

Chapter 2

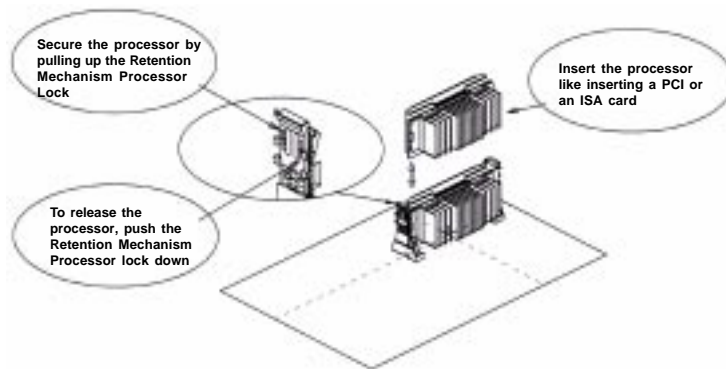
HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

2.1-1 Processor Installation Procedure

Step 1: Install the Retention Mechanism.

Attach the Retention Mechanism to the Mainboard. Push the Plastic lock to secure the Retention Mechanism into the mainboard.



Step 2: Install the Processor.

Insert the Processor like inserting a PCI or an ISA card.

Step 3: Lock the Processor.

Lock the processor by pulling up the Retention Mechanism processor lock shown above.

Note: The Retention Mechanism processor lock can only be used with S.E.C.C. 2 and S.E.P.P. processor.

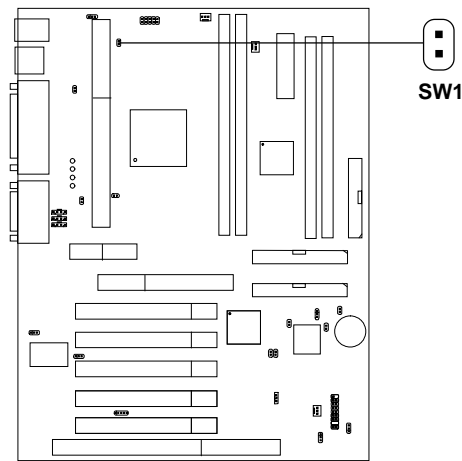
2.1-2 CPU Core Speed Derivation Procedure



The mainboard CPU Core/Bus ratio and CPU Bus Frequency can both be set through BIOS setup

| | | | |
|-------------|-----------------------|---|---|
| If | <u>CPU Clock</u> | = | 100MHz |
| | <u>Core/Bus ratio</u> | = | 4 |
| then | <u>CPU core speed</u> | = | <u>Host Clock</u> x <u>Core/Bus ratio</u> |
| | | = | 100MHz x 4 |
| | | = | 400MHz |

2.1-3 Overclocking Jumper: SW1

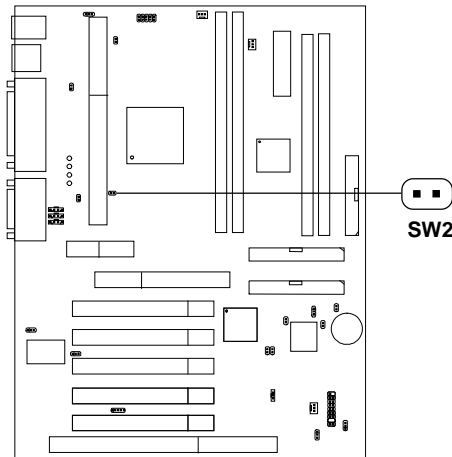
Overclocking is operating a CPU/Processor beyond its specified frequency. SW1 jumper is used for overclocking.





| SW1 | Function |
|---|--|
|  Short | Automatically detect CPU Bus Frequency |
|  Open | Allows CPU overclocking. Set 100MHz to 133Mhz |

2.1-4 Clocking Jumper for 66MHz (FSB) processor: SW2

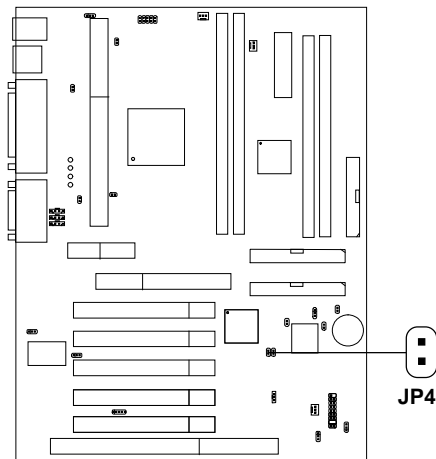
This jumper is used to enabled 66MHz (FSB) processor. To be able to used 66MHz(FSB) processor, you need to set this jumper.





| SW2 | Function |
|--|--|
|  Short | Default (if 66MHz FSB processor is installed, the system will be unabled to boot) |
|  Open | Allows 66MHz (FSB) processor to run at 100MHz |

2.1-5 CPU Core/Bus Ratio strap to Safe Mode: JP4 (reserved)

This jumper is used to adjust the CPU core/ratio to safe mode.

