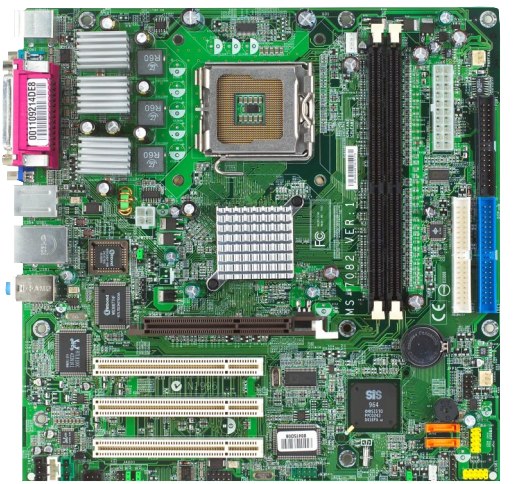
661FM3 Series

MS-7082 (v1.X) Micro ATX Mainboard



G52-M7082X3

Manual Rev: 1.1
Release Date: September 2004

CE N1996

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

FC **Micro-Star International**
MS-7082

Copyright Notice

Trademarks

Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.x with chipsets SiS661FX / 648FX & SiS964 / 964L	August 2004
V1.1	Manual cover updates	September 2004

Safety Instructions

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **Do not cover the openings.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment has not work well or you can not get it work according to User's Manual.
    - The equipment has dropped and damaged.
    - The equipment has obvious sign of breakage.
12. **Do not leave this equipment in an environment unconditioned, storage temperature above 60^0 C (140^0F), it may damage the equipment.**

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

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Getting Started

Thank you for purchasing 661FM3 Series (MS-7082 v1.X) Micro ATX mainboard. The 661FM3 Series (MS-7082 v1.X) is based on **SiS®** **661FX / 648FX** & **SiS® 964** / **964L** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4/Celeron D™ (LGA775)** processor, the 661FM3 Series (MS-7082 v1.X) delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- Supports Intel® Pentium 4 / Celeron-D in the 775-land package
- Supports 533MHz, 800MHz FSB
- Supports 2004 Performance FMB CPU VR Design
- Supports 3/4 pin CPU Fan Pin-Header with Fan Speed Control

(For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset

- SiS® 661FX / 648FX Chipset
  - Integrated graphic controller (661FX only)
  - Support DDR333/400 SDRAM
- SiS® 964 / 964L Chipset
  - High Definition Audio interface
  - 8 USB 2.0/1.1 ports
  - 2 channel Ultra ATA66/100/133 Bus Master IDE controller
  - 2 serial ATA Host Controllers (964 only)

Main Memory

- Supports 64-bit wide DDR
- Available bandwidth up to 3.2GB/s (DDR 400)
- Supports 128Mb, 256Mb or 512Mb DDR technologies

(For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php)

Slots

- One AGP Slot
- Three PCI Slots (32-bit v2.3 Master PCI bus, supports 3.3/5v PCI bus interface)

On-Board IDE

- An IDE controller on the 964/964L chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA66/100/133 operation modes.
- Support 2 Serial ATA 150 ports.

On-Board Peripherals

- On-Board Peripherals include:
  - 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
  - 2 serial port, Com1 on Rear IO, Com2 via pin header(IO bracket is optional)
  - 1 parallel port supports SPP/EPP/ECP mode
  - 8 USB 2.0/1.1 ports (Rear * 4 / Front * 4)
  - 1 Line-In/Line-Out/Mic
  - 1 RJ45 connector (Optional)
  - 2 IEEE1394 connectors (Rear x1 and Front x 1)(Optional)
  - 1 VGA port (661FX only)

Audio

- High Definition link controller integrated in 964/964L
- 6 channels (HDA) audio codec
  - Meet PC2001 audio performance requirement
  - Can support SPDIF Out via bracket only

On-Board LAN (Optional)

- RealtekR 8100C / 8110S (optional)
  - Integrated Fast Ethernet MAC and PHY in one chip.
  - Supports 10Mb/s, 100Mb/s and 1000Mb/s (1000Mb/s for 8110S only).
  - Compliance with PCI 2.2.
  - Supports ACPI Power Management

1394 (optional)

- Supports up to 2 * 1394 ports, one 6-pin 1394 connector on rear I/O, the other is supported by onboard pinheader. Transfer rate is up to 400Mbps.
- Controlled by VIA 6307 chipset.

