Hardware Setup *2*

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 Intel® Pentium® 4 processor. The mainboard uses a CPU socket called Socket 423 for easy CPU installation. Make sure that the CPU has a Heat Sink and a cooling fan attached to prevent overheating. If you do not find the Heat Sink and cooling fan, contact your dealer or purchase 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.

Open Lever

Sliding Plate

2. Look for the gold arrow. The gold arrow should point towards the end of lever. The CPU will only fit in the correct orientation.

Gold Arrow

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

Close Lever

!
WARNING!
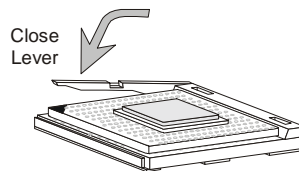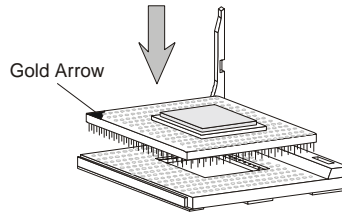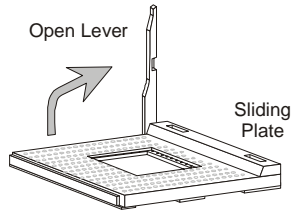
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

CPU Core Speed Derivation Procedure

|			
If	CPU Clock	=	100MHz
	Core/Bus ratio	=	14
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	100MHz x 14
		=	1.4GHz

> ⚠️ **WARNING!**
>
> *Overclocking*
> *This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

Memory Installation

The mainboard provides 4 gold-lead sockets for 184-pin RIMM modules. To operate properly, at least two RIMM modules must be installed. The mainboard supports the memory size up to 2 GB.

**RIMM Slots
(RIMM 2~4)**

**RIMM Slot
(RIMM 1)**
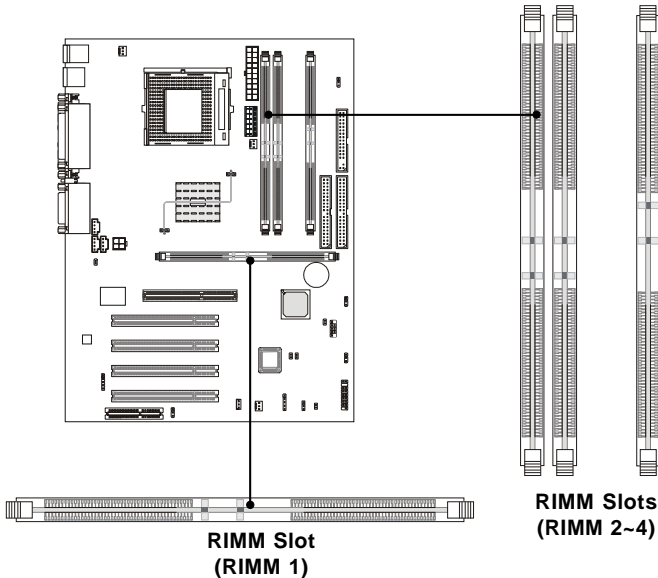
Memory Population Rules

- Support RIMM only.
- To operate properly, make sure that the RIMM banks are using the same type and equal size density memory.
- Support FSB 100MHz: PC800 RIMM.
- Support up to 32 Direct Rambus Device.
- Support ECC Single bit Correction and Multiple bit error detection (Setting in BIOS).
- Install two RIMM modules either on "RIMM 1and RIMM 2" or on "RIMM3 and RIMM4" slots.
- If only two RIMM slots are populated, you must install CRIMM modules on the other unused RIMM slots.

Installing the RIMM Modules

You can install two or four RIMM modules into RIMM slots according to your needs.

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.

NOTCH
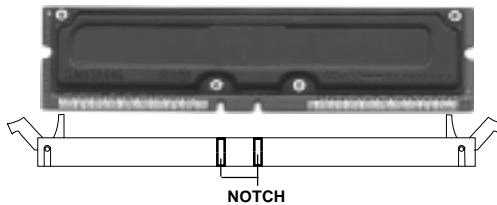
3. The plastic clips at sides of the RIMM slot will automatically close.
4. If you won't insert any RIMM modules on the other two RIMM slots, you must install CRIMM modules on the empty slots.


CRIMM Module

Note: To setup the RDRAM voltage for overclocking use, refer to "RDRAM Over Voltage Jumper: J20".

