CX271-S4056

S4056X271RAU8-HE

MS-S378

Server System

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Regulatory Notices

WEEE Statement



European Union: This symbol on the product indicates that this product cannot be discarded as municipal waste. Instead, it is your responsibility to dispose of your waste eletrical equipment by handling it over to a disignated collection point for recycling. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

CE Conformity

This product has been tested and found to comply with the harmonized standards for Information Technology Equipment published under Directives of Official Journal of the European Union.

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 <https://csr.msi.com/global/pevn_ewaste> and locate a nearby distributor for further recycling information.
- 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' 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.

Installation and Handling
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 Placemen
- 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.

Component Handling and Maintenance
Hot Surfaces
- Allow components like drives and power supplies to cool before touching.

Energy Pack Handling
- To reduce the risk of fire or burns after removing the energy pack:
- 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.
- The equipment shows visible signs of breakage.

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.

● **Safety: IEC/EN 62368-1**
This equipment is compliant with CB/LVD of Safety: IEC/EN 62368-1：2014.

The elements of the instructional safeguard shall be as follows:
- element 1a:  IEC 60417-6056(2011-05) for moving fan blades or
- IEC 60417-6057(2011-05) for other moving parts
- element 2:“Moving part” or “Moving fan blade” as applicable, or equivalent text
- element 3: optional
- element 4: “Keep body parts away from moving parts” or “Keep body parts away from fan blades” or “Keep body parts out of the motion path” as applicable, or equivalent text

Symbols on Equipment

	**CAUTION.** This symbol indicates a potential hazard. The potential for injury exists if cautions are not observed. Consult equipment documentation for specific details.
	**CAUTION**. Slide-mounted equipment is not to be used as a shelf or a work space.
	**Warning.** This symbol indicates the presence of hazardous energy circuits or electric shock hazards. Refer all servicing to qualified personnel.
	**Warning.** This symbol indicates the presence of a hot surface or hot component. If this surface is contacted, the potential for injury exists. To reduce risk of injury from a hot component, allow the surface to cool before touching.
 	**CAUTION：** Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions. **ATTENTION：** Risque d'explosion si la batterie est remplacée par un type incorrect. Mettre au rebus les batteries usagées selon les instructions.
	**Multiple power connections.** Prior to servicing, disconnect all power cords. **Raccordements de puissance multiples.** Avant l’ entretien, vous devez débranchez tous les cordons d’ alimentation.

System Specifications

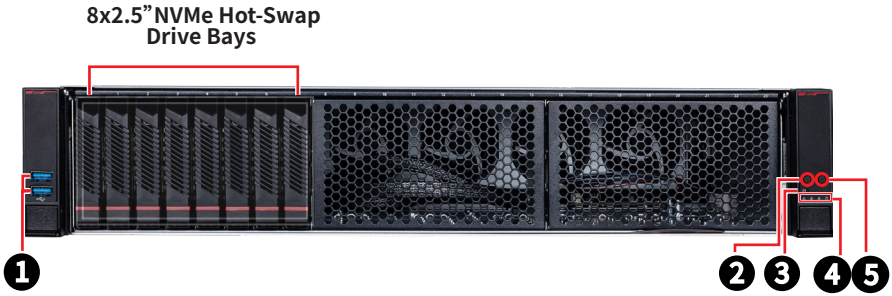
Model	CX271-S4056
SKUs	S4056X271RAU8-HE
Form factor	· 2U
Dimensions	· 438mm(17.2”) Wx 87mm(3.4”) Hx 764mm(30”)D
Processor	· Single AMD EPYC™ 9004 series and EPYC™ 9005 series processors, up to TDP 500W
Socket	· 1 x LGA6096 (Socket SP5)
Memory	· 24 x DDR5 DIMM Slots, 12 channels(2DPC), RDIMM/RIMM-3DS - Max. Frequency 5200MT/s(1DPC), 4400MT/s(2DPC) - Max. Capacity per DIMM: 256GB
Drive Bays	· 8 x Front hot-swap 2.5" U.2 PCIe 5.0 x4 NVMe drive bays
Internal Storage	· 2 x 2280/22110 PCIe 3.0 x2 NVMe M.2 ports
Expansion Slots	· 2 x FHFL PCIe5 x16 double wide slots support max 600W PCIe card · * PCIe card with TDP over 400W are supported @25°C operating temperature · 1 x FHHL PCIe5.0 x16 single wide slot
Networking	· 2 x PCIe 5.0 x16 OCP3.0 slots (NCSI supported) *NCSI only one slot is functional at the same time
Front I/O	· 8 x Hot-swap 2.5” U.2 drive bays · 2 x USB 3.0 Type-A Port · 1 x System Power LED Button · 1 x UID LED Button · 1 x Reset Button · 4 x Status LEDs: Fault/LAN/M.2
Rear I/O	· 1 x 1000Base-T Dedicated Server Management Port · 1 x COM USB Type A port · 1 x USB 2.0 Type-A Port · 1 x Mini Display port · 1 x Power LED(Green) Button · 1 x UID LED(Blue) Button · 1 x Status LEDs: Green/Red

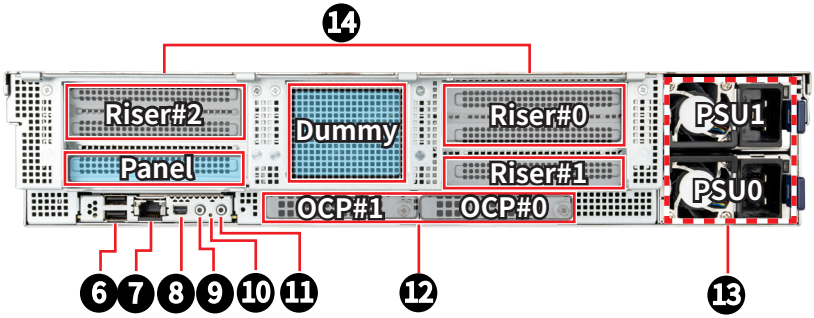
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Model	CX271-S4056
SKUs	S4056X271RAU8-HE
Security	· Chassis Intrusion · TPM2.0 module supported (optional) · ASPEED AST1060 Hardware Root of Trust module supported (optional)
Server Management	· 1 x 1000Base-T Dedicated Server Management Port · ASPEED AST2600 with AMI MegaRAC based firmware supporting IPMI 2.0 and DMTF Redfish API · Dual BIOS and dual BMC · eMMC for local BMC storage media
Cooling	· (1) EVAC air cooling module for max. 500W CPU · (6) 6056 Hot-swap System Fans
Environment	· Operating Temperature: 10°C ~ 35°C (50°F ~ 95°F) · Operating humidity: 8% to 85% (non-condensing) · Non-operating Temperature: -30°C ~ 60°C (-40°F to 140°F) · Non-operating Relative Humidity: 8% to 90% (non-condensing)
Power Supply	· (1+1) 3200W CRPS 80+ Titanium
Certification	· CE, FCC (Class A)

System Overview







1 **USB3.0 Type-A Port**

This connector is provided for USB peripheral devices. (Speed up to 5 Gbps)

2 **System Power Button/ LED**

3 **System Reset Button**

4

System Alarm LED

NIC Link LEDs

M.2 Activity LED

5 **UID Button/ LED**

6 **upper：COM USB Type A port**

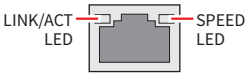
lower：USB2.0 Type-A Port

Important

Low-speed devices, such as mouse or keyboard, are suggested to be plugged into the USB 2.0 ports.

7 GbE RJ45 Port (mgmt.) Dedicated IPMI 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

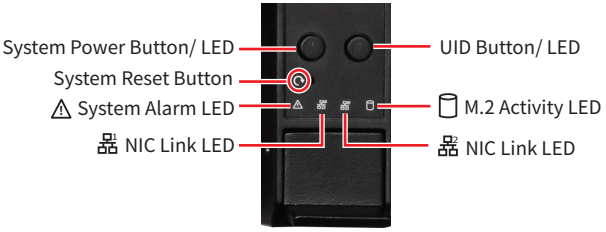
8 **Mini Display Port**

9 **UID Button/ LED**

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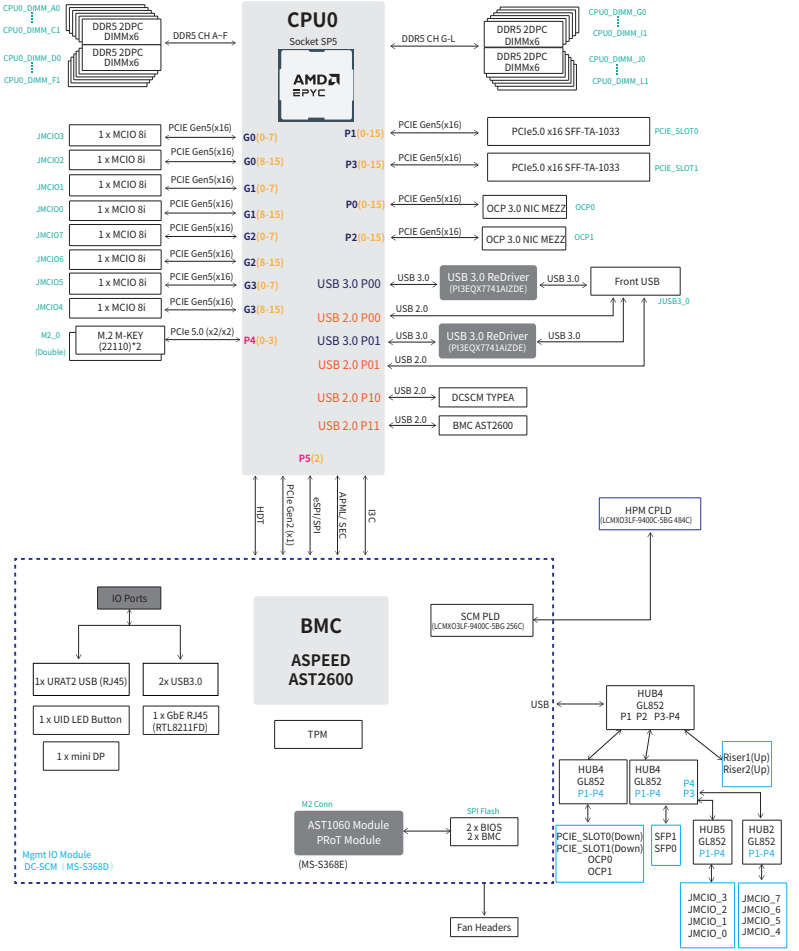
<table>
<tr><td>⑩</td><td>System Status LED
The System Status LED is provided for indicators for system.<table><tr><td rowspan="4">System Status LED</td><td>Status</td><td>Description</td></tr><tr><td>Off</td><td>System is running/normal operation</td></tr><tr><td>Red</td><td>BMC anomaly detected. Check BMC log for details.</td></tr><tr><td>Green</td><td>BMC initialization</td></tr></table></td></tr>
<tr><td>⑪</td><td>System Power Button/ LED</td></tr>
<tr><td>⑫</td><td>OCP 3.0 Mezzanine Slot
OCP#0：PCIe 5.0 x16 OCP3.0 Network Interface Card
OCP#1：PCIe 5.0 x16 OCP3.0 Network Interface Card</td></tr>
<tr><td>⑬</td><td>Power Supply Unit</td></tr>
<tr><td>⑭</td><td>PCIe Add-in Card Area
Riser#0:PCIe 5.0 x16 Dual Width Full Height Full Length
Riser#1:PCIe 5.0 x16 Full Height Full Length
Riser#2:PCIe 5.0 x16 Dual Width Full Height Full Length</td></tr>
</table>

System LED Indicators



LED	LED State	Description
System Power LED	Blue	System power is on
		System power is on ACPI S0 state
	Blinking	System is sleeping
	Off	System power is off
		System power 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
NIC Link LED	Blinking	NIC activity is occurring
	Off	NIC link is not established
M.2 Activity LED	Amber	M.2 present, no activity
	Blinking	M.2 accessing
	Off	No M.2 activity

Block Diagram



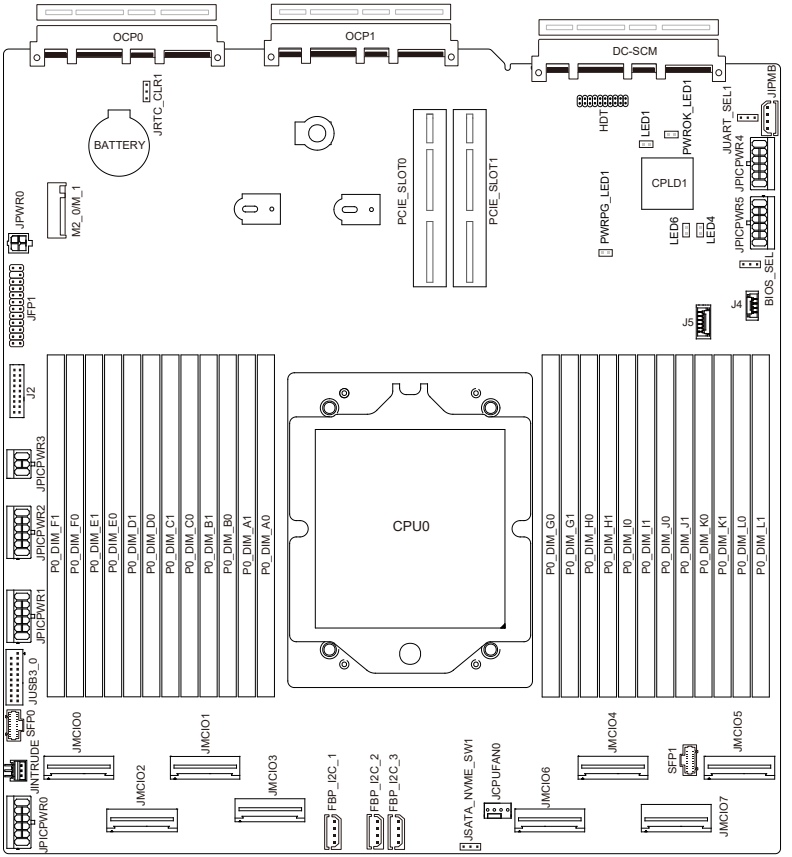
System Storage Topology





8 x 2.5" NVMe Hot-Swap Drive Bays							
NvMe #0	NVMe #1	NVMe #2	NVMe #3	NVMe #4	NVMe #5	NVMe #6	NVMe #7
CPU0		CPU0		CPU0		CPU0	
G1 0:7		G1 8:15		G0 0:7		G0 8:15	

Overview of Components



MGT1 DC-SCM Module

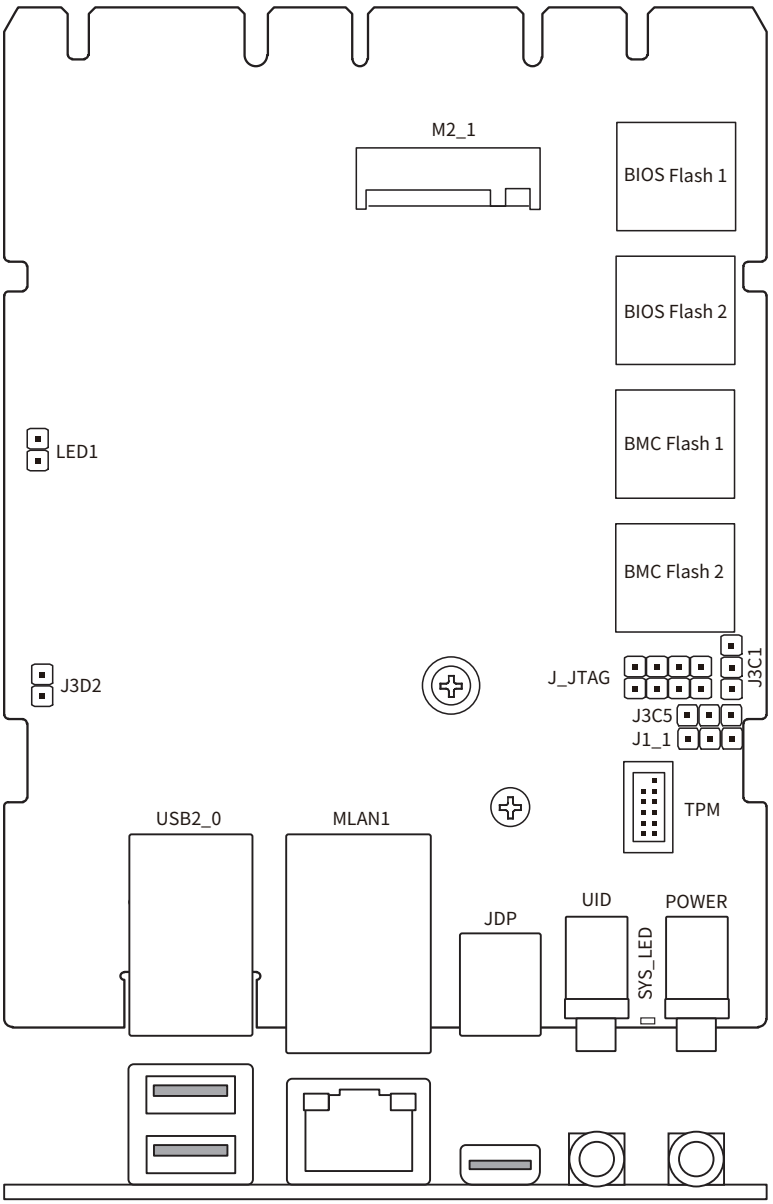
Specifications

Model	MGT1
Form factor	DC-SCM v2.0
Dimensions	120mm (4.72") x 420mm (3.54")
Chipset	ASPEED AST2600
Networking	1 x 1000Base-T dedicated server management port
Graphics	1 x mini DisplayPort
System Connectors	· 1 x USB 2.0 Type-A port (480 Mbps) · 1 x 1000Base-T dedicated server management port · 1 x COM USB Type-A port · 1 x mini DisplayPort · 1 x Power LED button header (green) · 1 x UID button header (blue) · 1 x status LEDs: green/red
Security	· TPM 2.0 module (optional) · ASPEED AST1060 Hardware Root-of-Trust module (optional)
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 BIOS and BMC, with eMMC for local BMC storage media
Environment	· Operating Temperature: 0°C to 35°C (50°F to 95°F) · Non-operating Temperature: -20°C to 70°C (-4°F to 158°F) · Non-operating Relative Humidity: 5% to 85% (non-condensing)

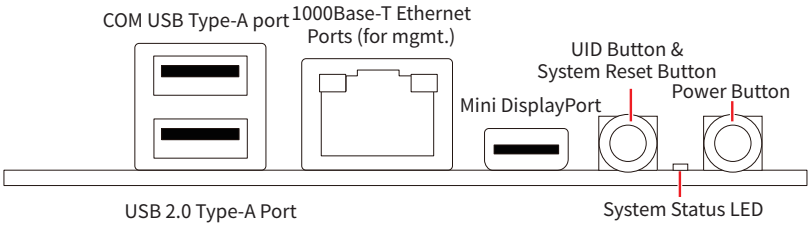
Optional modules

Model	TPM20-IRS	ROT1
Form factor	Proprietary	
Dimensions	20mm (0.78") x 21.5mm (0.84") (Right-angle type)	30mm (1.81") x 60mm (2.36")
Chipset	OPTIGA™ TPM SLB 9672	ASPEED AST1060
Security	TPM 2.0 module	Hardware Root-of-Trust module
Environment	· Operating Temperature: 0°C to 35°C (50°F to 95°F) · Non-operating Temperature: -20°C to 70°C (-4°F to 158°F) · Non-operating Relative Humidity: 5% to 85% (non-condensing)	

Overview of Components



Rear I/O Panel



COM USB Type-A port

This port allows for serial data transmission over a USB connection, enabling remote or direct console access.

