2 Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

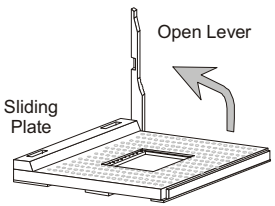
This chapter contains the following topics:

Central Processing Unit: CPU

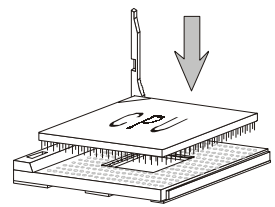
The mainboard supports AMD® Athlon™ and Duron™ processor. The mainboard uses a CPU socket called Socket A for easy CPU installation. **Make sure the CPU has a Heat Sink and a cooling fan attached on the top to prevent overheating.** If you do not find the Heat Sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

CPU Installation Procedures

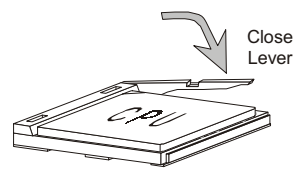
1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.



2. Align the pins on the CPU with the pin positions on the socket carefully and place the CPU on it.



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



Thermal Issue for CPU

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly crucial when building computer systems. Maintaining the proper thermal environment is key to reliable operation. As such, the processor must be maintained in the specified thermal requirements. AMD recommends the use of high performance thermal interface material.

AMD Athlon™/Duron™ processor with a speed of **600MHz and above** requires LARGER heatsink and fan. You also need to add thermal grease between the CPU and heatsink to improve heat dissipation. Then, make sure that the CPU and heatsink are securely fastened and in good contact with each other. These are needed to prevent damaging the processor and ensuring reliable operation.

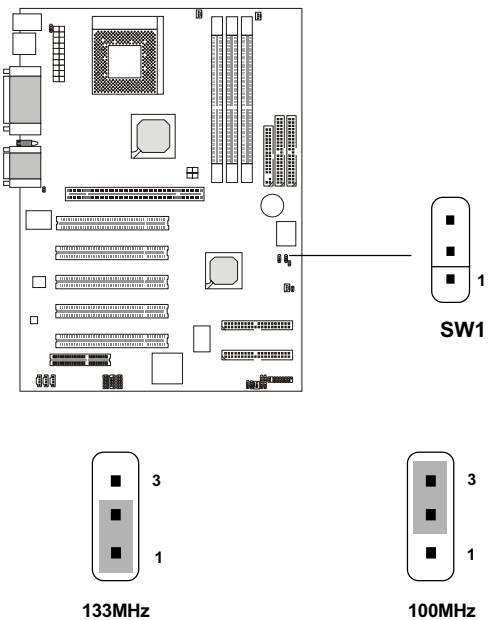
You can check AMD's web site for more information on proper cooling: *http://www.amd.com/products/cpg/athlon/pdf/cooling_guide.pdf*

CPU Core Speed Derivation Procedure

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

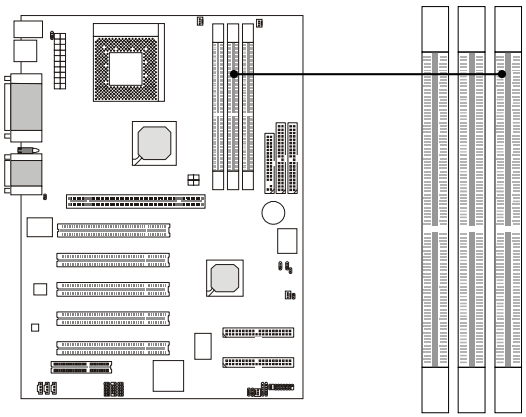
CPU Clock Frequency Selection : SW1

The SW1 is used to set the clock frequency of the CPU installed on the motherboard.



Memory Installation

The mainboard provides 3 sockets for 184-pin, 2.5V DDR DIMM with 6 memory banks. To operate properly, at least one DIMM module must be installed.



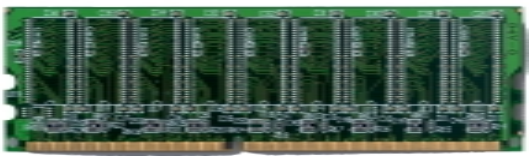
DDR DIMM Slots (DDR 1~3)

The SDRAM Addressing & Size

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
	4Mx4	ASYM	11	10	32MB	64MB
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
	16Mx4	ASYM	13	10	128MB	256MB
64M	2Mx32	ASYM	12	8	16MB	32MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
	16Mx4	ASYM	13	10	128MB	256MB

DDR Module Installation Procedures

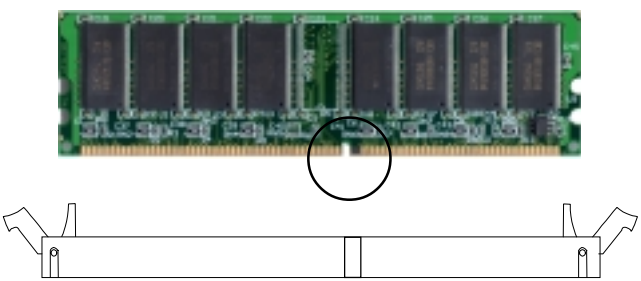
You can install either single sided or double sided 184-pin DDR DIMM modules into DDR DIMM slots to meet your needs. Different from the SDR DIMM, the DDR DIMM has only one notch on the center of module. The number of pins on either side of the breaks are different. The module will only fit in the right orientation.



