Thank you for purchasing the MSI® motherboard. This User Guide gives information about board layout, component overview, BIOS setup and software installation.

Contents

Safety Information

- The components included in this package are prone to damage from electrostatic discharge (ESD). Please adhere to the following instructions to ensure successful computer assembly.

- Ensure that all components are securely connected. Loose connections may cause the computer to not recognize a component or fail to start.

- Hold the motherboard by the edges to avoid touching sensitive components.

- It is recommended to wear an electrostatic discharge (ESD) wrist strap when handling the motherboard to prevent electrostatic damage. If an ESD wrist strap is not available, discharge yourself of static electricity by touching another metal object before handling the motherboard.

- Store the motherboard in an electrostatic shielding container or on an anti-static pad whenever the motherboard is not installed.

- Before turning on the computer, ensure that there are no loose screws or metal components on the motherboard or anywhere within the computer case.

- Do not boot the computer before installation is completed. This could cause permanent damage to the components as well as injury to the user.

- If you need help during any installation step, please consult a certified computer technician.

- Always turn off the power supply and unplug the power cord from the power outlet before installing or removing any computer component.

- Keep this user guide for future reference.

- Keep this motherboard away from humidity.

- Make sure that your electrical outlet provides the same voltage as is indicated on the PSU, before connecting the PSU to the electrical outlet.

- Place the power cord such a way that people can not step on it. Do not place anything over the power cord.

- All cautions and warnings on the motherboard should be noted.

- If any of the following situations arises, get the motherboard checked by service personnel:
  - Liquid has penetrated into the computer.
  - The motherboard has been exposed to moisture.
  - The motherboard does not work well or you can not get it work according to user guide.
  - The motherboard has been dropped and damaged.
  - The motherboard has obvious sign of breakage.

- Do not leave this motherboard in an environment above 60°C (140°F), it may damage the motherboard.

Specifications

CPU	• Supports 12th Gen Intel® Core™ Processors • Processor socket LGA1700 * Please go to www.msi.com to get the newest support status as new processors are released.
Chipset	Intel® B660 Chipset

Memory	• 4x DDR4 memory slots, support up to 128GB*
	• Supports 1R 2133/2666/3200 MHz (by JEDEC & POR)
	• Max overclocking frequency:
	  • 1DPC 1R Max speed up to 4800+ MHz
	  • 1DPC 2R Max speed up to 4000+ MHz
	  • 2DPC 1R Max speed up to 4000+ MHz
	  • 2DPC 2R Max speed up to 3600+ MHz
	• Supports Dual-Channel mode
	• Supports non-ECC, un-buffered memory
	• Supports Intel® Extreme Memory Profile (XMP)
	* Please refer to www.msi.com for more information on compatible memory.

Expansion Slots	• 2x PCIe x16 slots
	  • PCI_E1 (From CPU)
	    • Support PCIe 4.0 x16
	  • PCI_E3 (From B660 chipset)
	    • Support PCIe 3.0 x4
	• 1x PCIe 3.0 x1 slot (Fom B660 chipset)

Onboard Graphics	• 2x HDMI 2.1 with HDR ports, supporting a maximum resolution of 4K 60Hz*/** • 2x DisplayPort 1.4 ports with HBR3, supporting a maximum resolution of 4K 60Hz*/** * Available only on processors featuring integrated graphics. ** Graphics specifications may vary depending on the CPU installed.
SATA Ports	• 4x SATA 6Gb/s ports (From B660 chipset)

M.2 SSD Slots	• 2x M.2 slots (Key M)
	    • M2_1 slot (From CPU)
	        • Supports up to PCIe 4.0 x4
	        • Supports 2242/ 2260/ 2280 storage devices
	    • M2_2 slot (From B660 chipset)
	        • Supports up to PCIe 4.0 x4
	        • Supports up to SATA 6Gb/s
	        • Supports 2242/ 2260/ 2280 storage devices
	        • Supports Intel® Optane™ Memory
	    • Support Intel® Smart Response Technology for Intel Core™ processors
	* SATA8 will be unavailable when installing M.2 SATA SSD in the M2_2 slot.

RAID	• Supports RAID 0, RAID 1, RAID 5 and RAID 10 for SATA storage devices
Audio	Realtek® ALC897 Codec • 7.1-Channel High Definition Audio
LAN	1x Realtek® RTL8125BG 2.5Gbps LAN controller
Wi-Fi & Bluetooth® (PRO B660M-A WIFI DDR4)	Intel® Wi-Fi 6 • The Wireless module is pre-installed in the M.2 (Key-E) slot • Supports MU-MIMO TX/RX, 2.4GHz/ 5GHz (160MHz) up to 2.4Gbps • Supports 802.11 a/ b/ g/ n/ ac/ ax • Supports Bluetooth® 5.2
Power Connectors	• 1x 24-pin ATX main power connector • 1x 8-pin ATX 12V power connector • 1x 4-pin ATX 12V power connector

Internal USB Connectors	• 1x USB 3.2 Gen 1 5Gbps Type-C connector (From B660 chipset)
	• 1x USB 3.2 Gen 1 5Gbps Type-A connector (From ASM1074)
	  • Supports additional 2 USB 3.2 Gen 1 5Gbps ports
	• 2x USB 2.0 Type-A connectors (From B660 chipset)
	  • Supports additional 4 USB 2.0 ports

