
Getting Started **1**

Thank you for purchasing the MEDION 3500 (MS-6513 v1.X) Micro ATX mainboard. The MEDION 3500 is based on Intel® Brookdale & ICH2 chipsets for optimal system efficiency. Designed to fit the advanced Intel® Pentium® 4 processors in the 478 pin package, the MEDION 3500 delivers a high performance and professional desktop platform solution.

TOPICS

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Chapter 1

Mainboard Specification

CPU

- Supports Intel® Pentium® 4 processor in 478 pin package.
- Supports 1.5GHz, 1.6GHz, 1.7GHz, 1.8GHz, 1.9GHz, 2GHz, 2.1GHz, 2.2GHz and up.

Chipset

- Intel® 845 chipset (593 FC-BGA)
 - Supports DDR SDRAM at 200/266MHz operation (DDR200/DDR266).
 - AGTL+ host bus with integrated termination supporting 32-bit host addressing.
 - 1.5V AGP interface with 4x data transfer and 4x fast write capability.
 - 8-bit, 66MHz 4x hub interface to the Intel ICH2.
- Intel® ICH2 chipset (360 EBGA)
 - Upstream hub interface for access to the Intel MCH.
 - 2-channel Ultra ATA/100 Bus Master IDE controller.
 - USB controller 1.1 (expanded capabilities for 4 ports).
 - I/O APIC.
 - SMBus controller.
 - FWH interface.
 - LPC interface.
 - AC'97 2.1 interface.
 - PCI 2.2 interface.
 - Integrated system management controller.

Main Memory

- Supports four memory banks using two 184-pin DDR DIMMs.
- Supports up to 2GB PC2100/PC1600 DDR SDRAMs.
- Supports 2.5v DDR SDRAM.

Slots

- One AGP (Accelerated Graphics Port) 4x slot (1.5V only).
- Three PCI 2.2 32-bit Master PCI Bus slots. The third PCI can support 2 Master devices (support 3.3V/5V PCI bus interface).



Note: The AGP slot **DOES NOT support 3.3V AGP card**. Use of 3.3V AGP card may cause damage to the mainboard.

Getting Started

On-Board IDE

- An IDE controller on the ICH2 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 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
 - 2 serial ports (COM A + COM B1).
 - 1 parallel port supports SPP/EPP/ECP mode.
 - 4 USB ports (Rear * 2/Front * 2).
 - 1 RJ-45 LAN jack.
 - 1 audio/game port.

Audio (optional)

- C-Media CMI8738 / PCI-6ch supports 2/4/6 ch speaker.

Network

- Realtek RTL8100BL single chip fast 10/100 Mb/s Ethernet controller.

BIOS

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.

Dimension

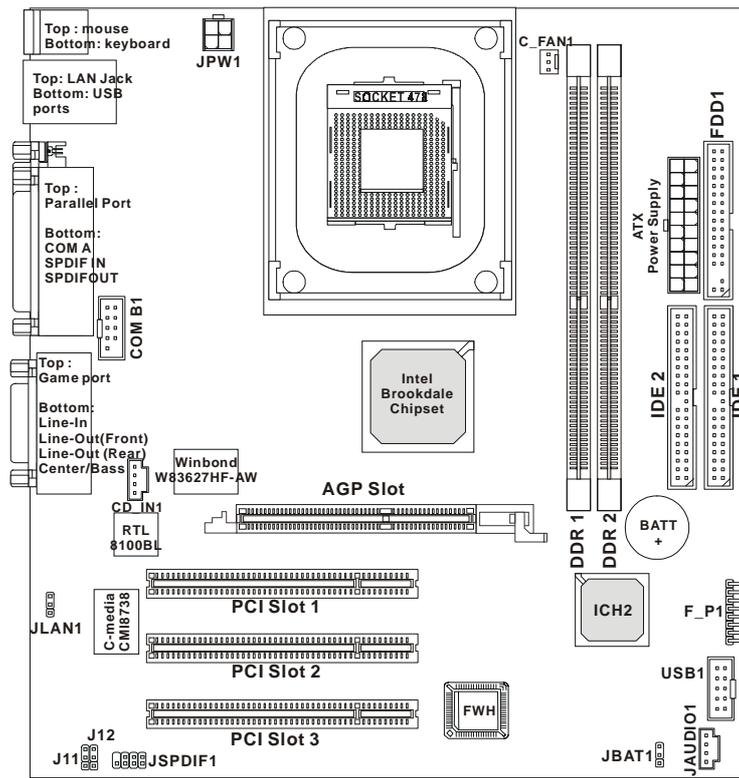
- Micro ATX Form Factor: 24.4cm x 22.4cm.

