## Chapter 3

Hardware Installation

3.1 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.

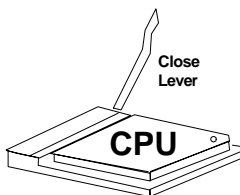### 3.1-1 CPU Installation Procedures

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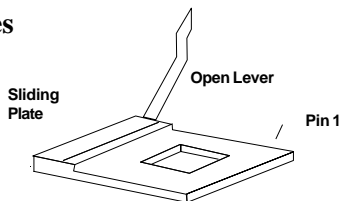
2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then, insert the CPU. It should insert easily.
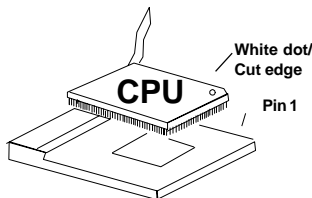
3. Press the lever down to complete the installation.

3.1-2 CPU Core Speed Derivation Procedure

The mainboard CPU Bus Frequency can be set through BIOS setup

If	<u>CPU Clock</u>	=	66MHz
	<u>Core/Bus ratio</u>	=	3.5
then	<u>CPU core speed</u>	=	<u>Host Clock</u> x <u>Core/Bus ratio</u>
		=	66MHz x 3.5
		=	233MHz

3.1-3 Fan Power Connectors: CPUFAN & SYSFAN

These connector 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.
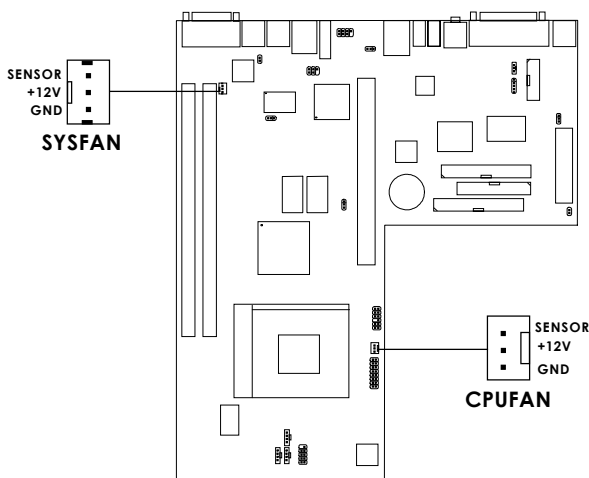

CPUFAN: Processor Fan
SYSFAN: System Fan

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.

3.2 Clear CMOS Jumper: JBAT1

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 JBAT1.
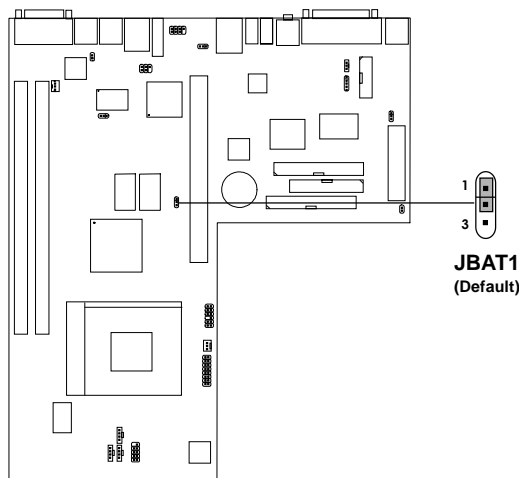
JBAT1
(Default)

JBAT1	Function
3 1	**Keep Data**
3 1	**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.
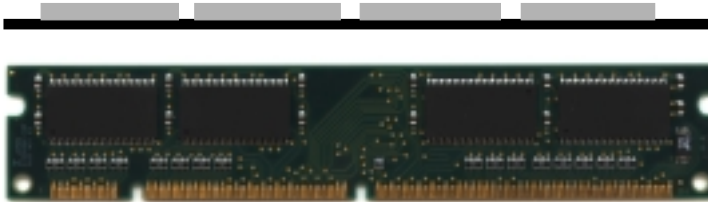
3.3 Memory Installation