Fan Connectors	• 1x 4-pin CPU fan connector • 1x 4-pin water-pump fan connector • 2x 4-pin system fan connectors
System Connectors	• 1x Front panel audio connector • 2x System panel connectors • 1x Chassis Intrusion connector • 1x TPM module connector • 1x Tuning Controller connector • 1x TBT connector (supports RTD3) • 1x Serial port
Jumpers	• 1x Clear CMOS jumper
LED Features	• 1x 4-pin RGB LED connector • 2x 3-pin RAINBOW LED connectors • 4x EZ Debug LED
Back Panel Connectors	• 1x PS/2 mouse/ keyboard port • 2x USB 2.0 Type-A ports (From B660 chipset) • 2x DisplayPort ports • 2x HDMI ports • 2x USB 3.2 Gen 1 5Gbps Type-A ports (From B660 chipset) • 2x USB 3.2 Gen 2 10Gbps Type-A ports (From B660 chipset) • 1x 2.5G LAN (RJ45) port • 2x Wi-Fi Antenna connectors (PRO B660M-A WIFI DDR4) • 3x audio jacks
I/O Controller	NUVOTON NCT6687 Controller Chip

Hardware Monitor	• CPU/ System/ Chipset temperature detection • CPU/ System/ Pump fan speed detection • CPU/ System/ Pump fan speed control
Form Factor	• Micro-ATX Form Factor • 9.6 in. x 9.6 in. (24.4 cm x 24.4 cm)
BIOS Features	• 1x 256 Mb flash • UEFI AMI BIOS • ACPI 6.4, SMBIOS 3.4 • Multi-language
Software	• Drivers • MSI Center • Intel Extreme Tuning Utility • CPU-Z MSI GAMING • Google Chrome™, Google Toolbar, Google Drive • Norton™ Internet Security Solution

Special Features

MSI Center Features
- LAN Manager
- Mystic Light
- Ambient Devices
- Frozr AI Cooling
- User Scenario
- True Color
- Live Update
- Hardware Monitoring
- Super Charger
- Speed Up
- Smart Image Finder
- MSI Companion

Audio
- Audio Boost

Network
- 2.5G LAN
- LAN Manager

Cooling
- Extended Heatsink Design
- M.2 Shield Frozr
- 7W/mK MOSFET thermal pad
- Choke thermal pad
- Pump Fan
- Smart Fan Control

LED
- Mystic Light Extension (RAINBOW/RGB)
- Mystic Light SYNC
- Ambient Devices Support

Performance
- Lightning Gen 4 (M.2/PCIE)
- Memory Boost
- Core Boost
- Game Boost
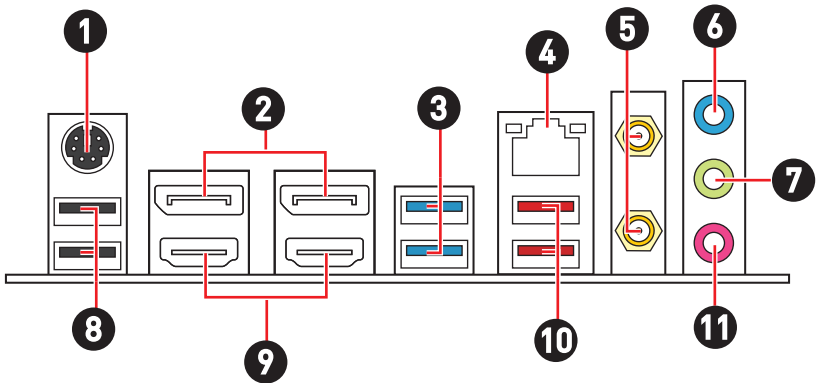- USB 3.2 Gen 2 10G
- Front USB Type-C
- 2oz Copper thickened PCB

Protection
- PCI-E Steel Armor

Experience
- MSI Center
- Click BIOS 5
- EZ M.2 Clip
- Forzr AI Cooling
- CPU Cooler Tuning
- EZ LED Control
- EZ DEBUG LED
- App player

Back Panel Connectors

Item	Description
1	PS/2 Mouse/ Keyboard port
2	DisplayPort ports
3	USB 3.2 Gen 1 5Gbps Type-A ports (From B660 chipset)
4	2.5Gbps LAN ports
5	Wi-Fi Antenna connectors (PRO B660M-A WIFI DDR4)
6	Line-in port
7	Line-out port
8	USB 2.0 Type-A ports (From B660 chipset)
9	HDMI ports
10	USB 3.2 Gen 2 10Gbps Type-A ports (From B660 chipset)
11	Mic-in port

LAN Port LED Status Table

Link/ Activity LED	
Status	**Description**
Off	No link
Yellow	Linked
Blinking	Data activity

Speed LED	
Status	**Speed**
Off	10 Mbps
Green	100/1000 Mbps
Orange	2.5 Gbps

Installing antennas (PRO B660M-A WIFI DDR4)