BIOS

- 4MB Award BIOS
- Provides DMI 2.0, WFM 2.0, WOL, WOR and SMBus for system management.

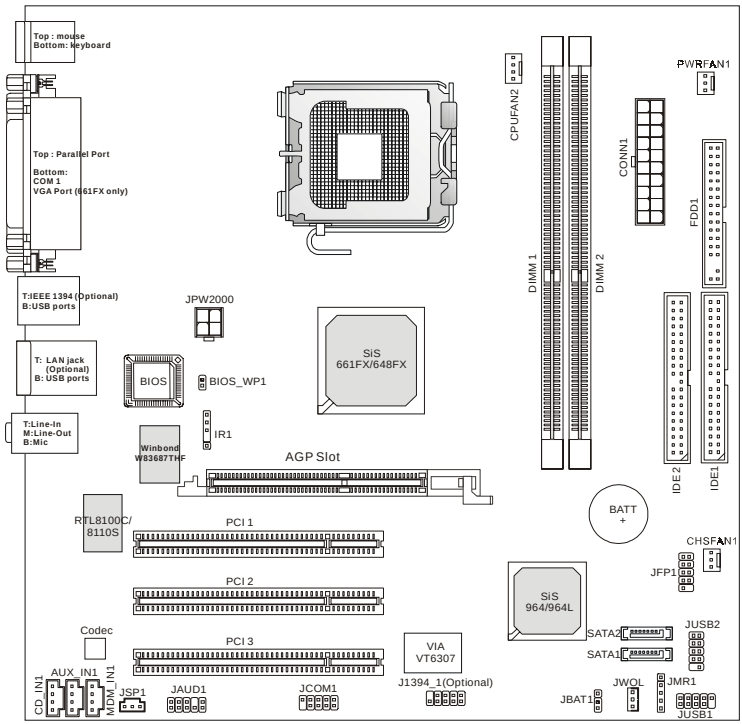
Dimension

- Micro-ATX Form Factor: 24.4 cm (L) x 24.4 cm (W)

Mounting

- 8 mounting holes

Mainboard Layout



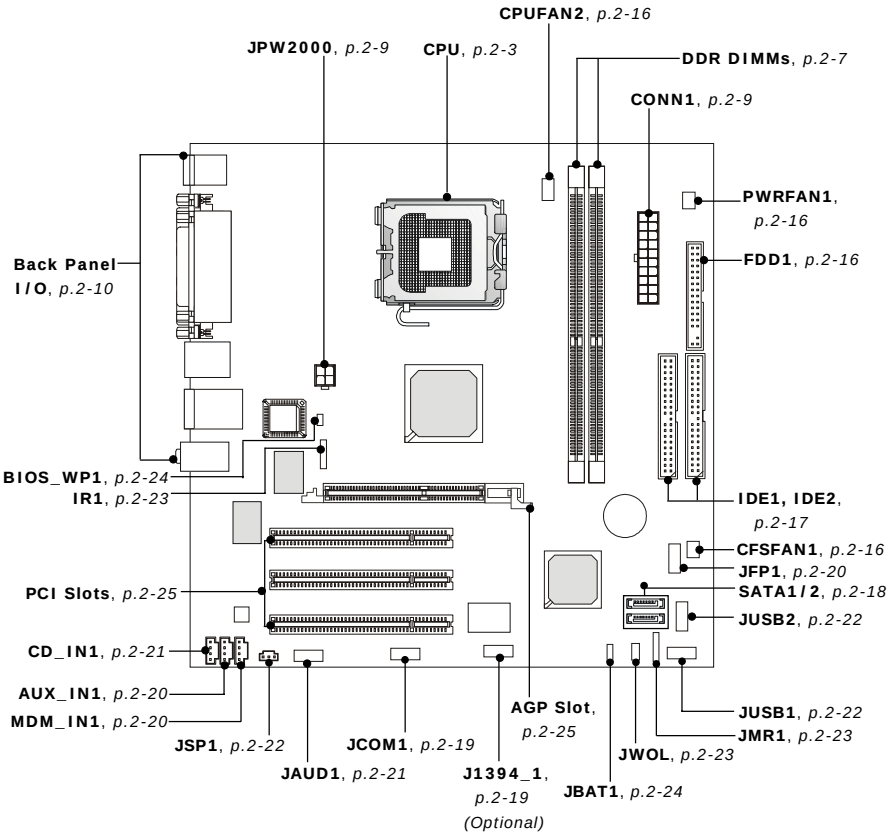
MS-7082 v1.X Micro ATX Mainboard

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. It also 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 Intel® Pentium 4 / Celeron D™ (LGA775) processor. The mainboard uses a CPU socket called LGA775. When you are installing the CPU, **make sure to install the heat sink/cooler to prevent overheating.** If you do not have the CPU, contact your dealer to purchase and install them before turning on the computer.

