

# Chapter 1

## Getting Started

Thank you for choosing the MS-7658 v1.X Micro-ATX mainboard. The MS-7658 mainboards are based on **Intel® P55** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Lynnfield LGA1156** processor, the MS-7658 deliver a high performance and professional desktop platform solution.

## MAINBOARD SPECIFICATIONS

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### Processor Support

- Intel® Lynnfield processor in the LGA1156 package

### Base Clock

- 133 MHz

### Chipset

- Intel® P55 chipset

### Memory Support

- 2 DDR3 DIMMs support DDR3 1333/ 1066 DRAM (8GB Max)
- Supports Dual-Channel mode

### LAN

- Supports PCIE LAN (10/100/1000) by Realtek® RTL8111DL

### Audio

- Chip integrated by Realtek® ALC662
- Supports 6-channel audio
- Compliant with Azalia 1.0 Spec

### SATA

- 4 SATA 3 Gb/s (SATA1~4) ports by Intel® P55

### RAID

- SATA1~4 support Intel® Matrix Storage Technology (AHCI/ RAID 0/ 1/ 5/ 10) by Intel® P55

### Connectors

- Back panel
  - 1 PS/2 keyboard port
  - 1 PS/2 mouse port
  - 6 USB 2.0 ports
  - 1 LAN port
  - 3 flexible audio ports
- On-Board
  - 2 USB 2.0 connectors, 1 reserved
  - 1 SPDIF-Out connector
  - 1 Front Panel connector
  - 1 Front Panel Audio connector
  - 1 reserved Aux Line-In connector

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### Slots

- 1 PCI Express 2.0 x16 slot
- 2 PCI Express 2.0 x1 slot

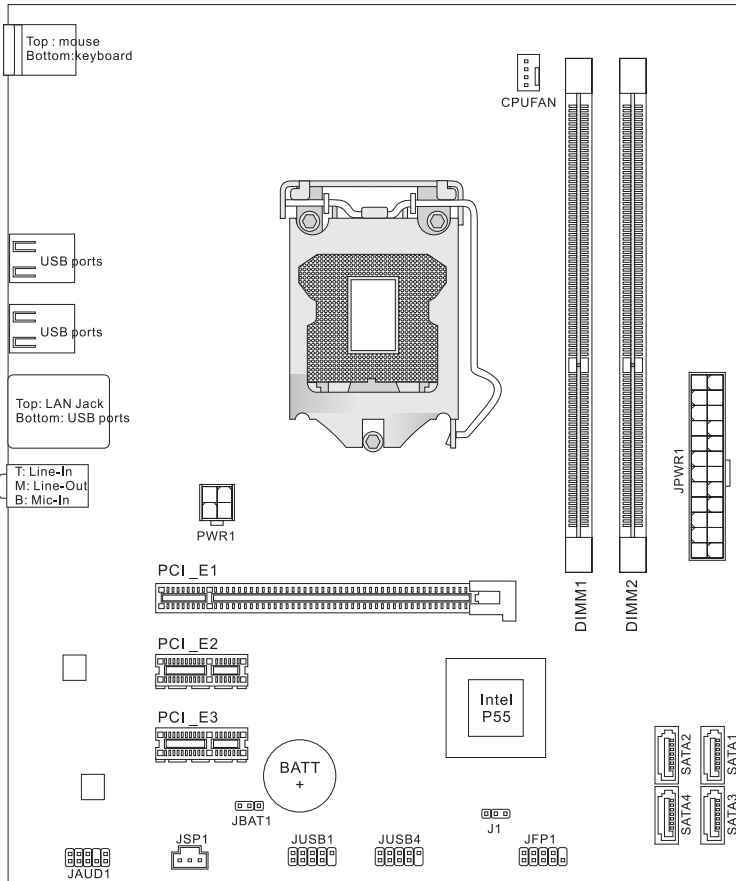
### Form Factor

- Micro-ATX (9.6 inch x 8 inch)