1. Screw the antennas tight to the antenna connectors as shown below.

2. Orient the antennas.

Overview of Components

PUMP_FAN1

ATX_PWR1

JUSB4

JUSB3

SATA▼5▲6

JFP2

JBAT1

JRAINBOW1

CPU_FAN1

DIMMB2
DIMMB1
DIMMA2
DIMMA1

Processor
Socket

CPU_PWR2

CPU_PWR1

JFP1

JTPM1

SATA7

SATA8

JUSB1

JUSB2

JTBT1

JDASH1

JCOM1

SYS_FAN2

JRAINBOW2

JRGB1

JAUD1

M2_1

PCI_E1

M2_2

PCI_E2

PCI_E3
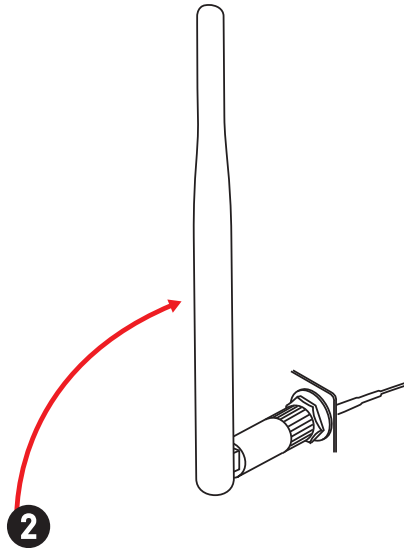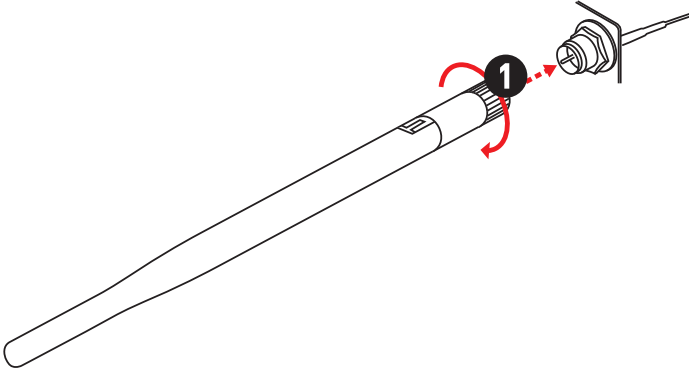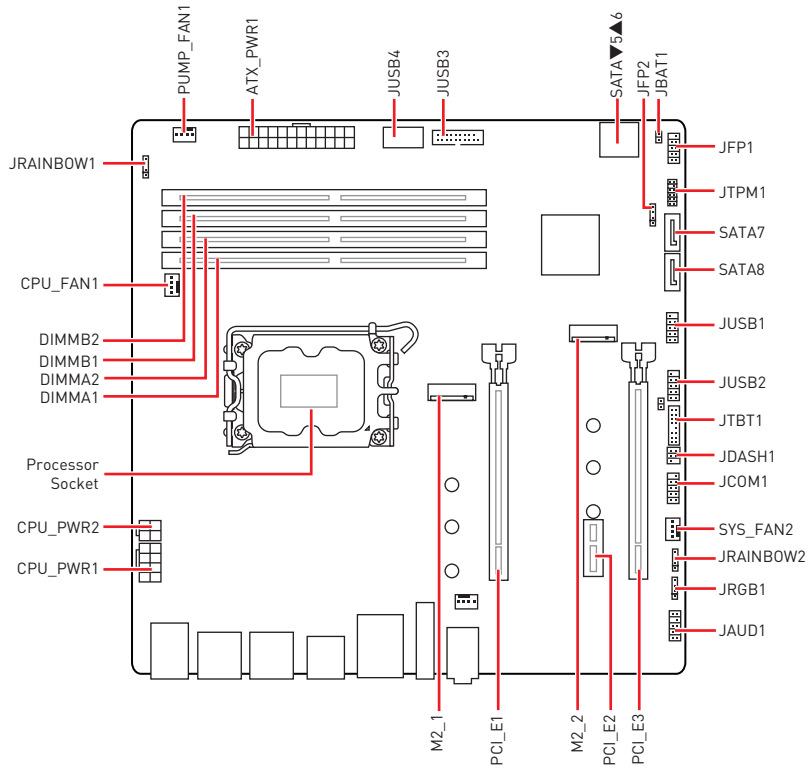
CPU Socket

Please install the CPU into the CPU socket as shown below.

⚠ *Important*

- *Always unplug the power cord from the power outlet before installing or removing the CPU.*

- *Please retain the CPU protective cap after installing the processor. MSI will deal with Return Merchandise Authorization (RMA) requests if only the motherboard comes with the protective cap on the CPU socket.*

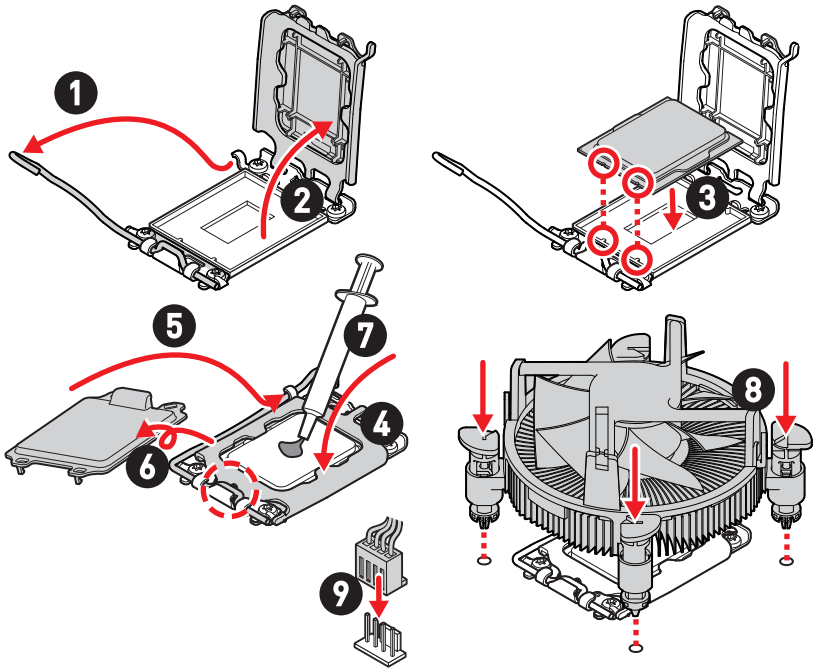- *When installing a CPU, always remember to install a CPU heatsink. A CPU heatsink is necessary to prevent overheating and maintain system stability.*

