



D3052

MS-S3661

Server Motherboard
User Guide

Contents

- Regulatory Notices.....4
- Safety Information 7
- Specifications9
- Overview of Components11
- Rear I/O Panel.....12
 - UID LED Button 12
 - COM Port 12
 - VGA Port 12
 - USB 3.2 Gen 1 Type-A Port 12
 - GbE RJ45 Port (for mgmt.) 13
 - 25G SFP28 LAN Port..... 13
 - HDMI™ Connector 13
- Block Diagram14
- CPU Socket16
 - Introduction to the AM5 CPU..... 16
 - CPU & Heatsink Installation 17
- Memory Slots.....18
 - DIMMA1~2, DIMMB1~2: DDR5 DIMM Slots 18
 - Recommended Memory Population 18
 - Installing Memory Modules..... 19
- Storage Connectors20
 - SATA1~4: SATA 3.0 6Gb/s Ports..... 20
 - SATA3_1: SATA 2.0 3Gb/s Ports..... 20
 - M2_1: M.2 Slot (M Key, PCIe 4.0, 22110/ 2280)..... 21
 - Installing M.2 SSD 21
- Expansion Slots22
 - PCI_E_16, PCI_E_4: PCIe Expansion Slots 22

Power Connectors	23
JPWR2: 24-Pin Main Power Connector	23
JPWR1: 8-Pin 12V Power Connector	24
JSDOMPWR1: 2-Pin SATA DOM Power Connector	24
Cooling Connectors	25
FAN1~6: Fan Connectors	25
USB Connectors	26
JUSB1: USB 3.2 Gen 1 Header	26
JUSB2: USB 3.2 Gen 1 Type-A Port	26
Other Connectors and Components	27
JFP1: Front Panel Header	27
JTPM1: SPI TPM Header	28
JCOM1: COM Port Header	28
JGPIO1: GPIO Header	29
JPMBUS1: PMBus Header	29
FP_I2C_1, RBP_I2C_1~2: I2C Headers	30
JIPMB1: IPMB Header	30
JCHASSIS: Chassis Intrusion Header	31
BAT1: CMOS Battery	32
Replacing CMOS battery	32
Jumpers	33
Onboard LEDs	34
BMC_LED1: BMC Heartbeat LED	34
LED_H1, LED_L1: Port 80 Debug LEDs	34

Regulatory Notices

WEEE Statement

Under the European Union (“EU”) Directive on Waste Electrical and Electronic Equipment, Directive 2012/19/EU, products of “electrical and electronic equipment” cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life.



CE Conformity

Hereby, Micro-Star International CO., LTD declares that this device is in compliance with the essential safety requirements and other relevant provisions set out in the European Directive.



FCC-A Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A 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 AC power cord, if any, must be used in order to comply with the emission limits.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Chemical Substances Information

In compliance with chemical substances regulations, such as the EU REACH Regulation (Regulation EC No. 1907/2006 of the European Parliament and the Council), MSI provides the information of chemical substances in products at:

<https://csr.msi.com/global/index>

Battery Information

Please take special precautions if this product comes with a battery.

- Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.
- Avoid disposal of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery, which can result in an explosion.
- Avoid leaving a battery in an extremely high temperature or extremely low air pressure environment that can result in an explosion or the leakage of flammable liquid or gas.
- Do not ingest battery. If the coin/button cell battery is swallowed, it can cause severe internal burns and can lead to death. Keep new and used batteries away from children.

European Union:



Batteries, battery packs, and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with the local regulations.

BSMI:



廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

California, USA:



The button cell battery may contain perchlorate material and requires special handling when recycled or disposed of in California. For further information please visit:

<http://www.dtsc.ca.gov/hazardouswaste/perchlorate/>



HIGH-DEFINITION MULTIMEDIA INTERFACE

The terms HDMI™, HDMI High-Definition Multimedia Interface, HDMI™ Trade dress and the HDMI™ Logos are trademarks or registered trademarks of HDMI™ Licensing Administrator, Inc.

Environmental Policy

- The product has been designed to enable proper reuse of parts and recycling and should not be thrown away at its end of life.
- Users should contact the local authorized point of collection for recycling and disposing of their end-of-life products.
- Visit the MSI website and locate a nearby distributor for further recycling information.
- Users may also reach us at gpcontdev@msi.com for information regarding proper disposal, take-back, recycling, and disassembly of MSI products.
- Please visit <<https://us.msi.com/page/recycling>> for information regarding the recycling of your product in the US.



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Technical Support

If a problem arises with your product and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please visit <https://eps.msi.com/support> for further guidance.

Safety Information



Please read and follow these safety instructions carefully before installing, operating or performing maintenance on the server.

General Safety Instructions

- Always read the safety instructions carefully.
- Keep this User Guide for future reference.
- Keep this equipment away from humidity.
- Lay the equipment on a stable, flat surface before setting it up.
- Do not cover the air openings to prevent overheating.
- Avoid spilling liquids into the equipment to prevent damage or electrical shock.
- Do not leave the equipment in an unconditioned environment. Storage temperatures above 60°C (140°F) may cause damage.

Electrical Safety

Power Setup and Protection

- Ensure the power source matches the equipment voltage before connection.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times. Do not disable the power cord grounding plug, as it is an important safety feature.
- Do not use a power adapter other than the one provided.
- Place the power cord to avoid being stepped on or crushed.
- Protect the server from power fluctuations and outages using a regulated uninterruptible power supply (UPS).

Handling Power Connections

- Unplug the power cord before inserting add-on cards or modules.
- Disconnect all power supplies before maintenance to avoid electrical shock. If the unit has more than one power supply, disconnect all of them.
- Unplug the power cord to fully disconnect the system. The front panel Power On/Standby button does not completely shut off system power. Portions of the power supply and some internal circuitry remain active until AC/DC power is removed.