USB 2.0 Type-A Port

This connector is provided for USB peripheral devices. (Speed up to 480 Mbps)

Important

High-speed devices are recommended for USB 3.2 ports whereas low-speed devices, such as mouse or keyboard, are suggested to be plugged into the USB 2.0 ports.

1000Base-T Ethernet Port (for mgmt.)

The 1000Base-T Ethernet Port is for connection to the Local Area Network (LAN). You can connect a network cable to it.

Mini-DisplayPort

This port is a compact version of DisplayPort, used for connecting displays. With an appropriate adapter, it supports connections to VGA, DVI, or HDMI displays.

UID LED Button & System Reset Button

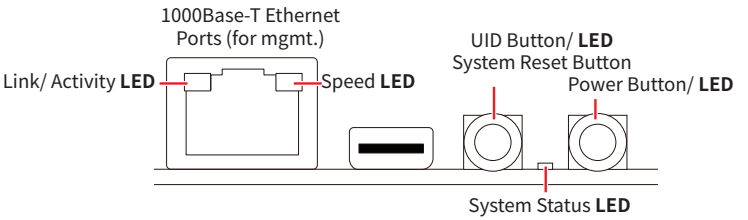
In the default setting, this button is configured as a UID button. By using the **J1_1** jumper, users can set it as a System Reset Button.

System Status LED

Power Button LED

Press the button to turn the system on or off. Power LED lit green when the system is turned on.

System LED Indicators



LED	LED State	Description
Power LED	Green	System power is on
		System power is on ACPI S0 state
	Blinking	System is sleeping
	Off	System power is off
		System power is on ACPI S4, S5 state
UID LED	Blue	Identify active via command or button
	Off	No identification
System Status LED	Green	BMC initialization
	Red	BMC anomaly detected. Check BMC log for details.
	Off	System is running/ normal operation
LAN Link/ Activity LED	Green	Linked
	Blinking	Data activity
	Off	No link
LAN Speed LED	Green	1GbE
	Orange	100M
	Off	10M

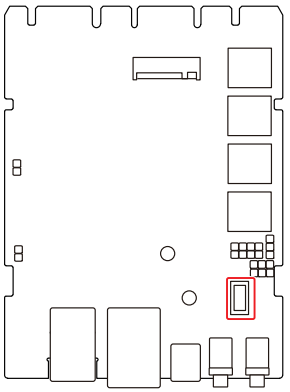
Component Contents

Component	Page
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M2_1: M.2 Slot (M Key, for ROT1)	25
J_JTAG: Manual Programming Headers (Debug Use)	26
Jumpers	**27**
Onboard LED	**27**
LED1: BMC Heartbeat LED	28

Connectors and Components

TPM: SPI TPM Header (for TPM20-IRS)

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





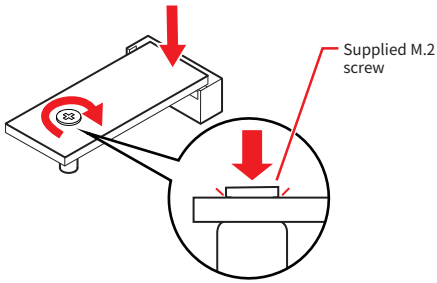
TPM

1	PRSNT#	2	RST#
3	MOSI	4	PIRQ
5	MISO	6	CLK
7	PP/Reserved	8	GND
9	Vcc	10	CS3
11	Vcc	12	N/A

Installing TPM module

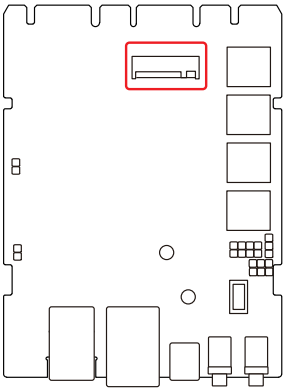
1. Place the TPM20-IRS module atop the SPI TPM header.

2. Secure the module in place with the supplied M.2 screw.



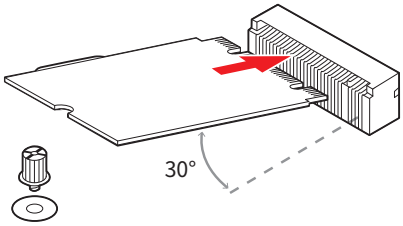
M2_1: M.2 Slot (M Key, for ROT1)

Please install the M.2 3060 module into the M.2 slot as shown below.

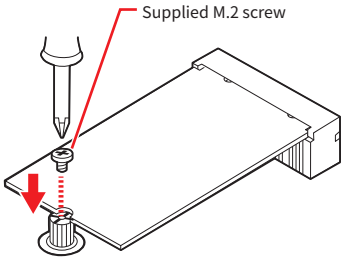


Installing M.2 3060 module

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

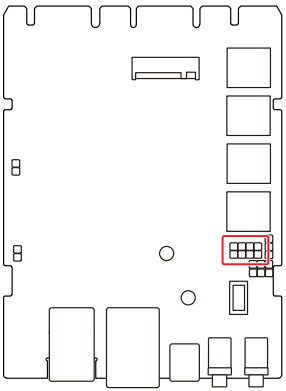


2. Secure the M.2 module in place with the supplied M.2 screw.



J_JTAG: Manual Programming Header (Debug Use)

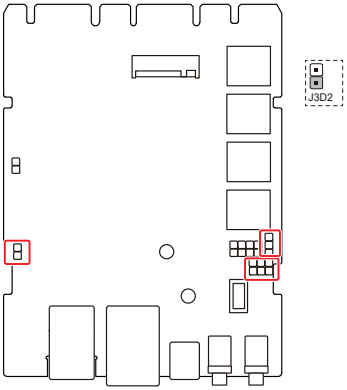
J_JTAG and J3C5 are used to manually debug and update CPLD firmware with programming tool.



Jumpers

Important

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



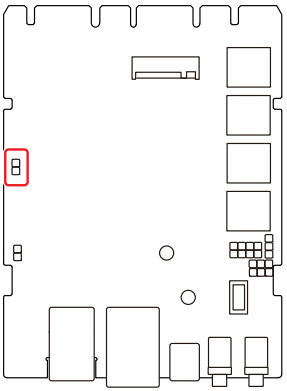


Jumper Name	Default Setting	Description
J3D2	1	**Force BMC Update Jumper** 1-X: Normal (default) 1-2: BMC Force Update
J3C1	1	**FRU Jumper** 1-2: FRU Write Protected 2-3: FRU Normal Operated (default)
J3C5	1	**JTAG SW Jumper** 1-2: JTAG SW disable 2-3: JTAG SW enable (default)
J1_1	1	**ID/ Reset Button Select Jumper** 1-2: ID Button (default) 2-3: Reset Button

Onboard LED

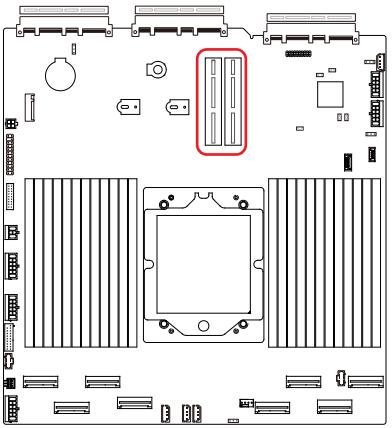
LED1: BMC Heartbeat LED

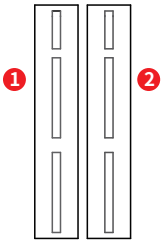
This LED indicates the BMC (Baseboard Management Controller) status.



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

Expansion Slots





1. PCIE_SLOT0: PCIe 5.0 x16 MCIO(SFF-TA-1033) Slots
2. PCIE_SLOT1: PCIe 5.0 x16 MCIO(SFF-TA-1033) Slots

PCIE_SLOT0~1:PCIe Expansion Slots

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

Important

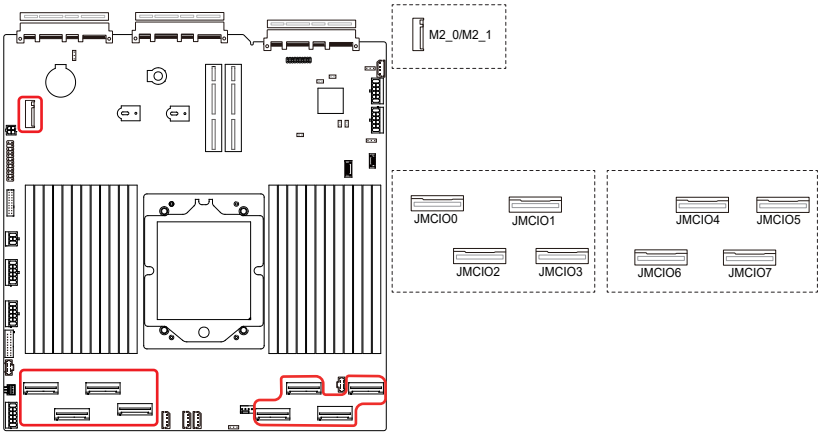
When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

Server Board Connectors

Storage Connectors

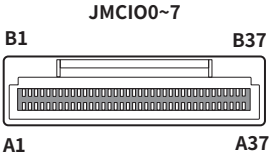
JMCIO0~7: MCIO 8i Connectors

These vertical 74-pin Mini Cool Edge IO (MCIO) connectors, which support **PCIe 5.0 x8** interface, delivering a per-lane transfer rate of **32GT/s**.



MCIO 8i Transmission Rate Table

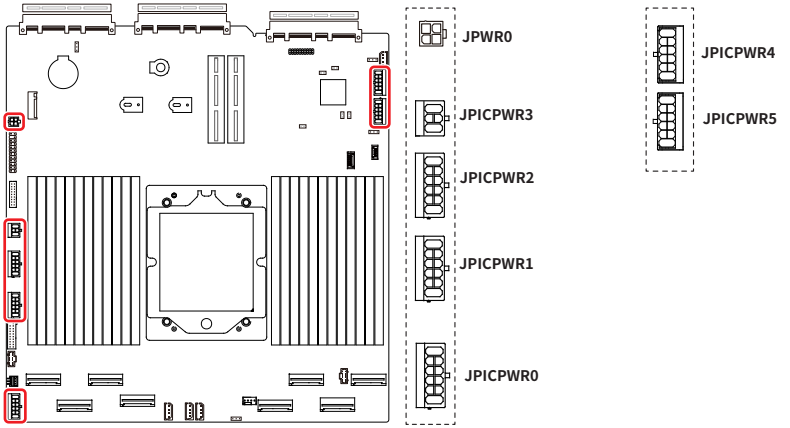
Name	Description
JMCIO0~7	PCIe 5.0 x8, 32GT/s
M2_0~1	PCIe 3.0 x2, 8GT/s



A1	GND	B1	GND
A2	P5E_CPU_PE_NVME_RX_D+	B2	P5E_CPU_PE_NVME_TX_D+
A3	P5E_CPU_PE_NVME_RX_D-	B3	P5E_CPU_PE_NVME_TX_D
A4	GND	B4	GND
A5	P5E_CPU_PE_NVME_RX_D+	B5	P5E_CPU_PE4_NVME_TX_D+

A6	P5E_CPU_PE_NVME_RX_D-	B6	P5E_CPU_PE_NVME_TX_D
A7	GND	B7	GND
A8	P3V3_AUX	B8	JMCIO_BMC_SCL
A9	FM_SMB_PEHPCPU_MCIO_LVC3_ALERT_N	B9	JMCIO_BMC_SDA
A10	GND	B10	GND
A11	CLK_100M_CPU_MCIO_R_D+	B11	PCIe_RST_N
A12	CLK_100M_CPU_MCIO_R_D-	B12	FM_MCIO_CPU_PESTI_CBL_PRES_N
A13	GND	B13	GND
A14	P5E_CPU_PE_NVME_RX_D+	B14	P5E_CPU_PE_NVME_TX_D+
A15	P5E_CPU_PE_NVME_RX_D-	B15	P5E_CPU_PE_NVME_TX_D
A16	GND	B16	GND
A17	P5E_CPU_PE_NVME_RX_D+	B17	P5E_CPU_PE_NVME_TX_D+
A18	P5E_CPU_PE_NVME_RX_D-	B18	P5E_CPU_PE_NVME_TX_D
A19	GND	B19	GND
A20	P5E_CPU_PE_NVME_RX_D+	B20	P5E_CPU_PE_NVME_TX_D+
A21	P5E_CPU_PE_NVME_RX_D-	B21	P5E_CPU_PE_NVME_TX_D
A22	GND	B22	GND
A23	P5E_CPU_PE_RX_D+	B23	P5E_CPU_PE_NVME_TX_D+
A24	P5E_CPU_PE_RX_D-	B24	P5E_CPU_PE_NVME_TX_D+
A25	GND	B25	GND
A26	SMB_MCIOP_CPU_SCL	B26	FM_MCIO_CPU_FPGA_FLEXIO_3A
A27	SMB_MCIOP_CPU_SDA	B27	FM_MCIO_CPU_FPGA_FLEXIO_4A
A28	GND	B28	GND
A29	USB_HUB_MCIO_CPU_PE_D+	B29	FM_MCIO_CPU_FPGA_FLEXIO_1A
A30	USB_HUB_MCIO_CPU_PE_D-	B30	FM_MCIO_CPU_FPGA_FLEXIO_2A
A31	GND	B31	GND
A32	P5E_CPU_PE_RX_D+	B32	P5E_CPU_PE_NVME_TX_D+
A33	P5E_CPU_PE_RX_D-	B33	P5E_CPU_PE_NVME_TX_D
A34	GND	B34	GND
A35	P5E_CPU_PE_RX_D+	B35	P5E_CPU_PE_NVME_TX_D+
A36	P5E_CPU_PE_RX_D-	B36	P5E_CPU_PE_NVME_TX_D
A37	GND	B37	GND

Power Connectors(on MS-S3781)



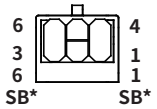
JPICPWR0~3: PIC Power Connectors

The PICPWR(Platform Infrastructure Connectivity Power) connector enables the HPM(Host Processor Module) to supply power and manage sideband signals to peripherals,including the GPU Cards (JPICPWR4~5), the Power Distribution Board(JPICPWR1~3)and the Fan Board(JPICPWR0).

JPICPWR3: 6-Pin HPM Power Connectors

The connector provides power output to HPM.

JPICPWR3



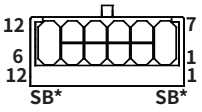
Power Signals			
1	GND	4	P12V
2	GND	5	P12V
3	GND	6	P12V
Sideband Management Signals			
S1	FM_HPM_JPWR3_B_SB1	S4	FM_HPM_JPWR3_B_SB4
S2	FM_HPM_JPWR3_B_SB3	S5	SMB_JPWR3_1A_LVC3_SCL
S3	FM_HPM_PICPWR5_SB3	S6	SMB_JPWR3_1A_LVC3_SDA

***SB: The term“ SB” stands for sideband.**

JPICPWR1~2: 12-Pin HPM Power Connectors

These connectors provide power output to HPM.