Power Supply

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

ATX 20-Pin Power Connector

This connector allows you to connect to an ATX power supply. The power connector supports **instant power on** function which means that system will boot up immediately when the power supply connector is inserted on the board.

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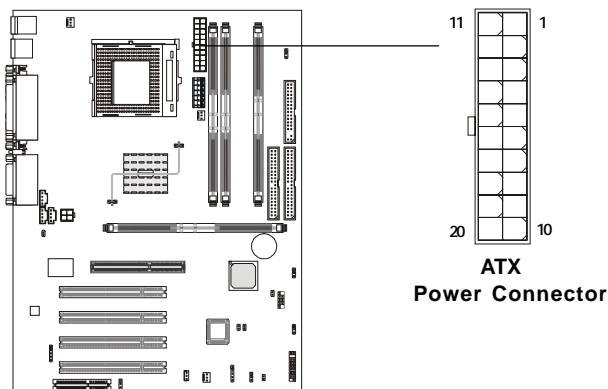
| PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

ATX 12V Power Connector: JWR1

Attaching the ATX power supply to the connector help offer sufficient voltage to Pentium 4 CPU. This power connector also supports **instant power on** function.

JWR1

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V
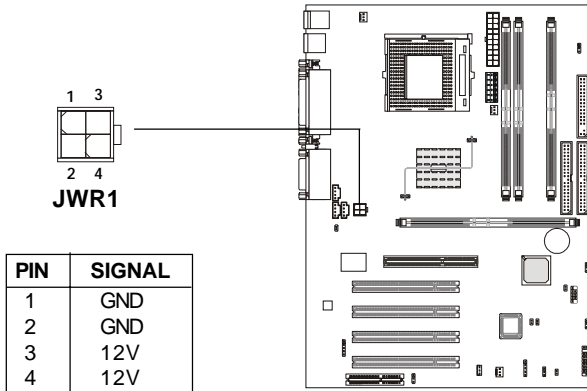
ATX 5V/3V Power Connector: JWR2

The mainboard provides an extra 5V/3V power connector for you to connect to the ATX power supply.

JWR2
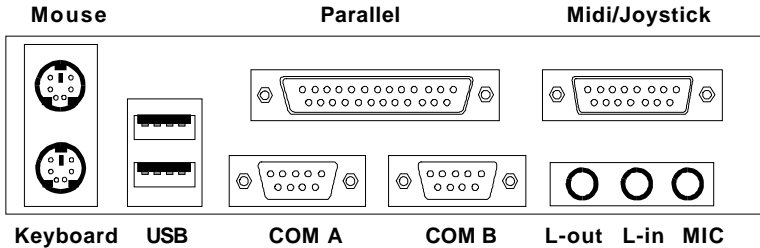
PIN	SIGNAL	PIN	SIGNAL
1	GND	4	3.3V
2	GND	5	3.3V
3	GND	6	5V
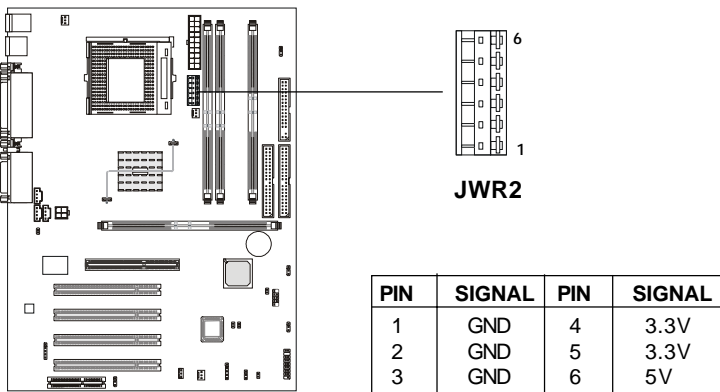
Back Panel

The Back Panel provides the following connectors:

Mouse   **Parallel**   **Midi/Joystick**

Keyboard   USB   COM A   COM B   L-out L-in MIC

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.
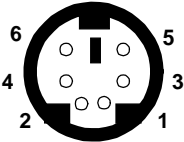
Pin Definition

PS/2 Mouse (6-pin Female)

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.
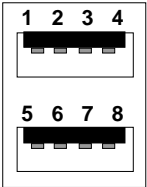
Pin Definition

PS/2 Keyboard (6-pin Female)

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 Port Description

USB Ports

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	Negative Data Channel 1
7	+Data 1	Positive 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.
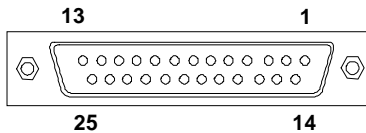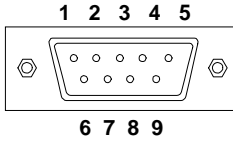