- *Confirm that the CPU heatsink has formed a tight seal with the CPU before booting your system.*

- *Overheating can seriously damage the CPU and motherboard. Always make sure the cooling fans work properly to protect the CPU from overheating. Be sure to apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*

- *Whenever the CPU is not installed, always protect the CPU socket pins by covering the socket with the plastic cap.*

- *If you purchased a separate CPU and heatsink/ cooler, Please refer to the documentation in the heatsink/ cooler package for more details about installation.*

DIMM Slots

Please install the memory module into the DIMM slot as shown below.
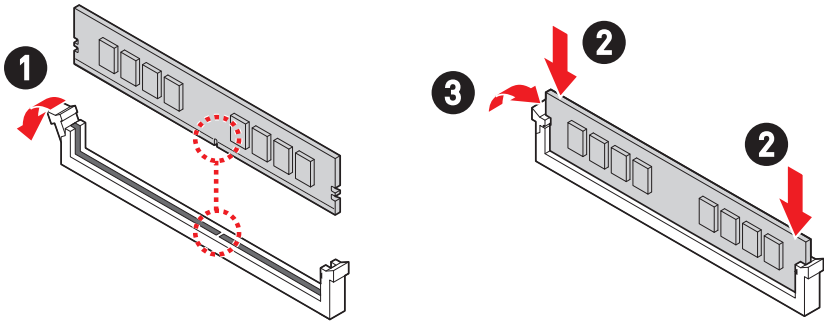
Memory module installation recommendation

DIMMA2

DIMMA2
DIMMB2

DIMMA1
DIMMA2
DIMMB1
DIMMB2
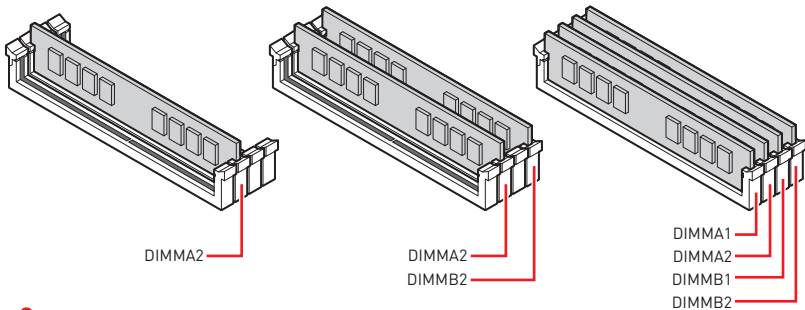
⚠ *Important*

- *Always insert memory modules in the **DIMMA2** slot first.*

- *To ensure system stability for Dual channel mode, memory modules must be of the same type, number and density.*

- *Some memory modules may operate at a lower frequency than the marked value when overclocking due to the memory frequency operates dependent on its Serial Presence Detect (SPD). Go to BIOS and find the **DRAM Frequency** to set the memory frequency if you want to operate the memory at the marked or at a higher frequency.*

- *It is recommended to use a more efficient memory cooling system for full DIMMs installation or overclocking.*

- *The stability and compatibility of installed memory module depend on installed CPU and devices when overclocking.*

- *Please refer to www.msi.com for more information on compatible memory.*

PCI_E1~3: PCIe Expansion Slots

PCI_E1: PCIe 4.0 x16 (From CPU)

PCI_E2: PCIe 3.0 x1 (From B660 chipset)

PCI_E3: PCIe 3.0 x4 (From B660 chipset)
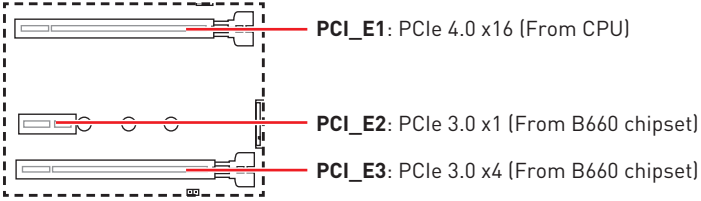
⚠️ *Important*

• *If you install a large and heavy graphics card, you need to use a tool such as **MSI Graphics Card Bolster** to support its weight to prevent deformation of the slot.*

• *For a single PCIe x16 expansion card installation with optimum performance, using the **PCI_E1** slot is recommended.*

• *When adding or removing expansion cards, always turn off the power supply and unplug the power supply power cable from the power outlet. Read the expansion card's documentation to check for any necessary additional hardware or software changes.*

JFP1, JFP2: Front Panel Connectors

The JFP1 connector controls the power on, power reset, and the LEDs on your PC case/chassis. Power Switch/ Reset Switch headers allow you to connect power button/ reset button. Power LED header connects to LED light on the PC case, and HDD LED header indicates the activity of the hard disk. The JFP2 connector is for Buzzer and Speaker. To connect the cables from PC case to the right pins, please refer to the following images below.

