

Chapter 2

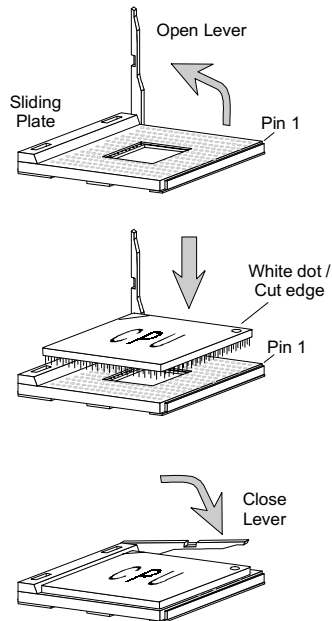
HARDWARE INSTALLATION

Central Processing Unit: CPU

The mainboard operates with **Intel® Celeron™/Pentium® III (FC-PGA) or VIA® Cyrix® III 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.

• 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. Hold the CPU firmly, and then press the lever down to complete the installation.



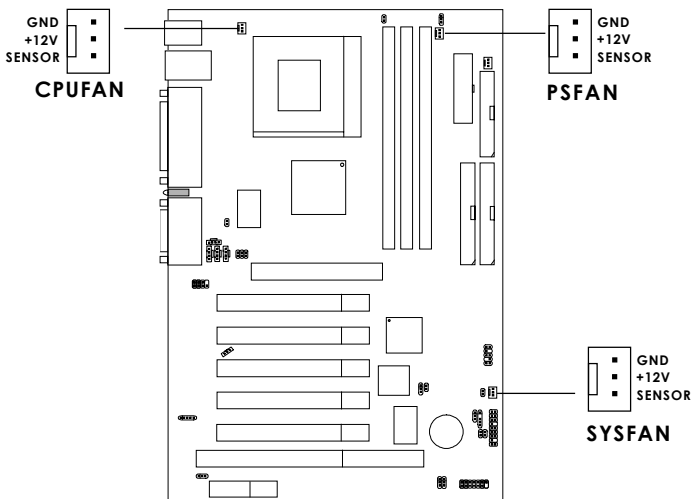
• CPU Core Speed Derivation Procedure

The mainboard CPU Bus Frequency can be set through BIOS setup.

If	<u>CPU Clock</u>	= 100MHz
	<u>Core/Bus ratio</u>	= 7
then	<u>CPU core speed</u>	= Host Clock x Core/Bus ratio
		= 700MHz

• Fan Power Connectors: CPUFAN, SYSFAN & PSFAN

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.



CPUFAN: Processor Fan

SYSFAN: System Fan

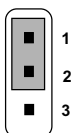
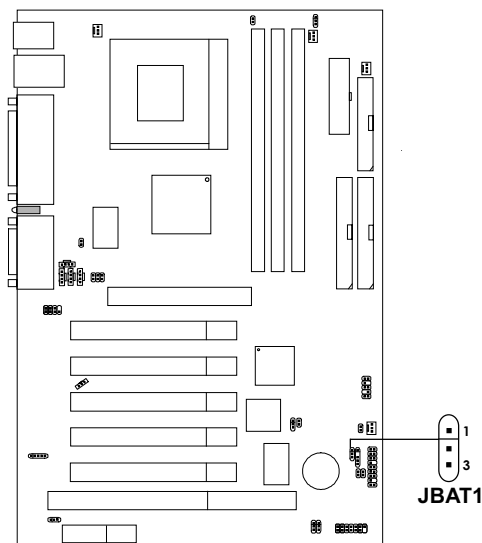
PSFAN: Power Supply Fan

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.

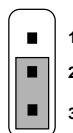
- Note:**
1. Always consult vendor for proper CPU cooling fan.
 2. CPU FAN supports the FAN control. You can install PC Alert utility. This will automatically control the CPU FAN Speed according to the actual CPU temperature.
-

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



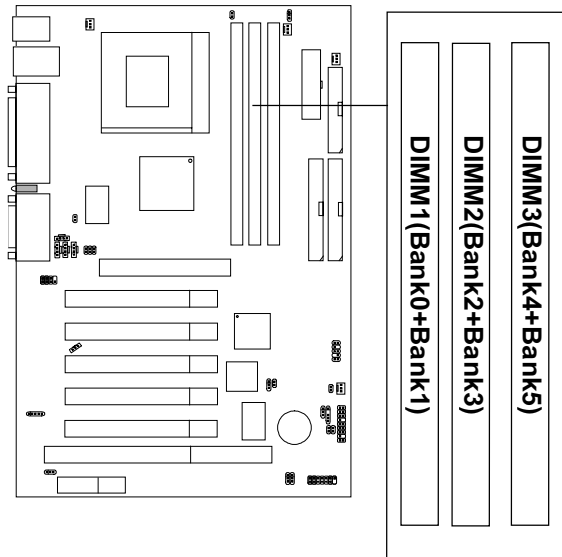
Clear Data

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

Memory Installation

- **Memory Bank Configuration**

The mainboard supports a maximum memory size of 512MB for SDRAM : It provides three 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 512 Mbytes DIMM memory module.