Pin Definition

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 Connectors: 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.
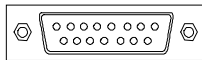
Pin Definition

1 2 3 4 5

6 7 8 9

9-Pin Male DIN Connectors

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 Connector

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.
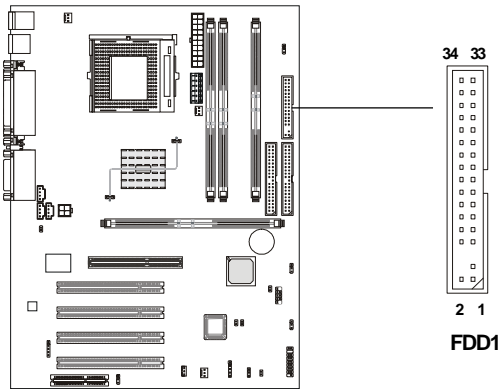
Line Out   Line In   MIC

2-11
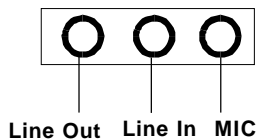
Connectors

The mainboard provides connectors to connect 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 Intel® ICH2 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.
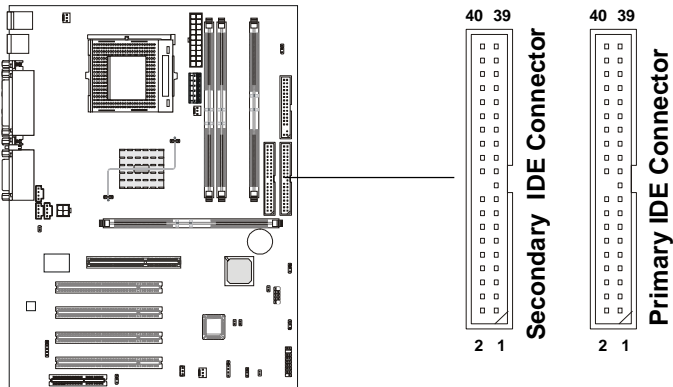
☐TIP:
If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Case Connector: JFP1

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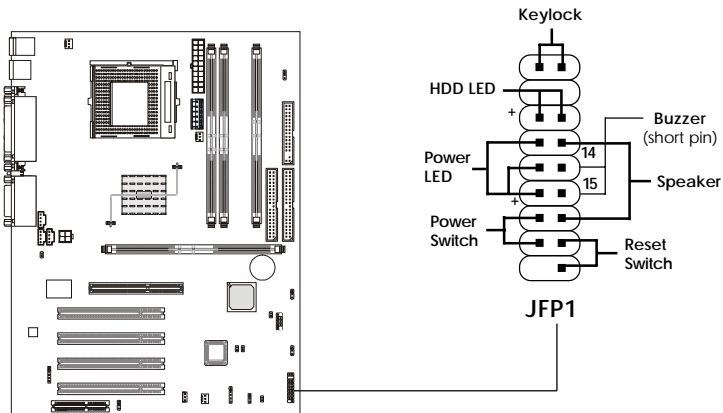
Power Switch

Connect to a 2-pin push button switch. The switch has the same feature as JRMS1.

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. There are three types of LEDs you can connect from the system case to the pin:

2-pin single color power LED: Connected to pin 5 & 6. When the system enters the suspend/sleep mode, the 2-pin power LED blinks.

2-pin dual color power LED: Connected to pin 5 & 6. The 2-pin power LED changes its color to indicate different system states:
GREEN color indicates full-on mode.
ORANGE color indicates suspend/sleep mode.

3-pin dual color power LED: Connected to pin 4, 5 & 6. The 3-pin power LED changes its color to indicate different system states:
GREEN color indicates full-on mode.
ORANGE color indicates suspend/sleep mode.

Speaker

Speaker from the system case is connected to this pin.
If on-board Buzzer is available, then:
Short pin 14-15:   On-board Buzzer Enabled.
Open pin 14-15:   On-board Buzzer Disabled.

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.

Keylock

Keylock allows you to disable the keyboard for security purpose. You can connect the keylock to this connector.