Assembly and Installation

This equipment must be installed in restricted access areas by qualified personnel to comply with safety standards set by the NEC and IEC 62368-1, Third Edition, for Information Technology Equipment.

Lifting and Placement

- **WARNING:** This server is heavy.
- Follow occupational health and safety guidelines for manual material handling.
- A minimum of two people is required to lift or install the server. For installations above chest height, a third person may be needed for alignment.
- Exercise caution when installing or removing the server from the rack, as it may become unstable when not fastened to the rails.

Hot Surfaces

- Allow components like drives and power supplies to cool before touching.

Energy Pack Handling after Removal

To reduce the risk of fire or burns:

- Do not disassemble, crush, or puncture the energy pack.
- Avoid shorting external contacts.
- Do not dispose of the energy pack in fire or water.

Other Components

- Keep away from hazardous moving parts, such as fan blades, to prevent injury.
- Do not drop or jolt the system, as this may damage internal components or compromise safety.

General Precautions During Operation

- Avoid operating the server with the access panel open or removed for extended periods, as this disrupts airflow and may cause overheating.
- Do not insert incorrect connectors into ports to avoid damage to components or the risk of electrical hazards.
- This equipment is not suitable for use in locations where children are likely to be present.

When to Contact Service Personnel

Seek immediate assistance from qualified personnel if any of the following occurs:

- The power cord or plug is damaged.
- Liquid has entered the equipment.
- The equipment has been exposed to moisture.
- The equipment does not function as described in the User Guide.
- The equipment has been dropped or physically damaged.
- The equipment shows visible signs of breakage.

Specifications

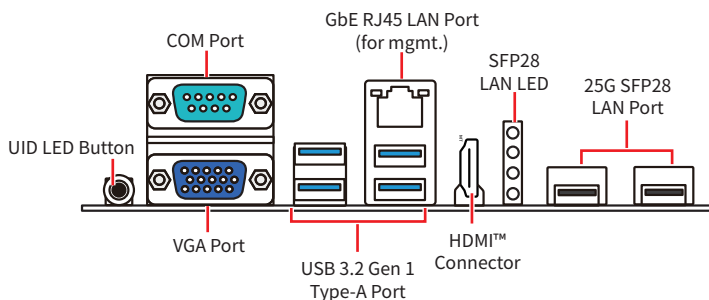
Model	D3052GB2N-25G
Form factor	Micro-ATX
Dimensions	243.84 mm (9.6") x 243.84 mm (9.6")
Processor	Single AMD Ryzen™ 7000/9000 Series and EPYC™ 4004/4005 Series Processor, TDP up to 170W
Socket	1 x AMD Socket AM5
Chipset	AMD B650 Chipset
Networking	• 2 x 25G SFP28 LAN ports - Intel® Ethernet Controller E810-XXVAM2, w/ NCSI
Graphics	• 1 x HDMI™ 1.4b (from CPU) • 1 x VGA (from AST2600 BMC)
Memory	• 4 x DDR5 DIMM slots, 2DPC, ECC/non-ECC UDIMM - Max Frequency: 5600 MT/s (1DPC) and 3600 MT/s (2DPC) - Max Capacity per DIMM: 48GB
Storage	• 4 x SATA 3.0 ports (SATA1~4, w/ 1 x VCC) • 2 x SATA 2.0 ports (SATA3_1) • 1 x M.2 M-Key slot (PCIe 4.0 x4, 22110/ 2280)
Expansion Slots	• 1 x PCIe 5.0 x 16 slot (Gen 5 x 16 signal from CPU) (PCIE_16) • 1 x PCIe 5.0 x 8 slot (Gen 5 x 4 signal from CPU) (PCIE_4)
Rear I/O	• 4 x USB 3.2 Gen 1 Type-A ports • 2 x 25G SFP28 LAN ports • 1 x HDMI™ connector • 1 x GbE RJ45 ports (Mgmt.) • 1 x COM port • 1 x VGA port • 1 x UID LED button • 4 x Link/Speed LEDs (SFP28 ports)
Internal USB Connectors	• 1 x USB 3.2 Gen 1 header • 1 x USB 3.2 Gen 1 Type-A port

Continued on next column

Model	D3052GB2N-25G
System Connectors	• 1 x Front panel header • 1 x SPI TPM header • 1 x GPIO header • 3 x I2C headers • 1x PMbus header • 1 x COM port header • 1 x Chassis intrusion header • 1x IPMB header
Cooling Connectors	6 x 4-pin system PWM fan connectors
Power Connectors	• 1 x 24-pin ATX power connector • 1x 8-pin 12V power connector • 1 x 2-pin SATA DOM power connector
Jumpers	• 1 x CMOS clear jumper • 1 x Power test jumper • 1 x BMC select jumper
LED Features	• 2 x BMC heartbeat LEDs • 2 x Port 80 debug LEDs
Security	1 x TPM header
Server Management	• 1 x 1GbE RJ45 port for Mgmt. (Realtek® RTL8211FD-CG) • ASPEED AST2600 with AMI MegaRAC based firmware - Supports IPMI 2.0 and DMTF Redfish® API • Single BIOS and single BMC
Environment	• Operating Temperature: 0°C ~ 40°C • Non-operating Temperature: -20°C ~ 70°C • Non-operating Relative Humidity: 5% ~ 85% (non-condensing)
Certifications	CE, FCC (Class A)



Rear I/O Panel



UID LED Button

The UID (Unit Identification) button help users identify and locate a system, especially in high-density rack environments.

COM Port

A COM port, also called a serial port or DB9 connector, is a communication interface for transferring data between a computer and external devices such as barcode scanners, printers, and credit card machines. It's commonly used for **initial system configuration and diagnostics** on server boards and for connecting legacy devices that lack modern interfaces. Users can connect a specially configured serial cable to establish a serial connection.

