1 Getting Started

Thank you for purchasing the MS-6577 v2.X Micro ATX mainboard. The MS-6577 is based on Intel® Brookdale-G/GE & ICH4 chipsets for optimal system efficiency. Designed to fit the advanced Intel® P4 Williamette and Northwood processors in 478-pin package, the MS-6577 delivers a high performance and professional desktop platform solution.

TOPICS

Mainboard Specification

CPU

➤ Supports Socket 478 for Intel® P4 Williamette and Northwood processors.
➤ Supports 1.4GHz to 2.8GHz or higher speed.

Chipset

➤ Intel® 845G/GE chipset
- FSB 400/533MHz.
- Multiplexed AGP interface.
- Integrated 3D/2D graphic core.
- Supports DDR 333 (for 845GE only)/266/200 memory.

➤ Intel® ICH4 chipset
- Hi-Speed USB (USB2.0) controller, 480Mb/sec.
- AC'97 3 Codec supported.
- Supports both ACPI and legacy APM power management.

Main Memory

➤ Supports four memory banks using two 184-pin unbuffered DIMM.
➤ Maximum memory size is 2GB without ECC (1GB/slot).
➤ Supports 2.5V DDR DIMM.

Slots

➤ Three 32-bit Master PCI (Peripheral Component Interconnect) Bus slots.
➤ One AGP (Accelerated Graphics Port) slot.

Onboard IDE

➤ An IDE controller on the ICH4 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA100/66 operation modes.
➤ Can connect up to four IDE devices.

Onboard Peripherals

➤ Onboard peripherals include:
- 2 PS/2 Ports
- 6 USB Ports (Rear x 4 /Front x 2)
- 1 Parallel Port + 1 Serial Port + 1 VGA Port
- 2 IEEE1394 Ports (Rear x 1 /Front x 1)

- 1 RJ-45 LAN Port
- Vertical Audio Ports (Line_in, Line_out, Mic_in)
- IDE x 2 (ATA100), Floppy x 1, ATX power connector
- AUX_IN x 1/ MIC_IN x 1
- MSI S-Bracket connector x 1
- Internal speaker pinheader x 1
- Front panel pinheader x 1
- CPU_FAN x 1/ SYS_FAN x 1
- Clear password pinheader x 1
- Clear CMOS pinheader x 1

Audio

➤ AC'97 link controller integrated in ICH4.
➤ Six-channel software codec RealTek ALC 650 (Optional).

LAN

➤ RealTek RTL8101L chip
- Integrated Fast Ethernet MAC and PHY in one chip.
- Supports 10 Mb/s and 100 Mb/s.
- Compliance with PCI v2.2.
- Supports ACPI Power Management.

BIOS

➤ PnP (Plug & Play) BIOS to detect peripheral devices and expansion cards automatically.
➤ DMI (Desktop Management Interface) function to record motherboard specifications.

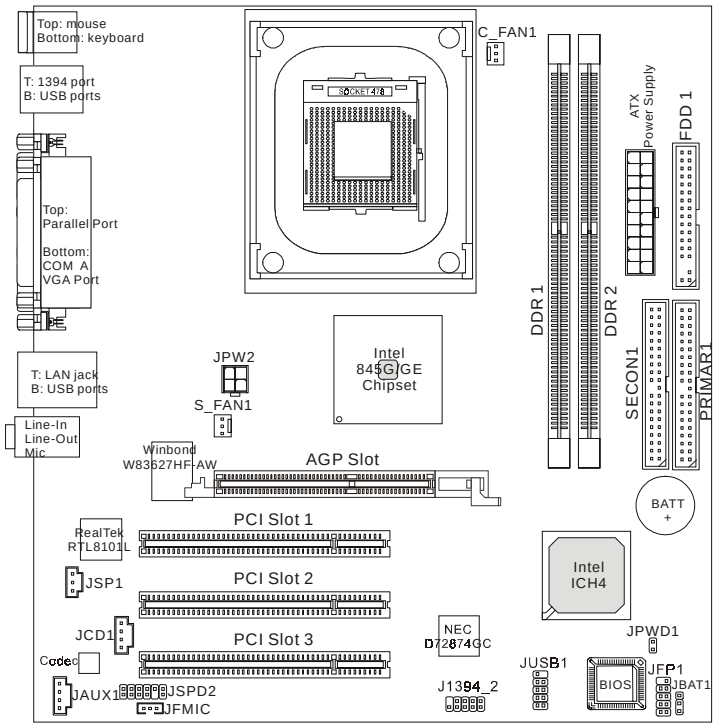
Dimension

➤ Micro-ATX Form Factor: 9.6" x 9.1"

Mounting

➤ 6 mounting holes.

