G4101

MS-S337

Server System

User Guide

Contents

Revision

V1.1, 2025/05

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/

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.

Copyright and Trademarks Notice

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' s Manual 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

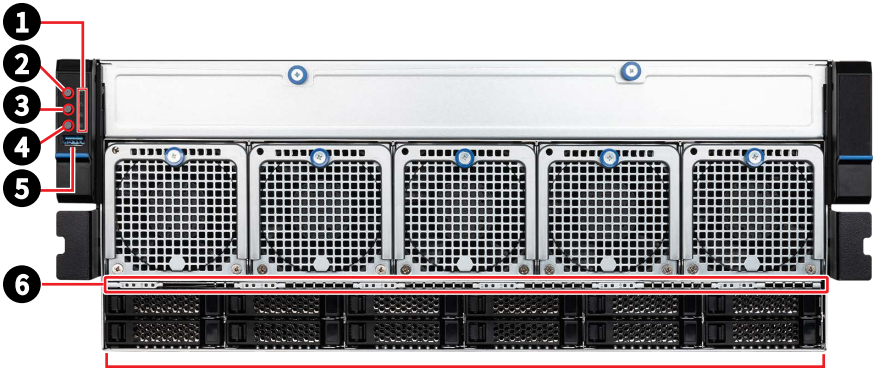
Seek immediate assistance from qualified personnel if any of the following occurs:

- 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.

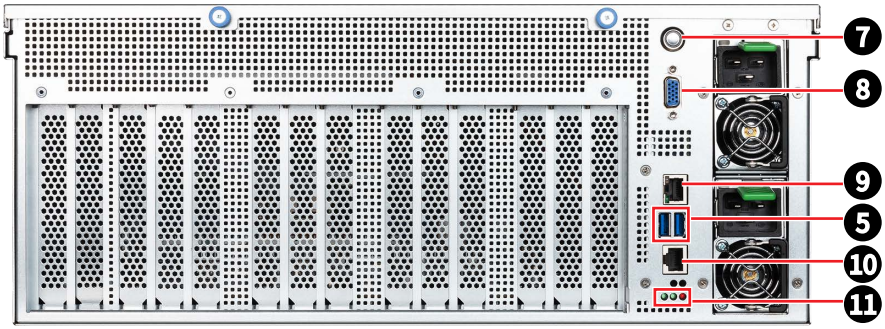
System Specifications

SKUs	G4101-04	G4101-05
Form factor	4U	
Dimensions	17.2”W (447.9mm) x 6.9”H (176mm) x 32.6”D (827.3mm)	
Processor	Single AMD EPYC™ 9004 and 9005 series processors, TDP up to 500W	
Server Management	• 1 x 1000Base-T dedicated server management port • ASPEED AST2600 with AMI MegaRAC based firmware (supports IPMI 2.0 and DMTF Redfish® API) • Dual BMC	
Memory	• 12 x DDR5 DIMM slots, 12 channels (1DPC), RDIMM/ 3DS-RDIMM - Max Frequency: 6400 MT/s (1DPC) - Max Capacity per DIMM: 256GB	
Drive Bays	12 x Hot-swap 2.5” U.2 PCIe 4.0 NVMe drive bays	
Internal Storage	• 1 x M.2 2280/ 22110 PCIe 3.0 x4 slot (M2_1) • 1 x M.2 2280/ 22110 PCIe 3.0 x2 slot (M2_2)	
Expansion Slots	• 4 x PCIe 5.0 x16 FHFL slots • 2 x PCIe 4.0 x16 FHFL slots (x8 signal)	
Front Panel	• 1 x USB 3.2 Gen 1 Type-A port • 1 x Power button/ LED • 1 x UID button/ LED • 1 x Reset button • 3 x Status LEDs (MLAN/ M.2/ Alarm)	
Rear Panel	• 1 x 1000Base-T dedicated server management port • 2 x USB 3.2 Gen 1 Type-A ports • 1 x COM RJ45 port • 1 x VGA D-Sub port • 1 x UID button • 3 x Status LEDs (Power/ M.2/ Alarm)	
TPM	1 x TPM header (with SPI interface)	
Security	TPM 2.0	
Cooling	• 1 x Air cooling module (for max 500W CPU) • 5 x 8038 Easy-swap chassis fans	
Environment	• Operating Temperature: 0°C ~ 35°C • Non-operating Temperature: -20°C ~ 70°C • Non-operating Relative Humidity: 5% ~ 85% (non-condensing)	
Power Supply	• (1+1) Redundant 3000W CRPS **80+ Platinum** - Dimension (WxHxL): 73.5 x 40 x 265 mm	• (1+1) Redundant 3000W CRPS **80+ Titanium** - Dimension (WxHxL): 73.5 x 40 x 265 mm
Certification	CE, FCC (Class A)	

System Overview



12 x 2.5" **U.2 NVMe 4.0**
Hot-Swap Drive Bays



1

M.2 Activity LED

System Alarm LED

MLAN LEDs

2 **System Power Button/ LED**

3 **UID LED Button**
(or BMC Reset Button, configured using jumper: JUID_SEL1)

4 **System Reset Button**

5 **USB 3.2 Gen 1 Type-A Port**
This connector is provided for USB peripheral devices. (Speed up to 5 Gbps)

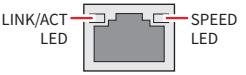
6 **Drive Bay LED**

7 **UID Button**

8 **VGA D-Sub Port**

9 **1000Base-T Dedicated Server Management Port**

The standard RJ45 LAN jack is provided for connection to the Local Area Network (LAN). You can connect a network cable to it.



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

10 **COM RJ45 Port**

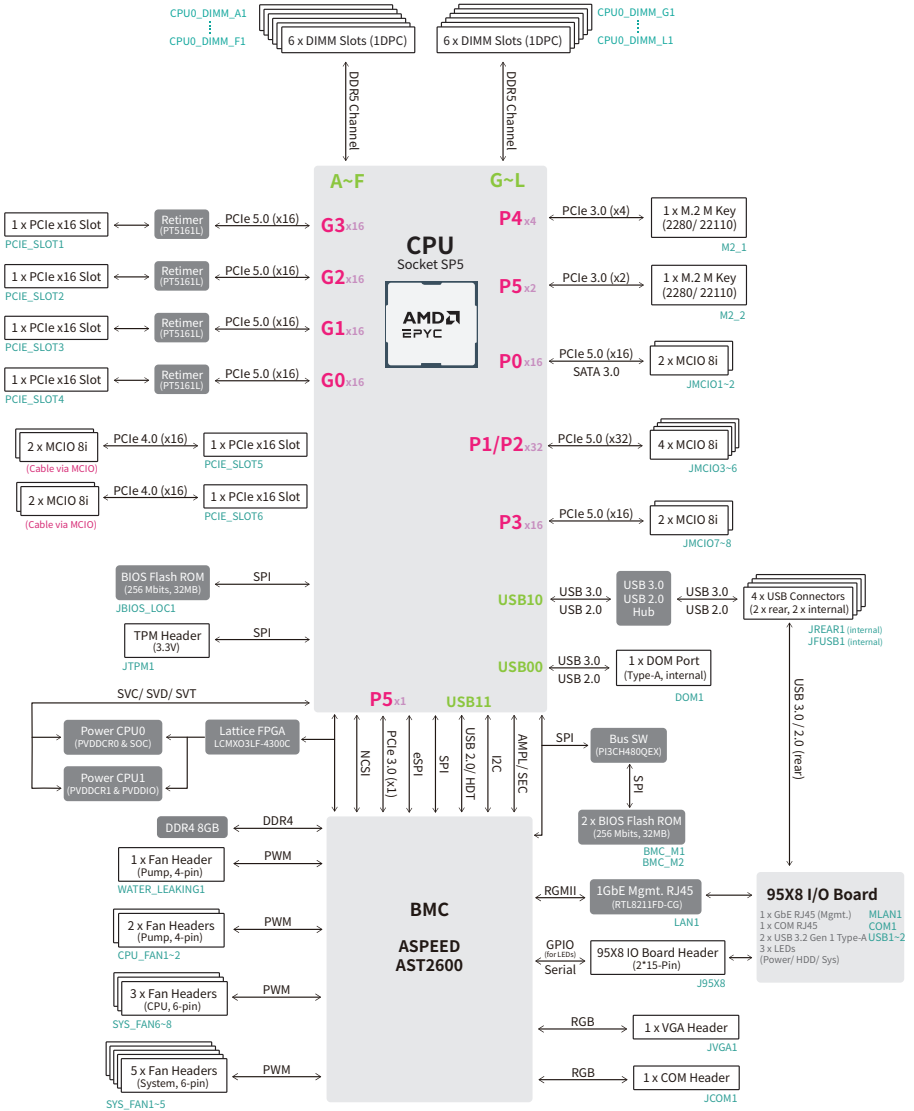
11

System Alarm LED

M.2 Activity LED

System Power LED

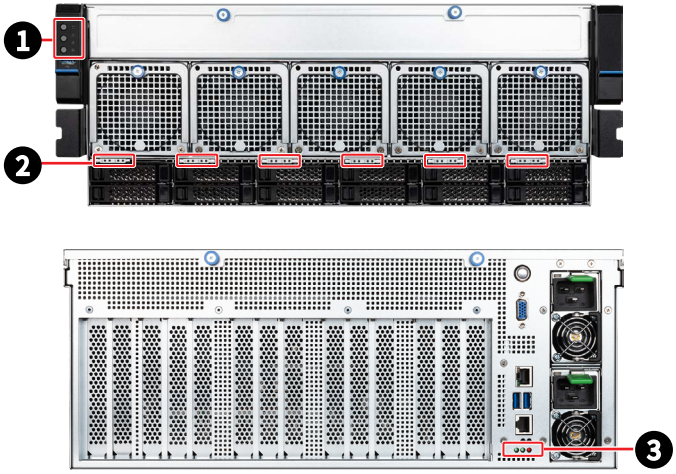
Block Diagram



System Storage Topology

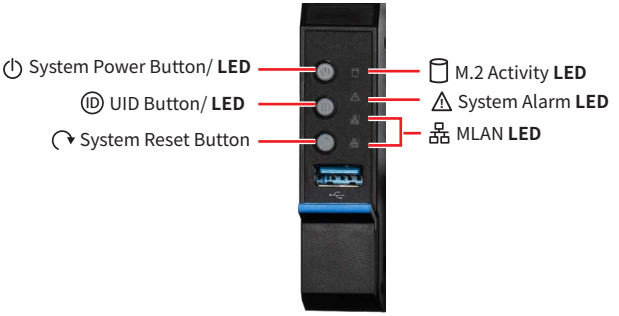
12 x NVMe Signals					
NVMe #11	**NVMe #9**	**NVMe #7**	**NVMe #5**	**NVMe #3**	**NVMe #1**
CPU0 P3	CPU0 P3	CPU0 P2	CPU0 P2	CPU0 P0	CPU0 P0
Lanes 8:11	Lanes 0:3	Lanes 8:11	Lanes 0:3	Lanes 8:11	Lanes 0:3
NVMe #12	**NVMe #10**	**NVMe #8**	**NVMe #6**	**NVMe #4**	**NVMe #2**
CPU0 P3	CPU0 P3	CPU0 P2	CPU0 P2	CPU0 P0	CPU0 P0
Lanes 12:15	Lanes 4:7	Lanes 12:15	Lanes 4:7	Lanes 12:15	Lanes 4:7

System LED Indicators



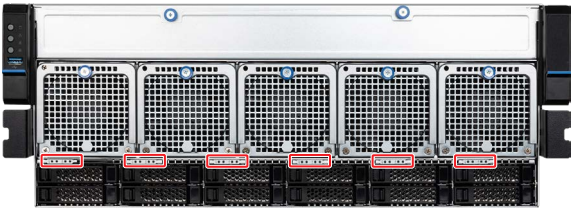
1	Front Panel LEDs
2	Drive Bay LEDs
3	Back Panel LEDs

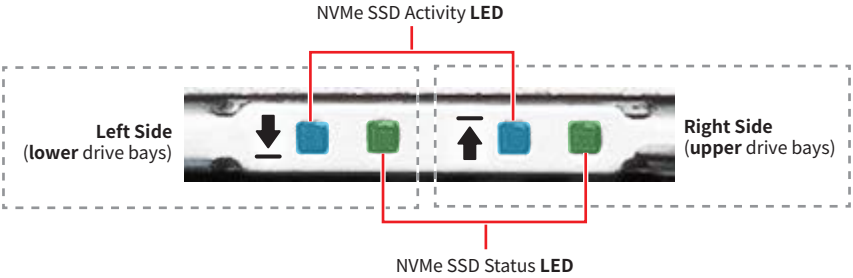
Front Panel LEDs



LED	LED State	Description
System Power LED	Blue	System is on
	Blinking	System is sleeping
	Off	System is off
		System is on ACPI S4, S5 state
UID LED	Blue	Identify active via command or button
	Off	No identification
System Alarm LED	Green	BMC initialization
	Red	System has failed
	Off	System is running/ normal operation
MLAN LED	Green	LAN link is established
	Blinking	LAN activity is occurring
	Off	LAN link is not established
M.2 Activity LED	Amber	Storage drive in use
	Off	No storage drive activity