Single Sided DIMM

Double Sided DIMM

1. Insert the DIMM module vertically into the DDR DIMM slot. Make sure the notch is on the right orientation.
2. The plastic clips at sides of the DIMM slot will automatically close.



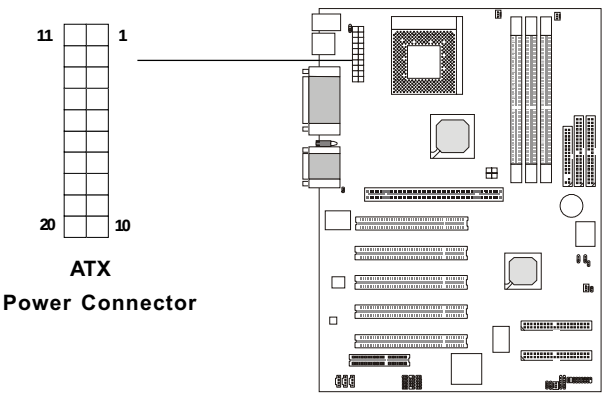
Volt

Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Supply

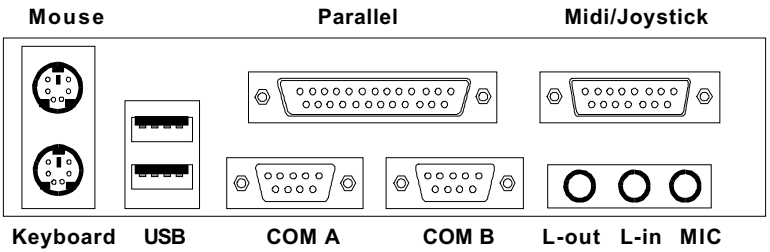
This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plugs of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.



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

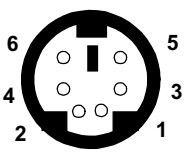
Back Panel

The Back Panel provides the following connectors:



Mouse Connector

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.



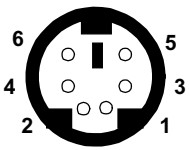
PS/2 Mouse (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

Keyboard Connector

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



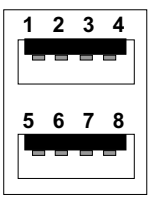
PS/2 Keyboard (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

USB Connectors

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into ths connector.



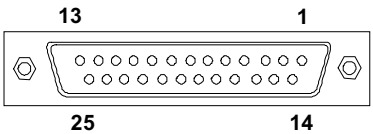
USB Ports

USB Port Description

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	+Data 1	Positive Data Channel 1
7	-Data 1	Negative Data Channel 1
8	GND	Ground

Parallel Port Connector

The mainboard provides a 25-pin female centronic connector for LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.

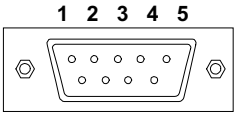


Pin Definition

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground1

Serial Port Connector: COM A & COM B

The mainboard has two 9-pin male DIN connectors for serial port COM A and COM B. You can attach a serial mouse or other serial devices.



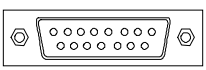
9-Pin Male DIN Connectors

Pin Definition

PIN	SIGNAL	DESCRIPTION
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	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

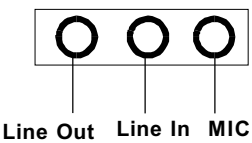
Joystick/Midi Connectors

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



Audio Port Connectors

Line Out is to connect speakers or headphones. ***Line In*** is a connector for external CD player, Tape player or other audio devices. ***Mic*** is used to connect to a microphone.

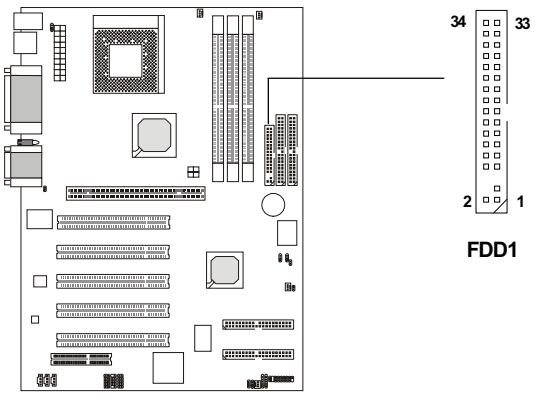


Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, modem, LAN, USB Ports, IR module and CPU/Power supply/System FAN.

Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.