Mainboard Layout



MS-6577 v2.X Micro ATX Mainboard

MSI Reminds You...

Enabling the functionality of Hyper-Threading Technology for your computer system requires ALL of the following platform Components:

**CPU: An Intel® Pentium® 4 Processor with HT Technology;*

**Chipset: An Intel® Chipset that supports HT Technology;*

**BIOS: A BIOS that supports HT Technology and has it enabled; and*

**OS: An operating system that supports HT Technology.*

For more information on Hyper-threading Technology, go to:

http://www.intel.com/info/hyperthreading

Quick Components Guide

Component	Function	Reference
Socket 478	Installing CPU	See p. 2-2
DDR1~2	Installing DDR modules	See p. 2-6
ATX Power Connector	Installing power supply	See p. 2-8
IEEE 1394 Port	Connecting to 1394 devices	See p. 2-10
USB Ports	Connecting to USB devices	See p. 2-10
COM A	Serial port connector	See p. 2-11
VGA Connector	Connecting to VGA monitors	See p. 2-11
LPT1	Parallel port connector	See p. 2-12
RJ-45 LAN Jack	Connecting to LAN devices	See p. 2-13
FDD1	Floppy disk drive connector	See p. 2-14
JSP1	Internal speaker connector	See p. 2-14
PRIMAR1/SECON1	Hard disk connectors	See p. 2-15
JCD1	CD-in connector	See p. 2-16
JAUX1	AUX-in connector	See p. 2-16
C_FAN1/S_FAN1	Fan power connectors	See p. 2-17
JFP1	Front panel connector	See p. 2-18
JUSB1	Front USB connector	See p. 2-19
JFMIC	Front microphone connector	See p. 2-20
JSPD2	S-Bracket connector	See p. 2-21
J1394_2	IEEE 1394 connector	See p. 2-22
JBAT1	Clear CMOS jumper	See p. 2-23
JPWD1	Clear BIOS password jumper	See p. 2-24
AGP Slot	Connecting to VGA cards	See p. 2-25
PCI Slots	Connecting to expansion cards	See p. 2-25

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.

TOPICS

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 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

MSI Reminds You...

Overheating

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

Replacing the CPU

While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

CPU Installation Procedures for Socket 478

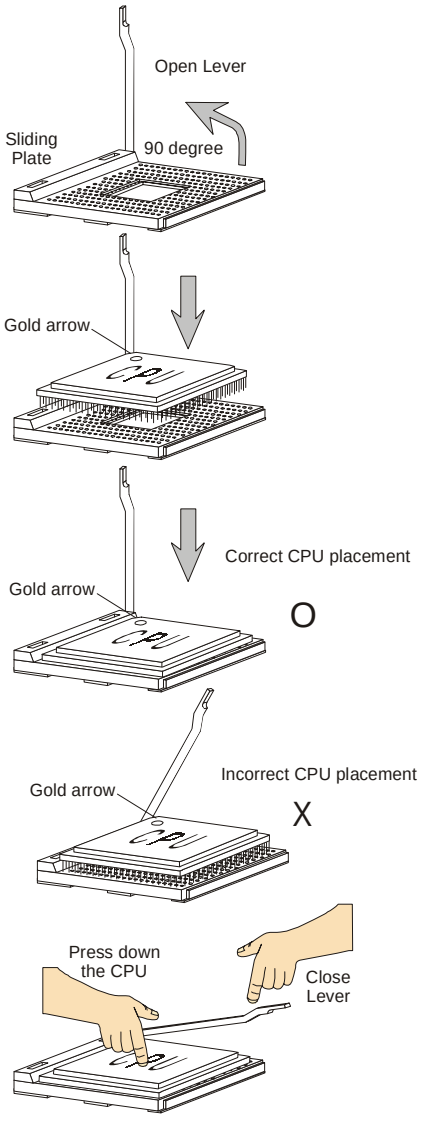
1. Please turn off the power and unplug the power cord before installing the CPU.

2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.

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

4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.