Mounting

- 6 mounting holes.

Chapter 1

Mainboard Layout



MEDION 3500 (MS-6513 v1.X) Micro ATX Mainboard

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.

TOPICS

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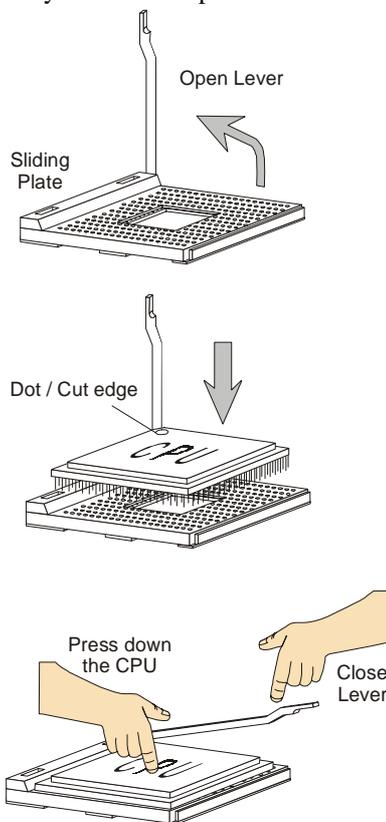
Chapter 2

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.
2. Look for the dot/cut edge. The dot/cut edge should point towards the lever pivot. The CPU will only fit in the correct orientation.
3. 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 finger pressing tightly on top of the CPU to make sure the CPU is properly & completely embedded into the socket.



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!

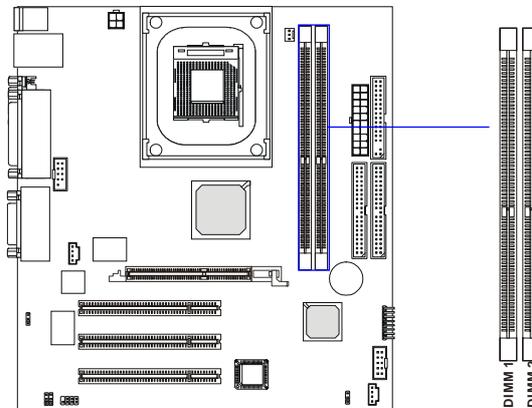
Overclocking

*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.***

Chapter 2

Memory

The mainboard provides 2 slots for 184-pin, 2.5V DDR DIMM with 4 memory banks. You can install DDR200/PC1600 or DDR266/PC2100 DDR SDRAM modules on the DDR DIMM slots (DIMM 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. Two types of DDR are available at the time of writing: PC1600 & PC2100. PC1600 DDR SDRAM running at 100MHz will produce about 1.6GB/s memory bandwidth. PC2100 running at 133MHz will produce 2.1GB/s memory bandwidth. 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.

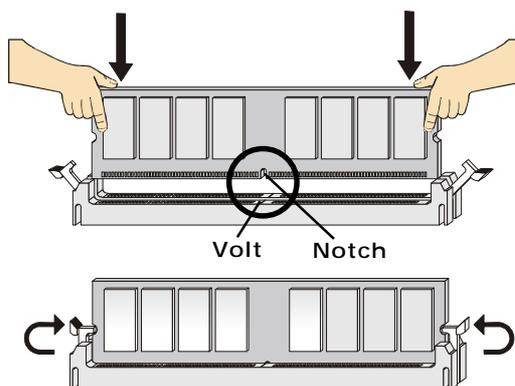
You can install memory modules in any combination as follows:

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.



How do I know if I have installed the memory modules correctly?

