Getting Started 1

Thank you for purchasing the MS-6579 (v1.X) M-ATX mainboard. The MS-6579 mainboard is based on Intel® Brookdale-E GMCH & ICH4 chipsets for optimal system efficiency. Designed to fit the advanced Intel® Pentium® 4 processors in the 478 pin package, the MS-6579 delivers a high performance and professional desktop platform solution.

Mainboard Specification

CPU

❑ Support socket 478 for Intel® Pentium® 4 processor

❑ Support socket 478 for Intel® Celeron processor

❑ Support 1.3GHz to 2.8GHz or higher speed P4 processor

Chipset

❑ Intel® Brookdale-E GMCH chipset (593 FCBGA)
- Support FSB 400/533 MHz
- Multiplexed AGP and Intel® DVO port Interface
- Support PC200/266 DDR technology

❑ Intel® ICH4 chipset (421 MBGA)
- 6 ports Hi-Speed USB (USB 2.0) controller, 480MB/sec
- AC'97 Codec Supported
- Support both ACPI and legacy APM power management
- Legacy free support

Main Memory

❑ Support four memory banks using two 184-pin unbuffered DIMM

❑ Max. memory size is 2 GB without ECC for 1GB/slot

❑ Support 2.5V DDR DIMM

Slots

❑ One AGP (Accelerated Graphics Port) 4x slot

❑ Three 32-bit Master PCI bus slots

On-Board IDE

❑ Dual IDE controllers integrated in ICH4 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA66/100 operation modes

❑ Can connect up to four IDE devices.

On-Board Peripherals

❏ On-board Peripherals include:
- 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
- 1 serial port (COM A)
- 1 parallel port supports SPP/EPP/ECP mode
- 6 ports USB 2.0 (Rear x 4 / Front x 2)
- 1 Line-In/Line-Out/Mic-In
- 1 RJ-45 LAN jack
- 2 PS/2 ports for keyboard and mouse

Audio

❏ AC'97 link controller integrated in ICH4 chipset
❏ 2 channels S/W codec ALC 202A
❏ Onboard Amplifier integrated in Philips TDA1517P chip, 3W

LAN

❏ Realtek RTL8101L

BIOS

❏ The mainboard BIOS provides "Plug & Play" function which detects the peripherals devices and expansion cards of the board automatically
❏ The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications
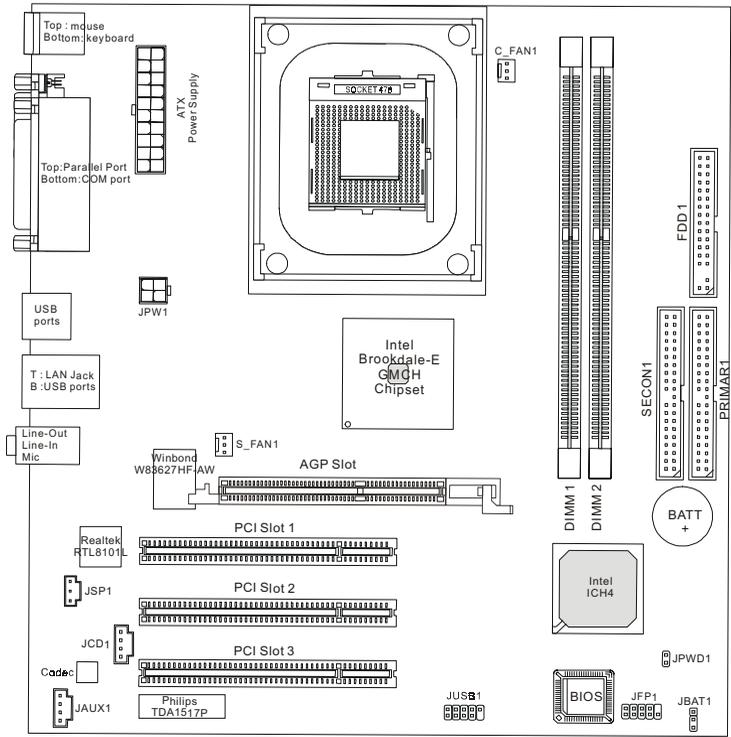
Dimension