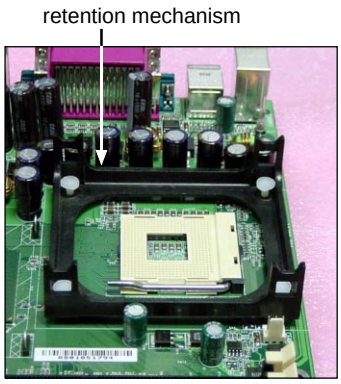
5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



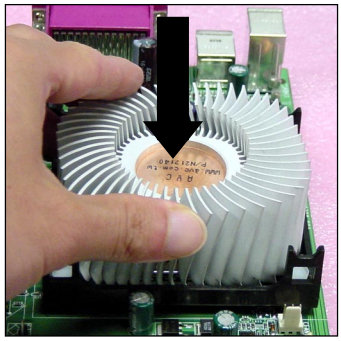
Installing the CPU Fan

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. Follow the instructions below to install the Heatsink/Fan:

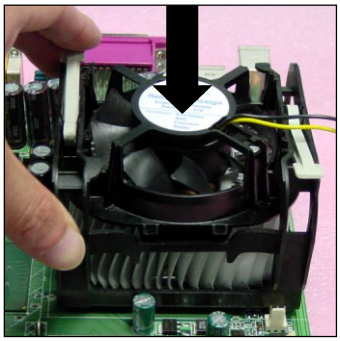
1. Locate the CPU and its retention mechanism on the motherboard.



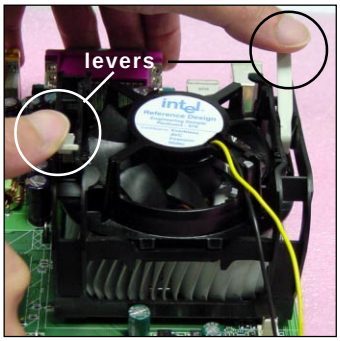
2. Position the heatsink onto the retention mechanism.



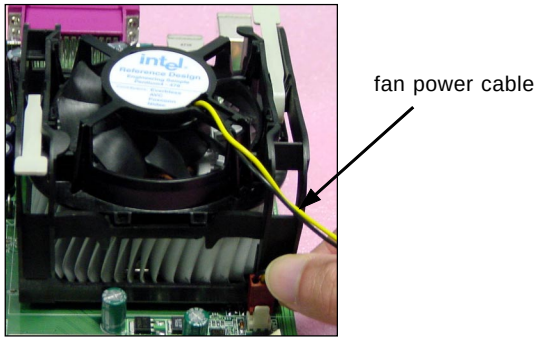
3. Mount the fan on top of the heatsink. Press down the fan until its four clips get wedged in the holes of the retention mechanism.



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



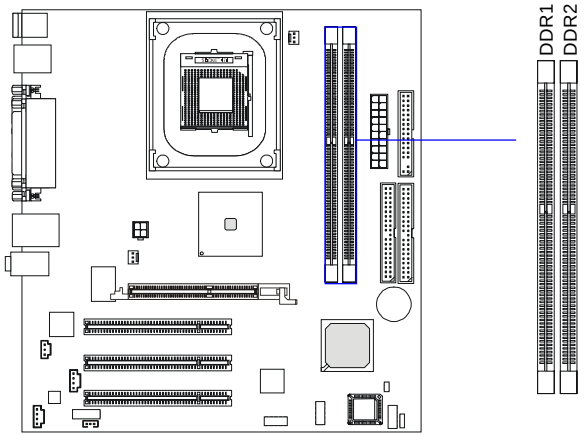
5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the board.



NOTES

Memory

The mainboard provides 2 slots for 184-pin, 2.5V DDR DIMM with 4 memory banks. You can install DDR333/PC2700 (for 845GE chipset only), DDR266/PC2100, or DDR200/PC1600 DDR SDRAM modules on the DDR DIMM slots (DDR 1~2). To operate properly, at least one DIMM module must be installed.



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.