### Mounting

- 6 mounting holes

# MAINBOARD LAYOUT



**MS-7658 v1.X Micro-ATX Mainboard**

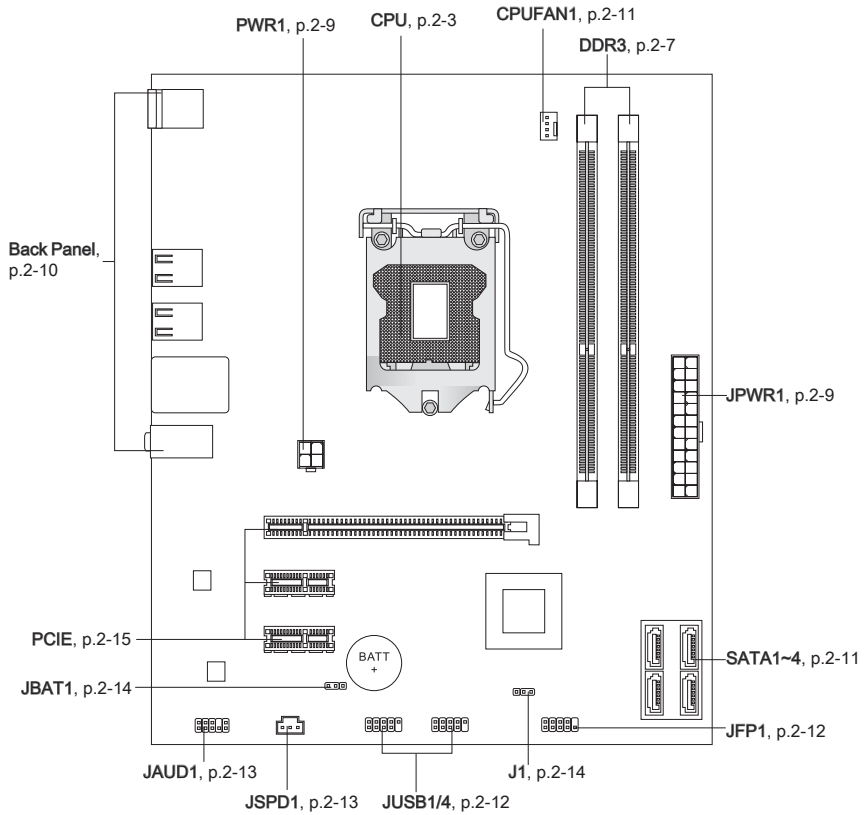
# Chapter 2

## 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.

## QUICK COMPONENTS GUIDE



## CPU (CENTRAL PROCESSING UNIT)

When you are installing the CPU, make sure to install the cooler to prevent overheating. If you do not have the CPU cooler, consult your dealer before turning on the computer.

### **Important**

#### **Overheating**

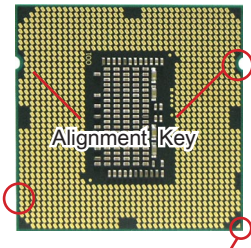
Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.

#### **Replacing the CPU**

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

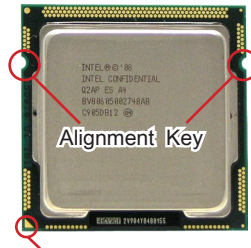
### Introduction to LGA 1156 CPU

The pin-pad side of LGA 1156 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 1156 CPU. Remember to apply some thermal paste on it for better heat dispersion.