3.3-1 Memory Bank Configuration

The mainboard supports a maximum memory size of 256MB(64-bit technology) or 512MB(128-bit technology for SDRAM: It provides two 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 128 Mbytes DIMM memory module.
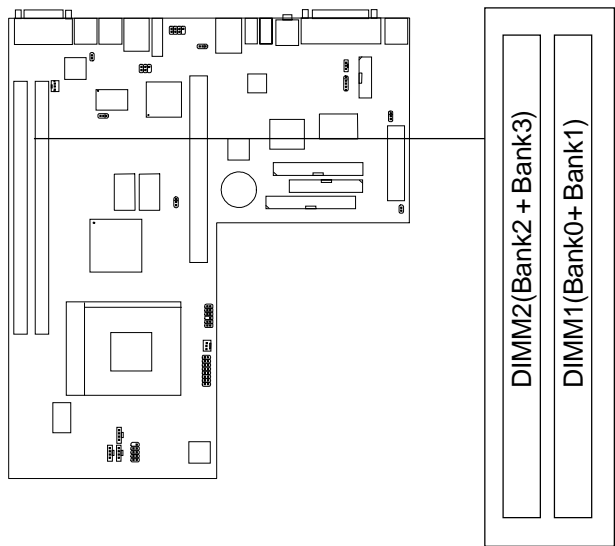
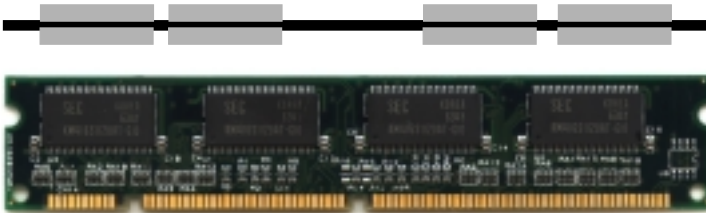### 3.3-2   Memory Installation Procedures:
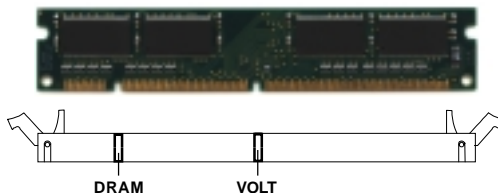
b. How to install a DIMM Module

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.

DRAM   VOLT

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

### 3.3-3   Memory Population Rules

1. Supports only SDRAM DIMM.

2. To operate properly, at least one 168-pin DIMM module must be in-
   stalled.

3. This mainboard supports Table Free memory, so memory can be installed
   on DIMM1 or DIMM 2 in any order.

4. Supports 3.3 volt DIMM.

5. The DRAM addressing and the size supported by the mainboard is
   shown next page:

Table 3.3-1 SDRAM Memory Addressing

DIMM Capacity	# of Devices/ DIMM	# of Sides	Dram Tech.	Front Side Population		Back Side Population		Row	Bank	Column
				Count	Config	Count	Config			
0		N/A		Empty		Empty		N/A	N/A	N/A
32MB	16	DS	16Mb	8-	2Mb x8	8-	2Mb x8	11	1	9
32MB	4	SS	64Mb	4-	4Mb x16			12	2	8
48MB	12	DS	64/16Mb	4-	4Mb x16	8-	2Mb x8	12	2/1	8
64MB	8	DS	64Mb	4-	4Mb x16	4-	4Mb x16	12	2	8
64MB	8	SS	64Mb	8-	8Mb x8			12	2	9
64MB	4	SS	128Mb	4-	8Mb x16			12	2	9
96MB	12	DS	64Mb	8-	8Mb x8	4-	4Mb x16	12	2	9/8
96MB	8	DS	128/64Mb	4-	8Mb x16	4-	4Mb x16	12	2	9/8
128MB	16	DS	64Mb	8-	8Mb x8	8-	8Mb x8	12	2	9
128MB	8	DS	128Mb	4-	8Mb x16	4-	8Mb x16	12	2	9
128MB	8	SS	128Mb	8-	16Mb x8			12	2	10
128MB	4	SS	256Mb	4-	16Mb x16			13	2	9
192MB	12	DS	128Mb	8-	16Mb x8	4-	8Mb x16	12	2	10/9
192MB	16	DS	128/64Mb	8-	16Mb x8	8-	8Mb x8	12	2	10/9
256MB	16	DS	128Mb	8-	16Mb x8	8-	16Mb x8	12	2	10
256MB	8	DS	256Mb	4-	16Mb x16	4-	16Mb x16	13	2	9
256MB	8	SS	256Mb	8-	32Mb x8			13	2	10
512MB	16	DS	256Mb	8-	32Mb x8	8-	32Mb x8	13	2	10