JPICPWR1/JPICPWR2



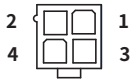
Power Signals			
1	GND	7	P12V
2	GND	8	P12V
3	GND	9	P12V
4	GND	10	P12V
5	GND	11	P12V
6	GND	12	P12V
Sideband Management Signals			
S1	FM_HPM_JPWR1_B_SB1/ FM_HPM_JPWR2_B_SB1	S7	FM_HPM_JPWR1_A_SB1/ FM_HPM_JPWR2_A_SB1
S2	FM_HPM_JPWR1_B_SB2/ FM_HPM_JPWR2_B_SB2	S8	FM_HPM_JPWR1_A_SB2/ FM_HPM_JPWR2_A_SB2
S3	FM_PS_ON_N/NC	S9	FM_PS_PWROK/NC
S4	FM_PS_SMB_ALERT_N/NC	S10	NC
S5	SMB_JPWR1_1B_LVC3_SCL/ SMB_JPWR2_1B_LVC3_SCL	S11	SMB_JPWR1_1A_LVC3_SCL/ SMB_JPWR2_1A_LVC3_SCL
S6	SMB_JPWR1_1B_LVC3_SDA/ SMB_JPWR2_1B_LVC3_SDA	S12	SMB_JPWR1_1A_LVC3_SDA/ SMB_JPWR2_1A_LVC3_SDA

***SB: The term" SB" stands for sideband.**

JPWR0: 4-Pin Riser Power Connector

This connector provides power output to Risers on rear side.

JPWR0



1	P12V	2	P3V3
3	GND	4	GND

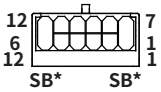
JPICPWR0: 12-Pin Fan board Power Connectors

These connectors provide power output to Fans.

JPICPWR4~5: 12-Pin GPU Power Connectors

These connectors provide power output to GPUs.

JPICPWR4/JPICPWR5



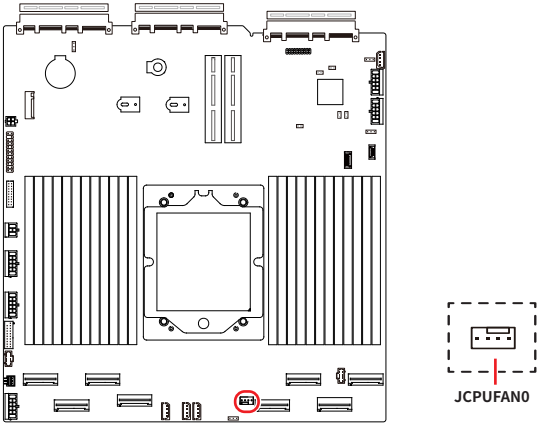
Power Signals			
1	GND	7	P12V
2	GND	8	P12V
3	GND	9	P12V
4	GND	10	P12V
5	GND	11	P12V
6	GND	12	P12V
Sideband Management Signals			
S1	FM_HPM_ PICPWR_B_SB1	S7	FM_HPM_PICPWR_A_ SB1
S2	FM_HPM_ PICPWR_B_SB2	S8	FM_HPM_PICPWR_A_ SB2
S3	FM_HPM_GPU_ SENSE0_SB3	S9	NC
S4	FM_HPM_GPU_ SENSE1_SB4	S10	NC
S5	B_ LVC3_SCL	S11	A_ LVC3_SCL
S6	B_ LVC3_SDA	S12	A_ LVC3_SDA

***SB: The term" SB" stands for sideband.**

Important

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

Cooling Connectors

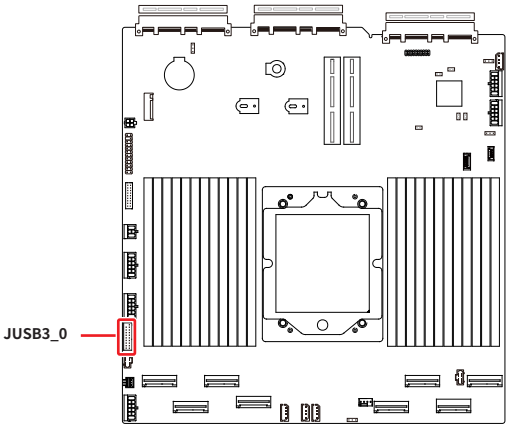


JCPUFAN0: CPU Fan Connector

The fan power connectors support CPU cooling fans.

JCPUFAN0 1 4				
	1	GND	3	FAN_TACH
	2	P12V	4	FAN_PWM

USB Connectors



JUSB3_0: USB 3.0 Connector

The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices. It supports up to 5Gbps and backward compatibility with USB 2.0 devices (480 Mbps).



	1	P5V_USB_1	11	USB2_P3_ESD_DP
	2	USB3_P2_ESD_RXN	12	USB2_P3_ESD_DN
	3	USB3_P2_ESD_RXP	13	GND
	4	GND	14	USB3_P3_ESD_TXP
	5	USB3_P2_ESD_TXN	15	USB3_P3_ESD_TXN
	6	USB3_P2_ESD_TXP	16	GND
	7	GND	17	USB3_P3_ESD_RXP
	8	USB2_P2_ESD_DN	18	USB3_P3_ESD_RXN
	9	USB2_P2_ESD_DP	19	P5V_USB_2
	10	NC		

Other Connectors and Components

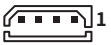
JINTRUDER: Chassis Intrusion Header

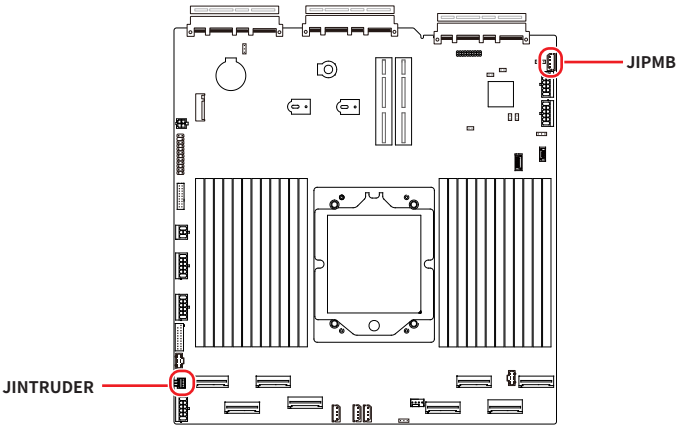
This connector connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

JINTRUDER 1 	1	INTRUSION_Cable_PRESENT_N
	2	GND
	3	HPM_SCM_INTRUSION

JIPMB: IPMB Header

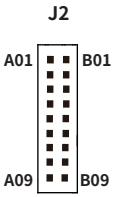
This header is used to connect the IPMB (Intelligent Platform Management Bus).

JIPMB 	1	SMB_IPMB_DAT
	2	GND
	3	SMB_IPMB_CLK
	4	P5V_AUX

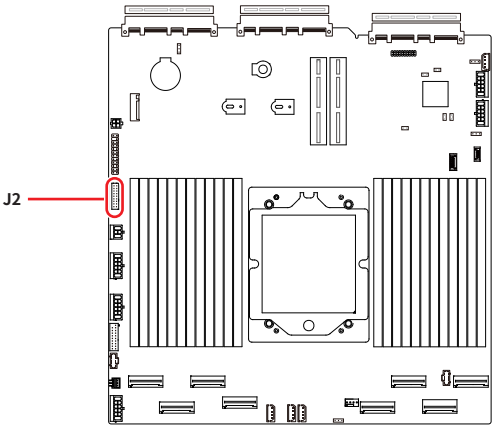


J2: PDB Management Connector

The PDB Management header connects to the power distribution board (PDB).



A01	P12V_STBY_PSU	B01	P12V_STBY_PSU
A02	ISENSE_I_PSYS_R	B02	VSENSE_LOCAL_V_PSYS_R
A03	P12V_STBY_PSU	B03	P12V_STBY_PSU
A04	GND	B04	GND
A05	PDB_SGPIO_LD	B05	PDB_SGPIO_CK
A06	PDB_SGPIO_DO	B06	GND
A07	GND	B07	PDB_SGPIO_DI
A08	SMB_PS_CLK_R	B08	GND
A09	SMB_PS_DAT_R	B09	TP_FULL_PWR_CYCLE_N

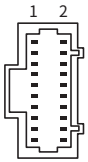


SFP0~1: DC-MHS Control Panel Header

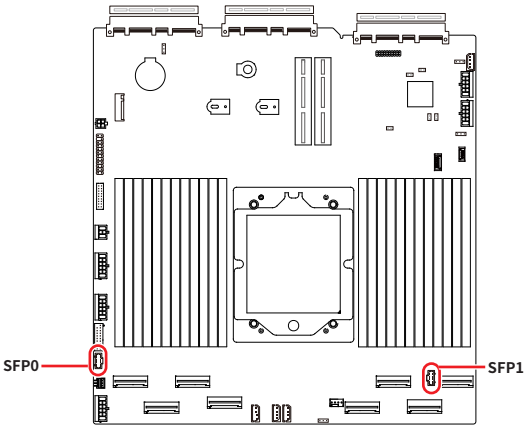
The DC-MHS control panel header for M-PESTI connects the HPM to the server' sfront panel, enabling essential controls such as power, LED indicators, buttons, and sideband signals for management and monitoring.

- DC-MHS (**Data Center Modular Hardware System**) is a modular framework for data center hardware, promoting interoperability across components.
- M-PESTI (**Modular Hardware System Peripheral Sideband Tunneling Interface**)standardizes communication for peripheral components, allowing automatic discovery and configuration.
- HPM (**Host Processor Module**) is the main processing module in a server, responsible for managing power, control signals, and peripheral interfaces.

SFP0~1

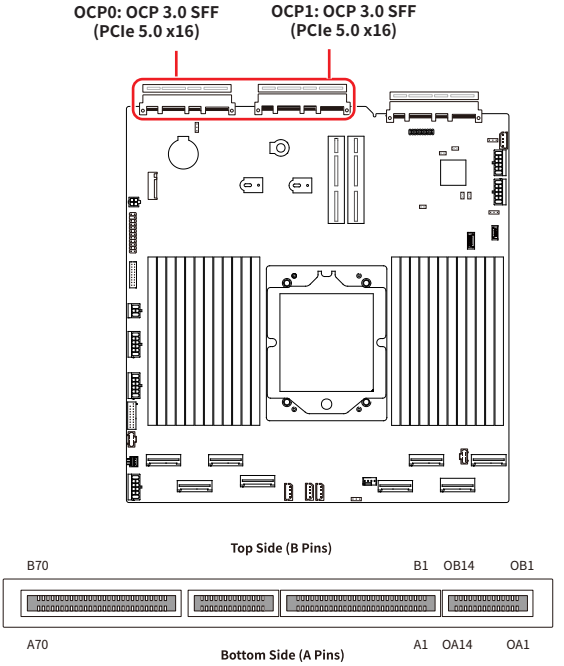


	1	P12V_AUX	2	GND
	3	P12V_AUX	4	BMC_SMB_LVC3_PESTI1_SDA
	5	NC	6	BMC_SMB_LVC3_PESTI1_SCL
	7	GND	8	GND
	9	USB2_BMC_PCP_ESD_D+	10	FM_FP_HPM_PCP_SB4
	11	USB2_BMC_PCP_ESD_D-	12	FM_FP_HPM_PCP_SB3
	13	GND	14	FM_FP_HPM_PCP_SB2
	15	SPI_BMC_FP_MISO_R	16	FM_FP_HPM_PCP_SB1
	17	SPI_BMC_FP_CS0_R	18	GND
	19	SPI_BMC_FP_MOSI_R	20	SPI_BMC_FP_CK_R



OCP0~1: OCP 3.0 Mezzanine Slot

This slot enables the deployment of a wide variety of additional options through OCP(Open Compute Project) network interface cards (NICs) or other expansion Cards.



Top Side (B Pins)		Bottom Side (A Pins)	
OB1	PWRGD_OCP0_NIC1_PWRGD_R	OA1	RST_CPU0_PE0_OCP0_PERST2_N
OB2	FM_OCP0_NIC_MAIN_PWR_EN	OA2	RST_CPU0_PE0_OCP0_PERST3_N
OB3	SGPIO_OCP0_R_LD_N	OA3	IRQ_WAKE_CPU0_PE0_OCP0_LVC3_N
OB4	SGPIO_OCP0_R_DIN	OA4	OCP0_RBT_ARB_IN
OB5	SGPIO_OCP0_R_DOUT	OA5	OCP0_RBT_ARB_OUT
OB6	SGPIO_OCP0_R_CLK	OA6	PUD_OCP0_SLOT_ID1_N
OB7	PUD_OCP0_SLOT_ID0_N	OA7	RMII_OCP0_TX_EN
OB8	RMII_OCP0_RXD1	OA8	RMII_OCP0_TXD1
OB9	RMII_OCP0_RXD0	OA9	RMII_OCP0_TXD0
OB10	GND	OA10	GND

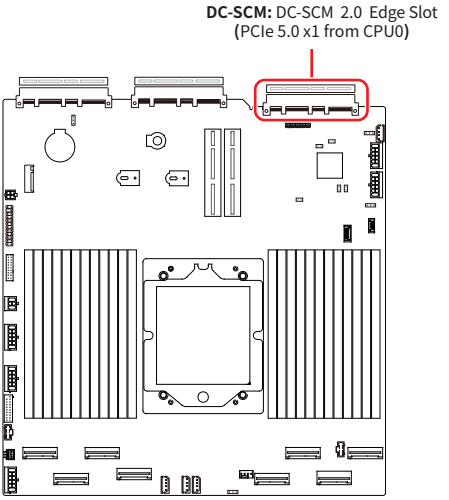
Top Side (B Pins)		Bottom Side (A Pins)	
OB11	CLK_100M_CPU0_OCP0_3_DN/DP	OA11	RST_CPU0_PE0_OCP0_PERST2_N
OB12	CLK_100M_CPU0_OCP0_2_DN/DP	OA12	RST_CPU0_PE0_OCP0_PERST3_N
OB13	GND	OA13	IRQ_WAKE_CPU0_PE0_OCP0_LVC3_N
OB14	RMII_OCP0_CSDV	OA14	OCP0_RBT_ARB_IN
Mechanical Key			
B1	P12V_AUX_OCP0	A1	GND
B2	P12V_AUX_OCP0	A2	GND
B3	P12V_AUX_OCP0	A3	GND
B4	P12V_AUX_OCP0	A4	GND
B5	P12V_AUX_OCP0	A5	GND
B6	P12V_AUX_OCP0	A6	GND
B7	PD_OCP0_NIC_BIF0_N	A7	SMB_CPU0_PE2_OCP0_LVC3_SCL
B8	PD_OCP0_NIC_BIF1_N	A8	SMB_CPU0_PE2_OCP0_LVC3_SDA
B9	PD_OCP0_NIC_BIF2_N	A9	RST_BMC_PCIE_MUX_R_LVC3_N
B10	RST_CPU0_PE7_OCP0_PERST0_N	A10	PD_CPU0_OCP0_NIC_PRSNTA_N
B11	P3V3_AUX_OCP0	A11	RST_CPU0_PE7_OCP0_PERST1_N
B12	FM_OCP0_NIC_AUX_PWR_LVC3_R_EN	A12	FM_CPU_PE_OCP0_NIC_PRSTN2_N
B13	GND	A13	GND
B14	CLK_100M_CPU0_OCP0_0_DN	A14	CLK_100M_CPU0_OCP0_1_DN
B15	CLK_100M_CPU0_OCP0_0_DP	A15	CLK_100M_CPU0_OCP0_1_DP
B16	GND	A16	GND
B17	P5E_CPU0_PE2_OCP_TX_DN0	A17	P5E_CPU0_PE2_OCP_RX_DN0
B18	P5E_CPU0_PE2_OCP_TX_DP0	A18	P5E_CPU0_PE2_OCP_RX_DP0
B19	GND	A19	GND
B20	P5E_CPU0_PE2_OCP_TX_DN1	A20	P5E_CPU0_PE2_OCP_RX_DN1
B21	P5E_CPU0_PE2_OCP_TX_DP1	A21	P5E_CPU0_PE2_OCP_RX_DP1
B22	GND	A22	GND
B23	P5E_CPU0_PE2_OCP_TX_DN2	A23	P5E_CPU0_PE2_OCP_RX_DN2
B24	P5E_CPU0_PE2_OCP_TX_DP2	A24	P5E_CPU0_PE2_OCP_RX_DP2
B25	GND	A25	GND
B26	P5E_CPU0_PE2_OCP_TX_DN3	A26	P5E_CPU0_PE2_OCP_RX_DN3
B27	P5E_CPU0_PE2_OCP_TX_DP3	A27	P5E_CPU0_PE2_OCP_RX_DP3