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

Chapter 2

Power Supply

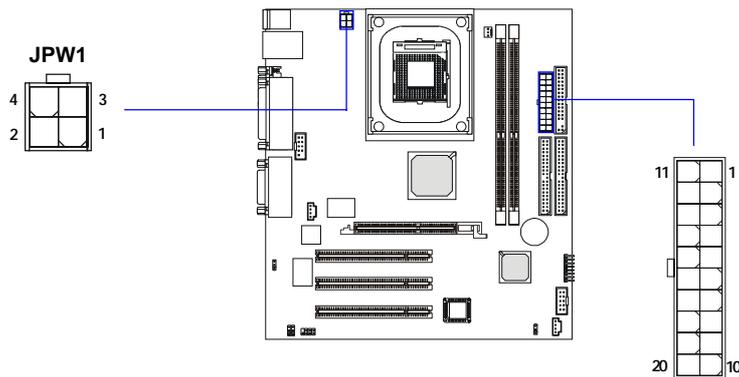
The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Connector

This connector allows you to connect to an ATX power supply. 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 12V Power Connector: JPW1

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



JPW1 Pin Definition

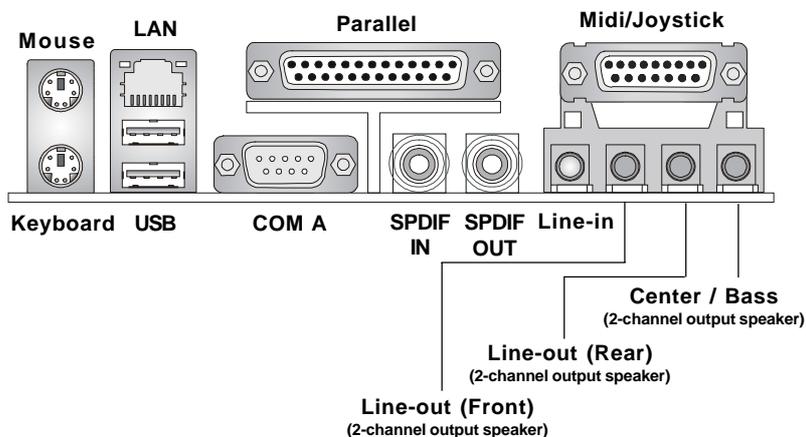
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

ATX Power Supply 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: JKBMS1

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

PS/2 Mouse (6-pin Female)

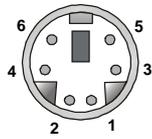
Pin Definition

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

Chapter 2

Keyboard Connector: JKBMS1

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.



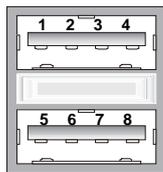
PS/2 Keyboard (6-pin Female)

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 the connector.



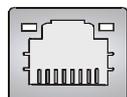
USB Ports

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

LAN (RJ-45) 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.

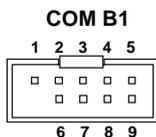
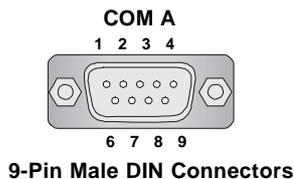


Pin Definition

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

Serial Port Connector: COM A & COM B1

The mainboard offers two 9-pin male DIN connectors for serial port COM A and COM B1. The ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to them.



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

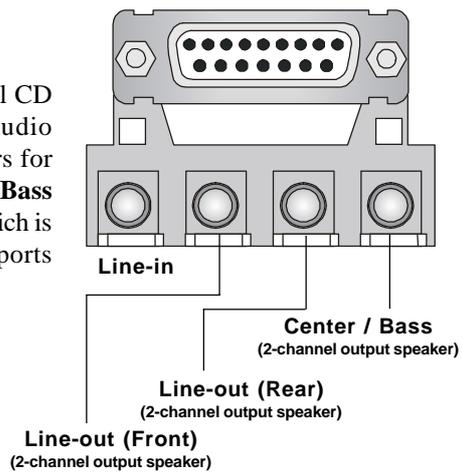
Chapter 2

Joystick/Midi Connectors

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

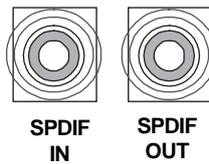
Audio Port Connectors

Line In is used for external CD player, tape player, or other audio devices. **Line Out** are connectors for speakers or headphones. **Center/Bass** is a connector for audio device which is used as a center speaker or supports bass effect.



SPDIF Connectors

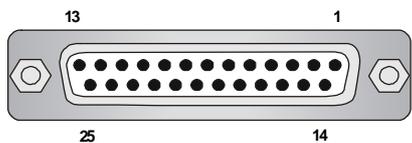
The SPDIF connectors provided on the back panel can be used to connect your digital audio equipment.