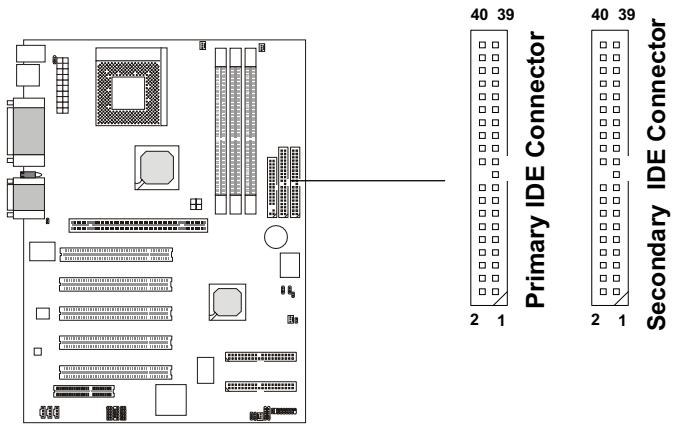


Hard Disk Connectors: IDE1 & IDE2

The mainboard uses an IDE controller on the VIA® VT8233 chipset that provides PIO mode 0-4, Bus Master, and Ultra DMA 33/66/100 modes. It has two HDD connectors IDE1 (Primary) and IDE2 (Secondary). You can connect up to four hard disk drives, CD-ROM or 120MB Floppy to IDE1 and IDE2.

IDE1 (Primary IDE Connector)
- The first hard disk drive should always be connected to IDE1. You can connect a Master and a Slave drive to IDE1.

IDE2 (Secondary IDE Connector)
- You can connect a Master and a Slave drive to IDE2.



TIP:

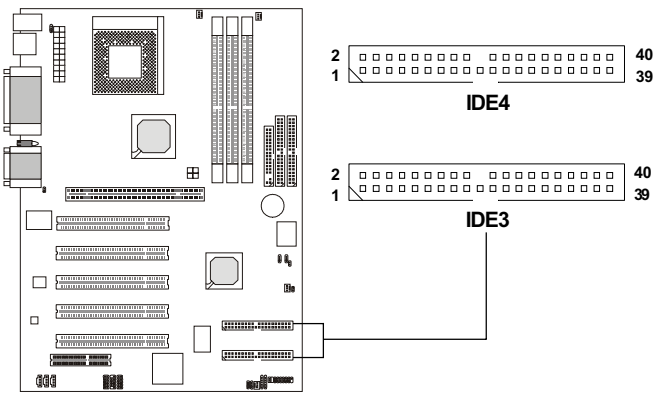
If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

IDE RAID Connectors: IDE3 & IDE4 (Optional)

The mainboard offers a low-cost RAID (Redundant Array of Independent Disks) solution by integrating two IDE RAID connectors that support PIO mode 0-4, Bus Master, and Ultra DMA 33/66/100 modes. The IDE RAID connectors allow you to connect Ultra ATA/DMA hard disks and use RAID technology for high performance, data security and fault tolerance. The connectors support RAID 0 (striping) and RAID 1 (mirroring).

IDE RAID Connectors

- You can connect a Master and a Slave drive to each IDE RAID connector.
- **For more information on IDE RAID, please refer to IDE RAID Manual.**

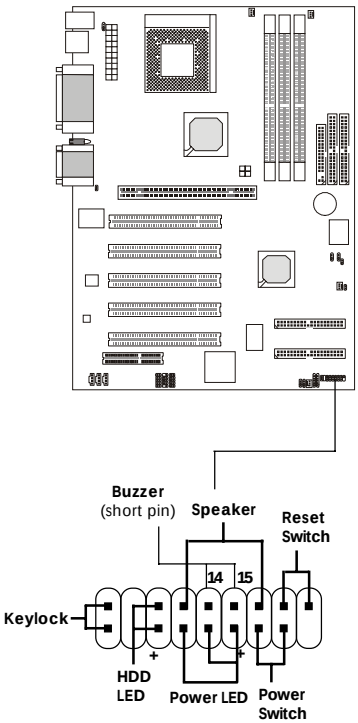


TIP:

If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Case Connector: JFP1

The case connector block JFP1 allows you to connect to the Power Switch, Reset Swtich, Speaker, Power LED, and HDD LED on the case.



JFP1

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 is working. You can connect the Reset switch from the system case to this pin.

Power LED

The Power LED is lit while the system power is on.

Speaker

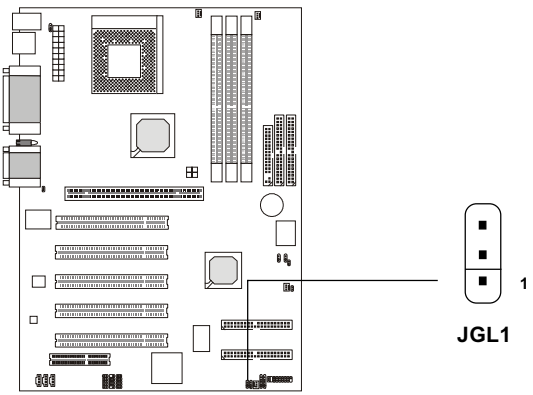
Speaker from the system case is connected to this pin.
If on-board Buzzer is available, then:
Always short pin 14-15 to enable on-board Buzzer

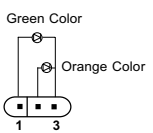
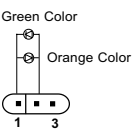
HDD LED

HDD LED shows the activity of a hard disk drive connected to the IDE1 or IDE2 connector. Avoid turning the power off while the HDD is working. You can connect the HDD LED from the system case to this pin.