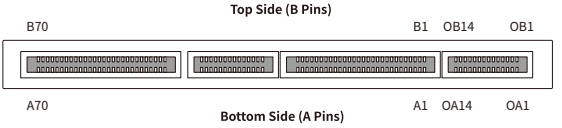
B28	GND	A28	GND
Mechanical Key			
B29	GND	A29	GND
B30	P5E_CPU0_PE2_OCP_TX_DN4	A30	P5E_CPU0_PE2_OCP_RX_DN4
B31	P5E_CPU0_PE2_OCP_TX_DP4	A31	P5E_CPU0_PE2_OCP_RX_DP4
B32	GND	A32	GND
B33	P5E_CPU0_PE2_OCP_TX_DN5	A33	P5E_CPU0_PE2_OCP_RX_DN5
B34	P5E_CPU0_PE2_OCP_TX_DP5	A34	P5E_CPU0_PE2_OCP_RX_DP5
B35	GND	A35	GND
B36	P5E_CPU0_PE2_OCP_TX_DN6	A36	P5E_CPU0_PE2_OCP_RX_DN6
B37	P5E_CPU0_PE2_OCP_TX_DP6	A37	P5E_CPU0_PE2_OCP_RX_DP6
B38	GND	A38	GND
B39	P5E_CPU0_PE2_OCP_TX_DN7	A39	P5E_CPU0_PE2_OCP_RX_DN7
B40	P5E_CPU0_PE2_OCP_TX_DP7	A40	P5E_CPU0_PE2_OCP_RX_DP7
B41	GND	A41	GND
Top Side (B Pins)		Bottom Side (A Pins)	
B42	FM_CPU0_OCP0_NIC_PRSTN0_N	A42	FM_CPU_OCP0_NIC_PRSTN1_N
Mechanical Key			
B43	GND	A43	GND
B44	P5E_CPU0_PE2_OCP_TX_DN8	A44	P5E_CPU0_PE2_OCP_RX_DN8
B45	P5E_CPU0_PE2_OCP_TX_DP8	A45	P5E_CPU0_PE2_OCP_RX_DP8
B46	GND	A46	GND
B47	P5E_CPU0_PE2_OCP_TX_DN9	A47	P5E_CPU0_PE2_OCP_RX_DN9
B48	P5E_CPU0_PE2_OCP_TX_DN9	A48	P5E_CPU0_PE2_OCP_RX_DP9
B49	GND	A49	GND
B50	P5E_CPU0_PE2_OCP_TX_DN10	A50	P5E_CPU0_PE2_OCP_RX_DN10
B51	P5E_CPU0_PE2_OCP_TX_DP10	A51	P5E_CPU0_PE2_OCP_RX_DP10
B52	GND	A52	GND
B53	P5E_CPU0_PE2_OCP_TX_DN11	A53	P5E_CPU0_PE2_OCP_RX_DN11
B54	P5E_CPU0_PE2_OCP_TX_DP11	A54	P5E_CPU0_PE2_OCP_RX_DP11
B55	GND	A55	GND

B56	P5E_CPU0_PE2_OCP_TX_DN12	A56	P5E_CPU0_PE2_OCP_RX_DN12
B57	P5E_CPU0_PE2_OCP_TX_DP12	A57	P5E_CPU0_PE2_OCP_RX_DP12
B58	GND	A58	GND
B59	P5E_CPU0_PE2_OCP_TX_DN13	A59	P5E_CPU0_PE2_OCP_RX_DN13
B60	P5E_CPU0_PE2_OCP_TX_DP13	A60	P5E_CPU0_PE2_OCP_RX_DP13
B61	GND	A61	GND
B62	P5E_CPU0_PE2_OCP_TX_DN14	A62	P5E_CPU0_PE2_OCP_RX_DN14
B63	P5E_CPU0_PE2_OCP_TX_DP14	A63	P5E_CPU0_PE2_OCP_RX_DP14
B64	GND	A64	GND
B65	P5E_CPU0_PE2_OCP_TX_DN15	A65	P5E_CPU0_PE2_OCP_RX_DN15
B66	P5E_CPU0_PE2_OCP_TX_DP15	A66	P5E_CPU0_PE2_OCP_RX_DP15
B67	GND	A67	GND
B68	FM_CPU0_PE0_OCP0_PRSTN3_QS_N	A68	USB2_OCP_NIC_DN
B69	NC	A69	USB2_OCP_NIC_DP
B70	FM_CPU_PE_OCP0_NIC_PRSNTB3_N	A70	FM_PWRBRK_CPU0_PE2_OCP0_ LVC3_N

DC-SCM: DC-SCM 2.0 Edge Slot

The slot links the Datacenter Secure Control Module (DC-SCM) to the motherboard, enabling centralized power, management, and security control across server hardware. This standardized interface allows easy upgrades and compatibility across various platforms.





Top Side (B Pins)		Bottom Side (A Pins)	
OB1	GND	OA1	GND
OB2	NC	OA2	NC
OB3	NC	OA3	NC
OB4	GND	OA4	GND
OB5	NC	OA5	NC
OB6	NC	OA6	NC
OB7	GND	OA7	GND
OB8	NC	OA8	NC
OB9	NC	OA9	NC
OB10	GND	OA10	GND

Top Side (B Pins)		Bottom Side (A Pins)	
OB11	USB2_BMC_HUB_DN	OA11	NC
OB12	USB2_BMC_HUB_DP	OA12	NC
OB13	GND	OA13	GND
OB14	P1V0_AUX	OA14	PECI_SCM
Mechanical Key			
B1	CLK_66M_ESPI_CPU0_LVC18	A1	P12V_AUX_SCM
B2	ESPI_CPU0_CS0_SCM_N	A2	P12V_AUX_SCM
B3	RST_ESPI_CPU0_LVC18_N	A3	P12V_AUX_SCM
B4	ESPI_CPU0_IO0_LVC18	A4	P12V_AUX_SCM
B5	ESPI_CPU0_IO1_LVC18	A5	GND
B6	ESPI_CPU0_IO2_LVC18	A6	GND
B7	ESPI_CPU0_IO3_LVC18	A7	GND
B8	IRQ_ESPI_CPU0_ALERT0_FPGA_LVC18_N	A8	BMC_JTAG_LVC3_TCK
B9	NC	A9	BMC_JTAG_LVC3_TDI
B10	NC	A10	BMC_JTAG_LVC3_TDO
B11	GND	A11	BMC_JTAG_LVC3_TMS
B12	SPI_CPU0_CLK_DCSCM_LVC18_R1	A12	NC
B13	SPI_CPU0_CS0_DCSCM_LVC18_R1_N	A13	FM_HPM_STBY_RST_N
B14	SPI_CPU0_IO0_DCSCM_LVC18_R1	A14	FM_HPM_STBY_EN
B15	SPI_CPU0_IO1_DCSCM_LVC18_R1	A15	SMB_CHASSIS_SENSOR_STBY_LVC3_SCL
B16	SPI_CPU0_IO2_DCSCM_LVC18_R1	A16	SMB_CHASSIS_SENSOR_STBY_LVC3_SDA
B17	SPI_CPU0_IO3_DCSCM_LVC18_R1	A17	SMB_HSBP_SCM_LVC3_R_SCL
B18	SPI_CPU0_CS1_DCSCM_LVC18_R1_N	A18	SMB_HSBP_SCM_LVC3_R_SDA
B19	GND	A19	GND
B20	LVDS_LVC18_TX_DN	A20	LVDS_LVC18_RX_DN
B21	LVDS_LVC18_TX_DP	A21	LVDS_LVC18_RX_DP
B22	GND	A22	GND
B23	LVDS_LVC18_CLK_TX_DN	A23	LVDS_LVC18_CLK_RX_DN
B24	LVDS_LVC18_CLK_TX_DP	A24	LVDS_LVC18_CLK_RX_DP
B25	GND	A25	GND
B26	FM_HPM_STBY_RDY	A26	SMB_PMBUS2_LVC3_SCL
B27	FM_INTRUDER_HDR_BMC_N	A27	SMB_PMBUS2_LVC3_SDA

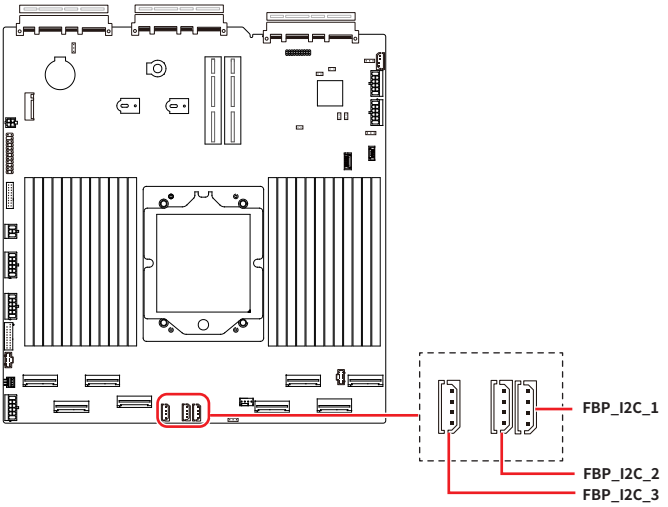
B28	P3V_BAT_CPU0	A28	RST_PLD_PCIE_CPU0_DEV_PERST_N
Mechanical Key			
B29	GND	A29	GND
B30	P5E_CPU0_PE1_TX_DN2	A30	P5E_CPU0_PE1_RX_DN2
B31	P5E_CPU0_PE1_TX_DP2	A31	P5E_CPU0_PE1_RX_DP2
B32	GND	A32	GND
B33	HUB_SSTX4N	A33	HUB_SSRX4N
B34	HUB_SSTX4P	A34	HUB_SSRX4P
B35	GND	A35	GND
B36	BMC_TYPEA_DN	A36	CLK_100M_SCM_DN
B37	BMC_TYPEA_DP	A37	CLK_100M_SCM_DP
B38	GND	A38	GND
B39	I3C_DBG_SCM_LVC18_R_SCL	A39	I3C_SPD_SCM_R_LVC1_SCL
B40	I3C_DBG_SCM_LVC18_R_SDA	A40	I3C_SPD_SCM_R_LVC1_SDA
B41	NC	A41	I3C_MNG_SCM_LVC1_R_SCL
Top Side (B Pins)		Bottom Side (A Pins)	
B42	NC	A42	I3C_MNG_SCM_LVC1_R_SDA
Mechanical Key			
B43	CLK3_50M_SCM_RMII_CLK	A43	SMB_PCIE_SCM_LVC3_R_SCL
B44	RMII3_SCM_CRS_DV_R	A44	SMB_PCIE_SCM_LVC3_R_SDA
B45	RMII3_SCM_TX_EN_R	A45	SMB_IPMB_LVC3_CLK
B46	RMII3_SCM_TXD0	A46	SMB_IPMB_LVC3_DAT
B47	RMII3_SCM_TXD1	A47	SMB_CPLD_UPDATE_SCM_LVC3_R_SCL
B48	RMII3_SCM_RXD0	A48	SMB_CPLD_UPDATE_SCM_LVC3_R_SDA
B49	RMII3_SCM_RXD1	A49	SMB_PMBUS1_LVC3_SCL
B50	VCC3_FRU_SCM	A50	SMB_PMBUS1_LVC3_SDA
B51	UART0_TX_SCM_HPM_DATA	A51	BMC_SMB_LVC18_CLK1
B52	SMB_HOST_STBY_LVC3_SCL	A52	BMC_SMB_LVC18_DAT1
B53	SMB_HOST_STBY_LVC3_SDA	A53	GND-31
B54	DBP_ASD_SCM_PREQ_LVC3_R_N	A54	SPI_CPU0_TPM_CLK_LVC18_MUX_R1
B55	DBP_ASD_SCM_PRDY_LVC3_R_N	A55	SPI_CPU0_TPM_CS_LVC18_MUX_R1_N

B56	SMB16_IPMB_LVC3_SCL	A56	SPI_CPU0_TPM_MOSI_LVC18_MUX_R1
B57	SMB16_IPMB_LVC3_SDA	A57	SPI_CPU0_TPM_MISO_LVC18_MUX_R1
B58	FM_SCM_PRSNT0_LVC3_N	A58	NC
B59	SCM_GPIO	A59	NC
B60	SPI_BMC_FP_CK_R	A60	SPI_IRQ_SCM_TPM_N
B61	SPI_BMC_FP_MISO_R	A61	NC
B62	SPI_BMC_FP_MOSI_R	A62	NC
B63	SPI_BMC_FP_CS0_R	A63	UART0_RX_HPM_SCM_DATA
B64	GND	A64	GND
B65	NC	A65	NC
B66	NC	A66	NC
B67	GND	A67	GND
B68	BMC_USB2A_DN	A68	NC
B69	BMC_USB2A_DP	A69	NC
B70	GND	A70	GND

FBP_I2C_1~3: HDD BP SMBUS Header

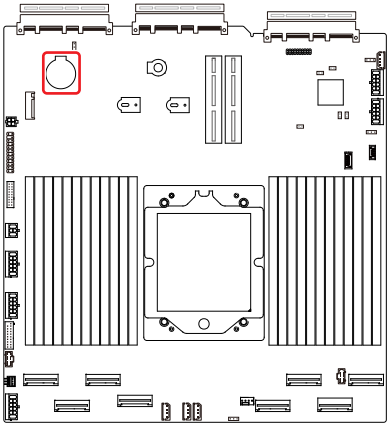
I2C headers are used to connect to the System Management Bus (SMBus). FBP_I2C_1~3 is for HDD backplanes.

FBP_I2C_1~3 1 4	1	P3V3_AUX
	2	SMB_HSBP_LVC3_R_SCL
	3	SMB_HSBP_LVC3_R_SDA
	4	GND



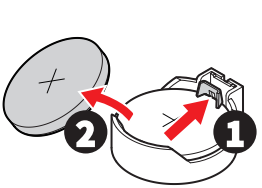
BAT1: CMOS Battery

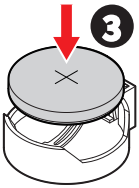
If the CMOS battery is out of charge, the time in the BIOS will be reset and the data of system configuration will be lost. In this case, you need to replace the CMOS battery.



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

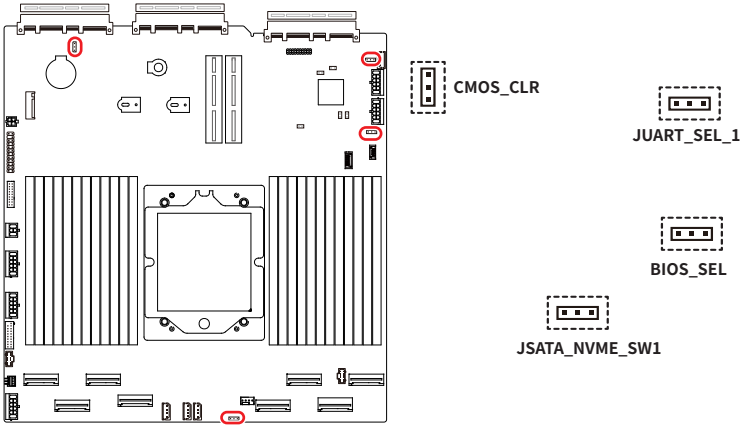
KEEP OUT OF REACH OF CHILDREN

- ***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.***

Jumpers

Important

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

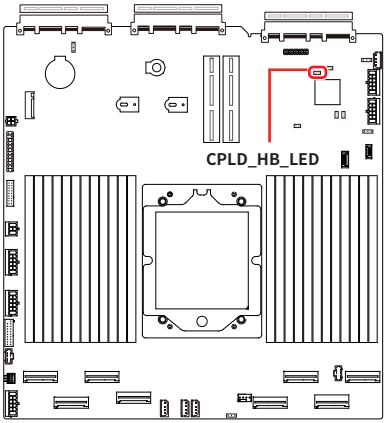


Jumper Name	Default Setting	Description
BIOS_SEL		1-2: System BIOS ROM and control by Jumper (default) 2-3: Local BIOS ROM
CMOS_CLR		1-2: Normal (Default) 2-3: CMOS Clear
JUART_SEL_1		1-2: UART CPLD to CPU (default) 2-3: UART BMC to CPU
JSATA_NVME_SW1		1-2: JMCIO3~4 set to SATA 2-3: JMCIO3~4 set to NVMe (default)

Onboard LEDs

LED1: CPLD Heart Beat LED

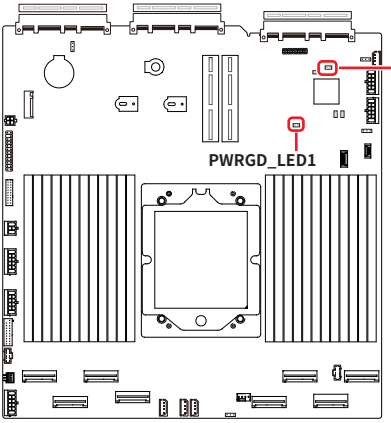
This LED indicates the CPLD (Complex Programmable Logic Device) status.



Status		Description
Off	Off	CPLD not ready
Blinking	Green 4Hz	CPLD ready

PWROK_LED1: CPU PowerOK LED, PWRGD_LED1: CPU PowerGood LED

The PWROK LED is lit on green indicates CPU PWROK status. The PWRGOOD LEDs indicates that all voltage inputs to the processor are in specification.