Power Saving LED Connector: JGL1 (Optional)

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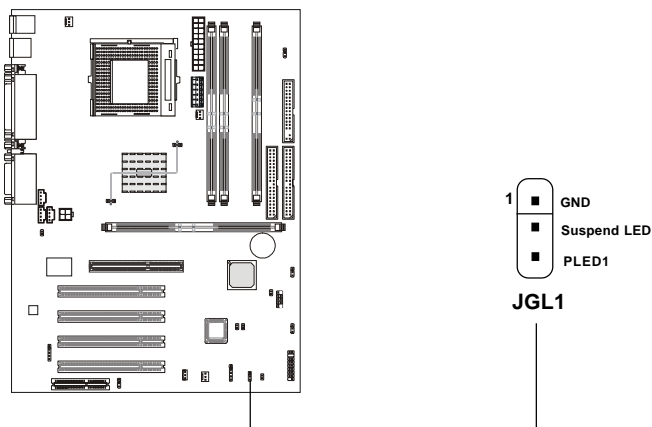

3-Pin LED	2-Pin LED
Green Color / Orange Color	Green Color / Orange Color
1-2 Single Color **1-3 Blink**	**1-2 Dual Color**

Remote Power On/Off Switch Connector: JRMS1

Connect to a 2-pin push button switch. When OFF, pressing the button can turn the system on. When ON, pressing the button once will make the system enter the sleep/suspend state. If the button is pressed for more than four seconds, the system will be turned off. To change the setup, go to the BIOS Power Management Setup.


JRMS1
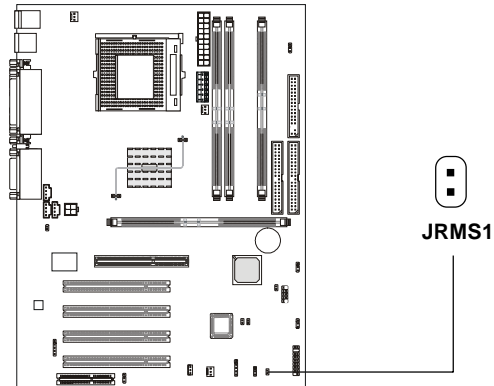
Power Saving Switch Connector: JGS1

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.

JGS1
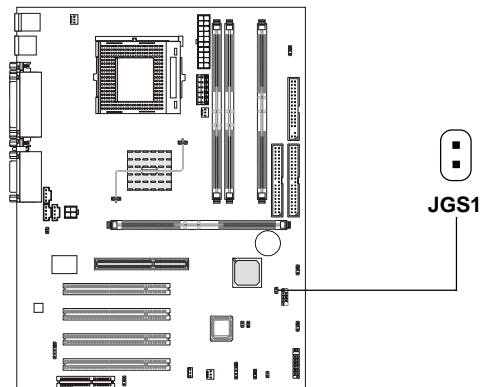
Wake On Ring Connector: JMDM1

    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.

Pin	Signal
1	NC
	GND
	MDM_WAKEUP
	NC
	5VSB

JMDM1
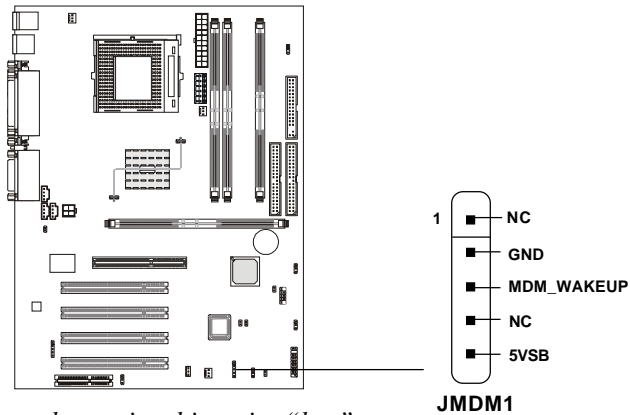
Note: Modem wake-up signal is active "low".

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.

Pin	Signal
1	5VSB
	GND
	MP_WAKEUP

JWOL1
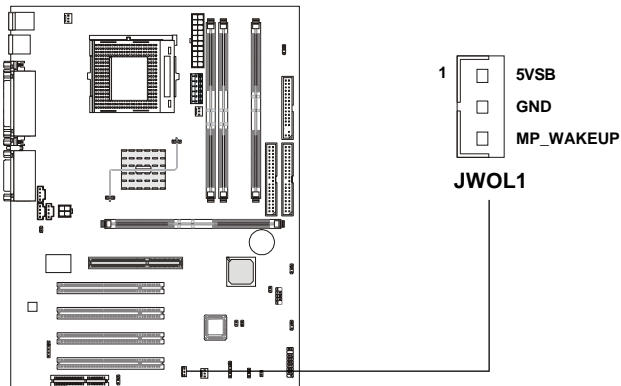
IrDA Infrared Module Connector: J18