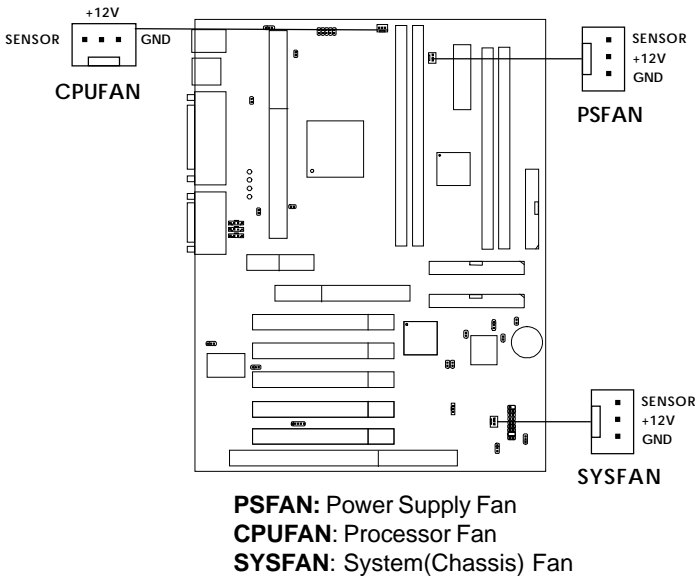


| JP4 | Function |
|--|---|
|  Short | Safe Mode (Core/Bus Ratio by 2) |
|  Open | Core/Bus Ratio in ICH Register (Default) |

Warning: If CPU Core/Bus ratio is set too high that the system hang. Short pin JP3, then restart the system until boot up, the CPU core/bus ratio will be set to the default setting by 2. Properly shutdown the system, and remove the short on JP3.

2.1-6 Fan Power Connector: CPUFAN/PSFAN/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 has System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of this function.

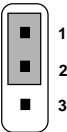
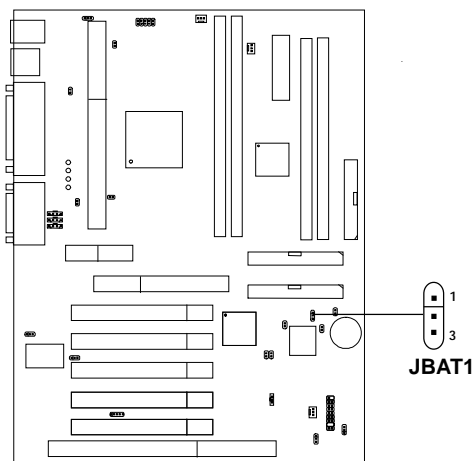


For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. System Hardware Monitor will count and report the fan rotation speed.

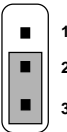
- Note:**
1. Always consult vendor for proper CPU cooling fan.
 2. CPU FAN supports the FAN control. You can install PC Alert utility. This will automatically control the CPU FAN Speed according to the actual CPU temperature.
 3. During Suspend mode, FAN status can be set through BIOS.

2.2 Clear CMOS Jumper: JBAT1

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



Keep Data



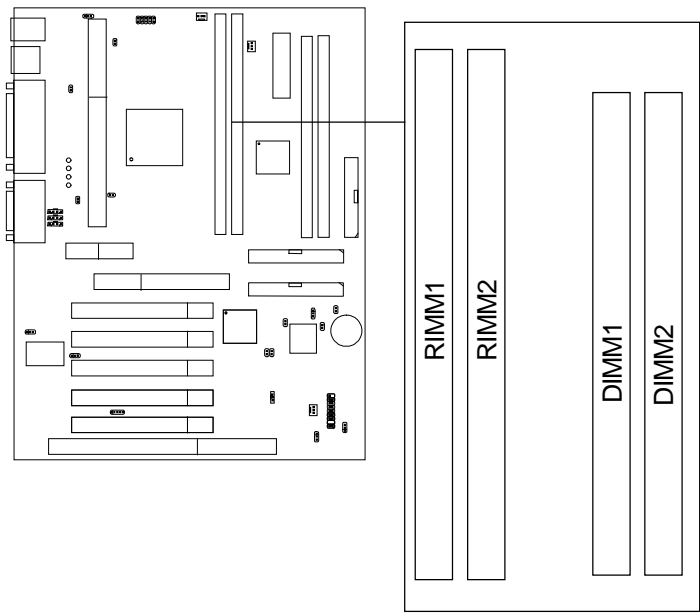
Clear Data

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

2.3 Memory Installation

2.3-1 Memory Bank Configuration

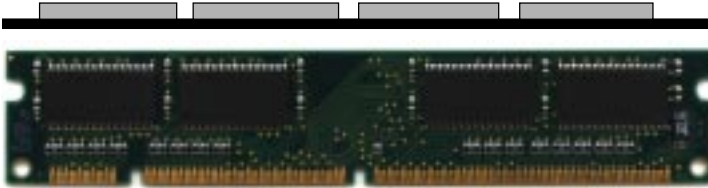
The mainboard supports a maximum memory size of 768MB(24 device) : It provides two 184-pin RIMM or two 168-pin DIMMs sockets. RIMM and DIMM memory module cannot be used at the same time.



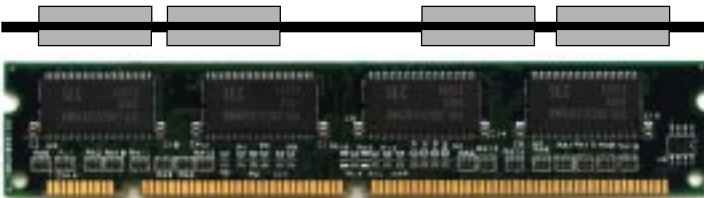
The Mainboard cannot support both RIMM and DIMM. The Mainboard can operate with only one RIMM, but not with DIMM. To use DIMM, you need to populate the RIMM slot with CRIMM.