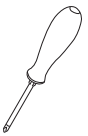
	Status	Description
PWROK_LED1	Off	CPU Power OK Fail
	On	CPU PWR OK
PWRGD_LED1	Off	CPU PWR_Good Fail
	On	CPU PWR_Good

Getting Started

Important

- *All information is subject to change without prior notice.*
- *The system photos are provided for demonstration purposes only. The appearance and internal view of your system may vary depending on the model you 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 antistatic pad or on the bed that came with the components whenever the components are separated from the system.

System Setup

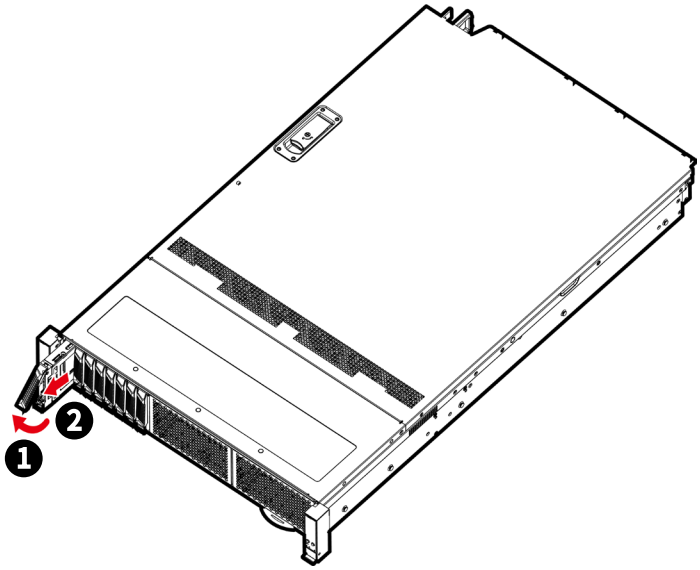
Important

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

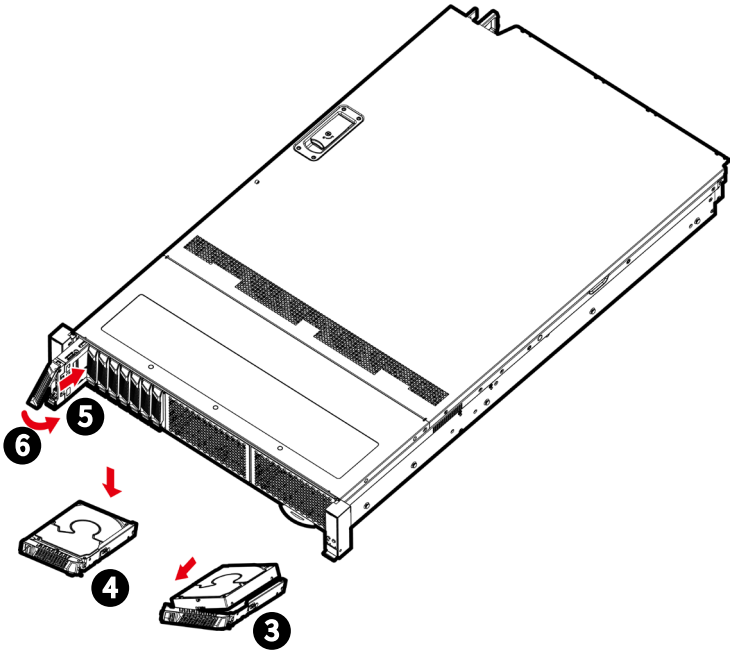
Drive Bay

Installing 2.5" HDD/ SSD

1. Carefully pull over the lever open.
2. With the lever open, insert the 2.5” HDD/ SSD assembly vertically into the drive bay.Remember the HDD tray should not be taken out.



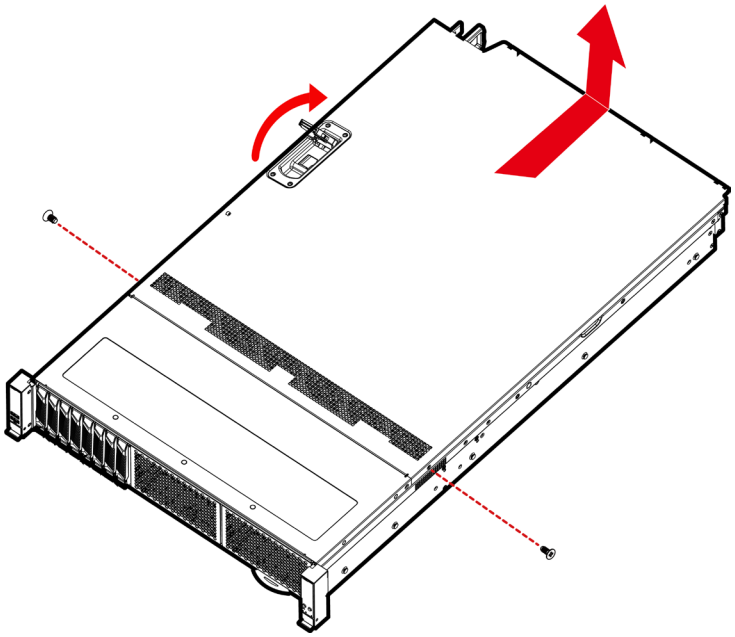
3. Engage two embossed pins into the side dimples on the HDD/ SSD.
4. Carefully push down the other side of the HDD/ SSD until another two embossed pins and side dimples lock it into place.
5. With the lever open, insert the 2.5” HDD/ SSD assembly vertically into the drive bay until the locking lever is engaged.
6. Push in the lever to lock it into place.



System Cover

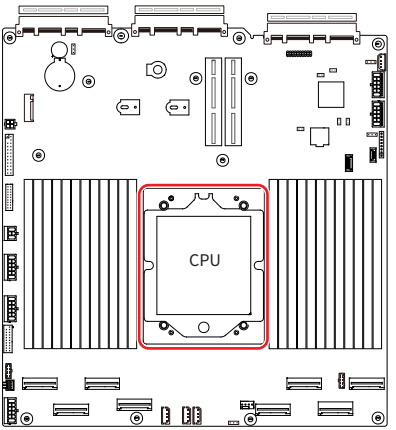
Removing System Cover

1. Remove the screws securing the system on both sides.
2. To remove the top cover panels, lift over the release latches and then slide them to the back side of the system.



CPU & Heatsink

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



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.

· 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.

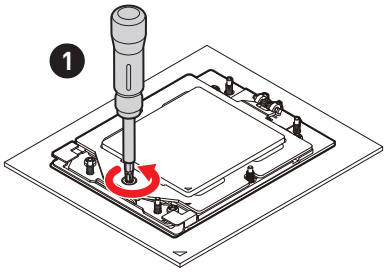
· Read the CPU status in BIOS.

Installing CPU & Heatsink

Important

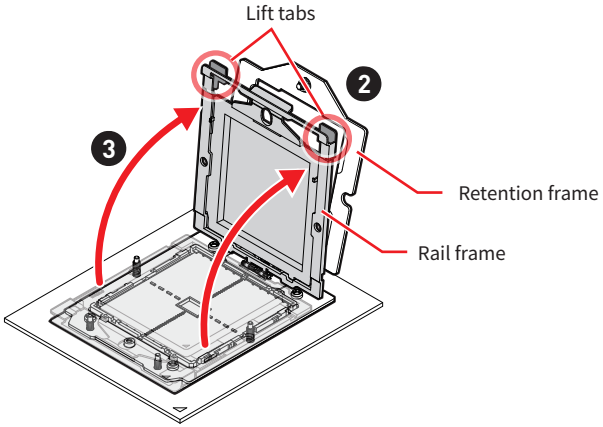
Images are for illustration purposes only; actual parts may vary.

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.

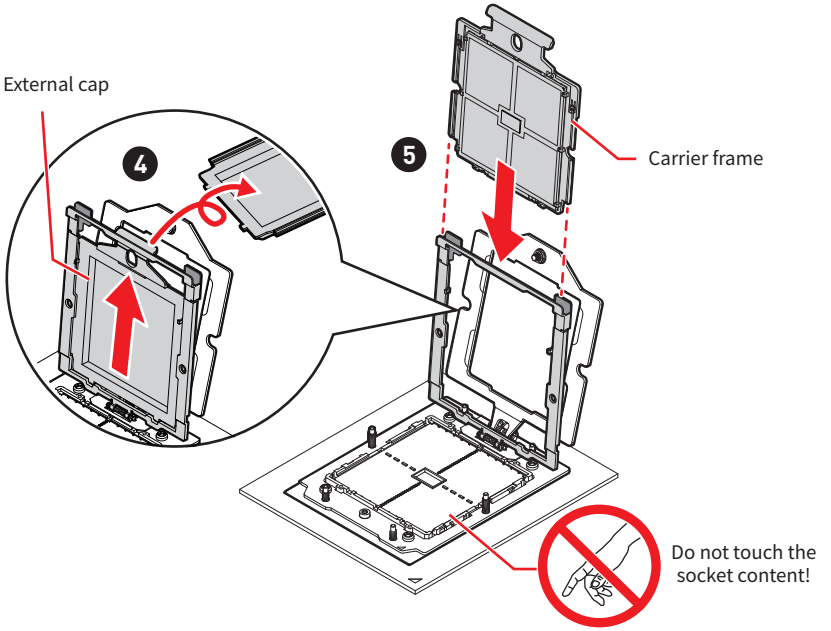
· *As both frames are spring-loaded, keep a tight grip on them while lifting to avoid an abrupt swinging motion.*



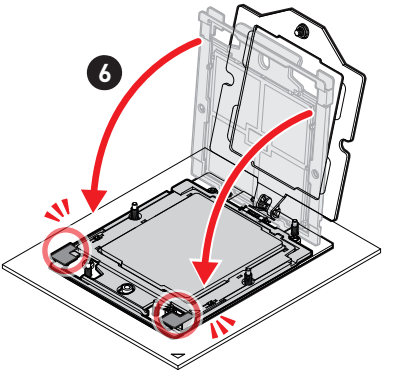
4. Pull the external cap upward through the rail guides on the rail frame to remove it.
5. Grip the handle of the carrier frame and slide it downward with the flanges and the rail guides aligned.

· *CPUs are shipped from the factory with pre-assembled carrier frames.*

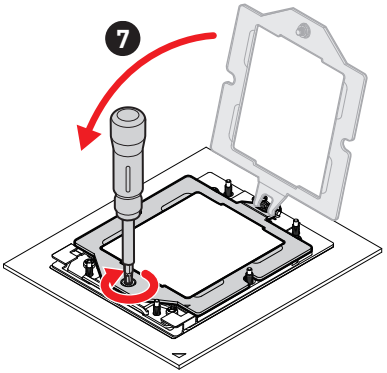
· *Make sure the flanges of the carrier frame are firmly loaded on the rails before closing the rail frame.*



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

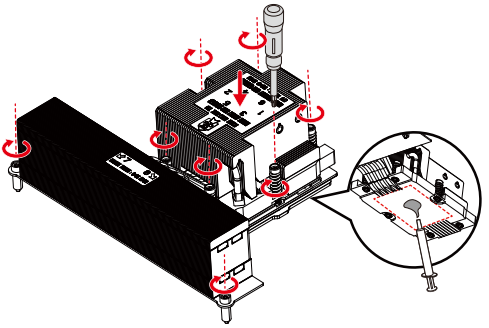
Screw Head: Torx T20

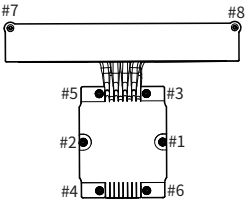
Torque: 12.5-15 kgf·cm*

*12.5-15 kgf·cm
= 1.23~1.47 N·m
= 10.9~13 lbf·in

8. 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.)
9. Lower the heatsink until it rests firmly in place after aligning the six screw holes on its bottom with the motherboard' s studs.
10. Tighten all screws in diagonal sequence with a torque screwdriver.

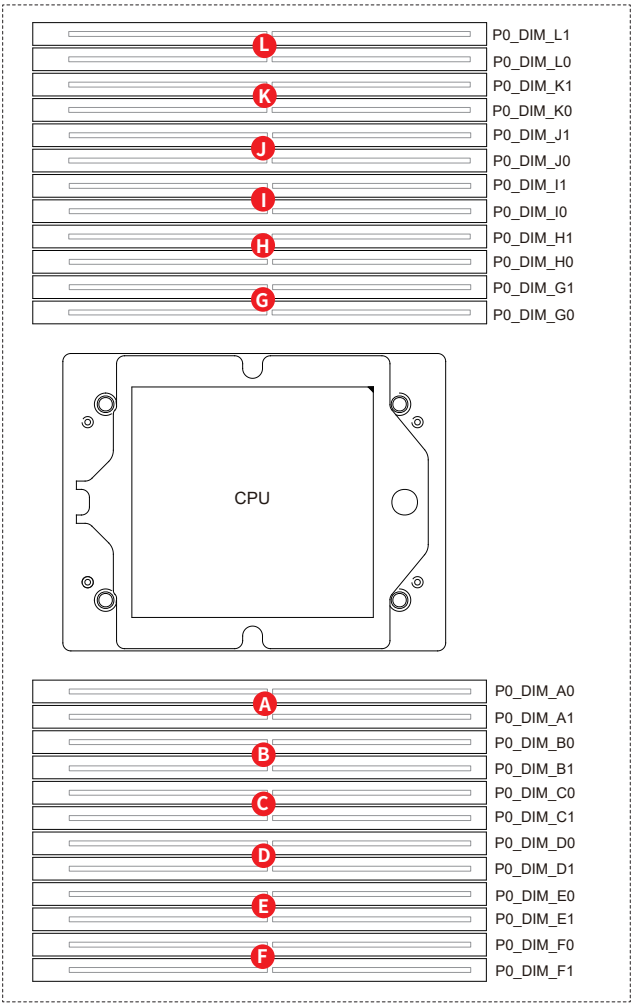
- *To avoid damaging the fins of the heatsink, always grip the heatsink along the axis of the fins. Holding a heatsink along the side might damage its fins or solder.*
- *To avoid distributing uneven pressure on the CPU, it is recommended to secure the heatsink in two steps: first, loosely attach the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



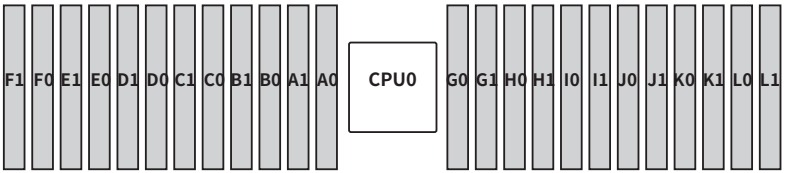


Memory Slots

P0_DIM_A0/A1~L0/L1: DDR5 DIMM Slots



Recommended Memory Population



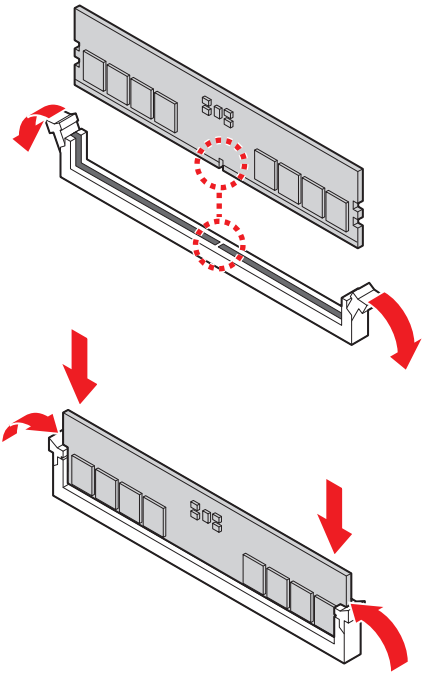
1 CPU																								
Channel / Qty. of DDR5	F1	F0	E1	E0	D1	D0	C1	C0	B1	B0	A1	A0	CPU	G0	G1	H0	H1	I0	I1	J0	J1	K0	K1	L0	L1
24	V	V	V	V	V	V	V	V	V	V	V	V		V	V	V	V	V	V	V	V	V	V	V	V
12	V		V		V		V		V		V				V		V		V		V		V		V
10			V		V		V		V		V				V		V		V		V		V		
8			V				V		V		V				V		V		V				V		
6							V		V		V				V		V		V						
4							V				V				V				V						
2											V				V										
1											V														
"V" indicates DIMMs are populated with DDR5.																									

Important

There should be at least one DDR5 DIMM populated.

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

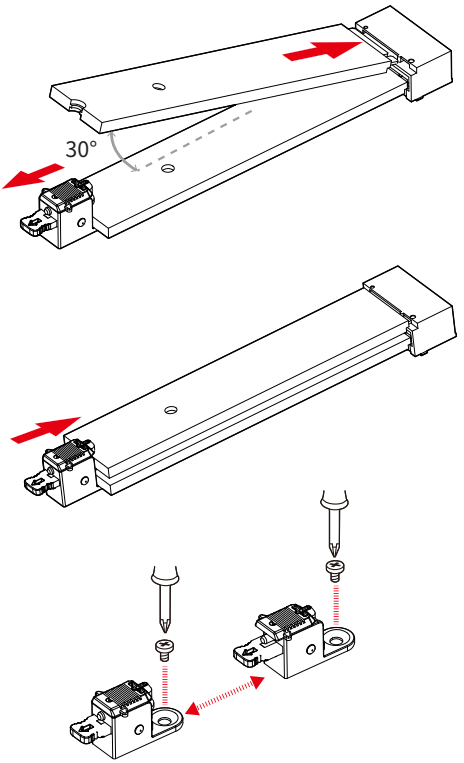
You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

Installing M.2 SSD onto the Server Board

Video Demonstration

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

1. Insert your M.2 SSD into the M.2 slot at a 30-degree angle.
2. Push the M.2 latch in the direction of the arrow .
3. Secure the M.2 SSD in place by push the M.2 latch.
4. Change the location of the M.2 latch with the M.2 Screw.