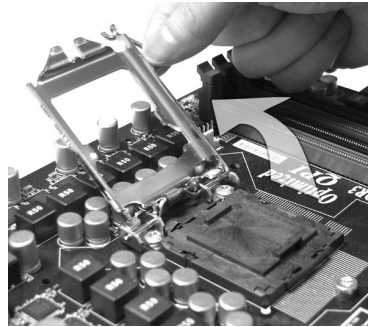
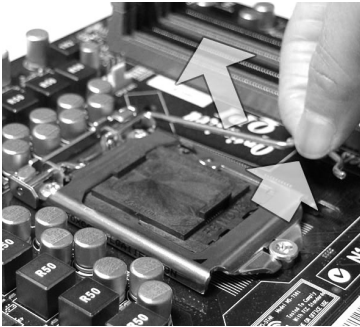
Yellow triangle is the Pin 1 indicator

### CPU & Cooler Installation

When you are installing the CPU, make sure the CPU has a cooler attached on the top to prevent overheating. Meanwhile, do not forget to apply some thermal paste on CPU before installing the heat sink/cooler fan for better heat dispersion.

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

1. Open the load level.
2. Lift the load lever up to fully open position

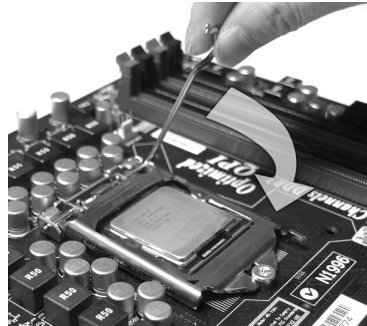
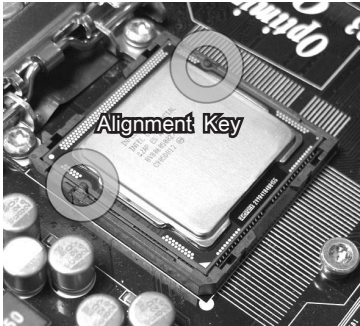


3. The CPU socket has a plastic cap on it to protect the contact from damage. Before you install CPU, always cover it to protect the socket pin. Remove the cap (as the arrow shows).
4. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.

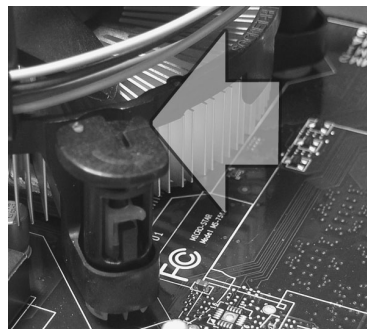




5. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.
6. Engage the load lever while pressing down lightly onto the load plate.



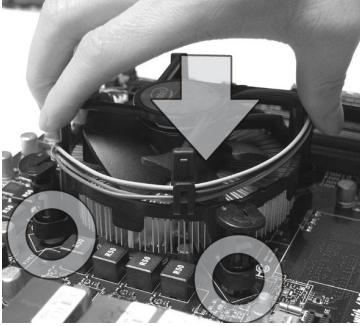
7. Secure the lever near the hook end under the retention tab.
8. Make sure the four hooks are in proper position before you install the cooler.



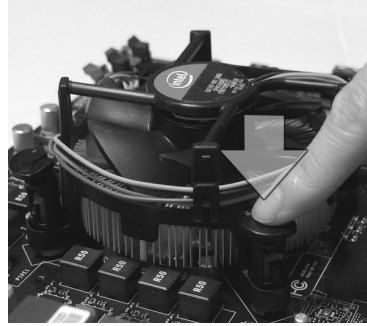
### **Important**

- Confirm if your CPU cooler is firmly installed before turning on your system.
- Do not touch the CPU socket pins to avoid damaging.

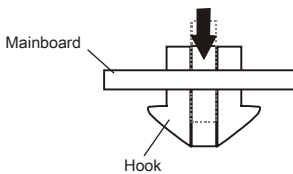
9. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.



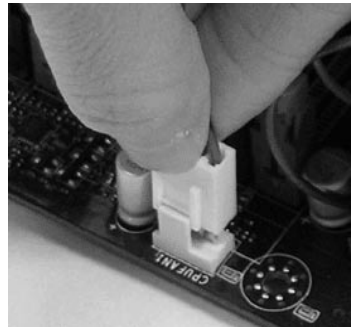
10. Press the four hooks down to fasten the cooler.