For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php.

MSI Reminds You...

Overheating

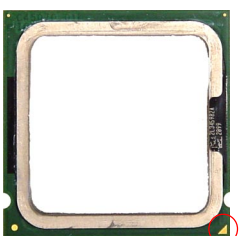
Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

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.

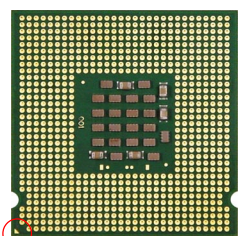
Introduction of LGA 775 CPU

The surface of LGA 775 CPU. Remember to apply some silicone heat transfer compound on it for better heat dispersion.



Yellow triangle is the Pin 1 indicator

The pin-pad side of LGA 775 CPU.



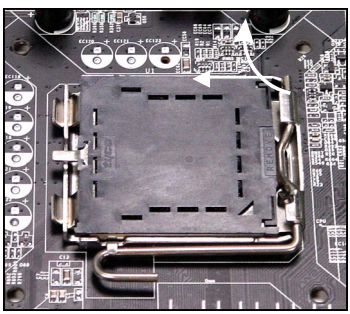
Yellow triangle is the Pin 1 indicator

CPU, Heatsink & Fan Installation

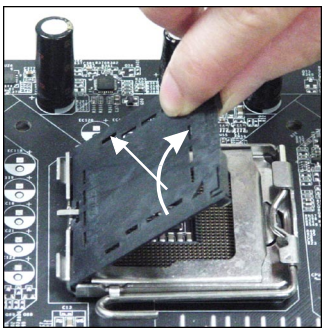
When you are installing the CPU, **make sure the CPU has a heat sink/ cooler fan attached on the top to prevent overheating.** If you do not have the heat sink/cooler fan, contact your dealer to purchase and install them before turning on the computer. Meanwhile, do not forget to apply some silicon heat transfer compound on CPU before installing the heat sink/cooler fan for better heatsinking.

Follow the steps below to install the CPU & cooling fan correctly. Wrong installation will cause the damage of your CPU & mainboard.

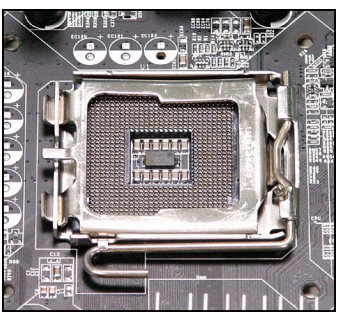
1. The CPU has a plastic cap on it to protect the contact from damage. Always cover it to protect the socket pin until you are going to install the CPU.



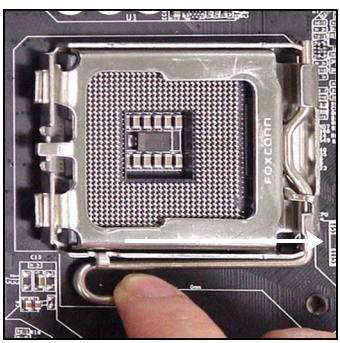
2. Remove the cap from lever hinge side (as the arrow shows).



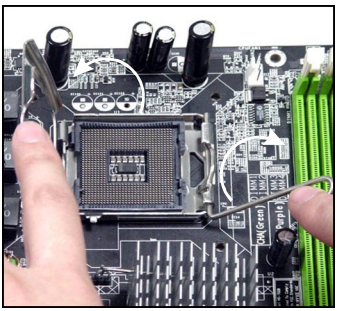
3. The pins of socket reveal.



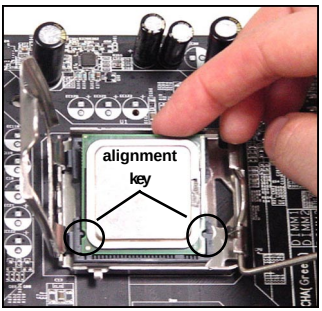
4. Open the load lever.