VGA Port

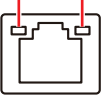
The DB15-pin female connector is provided for monitors.

USB 3.2 Gen 1 Type-A Port

The USB (Universal Serial Bus) port is used for connecting USB devices such as keyboards, mice, or other compatible peripherals. It supports data transfer rates up to **5 Gbps** and is backward-compatible with USB 2.0 devices.

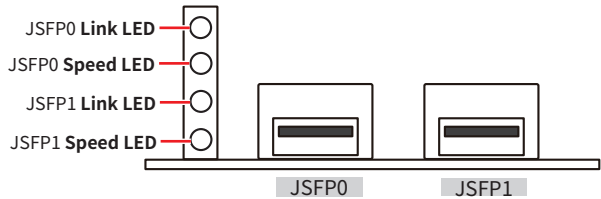
GbE RJ45 Port (for mgmt.)

Connect a specially configured RJ45 console cable to this jack for network routers/switches to communicate with the system through a serial connection.

Link/ Activity LED			Speed LED	
Status	Description		Status	Description
Off	No link		Off	10 Mbps
Green	Linked		Orange	100 Mbps
Blinking	Data activity		Green	1 Gbps

25G SFP28 LAN Port

Utilize fiber optic cables to connect with compatible SFP28 transceivers, or opt for DAC/AOC cables to meet your connectivity needs.

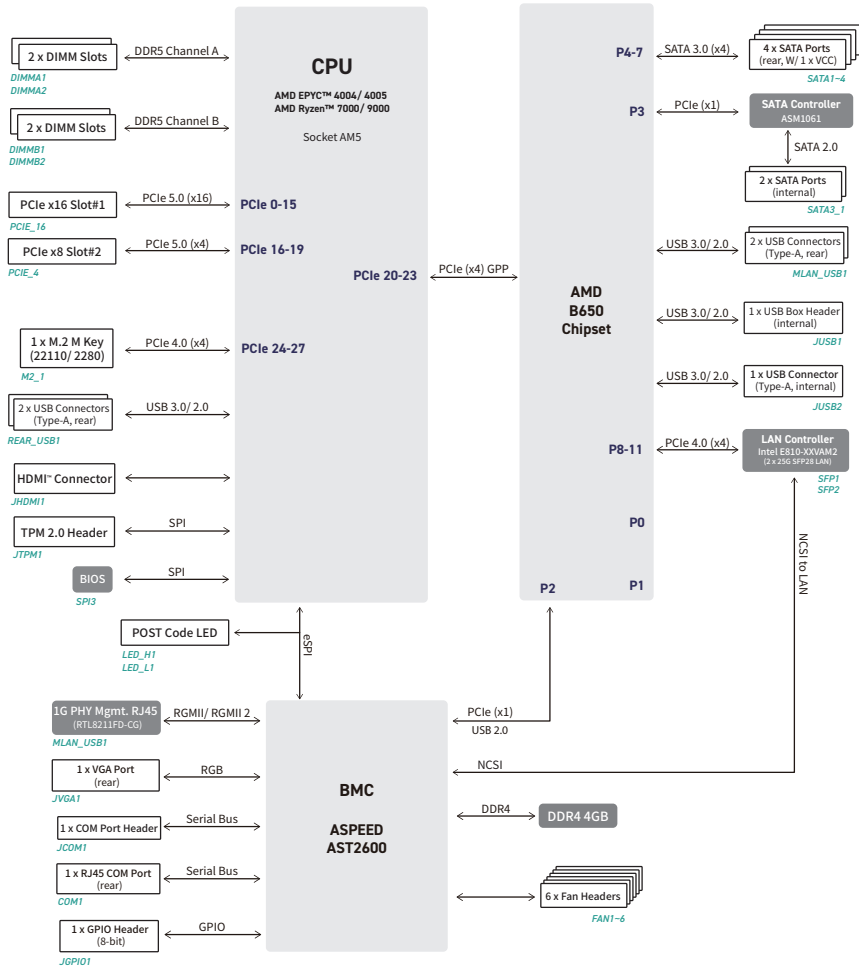


Link/ Activity LED		Speed LED	
Status	Description	Status	Description
Off	No link	Off	100 Mbps
Green	Linked	Yellow	10 Gbps
Blinking	Data activity	Green	25 Gbps

HDMI™ Connector HDMI™

HDMI™ is a digital interface for uncompressed audio/video streams, accommodating all TV formats and multi-channel audio on a single cable.

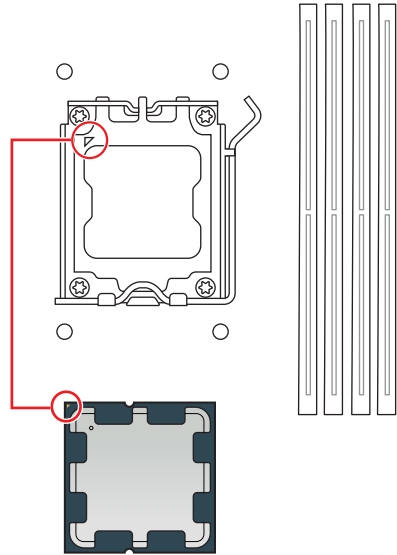
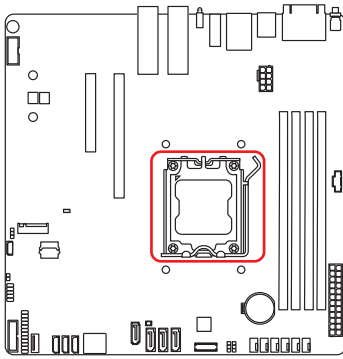
Block Diagram