Power Saving LED Connector: JGL1

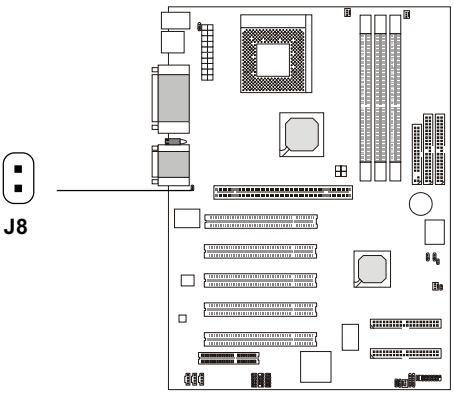
JGL1 is connected to a power saving LED. There are two types of LED that you can use: 3-pin or 2-pin (ACPI request) LED. If connected to a 2-pin LED, the LED light is green when system in turned on, and turns to orange color while entering the sleep state. For 3-pin LED, the LED is lit when system is on, and blinks during the sleep state.



3-Pin LED	2-Pin LED
	
1-2 Single Color 1-3 Blink	1-2 Dual Color

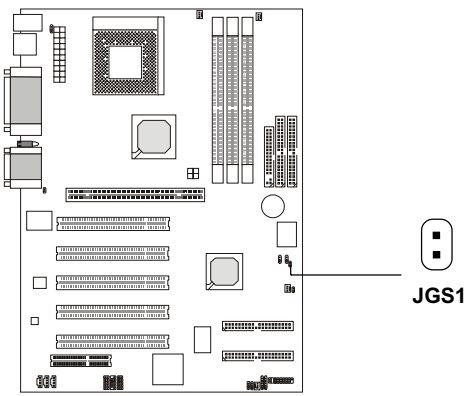
Chassis Intrusion Switch Connector: J8

This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



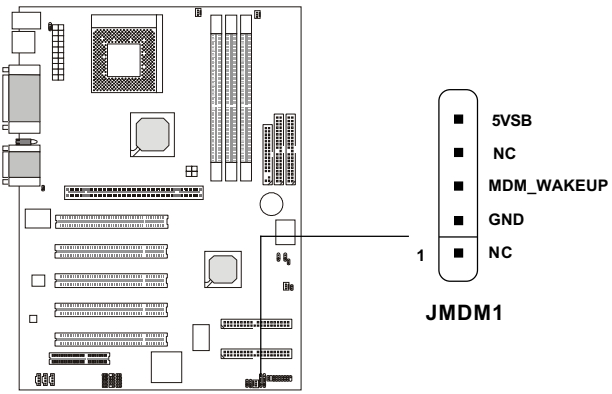
Power Saving Switch Connector: JGS1

Attach a power saving switch to this connector. Pressing the switch once will have the system enter the sleep/suspend state. Press any key to wake up the system.



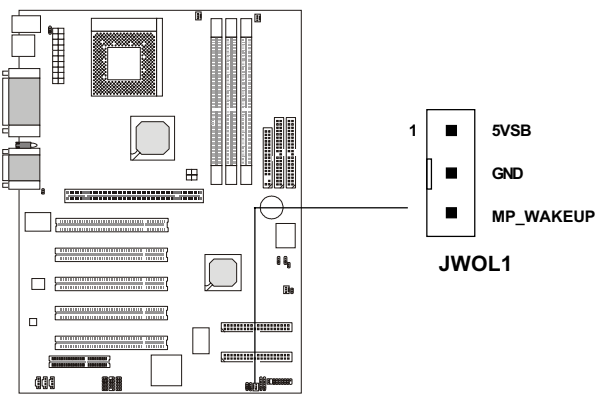
Wake On Ring Connector: JMDM1

This connector allows you to connect to a modem card with Wake On Ring function. The connector will power up the system when a signal is received through the modem card.



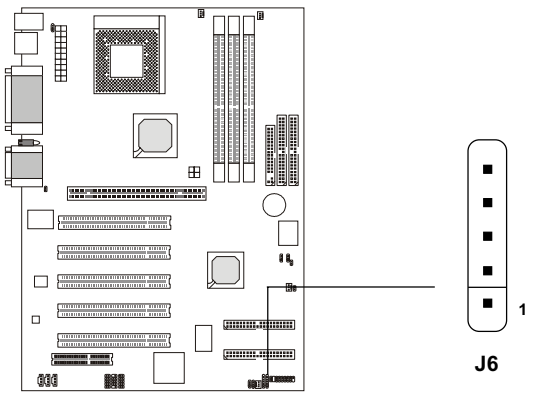
Wake On LAN Connector: JWOL1

This connector allows you to connect to a LAN card with Wake On LAN function. You can wake up the computer via remote control through a local area network.