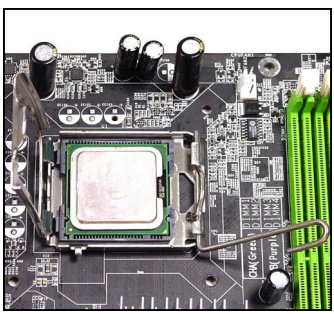
5. Lift the load lever up and open the load plate.



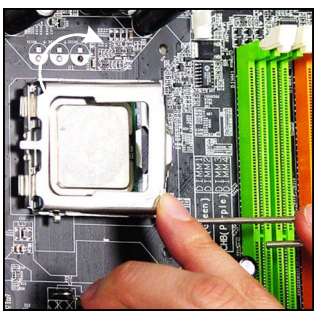
6. After confirming the CPU direction for correction mating, put down the CPU in the socket housing frame. Be sure to grape on the edge of the substrate. Note that the alignment keys are matched.



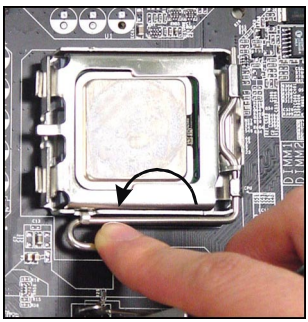
7. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with purely vertical motion and reload it again.



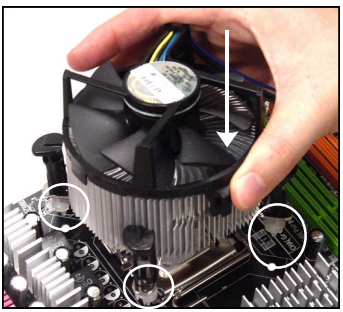
8. Rotate the load plate onto the package.



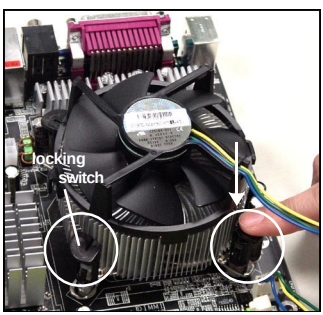
9. Engage the load while pressing down lightly onto the load plate, and then secure the lever with the hook under retention tab.



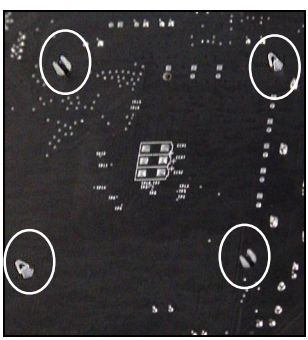
10. Align the holes on the mainboard with the heatsink first. Pull down the fan/heatsink until its four clips get wedged in the holes of the mainboard.



11. Press the four hooks down to fasten the fan. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks again.



12. Turn over the mainboard to confirm that the clip-ends are corrected inserted.



MSI Reminds You...

1. *Confirm if your CPU heatsink/cooler is firmly installed before turning on your system.*
2. *Check the information in **PC Health Status** of **H/W Monitor** in BIOS (refer to p.3-20 for details) for the CPU temperature.*
3. *Make sure that the CPU socket pins are not turned up or pressed down.*

Memory

The mainboard provides two 184-pin unbuffered DDR266/DDR333/DDR400 DDR SDRAM, and supports the memory size up to 2GB without ECC. To operate properly, at least one DIMM module must be installed.

(For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php)

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.

DDR 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.

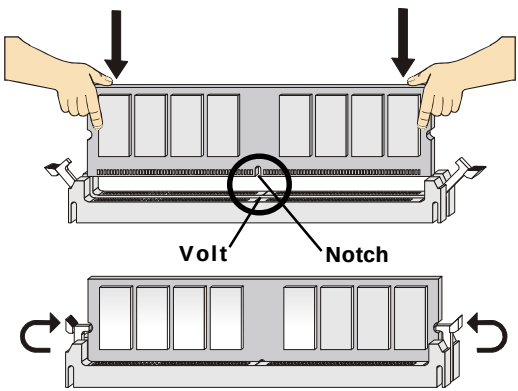
Memory modules can be installed in any combination as follows:

Slot	Memory Module	Total Memory
DDR 1 (Bank 0 & 1)	S/D	64MB~1GB
DDR 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.