Power LED Power Switch

Buzzer

JFP1   2 10   JFP2   1
        1 9
                Reserved

HDD LED Reset Switch

Speaker
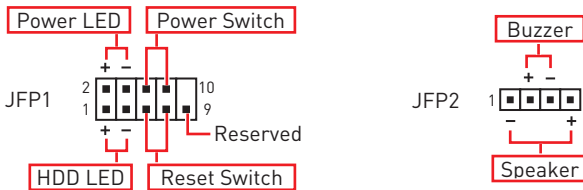
⚠️ *Important*

Please note that Power LED and HDD LED have positive and negative connection, you need to link up the cable to the corresponding positive and negative port on the motherboard. Otherwise, LEDs won't work properly.

M2_1~2: M.2 Slots (Key M)

Please install the M.2 solid-state drive (SSD) into the M.2 slot as shown below.

Installing M.2 module

For M2_1 slot

1. Loosen the screws of M.2 SHIELD FROZR heatsink.
2. Remove the M.2 SHIELD FROZR and remove the protective films from the thermal pads.
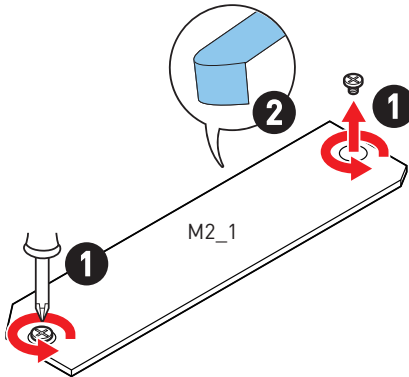
3. If there is no EZ M.2 Clip installed, please install the supplied EZ M.2 Clip kit in the M.2 slot according to your SSD length.
4. Insert your M.2 SSD into the M.2 slot at a 30-degree angle.
5. Rotate the EZ M.2 Clip to fix the M.2 SSD.
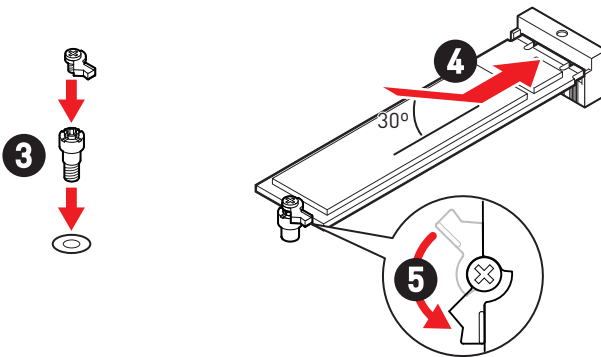
6. Put the M.2 SHIELD FROZR heatsink back in place and secure it.
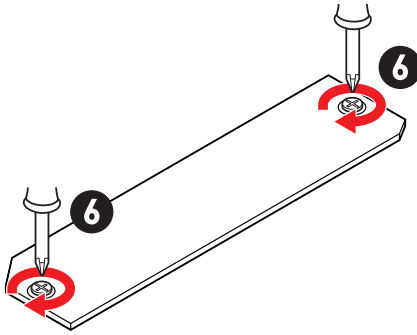
For M2_2 slot

1. Secure the supplied M.2 standoff according to your M.2 SSD length if need.

2. Insert your M.2 SSD into the M.2 slot at a 30-degree angle.

3. Secure the M.2 SSD in place with the supplied M.2 8.5H screw.

8.5H screw

30º

Standoff
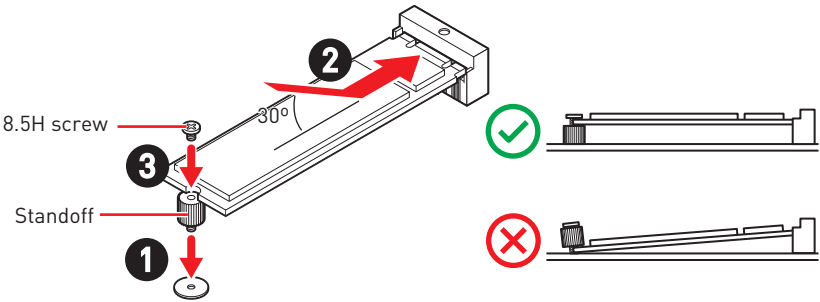
SATA5~8: SATA 6Gb/s Connectors

These connectors are SATA 6Gb/s interface ports. Each connector can connect to one SATA device.

```
SATA8
SATA7        SATA6
             SATA5
```
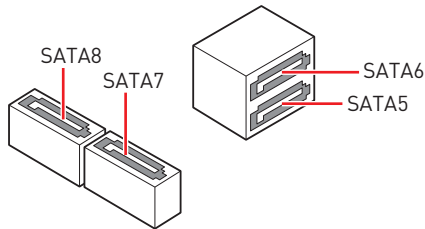
⚠️ *Important*

- *Please do not fold the SATA cable at a 90-degree angle. Data loss may result during transmission otherwise.*

- *SATA cables have identical plugs on either sides of the cable. However, it is recommended that the flat connector be connected to the motherboard for space saving purposes.*