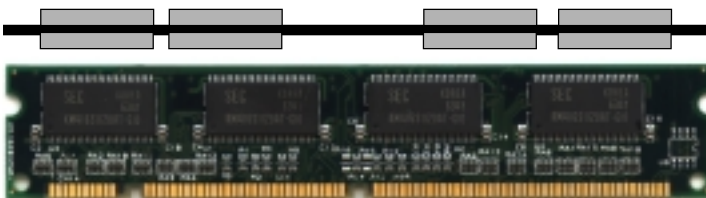


• Memory Installation Procedures

A. How to install a DIMM Module

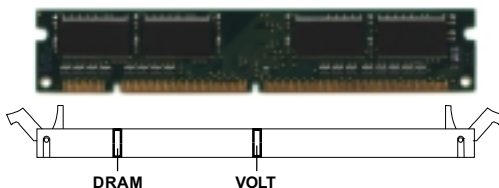


Single Sided DIMM



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.

● Memory Population Rules

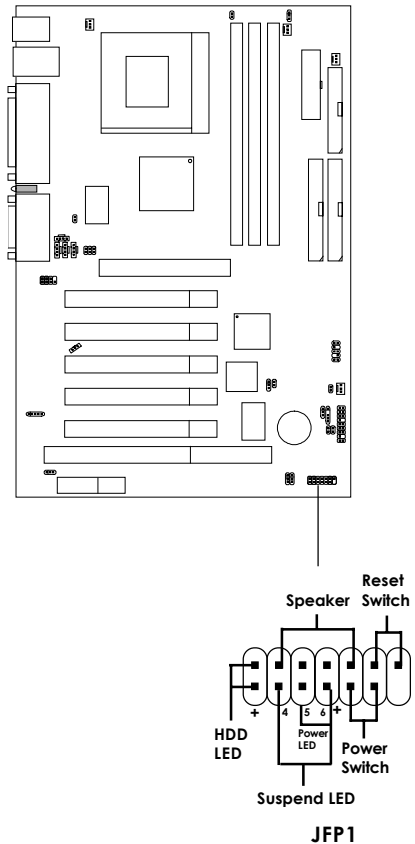
1. Supports only SDRAM DIMM.
2. To operate properly, at least one 168-pin DIMM module must be installed.
3. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM 2 or DIMM 3 in any order.
4. Supports 3.3 volt DIMM.
5. The DRAM addressing and the size supported by the mainboard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

SDRAM Memory Addressing

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
64M	2Mx32	ASYM	11	8	16MB	32MB
	4Mx16	ASYM	12	8	---	---
	8Mx8	ASYM	12	9	---	---

Case Connector: JFP1

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



Power Switch

Connect to a 2-pin push button switch.

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.

Power/Suspend LED

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

- a. **2-pin single color LED connects to pin 5 & 6.** This LED will light up when the system is on and blink during the suspend mode.
- b. **2-pin dual color LED connects to pin 4 & 5.**
 - GREEN**Color: Indicate the system is in full on mode.
 - ORANGE**Color: Indicate the system is in suspend mod
- c. **3-pin dual color LED connects to pin 4, 5 & 6.**
 - GREEN**Color: Indicate the system is in full on mode.
 - ORANGE**Color: Indicate the system is in suspend mode.

Speaker

Speaker from the system case is connected to this pin.

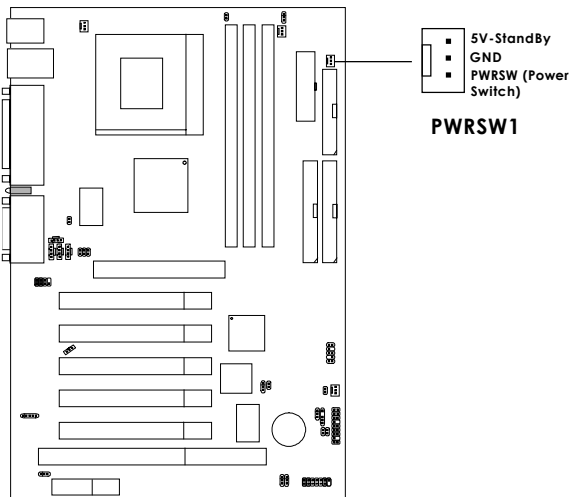
If on-board Buzzer is available:

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.

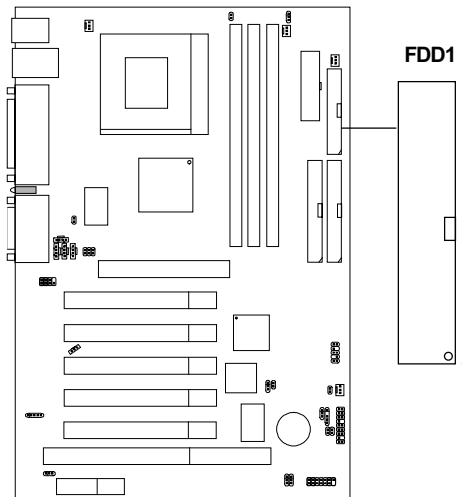
Power Switch Connector: PWRSW1

The mainboard also provides a power switch connector PWRSW1 for a **3-pin power switch connector**. The connector has the same function as the power switch connector in **JFP1**.



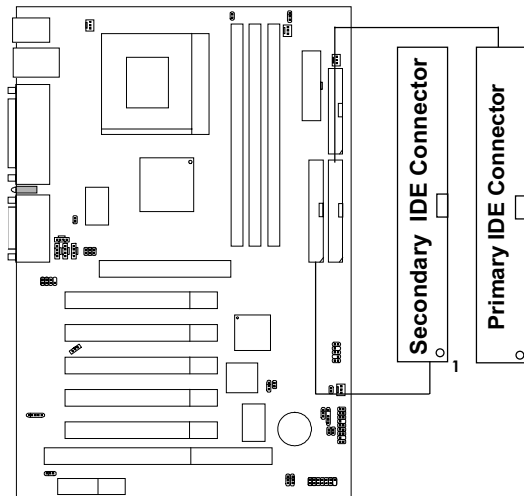
Floppy Disk Connector: FDD1

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.



Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66 Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33/66 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.

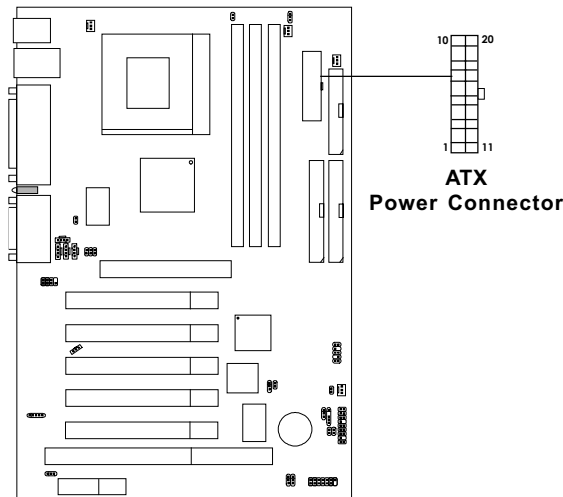
IDE2(Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

Power Supply

• 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.



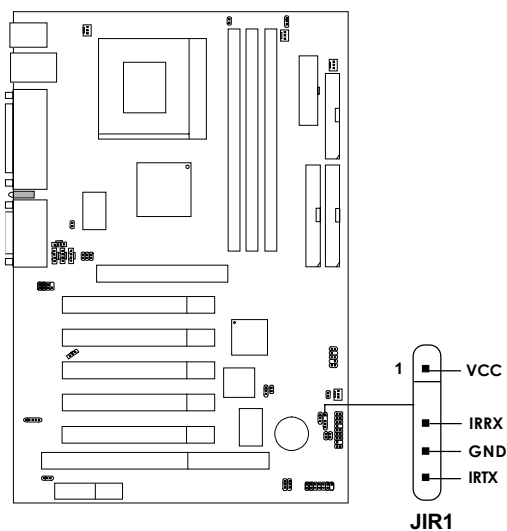
PIN DEFINITION

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.

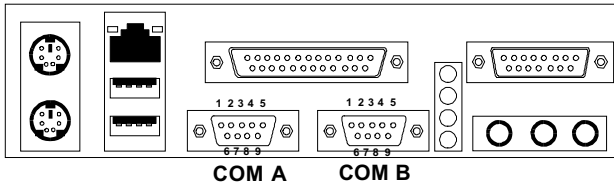
IrDA Infrared Module Connector: JIR1

The mainboard provides one 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.



Serial Port Connectors: COM A and COM B

The mainboard has two 9-pin male DIN connectors for serial ports COM A and COM B. The ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into the connectors.



Serial Ports (9-pin Male)

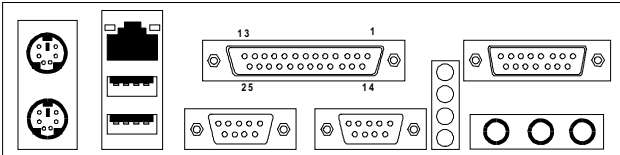
PIN DEFINITION

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)

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:

Parallel Port (25-pin Female)
LPT 1

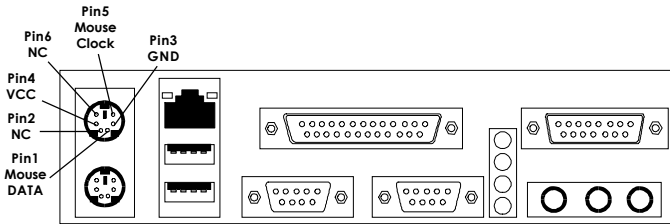


PIN DEFINITION

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		

Mouse Connector: JKBMS1

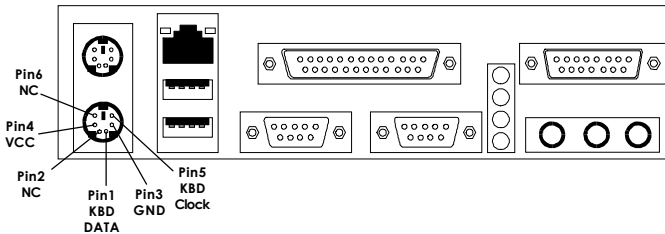
The mainboard provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location and pin definition are shown below:



PS/2 Mouse (6-pin Female)

Keyboard Connector: JKBMS1

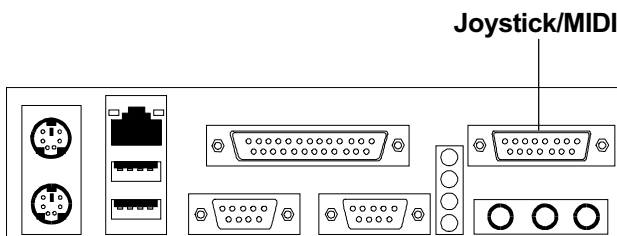
The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.