MSI Reminds You...

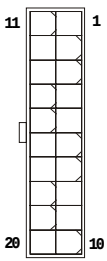
You can barely see the golden finger if the module is properly inserted in the socket.

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 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

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: JPW2000

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

JPW2000

JPW1 Pin Definition

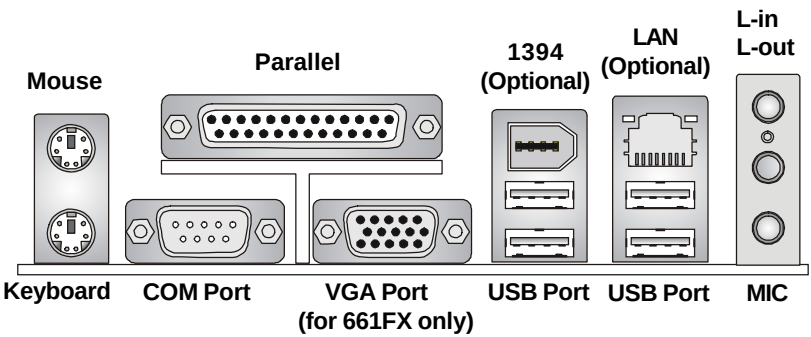
PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

MSI Reminds You...

Power supply of 300-watt (and above) is highly recommended for system stability.

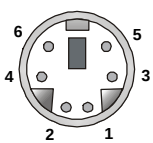
Back Panel

The back panel provides the following connectors:



Mouse Connector

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



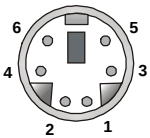
PS/2 Mouse (6-pin Female)

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.



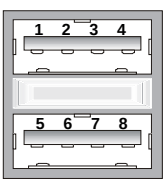
PS/2 Keyboard (6-pin Female)

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 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.



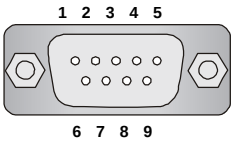
USB Ports

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

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



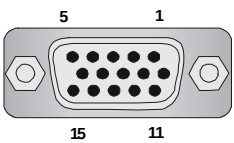
9-Pin Male DIN Connector

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

VGA Connector (for 661FX only)

The mainboard provides a DB 15-pin female connector to connect a VGA monitor.

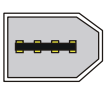


VGA Connector,DB 15-pin

Pin	Signal Description	Pin	Signal Description
1	RED	9	+5V
2	GREEN	10	GND
3	BLUE	11	N/C
4	N/C	12	SDA
5	GND	13	Horizontal Sync
6	GND	14	Vertical Sync
7	GND	15	SCL
8	GND		

IEEE 1394 Port (Optional)

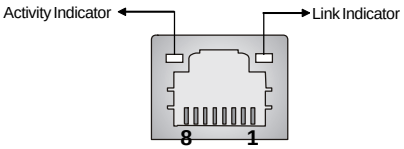
The back panel provides one standard IEEE 1394 port. The standard IEEE 1394 port connects to IEEE 1394 devices without external power. The IEEE 1394 high-speed serial bus complements USB by providing enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.



1394 Port

RJ-45 LAN Jack: 10/100 LAN (8100C) /Giga-bit LAN (8110S) (Optional)

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). Giga-bit LAN enables data to be transferred at 1000, 100 or 10Mbps. You can connect a network cable to either LAN jack.



RJ-45 LAN Jack

LED	Color	LED State	Condition
Left	Orange	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
		On	1000 Mbit/sec data rate is selected.

The pin assignments vary depending on the transfer rates: 10/100Mbps or 1000Mbps. Note that Pin 1/2, 3/6, 4/5, 7/8 must work in pairs. Please refer to the following for details:

10/100 LAN 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

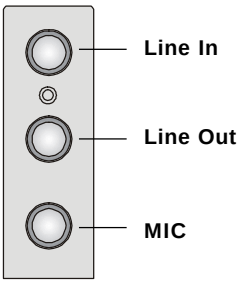
Giga-bit LAN Pin Definition

PIN	SIGNAL	DESCRIPTION
1	D0P	Differential Pair 0+
2	D0N	Differential Pair 0-
3	D1P	Differential Pair 1+
4	D2P	Differential Pair 2+
5	D2N	Differential Pair 2-
6	D1N	Differential Pair 1-
7	D3P	Differential Pair 3+
8	D3N	Differential Pair 3-

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

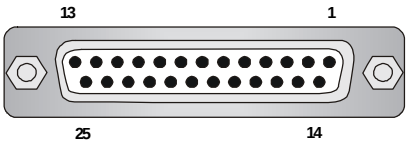


MSI Reminds You...