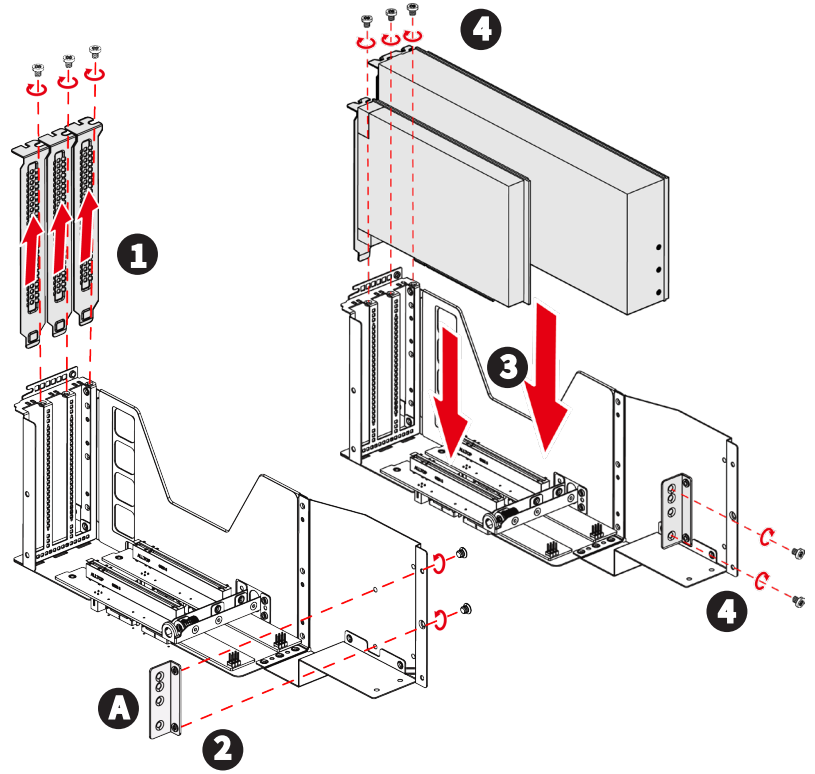
PCIe Add-in Card

Installing PCIe Add-in Card1

1. Loosen the three screws on the riser bracket to remove the **filler panel** .
2. Secure the **bracket (A)** for installing PCIe add-in card with two screws.
3. Align the PCIe add-in card with the connector on the riser card, and insert it until it is fully seated.
4. Tighten the screws to securely fix the PCIe add-in card in place.

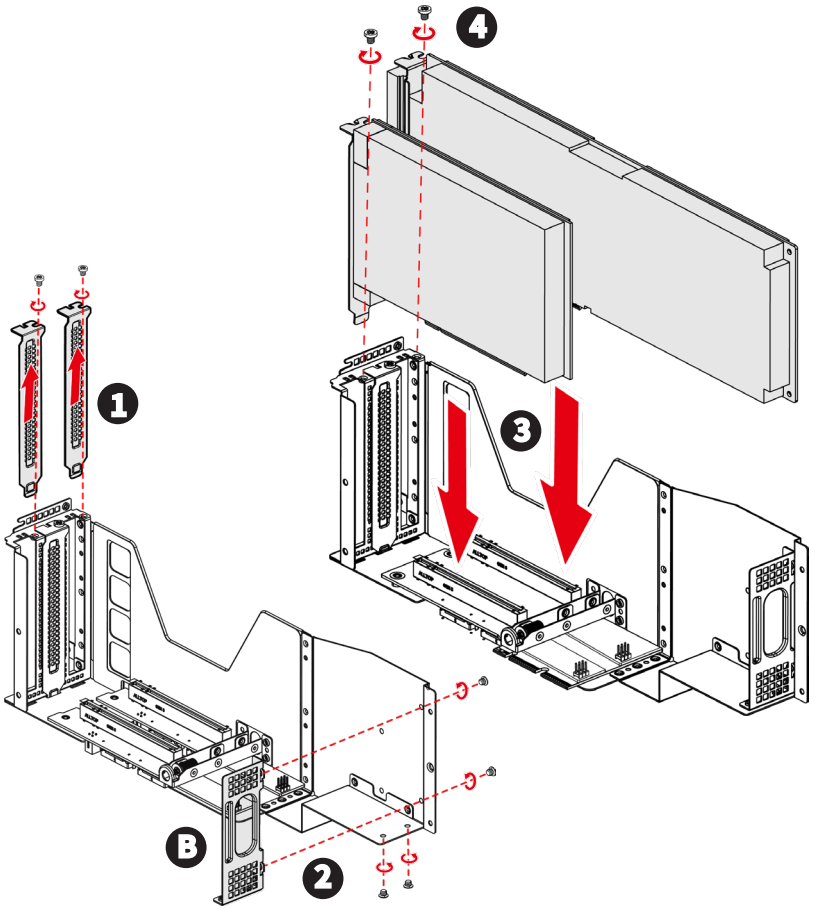
Important

The procedure for installing PCIe add-in cards are the same for all the riser slots.



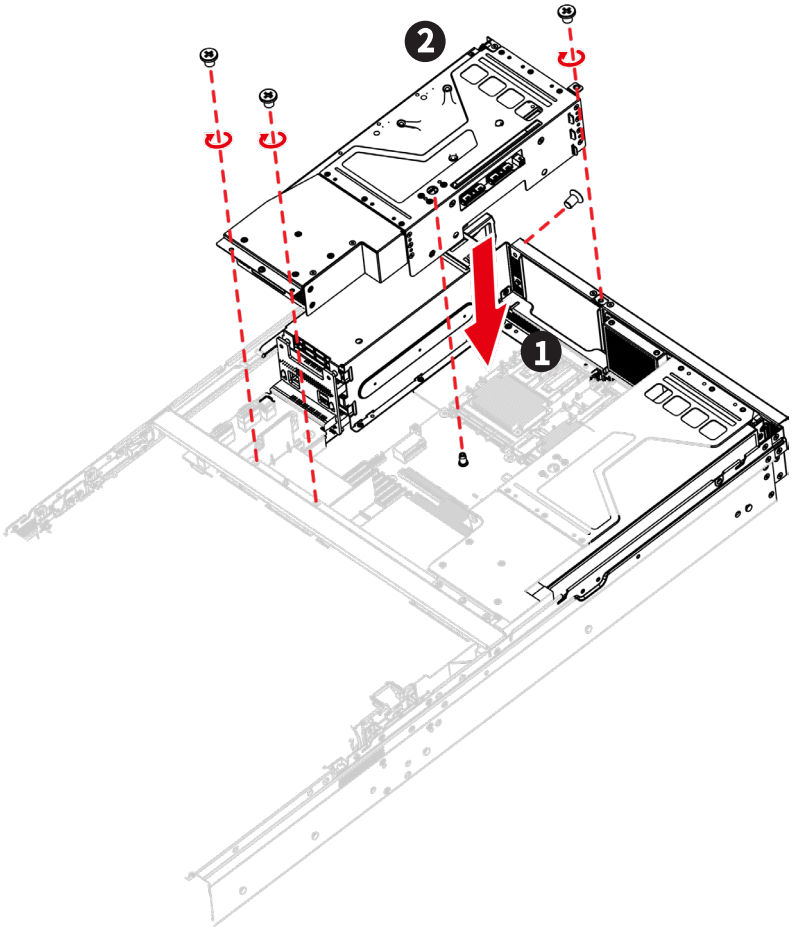
Installing PCIe Add-in Card2

1. Loosen the two screws on the riser bracket to remove the **filler panel.**
2. Secure the **bracket (B)** for installing PCIe add-in card with four screws.
3. Align the PCIe add-in card with the connector on the riser card, and insert it until it is fully seated.
4. Tighten the screws to securely fix the PCIe add-in card in place.



Installing Riser Card Assembly

1. Insert the riser card assembly into the PCIe slot on the system board.
2. Tighten the screws on the rear and front side of the system to secure the riser card assembly.

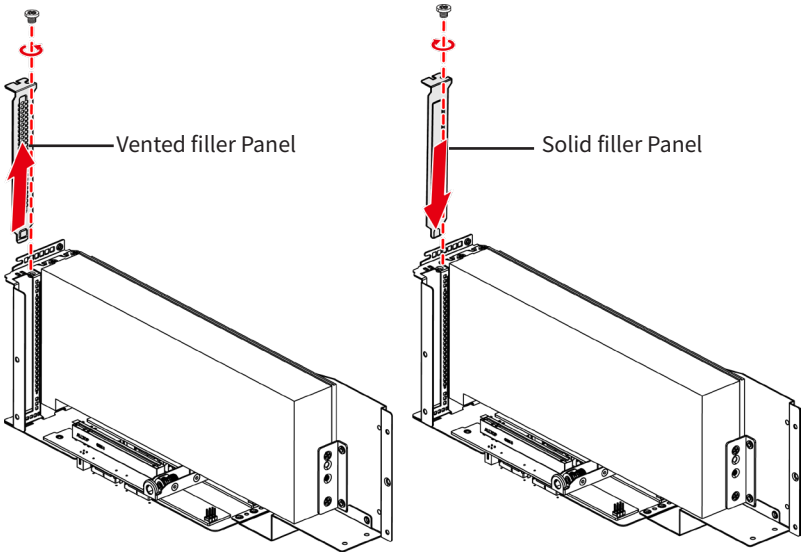


Filler Panel Replacement

1. Loosen the screw on the riser bracket to remove the **vented filler panel.**
2. Tighten the screw to securely fix the **solid filler panel** in place.

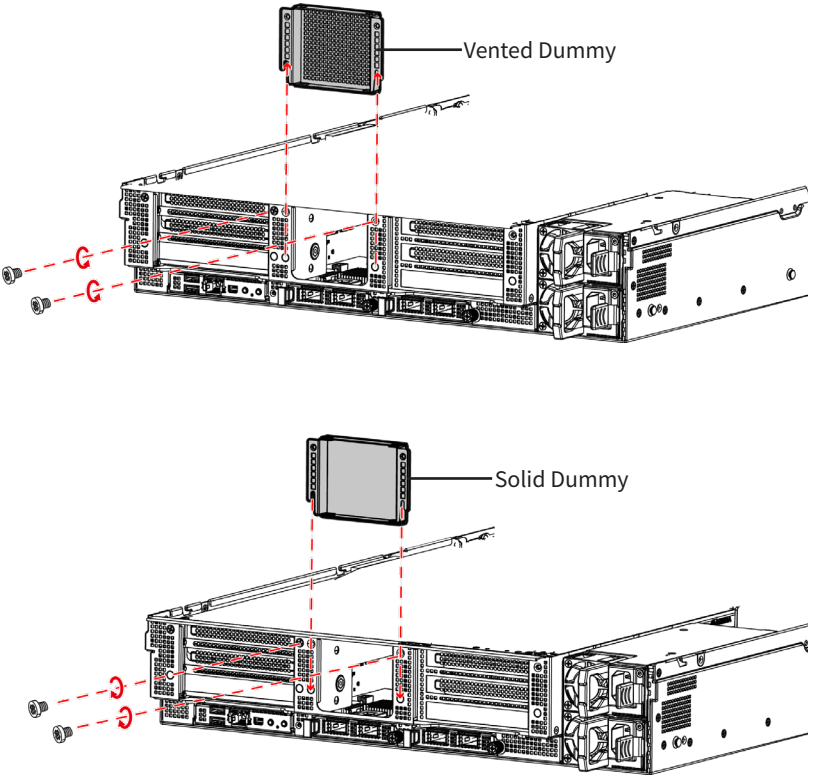
Important

- *As for a **600w GPU** on **Riser#0** and no Raid Card on **Riser#1**, replace the **Panel#1**,**Riser#1** and **Dummy** with **solid** filler panel and Dummy**.** Specific **Riser** and **Panel** position refer to Chapter **System Overview** in detail.*
- *The accessory package contains the **solid filler panel** and **Solid Dummy** for replacement.*



Dummy Replacement

1. Loosen the screw on the rear side to remove the **vented filler panel.**
2. Tighten the screw on the rear side of the system to secure the **solid dummy**.



System Fan

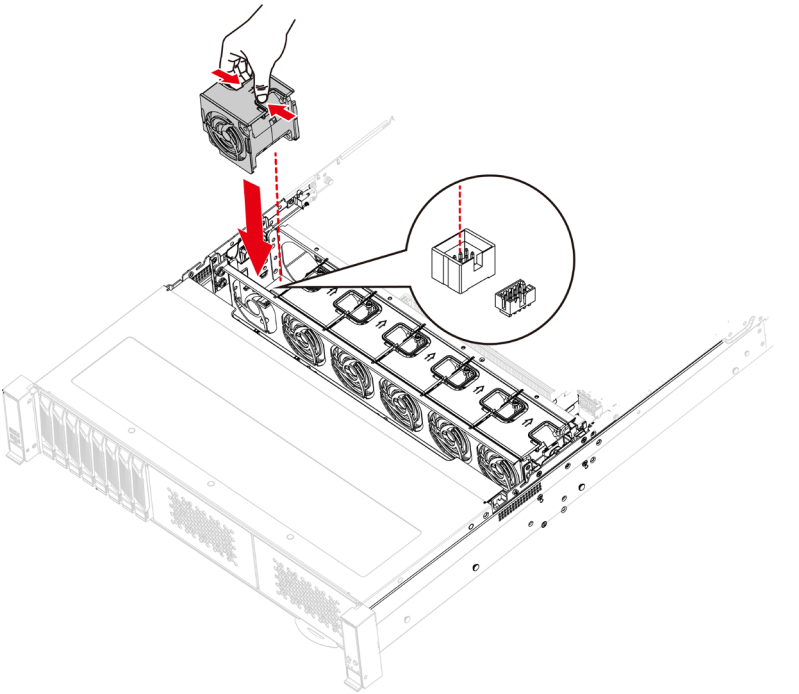
The server system is equipped with six 60 x 60 x 56mm hot-swappable system fans that provide primary airflow to maintain optimal cooling and prevent overheating.

The fan features include:

- Tachometer on each fan allows BMC to monitor the system' s status in real-time.
- An integrated BMC firmware automatically adjusts fan speed based on the system' s thermal status to maintain optimal performance.
- An integrated fault LED on the top of each fan lights up red in case of a failure, simplifying issue identification.
- Fans are mounted within a fan cage that can be easily removed for cable routing, simplifying maintenance and upgrading for efficient operation.

Installing 2U Fan

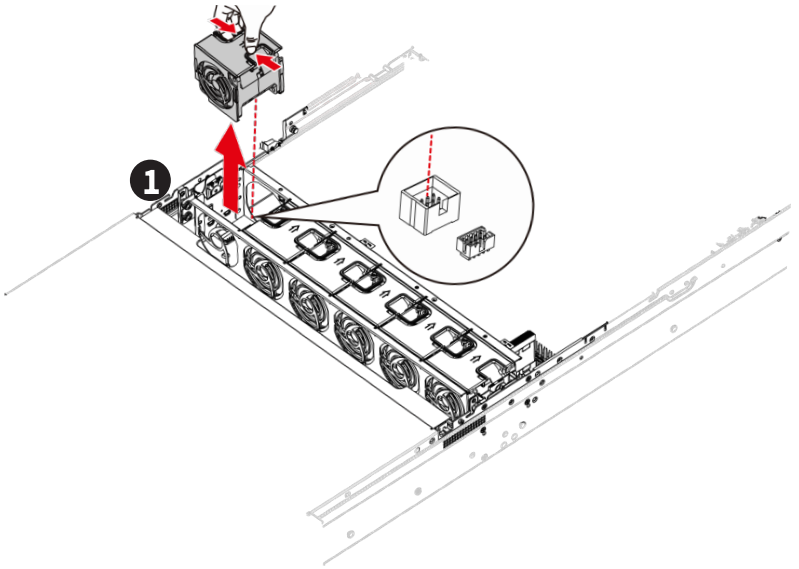
1. With the connectors aligned, press the fan release tabs and slide the fan into the slot.
2. Release the tabs until the fan locks into place.