Component Contents

Component	Page
CPU Socket	14
Memory Slots	16
DIMMA1~2, DIMMB1~2: DDR5 DIMM Slots	16
Storage Connectors	18
SATA1~4: SATA 3.0 6Gb/s Ports	18
SATA3_1: SATA 2.0 3Gb/s Ports	18
M2_1: M.2 Slot (M Key, PCIe 4.0, 22110/ 2280)	19
Expansion Slots	20
PCIE_16, PCIE_4: PCIe Expansion Slots	20
Power Connectors	21
JPWR2: 24-Pin Main Power Connector	21
JPWR1: 8-Pin 12V Power Connector	22
JSDOMPWR1: 2-Pin SATA DOM Power Connector	22
Cooling Connectors	23
FAN1~6: Fan Connectors	23
USB Connectors	24
JUSB1: USB 3.2 Gen 1 Header	24
JUSB2: USB 3.2 Gen 1 Type-A Port	24
Other Connectors and Components	25
JFP1: Front Panel Header	25
JTPM1: SPI TPM Header	26
JCOM1: COM Port Header	26
JGPIO1: GPIO Header	27
JPMBUS1: PMBus Header	27
FP_I2C_1, RBP_I2C_1~2: I2C Headers	28
JIPMB1: IPMB Header	28
JCHASSIS: Chassis Intrusion Header	29
BAT1: CMOS Battery	30
Jumpers	31
Onboard LEDs	32
BMC_LED1: BMC Heartbeat LED	32
LED_H1, LED_L1: Port 80 Debug LEDs	32

CPU Socket



Introduction to the AM5 CPU

The surface of the AM5 CPU has two **notches** and a **golden triangle** to assist in correctly lining up the CPU for motherboard placement. The golden triangle is the Pin 1 indicator.

Important

- **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.
- While **replacing the CPU**, always turn off the power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.
- Confirm if your CPU cooler is firmly installed before turning on your system.
- Do not touch the CPU socket pins to avoid damage.
- Whenever CPU is not installed, always protect your CPU socket pins with the plastic cap covered.
- Please refer to the documentation in the CPU cooler package for more details about the CPU cooler installation.
- Read the CPU status in BIOS.

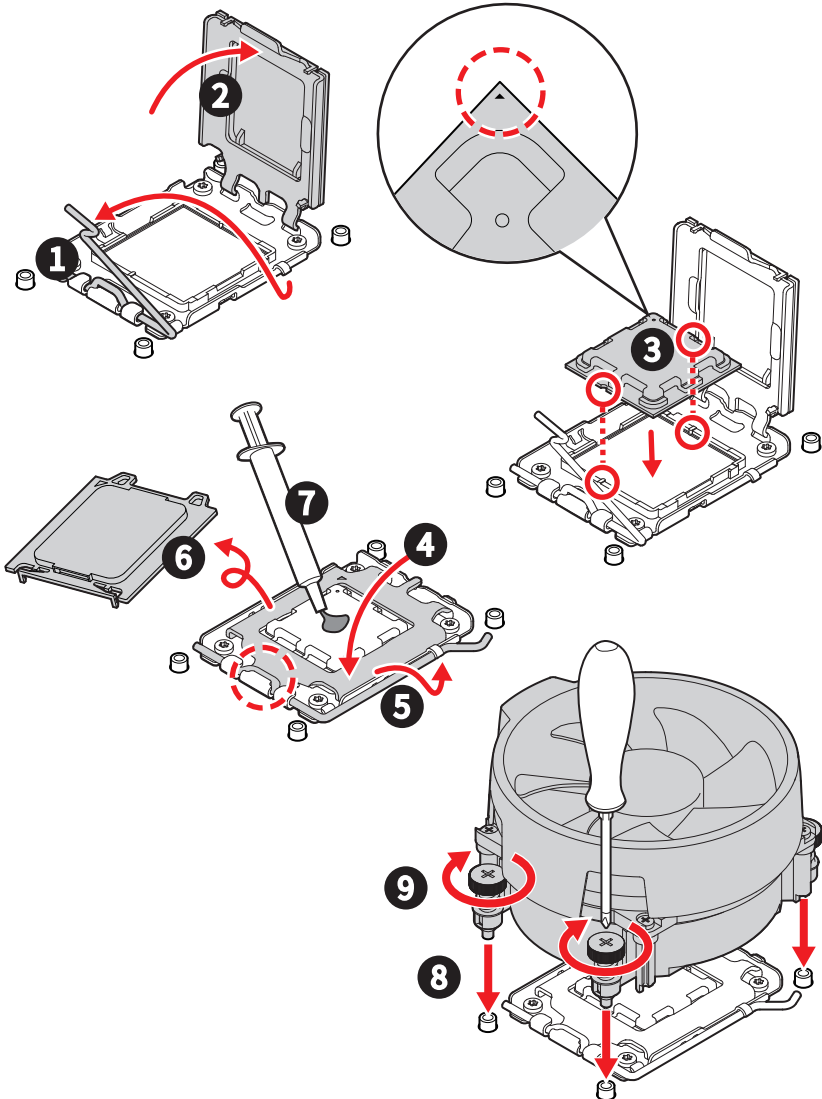
CPU & Heatsink Installation

Use appropriate ground straps, gloves and ESD mats to protect yourself from electrostatic discharge (ESD) while installing the processor.



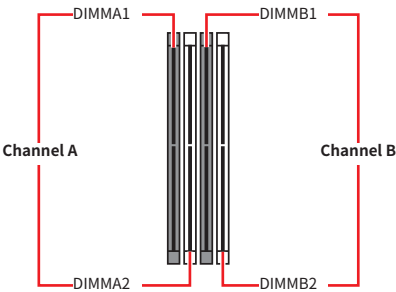
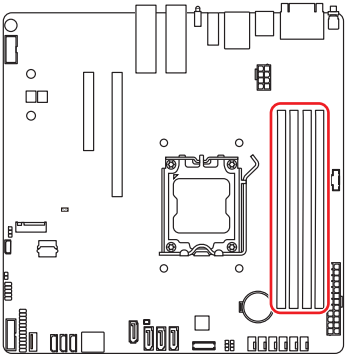
Important

Images are for demonstration purposes only; actual parts may vary.