3.4 Case Connector: JFP1

The Power Switch, Reset Switch, Power LED, LAN LED and HDD LED are all connected to the JFP1 connector block.
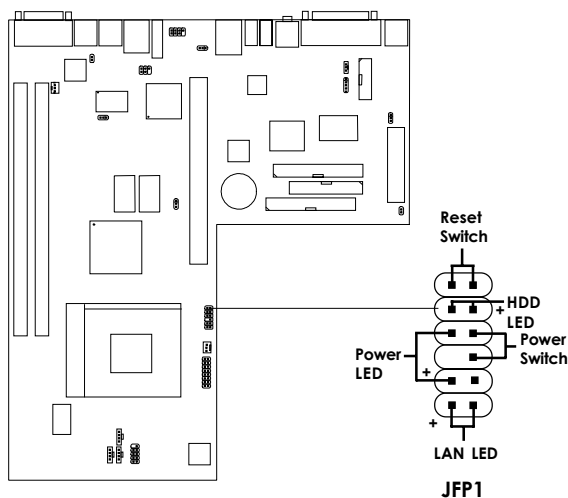
3.4-1 Power Switch

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

3.4-2 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.

3.4-3 Power LED

The Power LED is lit while the system power is on. You can connect the Power LED from the system case to this pin. When the system enters suspend mode, the power LED will turn orange.

3.4-4 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.

3.4-5 LAN LED

This can be connected with LED that will shows any activity on your network.

3.5 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.
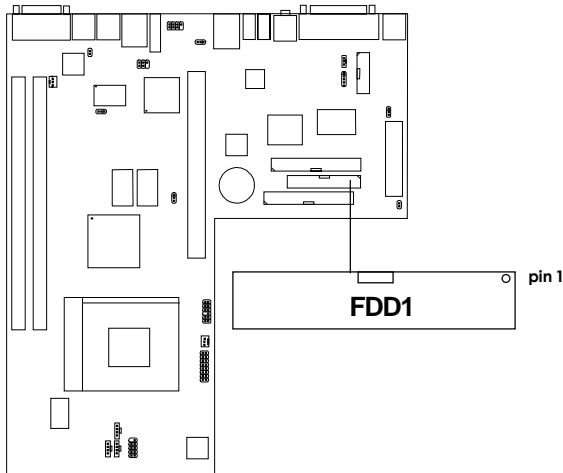
3.6 Hard Disk Connectors: IDE1 & IDE2

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.
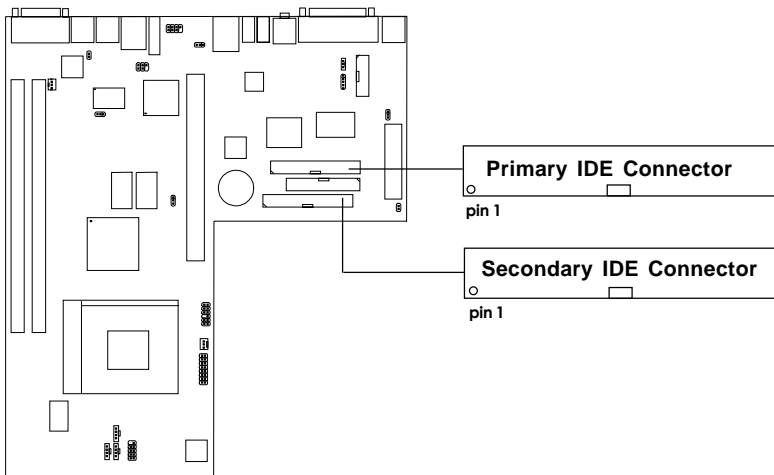

IDE1 (primary IDE connector)

> 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.