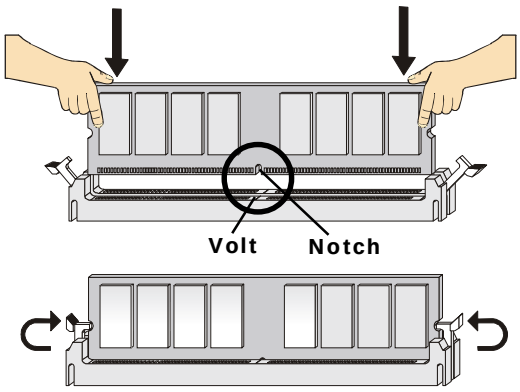
You can install memory modules in any combination as follows:

Slot	Memory Module	Total Memory
DIMM 1 (Bank 0 & 1)	S/D	64MB~1GB
DIMM 2 (Bank 2 & 3)	S/D	64MB~1GB
Maximum System Memory Supported		64MB~2GB

S: Single Side **D: Double Side**

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



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

Power Supply

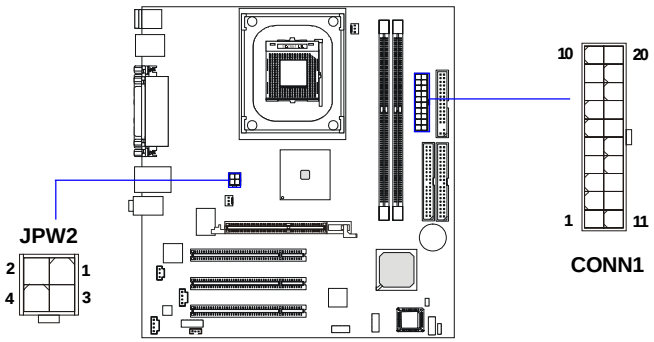
The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Supply: 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. 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 12V Power Connector: JPW2

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



JPW2 Pin Definition

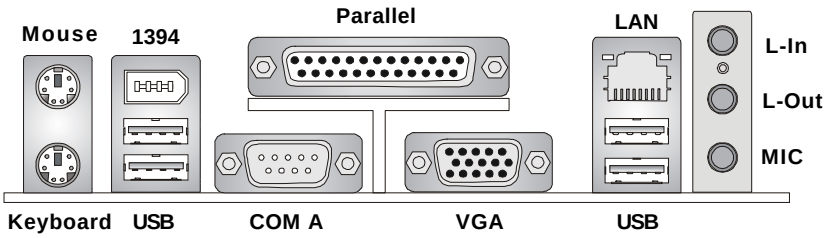
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

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

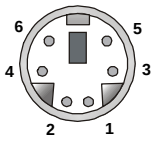
Back Panel

The Back Panel provides the following connectors:



Mouse/Keyboard Connector

The mainboard provides a standard PS/2® mouse/keyboard mini DIN connector for attaching a PS/2® mouse/keyboard. You can plug a PS/2® mouse/keyboard directly into this connector. The connector location and pin assignments are as follows:



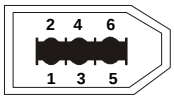
PS/2 Mouse/Keyboard (6-pin Female)

Pin Definition

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

IEEE 1394 Port

The 6-pin IEEE 1394 port is used to connect 1394-compatible external devices via 6-pin to 6-pin or 6-pin to 4-pin 1394 cables.



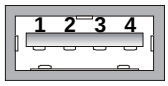
IEEE 1394 Port

Pin Definition

PIN	SIGNAL
1	PWR
2	GND
3	TPB-
4	TPB+
5	TPA-
6	TPA+

USB Ports

The back panel provides four UHCI (Universal Host Controller Interface) USB (Universal Serial Bus) 2.0 ports for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug USB devices directly into the ports.



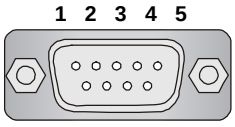
USB Port

Pin Definition

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

Serial Port: COM A

The mainboard provides one 9-pin male DIN serial port COM A. You can attach a serial mouse or other serial devices to this port.



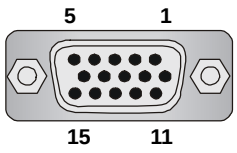
9-Pin Serial Port

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

VGA DB 15 Pin Connector

One DB 15-pin VGA connector is provided for connection to a VGA monitor.



DB 15-Pin Female Connector

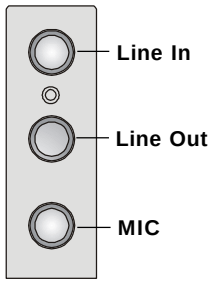
Pin Definition

Analog Video Display Connector (DB-15S)	
PIN	**SIGNAL DESCRIPTION**
1	Red
2	Green
3	Blue
4	Not used
5	Ground
6	Ground
7	Ground
8	Ground
9	Power
10	Ground
11	Not used
12	SDA
13	Horizontal Sync
14	Vertical Sync
15	SCL

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 microphones.