❏ M-ATX Form Factor: 245mm x 231mm

Mounting

❏ 6 mounting holes

Others

❏ PC 2001 compliant
❏ Support STR/STD
❏ Support PCI 2.2

Mainboard Layout

Top : mouse
Bottom:keyboard

ATX
Power Supply

Top:Parallel Port
Bottom:COM port

USB
ports

T : LAN Jack
B :USB ports

Line-Out
Line-In
Mic

JPW1

Winbond
W83627HF-AW

Realtek
RTL8101L

JSP1

JCD1

Codec

JAUX1

Philips
TDA1517P

S_FAN1

AGP Slot

PCI Slot 1

PCI Slot 2

PCI Slot 3

SOCKET 478

C_FAN1

Intel
Brookdale-E
GMCH
Chipset

Intel
ICH4

FDD1

SECON1

PRIMAR1

DIMM 1

DIMM 2

BATT
+

JUSB1

BIOS

JPWD1

JFP1

JBAT1

MS-6579 v1.X M-ATX Mainboard

Quick Components Guide

Component	Function	Reference
CONN1	ATX 20-pin power connector	See p. 2-7
JPW1	ATX 12V power connector	See p. 2-7
JKBMS1	Mouse connector	See p. 2-8
JKBMS1	Keyboard connector	See p. 2-9
USB Connectors	Connecting to USB devices	See p. 2-9
COM A	Serial port connector	See p. 2-10
Audio Connectors	Connecting to audio devices	See p. 2-10
LPT1	Parallel port connector	See p. 2-11
LAN Jack	RJ-45 LAN connector	See p. 2-12
FDD1	Floppy disk drive connector	See p. 2-13
PRIMAR1 & SECON1	Hard disk connectors	See p. 2-14
JCD1	CD-in connector	See p. 2-15
JAUX1	AUX LINE-in connector	See p. 2-15
C_FAN1/S_FAN1	Fan power connectors	See p. 2-16
JFP1	Front panel connector	See p. 2-17
JUSB1	Front USB connector	See p. 2-18
JSP1	Stereo Speaker connector	See p. 2-19
JBAT1	Clear CMOS jumper	See p. 2-20
JPWD1	Clear BIOS password jumper	See p. 2-21
AGP Slot	Connecting to AGP card	See p. 2-22
PCI Slots	Connecting to expansion cards	See p. 2-22

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.

Central Processing Unit: CPU

The mainboard supports Intel® Pentium® 4 processor in the 478 pin package. The mainboard uses a CPU socket called PGA478 for easy CPU installation. When you are installing the CPU, **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.

Open Lever

Sliding Plate

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

Gold Arrow

Dot

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

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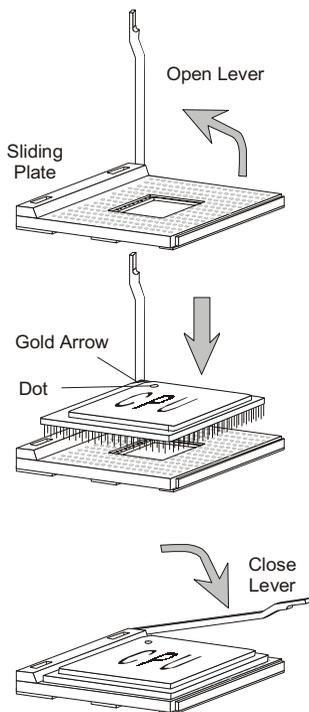
> **STOP**
> **WARNING!**
> *Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.*

Installing the CPU Fan

As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly important. To dissipate heat, you need to attach the CPU cooling fan and heatsink on top of the CPU. Please note that the following installation procedures are for your reference only. The actual CPU cooling fan and heatsink that come with your purchase may be different from the pictures shown below.

1. Locate the CPU and its retention mechanism on the motherboard.

retention mechanism


2. Position the heatsink onto the retention mechanism.
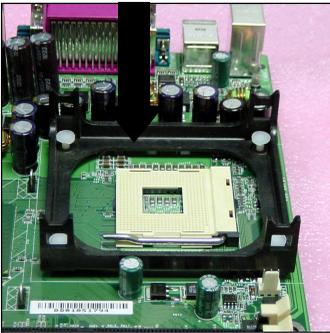
3. Mount the fan on top of the heatsink. Press down the fan until its four clips get wedged in the holes of the retention mechanism.