3.7 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).**

**ATX
Power Connector**
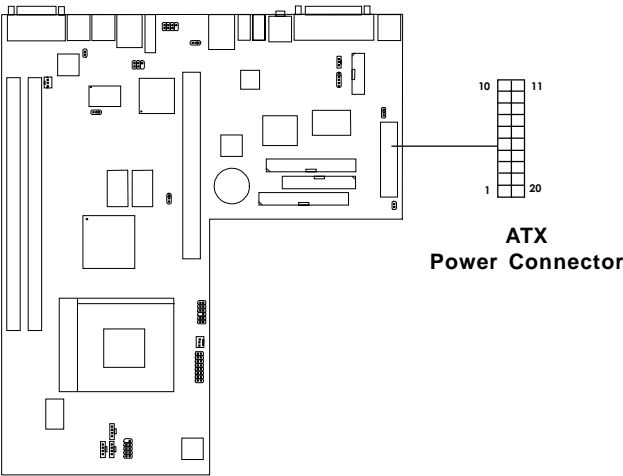
PIN DEFINITION

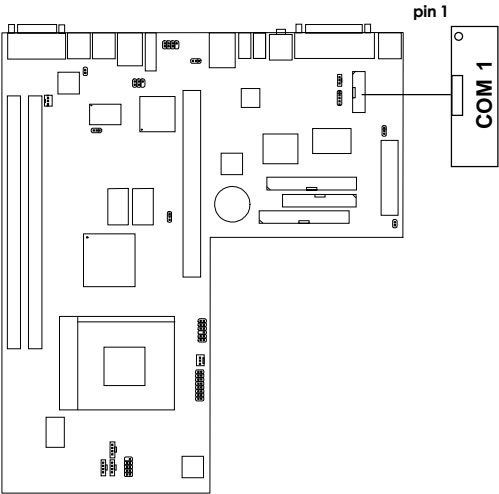| PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

3.7-1   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 only used for ATX type power supply.
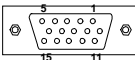
JRMS1

3.8 Serial Port Connector: COM 1

The mainboard provides a serial port (COM 1) connector. This connector is 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into these connectors.

3.9 VGA DB 15 Pin Connector

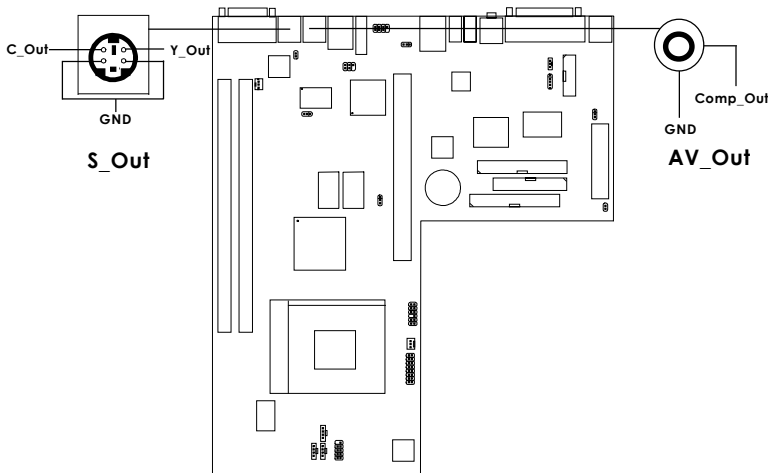The mainboard provides a DB 15-pin connector to connect to a VGA monitor.

VGA

| Analog Video Display Connector(DB15-S)	
Pin	**Signal Description**
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Not used
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

3.10 S-Out and AV-Out Connector

The mainboard provides two TV-Out Connector: S-Out and AV-Out. This mainboard can only support one monitor, either PC monitor or TV-Out at a time, but not at the same time.

Note: If you want to use TV-Out, you need to remove the PC monitor cable and connect the TV before turning on the system. If not, then the PC Monitor will still be your monitor.
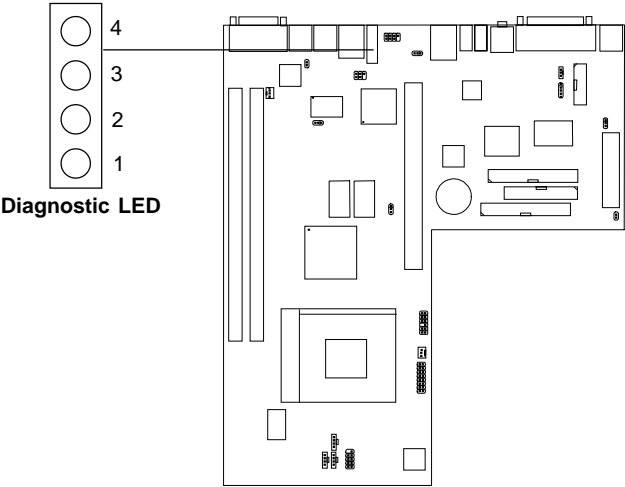
3.11 LAN Connector

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

**RJ-45
Connector**
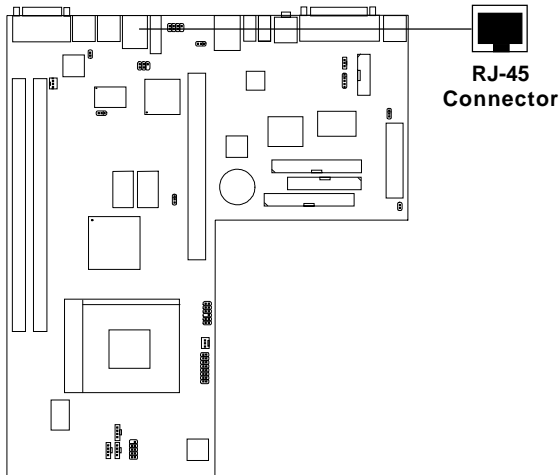
3.12 Diagnostic LED

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.