Memory Slots

DIMMA1~2, DIMMB1~2: DDR5 DIMM Slots



Recommended Memory Population

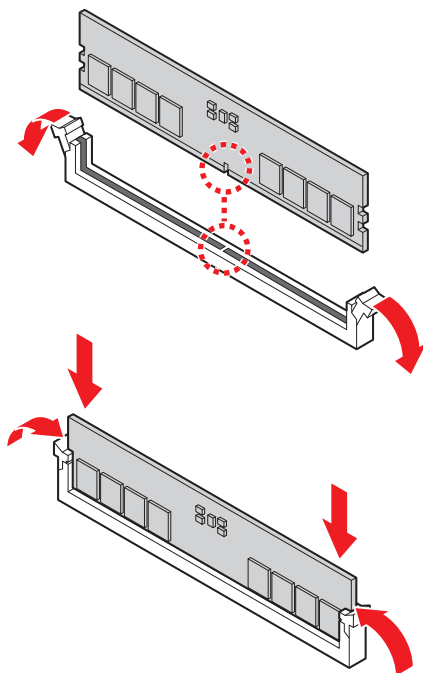
Quantity of DIMMs		1	2		3		4
Channel A	DIMMA1				V		V
	DIMMA2	V	V		V	V	V
Channel B	DIMMB1			V		V	V
	DIMMB2		V	V		V	V
"V" indicates a populated DIMM slot.							

Important

- Only support **UDIMM**.
- There should be at least 1 DDR5 DIMM populated.
- Paired memory installation for Max performance.
- If only **1 DIMM** is populated in a channel, then populate it in the **DIMMA2** slot.
- Populate the same DIMM type in each channel, specifically: 1. Use the same DIMM size; 2. Use the same number of ranks per DIMM.
- We don't suggest other memory installation.

Installing Memory Modules

1. Open the side clips to unlock the DIMM slot.
2. Insert the DIMM vertically into the slot, ensuring that the off-center notch at the bottom aligns with the slot.
3. Push the DIMM firmly into the slot until it clicks and the side clips automatically close.
4. Verify that the side clips have securely locked the DIMM in place.



Important

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

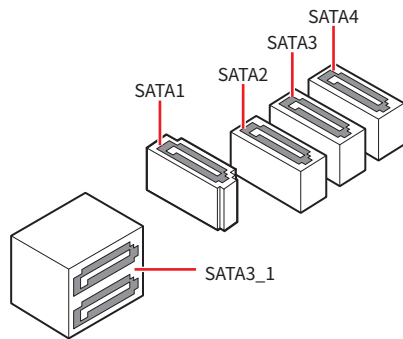
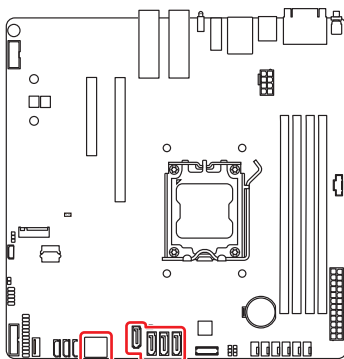
Storage Connectors

SATA1~4: SATA 3.0 6Gb/s Ports

These connectors are SATA 6Gb/s interface ports, it can connect to SATA devices.

SATA3_1: SATA 2.0 3Gb/s Ports

These connectors are SATA 3Gb/s interface ports, it can connect to SATA devices.

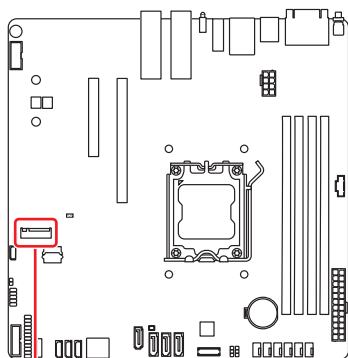


Important

- 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.

M2_1: M.2 Slot (M Key, PCIe 4.0, 22110/ 2280)

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



M2_1



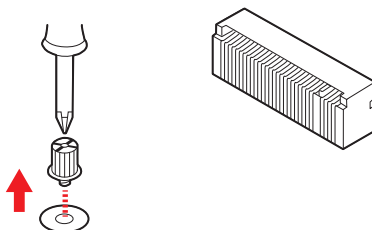
Video Demonstration

Watch the video to learn how to
Install M.2 SSD.

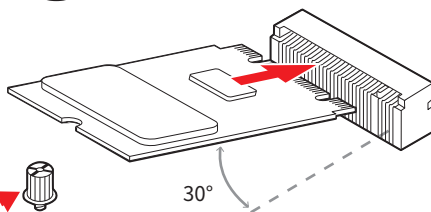


Installing M.2 SSD

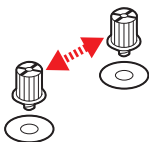
1. Loosen the M.2 riser screw from the motherboard.



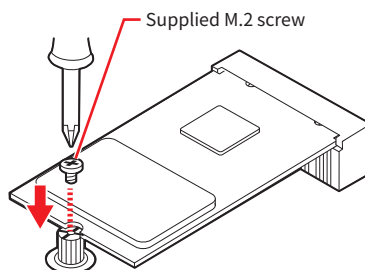
2. Set the M.2 riser screw at the appropriate location based on the length of your M.2 SSD.