4. Press the two levers down to fasten the fan. Each lever can be pressed down in only ONE direction.

levers
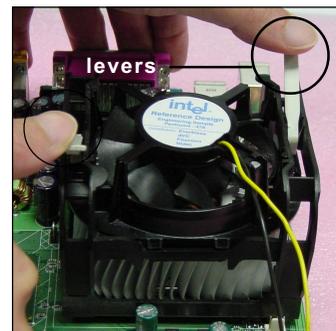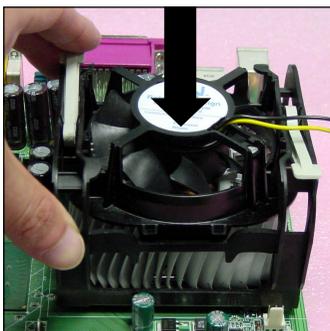
**5.** Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the board.
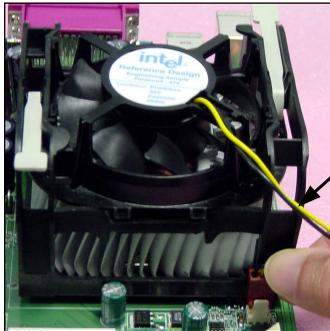
fan power cable

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

Memory

The mainboard provides 2 slots for 184-pin, 2.5V unbuffered DDR DIMM with 4 memory banks. You can install PC1600/PC2100 DDR SDRAM modules on the DDR DIMM slots (DDR 1~2). To operate properly, at least one DIMM module must be installed.

**DDR DIMM Slots
(DDR 1~2)**
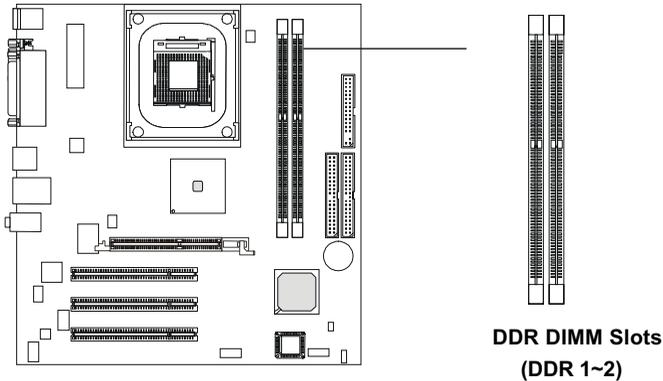
Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

DDR Module Combination

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.

You can install memory modules in any combination as follows:

Slot	Momory Module	Total Memory
Slot 1 (Bank 0 & 1)	64MB, 128MB, 256MB, 512MB	64MB~512MB
Slot 2 (Bank 2 & 3)	64MB, 128MB, 256MB, 512MB	64MB~512MB
Maximum System Memory Supported		64MB~1GB

Installing DDR Modules

1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.

2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.

TIP: You can barely see the golden finger if the module is properly inserted in the socket.

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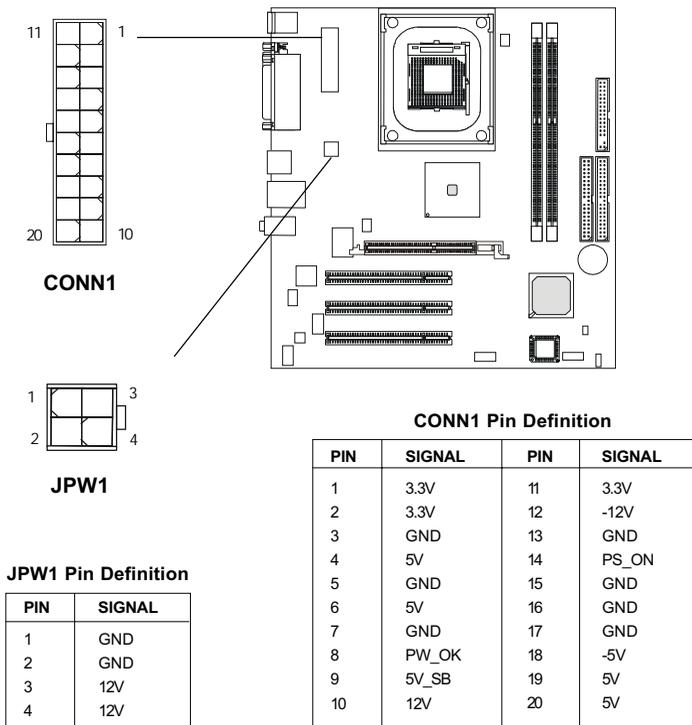