Diagnostic LED

Diagnostic LED Function

Diagnostic LED 4	3	2	1	Description	Possible Problem/ Solution
0	0	0	0	System Power ON. This will start BIOS Initialization	System D-LED will hang here The Processor might be damage or not installed properly Damage/Discharge Lithium Battery
0	0	0	1	Early Chipset Initialization	***
0	0	1	0	Memory Detection Test Testing Onboard memory size	System D-LED will hang here The Memory module might be damage or not installed properly.
0	0	1	1	Decompressing BIOS image to RAM for fast booting.	***
0	1	0	0	Initializing Keyboard Controller	***
0	1	0	1	Testing VGA BIOS This will start writing VGA sign-on messages to the screen.	System D-LED will produce Beep sound The VGA card might be damage or not inserted properly.
0	1	1	0	Processor Initialization This will show information regarding the processor (like brand name, system bus, etc...)	***
0	1	1	1	Testing RTC (Real Time Clock)	Low Lithium Battery
1	0	0	0	Initializing Video Interface This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter	***
1	0	0	1	BIOS Sign On This will start showing information about Logo, processor brand name, etc.....	***
1	0	1	0	Testing Base and Extended Memory Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.	***
1	0	1	1	Assign Resource to all ISA	***
1	1	0	0	Initializing Hard Drive Controller This will initialize IDE drive and controller	Check IDE cable for proper installation
1	1	0	1	Initializing Floppy Drive Controller This will initialize Floppy Drive and controller	System D-LED will hang here The Floppy Drive Cable might not be installed properly
1	1	1	0	Boot Attempt This will set low stack and boot via INT19h.	***
1	1	1	1	Operating System Booting.	***

1 = GREEN 0 = RED   *** **Check local Vendor for possible internal mainboard problem.**

3.13 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.
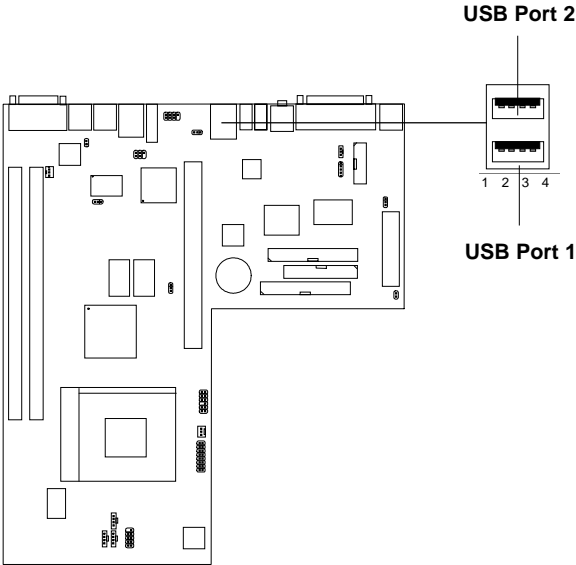
PIN	SIGNAL
1	VCC
2	-Data0
3	GND
4	+Data0