2.3-2 Memory Installation Procedures

A. How to install a DIMM Module

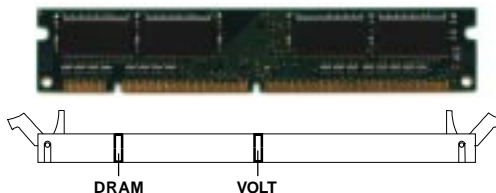


Single Sided DIMM



Double Sided DIMM

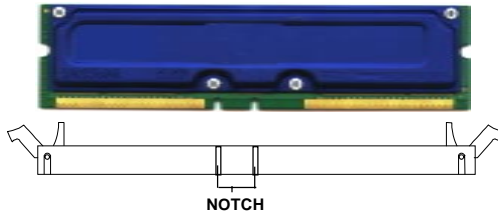
1. The DIMM slot has 2 Notch Keys “VOLT and DRAM”, so the DIMM memory module can only fit in one direction.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.



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

B. How to install a RIMM Module

1. The RIMM slot has 2 Notch Keys, so the RIMM memory module can only fit in one direction.
2. Insert the RIMM memory module vertically into the RIMM slot.
Then push it in.



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

2.3-3 Memory Population Rules

- 1. Support only SDRAM DIMM or RIMM memory module
- 2. To operate properly, at least one RIMM module must be installed.
Maximum RIMM installle: 1 Double side and 1 Single side.
- 3. To operate with DIMM, you need to install the two MS-6908 CRIMM module provided with the Mainboard. The CRIMM is installed into the RIMM slot.



CRIMM Memory Module

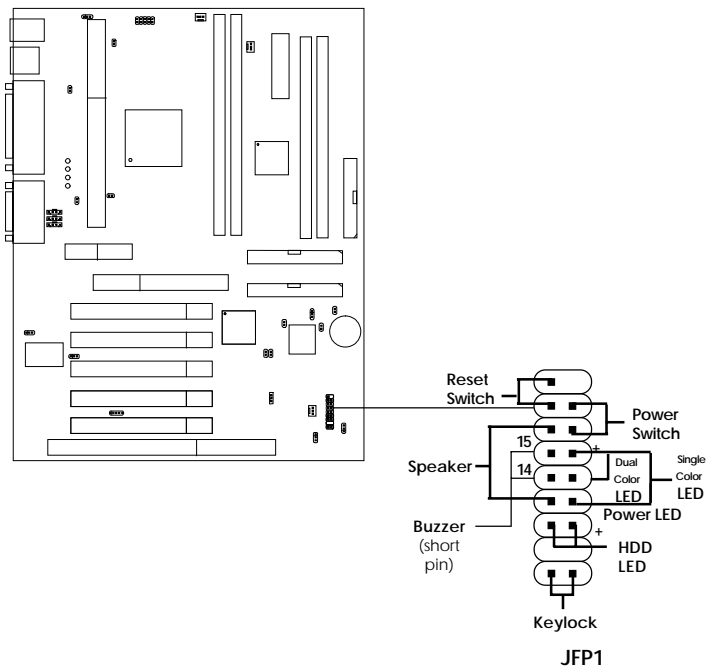
- 4. The DRAM addressing and the size supported by the mainboard is shown below:

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. |
| 64MB | 8Mx8 | ASYM | 12 | 9 | 64MBx8 | 128MBx16 |
| 64MB | 4Mx16 | ASYM | 12 | 8 | 32MBx4 | 64MBx8 |
| 128MB | 16Mx8 | ASYM | 12 | 10 | 128MBx8 | 256MBx16 |
| 128MB | 32Mx4 | ASYM | 12 | 11 | 256MBx16 | 512MBx32 |

2.4 Case Connector: JFP1

The Keylock, Power Switch, Reset Switch, 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 Power LED

The Power LED is lit while the system power is on. Connect the Power LED from the system case to this pin. There are two types of LED that you can use: 3-pin single color LED or 2-pin dual color LED(ACPI request).

- a. 3 pin single color LED connect to pin 4, 5, & 6. This LED will lit when the system is on.
- b. 2 pin dual color LED connect to pin 5 & 6.

GREENColor: Indicate the system is in full on mode.

ORANGEColor: Indicate the system is in suspend mode.

2.4-4 Speaker

Speaker from the system case is connected to this pin.

If on-board Buzzer is available:

Short pin 14-15: On-board Buzzer Enabled.

Open pin 14-15: On-board Buzzer Disabled.

2.4-5 HDD LED

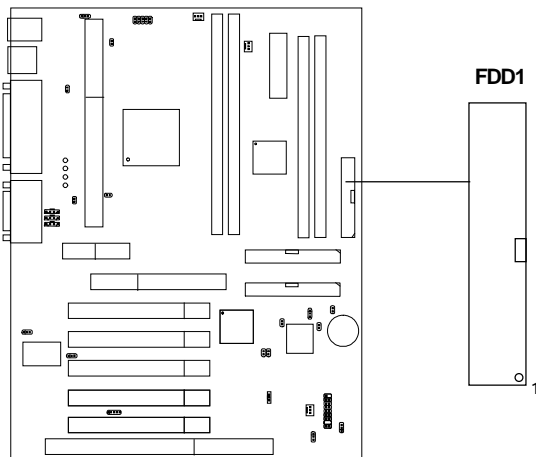
HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin.