Volt   notch
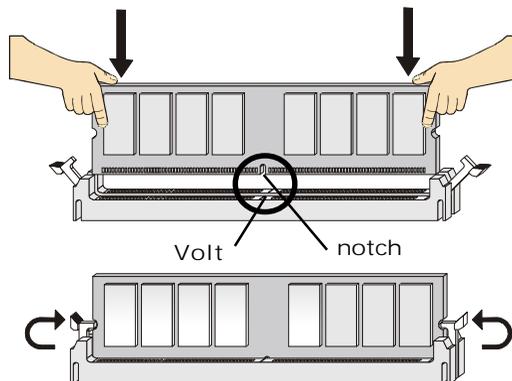
Power Supply

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 Connector: CONN1

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.
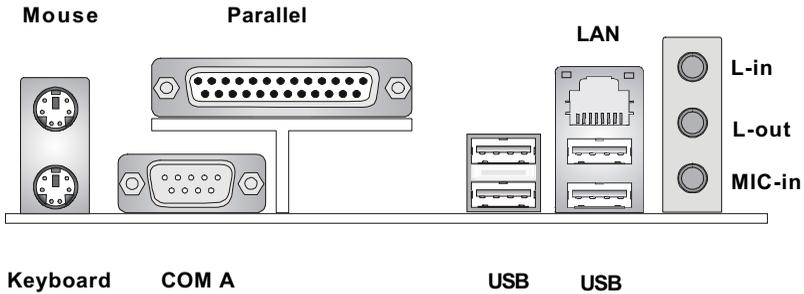
ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

CONN1

JPW1

JPW1 Pin Definition

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

CONN1 Pin Definition

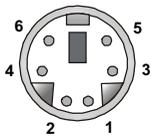| PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

Back Panel

The Back Panel provides the following connectors:

Mouse Connector: KBMS1

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 assignments are as follows:

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: KBMS1

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.
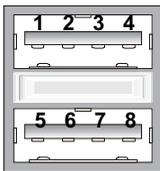
Pin Definition

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

PS/2 Keyboard (6-pin Female)

USB Connectors

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

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	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

USB Ports

Serial Port Connector: COM A

The mainboard offers a 9-pin male DIN connector as the serial port COM A. The port is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to it.

1 2 3 4 5

6 7 8 9

9-Pin Male DIN Connector
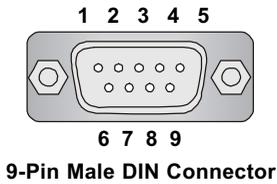
Pin Definition

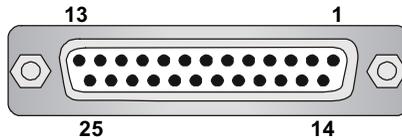| PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
	CTS	Clear To Send
9	RI	Ring Indicate

Audio 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-In** is a connector for microphones.

Line-In

Line-Out

MIC-In
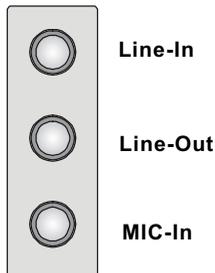
Parallel Port Connector: LPT1

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.
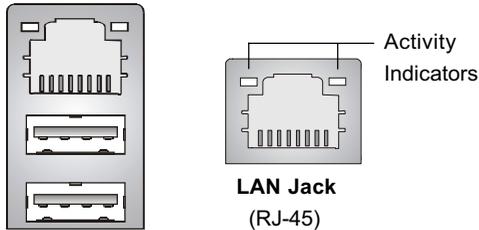
Pin Definition

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	Ground

LAN Connector

The mainboard provides an optional **RJ-45** LAN connector for your network connection.
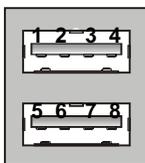
USB Connectors

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 the connector.