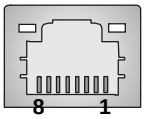
1/8" Stereo Audio Connectors



RJ-45 LAN Jack

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). You can connect a network cable to the LAN jack.

RJ-45 LAN Jack

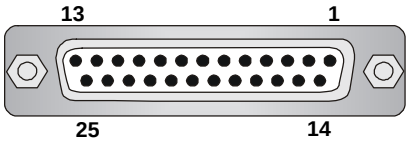


Pin Definition

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

Parallel Port Connector: LPT1

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



Pin Definition

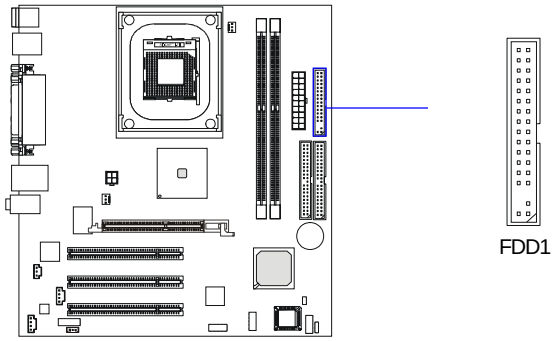
PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select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

Connectors

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

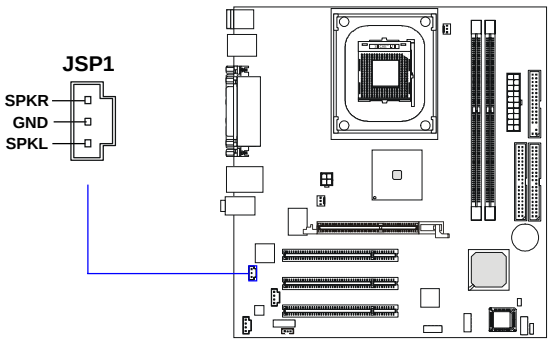
Floppy Disk Drive Connector: FDD1

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



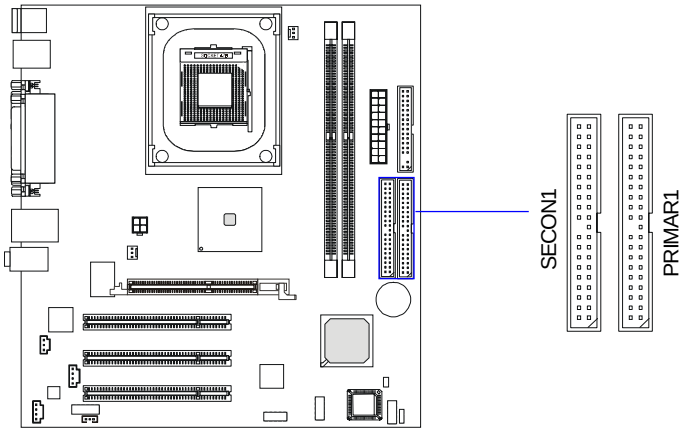
Internal Speaker Connector: JSP1

This connector is used to connect the internal speaker if available.



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 DMA33/66/100 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices. These connectors support the provided IDE hard disk cable.



PRIMAR1 (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.

SECON1 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

TIP:

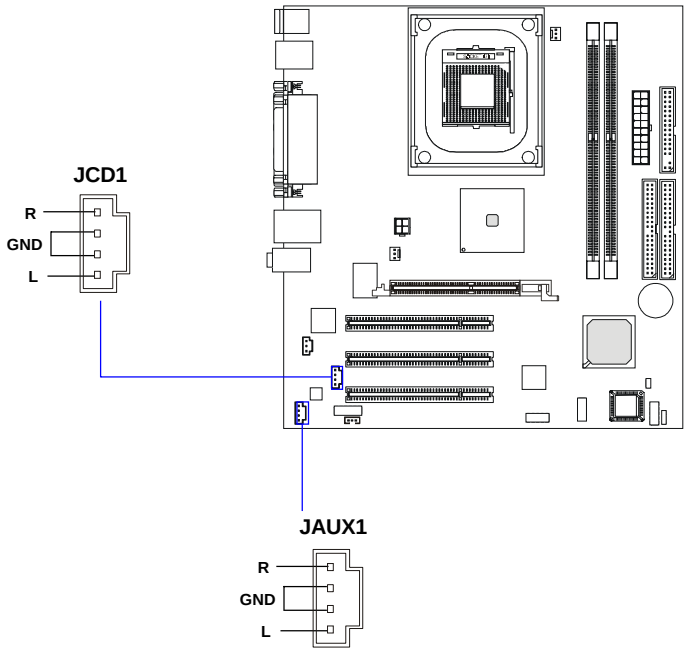
If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

CD-In Connector: JCD1

The connector is for CD-ROM audio connector.