2.4-6 Keylock

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

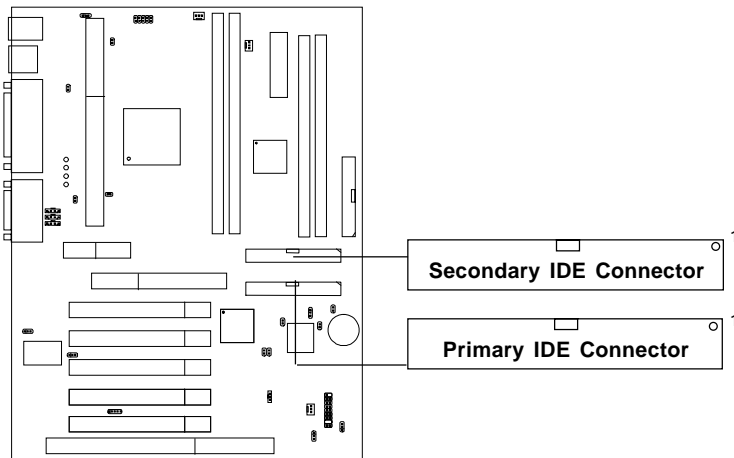
2.5 Floppy Disk Connector: FDD1

The mainboard also provides a standard floppy disk connector FDD1 that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.



2.6 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA/66 (ICH)/ Ultra DMA/33(ICH0) 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.

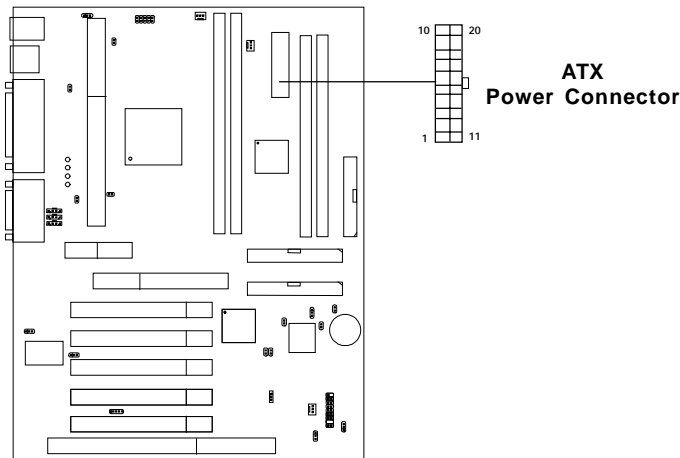
IDE2(Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

2.7 Power Supply

2.7-1 ATX 20-pin Power Connector: JWR1

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. This power connector supports instant power on function which means that system will boot up instantly when the power connector is inserted on the board.



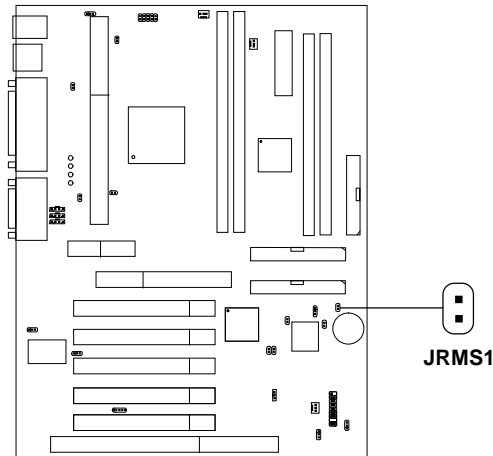
PIN DEFINITION

| 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.

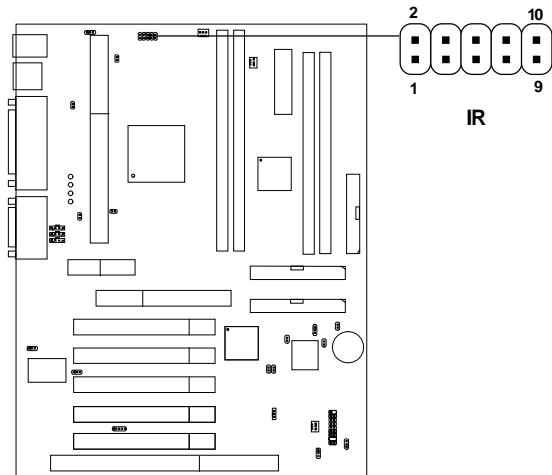
2.7-2 Remote Power On/Off Switch: JRMS1

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.



2.8 IrDA Infrared Module Connector: IR

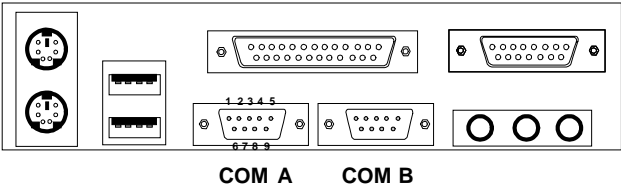
The mainboard provides one 5-pin infrared (IR) connector for IR modules. This connector is for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function. FIR and Consumer IR are reserved functions.



| PIN | SIGNAL |
|-----|--------|
| 1 | VCC |
| 2 | NC |
| 3 | NC |
| 4 | CIIRX |
| 5 | IRRX |
| 6 | 5VSB |
| 7 | GND |
| 8 | NC |
| 9 | IRTX |
| 10 | NC |

2.9 Serial Port Connectors: COM A and COM B

The mainboard provides two 9-pin male DIN connector for serial port COM A & COM B. These port are a 16550A high speed communication port that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.