Hardware Setup

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

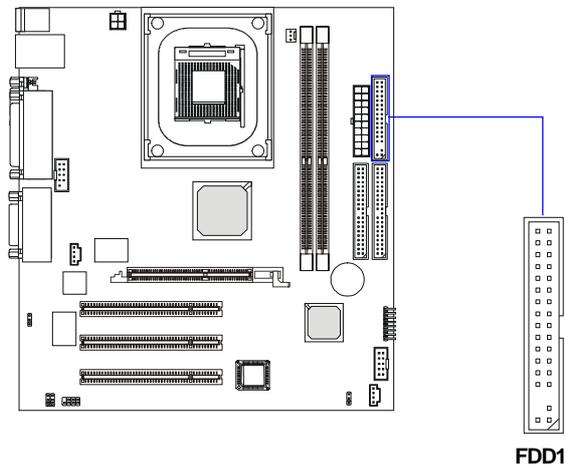
Chapter 2

Connectors

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

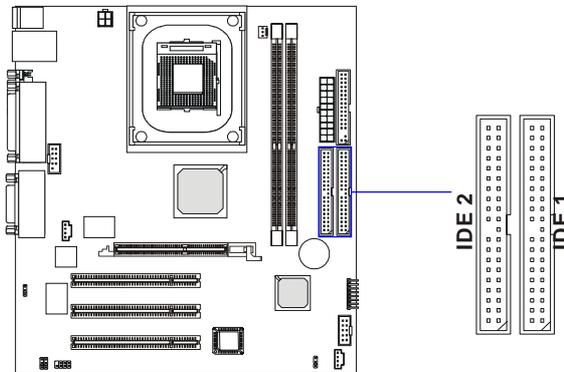
Floppy Disk Drive Connector: FDD1

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



Hard Disk Connectors: IDE1 & IDE2

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, 120MB Floppy (reserved for future BIOS) and other devices. These connectors support the provided IDE hard disk cable.



IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

 **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.

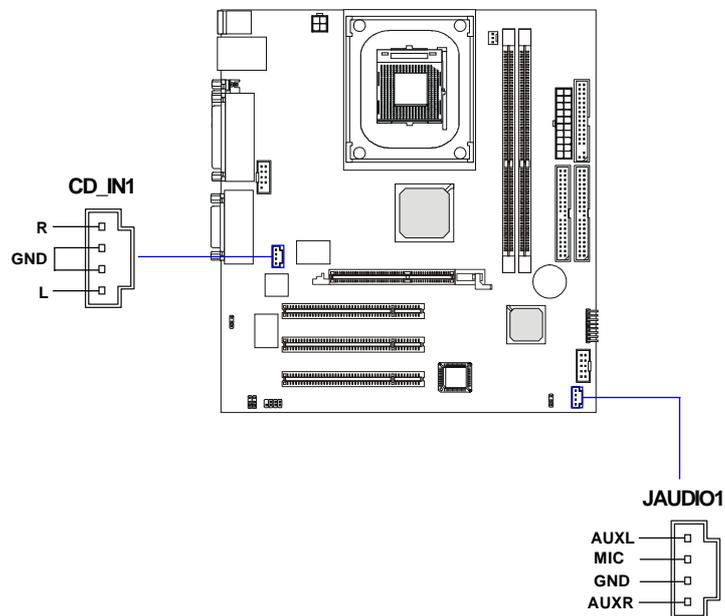
Chapter 2

CD-In Connector: CD_IN1

The connector is for CD-ROM audio connector.

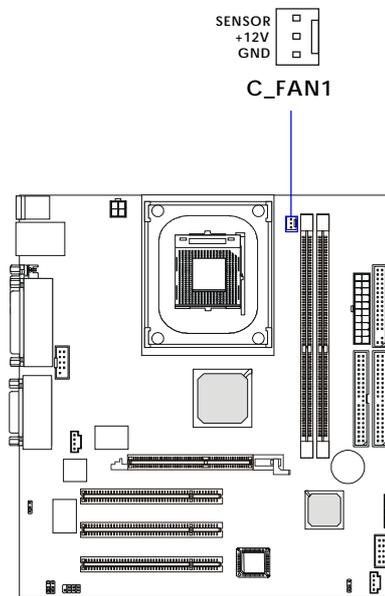
Front Audio Line-out Connector: JAUDIO1

The connector is for front audio output devices.