IrDA Infrared Module Connector: J6

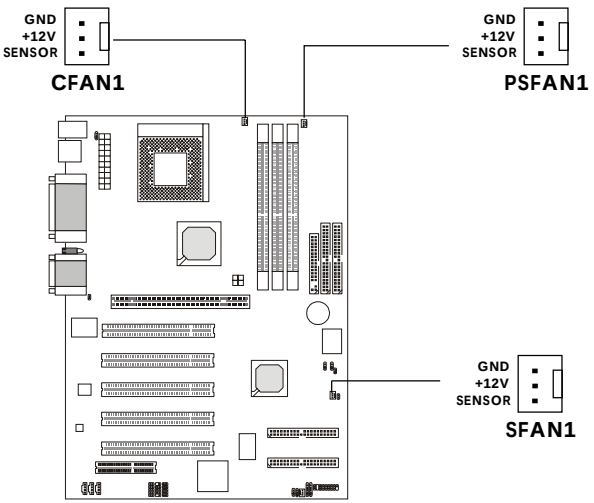
This connector allows you to connect to an IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function.



Pin	Signal
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX

Fan Power Connectors: CFAN1/SFAN1/PSFAN1

The CFAN1 (processor fan), SFAN1 (system fan) and PSFAN1 (power supply fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, 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 the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

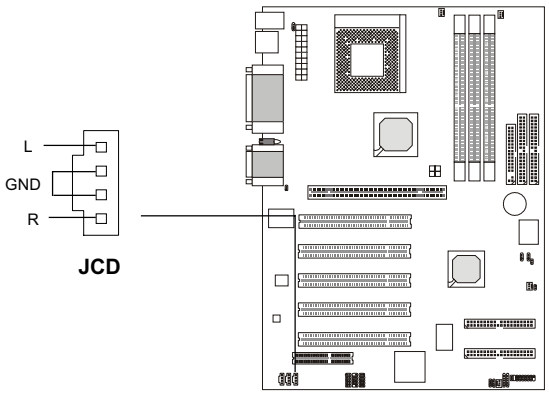


Note:

1. Always consult the vendor for proper CPU cooling fan.
2. CPU Fan supports the fan control. You can install the PC Alert utility that will automatically control the CPU Fan speed according to the actual CPU temeperature.

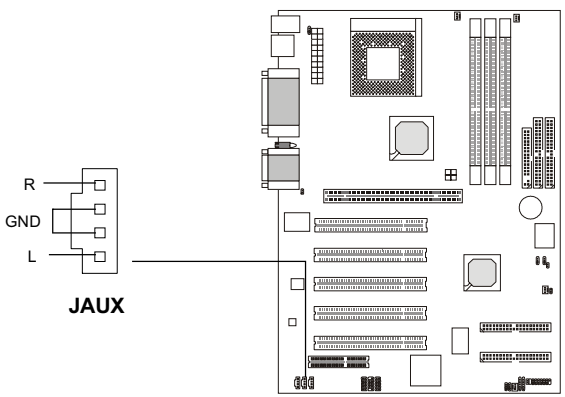
CD-In Connector: JCD

The connector is for CD-ROM audio connector.



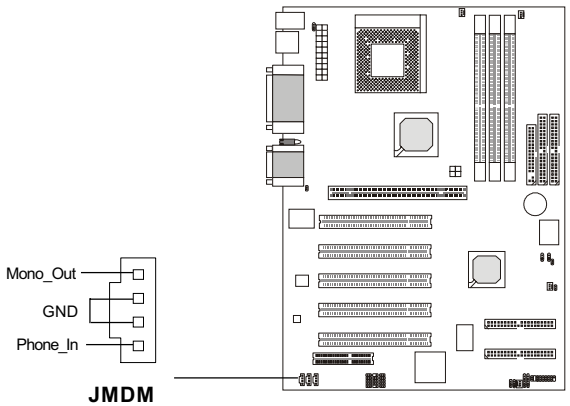
Aux Line-In Connector: JAUX

The connector is for DVD add-on card with Line-in connector.



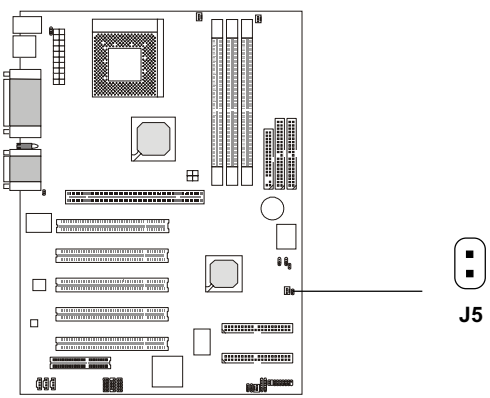
Modem-In Connector: JMDM

The connector is for modem with internal audio connector.