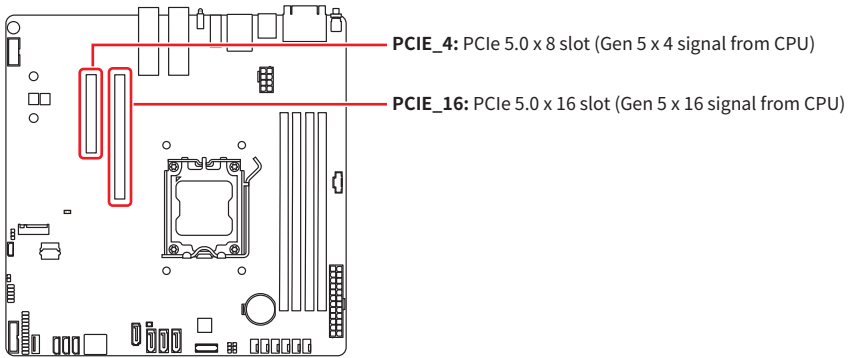
3. Insert your M.2 SSD into the M.2 slot at a 30-degree angle.



4. Secure the M.2 SSD in place with the supplied M.2 screw.



Expansion Slots



PCIE_16, PCIE_4: PCIe Expansion Slots

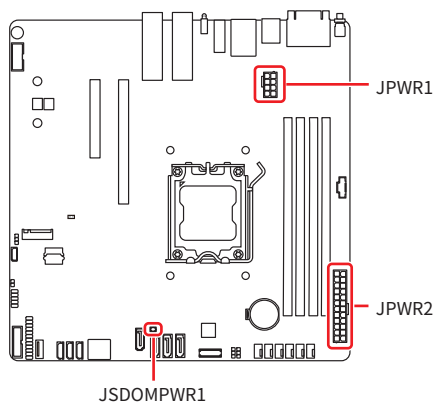
The PCI Express(Peripheral Component Interconnect Express) slots support PCIe interface expansion cards.



Important

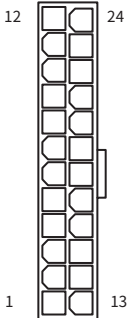
When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

Power Connectors



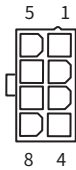
JPWR2: 24-Pin Main Power Connector

This connector allows you to connect an ATX power supply.

JPWR2 	1	+3.3V	13	+3.3V
	2	+3.3V	14	-12V
	3	GND	15	GND
	4	+5V	16	PS-ON#
	5	GND	17	GND
	6	+5V	18	GND
	7	GND	19	GND
	8	PWR OK	20	Res
	9	5VSB	21	+5V
	10	+12V	22	+5V
	11	+12V	23	+5V
	12	+3.3V	24	GND

JPWR1: 8-Pin 12V Power Connector

This connector allows you to connect an ATX power supply.

JPWR1 	1	GND	5	P12V
	2	GND	6	P12V
	3	GND	7	P12V
	4	GND	8	P12V

JSDOMPWR1: 2-Pin SATA DOM Power Connector

This connector is used to provide power to SATA DOM devices.

JSDOMPWR1 	1	GND
	2	P5V

 Important

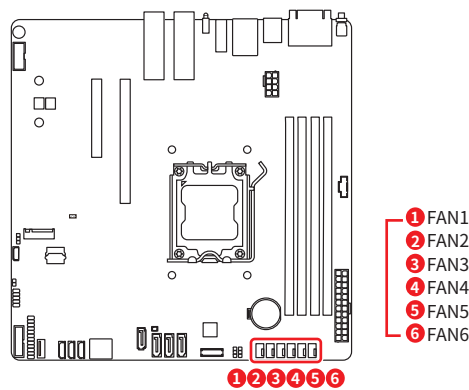
Make sure that all power connectors are securely connected to the power supply to ensure stable operation of the motherboard.

Cooling Connectors

FAN1~6: Fan Connectors

The fan power connector supports system cooling fans 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.

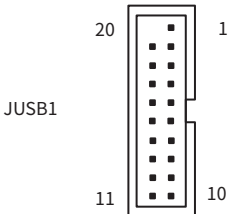
FAN1~6 4 1	1	GND
	2	P12V
	3	FAN_TACH
	4	BMC_PWM



USB Connectors

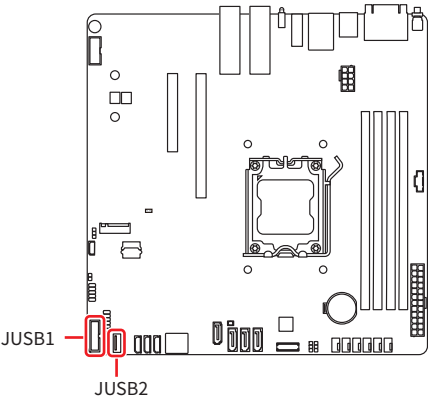
JUSB1: USB 3.2 Gen 1 Header

This port is backward-compatible with USB 2.0 devices and supports data transfer rate up to **5 Gbps**.

	1	USB_VCC1	11	USB2_ESD_DP9
	2	USB3_ESD_RX4N	12	USB2_ESD_DN9
	3	USB3_ESD_RX4P	13	GND
	4	GND	14	USB3_ESD_TX5P
	5	USB3_ESD_TX4N	15	USB3_ESD_TX5N
	6	USB3_ESD_TX4P	16	GND
	7	GND	17	USB3_ESD_RX5P
	8	USB2_ESD_DN8	18	USB3_ESD_RX5N
	9	USB2_ESD_DP8	19	USB_VCC2
	10	NC	20	No pin

JUSB2: USB 3.2 Gen 1 Type-A Port

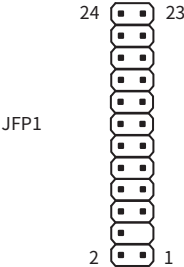
The USB (Universal Serial Bus) port is used for connecting USB devices such as keyboards, mice, or other compatible peripherals. It supports data transfer rates up to **5 Gbps** and is backward-compatible with USB 2.0 devices.