PS/2 Keyboard (6-pin Female)

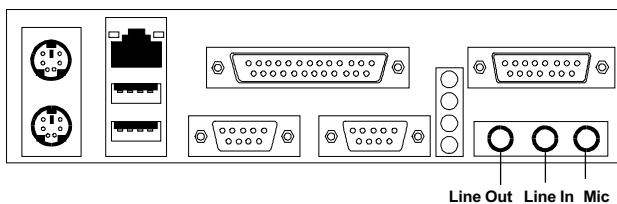
Joystick/Midi Connectors

You can connect a joystick or game pad to this connector.



Audio Port Connectors

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

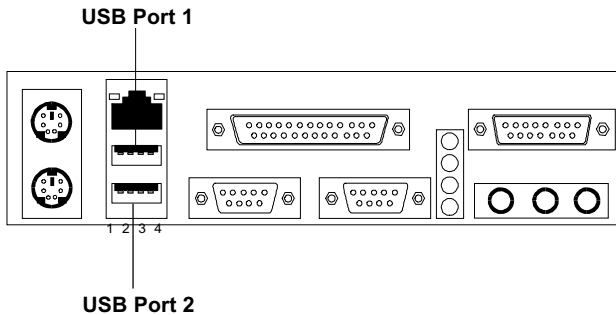


1/8" Stereo Audio Connectors

Note: If you choose to enable the Audio Multi-Channel, this will change the **Line In** to 3, 4 channel output and **MIC** to 5, 6 channel output (optional). To use this function, set the Audio Multi-Channel to enable located at the BIOS Integrated Peripherals or install the driver provided with this mainboard.

USB Connectors

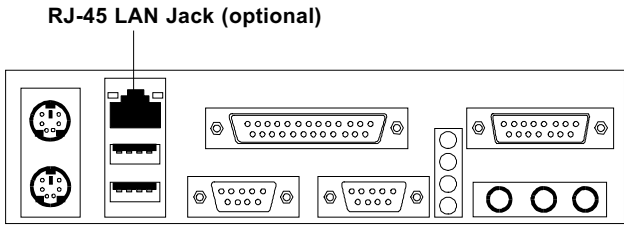
The mainboard provides a **UHCI(Universal Host Controller Interface)** **Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.



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

LAN Connector (Optional)

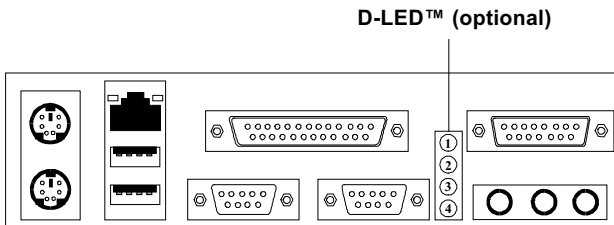
The mainboard provides an optional **RJ-45** LAN connector for your Network need.



















PIN	SIGNAL	DESCRIPTION
8	NC	Not Used
7	NC	Not Used
6	RDN	Receive Differential Pair
5	NC	Not Used
4	NC	Not Used
3	RDP	Receive Differential Pair
2	TDN	Transmit Differential Pair
1	TDP	Transmit Differential Pair

D-LED™ (Optional)

The mainboard integrates optional Diagnostics LEDs (D-LED™), which provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures.

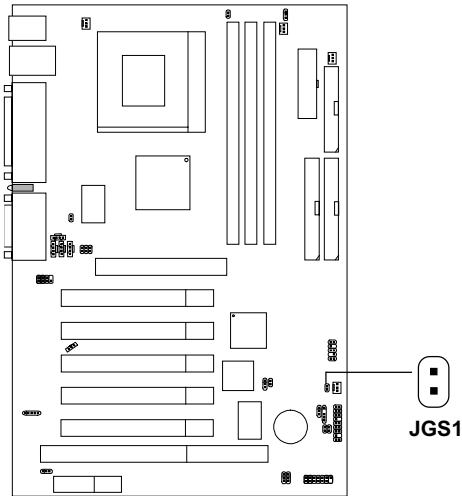


CHAPTER 2

D-LED	Description
	System Power ON - The D-LED will hang here if the processor is damaged or not installed properly.
	Early Chipset Initialization
	Memory Detection Test - Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.
	Decompressing BIOS image to RAM for fast booting.
	Initializing Keyboard Controller.
	Testing VGA BIOS - This will start writing VGA sign-on message to the screen.
	Processor Initialization - This will show information regarding the processor (like brand name, system bus, etc...)
	Testing RTC (Real Time Clock)
	Initializing Video Interface - This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.
	BIOS Sign On - This will start showing information about logo, processor brand name, etc....
	Testing Base and Extended Memory - Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.
	Assign Resources to all ISA.
	Initializing Hard Drive Controller - This will initialize IDE drive and controller.
	Initializing Floppy Drive Controller - This will initialize Floppy Drive and controller.
	Boot Attempt - This will set low stack and boot via INT 19h.
	Operating System Booting

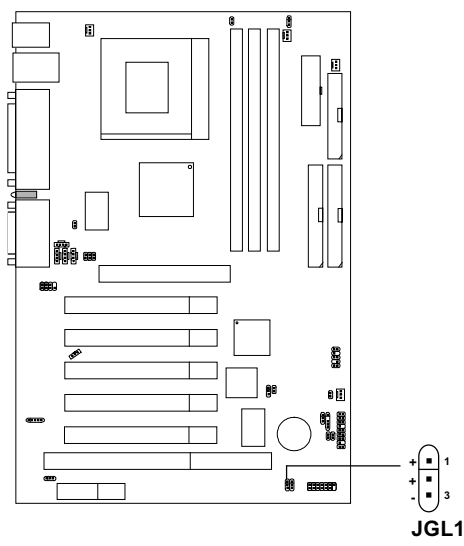
Power Saving Switch Connector: JGS1

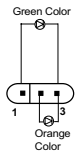
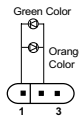
Attach a power saving switch to **JGS1**. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.