- *SATA8 will be unavailable when installing M.2 SATA SSD in the M2_2 slot.*

JAUD1: Front Audio Connector

This connector allows you to connect audio jacks on the front panel.
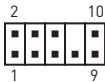
Pin	Signal Name	Pin	Signal Name
1	MIC L	2	Ground
3	MIC R	4	NC
5	Head Phone R	6	MIC Detection
7	SENSE_SEND	8	No Pin
9	Head Phone L	10	Head Phone Detection

CPU_PWR1~2, ATX_PWR1: Power Connectors

These connectors allow you to connect an ATX power supply.
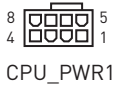
CPU_PWR1

CPU_PWR1

Pin	Signal Name	Pin	Signal Name
1	Ground	2	Ground
3	Ground	4	Ground
5	+12V	6	+12V
7	+12V	8	+12V
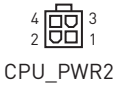
CPU_PWR2

CPU_PWR2

Pin	Signal Name	Pin	Signal Name
1	Ground	2	Ground
3	+12V	4	+12V
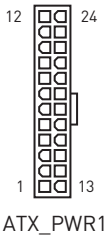
ATX_PWR1

ATX_PWR1

Pin	Signal Name	Pin	Signal Name
1	+3.3V	2	+3.3V
3	Ground	4	+5V
5	Ground	6	+5V
7	Ground	8	PWR OK
9	5VSB	10	+12V
11	+12V	12	+3.3V
13	+3.3V	14	-12V
15	Ground	16	PS-ON#
17	Ground	18	Ground
19	Ground	20	Res
21	+5V	22	+5V
23	+5V	24	Ground

⚠️ *Important*

Make sure that all the power cables are securely connected to a proper ATX power supply to ensure stable operation of the motherboard.

CPU_FAN1, PUMP_FAN1, SYS_FAN1~2: Fan Connectors

Fan connectors can be classified as PWM (Pulse Width Modulation) Mode or DC Mode. PWM Mode fan connectors provide constant 12V output and adjust fan speed with speed control signal. DC Mode fan connectors control fan speed by changing voltage.

PWM Mode pin definition

Pin	Signal Name	Pin	Signal Name
1	Ground	2	+12V
3	Sense	4	Speed Control Signal

DC Mode pin definition

Pin	Signal Name	Pin	Signal Name
1	Ground	2	Voltage Control
3	Sense	4	NC

Fan connector specifications

Connector	Default fan mode	Max. current	Max. power
CPU_FAN1	PWM mode	2A	24W
PUMP_FAN1	PWM mode	3A	36W
SYS_FAN1~6	PWM mode	2A	24W

⚠ *Important*

*You can adjust fan speed in **BIOS > HARDWARE MONITOR**.*

JCI1: Chassis Intrusion Connector

This connector allows you to connect the chassis intrusion switch cable.

Normal
(default)

Trigger the chassis
intrusion event

Using chassis intrusion detector

1. Connect the **JCI1** connector to the chassis intrusion switch/ sensor on the chassis.

2. Close the chassis cover.

3. Go to B**IOS > SETTINGS > Security > Chassis Intrusion Configuration**.

4. Set **Chassis Intrusion** to **Enabled**.

5. Press **F10** to save and exit and then press the **Enter** key to select **Yes**.

6. Once the chassis cover is opened again, a warning message will be displayed on screen when the computer is turned on.

Resetting the chassis intrusion warning

1. Go to **BIOS > SETTINGS > Security > Chassis Intrusion Configuration**.

2. Set **Chassis Intrusion** to **Reset**.

3. Press **F10** to save and exit and then press the Enter key to select **Yes**.

JBAT1: Clear CMOS (Reset BIOS) Jumper

There is CMOS memory onboard that is external powered from a battery located on the motherboard to save system configuration data. If you want to clear the system configuration, set the jumpers to clear the CMOS memory.

Keep Data
(default)

Clear CMOS/
Reset BIOS

Resetting BIOS to default values

1. Power off the computer and unplug the power cord.

2. Use a jumper cap to short **JBAT1** for about 5-10 seconds.

3. Remove the jumper cap from **JBAT1**.

4. Plug the power cord and Power on the computer.

JUSB4: USB 3.2 Gen 1 5Gbps Type-C Connector

This connector allows you to connect USB 3.2 Gen 1 5Gbps Type-C connector on the front panel. The connectors possess a foolproof design. When you connect the cable, be sure to connect it with the corresponding orientation.

JUSB4

USB Type-C Cable

USB Type-C port on the front panel
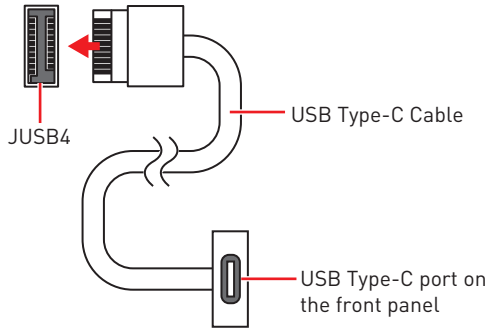
JUSB3: USB 3.2 Gen 1 Connector

This connector allows you to connect USB 3.2 Gen 1 5Gbps ports on the front panel.
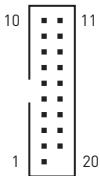
Pin	Signal Name	Pin	Signal Name
1	Power	2	USB3_RX_DN
3	USB3_RX_DP	4	Ground
5	USB3_TX_C_DN	6	USB3_TX_C_DP
7	Ground	8	USB2.0-
9	USB2.0+	10	Ground
11	USB2.0+	12	USB2.0-
13	Ground	14	USB3_TX_C_DP
15	USB3_TX_C_DN	16	Ground
17	USB3_RX_DP	18	USB3_RX_DN
19	Power	20	No Pin

10 11

1 20

⚠️ *Important*

Note that the Power and Ground pins must be connected correctly to avoid possible damage.

