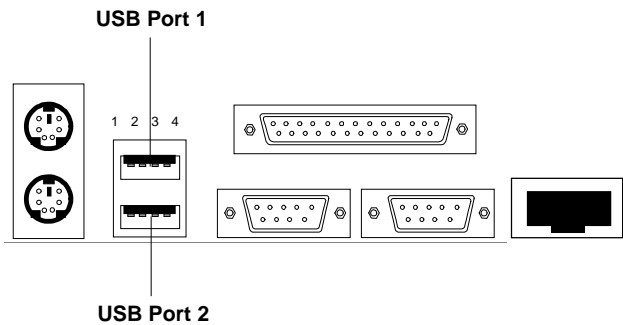
The mainboard provides a standard PS/2[®] keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.

PS/2[®] Keyboard (6-pin Female)



2.13 USB Connector: USB

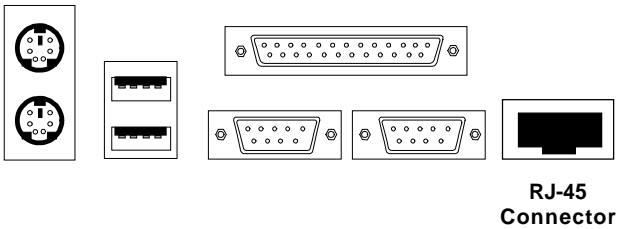
The mainboard provides a **UHCI(Universal Host Controller Interface)** **Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



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

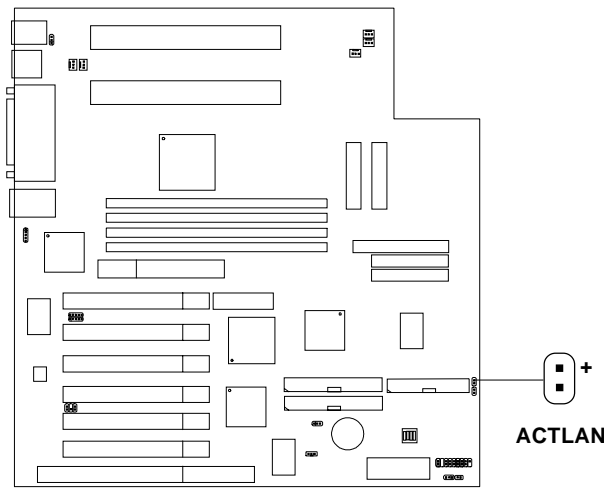
2.14 LAN Connector

The mainboard provides a RJ-45 connector for your network need.



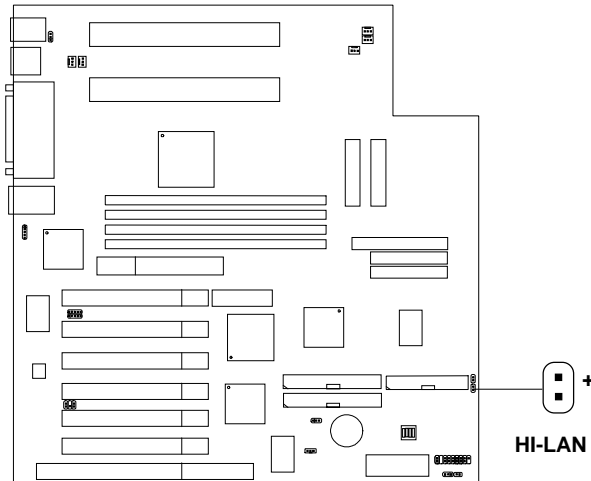
2.15 Onboard LAN Active LED Connector: ACTLAN

Attach LED to this connector. When the onboard LAN chipset is active, this LED will lit.



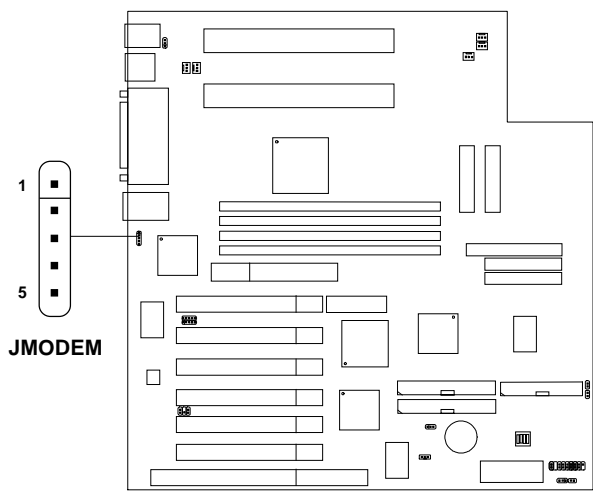
2.16 Onboard LAN Active-High LED Connector: HI-LAN

Attach LED to this connector. When the onboard LAN chipset is on active high speed (100MB/s), this LED will lit.