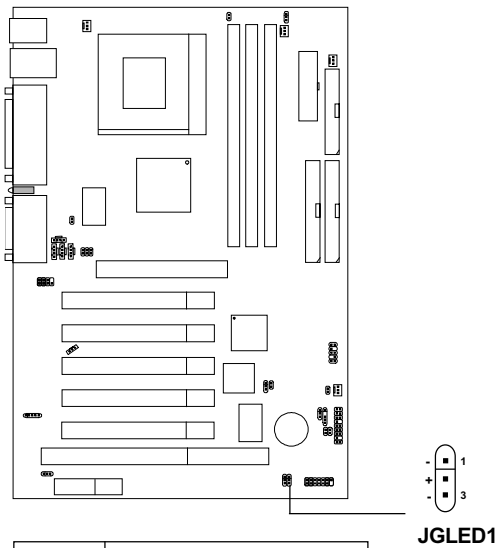
Power Saving LED Connectors: JGL1 & JGLED1

JGL1 can be connected with a LED. There are three types of LEDs that you can use: 3-pin dual color LED, 2-pin single color LED or 2-pin dual color LED (ACPI request). See page 2-9 (Power/Suspend LED) for more information.

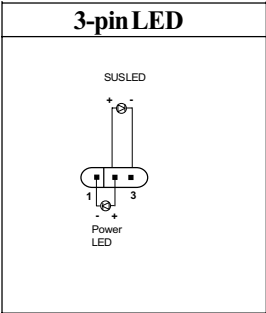


3-pin LED	2-pin LED
	 1-2 Dual Color

You can also connect an appropriate power saving LED to **JGLED1**. The only difference between JGL1 and JGLED1 is their pin definitions.

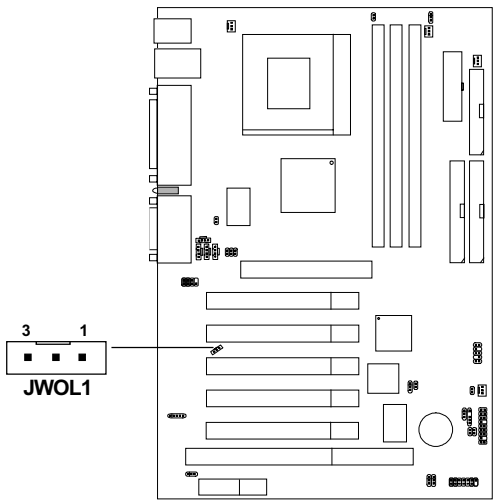


PIN	Description
1	PLED1 (Power LED)
2	5V Stand-by
3	PLED2 (Suspend LED)



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.



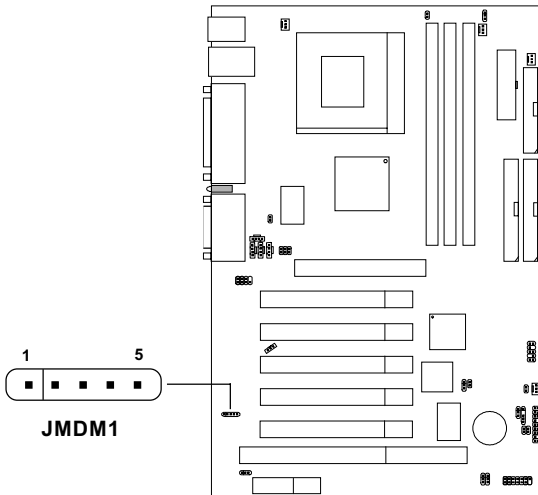
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

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)

Modem Wake Up Connector: JMDM1

The JMDM1 connector is for use with Modem add-on card that supports the Modem Wake Up function. To use this function, you need to set the “Power On by Ring” to enable at the BIOS Power Management Setup.



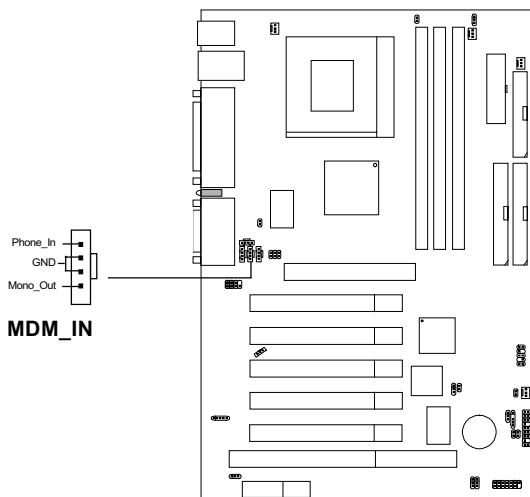
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

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)

Modem-In: MDM_IN

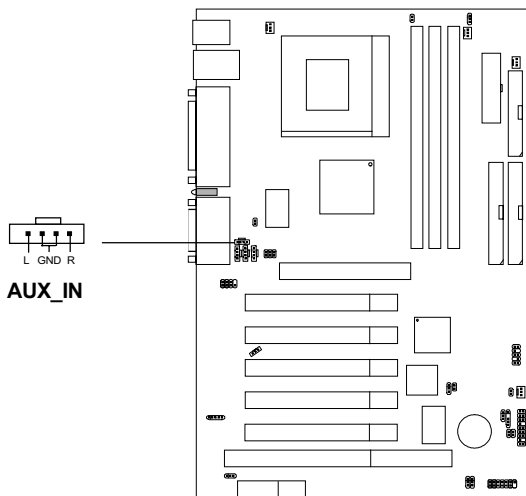
The connector is for Modem with internal voice connector.