Activity
Indicators

LAN Jack
(RJ-45)

LAN Jack Pin Definition

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

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	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

1 2 3 4

5 6 7 8

USB Ports

Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, USB Ports and CPU/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.

FDD1
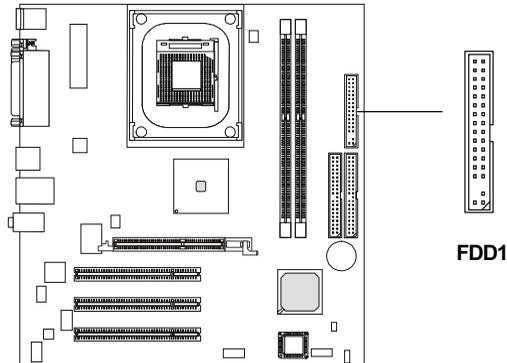
Hard Disk Connectors: PRIMAR1 & SECON1

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33/66/100 function. You can connect up to four hard disk drives, CD-ROM and other devices. These connectors support the provided IDE hard disk cable.
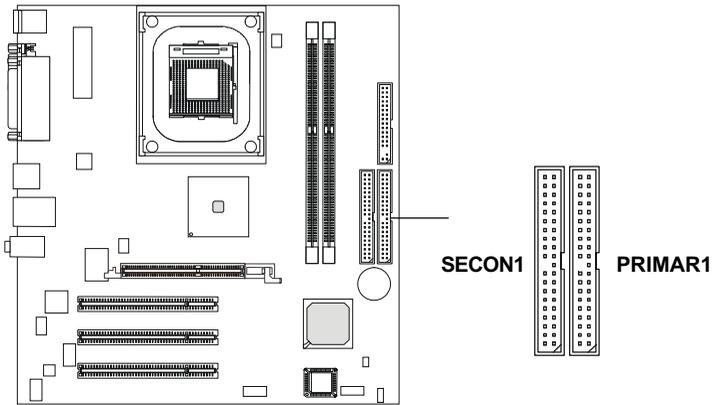
SECON1   PRIMAR1

PRIMAR1 (Primary IDE Connector)

The first hard drive should always be connected to PRIMAR1. PRIMAR1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

SECON1 (Secondary IDE Connector)

SECON1 can also connect a Master and a Slave drive.

> 💡 **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.*

CD-In Connector: JCD1

The connector is for CD-ROM audio connector.

Aux Line-In Connector: JAUX1

The connector is for DVD add-on card with Line-in connector.
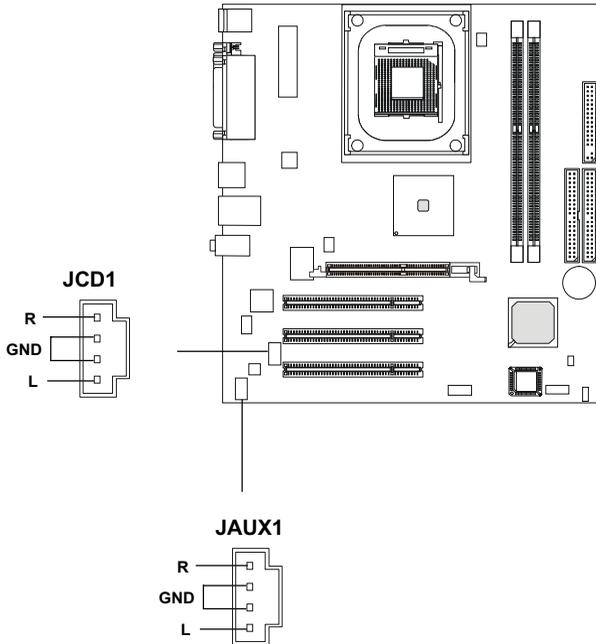
Fan Power Connectors: C_FAN1/S_FAN1