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

J18
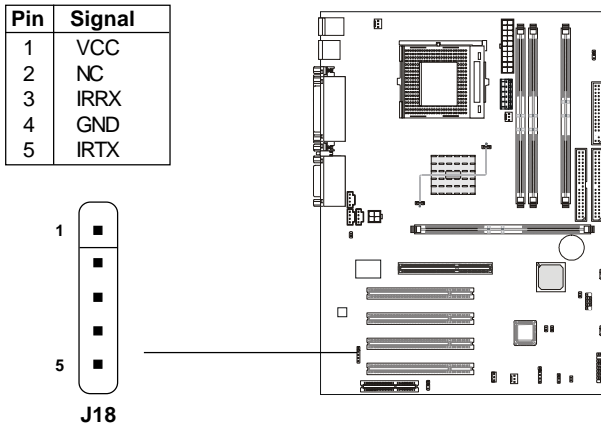
Chassis Intrusion Switch Connector: J12

The 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.
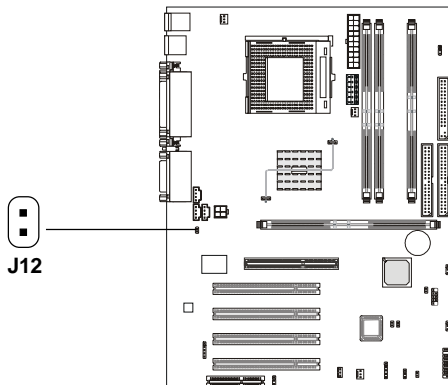
J12

Fan Power Connectors: CPUFAN/SYSFAN/PSFAN

The CPUFAN (processor fan), SYSFAN (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.

GND
+12V
SENSOR

CPUFAN

GND
+12V
SENSOR

PSFAN1

GND
+12V
SENSOR

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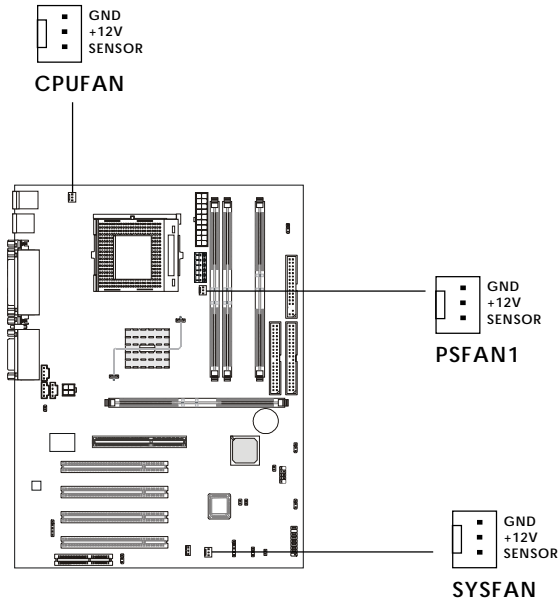
Note:
1. Always consult the vendor for proper CPU cooling fan.
2. CPU Fan supports the fan control. You can install the PC Alert utility that will automatically control the CPU Fan speed according to the actual CPU temperature.

CD-In/Aux Line-In/Modem-In Connector: J8/J10/J11

J8 connector is for CD-ROM audio connector.
J10 connector is for DVD add-on card with Line-in connector.
J11 connector is for modem with internal audio connector.