*For advanced audio application, Realtek ALC 655 is provided to offer support for **6-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/6-channel audio. For more information on **6-channel audio operation**, please refer to Appendix. Using 4- or 6-Channel Audio Function.*

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	PaperEnd
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, LAN, USB Ports, IR module and CPU/System/Power Supply FAN.

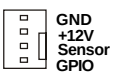
Floppy Disk Drive Connector: FDD1

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

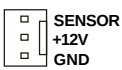
FDD1

Fan Power Connectors: CPUFAN2 & PWRFAN1 & CHSFAN1

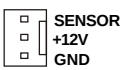
The CPUFAN2 (processor fan), CHSFAN1 (system fan) and PWRFAN1 (power fan) support system cooling fan with +12V. It supports four/three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire 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.



CPUFAN2



PWRFAN1



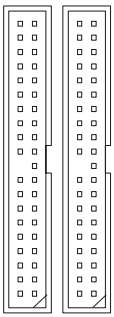
CHSFAN1

MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.
2. CPUFAN2 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.

Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100/133 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.



IDE2 **IDE1**

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)

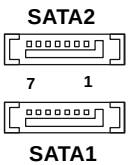
IDE2 can also connect a Master and a Slave drive.

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.

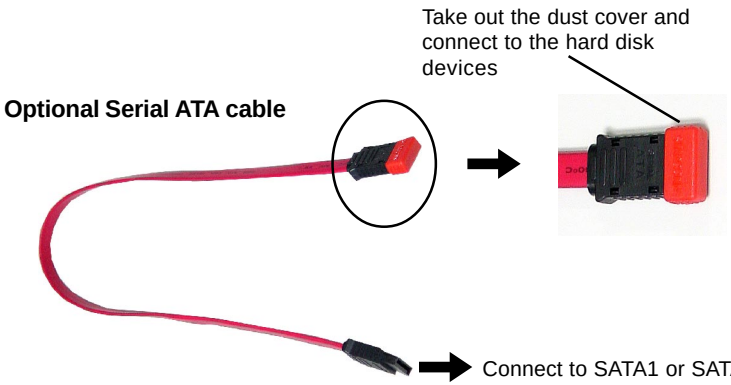
Serial ATA HDD Connectors: SATA1 & SATA2

The mainboard provides dual high-speed Serial ATA interface ports. The ports support 1st generation Serial ATA data rates of 150MB/s and are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk drive.



Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		



MSI Reminds You...

Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, the loss of data may occur during transmission.

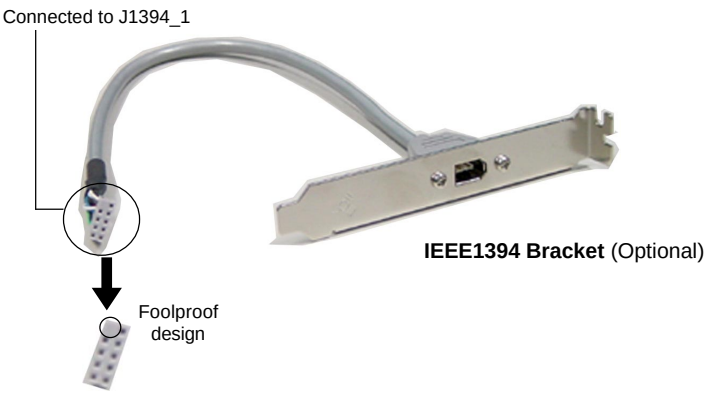
IEEE 1394 Connector: J1394_1 (Optional)

The mainboard provides one IEEE1394 pin header that allows you to connect IEEE 1394 ports via an external IEEE1394 bracket (optional).