JUSB1~2: USB 2.0 Connectors

These connectors allow you to connect USB 2.0 ports on the front panel.
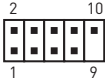
Pin	Signal Name	Pin	Signal Name
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	Ground	8	Ground
9	No Pin	10	NC

⚠️ *Important*

• *Note that the VCC and Ground pins must be connected correctly to avoid possible damage.*

• *In order to recharge your iPad, iPhone and iPod through USB ports, please install MSI Center utility.*

JTPM1: TPM Module Connector

This connector is for TPM (Trusted Platform Module). Please refer to the TPM security platform manual for more details and usages.
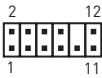
Pin	Signal Name	Pin	Signal Name
1	SPI Power	2	SPI Chip Select
3	Master In Slave Out (SPI Data)	4	Master Out Slave In (SPI Data)
5	Reserved	6	SPI Clock
7	Ground	8	SPI Reset
9	Reserved	10	No Pin
11	Reserved	12	Interrupt Request

JTBT1: Thunderbolt Add-on Card Connector

This connector allows you to connect the add-on Thunderbolt I/O card.

```
2        16
1        15
```
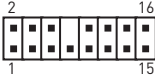
Pin	Signal Name	Pin	Signal Name
1	TBT_Force_PWR	2	TBT_S0IX_Entry_REQ
3	TBT_CIO_Plug_Event#	4	TBT_S0IX_Entry_ACK
5	SLP_S3#_TBT	6	TBT_PSON_Override_N
7	SLP_S5#_TBT	8	Net Name
9	Ground	10	SMBCLK_VSB
11	DG_PEWake	12	SMBDATA_VSB
13	TBT_RTD3_PWR_EN	14	Ground
15	TBT_Card_DET_R#	16	PD_IRQ#

JCOM1: Serial Port Connector

This connector allows you to connect the optional serial port with bracket.

```
2      10
1       9
```

Pin	Signal Name	Pin	Signal Name
1	DCD	2	SIN
3	SOUT	4	DTR
5	Ground	6	DSR
7	RTS	8	CTS
9	RI	10	No Pin

JDASH1: Tuning controller Connector

This connector is used to connect an optional Tuning Controller module.

```
2    6
1    5
```

Pin	Signal Name	Pin	Signal Name
1	No Pin	2	NC
3	MCU_SMB_SCL_M	4	MCU_SMB_SDA_M
5	VCC5	6	Ground

JRGB1: RGB LED connector

The JRGB connector allows you to connect the 5050 RGB LED strips 12V.

Pin	Signal Name	Pin	Signal Name
1	+12V	2	G
3	R	4	B

⚠️ *Important*

- *The JRGB connector supports up to 2 meters continuous 5050 RGB LED strips (12V/G/R/B) with the maximum power rating of 3A (12V).*

- *Always turn off the power supply and unplug the power cord from the power outlet before installing or removing the RGB LED strip.*

- *Please use MSI's software to control the extended LED strip.*

JRAINBOW1~2: Addressable RGB LED connectors

The JRAINBOW connectors allow you to connect the WS2812B Individually Addressable RGB LED strips 5V.

Pin	Signal Name	Pin	Signal Name
1	+5V	2	Data
3	No Pin	4	Ground

⚠️ *CAUTION*

Do not connect the wrong type of LED strips. The JRGB connector and the JRAINBOW connector provide different voltages, and connecting the 5V LED strip to the JRGB connector will result in damage to the LED strip.

⚠️ *Important*

- *The JRAINBOW connector supports up to 75 LEDs WS2812B Individually Addressable RGB LED strips (5V/Data/Ground) with the maximum power rating of 3A (5V). In the case of 20% brightness, the connector supports up to 200 LEDs.*

- *Always turn off the power supply and unplug the power cord from the power outlet before installing or removing the RGB LED strip.*

- *Please use MSI's software to control the extended LED strip.*

Installing OS, Drivers & MSI Center

Please download and update the latest utilities and drivers at www.msi.com

Installing Windows 10/ Windows 11

1. Power on the computer.
2. Insert the Windows 10/ Windows 11 installation disc/USB into your computer.
3. Press the **Restart** button on the computer case.
4. Press **F11** key during the computer POST (Power-On Self Test) to get into Boot Menu.
5. Select the Windows 10/ Windows 11 installation disc/USB from the Boot Menu.
6. Press any key if screen shows **Press any key to boot from CD or DVD...** message. If not, please skip this step.
7. Follow the instructions on the screen to install Windows 10/ Windows 11.

Installing Drivers

1. Start up your computer in Windows 10/ Windows 11.
2. Insert MSI® USB Drive into the USB port.
3. Click the **Select to choose what happens with this disc** pop-up notification, then select **Run DVDSetup.exe** to open the installer. If you turn off the AutoPlay feature from the Windows Control Panel, you can still manually execute the **DVDSetup.exe** from the root path of the MSI USB Drive.
4. The installer will find and list all necessary drivers in the **Drivers/Software** tab.
5. Click the **Install** button in the lower-right corner of the window.
6. The drivers installation will then be in progress, after it has finished it will prompt you to restart.
7. Click **OK** button to finish.
8. Restart your computer.