Mono_Out is connected to the Modem Speaker Out connector.
Phone_In is connected to the Modem Microphone In connector.

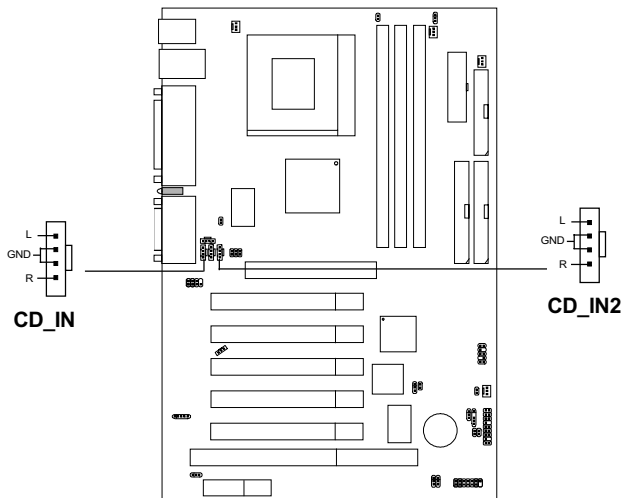
AUX Line In Connector: AUX_IN

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



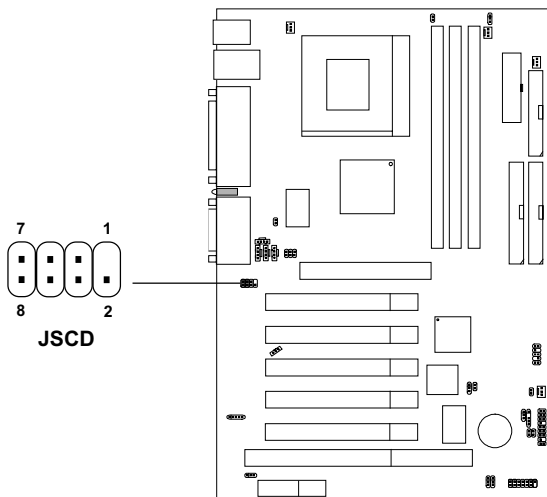
CD-In Connectors: CD_IN & CD_IN2

The connectors are for CD-ROM audio connectors.



Slim CD-ROM Connector: JSCD

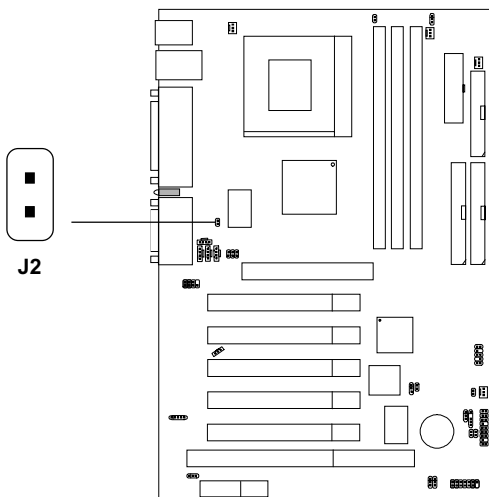
This connector is connected to a **slim** CD-ROM drive if any.



PIN	Description
1	NA
2	CDL
3	VCC
4	CDGND
5	GND
6	CDGND
7	VCC
8	CDR

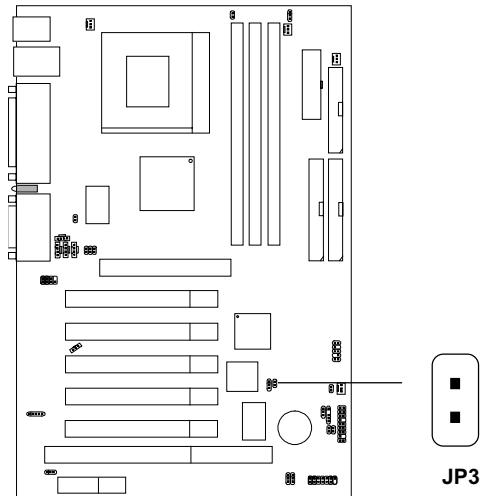
Chassis Intrusion Switch Case: J2

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



BIOS Flash Jumper: JP3

This jumper is used to lock or unlock the boot block area on BIOS. When unlocked, the BIOS boot block area can be updated. When locked, the BIOS boot block area can not be updated.