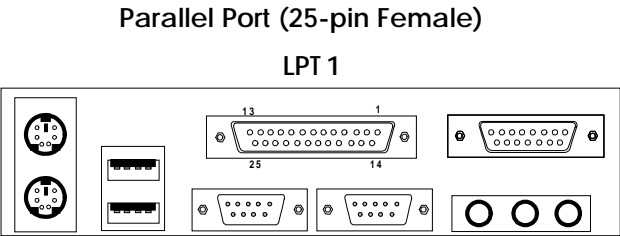
Serial Port (9-pin Male)

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: LPT1

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:

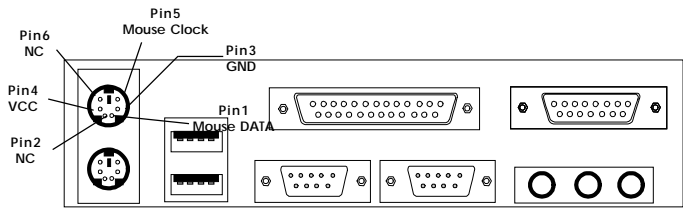


PIN DEFINITION

| 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

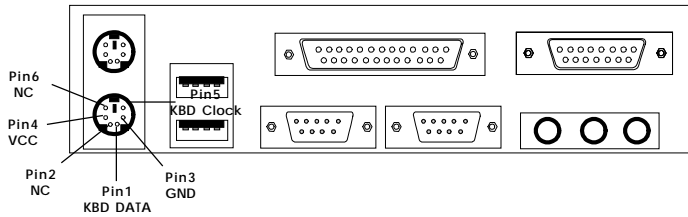
The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:



PS/2 Mouse (6-pin Female)

2.12 Keyboard Connector: JKBMS1

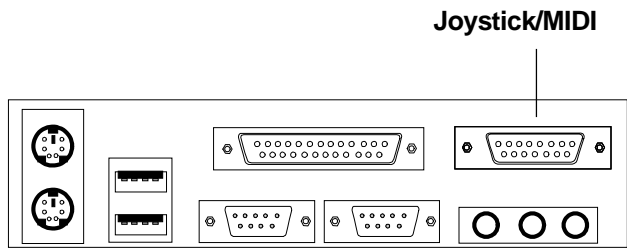
The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



PS/2 Keyboard (6-pin Female)

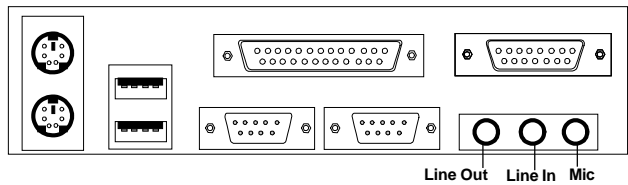
2.13 Joystick/Midi Connectors

You can connect joystick or game pad to this connector.



2.14 Audio Port Connectors

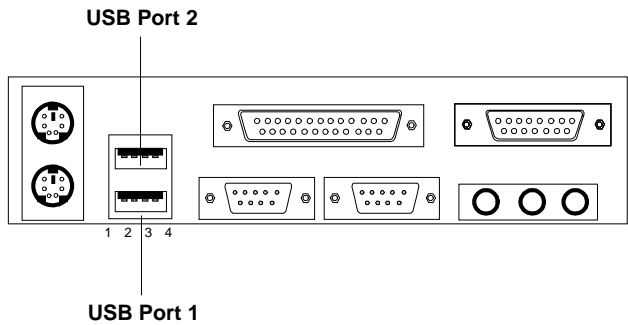
Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape layer, or other audio devices. **Mic** is a connector for the microphones.



1/8" Stereo Audio Connectors

2.15 USB Connectors

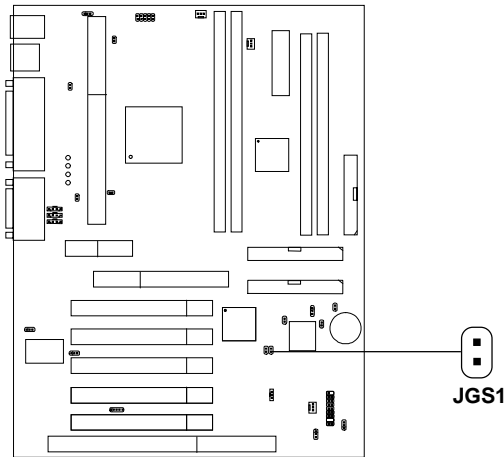
The mainboard provides a **UHCI(Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



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

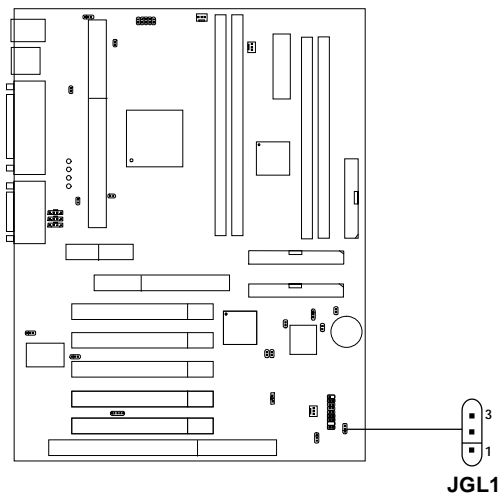
2.16 Power Saving Switch Connector: JGS1