IDE RAID HDD LED Connector: J5

The connector is used to connect to a HDD LED for showing the activity of a hard disk drive attached to the IDE 3 or IDE4 connector.



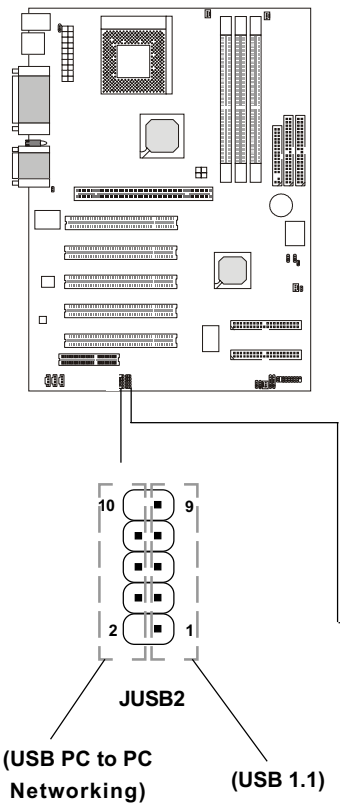
USB Rear Panel Connectors: JUSB1 (optional), JUSB2 & JUSB3

The mainboard provides two or three USB (Universal Serial Bus) pin headers that allow you to connect optional USB ports for Rear Panel.

TWO USB Connectors: JUSB2/3

If your mainboard comes with two USB pin headers, one of them will be compatible with USB 1.1 specification and the other will implement USB PC to PC Networking function.

The mainboard can have **five USB 1.1 ports** and **one USB PC2PC port**.



JUSB2 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	NC
3	USB0-	4	GND
5	USB0+	6	USB1+
7	GND	8	USB1-
9	GND	10	NC

JUSB3 Pin Definition

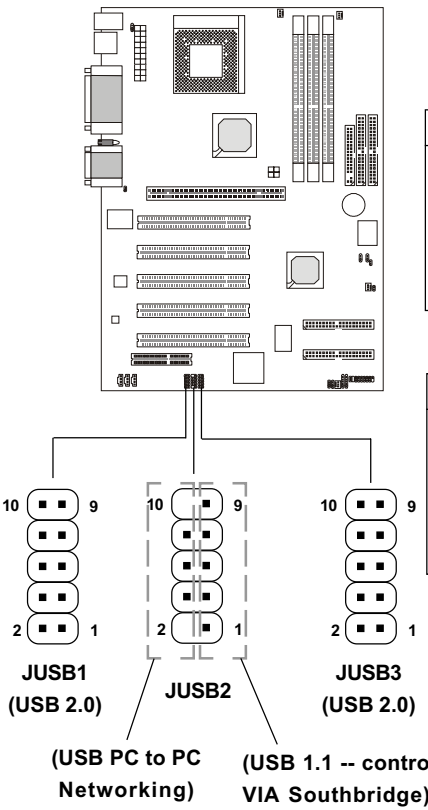
Pin	Description	Pin	Description
1	VCC	2	GND
3	USB0-	4	GND
5	USB0+	6	USB1+
7	GND	8	USB1-
9	GND	10	VCC

THREE USB Connectors: JUSB1/2/3

If your mainboard comes with three USB pin headers along with the NEC USB 2.0 controller, two of them will comply with high-speed USB 2.0 specification and one will implement USB PC to PC Networking function.

USB 2.0 technology increases data transfer rate and is ideal for connecting to high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems** and the like. It is not recommended to connect low-speed USB legacy keyboard and mouse to the USB 2.0 ports. Please connect these USB legacy devices to the USB rear ports.

The mainboard can have **seven USB 1.1 ports** and **one USB PC2PC port**.

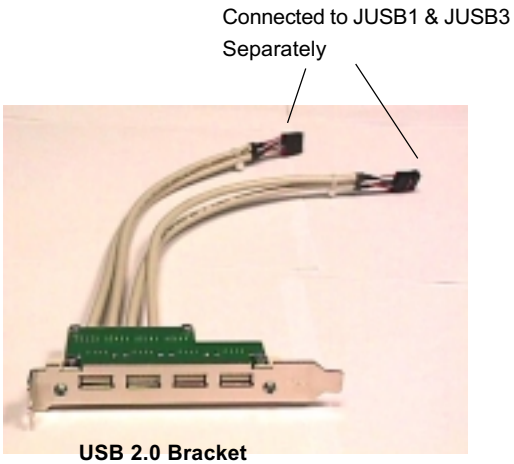


JUSB2 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	NC
3	USB0-	4	GND
5	USB0+	6	USB1+
7	GND	8	USB1-
9	GND	10	NC

JUSB1/3 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	GND
3	USB0-	4	GND
5	USB0+	6	USB1+
7	GND	8	USB1-
9	GND	10	VCC



USB 2.0 Bracket

Note: *USB PC to PC Networking feature allows users to transfer and receive data from other computers or share system resources with other computers without using any network adapter. See below for instructions.*

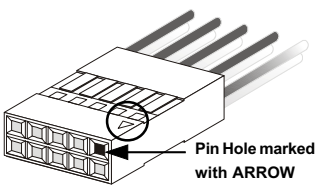
To Attach the USB PC to PC cable

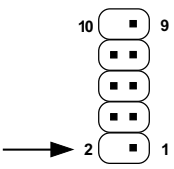
1. Check whether the package includes the following items. If any is missing, contact your dealer.