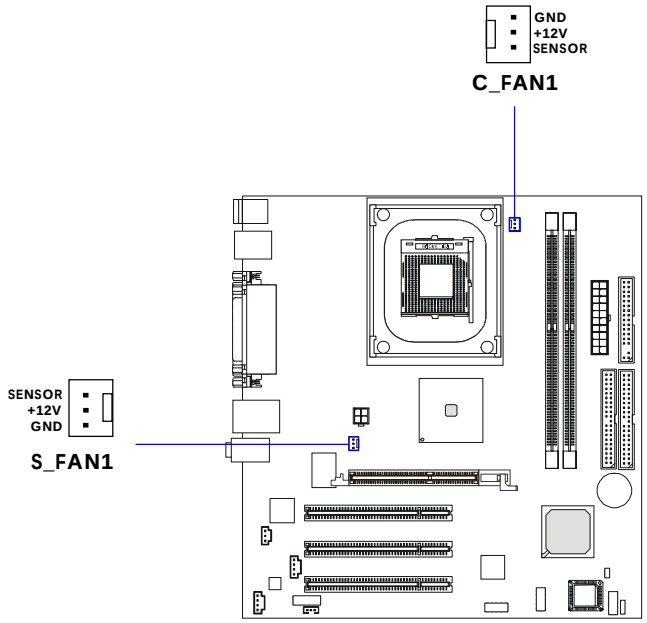
Aux Line-In Connector: JAUX1

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



Fan Power Connectors: C_FAN1/S_FAN1

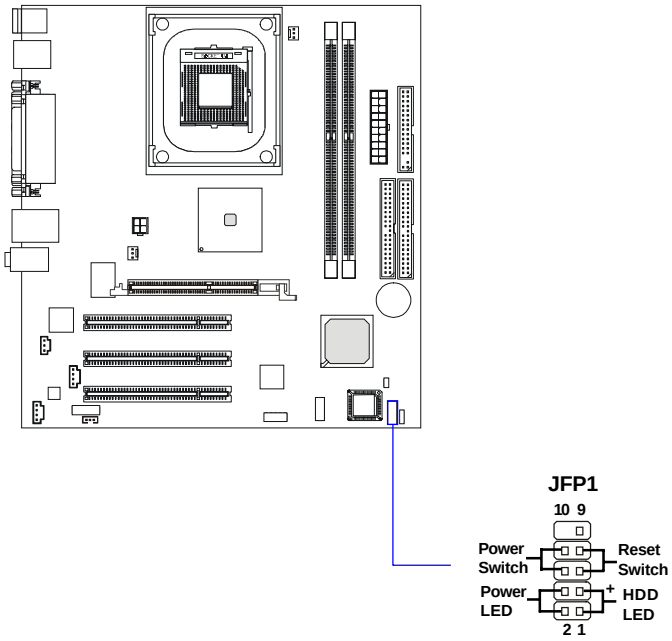
The C_FAN1 (processor fan) & S_FAN1 (system fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND.



Note: *Always consult the vendor for proper CPU cooling fan.*

Front Panel Connector: JFP1

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

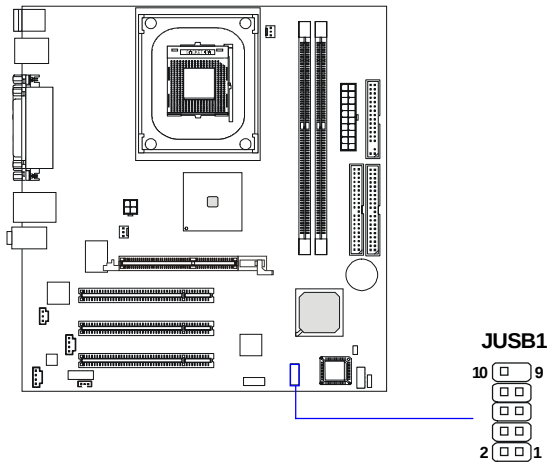


Pin Definition

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	NC	No connection

Front USB Connector: JUSB1

The mainboard provides one USB 2.0 pinheader for connection to USB devices. USB 2.0 technology increases 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**.