JP3



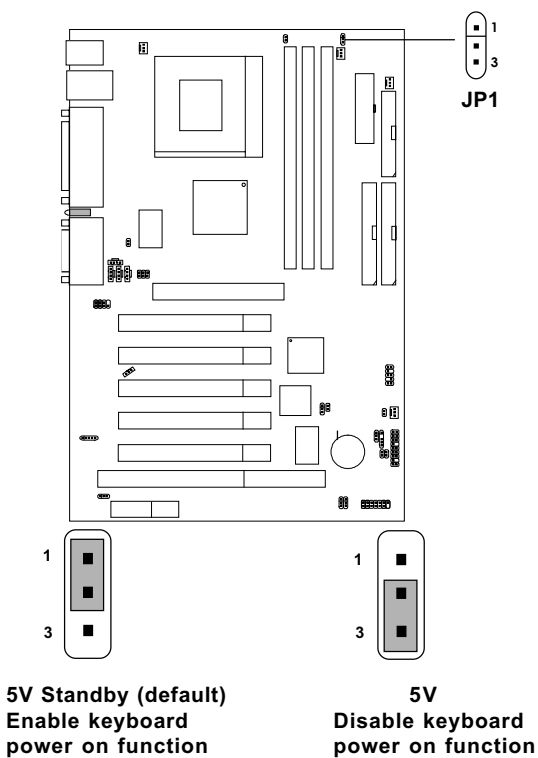
**BIOS Flash
Locked**



**BIOS Flash
Unlocked**

Keyboard Power: JP1

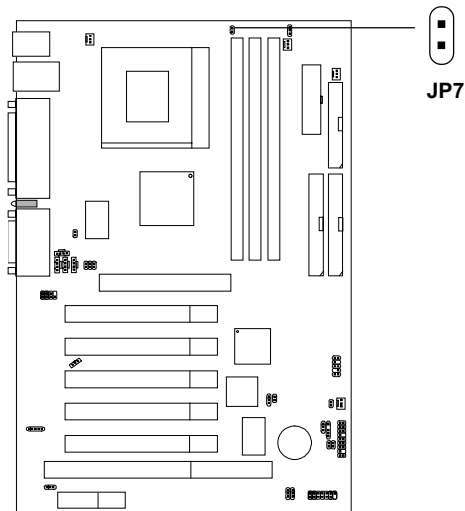
This jumper is for setting the keyboard power. This function should be set in the BIOS for the keyboard and PS/2 mouse Wake-up function.





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

CPU Termination Voltage Jumper: JP7

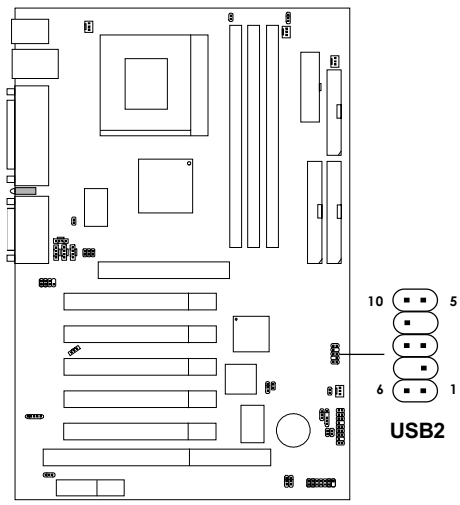
The JP7 jumper is used to select the appropriate CPU termination voltage for Celeron™/Coppermine™ (FC-PGA) processor.



JP7	Function
	For Coppermine
	For Celeron

USB Front Connector: JUSB1

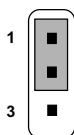
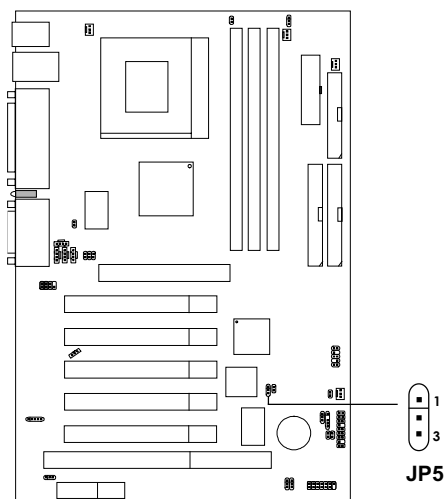
The mainboard provides a **front Universal Serial Bus connector**. This is an optional USB connector for Front Panel.



Pin	Description	Pin	Description
1	VCC	6	GND
2	USB2-	7	NA
3	USB2+	8	USB3+
4	NA	9	USB3-
5	GND	10	VCC

JP5 (Reserved)

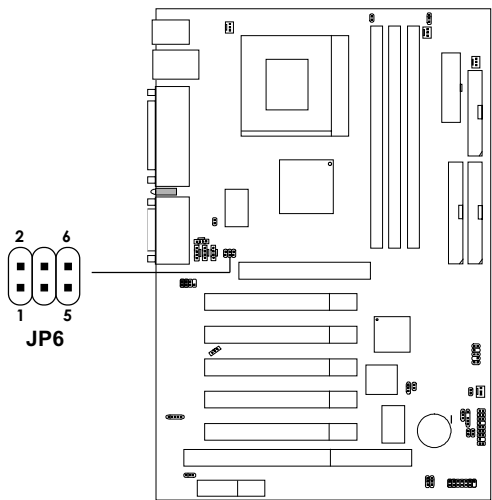
This jumper is for manufacturer test setting only. Default setting short 1-2 pin.