Fan Power Connectors: C_FAN1

The C_FAN1 (processor fan) supports 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.



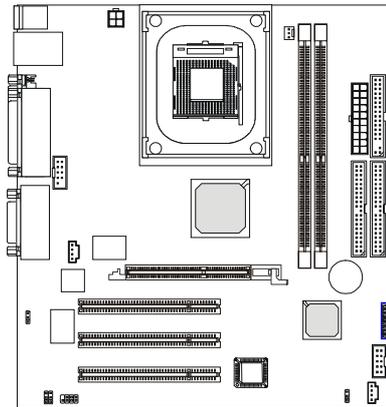
Note:

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 temperature.

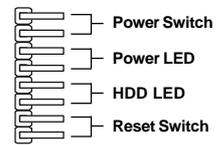
Chapter 2

Front Panel Connectors: F_P1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs



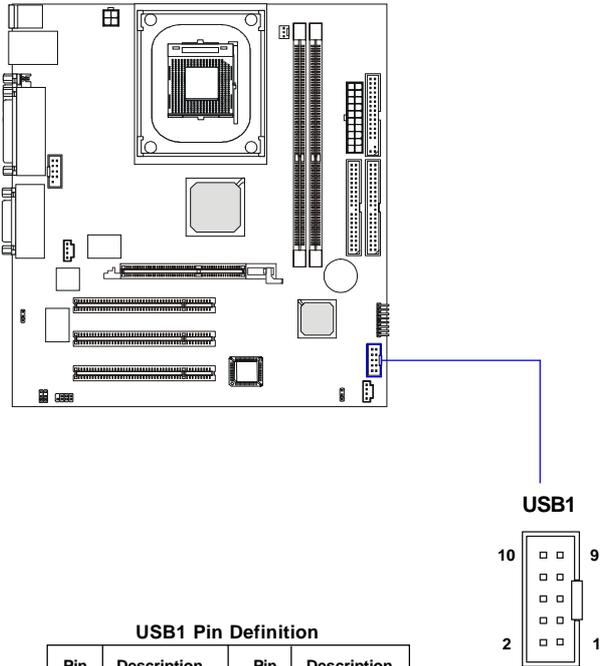
F_P1



Hardware Setup

Front USB Connector: USB1

The mainboard provides one front Universal Serial Bus connector for users to connect USB devices.



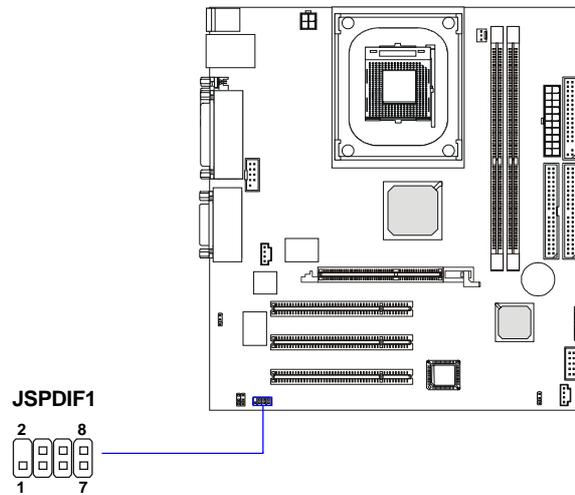
USB1 Pin Definition

Pin	Description	Pin	Description
1	USBPWR	2	GND
3	USBDT2-	4	GND
5	USBDT2+	6	USBDT3+
7	GND	8	USBDT3-
9	GND	10	USBPWR

Chapter 2

SPDIF Connector: JSPDIF1

The connector is used to connect an optional bracket for SPDIF (Sony & Philips Digital Interconnect Format) digital audio transmission.



