



# *Getting Started*

Thank you for purchasing MS-7015 v1.X Micro-ATX mainboard. The MS-7015 v1.X is based on **VIA® Apollo KT600 & VT8237** chipsets, provides eight USB 2.0 ports for high-speed data transmission and C-Media 9761 chip for 6-channel audio output. Designed to fit the advanced **AMD® Athlon™, Athlon™ XP or Duron™** processors, the MS-7015 v1.X delivers a high performance and professional desktop platform solution.

## Mainboard Specifications

### CPU

- Supports Socket A (Socket-462) for AMD® Athlon™/Athlon™ XP /Duron™ processors.
- Supports up to 3200+.

### Chipset

- VIA® Apollo KT600 chipset
  - FSB @200/266/333/400 MHz.
  - Supports DDR200/266/333/400 DDR SDRAM.
  - AGP 8X and PCI advanced high performance memory controller.
- VIA® VT8237 chipset
  - Ultra DMA 66/100/133 master mode EIDE controller.
  - ACPI & PC2001 compliant enhanced power management.
  - Supports 8 USB 2.0 ports

### Main Memory

- Supports four memory banks using two 184-pin 200/266/333/400 DDR SDRAMs.
- DDR400 memory supports.
- Supports up to 2GB memory size.

### Slots

- One AGP (Accelerated Graphics Port) slot.
  - Supports AGP 8X.
- Three 32-bit PCI bus slots (support 3.3v/5v PCI bus interface).

### On-Board IDE

- An IDE controller on the VT8237 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA133/100/66 operation modes.
  - Can connect up to four Ultra ATA drives.

### On-Board Peripherals

- On-Board Peripherals include:
  - 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
  - 1 serial port (COM A)
  - 1 parallel port supports SPP/EPP/ECP mode

- 1 audio port (SPDIF-in, SPDIF-out, Line-in, Line-out)
- 8 USB 2.0 ports (Rear \* 4/ Front \* 4)
- 1394 port
- RJ45 LAN port

### **Audio**

- 6 channels software audio codec C-Media 9761.
  - Compliance with AC97 v2.2 Spec.
  - Meet PC2001 audio performance requirement.

### **LAN 10/100MBps (Optional)**

- VIA 6103
  - Integrated Ethernet MAC and PHY transceiver, auto-negotiation operation.
  - Supports 10MB/s and 100MB/s.
  - Compliance with PCI v2.2 and LAN on Motherboard (LOM) standard.

### **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.
- ACPI, 1.0a, APM1.2, PnP 1.0a, SMBIOS 2.3, USB 2.0, WFM 2.0, Overclock, Boot from USB device.

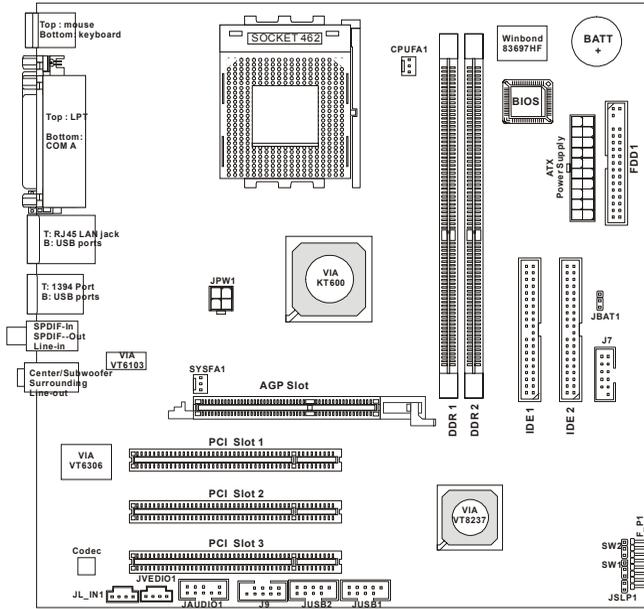
### **Dimension**

- ATX Form Factor: 24.5 cm (L) x 24.5 cm (W).

### **Mounting**

- 6 mounting holes.