Attach a power saving switch to **JGS1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



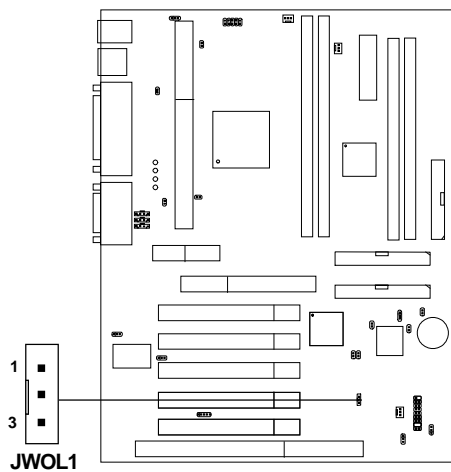
2.17 Power Saving LED Connector: JGL1

JGL1 can be connected with a LED. When the 2-pin LED is connected to JGL1, the light will turn green, when system is On. During sleep mode, the 2-pin LED will change color from Green to Orange.



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. To use this function, you need to set the “Wake-Up on LAN” to enable at the BIOS Power Management Setup.



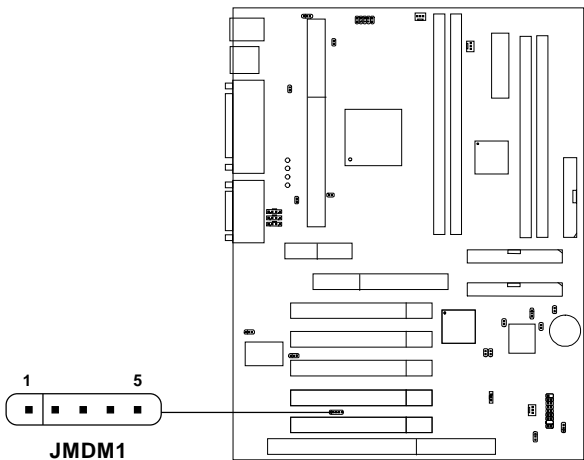
| PIN | SIGNAL |
|-----|-----------|
| 1 | 5VSB |
| 2 | GND |
| 3 | MP_WAKEUP |

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 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for used with Modem add-on card that supports the Modem Wake Up function.



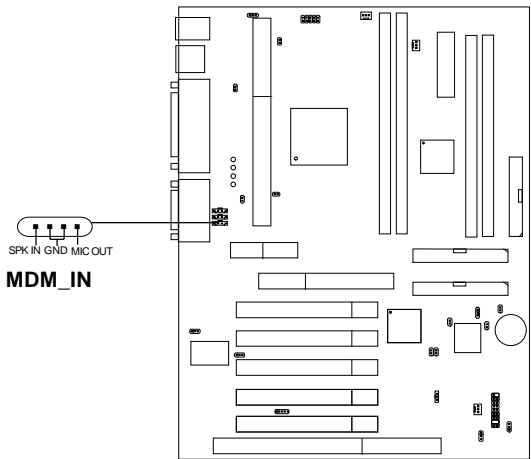
| PIN | SIGNAL |
|-----|------------|
| 1 | NC |
| 2 | GND |
| 3 | MDM_WAKEUP |
| 4 | NC |
| 5 | 5VSB |

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

2.20 Modem-In: MDM_IN

The connector is for Modem with internal voice connector.

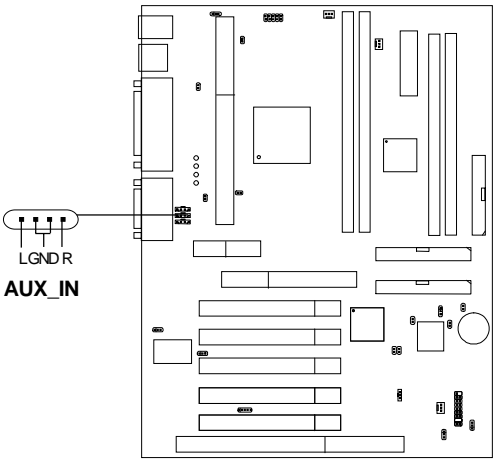


SPK_IN is connected to the Modem Speaker Out connector.

MIC_OUT is connected to the Modem Microphone In connector.

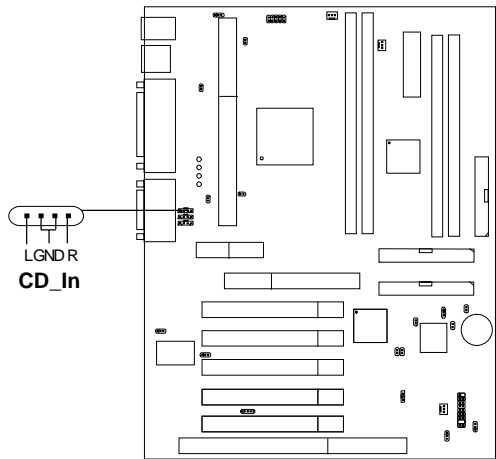
2.21 AUX Line In Connector: AUX_IN

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



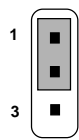
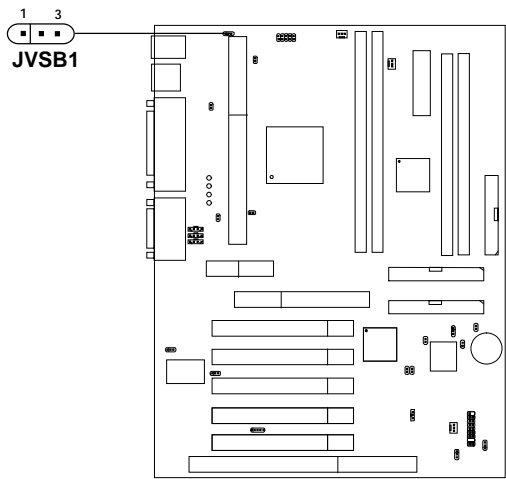
2.22 CD-In Connector: CD_IN

This connector is for CD-ROM audio connector.