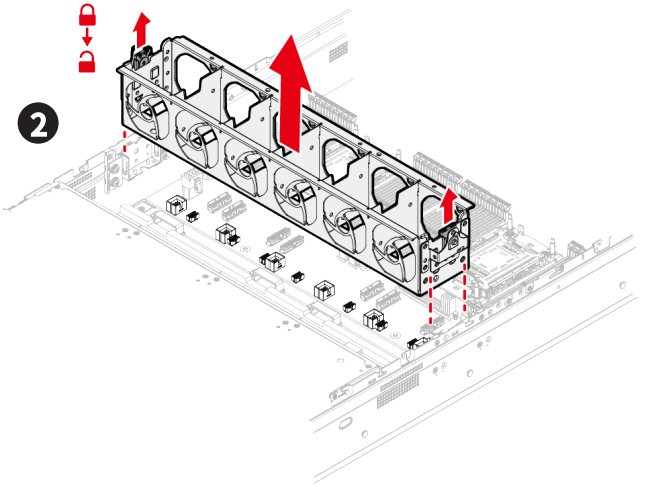


System Fan Cage

UnInstalling 2U Fan cage

1. Remove all the fans from the fan cage.
2. Release the tabs until the fan cage unlocks from place.





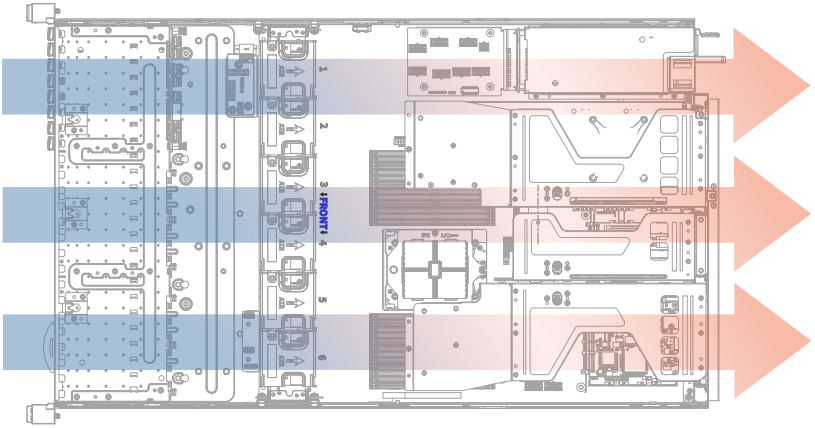
System Airflow

Airflow Direction

- Cool air is drawn in from the front of the chassis, flowing across the front drive bays and internal components.
- Air then passes through the system fans and heat-generating components(CPU,memory, add-in cards).
- Warm air is exhausted from the rear of the chassis.

Airflow Reference illustration

When the system top cover is removed, airflow direction can be illustrated as follows:

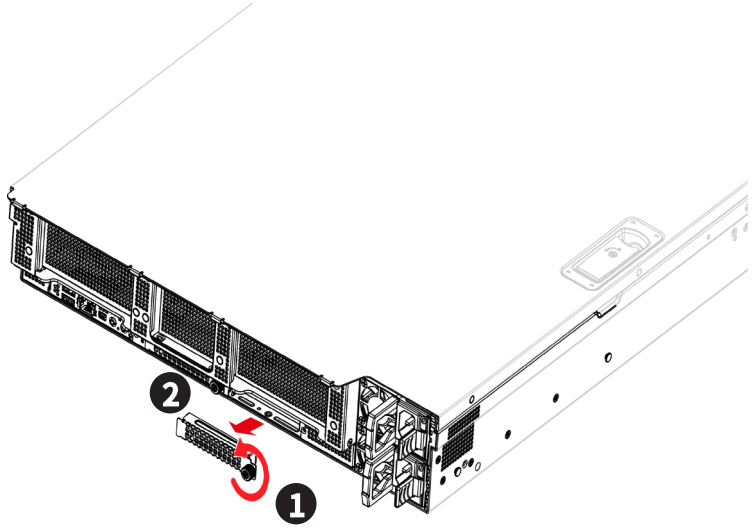


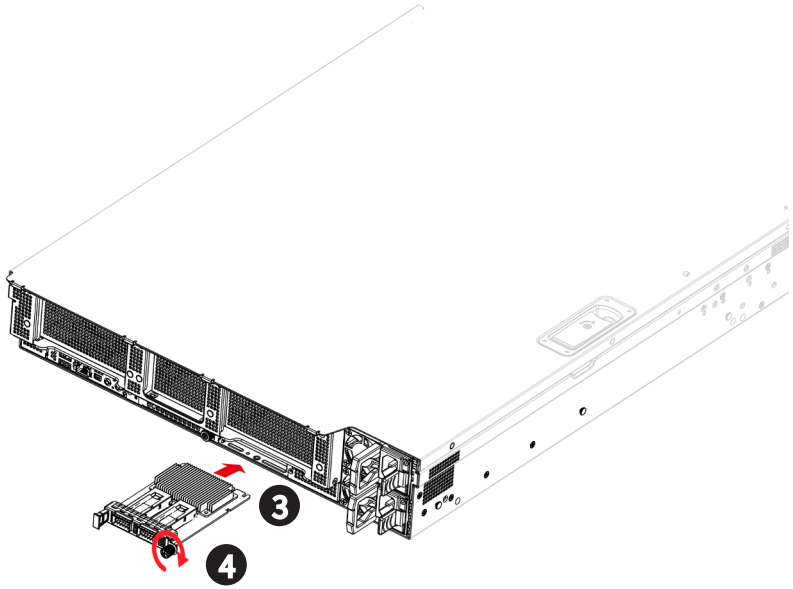
Important

- This illustration is intended as a conceptual reference to help users understand airflow direction and is not a scale drawing of fan output or airflow volume.
- For optimal cooling performance, ensure that internal cables are routed according to the cable routing guidelines to avoid airflow obstuction.
- Operate the system with the top cover properly installed during normal use. Running the system without the cover can significantly degrade cooling performance.

Installing OCP Card

1. Unscrew to relese the OCP dummy bracket.
2. Insert the OCP Card into the OCP bay and secure the rotary screw.





Air Duct

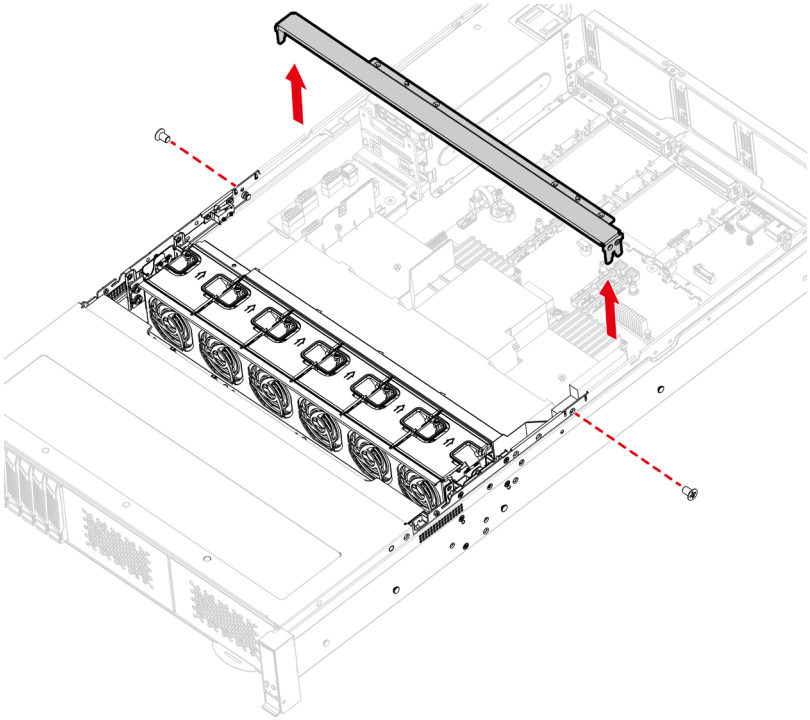
The server system offers a pre-installed plastic air duct available as an accessory.

Important

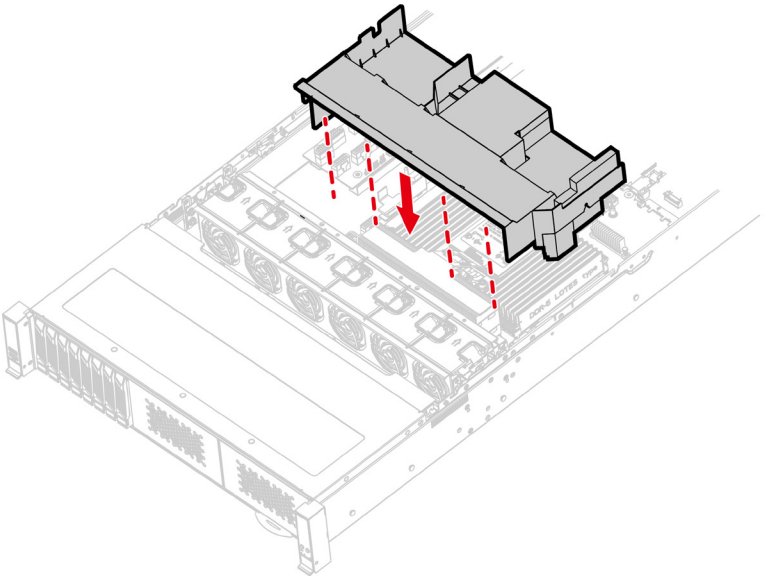
- *After installing the air duct, the middle GPU bar have to be reinstalled to the chassis.*

Installing Air Duct

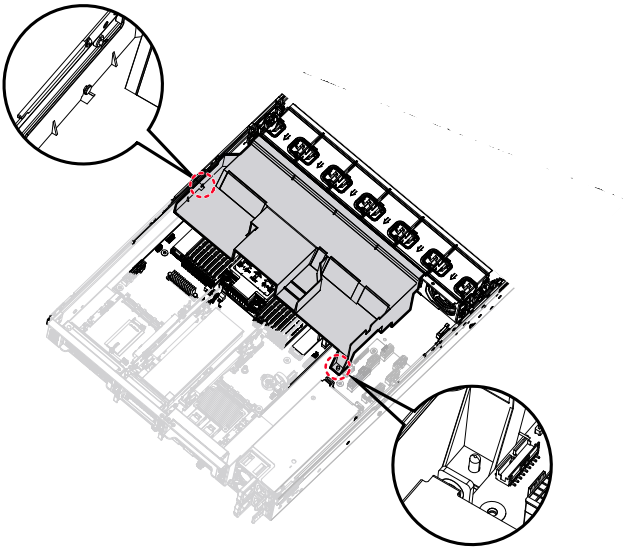
1. Unscrew to remove the middle GPU bar.



2. Install the air duct to the chassis.



3. Align the pins on the front edge of the air duct with the holes on the fan wall, then lower the air duct into place until it is securely seated.



Power Supply Unit (PSU)

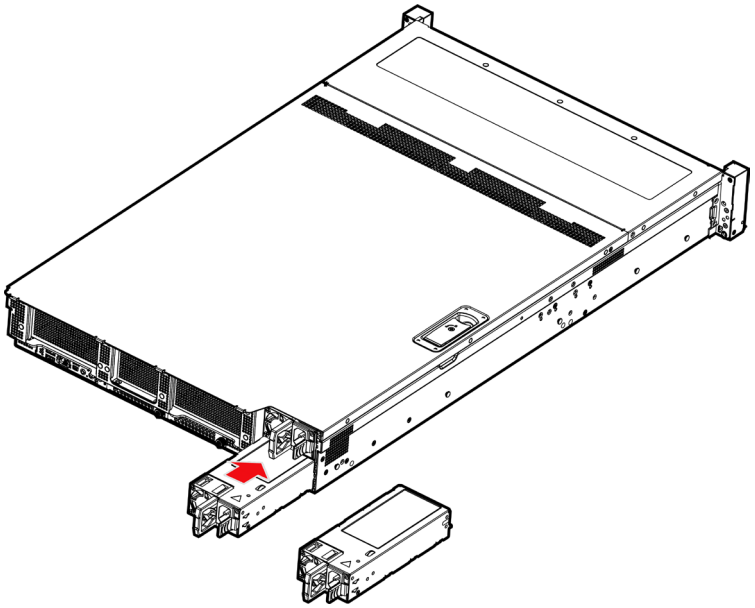
The server system supports two power supplies that can be easily inserted and removed from the rear side of the system without the need for tools.

Important

- *Both power supplies must be identical and both power cords should be connected.*
- *Failing to connect both power supplies could result in CPU throttling.*

Installing PSU

1. Press the tab and hold the latch to pull out the power.
2. Slide the PSU into the chassis bay until the release latch snaps into place.
3. Connect the power cable to the PSU power outlet.

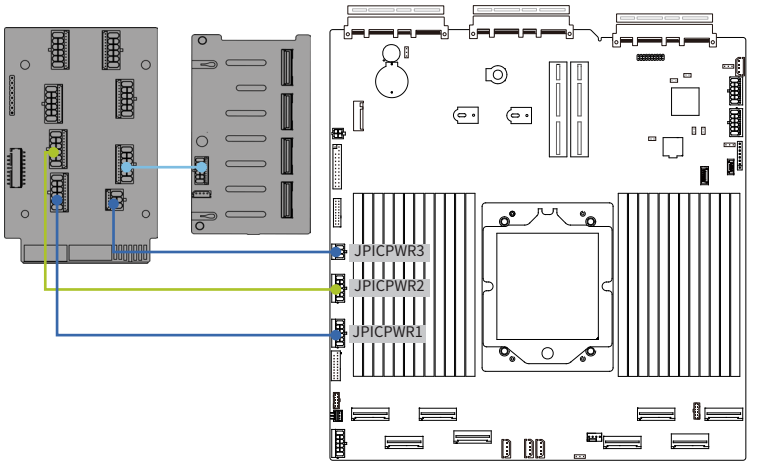


Cable Routing

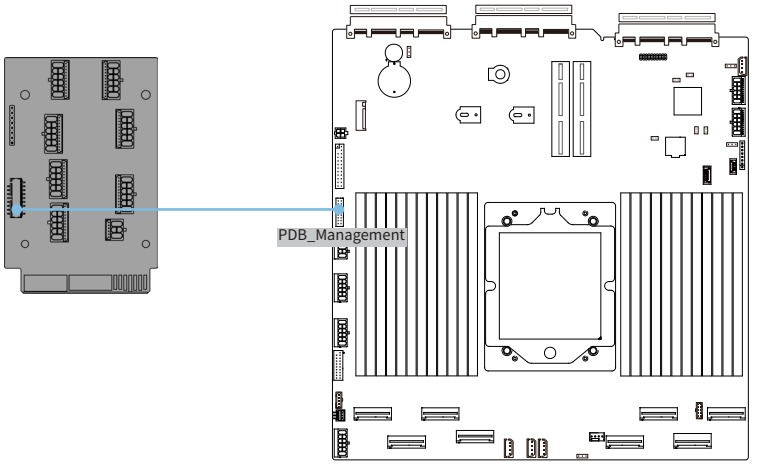
Important

Please remove the fan cage before routing cables.

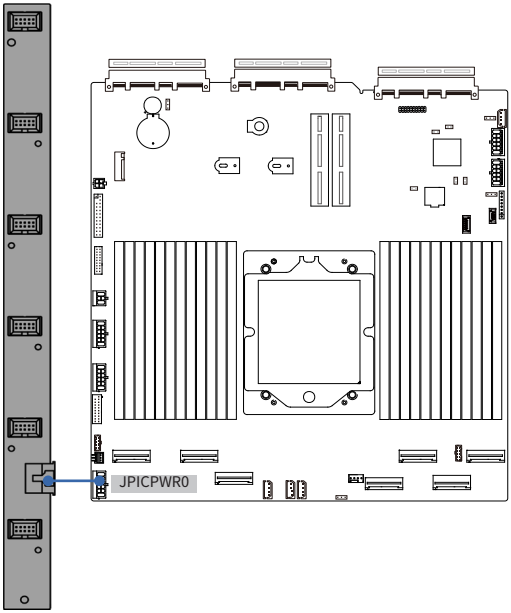
12-pin/6-pin to 12-pin/6-pin Power Cable (PDB to MB/HDD BP)



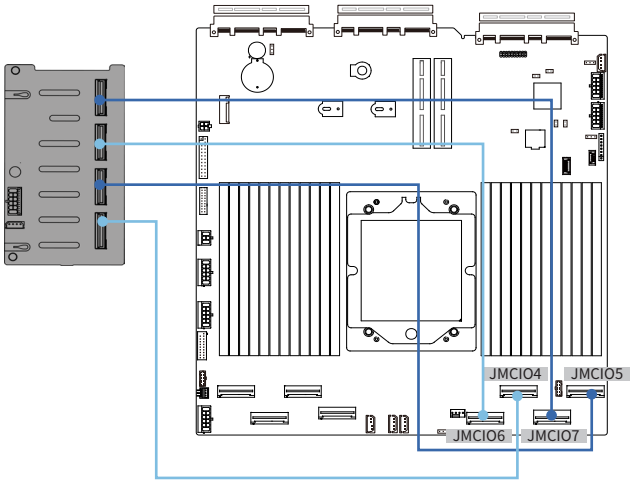
PDBManagment to PDB Cable (PDB to MB)



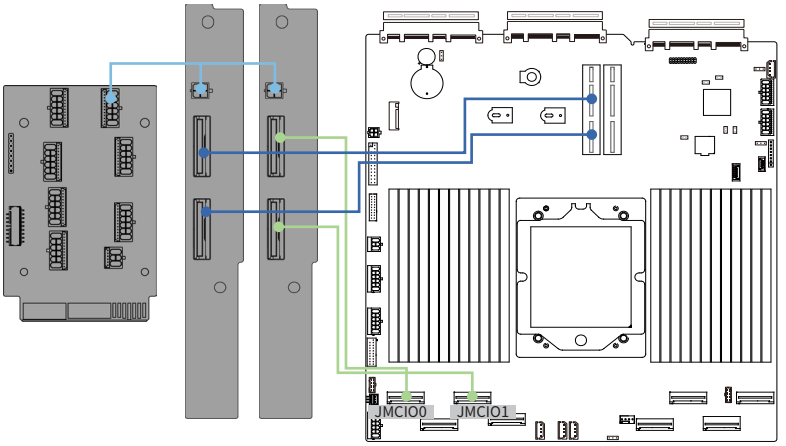
12-pin to 12-pin Power Cable (Fan BP to MB)