# Mainboard Layout



MS-7015 v1.X Micro-ATX Mainboard

# 2

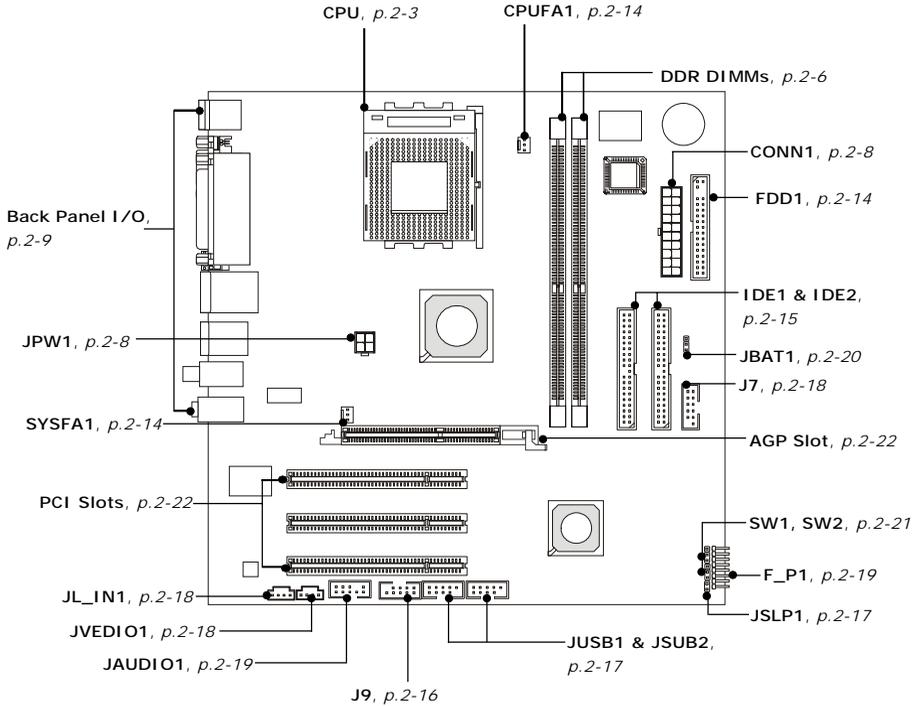


## *Hardware Setup*

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

# Quick Components Guide



## Central Processing Unit: CPU

The mainboard supports AMD® Athlon™, Athlon™ XP and Duron™ processors in the 462 pin package. The mainboard uses a CPU socket called Socket-462 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  
                           = 1.4 GHz

### Memory Speed/CPU Clock Support Matrix

Memory CPU Clock	DDR200	DDR 266	DDR 333	DDR 400
100MHz			X	X
133MHz	X			
166MHz	X			
200MHz	X			

: Yes.

X: Not available .



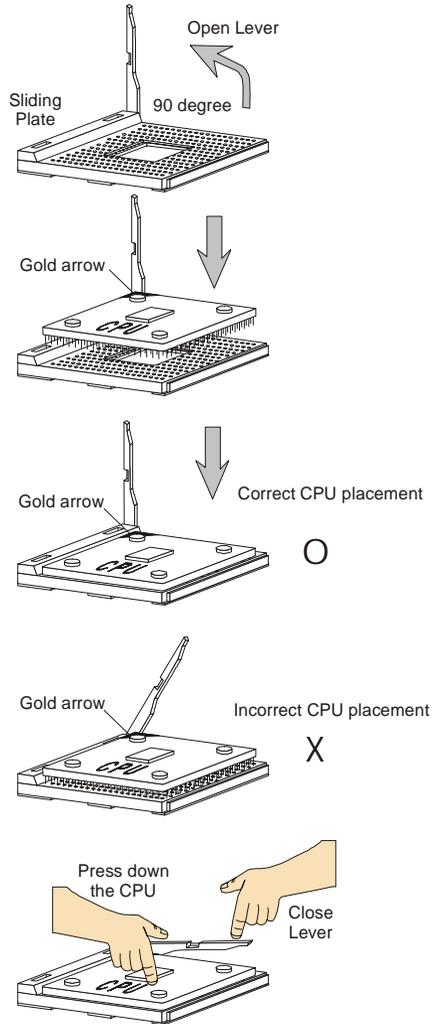
**WARNING!**

#### Thermal Issue for CPU

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

## CPU Installation Procedures for Socket 462

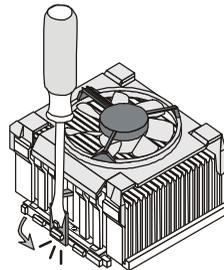
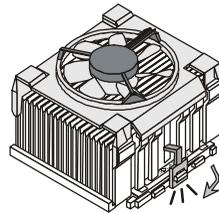
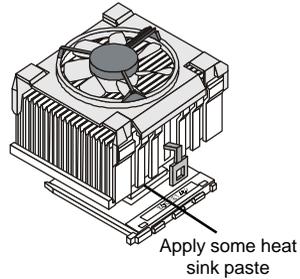
1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the gold arrow. The gold arrow should point towards the lever pivot. The CPU can only fit in the correct 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 AMD Athlon CPU (Socket 462) Cooler Set

The following instructions will guide you through the heat sink installation procedures. Please consult your agent for the proper CPU cooler set.