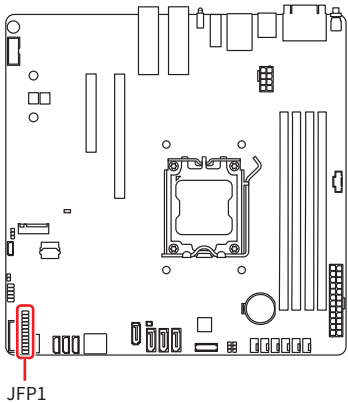


Other Connectors and Components

JFP1: Front Panel Header

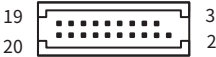
The front panel header is provided for electrical connection to the front panel switches and LEDs.

	1	PWR_LED+	2	FP_PWR
	3	N/A	4	SYS_ID_LED+
	5	PWR_LED-	6	SYS_ID_LED-
	7	HDD_ACT_LED+	8	SYS_FAULT_LED1-
	9	HDD_ACT_LED-	10	SYS_FAULT_LED2-
	11	PWR_BTN	12	NIC#1_ACT_LED+
	13	PWR_BTN_GND	14	NIC#1_ACT_LED-
	15	RST_BTN	16	SMB_SDA
	17	RST_BTN_GND	18	SMB_SCL
	19	SYS_ID_BTN	20	CHASSIS_INTRUSION
	21	WIRE_TEMP_SENSOR	22	NIC#2_ACT_LED+
	23	NMI_BTN	24	NIC#2_ACT_LED-



JTPM1: SPI TPM Header

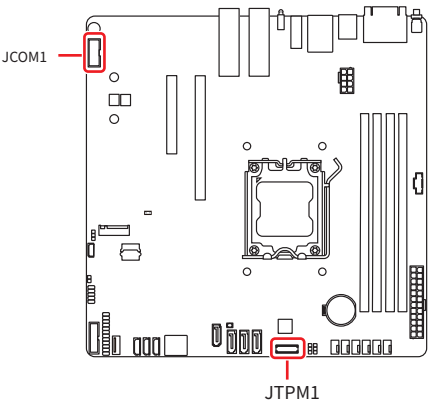
This header connects to a TPM (Trusted Platform Module) (optional). Please refer to the TPM security platform manual for more details.

	1	No Pin	2	SPI_LOC_ROM_CS_N
	3	CPU_RSMEST_L	4	N/A
	5	GND	6	P1V8_AUX
	7	SPI_CPU0_CLK	8	TPM_SPI_WP_N
	9	SPI_CPU0_HOLD_L	10	SPI_CPU0_MISO
	11	N/A	12	SPI_CPU0_MOSI
	13	SPI_TPM_CS_N	14	GND
	15	PVDD_P1V8_AUX	16	GND
	17	IRQ_TPM_SPI_N	18	P1V8_AUX
	19	TPM_RESET_N	20	P1V8_AUX

JCOM1: COM Port Header

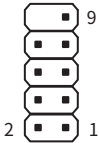
This header is a 16550A high speed communications port that sends/receives 16 bytes FIFOs. You can attach a serial device to it.

	1	NDCD#_B	2	NSIN_B
	3	NSOUT_B	4	NDTR_B
	5	GND	6	NDSR#_B
	7	NRTS_B	8	NCTS#_B
	9	NRTS#_B	10	No pin



JGPIO1: GPIO Header

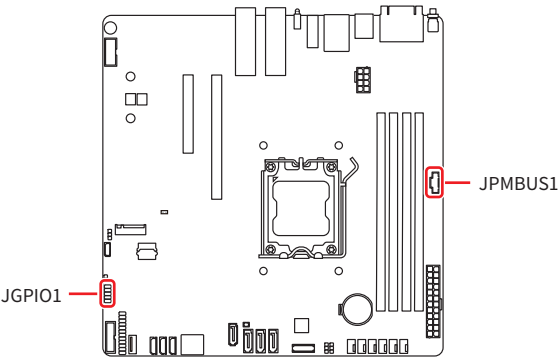
This header is provided for the General-Purpose Input/Output (GPIO) peripheral module.

JGPIO1 	1	USER_GPIO0	2	USER_GPIO1
	3	USER_GPIO2	4	USER_GPIO3
	5	USER_GPIO4	6	USER_GPIO5
	7	USER_GPIO6	8	USER_GPIO7
	9	GND	10	No pin

JPMBUS1: PMBus Header

Power Management Bus (PMBus) is a variant of the System Management Bus (SMBus) which is targeted at digital management of power supplies.

JPMBUS1 	1	JPMBUS1_LVC3_SCL
	2	JPMBUS1_LVC3_SDA
	3	SMB_PMBUS_ALERT_N
	4	GND
	5	P3V3_AUX



FP_I2C_1, RBP_I2C_1~2: I2C Headers

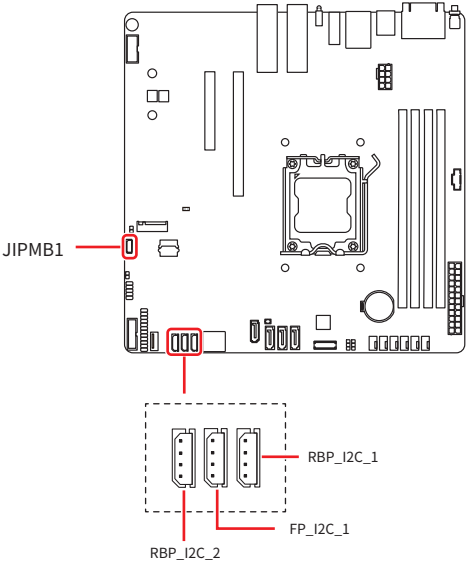
I2C headers are used to connect to the System Management Bus (SMBus). FBP_I2C_1 is for front HDD backplane, and RBP_I2C_1, RBP_I2C_2 are for rear HDD backplanes.