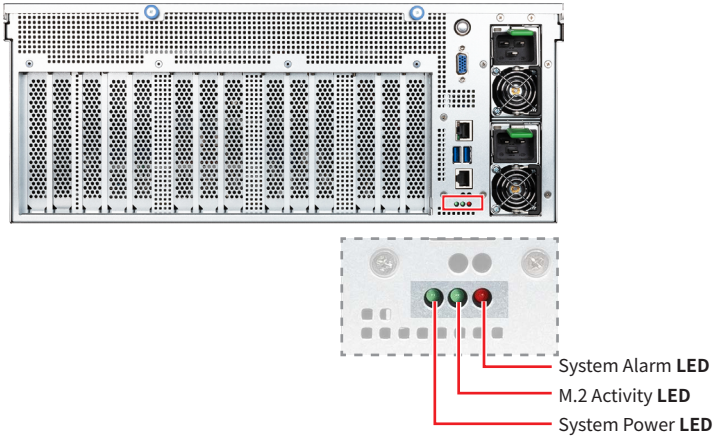
Drive Bay LEDs





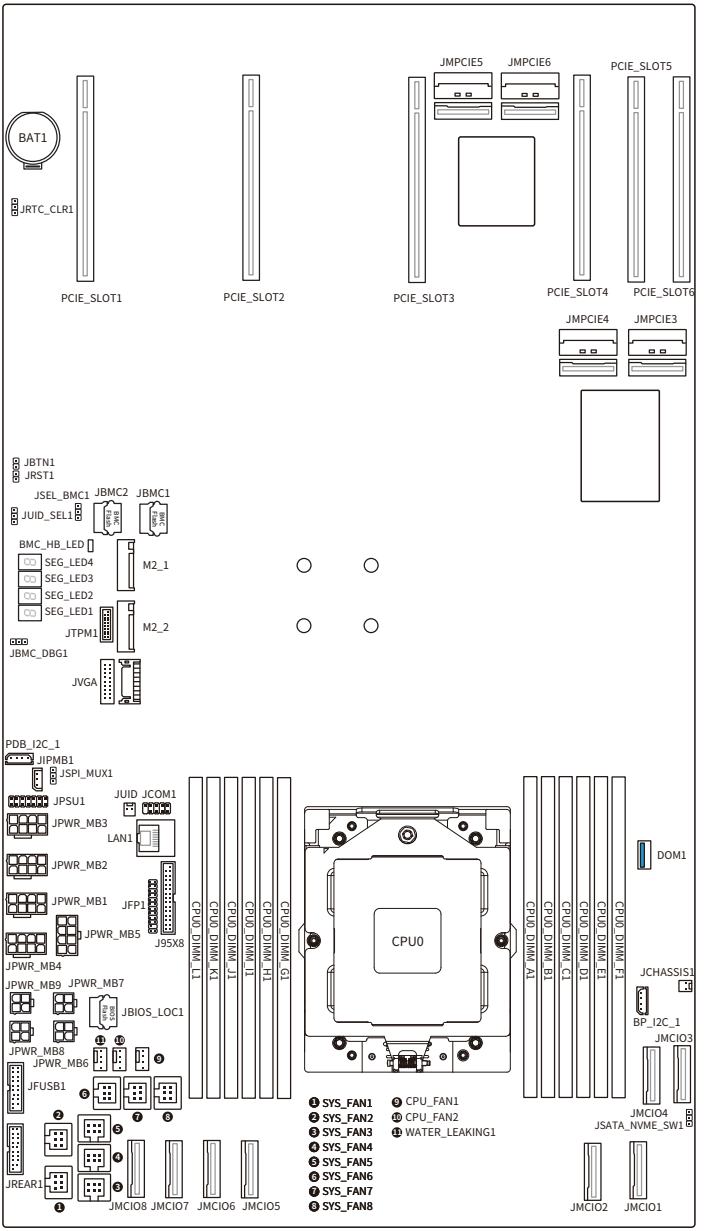
LED	LED State	Description
NVMe SSD Activity LED	Blue	SSD present
	Off	SSD not present
NVMe SSD Status LED	Green	SSD present, no activity
	Blinking	SSD present and in use
	Red	SSD has failed and should be swapped immediately
	Blinking (1Hz)	RAID rebuilding
	Blinking (4Hz)	Locate
	Off	SSD not present

Back Panel LEDs



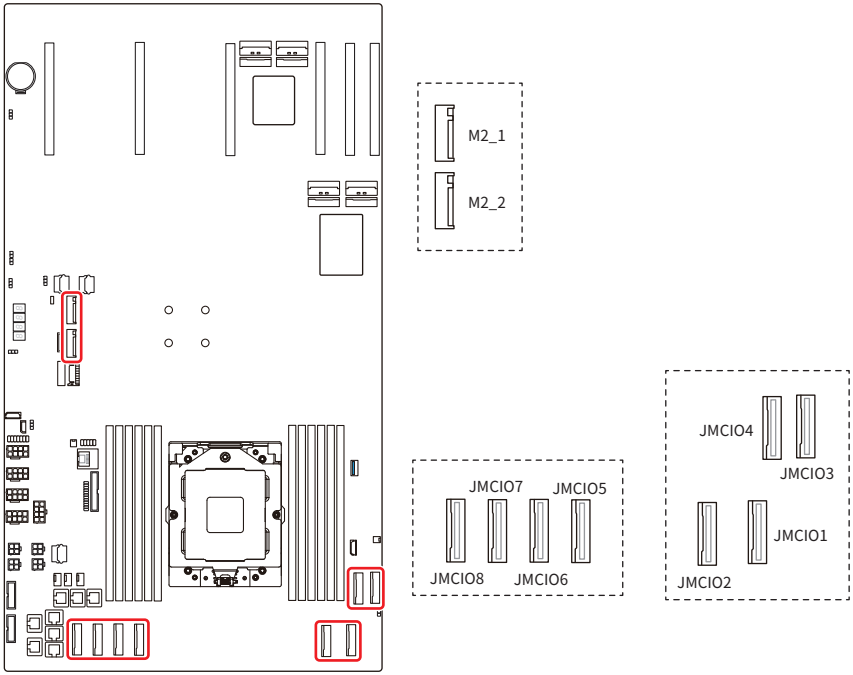
LED	LED State	Description
System Power LED	Green	System is on
	Off	System is off
M.2 Activity LED	Blinking	Storage drive in use
	Off	No storage drive activity
System Alarm LED	Red	System has failed
	Off	System is running/ normal operation

Motherboard Overview



Motherboard Connectors

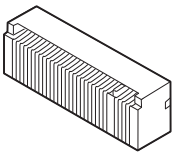
Storage Connectors



Name	Description
JMCIO1~2	PCIe 5.0 x8, 32GT/s (default)
	SATA 3.0, 6Gb/s
JMCIO3~8	PCIe 5.0 x8, 32GT/s
M2_1	PCIe 3.0 x4, 8GT/s
M2_2	PCIe 3.0 x2, 8GT/s

M2_1~2: M.2 Slots (M Key, PCIe 3.0, 22110/ 2280)

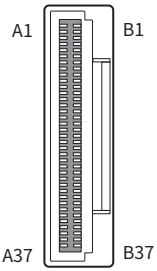
The M.2 slot supports solid-state drive (SSD). For Installation procedure, please refer to **"System Setup > M.2 M Key"**.



JMCIO1~8: MCIO 8i Connectors

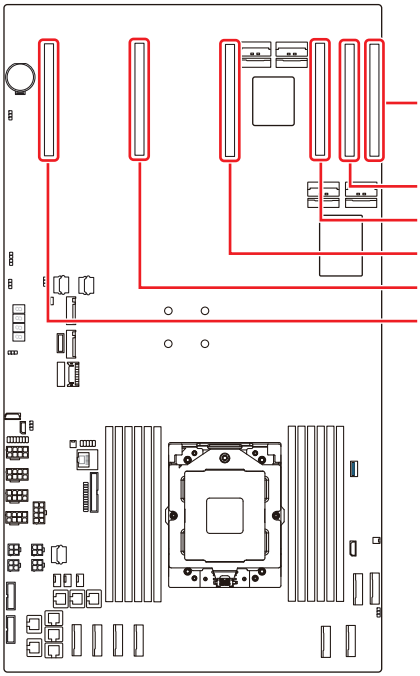
These connectors serve as MCIO interface ports, supporting both SATA and NVMe devices.

JMCIO1~8



	A1	GND	B1	GND
	A2	SSD_RX+	B2	SSD_TX+
	A3	SSD_RX-	B3	SSD_TX-
	A4	GND	B4	GND
	A5	SSD_RX+	B5	SSD_TX+
	A6	SSD_RX-	B6	SSD_TX-
	A7	GND	B7	GND
	A8	NC	B8	SMB_PEHPCPU_LV3_SCL
	A9	FM_SMB_CPU_ALERT_N	B9	SMB_PEHPCPU_LV3_SDA
	A10	GND	B10	GND
	A11	CLK_100M_SSD_DP	B11	RST_PCIE_CPU_PERST_N
	A12	CLK_100M_SSD_DN	B12	FM_PCIE_SSD_PRSNT_N
	A13	GND	B13	GND
	A14	SSD_RX+	B14	SSD_TX+
	A15	SSD_RX-	B15	SSD_TX-
	A16	GND	B16	GND
	A17	SSD_RX+	B17	SSD_TX+
	A18	SSD_RX-	B18	SSD_TX-
	A19	GND	B19	GND
	A20	SSD_RX+	B20	SSD_TX+
	A21	SSD_RX-	B21	SSD_TX-
	A22	GND	B22	GND
	A23	SSD_RX+	B23	SSD_TX+
	A24	SSD_RX-	B24	SSD_TX-
	A25	GND	B25	GND
	A26	NC	B26	SMB_PEHPCPU_LV3_SCL
	A27	FM_SMB_CPU_ALERT_N	B27	SMB_PEHPCPU_LV3_SDA
	A28	GND	B28	GND
	A29	CLK_100M_SSD_DP	B29	RST_PCIE_CPU_PESET_N
	A30	CLK_100M_SSD_DN	B30	FM_PCIE_SSD_PRSNT_N
	A31	GND	B31	GND
	A32	SSD_RX+	B32	SSD_TX+
	A33	SSD_RX-	B33	SSD_TX-
	A34	GND	B34	GND
	A35	SSD_RX+	B35	SSD_TX+
	A36	SSD_RX-	B36	SSD_TX-
	A37	GND	B37	GND

Expansion Slots



PCIE_SLOT6: PCIe 4.0 x 16 slot (Gen 4 x8 signal)

PCIE_SLOT5: PCIe 4.0 x 16 slot (Gen 4 x8 signal)

PCIE_SLOT4: PCIe 5.0 x 16 slot (Gen 5 x16 signal)

PCIE_SLOT3: PCIe 5.0 x 16 slot (Gen 5 x16 signal)

PCIE_SLOT2: PCIe 5.0 x 16 slot (Gen 5 x16 signal)

PCIE_SLOT1: PCIe 5.0 x 16 slot (Gen 5 x16 signal)

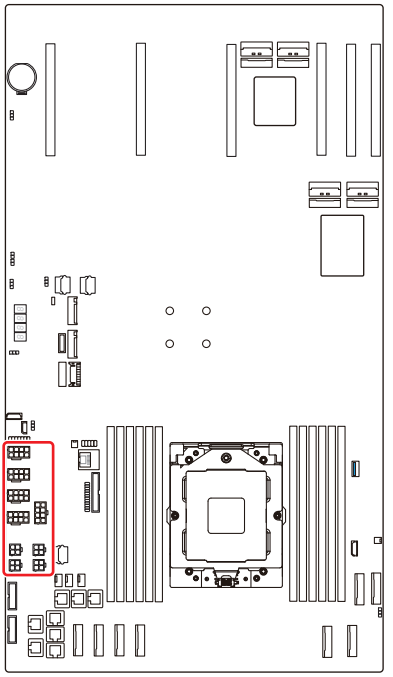
PCIE_SLOT1~6: PCIe Expansion Slots

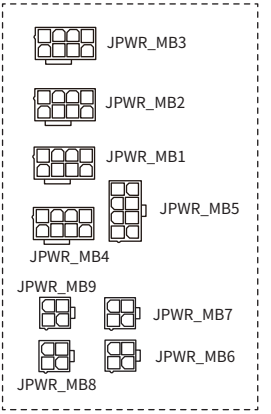
The PCI Express(Peripheral Component Interconnect Express) slots support PCIe interface expansion cards.

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.