1. Position your CPU cooler set onto the CPU.
2. Use one end of the clip to hook the latch of the CPU sliding plate.
3. Hook the other latch to fix the cooling fan set. You may need a screw drive to press down the other side of the clip.
4. Connect the fan to the power supply connector provided on your mainboard.



### **MSI Reminds You...**

*Please apply some heat sink paste on top of CPU to dissipate the heat more effectively.*

## Memory

The mainboard provides 2 slots for 184-pin DDR SDRAM DIMM (Double In-Line Memory Module) modules and supports the memory size up to 2GB. You can install PC3200/DDR400, PC2700/DDR333, PC2100/DDR266 or PC1600/DDR200 modules on the DDR DIMM slots (DDR 1~2).



**DIMM1 & DIMM2**

### 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 DIMM Module Combination

Install at least one DIMM module on the slots. Memory modules can be installed on the slots in any order. You can install either single- or double-sided modules to meet your own needs.

Memory modules can be installed 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
<b>Maximum System Memory Supported</b>		64MB~2GB

**S: Single Side**

**D: Double Side**

## Installing DDR Modules

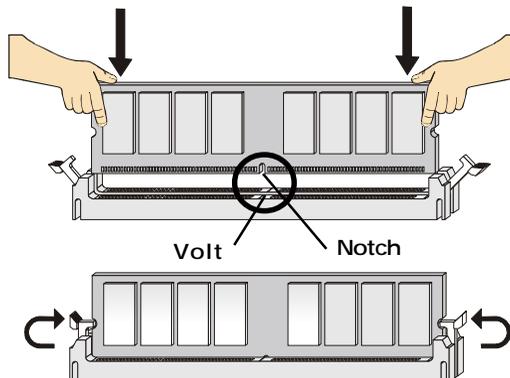
1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.



### MSI Reminds You...

*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.

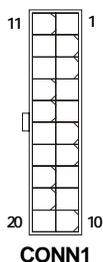


## Power Supply

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 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.

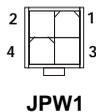


**CONN1 Pin Definition**

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

### ATX 12V Power Connector: JPW1

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

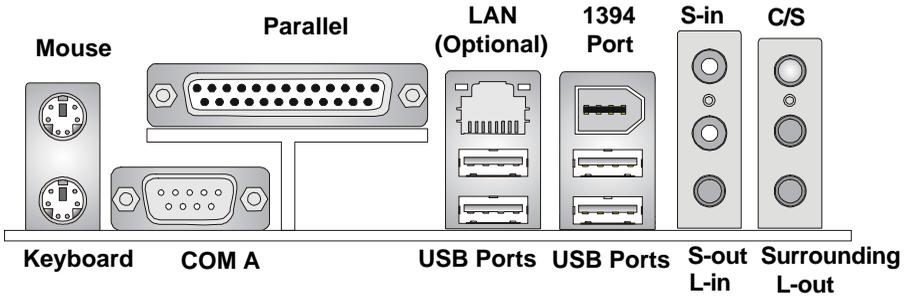


**JPW1 Pin Definition**

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

## Back Panel

The back panel provides the following connectors:



### Mouse Connector

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



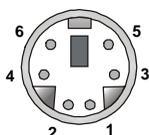
PS/2 Mouse (6-pin Female)

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

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.



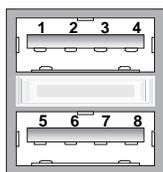
**PS/2 Keyboard (6-pin Female)**

**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 2.0 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.



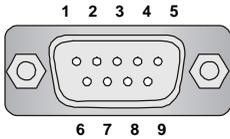
**USB Ports**

**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

## Serial Port Connector: COM A

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



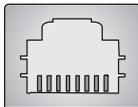
**9-Pin Male DIN Connector**

**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
8	CTS	Clear To Send
9	RI	Ring Indicate

## RJ-45 LAN Jack (Optional)

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.



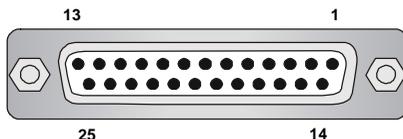
**RJ-45 LAN Jack**

**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

## 1394 Port

There is one 1394 port on the back panel providing the connection for 1394 devices.

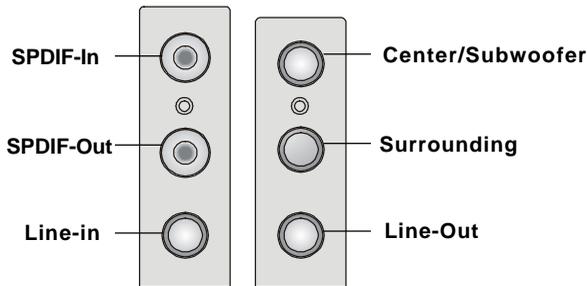


1394 port

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## 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. Other four ports are for the 6-channel audio operation.