The C_FAN1 (processor fan) and S_FAN1 (system 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.
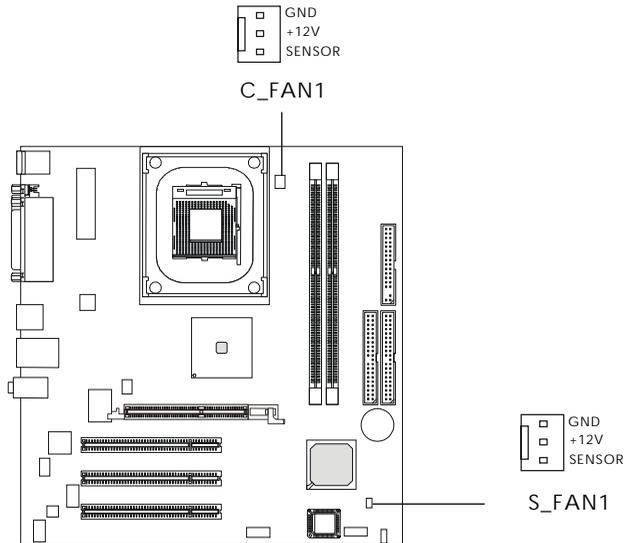
Note: *Always consult the vendor for proper CPU cooling fan.*

Front Panel Connector: JFP1

The mainboard provides a front panel connector for establishing electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
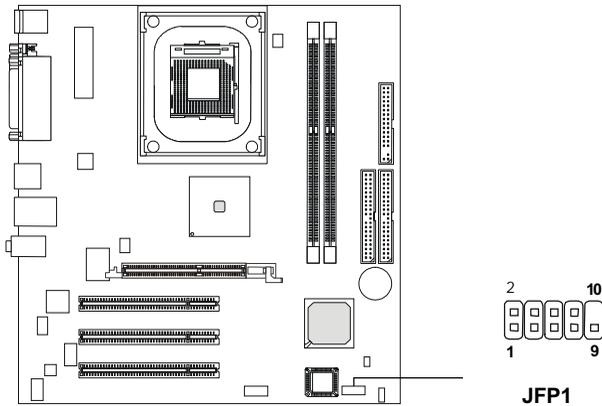

JFP1 Switch/LED Front Panel Electrical Connection

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up to +5V
2	FP PWR/SLP	MSG LED pull-up to +5V
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up to +5V
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up to +5V
7	RST_SW_P	Reset Switch high reference pull-up to +3.3V
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

Front USB Connector: JUSB1

The mainboard comes with a USB 2.0 & 1.1 compliant connector, JUSB1. USB 2.0 technology increases the data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals, such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**. JUSB1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.
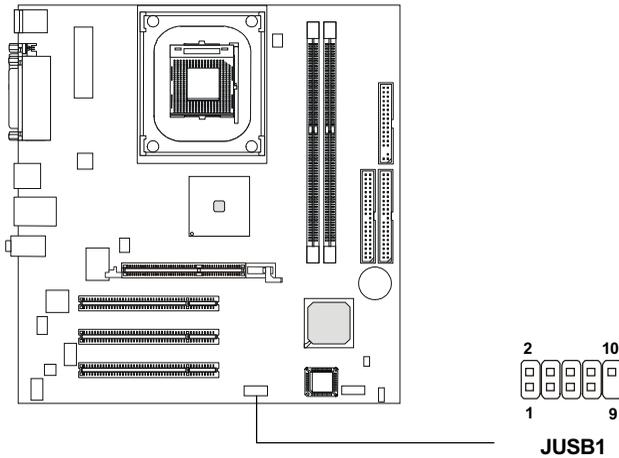
JUSB1

JUSB1 Pin Definition

Pin	Description	Pin	Description
1	USBPWR	2	USBPWR
3	USBP0-	4	USBP1-
5	USBP0+	6	USBP1+
7	GND	8	GND
9	NC	10	USBOC

Stereo Speaker Connector: JSP1

The connector is used to connect stereo speakers.