11. Turn over the mainboard to confirm that the clip-ends are correctly inserted.



12. Finally, attach the CPU Fan cable to the CPU fan connector on the mainboard.

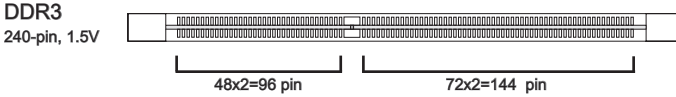


### **Important**

- Read the CPU status in BIOS.
- Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.
- Mainboard photos shown in this section are for demonstration of the CPU/ cooler installation only. The appearance of your mainboard may vary depending on the model you purchase.
- Please refer to the documentation in the CPU fan package for more details about the CPU fan installation.

## MEMORY

These DIMM slots are used for installing memory modules. For more information on compatible components, please visit <http://www.msi.com/index.php?func=testreport>



### Memory Population Rule

Please refer to the following illustrations for memory population rules.

#### Dual-Channel mode Population Rule

In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Enabling Dual-Channel mode can enhance the system performance. The following illustrations explain the population rules for Dual-Channel mode.

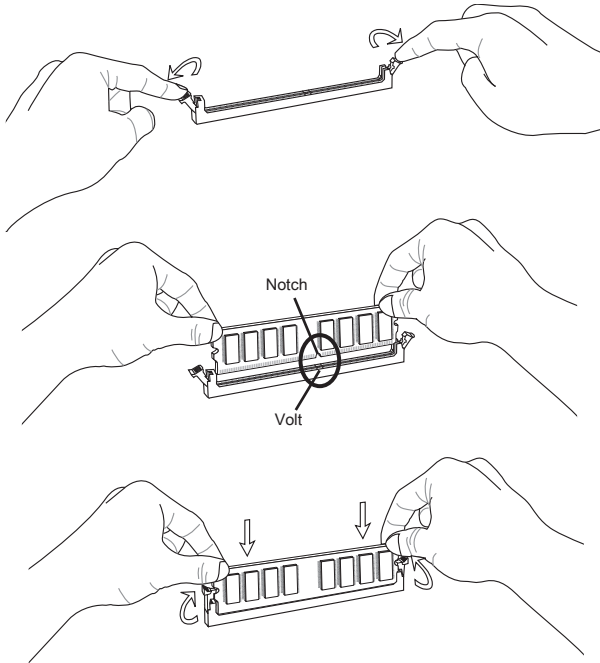


### **Important**

- *DDR3 memory modules are not interchangeable with DDR2 and the DDR3 standard is not backwards compatible. You should always install DDR3 memory modules in the DDR3 DIMM slots.*
- *In Dual-Channel mode, make sure that you install memory modules of the **same type and density** in different channel DIMM slots.*
- *To enable successful system boot-up (Lynnfield CPU especially), always insert the memory modules into the **DIMM1** first.*

## Installing Memory Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.
2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot. The plastic clip at each side of the DIMM slot will automatically close when the memory module is properly seated.
3. Manually check if the memory module has been locked in place by the DIMM slot clips at the sides.



### **Important**

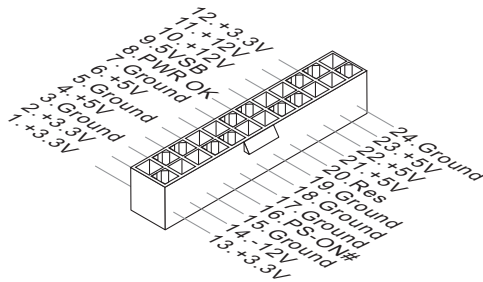
*You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.*

## POWER SUPPLY

### ATX 24-pin Power Connector: JPWR1

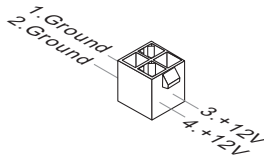
This connector allows you to connect an ATX 24-pin power supply. To connect the ATX 24-pin power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

You may use the 20-pin ATX power supply as you like. If you'd like to use the 20-pin ATX power supply, please plug your power supply along with pin 1 & pin 13.