J8

J10

J11
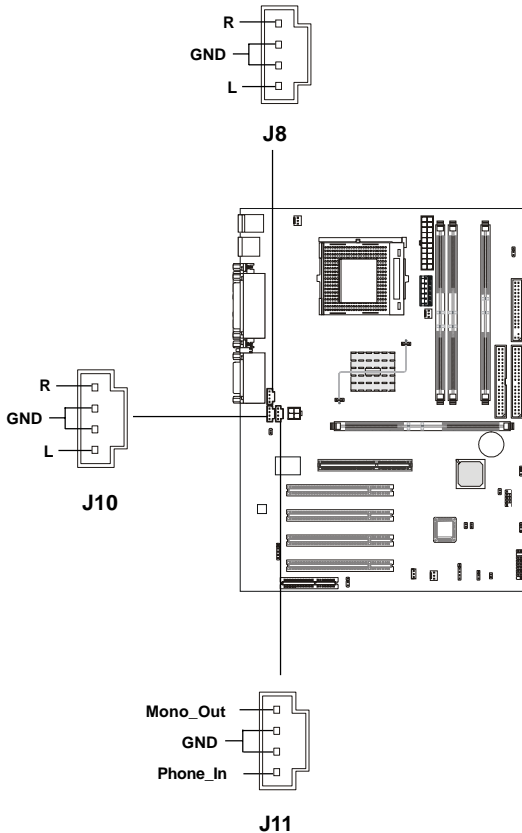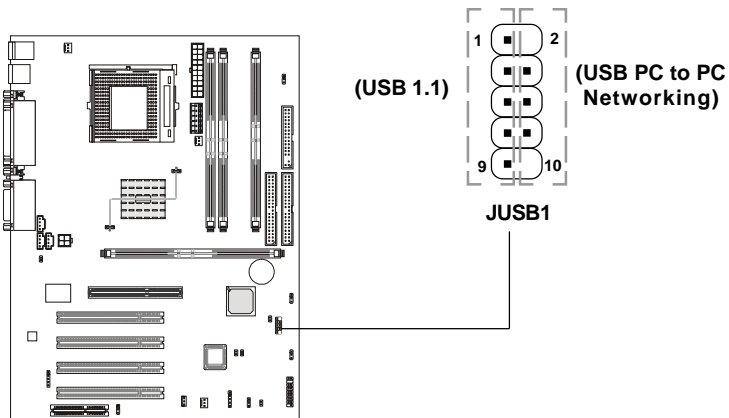
☛*Note:*

Mono_Out is connected to the Modem speaker-out connector.
Phone_In is connected to the Modem Microphone-In connector.

USB PC To PC Connector: JUSB1 (Optional)

The mainboard provides one USB (Universal Serial Bus) pin header that allows you to connect optional USB ports. JUSB1 is **optionally** implemented with USB PC to PC Networking function.

Depending on the model you purchased, the mainboard may offer **three USB 1.1 ports** and **one USB PC2PC port**, or just **four USB 1.1 ports**. This topic focuses on USB PC2PC function.

JUSB1

JUSB1 Pin Definition

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

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.
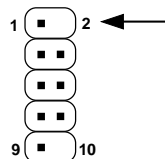

USB PC to PC Bracket

USB PC to PC Cable

2. Connect the USB Bracket cable to the JUSB1 pin header on the mainboard. Locate the pin position marked with the ARROW on the connector of USB Bracket and Pin# 2 of JUSB1. Then align the marked pin position with Pin# 2 to attach the USB Bracket.
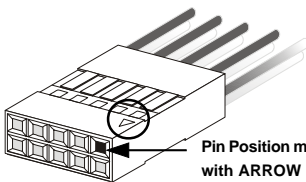
Pin Position marked with ARROW

JUSB1

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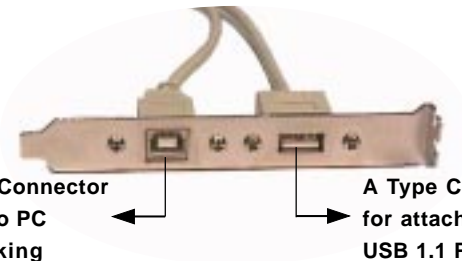
B Type Connector for PC to PC Networking

A Type Connector for attaching USB 1.1 Peripherals

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).