### MSI Reminds You...

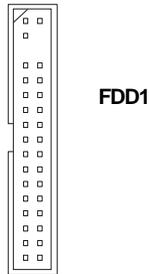
*For advanced audio application, C-Media 9761 is provided to offer support for **6-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/6-channel audio.*

## Connectors

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

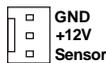
### Floppy Disk Drive Connector: FDD1

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

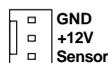


### Fan Power Connectors: CPUFA1 / SYSFA1

The CPUFA1 (processor fan) and SYSFA1 (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.



CPUFA1



SYSFA1

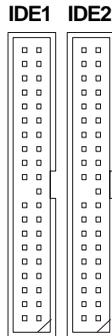


#### MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.
2. CPUFA1 supports the fan control. You can install the Core Center utility that will automatically control the CPU fan speed according to the actual CPU temperature.

## Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 66/100/133 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy and other devices.



### 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.

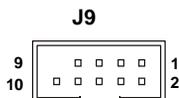


#### MSI Reminds You...

*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.*

## IEEE 1394 Connector: J9

The mainboard provides one 1394 pin header that allows you to connect optional IEEE 1394 ports.



**J9 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

Connected to J9



## Power Saving Switch Connector: JSLP1

Attach a power saving switch to this connector. Press the switch once to have the system entered the Sleep/Suspend state. Press any key to wake up the system.



**JSLP1**

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## Front USB Connectors: JUSB1, JUSB2

The mainboard provides two USB 2.0 pin headers *JUSB1* & *JUSB2* (optional USB 2.0 bracket available) that are compliant with Intel® I/O Connectivity Design Guide. 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.**



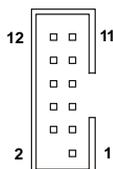
**JUSB1 / JUSB2**

### Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	USBPWR	2	USBPWR
3	USBP4-	4	USBP5-
5	USBP4+	6	USBP5+
7	GND	8	GND
9	NC	10	USBOC

## Joystick/Game Connector: J7 (Optional)

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



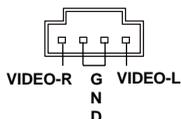
**J7**

**J7 Pin Definition**

Pin	Description	Pin	Description
1	FVCC5 (power)	2	Key pin
3	RXD	4	GP4
5	GP5	6	GP6
7	GP7	8	GP2
9	GP1	10	GP0
11	GP3	12	TXD

## Audio Connector: JVEDIO1

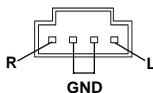
This connector allows you to connect to a TV Tuner Card.



**JVEDIO1**

## Aux Line-In Connector: JL-IN1

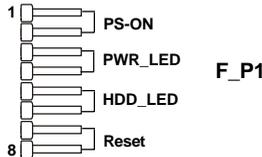
The connector is for DVD add-on card with Line-in connector.



**JL\_IN1**

## Front Panel Connector: F\_P1

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



## Front Panel Audio Connector: JAUDIO1

The JAUDIO1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



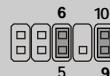
JAUDIO1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel



### MSI Reminds You...

*If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.*

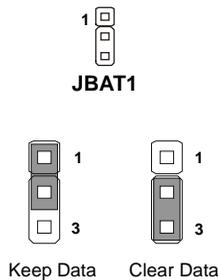


## Jumpers

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:

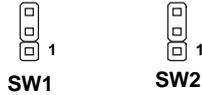


#### MSI Reminds You...

*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.*

## FSB Clock Jumper: SW1, SW2

These two jumpers provide 100MHz, 133MHz, 166MHz, and 200MHz Front Side Bus frequency selection for overclocking purpose.



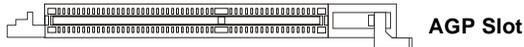
FSB = 100MHz	<p>SW1</p>	<p>SW2</p>
FSB = 133MHz	<p>SW1</p>	<p>SW2</p>
FSB = 166MHz	<p>SW1</p>	<p>SW2</p>
FSB = 200MHz	<p>SW1</p>	<p>SW2</p>

## Slots

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

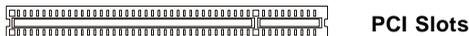
### AGP (Accelerated Graphics Port) Slot

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 supports 4x (1.07Gbps) and 8x (2.1Gbps) AGP cards.



### 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.



#### MSI Reminds You...

*Mainboard photos shown in next section are for demonstration of the installation of mini-PCI cards only. The appearance of your mainboard may vary depending on the model you purchase.*

## **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#