J1394_1

Pin Definition

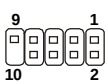
PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground



IEEE1394 Bracket (Optional)

Serial Port Connector: JCOM1

The mainboard offers one serial port JCOM1. It is 16550A high speed communication ports that senda/receivea/ 16 bytes FIFOs. You can attach a serial mouse or other serial device directly to it.



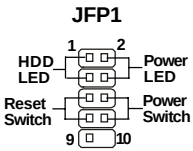
JCOM1

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

Front Panel Connectors: JFP1

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

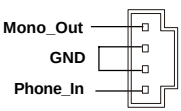


JFP1 Pin Definition

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	RSVD_DNU	Reserved. Do not use.

Modem-In Connector: JMD1

The connector is for modem with internal audio connector.

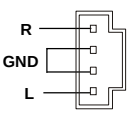


MDM_IN1

Aux Line-In Connector: AUX_IN1

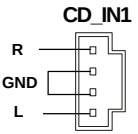
The connector is for DVD add-on card with Line-in connector.

AUX_IN1



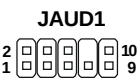
CD-In Connector: CD_IN1

The connector is for CD-ROM audio connector.



Front Panel Audio Connector: JAUD1

The JAUD1 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.

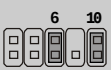


JAUD1 Pin Definition

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

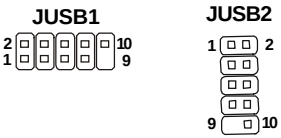
MSI Reminds You...

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.



Front USB Connectors: JUSB1 & JUSB2

The mainboard provides two USB 2.0 pin headers *JUSB1*/*JUSB2* 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	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key	10	USBOC

MSI Reminds You...

Note that the pins of VCC and GND must be connected correctly, or it may cause some damage.

SPDIF Connector: JSP1

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

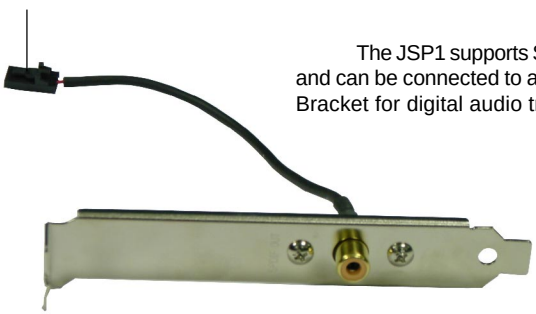
JSP1

JSP1 Pin Definition

PIN	SIGNAL
1	VCCS
2	SPDIF0
3	GND

Connected to JSP1

The JSP1 supports SPDIF output only and can be connected to an external SPDIF Bracket for digital audio transmission.



SPDIF Bracket (Optional)

IrDA Infrared Module Header: IR1

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function.

IR1

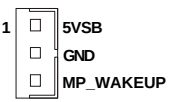
IR1 Pin Definition

Pin	Signal
1	VCC5
2	NC
3	IRRX
4	GND
5	IRTX

Wake On LAN Connector: JWOL

This connector allows you to connect to a LAN card with Wake On LAN function. You can wake up the computer via remote control through a local area network.

JWOL



MSI Reminds You...

To be able to use this function, you need a power supply that provides enough power for this feature. (750 mA 5V Stand-by)

Wake Up On Modem Connector: JMR1

This connector allows you to connect to connect a modem card with Wake Up On Modem function. You can wake up the computer via remote control device through modem.

JMR1

JMR1 Pin Definition

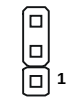
Pin	Signal
1	NC
2	GND
3	WAKE UP
4	NC
5	5VSB

Jumpers

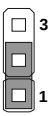
The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

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



JBAT1



Keep Data

Clear 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.

BIOS Flash Jumper: BIOS_WP1

This jumper is used to lock or unlock the boot block area on BIOS. When unlocked, the BIOS boot block area can be updated. When locked, the BIOS boot block area cannot be updated.

BIOS_WP1

BIOS Flash Locked

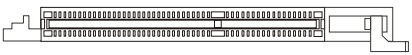
BIOS Flash Unlocked

Slots

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

AGP (Accelerated Graphics Port) Slot

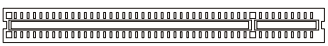
The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory.



AGP Slot

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 Slot

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 D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT B#	INT C#	INT D#	INT A#
PCI Slot 2	INT C#	INT D#	INT A#	INT B#
PCI Slot 3	INT D#	INT A#	INT B#	INT C#