FP_I2C_1 RBP_I2C_1 RBP_I2C_2		1	NC
		2	I2C_CLK
		3	I2C_DATA
		4	GND

JIPMB1: IPMB Header

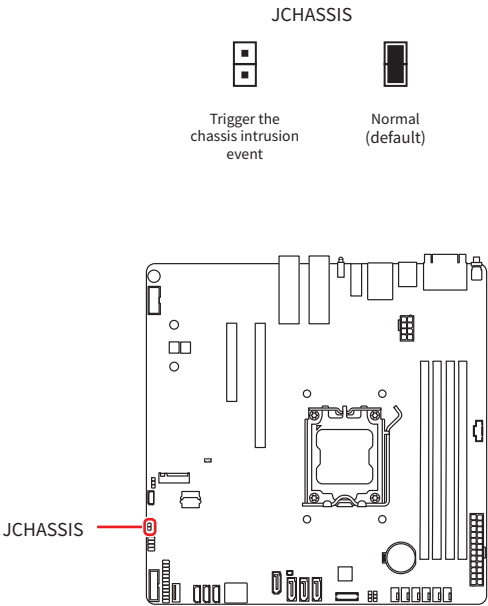
Intelligent Platform Management Bus (IPMB) header is used to connect various management components, such as Baseboard Management Controller (BMC).

JIPMB1		1	SMB_IPMB_DAT
		2	GND
		3	SMB_IPMB_CLK



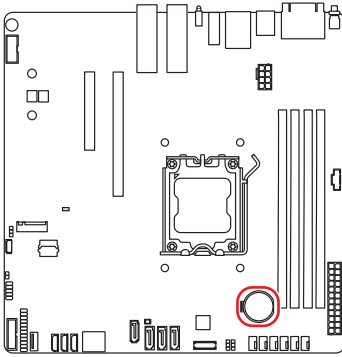
JCHASSIS: Chassis Intrusion Header

This header connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



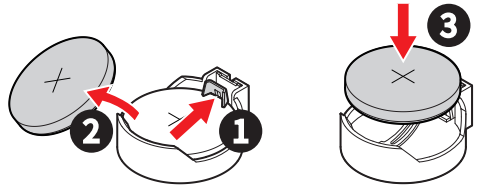
BAT1: CMOS Battery

If the CMOS battery is out of charge, the time in the BIOS will be reset and the data of system configuration will be lost. In this case, you need to replace the CMOS battery.



Replacing CMOS battery

1. Push the retainer clip to free the battery.
2. Remove the battery from the socket.
3. Install the new CR2032 coin-cell battery with the + sign facing up. Ensure that the retainer holds the battery securely.



WARNING

KEEP OUT OF REACH OF CHILDREN

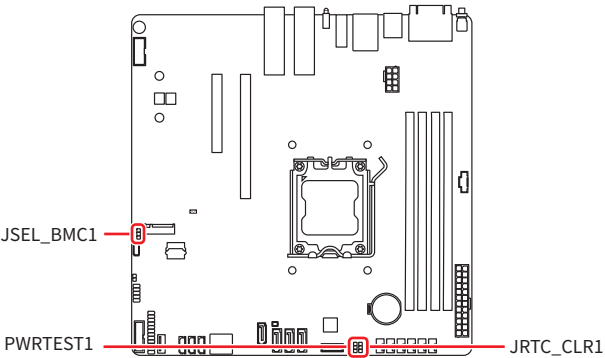
- Swallowing can cause chemical burns, perforation of soft tissue, and even death.
- Severe burns can occur within 2 hours of ingestion.
- If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

Jumpers



Important

Avoid adjusting jumpers when the system is on; it will damage the motherboard.

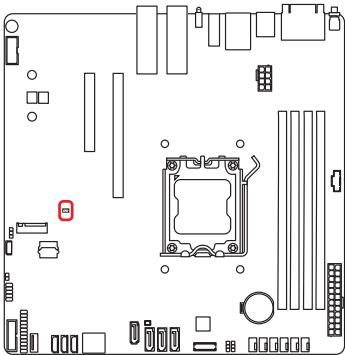


Jumper Name	Default Setting	Description
JSEL_BMC1	 1	1-2: Using CPU (Default) 2-3: Using BMC
PWRTEST1	 1	1-2: Normal (Default) 2-3: Power test
JRTC_CLR1	 1	1-2: Normal (Default) 2-3: Clear CMOS

Onboard LEDs

BMC_LED1: BMC Heartbeat LED

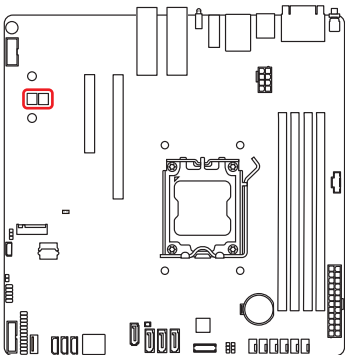
This LED indicates the BMC (Baseboard Management Controller) status.



Status	Description
 Off	BMC is not activated
 Blinking	BMC is functioning normally

LED_H1, LED_L1: Port 80 Debug LEDs

The Port 80 Debug LEDs display progress and error codes during and after POST (Power-On Self Test).



Hexadecimal Character Table

Hexadecimal	0	1	2	3	4	5	6	7
LED display	0	1	2	3	4	5	6	7
Hexadecimal	8	9	A	B	C	D	E	F
LED display	8	9	A	b	c	d	E	F



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