### ATX 4-pin Power Connector: PWR1

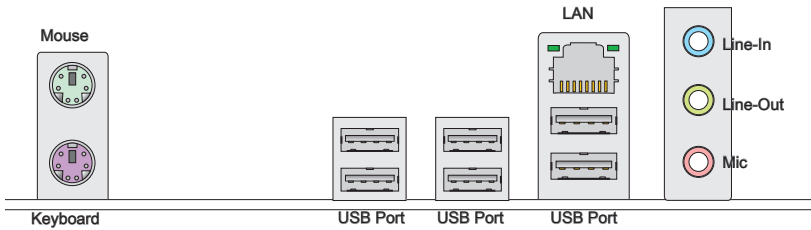
This connector is used to provide power to the CPU.



### **Important**

- Make sure that all the connectors are connected to proper ATX power supplies to ensure stable operation of the mainboard.
- Power supply of 400 watts (and above) is highly recommended for system stability.

## BACK PANEL



### ▶ Mouse/Keyboard

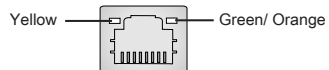
The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

### ▶ USB Port

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

### ▶ LAN

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



LED	Color	LED State	Condition
Left	Yellow	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 Mbits/sec data rate is selected.
		On	100 Mbits/sec data rate is selected.
	Orange	On	1000 Mbits/sec data rate is selected.

### ▶ Audio Ports

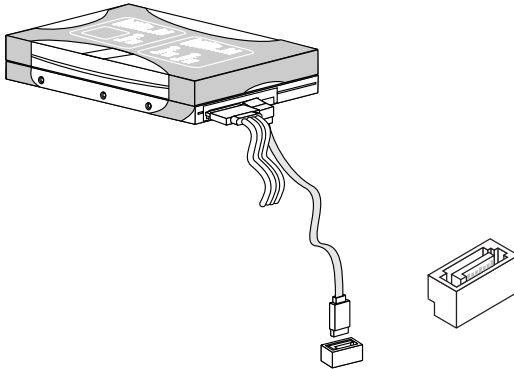
These audio connectors are used for audio devices. It is easy to differentiate between audio effects according to the color of audio jacks.

- Line-In (Blue) - Line In, is used for external CD player, tape-player or other audio devices.
- Line-Out (Green) - Line Out, is a connector for speakers or headphones.
- Mic (Pink) - Mic, is a connector for microphones.

## CONNECTORS

### Serial ATA Connector: SATA1~4

This connector is a high-speed Serial ATA interface port. Each connector can connect to one Serial ATA device.

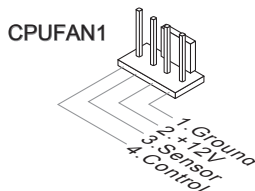


#### **Important**

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

### Fan Power Connectors: CPUFAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always 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.

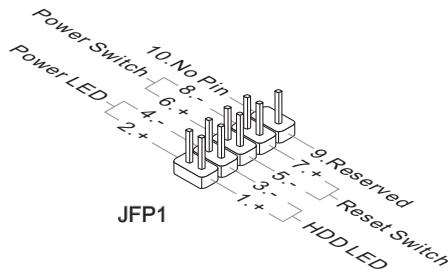


#### **Important**

- Please refer to the recommended CPU fans at processor's official website or consult the vendors for proper CPU cooling fan.
- CPUFAN1 support Smart fan control.
- Fan cooler set with 3 or 4 pins power connector are both available for CPUFAN1.