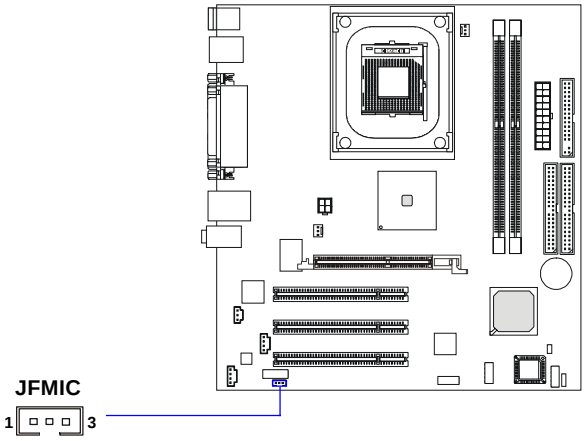


Pin Definition

Pin	Description	Pin	Description
1	VCC	2	VCC
3	USB P4-	4	USB P5-
5	USB P4+	6	USB P5+
7	GND	8	GND
9	KEY	10	NC

Front Microphone Connector: JFMIC

This connector is used to connect the front panel microphone if available.



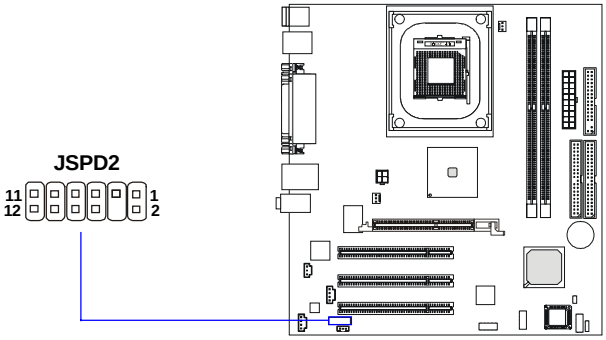
Pin Definition

PIN	SIGNAL	DESCRIPTION
1	FMIC	Front Microphone
2	GND	Ground
3	VCC	VCC5V

S-Bracket Connector: JSPD2

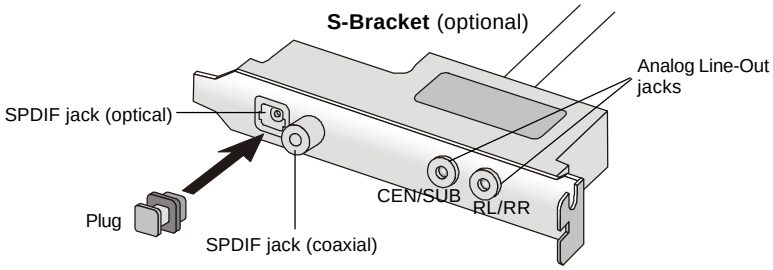
This connector allows you to connect the optional S-Bracket for Sony & Philips Digital Interface (SPDIF). The S-Bracket offers 2 SPDIF jacks for digital audio transmission (one for optical fiber connection and the other for coaxial), and 2 analog Line-Out jacks for 4-channel audio output.

To attach the fiber-optic cable to optical SPDIF jack, you need to remove the plug from the jack first. The two SPDIF jacks support *SPDIF output* only. For more information on the S-Bracket, refer to *Appendix. Using 4- or 6-Channel Audio Function*.



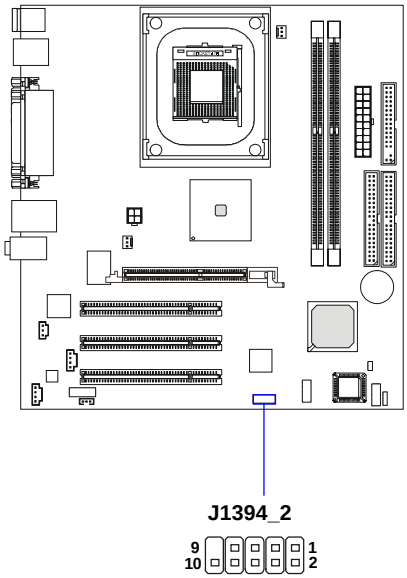
Pin Definition

PIN	SIGNAL	DESCRIPTION	PIN	SIGNAL	DESCRIPTION
1	VCC5	VCC 5V	2	VDD3	VDD 3.3V
3	SPDFO	S/PDIF output	4	(No Pin)	Key
5	GND	Ground	6	SPDFI	S/PDIF input
7	LFE-OUT	Audio bass output	8	SOUT-R	Audio right surrounding output
9	CET-OUT	Audio center output	10	SOUT-L	Audio left surrounding output
11	GND	Ground	12	GND	Ground



IEEE 1394 Connector: J1394_2

The mainboard provides one 1394 pinheader that allows you to connect additional IEEE 1394 devices.