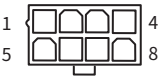
Power Connectors





JPWR_MB1~4: 8-Pin 12V Power Connectors (for MB PWR)

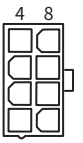
JPWR_MB1~4



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

JPWR_MB5: 8-Pin 12V Power Connector (for BP PWR)

JPWR_MB5



1	GND	5	P12V
2	GND	6	P12V_AUX
3	GND	7	P12V_AUX
4	GND	8	P12V_STBY

JPWR_MB6, JPWR_MB8: 4-Pin 5V Power Connectors

JPWR_MB6
JPWR_MB8

1	GND	3	P5V
2	GND	4	P5V

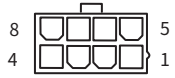
JPWR_MB7, JPWR_MB9: 4-Pin 3V Power Connectors

JPWR_MB7
JPWR_MB9

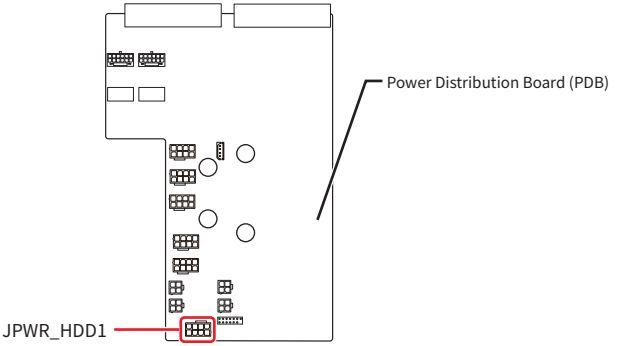
1	GND	3	P3V
2	GND	4	P3V

JPWR_HDD1: 8-Pin HDD/SATA Power Connector (on PDB)

JPWR_HDD1



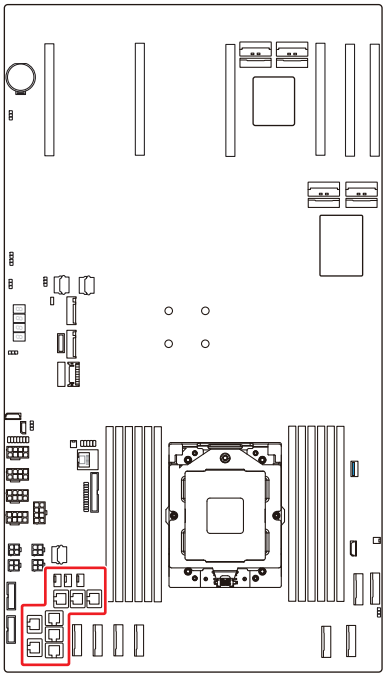
1	GND	5	P12V
2	GND	6	P12V
3	GND	7	P12V
4	GND	8	P12V

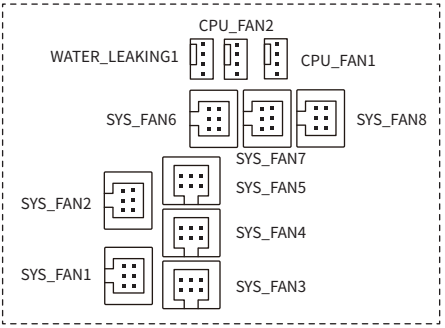


Important

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

Cooling Connectors





SYS_FAN1~8: System/CPU Fan Connectors

The fan power connectors support system/ CPU cooling fans.

SYS_FAN1~8 	1	FAN_TACH	2	P12V
	3	PWM	4	P12V
	5	GND	6	GND

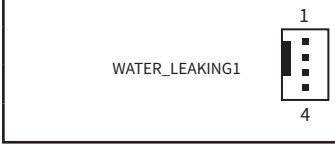
CPU_FAN1~2: CPU Pump Connectors

The fan power connectors support CPU pump.

CPU_FAN1~2 	1	GND	3	FAN_TACH
	2	P12V	4	FAN_PWM

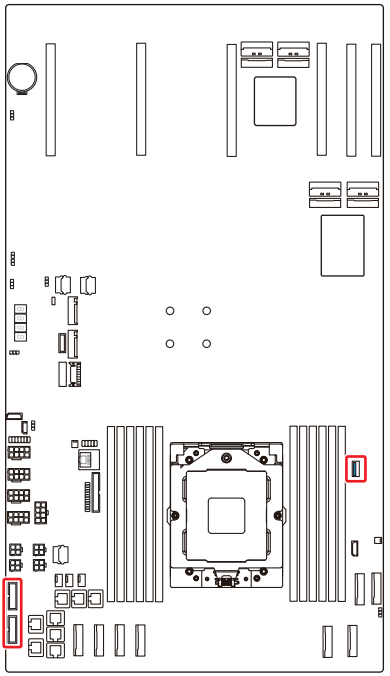
WATER_LEAKING1: CPU Pump Water Leak Detection Connector

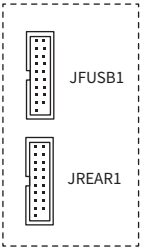
This connector is for detecting water leaks in the CPU water cooling pump. If a leak is detected, the system will automatically shut down for protection.

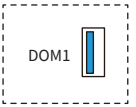


1	P5V_AUX
2	Water_Leaking
3	GND
4	GND

USB Connectors







DOM1: USB 3.2 Gen 1 Type-A Port

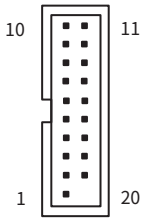
The USB (Universal Serial Bus) port is used for connecting USB devices such as keyboards, mice, or other compatible peripherals. It supports data transfer rates up to **5 Gbps** and is backward-compatible with USB 2.0 devices.

DOM1

JREAR1, JFUSB1: USB 3.2 Gen 1 Headers

These headers are backward-compatible with USB 2.0 devices and support data transfer rate up to **5 Gbps**.

JREAR1
JFUSB1



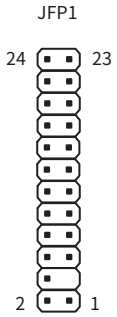
JREAR1			
1	P5V_AUX_USB_BP2	11	HUB_SSD2P_ESD_DP
2	HUB_SSRX1N_ESD	12	HUB_SSD2N_ESD_DN
3	HUB_SSRX1P_ESD	13	GND
4	GND	14	HUB_SSTX2_C_ESD_TXP
5	HUB_SSTX1_C_ESD_TXN	15	HUB_SSTX2_C_ESD_TXN
6	HUB_SSTX1_C_ESD_TXP	16	GND
7	GND	17	HUB_SSRX2P_ESD
8	HUB_SSD1N_ESD_DN	18	HUB_SSRX2N_ESD
9	HUB_SSD1P_ESD_DP	19	P5V_AUX_USB_BP3
10	NC	20	No Pin

JFUSB1			
1	P5V_AUX_USB_BP4	11	HUB_SSD4P_ESD_DP
2	HUB_SSRX3N_ESD_RXN	12	HUB_SSD4N_ESD_DN
3	HUB_SSRX3P_ESD_RXP	13	GND
4	GND	14	HUB_SSTX4_C_TXP_ESD_TXP
5	HUB_SSTX3_C_TXN_ESD_TXN	15	HUB_SSTX4_C_TXP_ESD_TXP
6	HUB_SSTX3_C_TXP_ESD_TXP	16	GND
7	GND	17	HUB_SSRX4P_ESD_RXP
8	HUB_SSD3N_ESD_DN	18	HUB_SSRX4N_ESD_RXN
9	HUB_SSD3P_ESD_DP	19	P5V_AUX_USB_BP5
10	NC	20	No Pin

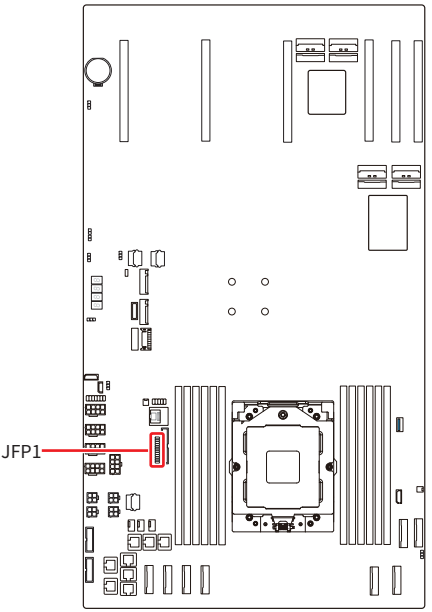
Other Connectors and Components

JFP1: Front Panel Header

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



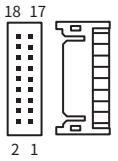
	1	VDD_33_DUAL	2	P3V3_AUX
	3	N/A	4	P3V3_AUX
	5	FP_PWR_LED_B_R_N	6	FP_ID_LED_B_R_N
	7	VDD_33_RUN	8	SYS_ERR_LED#_N
	9	FP_HDD_ACT_LED_N	10	SYS_FLT_LED#_N
	11	FP_PWR_BTN_L_R	12	VDD_33_DUAL
	13	GND	14	LAN_NIC_0_ACT_N_R
	15	FP_RST_BTN_L_R	16	SMB_BMC_HSBP_STBY_LVC3_SDA
	17	GND	18	SMB_BMC_HSBP_STBY_LVC3_SCL
	19	FP_ID_BTN_N_R	20	FP_CHASSIS_INTRUSION (TP)
	21	GND	22	VDD_33_DUAL
	23	NMI_BTN_N_R	24	LAN_NIC_1_ACT_N_R



JVGA: Front VGA Connector

The VGA connector is provided for monitors.

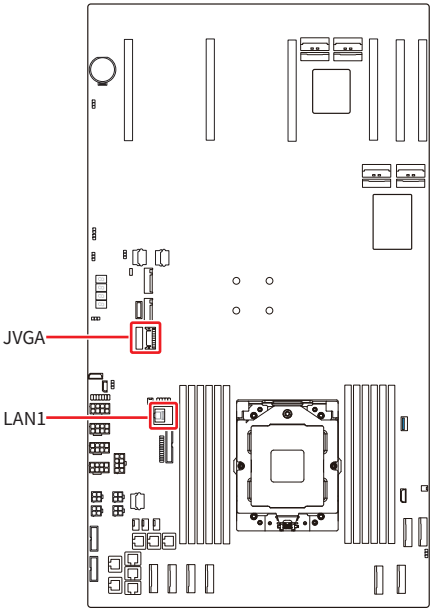
JVGA



	1	NC	2	NC
	3	F_RED1	4	GND
	5	F_GRN1	6	GND
	7	F_BLU1	8	GND
	9	F_VS1	10	GND
	11	F_HS1	12	GND
	13	F_DDCDAT1	14	NC
	15	F_DDCCLK1	16	P5V
	17	NC	18	NC

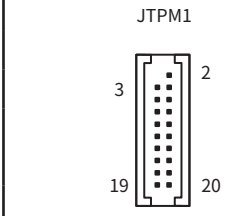
LAN1: 1000Base-T Dedicated Server Management Port

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

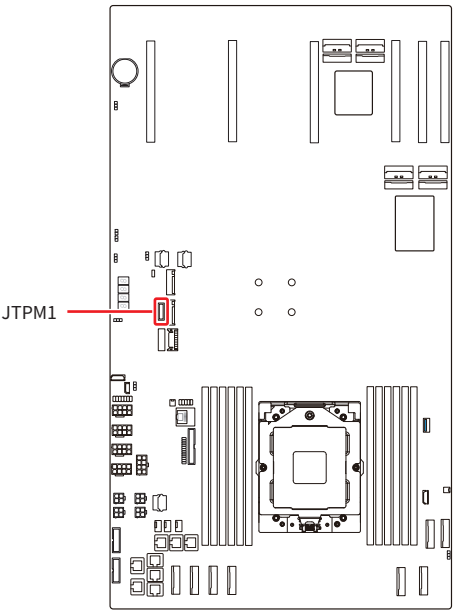


JTPM1: SPI TPM Header

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

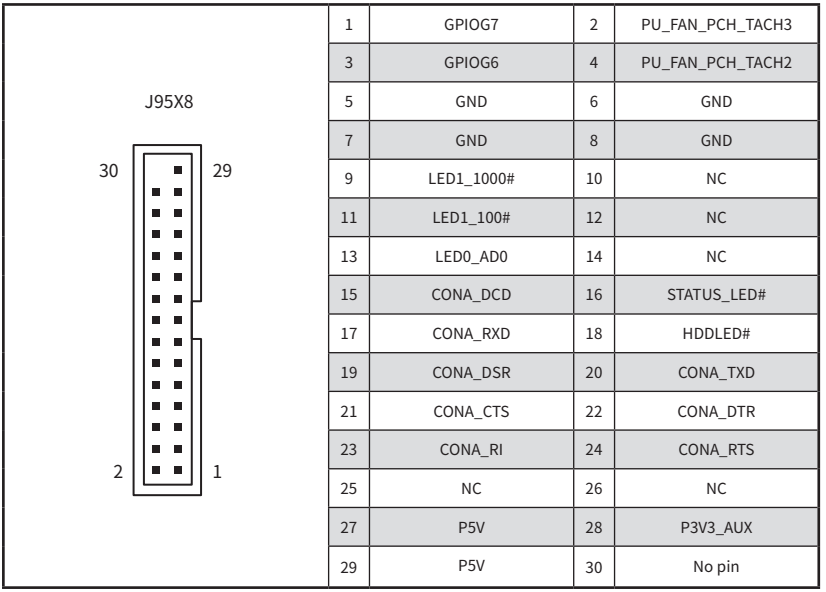


1	No pin	2	P3V3_AUX
3	TPM_RSMRST_N	4	N/A
5	GND	6	P3V3_AUX
7	SPI_P0_3V3_LOC_CLK	8	P3V3_AUX
9	P3V3_AUX	10	SPI_P0_3V3_LOC_MISO
11	N/A	12	SPI_CPU0_3V3_MOSI
13	SPI_TPM_CS_N	14	GND
15	P3V3_AUX	16	N/A
17	IRQ_TPM_SPI_N	18	P3V3_AUX
19	P0_RESET_LS_L	20	P3V3_AUX

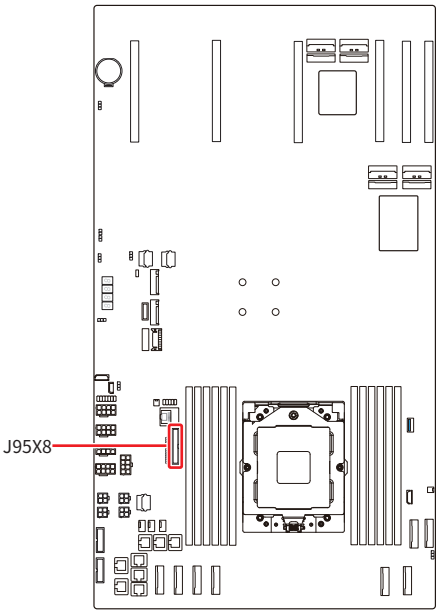


J95X8: 95X8 I/O Board Header

The 95X8 I/O board header is designed to interface with the 95X8 I/O Board. This I/O Board functions as an I/O expander, enabling the expansion of input/output capabilities within a system.