3.14   IEEE 1394 port

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.
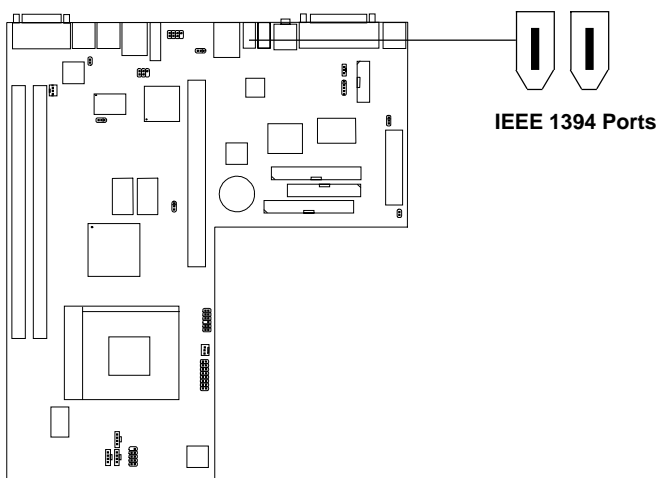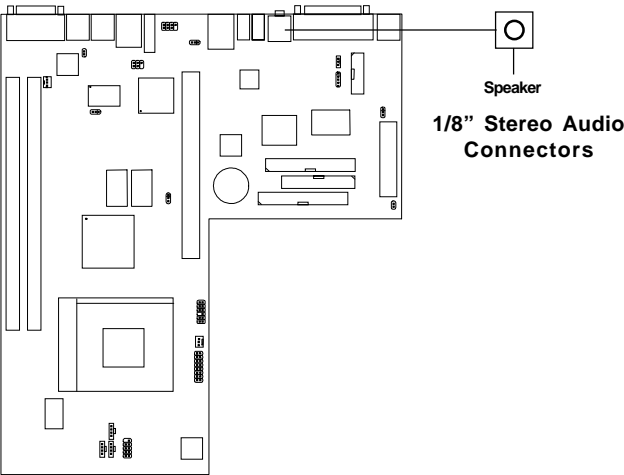

IEEE 1394 Ports

A. Software Support

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

3.15 Speaker Out

Speaker is a connector for Speakers or Headphones.

Speaker

1/8" Stereo Audio Connectors

3.16 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:
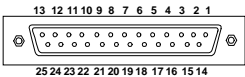
LPT

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		

3.17 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:

Pin5
Mouse Clock

Pin6
NC

Pin3
GND

Pin4
VCC

Pin1
Mouse DATA

PS/2® Mouse (6-pin Female)

Pin2
NC
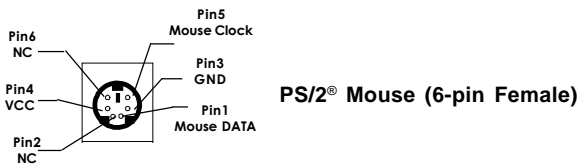
3.18 Keyboard Connector: JKBMS1

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.

Pin5
KBD Clock

Pin6
NC

Pin4
VCC

PS/2® Keyboard (6-pin Female)

Pin2
NC

Pin1
KBD DATA

Pin3
GND
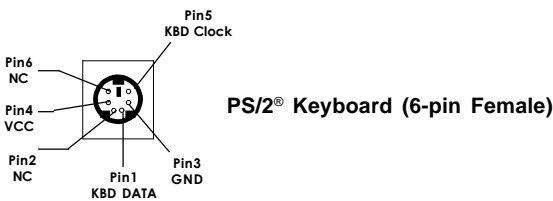
## 3.19 Infrared Module Connector: IR1

The mainboard provides a 5-pin infrared connector(IR1) 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.

IR1
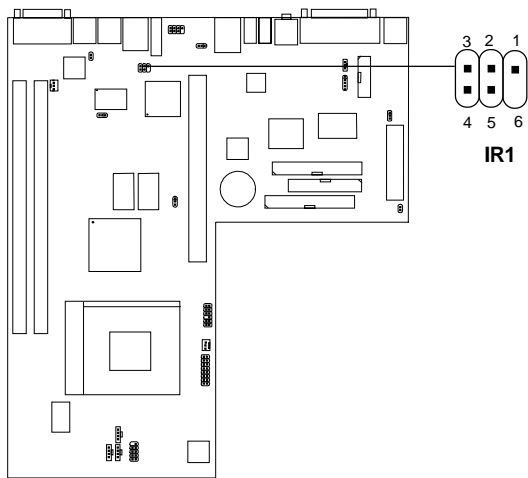
PIN	SIGNAL	DESCRIPTION
1	NC	No Connection
2	IRRX	IRRX
3	GND	Ground
4	VCC	5 V
5	IRTX	IRTX
6	NC	No Connection

3.20 USB Connector: USB1

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

USB1
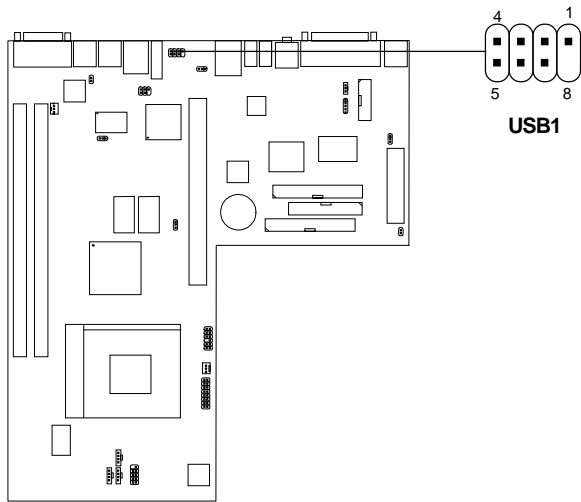
PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data0	Negative Data Channel 0
3	+Data 0	Positive Data Channel 0
4	GND	Ground
5	GND	Ground
6	+Data 1	Positive Data Channel 1
7	-Data 1	Negative Data Channel 1
8	NC	No Connection