USB PC to PC Bracket

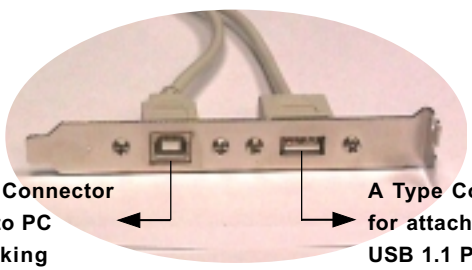
USB PC to PC Cable

2. Connect the USB Bracket cable to the JUSB2 pin header on the mainboard. Locate the pin hole marked with the ARROW on the connector of USB Bracket and Pin# 2 of JUSB2. Then align the pin hole with Pin# 2 to attach the USB Bracket.

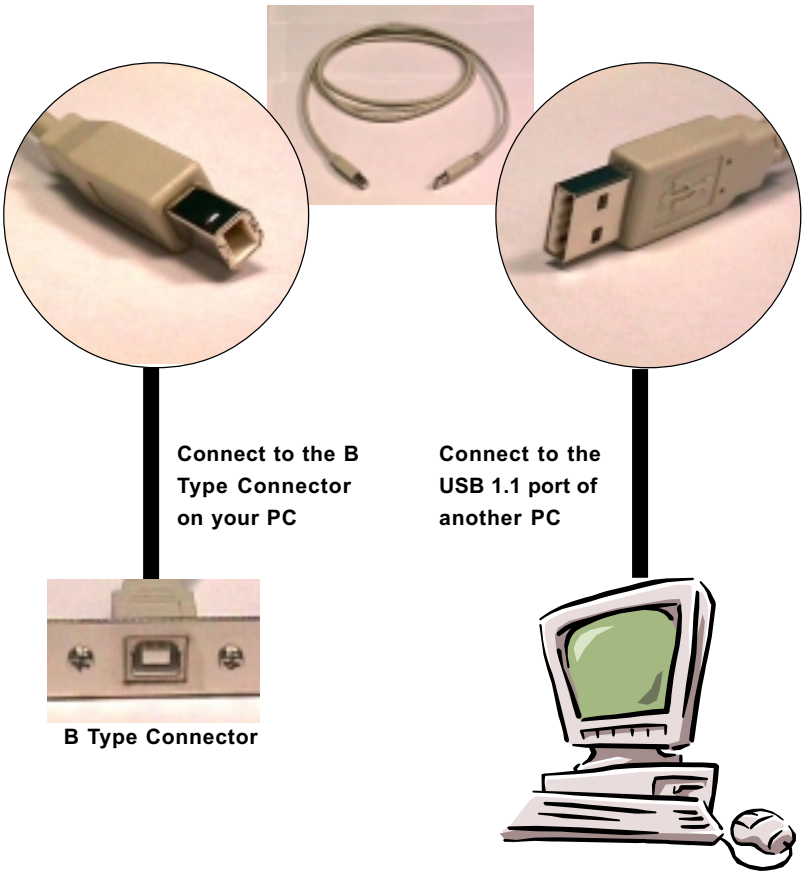




3. Identify the **B Type Connector** on the bracket used for PC to PC Networking function.



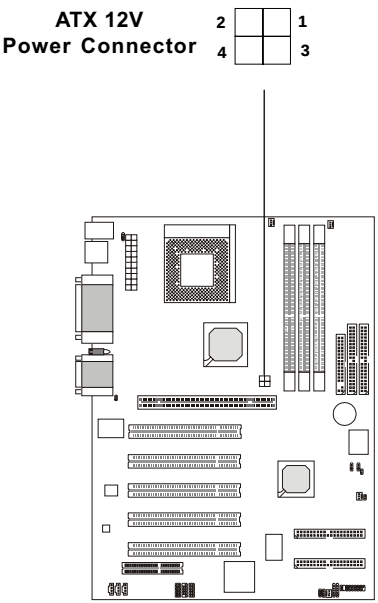
4. Connect your PC to another PC via USB PC to PC cable. The transfer rate will run at USB 1.1 speed (12Mbps/s).



For more information on USB PC to PC Networking function, refer to Appendix A: USB PC to PC Networking Function.

ATX 12V Power Connector: JWR1

This 12V power connector is used to connect the power cabe of the AGP Pro card if the card comes with a power cable, and supply power to the installed card accordingly.