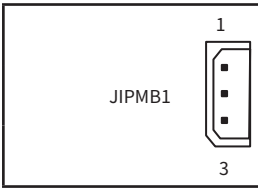


1	GPIOG7	2	PU_FAN_PCH_TACH3
3	GPIOG6	4	PU_FAN_PCH_TACH2
5	GND	6	GND
7	GND	8	GND
9	LED1_1000#	10	NC
11	LED1_100#	12	NC
13	LED0_AD0	14	NC
15	CONA_DCD	16	STATUS_LED#
17	CONA_RXD	18	HDDLED#
19	CONA_DSR	20	CONA_TXD
21	CONA_CTS	22	CONA_DTR
23	CONA_RI	24	CONA_RTS
25	NC	26	NC
27	P5V	28	P3V3_AUX
29	P5V	30	No pin



JIPMB1: IPMB Header

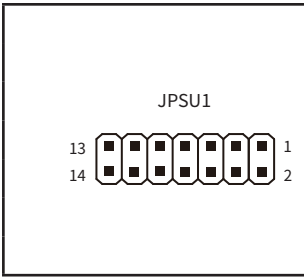
Intelligent Platform Management Bus (IPMB) header is used to connect various management components, such as Baseboard Management Controller (BMC).



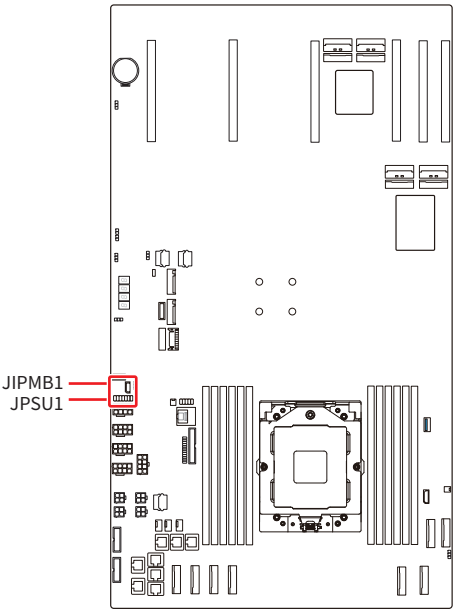
1	SMB_ PS1_DAT
2	GND
3	SMB_PS1_CLK

JPSU1: PDB Header

This header is designed to interface with the Power Distribution Board (PDB).

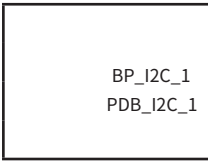


1	PMBUS_CLK1	2	VDD_33_DUAL_EN
3	PMBUS_DATA1	4	VDD_33_DUAL_PG
5	SMB_PMBUS_ALERT_N	6	VDD_5_DUAL_EN
7	PS_ON_N	8	VDD_5_DUAL_PG
9	PSU_PWROK_SH_BUF<0>	10	VDD_33_RUN_EN
11	PSU_PWROK_SH_BUF<1>	12	VDD_33_RUN_PG
13	NC	14	PSU_PWR_OK



BP_I2C_1, PDB_I2C_1: I2C Headers

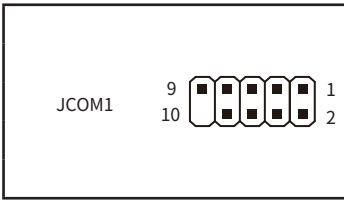
I2C headers are used to connect to the System Management Bus (SMBus).



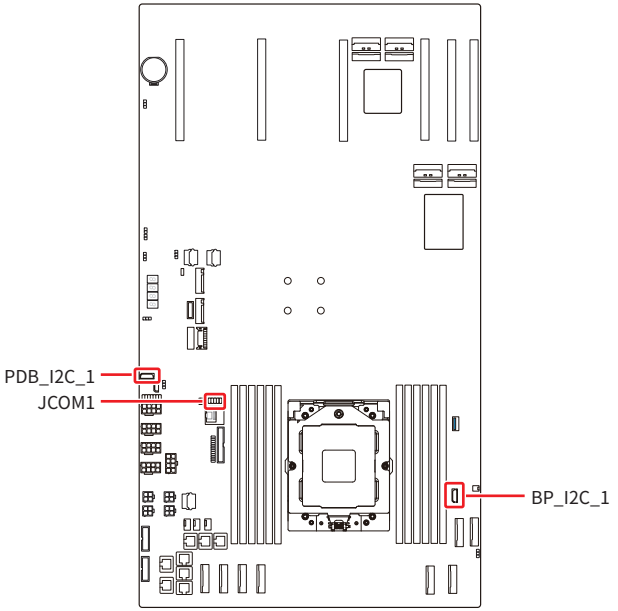
1	NC
2	BP_I2C_CLK1
3	BP_I2C_DAT1
4	GND

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	CONB_DCD	2	CONB_RXD
3	CONB_TXD	4	CONB_DTR
5	GND	6	CONB_DSR
7	CONB_RTS	8	CONB_CTS
9	CONB_RI	10	No pin



JBTN1: Power Button Header

This header is provided to connect the system power button.

JBTN1 	1	FP_PWR_BTN#	2	GND

JRST1: Reset Button Header

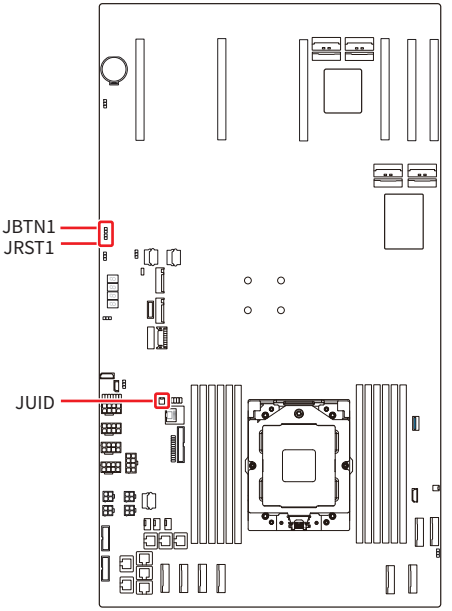
This header is provided to connect the system reset button.

JRST1 	1	FP_RST_BTN#	2	GND

JUID: UID Button Header

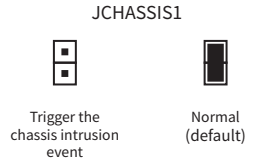
This header is provided to connect the system UID button.

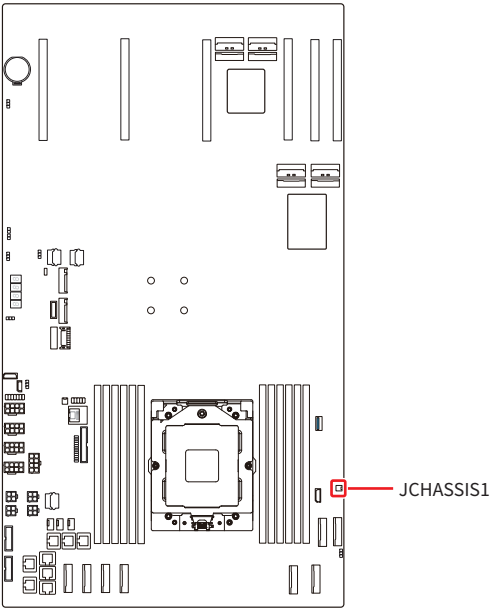
JUID 	1	REAR_ID_BTN_N	2	GND



JCHASSIS1: Chassis Intrusion Header

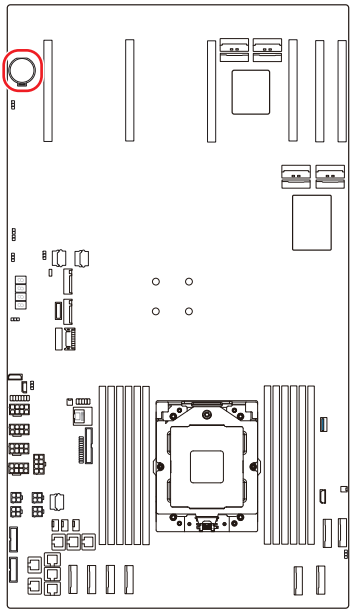
This header connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.





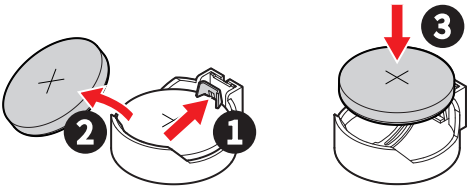
BAT1: CMOS Battery

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

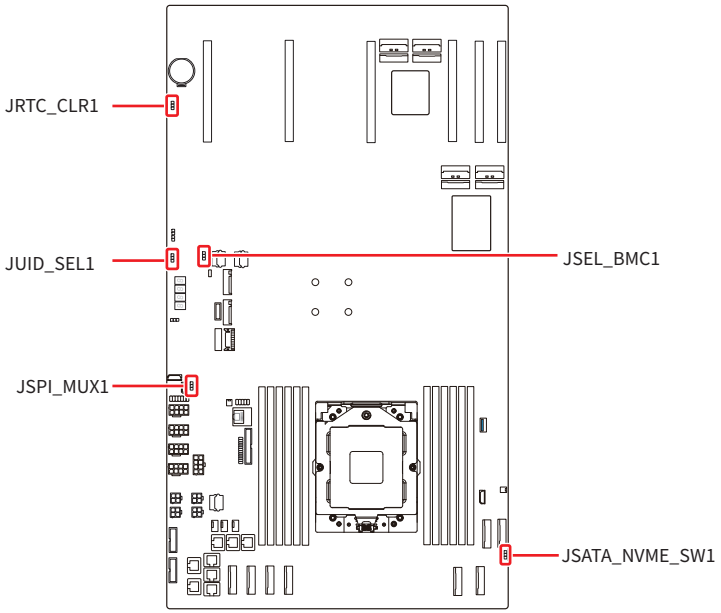
KEEP OUT OF REACH OF CHILDREN

- *Swallowing can lead to chemical burns, perforation of soft tissue, can 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.*

Motherboard Jumpers

Important

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

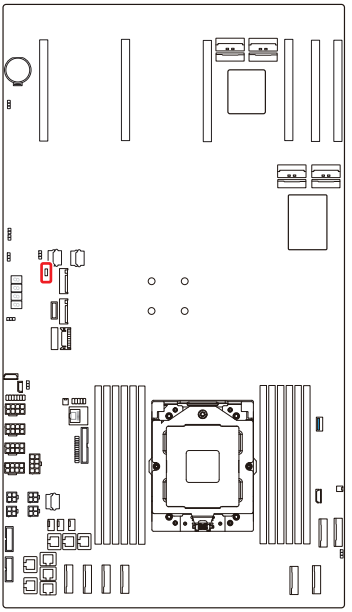


Jumper Name	Default Setting	Description
JRTC_CLR1		1-2: Normal (default) 2-3: Clear CMOS
JUID_SEL1		1-2: UID Button (default) 2-3: BMC RST Button
JSEL_BMC1		1-2: BMC2 2-3: BMC1 (default)
JSPI_MUX1		1-2: BIOS control by BMC SEL(default) 2-3: Reflash BIOS by BMC
JSATA_NVME_SW1		1-2: JMCIO1~2 setting to SATA SIGNAL 2-3: JMCIO1~2 setting to NVME SIGNAL (default)

Motherboard LEDs

BMC_HB_LED: BMC Heartbeat LED

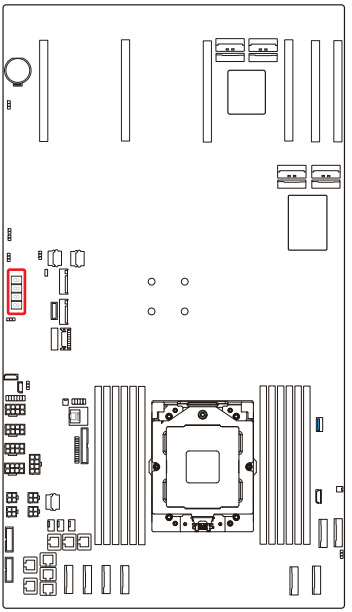
This LED indicates the BMC (Baseboard Management Controller) status.