USB Port Description

3.21 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 750 mA 5V Stand-by)

3.22 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for use with Modem add-on card that supports
the Modem Wake Up function.
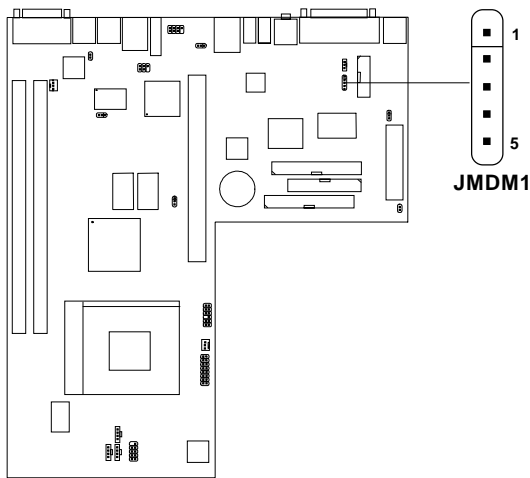
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

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)

3.23 Modem-In: JTAD1

The connector is for Modem with internal voice connector.

JTAD1
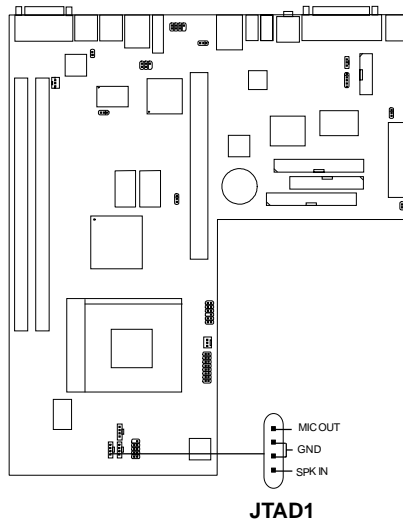
SPK_IN is connected to the Modem Speaker Out connector.
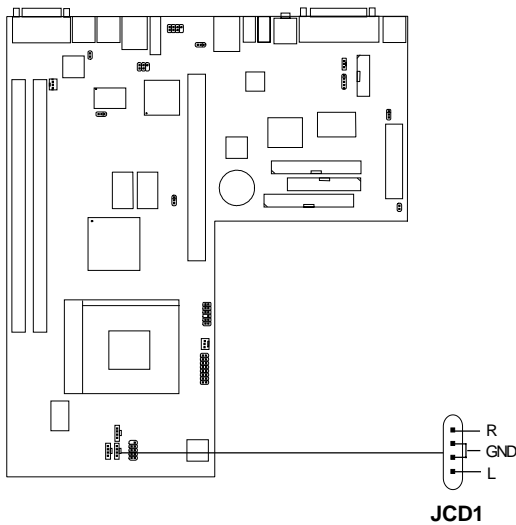MIC_OUT is connected to the Modem Microphone In connector.

3.24 AUX Line In Connector: JAUX1

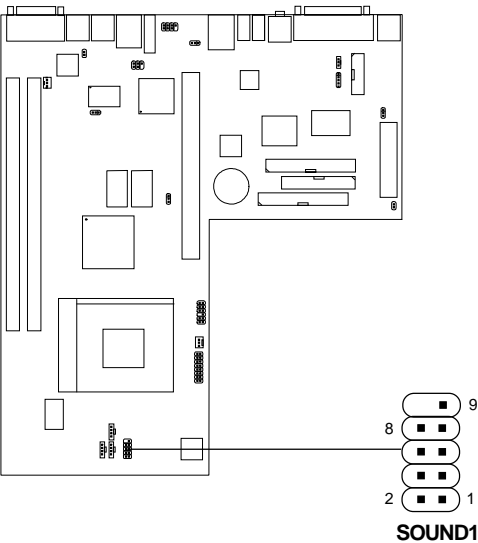This connector is used for DVD Add on Card with Line In connector.