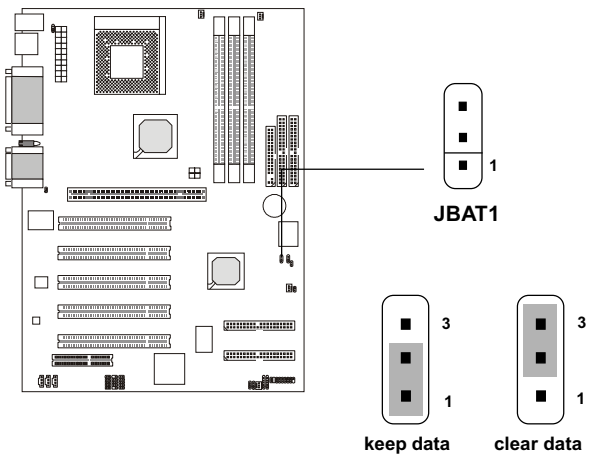
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

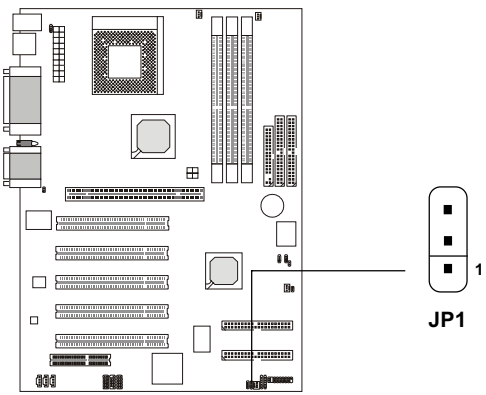
There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. That battery has long life time for at least 5 years. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper) to clear data. Follow the instructions below to clear the data:

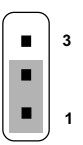


WARNING! *You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

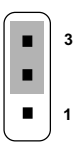
Onboard Audio Codec Jumper: JP1

The jumper is used to enable or disable the onboard software audio codec. When enabling the onboard audio codec, 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.





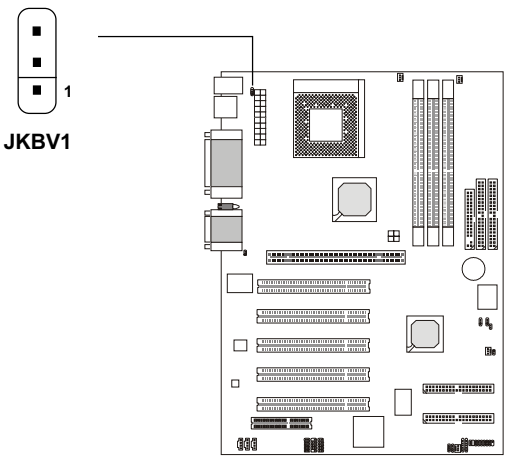
Enable onboard Audio Codec

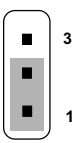


Disable onboard Audio Codec

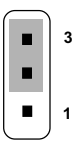
Keyboard Wake-up Jumper: JKBV1

The JKBV1 jumper is used to set PS/2 keyboard/mouse wake-up function. To use the function, you should also go to BIOS to enable the PS/2 keyboard/mouse wake-up (power on) function.





VCC 5V --
Disable Keyboard
Power On Function

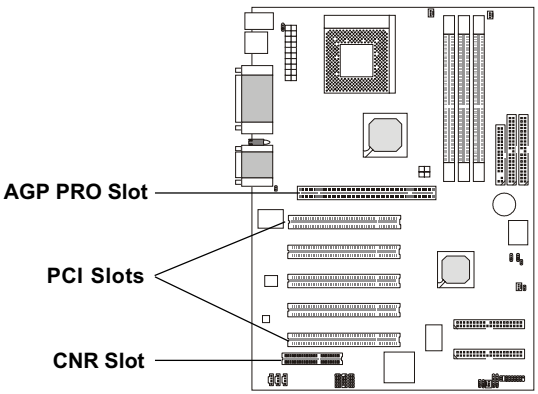


5V StandBy (Default)--
Enable Keyboard
Power On Function

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

Slots

The motherboard provides five 32-bit Master PCI Bus Slots, one AGP PRO and one CNR slot.



AGP (Accelerated Graphics Port) PRO Slot

The AGP Pro Slot allows you to insert the AGP Pro or AGP card.

PCI Slots

Five PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

CNR (Communication Network Riser)

The CNR specification is an open industry-standard specification that defines a hardware scalable Original Equipment Manufacturer (OEM) mainboard riser board and interface, which 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. **To install a PCI expansion card on a PCI *shared* slot, you must make sure the card's driver supports "IRQ shared" function or there is no need to assign an IRQ to the device.**

The "AGP/PCI/USB/Promise ATA100" 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#
NEC USB 2.0	INT A#	INT B#	INT C#	
Promise ATA 100	INT B#			

The mainboard supports PCI Slot 1~5 Bus Master.