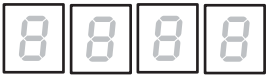


LED Status	Description
Off	BMC is not activated
Blinking	BMC is functioning normally

SEG_LED1~4: 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

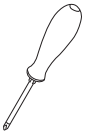
Hexadecimal	0	1	2	3	4	5	6	7
LED display	0	1	2	3	4	5	6	7
Hexadecimal	8	9	A	B	C	D	E	F
LED display	8	9	A	b	C	d	E	F

Getting Started

Important

- *All information is subject to change without prior notice.*
- *The illustrations are provided for demonstrative purposes only. The appearance and internal view of your system may differ based on the model you have purchased.*

Necessary Tools



Screwdriver

Pliers

Tweezers

Anti-Static Gloves

Safety Precautions

The following precautions should be observed while handling the system:

- Place the system on a flat and stable surface.
- Do not place the system in environments subject to mist, smoke, vibration, excessive dust, salty or greasy air, or other corrosive gases and fumes.
- Do not drop or jolt the system.
- Do not use a power adapter other than the one enclosed with the system.
- Disconnect the power cord before performing any installation procedures on the system.
- Do not perform any maintenance with wet hands.
- Prevent foreign substances, such as water, other liquids or chemicals, from entering the system while performing installation procedures.
- Use a grounded wrist strap before handling system components such as CPU, Memory, HDD, expansion cards, etc.
- Place system components on a grounded anti-static pad or on the bed that came with the components whenever the components are separated from the system.

System Setup

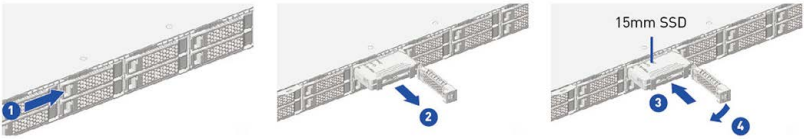
Important

Before removing or installing any components, make sure the system is not turned on or connected to the power.

Drive Bay

Installing 2.5" HDD/ SSD

1. Press the tray button to release the lever.
2. Pull the HDD/ SSD assembly out of the drive bay.
3. Insert the HDD/ SSD horizontally.

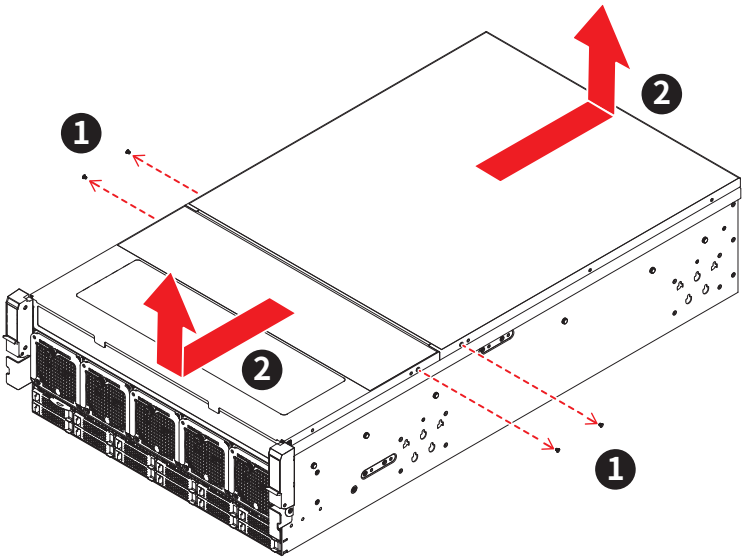


- *The interposer BKT act as dummy HDD/ SSD when no drive inside.*
- *The interposer BKT act as spacer to support 7nm HDD/ SSD.*

System Cover

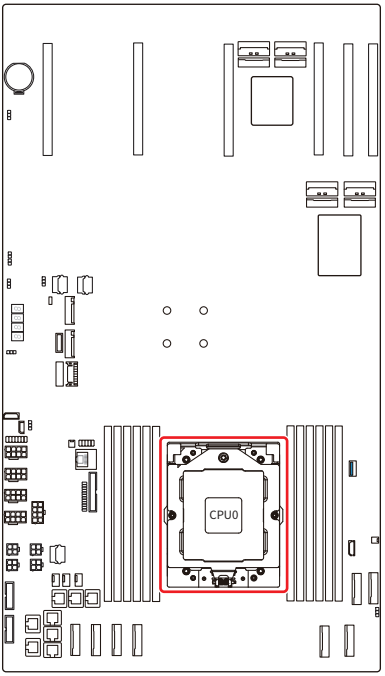
Removing System Cover

1. Remove the **screws** securing the system on both sides.
2. Slide the covers to the front and back side of the system to remove it.



CPU & Cooler

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



Important

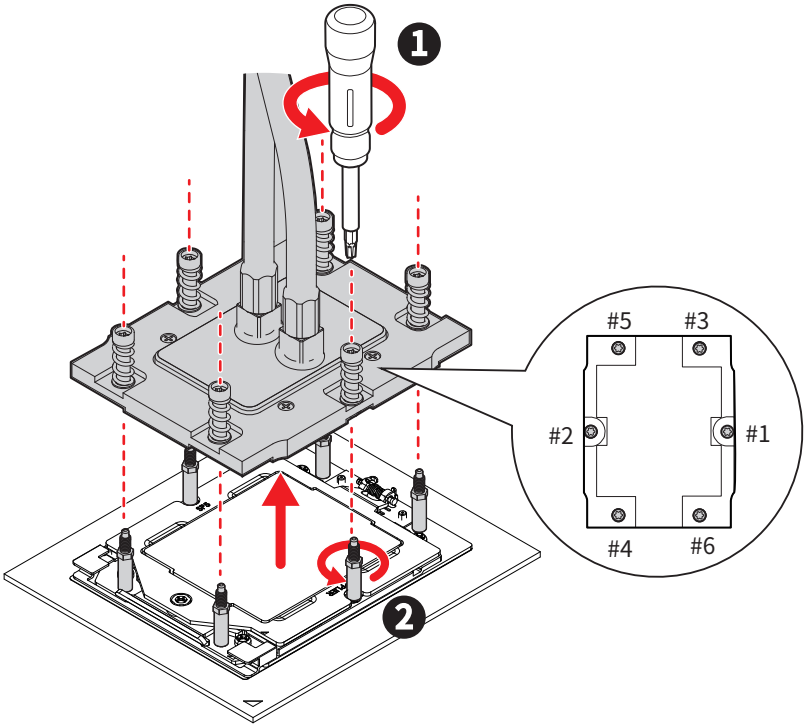
- *Images are for illustration purposes only; actual parts may vary.*
- ***Overheating** will seriously damage the CPU and system. Always make sure the cooler (heatsink/fan) can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*
- *Confirm if your cooler is firmly installed before turning on your system.*
- *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.*
- *Do not touch the CPU socket content 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.*

Removing Preinstalled Liquid Cooling Module

If your system comes with a preinstalled liquid cooling module, follow the instructions below to remove it before proceeding with the CPU installation.

Follow the steps below:

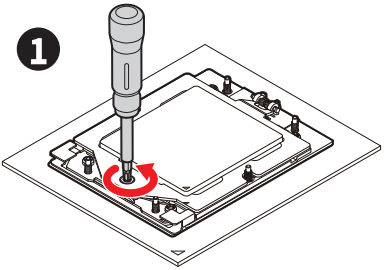
1. Loosen all **screws** in a diagonal sequence.
2. Remove all **standoffs**.



Installing CPU

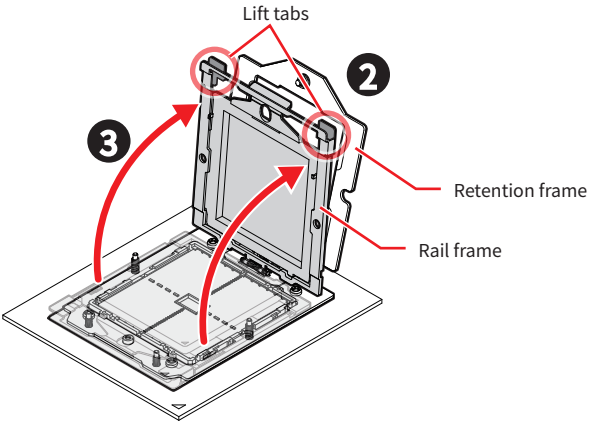
Follow the steps below to install CPU:

1. Remove the screw on the top of the retention frame.



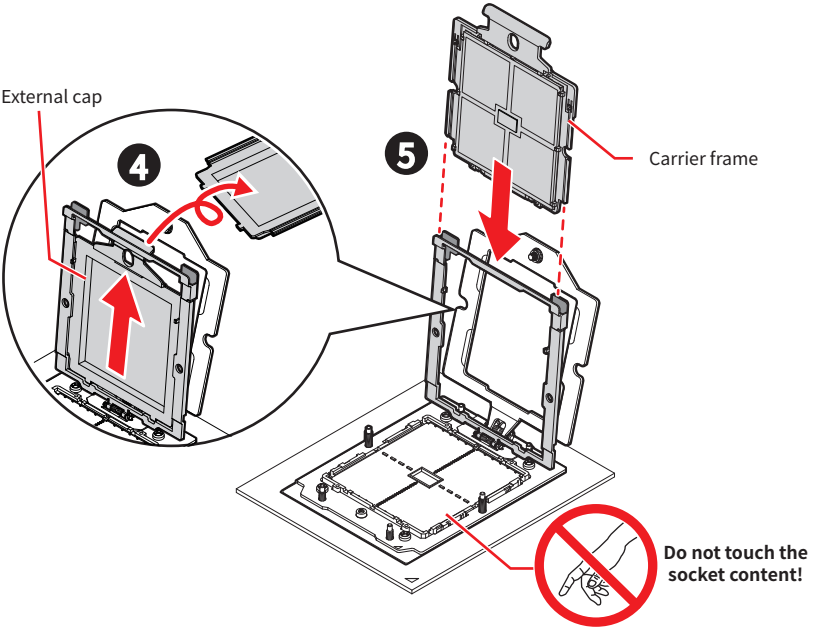
2. After removing the top screw, the **spring-loaded retention frame** will rise up. Hold it gently until it is fully open.
3. Lift the **rail frame** by gripping the lift tabs near the front edge of the rail frame.

- *As both frames are spring-loaded, keep a tight grip on them while lifting to avoid an abrupt swinging motion.*

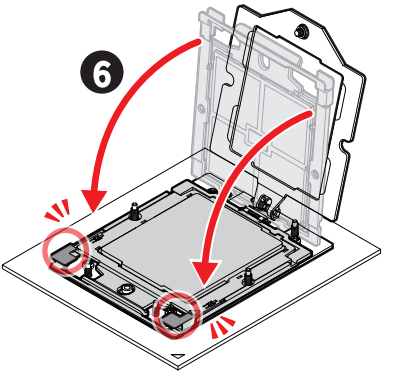


4. Pull the **external cap** upward through the rail guides on the rail frame to remove it.
5. Grip the handle of the **carrier frame** and slide it downward with the flanges and the rail guides aligned.

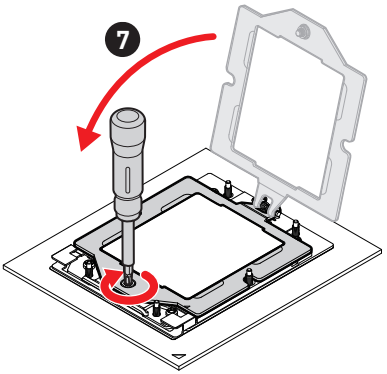
- *CPUs are shipped from the factory with pre-assembled carrier frames.*
- *Make sure the flanges of the carrier frame are firmly loaded on the rails before closing the rail frame.*



6. Grip the **lift tabs at the front edge of the rail frame** with the carrier frame loaded, then gently lower it to engage the carrier' s latching mechanism to the socket housing.