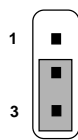


2.23 Keyboard Power: JVSb1

The JVSb1 jumper is for setting keyboard power. This function should be set in the BIOS for the keyboard Wake-up function.



5V Standby
Enable keyboard
power on function

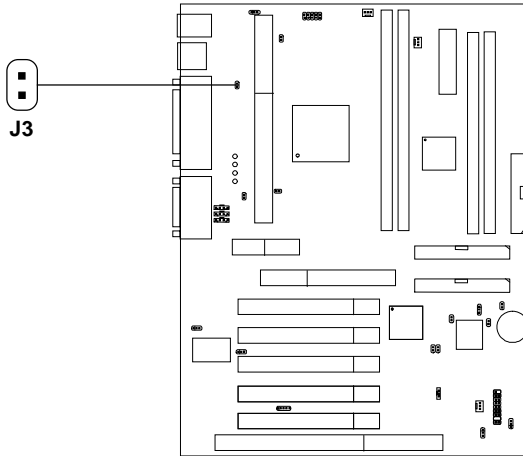


5V (default)
Disable keyboard
power on function

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)

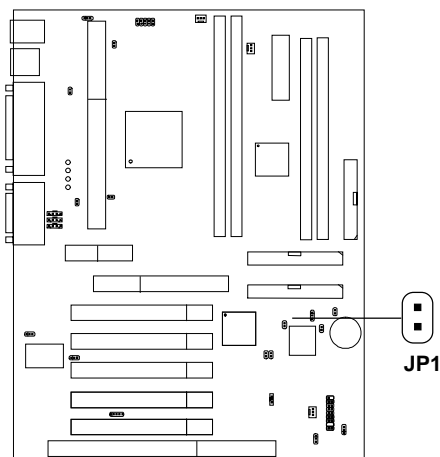
2.24 Chassis Intrusion Switch Case: J3

This connector is connected to a 2-pin connector chassis switch. If the Chassis is open, the switch will be open. The system will record this status. To clear the warning, you must enter the BIOS setting and clear the status.



2.25 FWH Boot Block Protect: JP1 (reserved)

This jumper is used to lock/unlock FWH BIOS Flash. This Jumper should be unlock when flashing/programming the BIOS.



**BIOS Flash
locked**

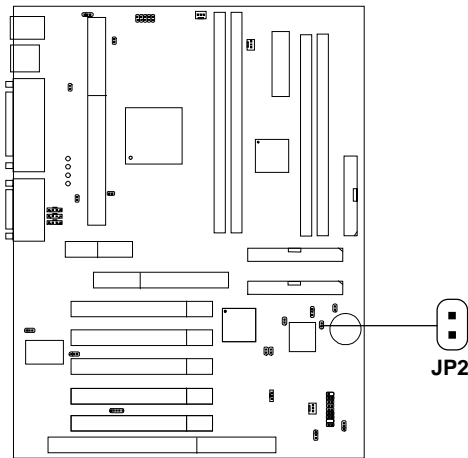


**BIOS Flash
UnLocked
(BIOS Default)**

Note: If this jumper does not exist, this motherboard will have self building BIOS function.

2.26 System Error Reset Jumper: JP2 (reserved)

This jumper is used to Enabled/Disabled the reboot.



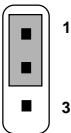
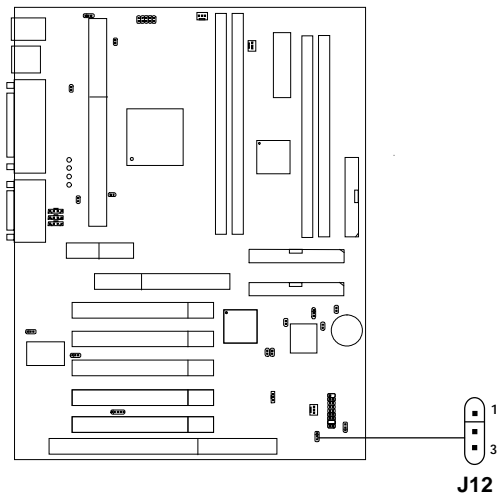
**No Reboot
(default)**



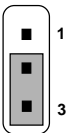
**Reboot
(7 sec
automatic
restart)**

2.27 Speaker Output Select Jumper: J12

This jumper will enable the case speaker/buzzer to be transferred to the Audio speaker.