2.17 Modem Wake Up Connector: JMODEM

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



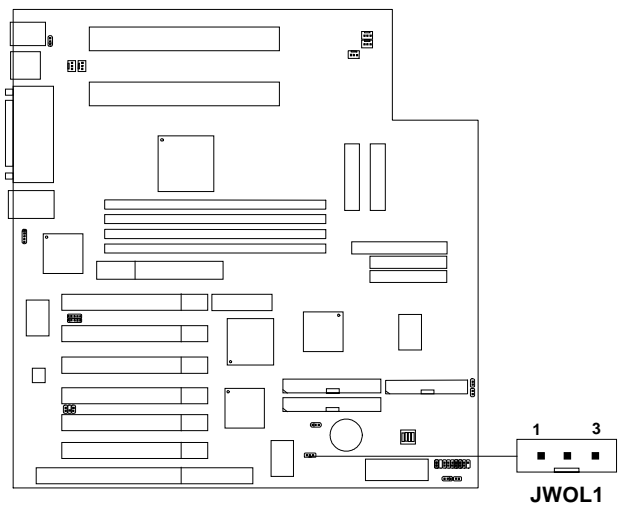
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

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

2.18 Wake-Up on LAN Connector: JWOL1

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



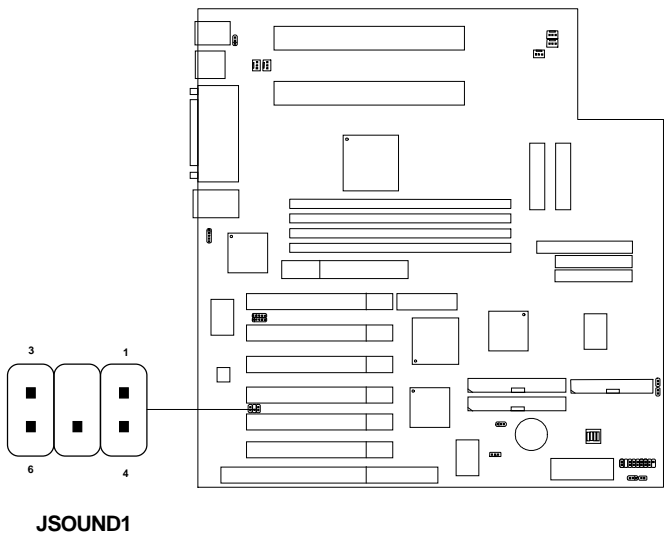
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

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

2.19 SB_Link™ Card Sound Connector: JSOUND1

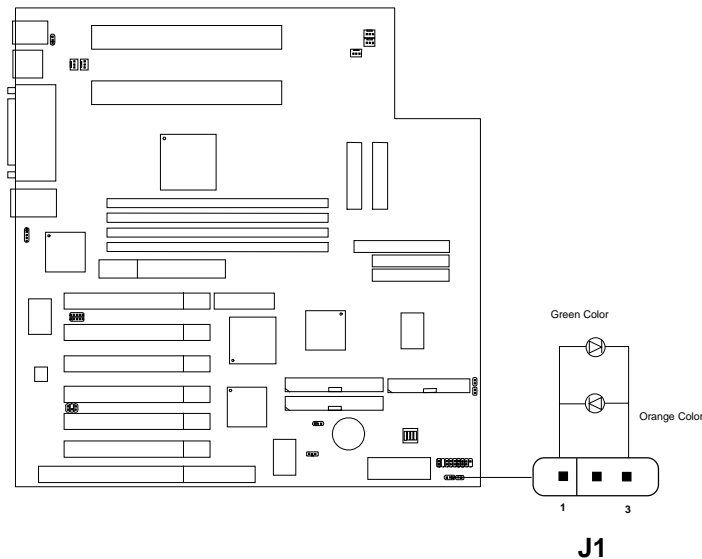
The mainboard provides a distributed DMA connector for PCI sound card with this feature, such as Creative® PCI 3D sound card.



Pin	Definition
1	DMA Grand Signal
2	NC
3	GND
4	GND
5	DMA Request Signal
6	Serial Interrupt Signal

2.20 Power LED Dual Color Connector: J1

J1 can be connected with dual-color LED. LED will lit while the system is in suspend mode.



Note: **Green Color:** Indicate the system is in full on mode.
Orange Color: Indicate the system is in suspend mode.

2.21 SCSI Connectors

The mainboard provides three SCSI connector. The first SCSI is for Ultra SCSI which supports 20MB/s. The second SCSI is for Ultra Wide SCSI supports 40MB/s. The third SCSI is for Ultra 2 SCSI which supports 80MB/s.