7. Push the **retention frame** downward and use a torque screwdriver to tighten the screw in the middle.



Torque Screwdriver Settings

Screw Head: Torx T20

Torque: 12.5-15 kgf·cm*

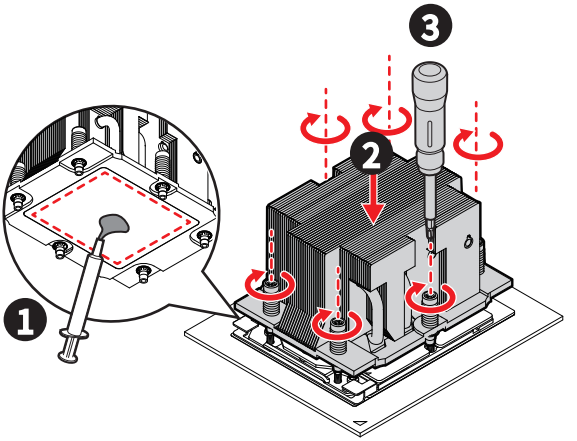
*12.5-15 kgf·cm
= 122.6~147 N·m
= 10.9~13 lbf·in

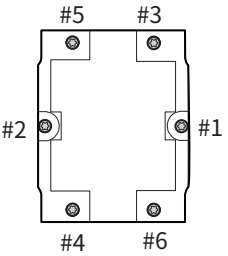
Installing Heatsink

Follow the steps below to install heatsink:

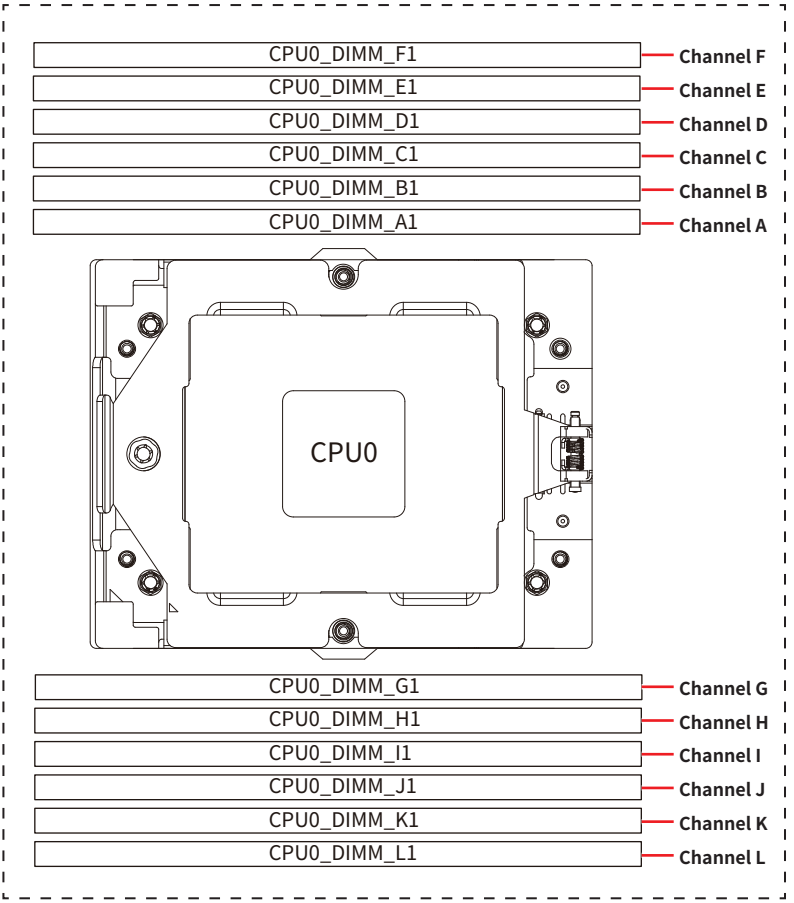
1. For peak thermal performance, apply proper amount of **thermal paste** to the bottom center of the heatsink. (Skip this step if there is pre-applied thermal paste.)
2. Lower the heatsink until it rests firmly in place after aligning the six screw holes on its bottom with the motherboard' s studs.
3. Tighten all screws in **diagonal sequence** with a torque screwdriver.

- *To avoid damaging the fins of the heatsink, always grip the heatsink **along the axis of the fins.** Holding a heatsink along the side might damage its fins or solder.*
- ***To avoid distributing uneven pressure on the CPU, it is recommended to secure the heatsink in two steps: first, loosely attach the screws at six points and then gradually tighten them.***

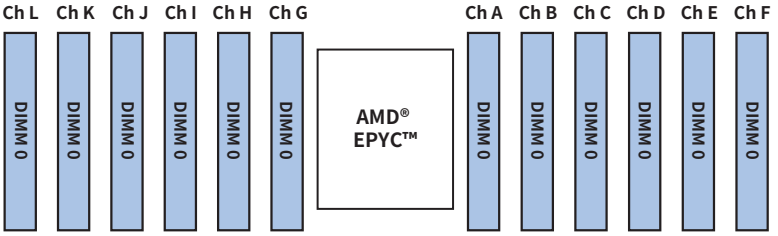




Memory


CPU0_DIMM_F1
CPU0_DIMM_E1
CPU0_DIMM_D1
CPU0_DIMM_C1
CPU0_DIMM_B1
CPU0_DIMM_A1
Channel F
Channel E
Channel D
Channel C
Channel B
Channel A
CPU0
CPU0_DIMM_G1
CPU0_DIMM_H1
CPU0_DIMM_I1
CPU0_DIMM_J1
CPU0_DIMM_K1
CPU0_DIMM_L1
Channel G
Channel H
Channel I
Channel J
Channel K
Channel L

Recommended Memory Population



Qty. of DDR5 \ Channel	L	K	J	I	H	G	CPU	A	B	C	D	E	F
12	V	V	V	V	V	V		V	V	V	V	V	V
10		V	V	V	V	V		V	V	V	V	V	
8		V		V	V	V		V	V	V		V	
6				V	V	V		V	V	V			
4				V		V		V		V			
2						V		V					
1								V					

Key Parameters for DIMM Configuration

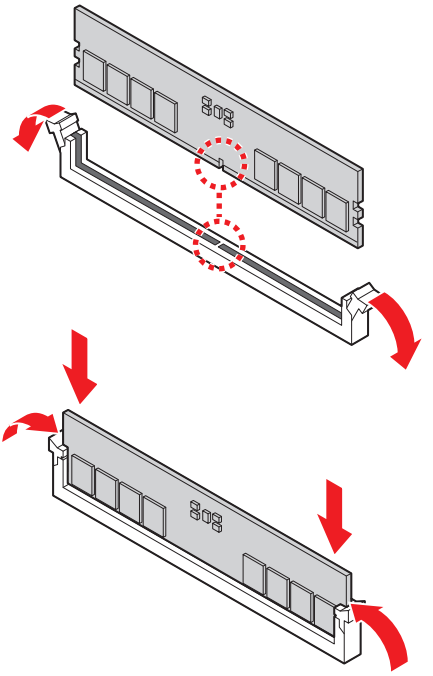
Parameter	Possible Values		
# of DIMMs Populated Per Channel	1DPC (1 DIMM per channel)		
DIMM Type	RDIMM, 3DS RDIMM		
DIMM Construction	RDIMM	1R (1 rank)	6400 MT/s memory speed supported
		2R (2 ranks)	
	3DS RDIMM	2S2R (4 ranks)	
		2S4R (8 ranks)	
		2S8R (16 ranks)	

Important

- *There should be at least 1 DDR5 DIMM populated.*
- *Paired memory installation for Max performance.*
- *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.

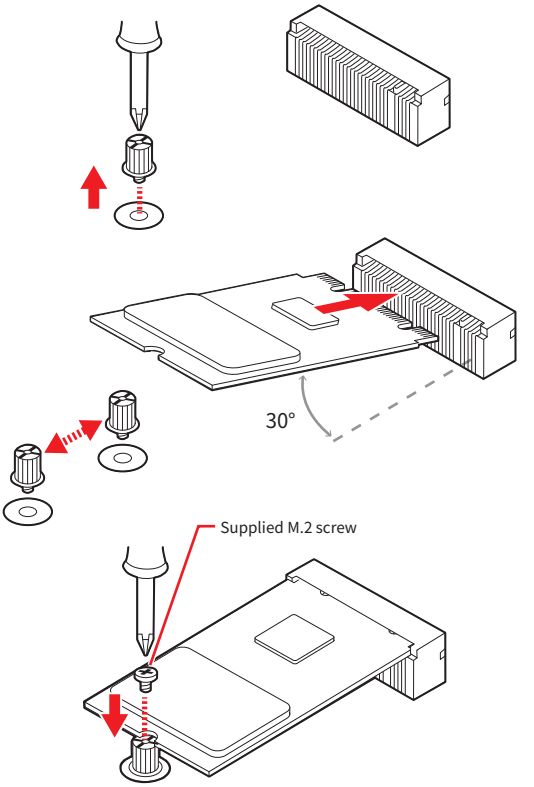
M.2 M Key

Installing an M.2 SSD

Video Demonstration

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

1. Loosen the M.2 riser screw from the motherboard.
2. Move and fasten the M.2 riser screw to the appropriate location according your M.2 SSD size.
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.

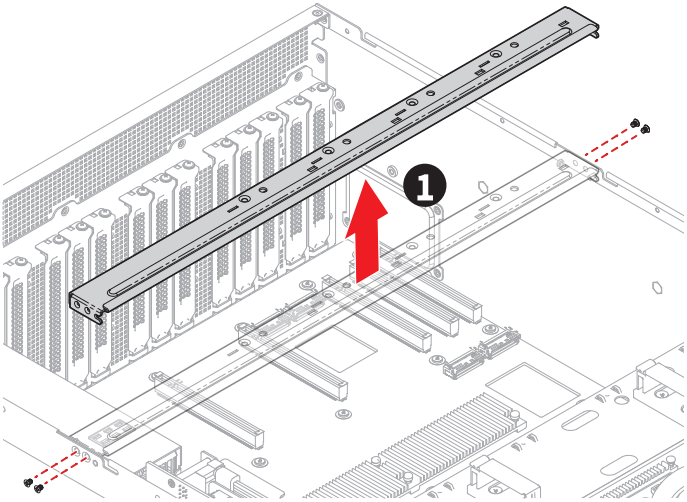


PCIe Card

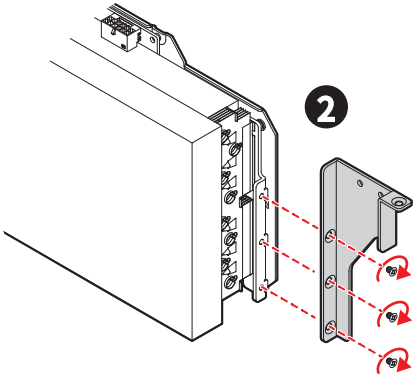
Installing PCIe Card

Follow the steps below to install PCIe card:

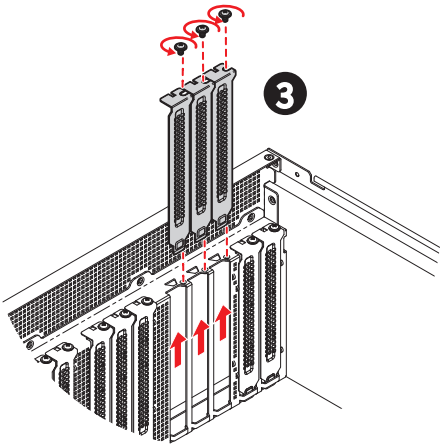
1. Remove the **riser bar** by loosening the screws on both sides of the chassis.



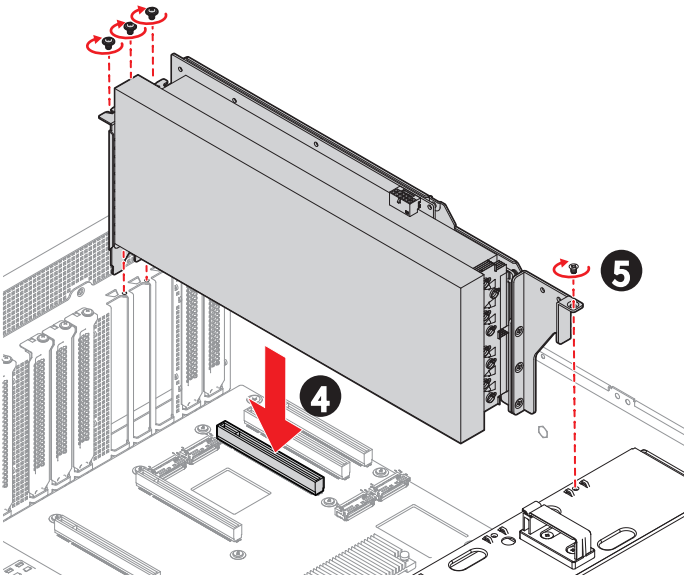
2. Attach the **PCIe bracket** to the PCIe card by tightening the screws.



3. Loosen the screws on the rear side of the chassis to remove the **filler panels**.

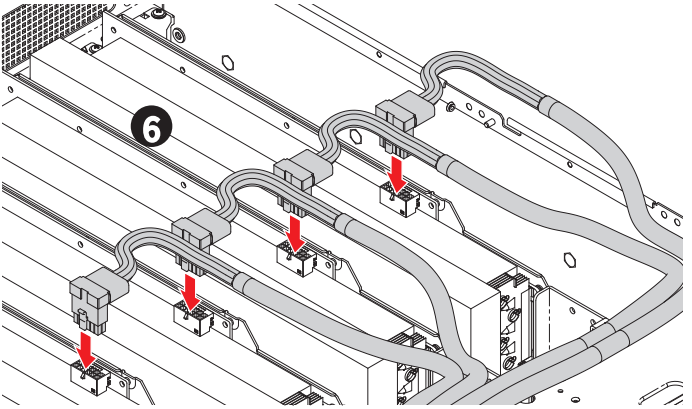


4. Align the PCIe card with the riser slot and insert it until it is fully seated.
5. Tighten the screws to securely fix the **PCIe card assembly** in place.