Pin Definition

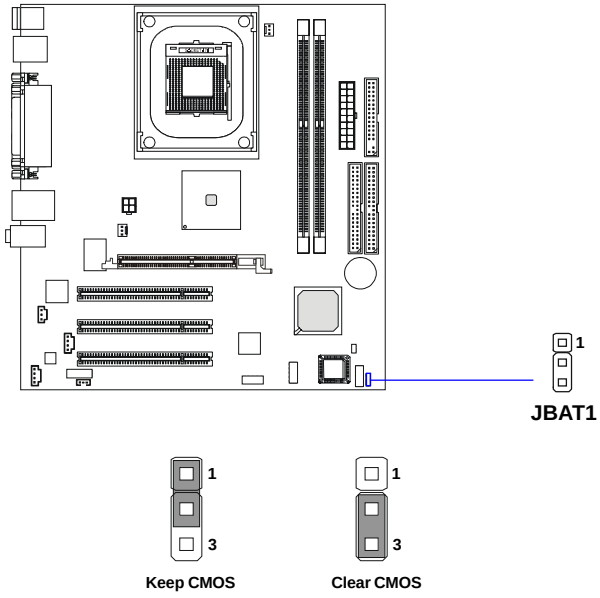
PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground

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

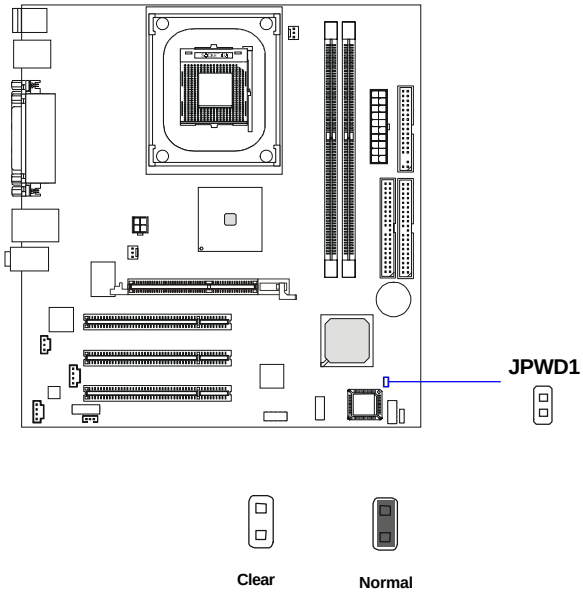
There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. That battery has long life time for at least 5 years. If you want to clear the system configuration,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



WARNING! *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.*

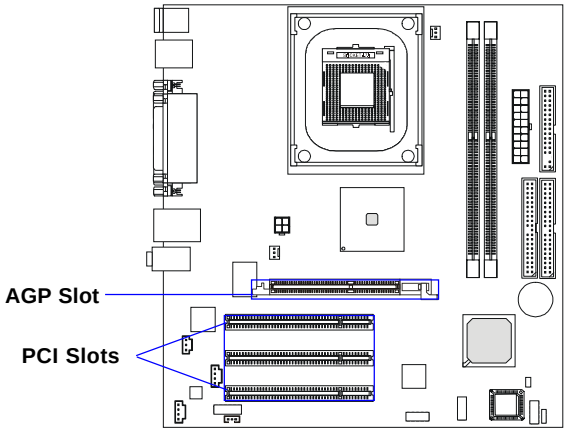
Clear BIOS Password Jumper: JPWD1

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



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 and provides three levels of throughputs: 1x (266Mbps), 2x (533Mbps) and 4x (1.07Gbps). Please especially note that, for enhanced 3D visualization, Intel® 845 chipset supports the latest graphics devices through **1.5V AGP 4X** interface. **No 3.3V AGP 2X interface is supported**. Installing 3.3V AGP 2X cards on Intel® 845 based mainboards will damage the mainboards.

PCI (Peripheral Component Interconnect) Slots

The 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, acronym 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#		
AGP Slot	INT A#	INT B#		
1394 Controller	INT H#			