Connect to the B Type Connector on your PC

Connect to the USB 1.1 port of another PC

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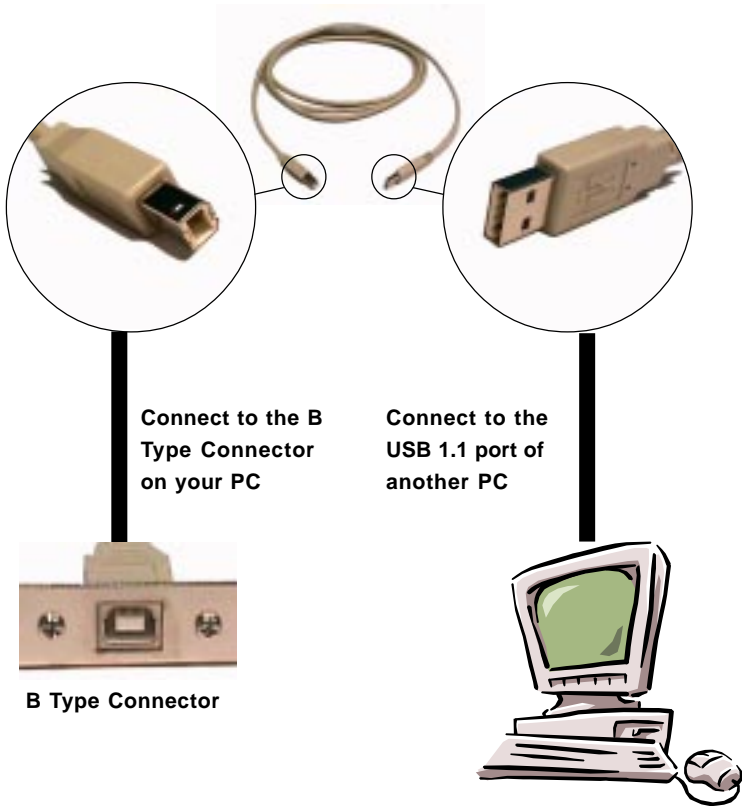
*For more information on USB PC to PC Networking function, refer to Appendix A: USB PC to PC Networking Function.*

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. 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:
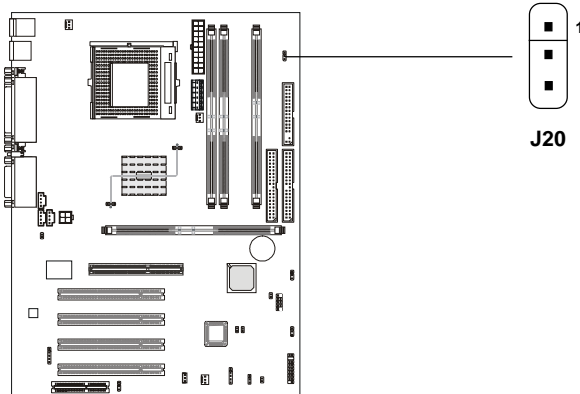

JBAT1
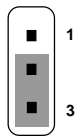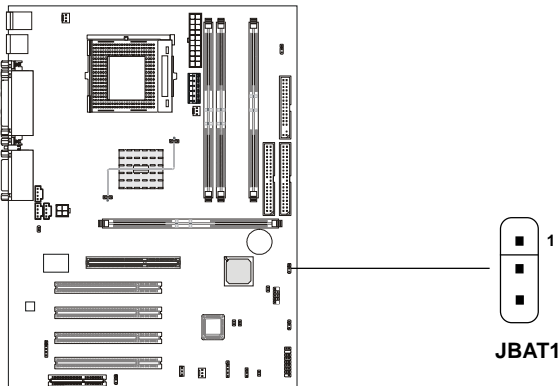
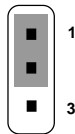clear data
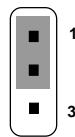
keep data

> ⚠️ **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.*
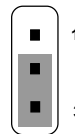
RDRAM Over Voltage Jumper: J20

The jumper is used to set the RDRAM voltage for overclocking purpose.

J20
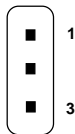
| Normal
(2.5V) | Over Voltage
(2.58V) | Over Voltage
(2.68V) |

⚠️ **WARNING!**

Over Voltage

This motherboard is designed to support over voltage. However, please make sure your components are able to tolerate such abnormal setting, while doing over voltage. Any attempt to operate beyond product specifications is not recommended. ***We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

Avoid setting J20 while the sytem is on. It will damage the RDRAM.

Onboard Audio Codec Jumper: J19

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.