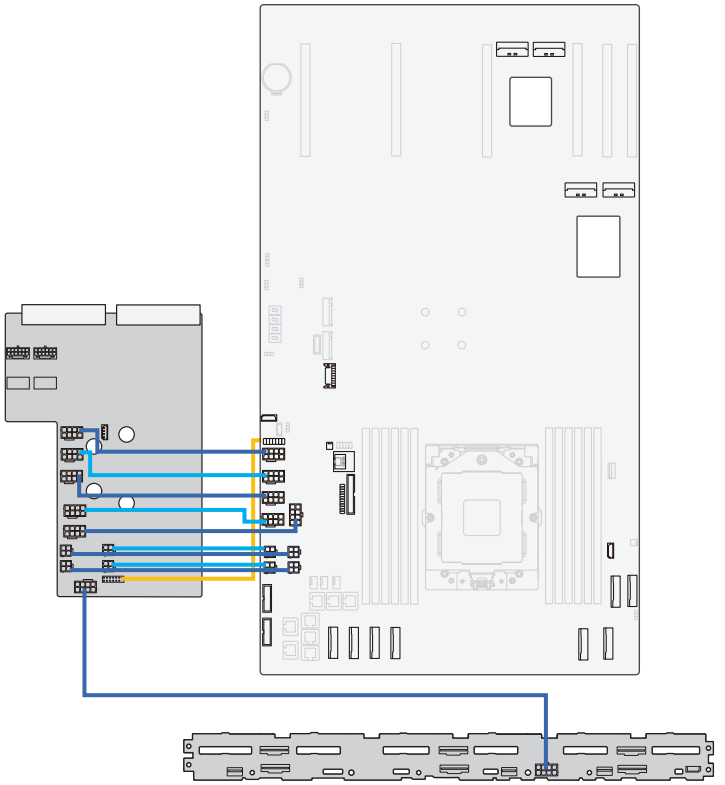
- *Follow the above procedures to install other PCIe cards.*

6. Connect power cables to the **12-pin power connectors** on the PCIe cards.

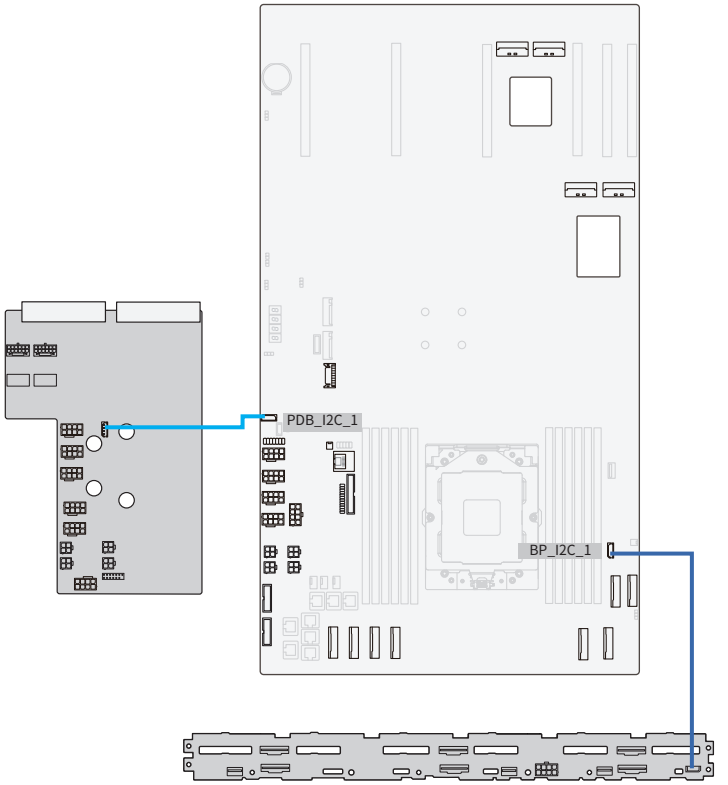


Cable Routing

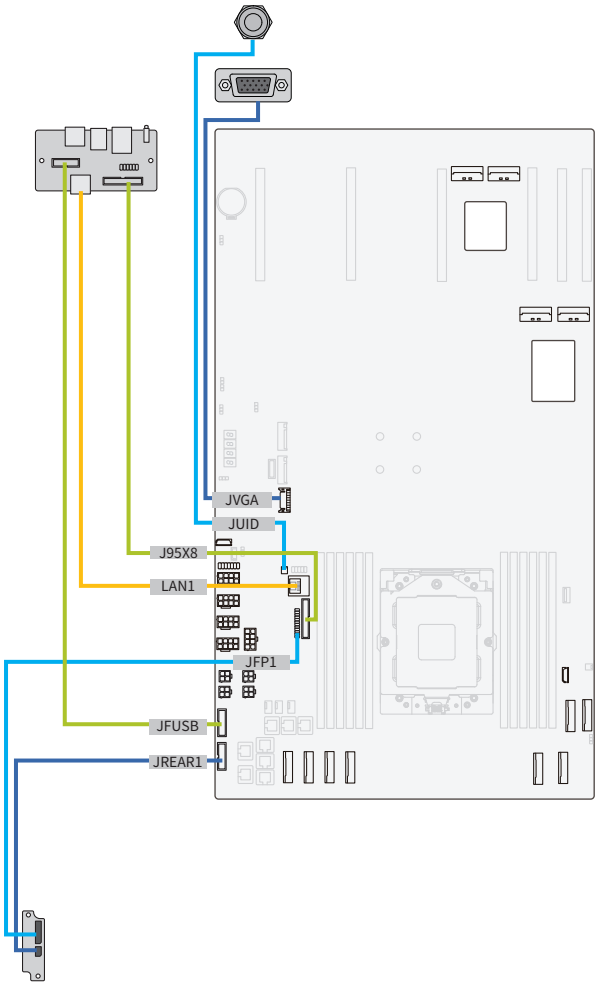
Power Cables



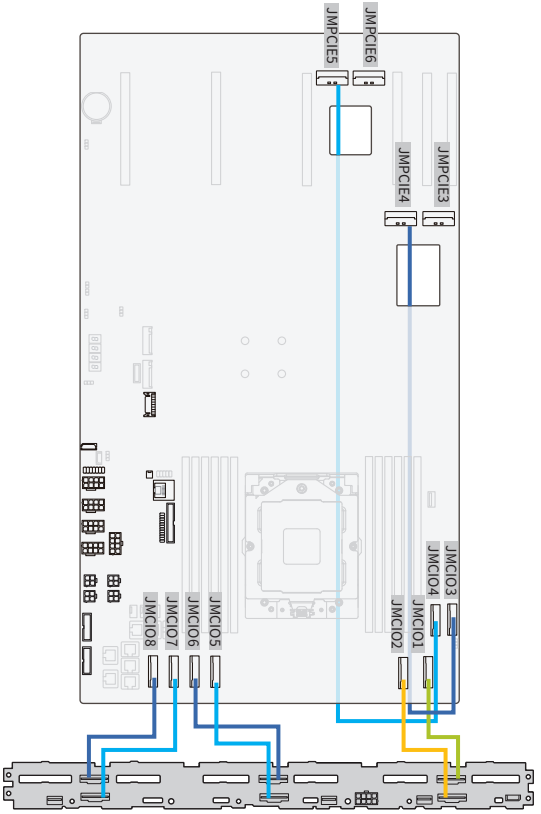
I2C Cables



Cables for Front & Rear I/O



Storage Cables



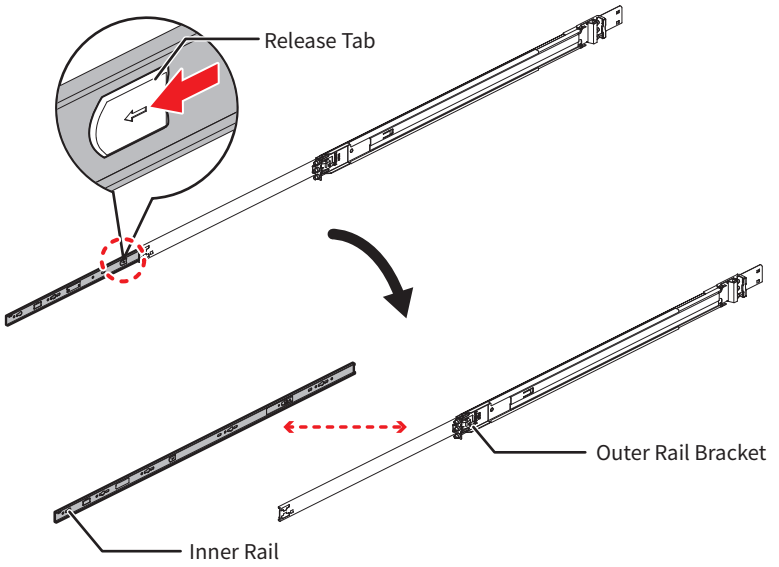
Slide Rail

Important

The illustrations are provided for demonstrative purposes only. The appearance of your system may differ based on the model you have purchased.

Disassembling Slide Rail

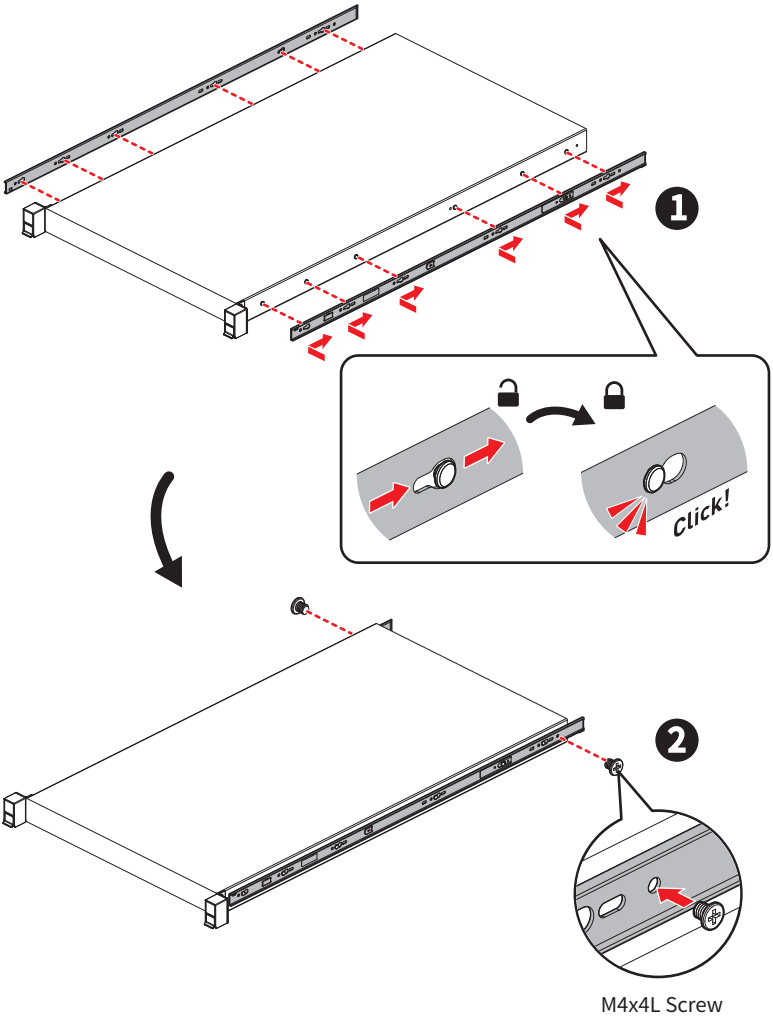
Slide the **release tab** forward to separate the inner rail from the bracket.



Installing Inner Rail onto the Chassis

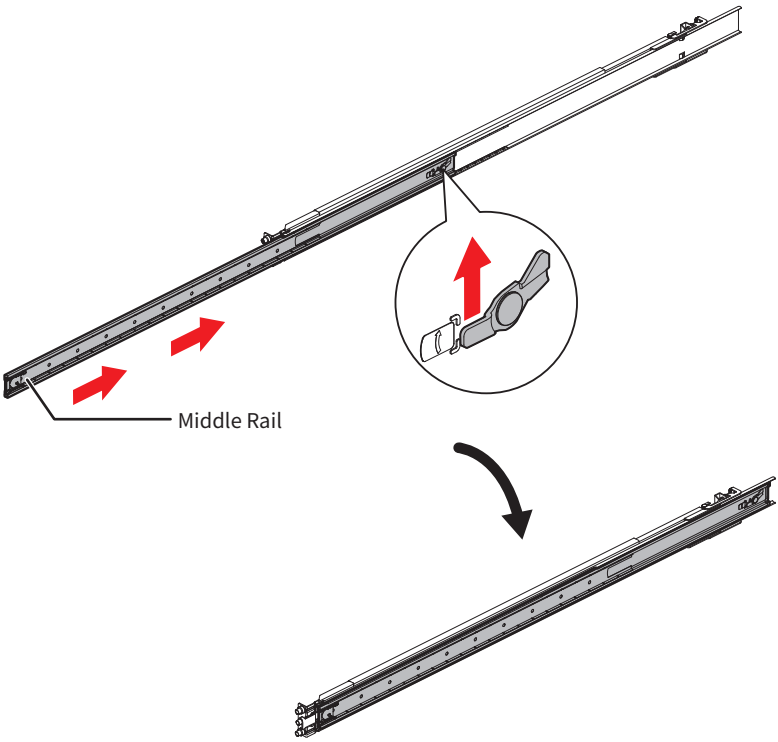
1. Align the standoffs on the side of the chassis with the hole on the inner rail, then **pull the inner rail backwards** till it locks into place.
2. Tighten the screw to secure the inner rail.