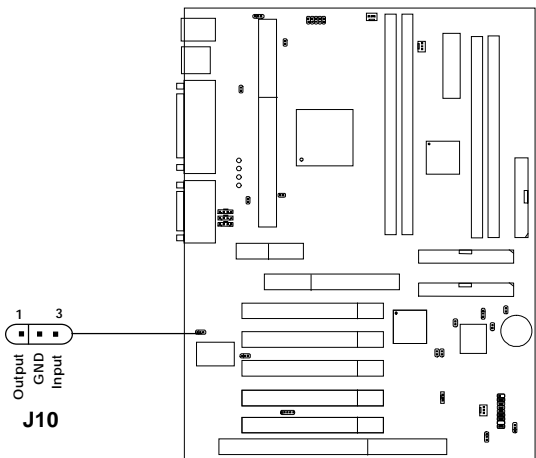
Output to
Audio Chip



Output to
Onboard Buzzer
(default)

2.28 SPDIF Connector: J10 (reserved)

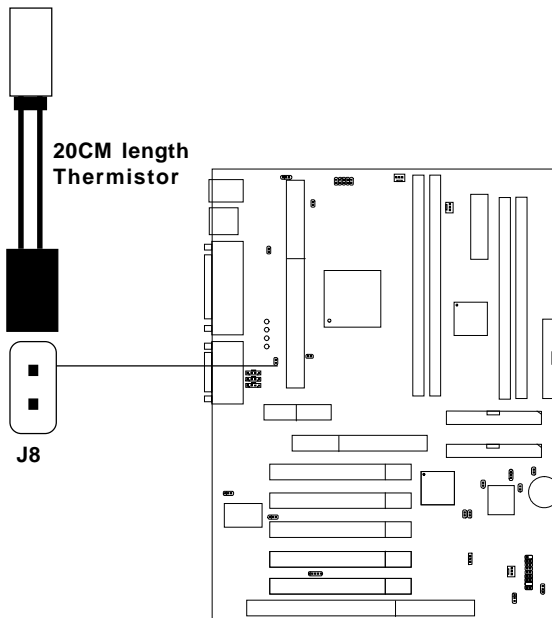
This item is for Sony & Philips Digital Interface for AC3 decoder.



Note: This jumper only exist with Hardware Audio onboard.

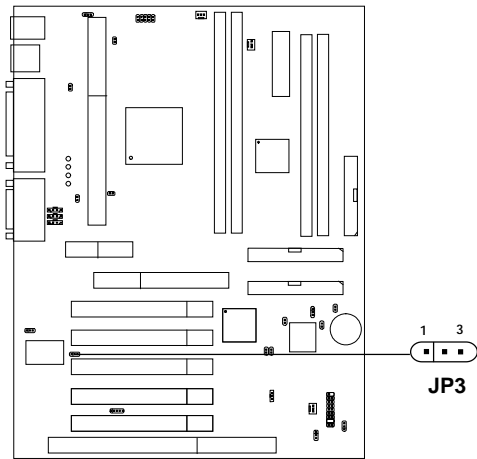
2.29 TOP TECH III: J8

This is used to check the AGP card or chipset temperature. The J8 is a 2-pin connector which can be inserted with a 20cm length thermistor. It is located near the chipset heatsink that monitors the chipset temperature. The BIOS setup for “TOP TECH. III” should be set to enabled.



2.30 Onboard Software Audio Jumper: JP3

This jumper is used to enabled/disabled Onboard Software audio. For enabling AMC97 on AMR slot. Note: This jumper will only exist if there's no Hardware audio onboard.

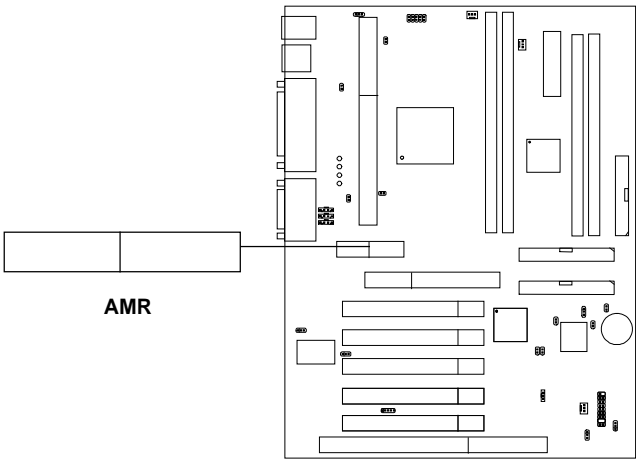


| JP3 | Function |
|-----|--|
| | Enabled Onboard Audio |
| | Enabled AMC97 on AMR(Audio Modem Riser) Card |

Note: Short pin 2-3 on JP4, to be able to use AMR card.

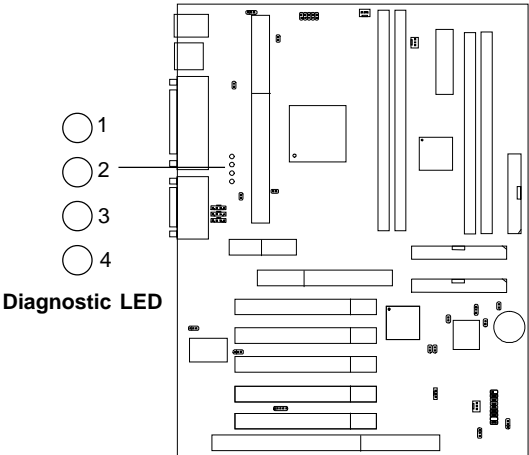
2.31 AMR

The Audio/Modem Riser specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, which supports both audio and modem.



2.32 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 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.**