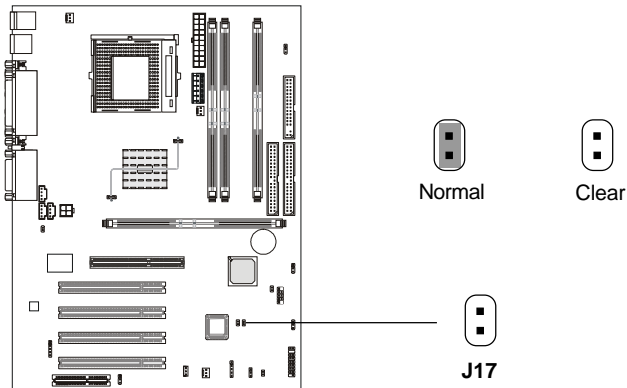**J19**
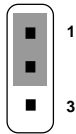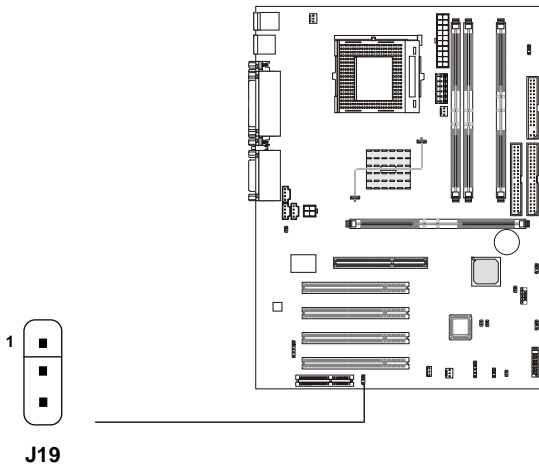
Enable onboard
audio codec
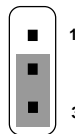
Disable onboard
audio codec

Clear BIOS Password Jumper: J17

The jumper is used to clear the BIOS password. To clear the password, open the jumper and restart your computer.
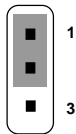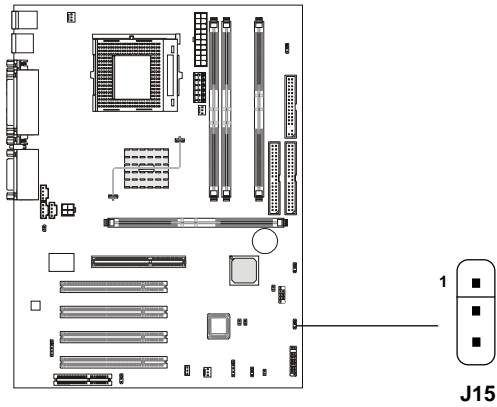

Normal   Clear

J17

BIOS Flash Jumper: J16

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 cannot be updated.
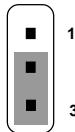

BIOS Flash   BIOS Flash
Locked   Unlocked

J16
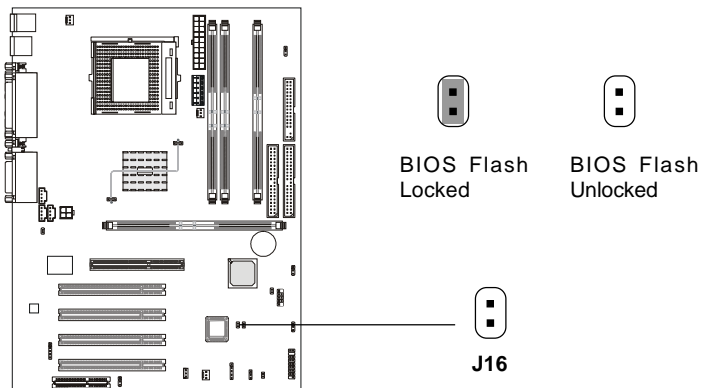
Beep Device Jumper: J15 (Optional)

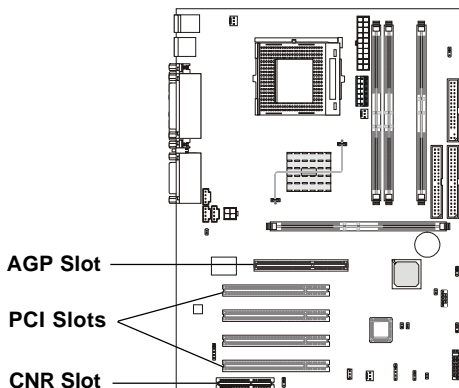The jumper is used to select the device for beep sound output.

J15

Output to External
Speaker

Output to Onboard
Buzzer

Slots

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

AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card only. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory and provides three levels of throughputs: 1x (266Mbps), 2x (533Mbps) and 4x (1.07Gbps). The slot only supports **1.5V** AGP card.

PCI Slots

Four 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) Slot

The CNR slot allows you to insert the CNR expansion cards. CNR is a specially designed network, audio, or modem riser card for ATX family motherboards. Its main processing is done through software and controlled by the motherboard's chipset.

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 PCI IRQ pins are typically connected to the PCI bus as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT C#	INT F#	INT G#	INT A#
PCI Slot 2	INT F#	INT G#	INT A#	INT C#
PCI Slot 3	INT G#	INT A#	INT C#	INT F#
PCI Slot 4	INT A#	INT C#	INT F#	INT G#

PCI Slot 1~4: Bus Master