- *Repeat the same procedure to install the inner rail on the other side of the chassis.*

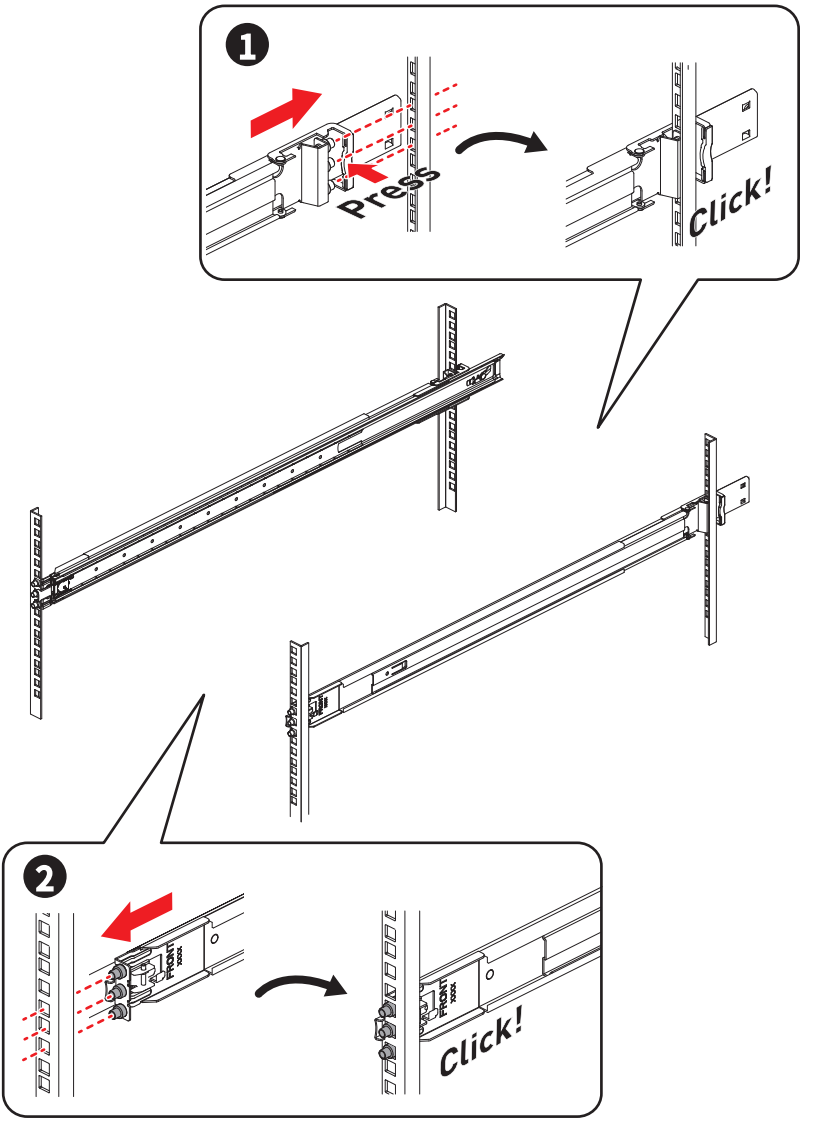


Retracting Outer Rail Bracket

Pull the latch upward to slide the middle rail back to the outer rail bracket.



Attaching Outer Rail Bracket to Rack Frame

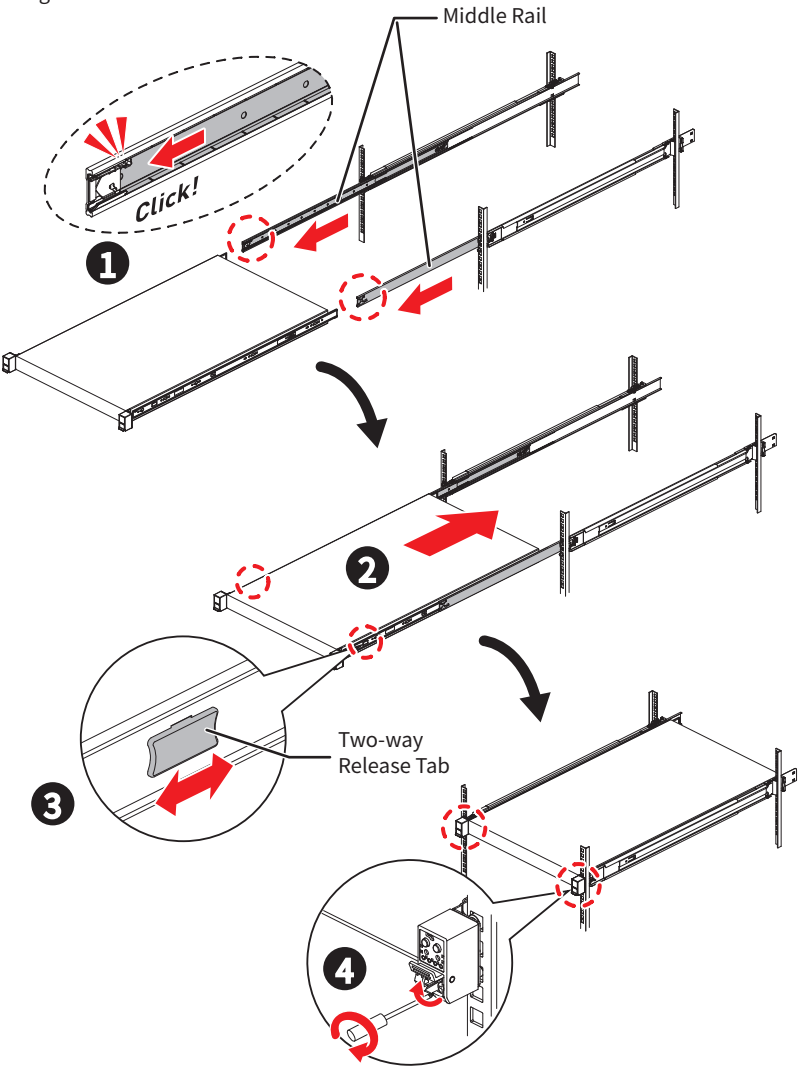


Installing Chassis into Rack

1. Pull out the middle rails till it fully extended.

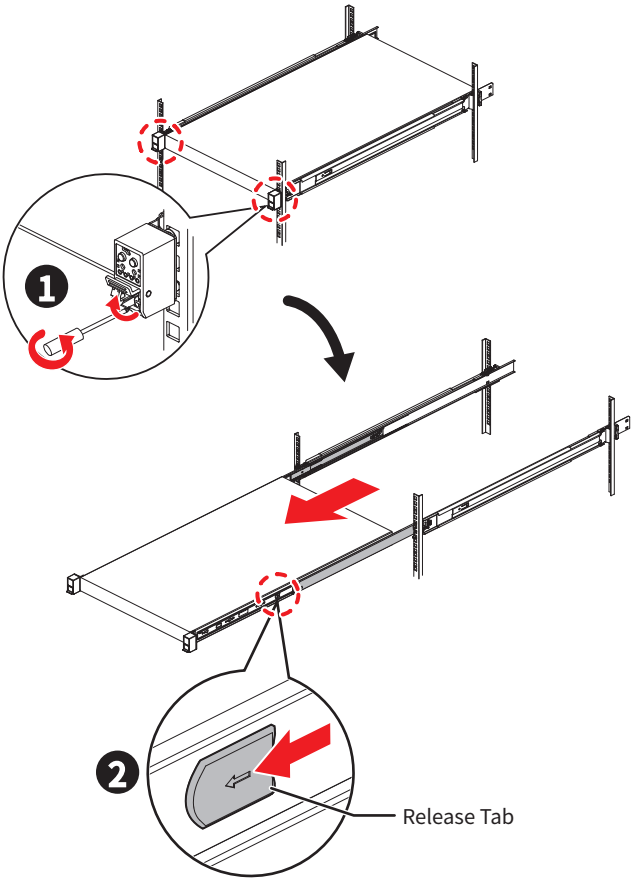
- *Ensure the **ball bearing retainers** are locked forward on each middle rail.*

2. Engage the inner rails of the chassis to the middle rails, then push the chassis forward until it stops.
3. Push the chassis into the rack by sliding the **two-way release tabs** forward or backward.
4. Tighten the screws to secure the chassis.

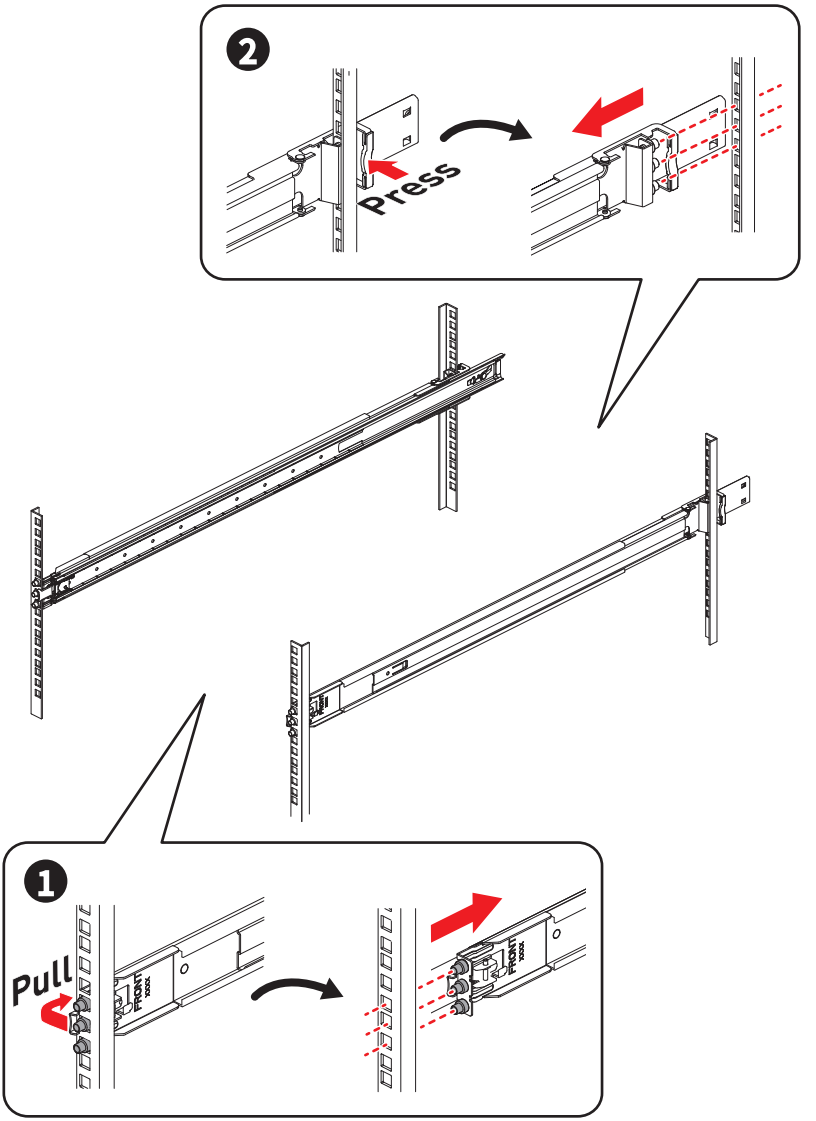


Removing Chassis from Rack

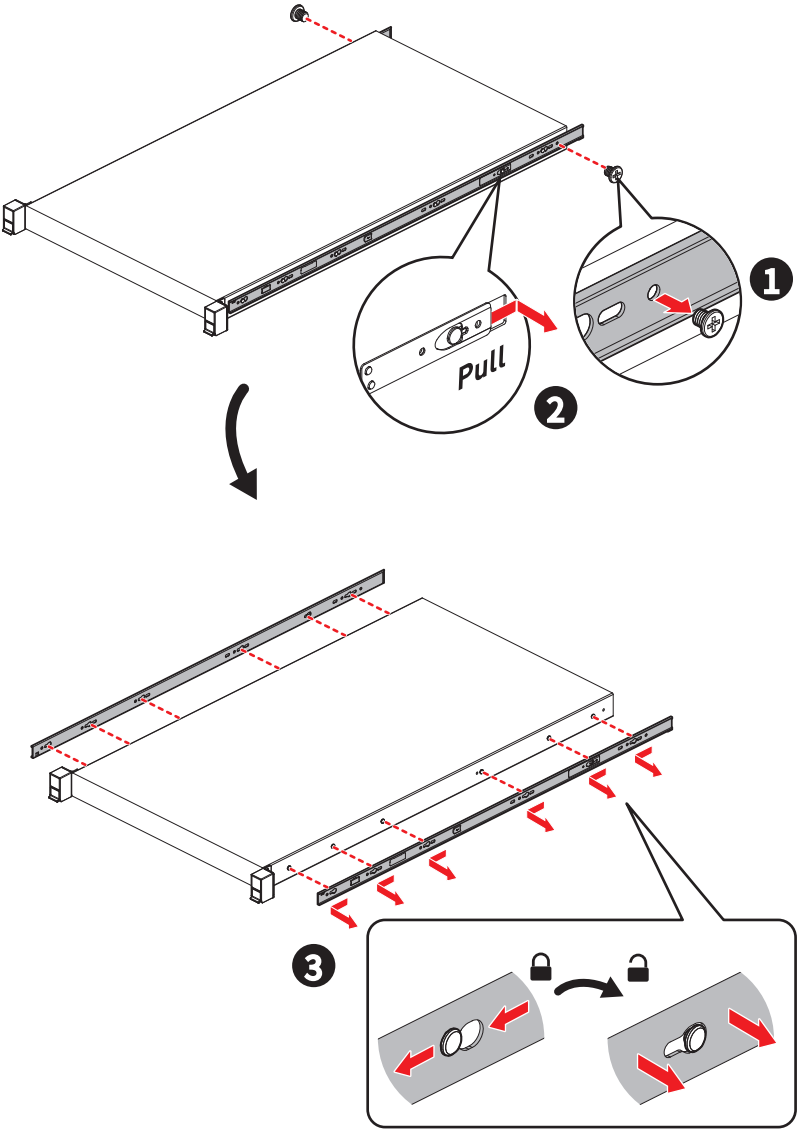
1. Remove the screws.
2. Slide the **release tab** forward to separate the inner rail (chassis) from the bracket.



Detaching Outer Rail Bracket from Rack Frame



Detaching Inner Rail from Chassis



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