JSPDIF1 Pin Definition

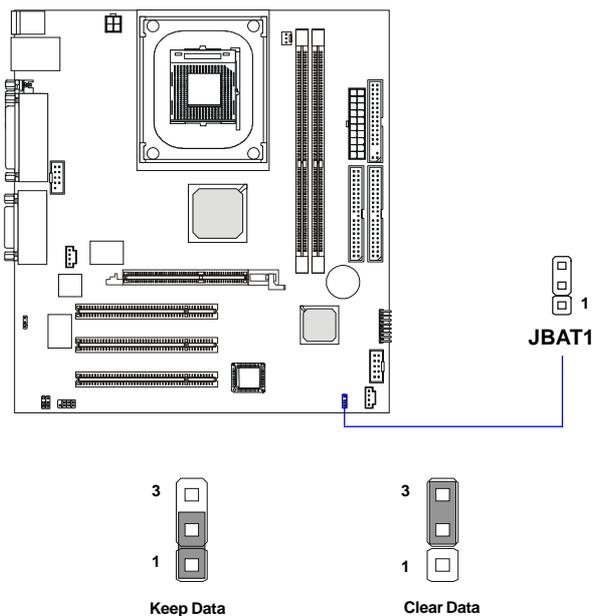
Pin	Description	Pin	Description
1	+12V	2	NC
3	NC	4	SPDIFO
5	SPDIF1	6	GND
7	SPDIF2	8	SPGPIO

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 these 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:

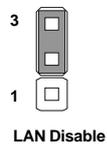
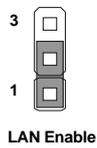
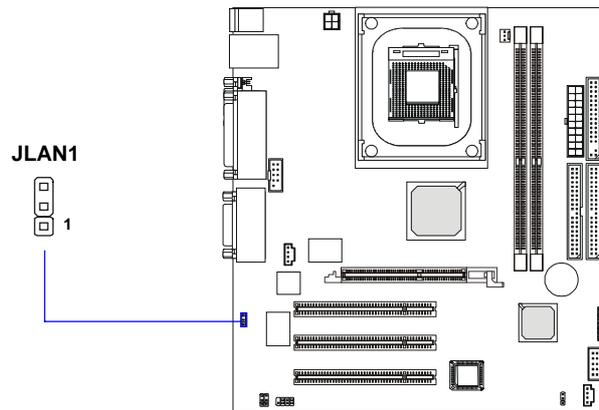


STOP
WARNING! You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Chapter 2

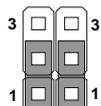
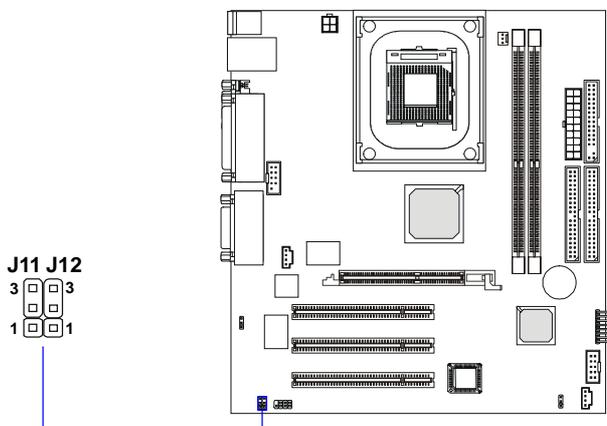
LAN Enable/Disable Jumper: JLAN1

This jumper is used to enable/disable the onboard LAN controller.

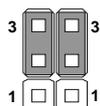


Center/Bass Setting Jumper: J11 & J12

The mainboard comes with two jumpers for users to set up their center or bass speaker. If you connect a pair of speakers which supports bass through the Center/Bass audio connector (*refer to P.2-11*), you may need to set up which speaker can output bass in order to get a better sound effect. If you merely connect a single center or bass speaker, the setting of these two jumpers will be invalid. Follow the instructions below to set up the speakers:



Set the center speaker to the left and woofer to the right.

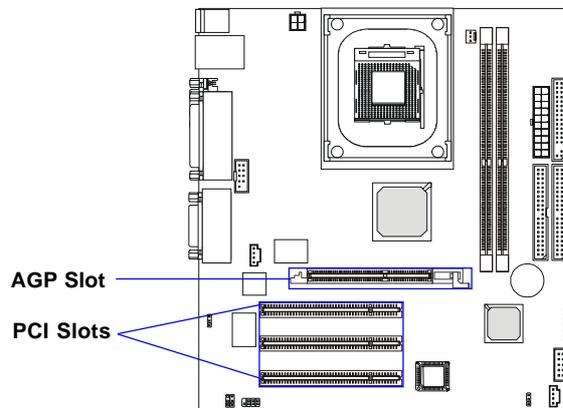


Set the center speaker to the right and woofer to the left.

Chapter 2

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 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.

Hardware Setup

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 D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
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#