JAUX1
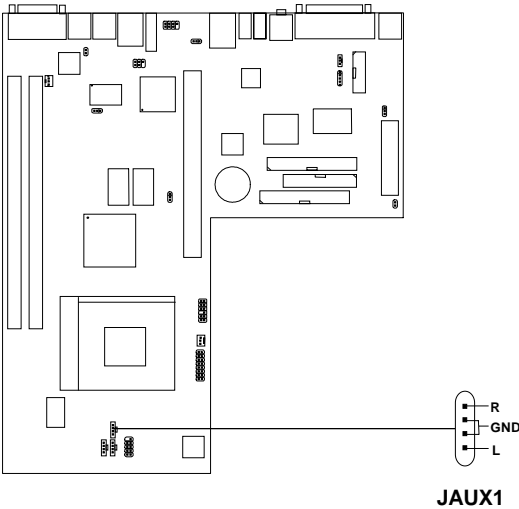
3.25 CD-In Audio Connector: JCD1

This connector is for CD-ROM with internal voice connector.


JCD1

3.26 Front Panel Sound Connector: SOUND1

Connect the Front Panel Bezel audio into this connector.

SOUND1

PIN	SIGNAL	DESCRIPTION
1	Line-In L	Line-In Left side
2	MIC_In	Microphone In
3	Line-In R	LIne-In Right side
4	NC	No Connection
5	Line-Out L	LIne-Out Left side
6	NC	No Connection
7	Line-Out R	Line-Out Right side
8	NC	No Connection
9	GND	Ground

3.27 LAN Enable/Disable Jumper: JLAN(optional)

This jumper is used to Enabled/Disabled the onboard LAN.

3   1
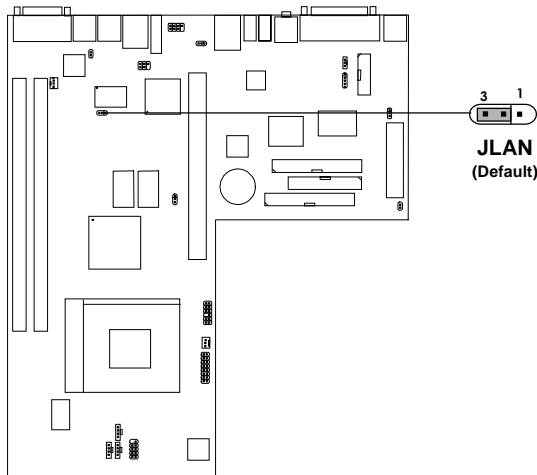
JLAN
(Default)

JLAN	Function
1 / 3	**LAN Disabled**
1 / 3	**LAN Enabled (default)**

3.28 Keyboard Power On Function: JKBV1

The JKBV1 jumper is used for setting Keyboard Power on Feature. This function should be set through BIOS Keyboard and PS/2 mouse Wake-up function.

JKBV1
(Default)

JKBV1	Function
1 ▪ ▪ 3 ▪	**5V (default)** **Disable keyboard** **power on function**
1 ▪ ▪ 3 ▪	**5V Standby** **Enable Keyboard** **Power on function**

3.29 TV NTSC/PAL Jumper: JNTSC

This jumper is used to set the AV to NTSC or PAL.

JNTSC

| JNTSC	Function
	NTSC
	PAL

3.30 USB WakeUp Function Jumper: JUSB1

This jumper is used to Enabled/Disabled the USB wake up function.
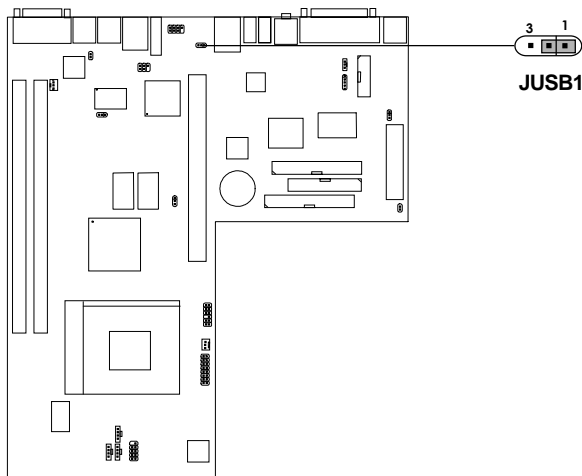
JUSB	Function
1 ■ 3 ■	**Default**
1 ■ 3 ■	**Support Wake-Up from USB device**