Default

Onboard LAN: JP6 (Optional)

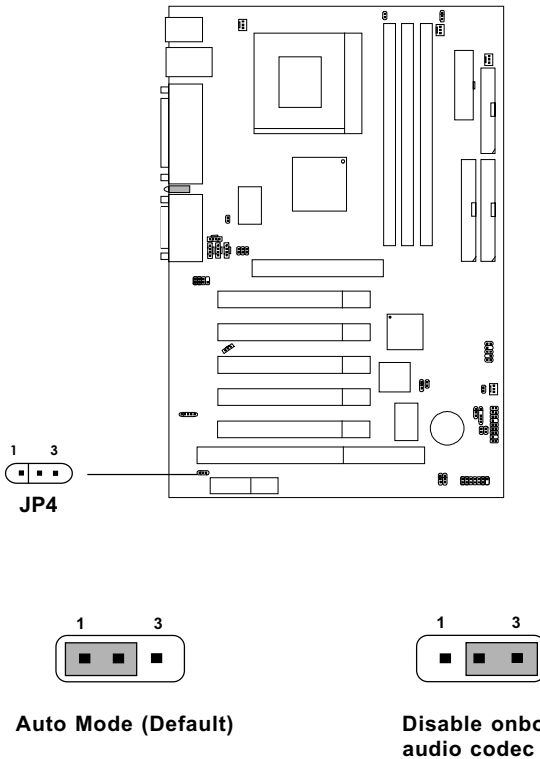
This jumper is used to Enable or Disable the onboard LAN.



JP6	Function
	Enable onboard LAN
	Disable onboard LAN

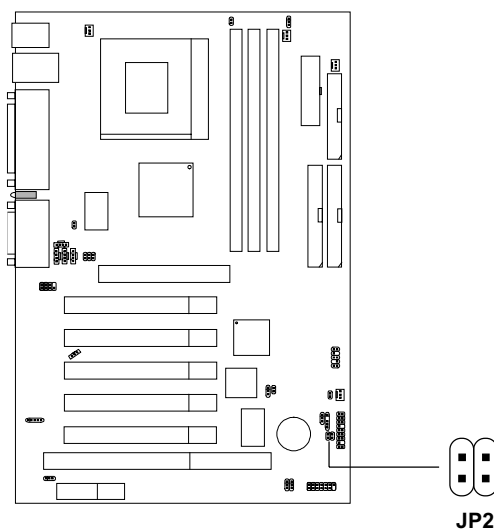
Onboard Audio Codec Jumper: JP4

The jumper is used to enable or disable the onboard software audio codec. In Auto Mode, the system will use the onboard codec as the PRIMARY audio adapter and the installed CNR card as the SECONDARY one. But some types of CNR cards cannot be set to the secondary one, then the onboard audio codec must be disabled to resolve the system conflict.



Audio Enabled Jumper: JP2

This jumper must be always short in order to make the audio subsystem function; otherwise, the audio subsystem doesn't work and sound cannot be heard.

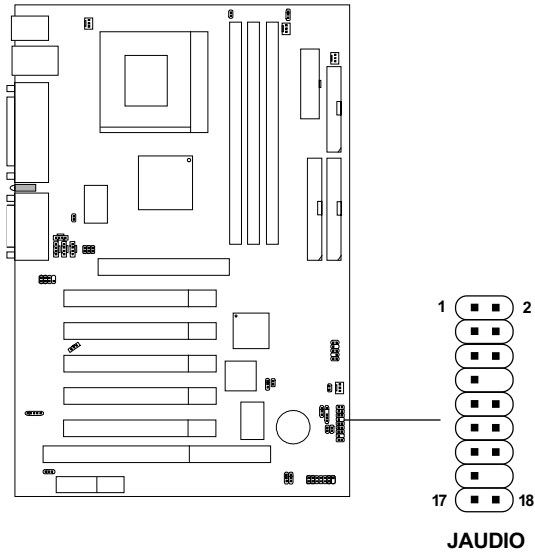


Always short the jumper

Note: However, to use the optional speaker connected to **JAUDIO** pin1~8, **DO NOT** short **JP2**.

Front Panel Audio Connector: JAUDIO

You can connect an optional Front Panel audio connector to this connector.



PIN	Description	PIN	Description
1	Active Line Out (R)	2	Active Line Out (L)
3	GND (ALO)	4	GND (ALO)
5	GND (+12)	6	GND (+12)
7	+12V (1A)	8	(Cut)
9	MIC	10	GND (MIC)
11	Front Line Out (R)	12	Line Next (R)
13	Front Line Out (L)	14	Line Next (L)
15	GND (FLO)	16	(Cut)
17	Line In (R)	18	Line In (L)

Note: To use the optional speaker connected to pin1~8, you must **open JP2**.

CNR (Communication Network Riser)

The Communication Network Riser specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, which supports audio, modem and LAN cards. However, if the optional LAN function is integrated on the board, CNR slot **supports audio and modem only**.



PCI Interrupt Request Routing

The IRQ, abbreviation of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The “AGP/PCI/USB/LAN/AC97” IRQ pins are typically connected to the PCI bus INTA#-INTD# pins as follows:

	Order 1	Order 2	Order 3	Order 4
AGP	INT A#	INT B#		
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT C#	INT D#	INT A#	INT B#
PCI Slot 4	INT D#	INT A#	INT B#	INT C#
PCI Slot 5	INT A#	INT B#	INT C#	INT D#
USB-1	INT D#			
USB-2	INT H#			
LAN (Optional)	INT E#			
AC97	INT B#			

AGP & PCI Slot 1 & PCI Slot 5 shared.

PCI Slot 2 & AC97 shared.

PCI Slot 4 & USB-1 shared.

PCI Slot 1~5: Bus Master