JSP1 Pin Definition

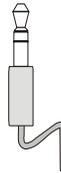| PIN	SIGNAL
1	Right Speaker
2	GND
3	Left Speaker

1

3
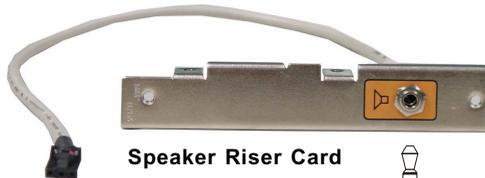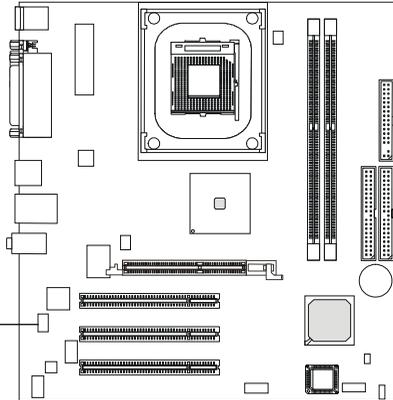
JSP1

Connected to JSP1

Speaker Riser Card (optional)

Connected to stereo speakers

Jumpers

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

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:

Keep CMOS   Clear CMOS

JBAT1
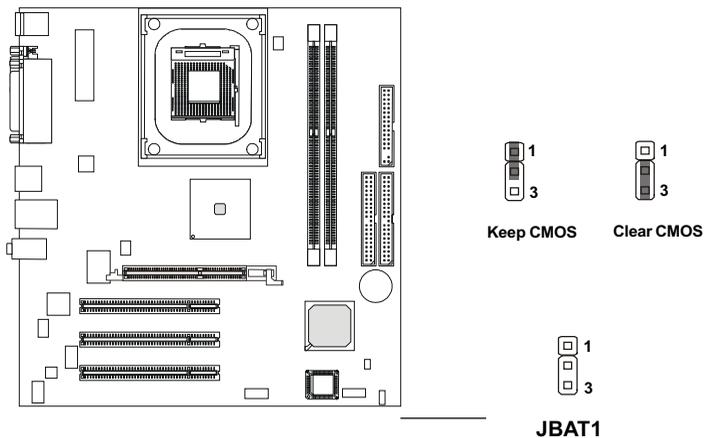
> Note: To clear CMOS, first make the #2-3 pin short connected after the system is off. And then power on the system and short connect #1-2 pin before entering the BIOS (Standard CMOS Features) to clear data.
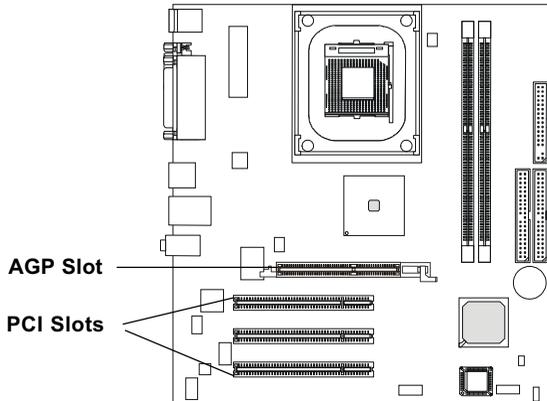
Clear BIOS Password Jumper: JPWD1

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

GPIO 2
3.3V Standby 1

JPWD1

Clear   Normal
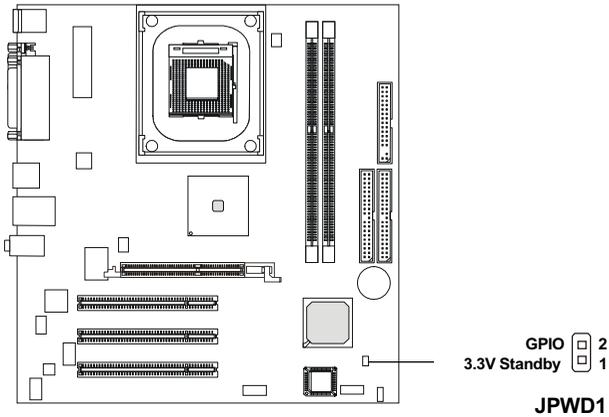
Slots

The motherboard provides three 32-bit Master PCI bus slots and one AGP slot.

AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card. 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. The slot only supports **1.5V 2x/4x** AGP card.

PCI Slots

Three 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.

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 INT A# ~ INT H# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT F#	INT G#	INT H#	INT E#
PCI Slot 2	INT G#	INT H#	INT E#	INT F#
PCI Slot 3	INT D#	INT A#	INT B#	INT C#
LAN Controller	INT H#	INT E#		