MSI Center

MSI Center is an application that helps you easily optimize game settings and smoothly use content creation softwares. It also allows you to control and synchronize LED light effects on PCs and other MSI products. With MSI Center, you can customize ideal modes, monitor system performance, and adjust fan speed.

MSI Center User Guide

If you would like to know more information about MSI Center, please refer to

http://download.msi.com/manual/mb/MSICENTER.pdf

or scan the QR code to access.

⚠ *Important*

Functions may vary depending on the product you have.

UEFI BIOS

MSI UEFI BIOS is compatible with UEFI (Unified Extensible Firmware Interface) architecture. UEFI has many new functions and advantages that traditional BIOS cannot achieve, and it will completely replace BIOS in the future. The MSI UEFI BIOS uses UEFI as the default boot mode to take full advantage of the new chipset's capabilities.

⚠️ *Important*

The term BIOS in this user guide refers to UEFI BIOS unless otherwise noted.

UEFI advantages

• Fast booting - UEFI can directly boot the operating system and save the BIOS self-test process. And also eliminates the time to switch to CSM mode during POST.

• Supports for hard drive partitions larger than 2 TB.

• Supports more than 4 primary partitions with a GUID Partition Table (GPT).

• Supports unlimited number of partitions.

• Supports full capabilities of new devices - new devices may not provide backward compatibility.

• Supports secure startup - UEFI can check the validity of the operating system to ensure that no malware tampers with the startup process.

Incompatible UEFI cases

• **32-bit Windows operating system** - this motherboard supports only Windows 10/ Windows 11 64-bit operating system.

• **Older graphics card** - the system will detect your graphics card. When display a warning message **There is no GOP (Graphics Output protocol) support detected in this graphics card**.

⚠️ *Important*

We recommend that you to replace with a GOP/UEFI compatible graphics card or using integrated graphics from CPU for having normal function.

How to check the BIOS mode?

1. Power on your computer.

2. Press **Delete** key, when the **Press DEL key to enter Setup Menu, F11 to enter Boot Menu** message appears on the screen during the boot process.

3. After entering the BIOS, you can check the **BIOS Mode** at the top of the screen.

BIOS Mode: **UEFI**

BIOS Setup

The default settings offer the optimal performance for system stability in normal conditions. You should **always keep the default settings** to avoid possible system damage or failure booting unless you are familiar with BIOS.

⚠️ *Important*

- *BIOS items are continuously update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be for reference only. You could also refer to the **HELP** information panel for BIOS item description.*

- *The BIOS screens, options and settings will vary depending on your system.*

Entering BIOS Setup

Press **Delete** key, when the **Press DEL key to enter Setup Menu, F11 to enter Boot Menu** message appears on the screen during the boot process.

Function key

F1:	General Help list
F2:	Add/ Remove a favorite item
F3:	Enter Favorites menu
F4:	Enter CPU Specifications menu
F5:	Enter Memory-Z menu
F6:	Load optimized defaults
F7:	Switch between Advanced mode and EZ mode
F8:	Load Overclocking Profile
F9:	Save Overclocking Profile
F10:	Save Change and Reset*
F12:	Take a screenshot and save it to USB flash drive (FAT/ FAT32 format only).
Ctrl+F:	Enter Search page

* When you press F10, a confirmation window appears and it provides the modification information. Select between Yes or No to confirm your choice.

BIOS User Guide

If you'd like to know more instructions on setting up the BIOS, please refer to http://download.msi.com/manual/mb/Intel600BIOS.pdf

or scan the QR code to access.

⚠️ *Important*

Functions may vary depending on the product you have.

Resetting BIOS

You might need to restore the default BIOS setting to solve certain problems. There are several ways to reset BIOS:

• Go to BIOS and press **F6** to load optimized defaults.

• Short the **Clear CMOS** jumper on the motherboard.

⚠ *Important*

*Be sure the computer is off before clearing CMOS data. Please refer to the **Clear CMOS** jumper/ button section for resetting BIOS.*

Updating BIOS

Updating BIOS with M-FLASH

Before updating:

Please download the latest BIOS file that matches your motherboard model from MSI website. And then save the BIOS file into the USB flash drive.

Updating BIOS:

1. Insert the USB flash drive that contains the update file into the USB port.

2. Please refer the following methods to enter flash mode.

   • Reboot and press **Ctrl + F5** key during POST and click on Yes to reboot the system.

   • Reboot and press **Del** key during POST to enter BIOS. Click the **M-FLASH** button and click on Yes to reboot the system.

3. Select a BIOS file to perform the BIOS update process.

4. When prompted click on **Yes** to start recovering BIOS.

5. After the flashing process is 100% completed, the system will reboot automatically.

Updating the BIOS with MSI Center

Before updating:

• Make sure the LAN driver is already installed and the internet connection is set properly.

• Please close all other application software before updating the BIOS.

To update BIOS:

1. Install and launch MSI Center and go to **Support** page.

2. Select **Live Update** and click on **Advance** button.

3. Select the BIOS file and click on **Install** button.

4. The installation reminder will appear, then click the Install button on it.

5. The system will automatically restart to update BIOS.

6. After the flashing process is 100% completed, the system will restart automatically.