MCIO 8i to MCIO 8i Cable(HDD BP to MB)



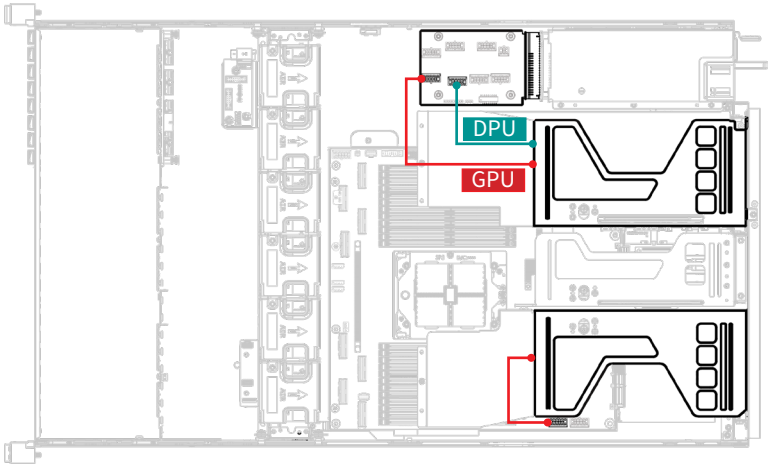
Riser to PCIE slot Cable (Riser Card S378C to MB)



DPU & GPU Power Cable

Important

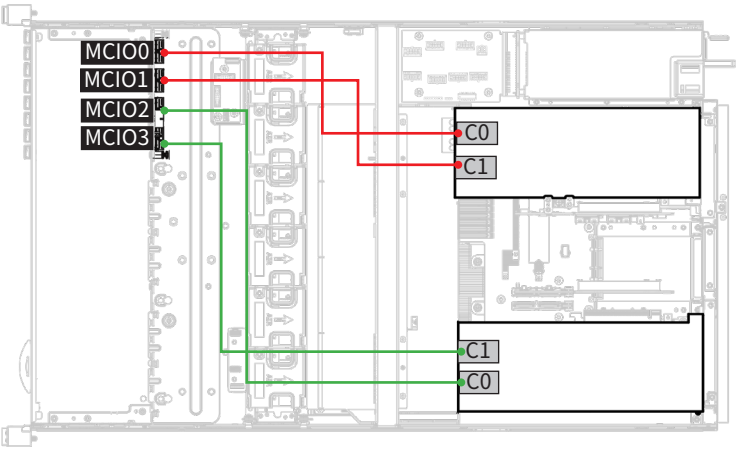
- Prior to the connection of the **GPU**/**DPU power cable**,detach the heatsink.
- Standard package does not include DPU cables. For purchasing inquiries, please contact our sales representative to order.



Raid Card Cable

Important

- Please remove the **Fan cage**, **Air duct**,and **Raid cards** before routing the Raid card cable.
- For Removing procedure, see "System Fan Cage & Air duct".
- Please organize the extra cables in the area between the **fan module** and the **HDD backplane**.
- Standard package does not include these cables. For purchasing inquiries, please contact our sales representative to order.
- For BIOS-related settings of the RAID Card, please refer to the "**MCIO Bifurcation & Mode Control**" section in the BIOS User Guide.



Slide Rail

This section describes the installation and removal procedure of slide rails. The following illustrations facilitate a deeper and more professional comprehension of the slide rails utilization and rack mounting.

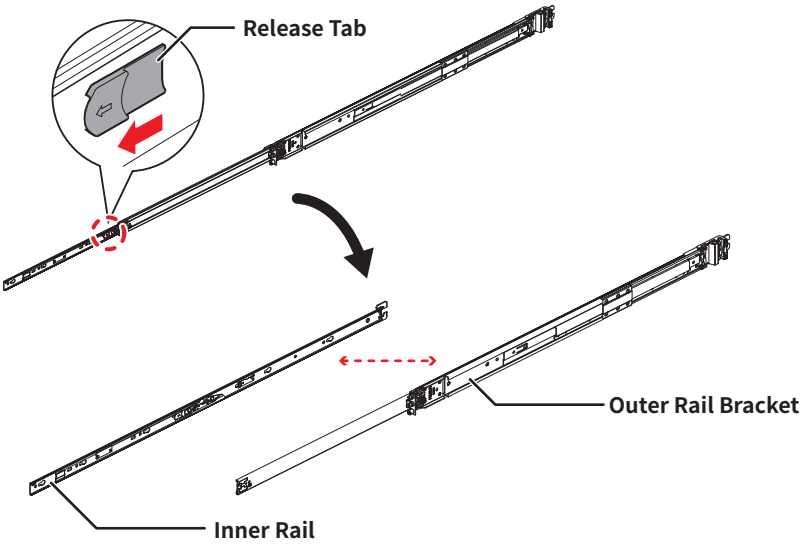
Rail Adjustable Range

The slide rail kits on our server can be adjustable to support different rack depths. Measured as the distance between the front and rear rack mounting post.

- The rack post range: 623.3~916.8±3mm.

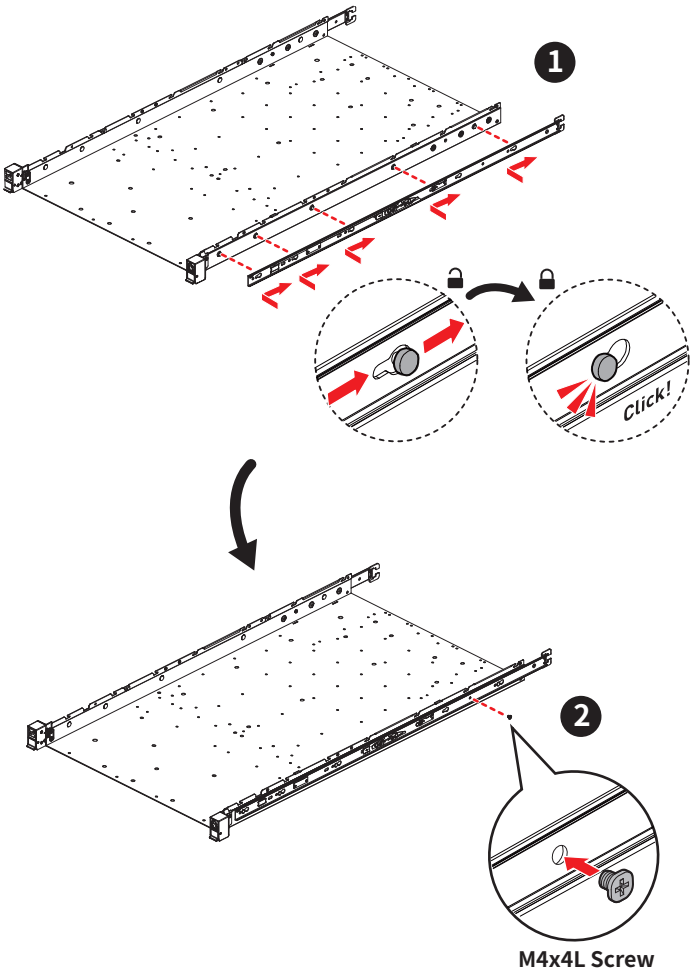
Disassembling Slide Rail

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



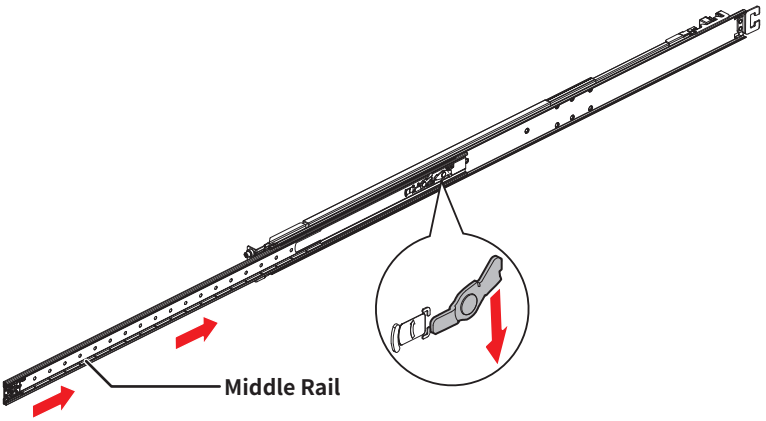
Installing Inner Rail to System

1. Align the standoffs on the side of the system 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.
3. Repeat the same procedure to install the inner rail on the other side of the system.



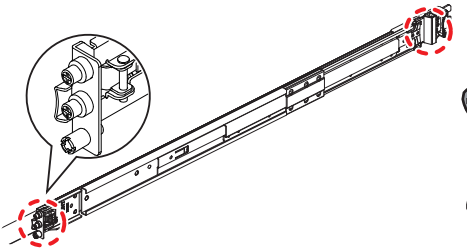
Retracting Outer Rail Bracket

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



Important

*The pre-installed screws on the outer rail bracket are intended only for square rack holes. For round rack holes, please switch to the "**7.1 round hole screw**".*



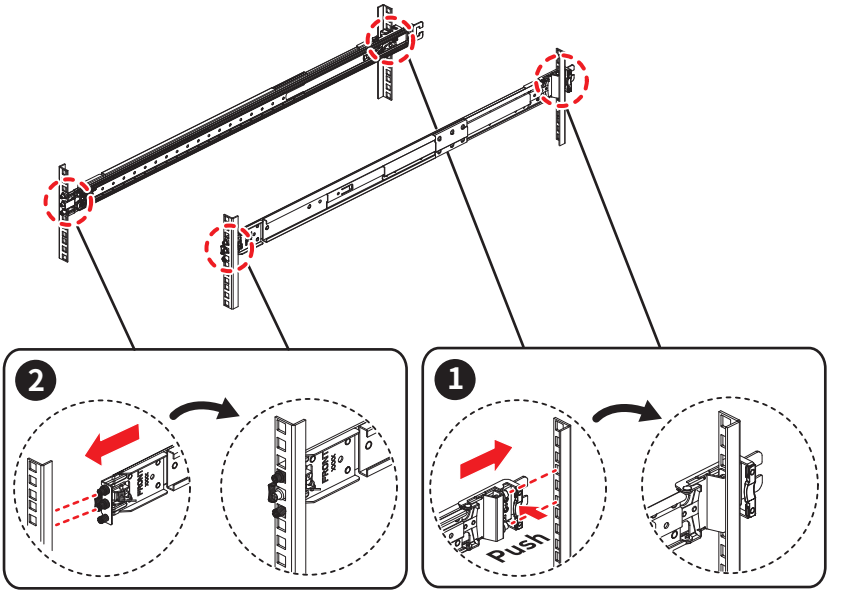


9.5 Square Hole Screw
(pre-installed)



7.1 Round Hole Screw

Attaching Outer Rail Bracket to Rack Frame

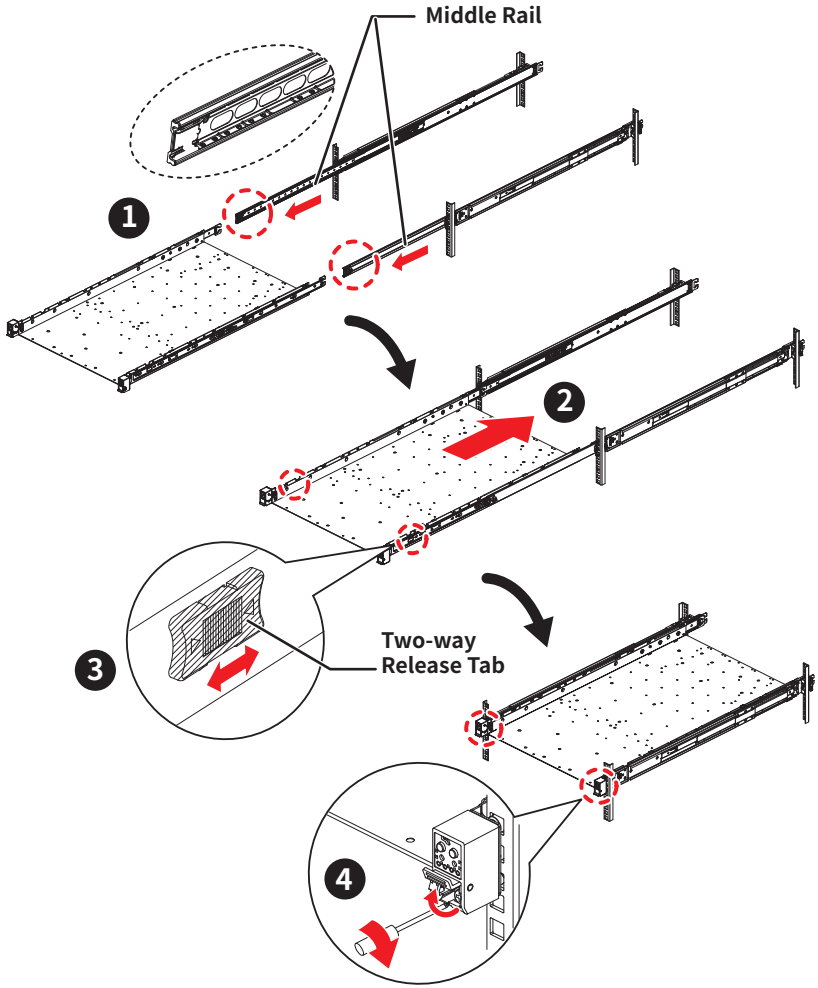


Installing System into Rack

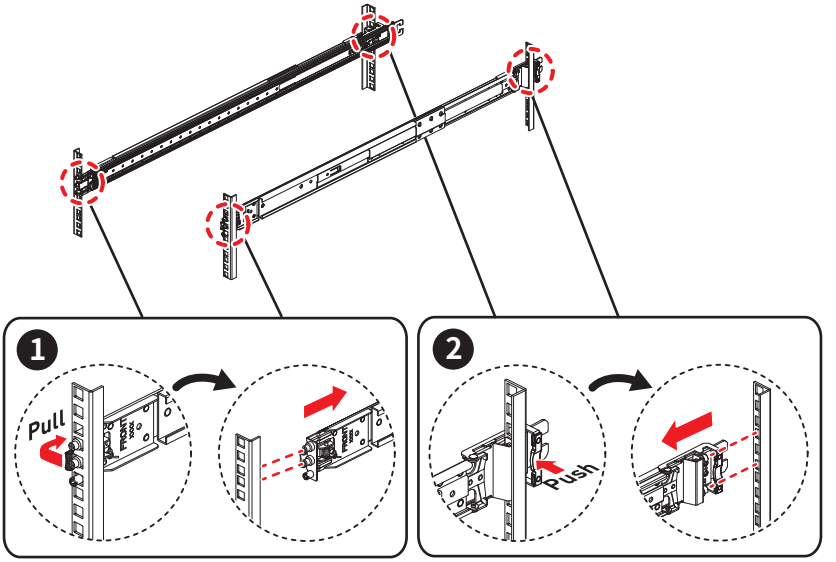
1. Pull out the middle rails till it fully extended.
2. Engage the inner rails of the system to the middle rails, then push the system forward until it stops.
3. Push the system into the rack by sliding the two-way release tabs forward or backward.
4. Tighten the screws to secure the system.

Important

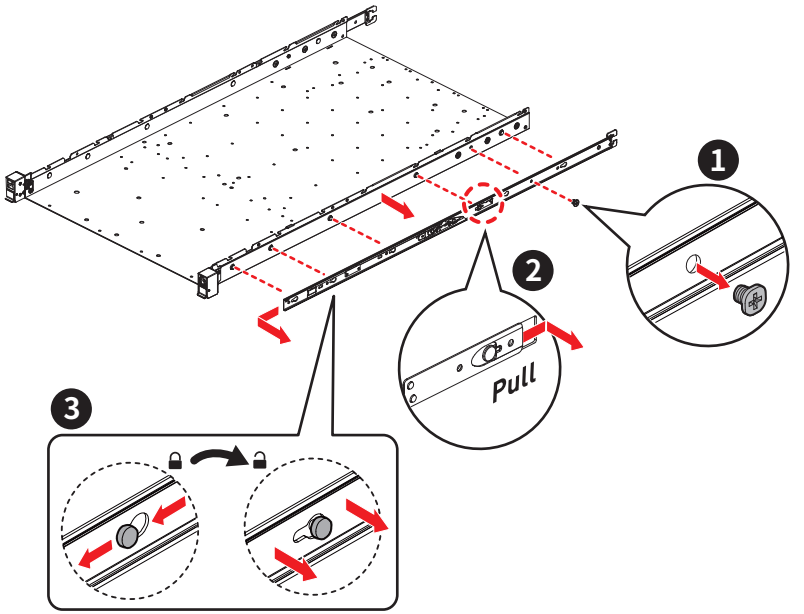
Ensure the ball bearing retainers are locked forward on each middle rail.



Detaching Outer Rail Bracket from Rack Frame



Detaching Inner Rail from System



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