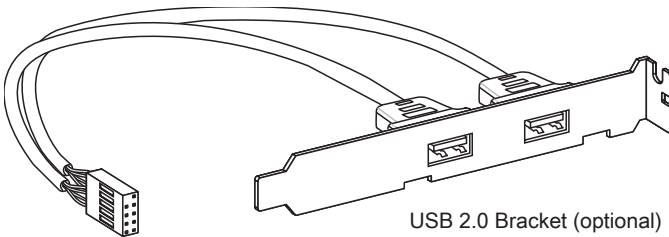
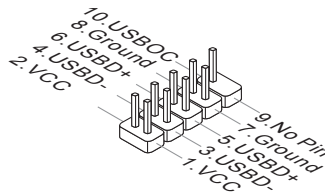
### Front Panel Connectors: JFP1

These connectors are for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



### Front USB Connector: JUSB1 / JUSB4

This connector, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as USB HDD, digital cameras, MP3 players, printers, modems and the like.



USB 2.0 Bracket (optional)

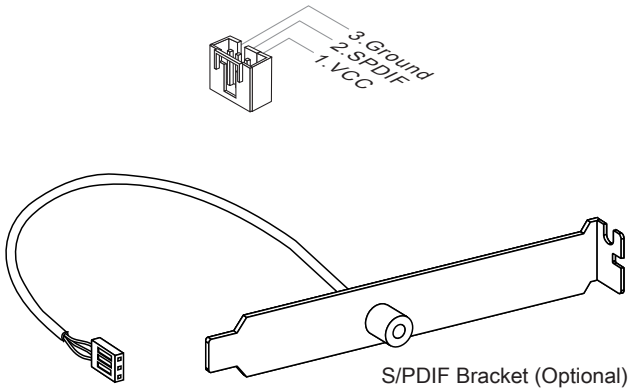
### **Important**

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.



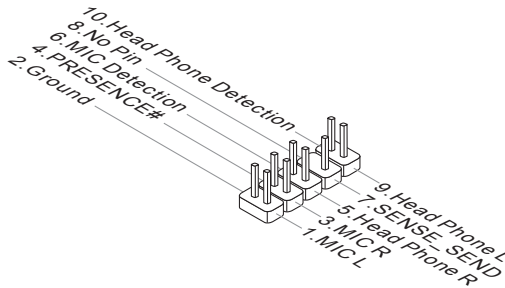
### S/PDIF-Out Connector: JSPD1

This connector is used to connect S/PDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.



### Front Panel Audio Connector: JAUD1

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



## JUMPERS

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### Clear CMOS Jumper: JBAT1

There is a CMOS RAM onboard that has a power supply from an 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, set the jumper to clear data.



JBAT1



Keep Data



Clear Data

### **Important**

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.

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### BIOS Recovery Jumper: J1

The jumper is used for BIOS recovering. If you want to recover BIOS, set the jumper to the 1-2 pins. When set to enabled, the system can automatically recover BIOS every time it is turned on.



J1



Disabled  
(Default)



Enabled

### **Important**

Please refer to the below steps to recover BIOS:

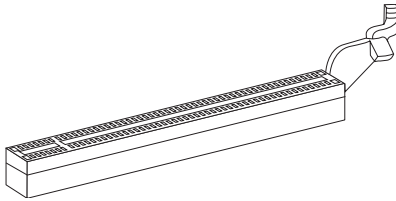
1. Power off the system. Move the jumper from pin 2-3 to pin 1-2.
2. Turn on the system.
3. Boot from a bootable device that include AMIBIOS.
4. ROM file.
5. Proceed BIOS recovery till complete.
6. Shut down the system.
7. Move the jumper back to pin 2-3.
8. Boot up the system.

## SLOTS

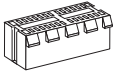
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### PCIE (Peripheral Component Interconnect Express) Slot

The PCI Express slot supports the PCI Express interface expansion card.



PCI Express x16 Slot



PCI Express x1 Slot

### **Important**

*When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.*