S3061D270RAU6-X2

MS-S389

Server System

User Guide

Contents

Revision

V1.0, 2025/04

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.

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

CE Conformity

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

CE

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

SKU Name	S3061D270RAU6-X2
Form factor	2U2N
Dimensions	448mm(17.2”) W x 87mm(3.4”) H x 745mm(29.3”) D
Processor	Single Intel® Xeon® 6700E-series, 6500P-series and 6700P-series processors, TDP up to 350W, per node
Socket	1 x Intel® LGA 4710 (Socket E2)
Chipset	N/A
Memory	• 16 x DDR5 DIMM slots, 8 channels (2DPC), RDIMM/ RDIMM-3DS/ MRDIMM* - Max Frequency: » RDIMM: 6400 MT/s (1DPC), 5200 MT/s (2DPC) » MRDIMM: 8000 MT/s (only support 1DPC) - Max Capacity per DIMM: » RDIMM: 256GB » MRDIMM: 64GB *MRDIMMs are only supported with Intel® Xeon® 6 P-core series processors.
Drive Bays	6 x Front hot-swap 2.5" U.2 PCIe 5.0 x4 NVMe drive bays per node
Internal Storage	2 x 2280/22110 PCIe 5.0 x2 M.2 slots per node(M-key)
Expansion Slots	1 x FHHL PCIe 5.0 x16 slot per node
Networking	1 x PCIe 5.0 x16 OCP 3.0 slot per node (NCSI supported)
RAID	Supports NVMe RAID 0/1/5/10 (Intel® VROC RAID key required)
Front I/O	Per node: • 1 x 1000Base-T dedicated server management port • 1 x COM USB Type-A port • 1 x USB 2.0 Type-A port (480 Mbps) • 1 x Mini-DisplayPort • 1 x Power LED (Green) button • 1 x UID LED (Blue) button & System Reset Button* • 1 x Status LEDs (Green/ Red) * The UID LED button can also function as a system reset button, configured using **jumper J1_1**.
Rear I/O	N/A
Security	• Node present detection • ASPEED AST1060 Hardware Root of Trust (HWRoT) module supported (optional) - Supports via M.2 M key slot on DC-SCM module **MGT1** • TPM 2.0 module supported (optional) - Supports via TPM header with SPI interface on DC-SCM module **MGT1**

Continued on next column

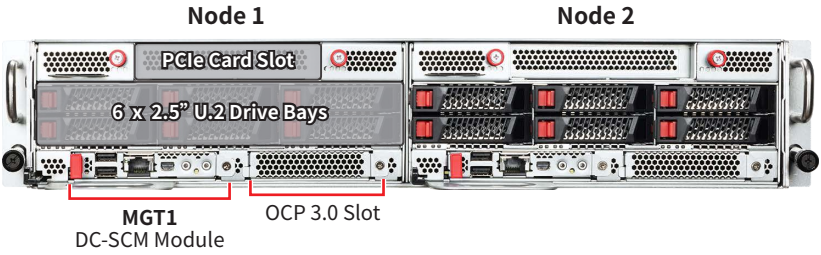
SKU Name	S3061D270RAU6-X2
Server Management	Per node: • 1 x 1000Base-T dedicated server management port • ASPEED AST2600 with AMI MegaRAC based firmware - Supports IPMI 2.0 and DMTF Redfish® API • Dual BIOS and dual BMC supported • eMMC for local BMC storage media
Cooling	• 1 x EVAC air cooling modules for max 360W CPU per node • 4 x Rear 8080 hot-swap fans per system
Environment	• Operating Temperature: 0°C ~ 35°C (50°F ~ 95°F) • Non-operating Temperature: -20°C ~ 70°C (-4°F to 158°F) • Non-operating Relative Humidity: 5% ~ 85% (non-condensing)
Power Supply	• (1+1) Redundant 2400W CRPS, 80PLUS Titanium - Dimension (WxHxL): 73.5 x 40 x 185 mm
Certification	CE, FCC (Class A)

Optional Modules for MGT1

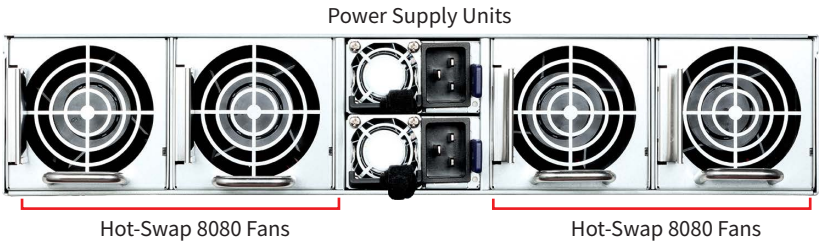
Model	TPM20-IRS	ROT1
Form factor	Proprietary	
Dimensions	20mm (0.78") x 21.5mm (0.84") (Right-angle type)	30mm (1.81") x 60mm (2.36")
Chipset	OPTIGA™ TPM SLB 9672	ASPEED AST1060
Security	TPM 2.0 module	Hardware Root-of-Trust module
Environment	• Operating Temperature: 0°C to 35°C (50°F to 95°F) • Non-operating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

System Overview

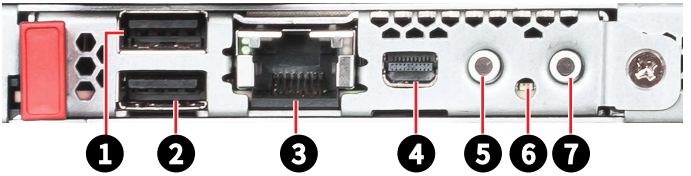
Front View



Rear View



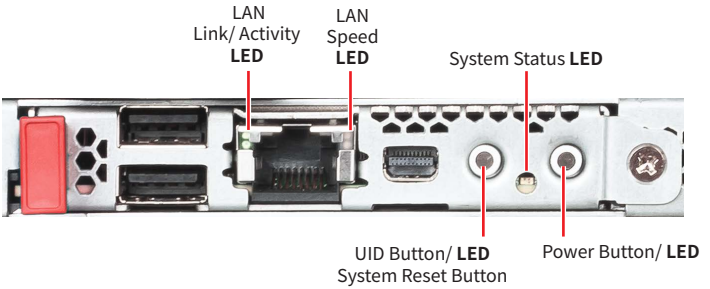
MGT1: DC-SCM Module I/O Panel



1	**COM USB Type-A Port** This port allows for serial data transmission over a USB connection, enabling remote or direct console access.
2	**USB 2.0 Type-A Port** This port 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.*
3	**1000Base-T Ethernet Port (for mgmt.)** The standard RJ45 LAN jack is provided for connection to the Local Area Network (LAN). You can connect a network cable to it.
4	**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.
5	**UID LED Button (default) & System Reset Button*** * The UID LED button can also function as a system reset button, configured using **jumper J1_1**.
6	**System Status LED**
7	**System Power LED Button**

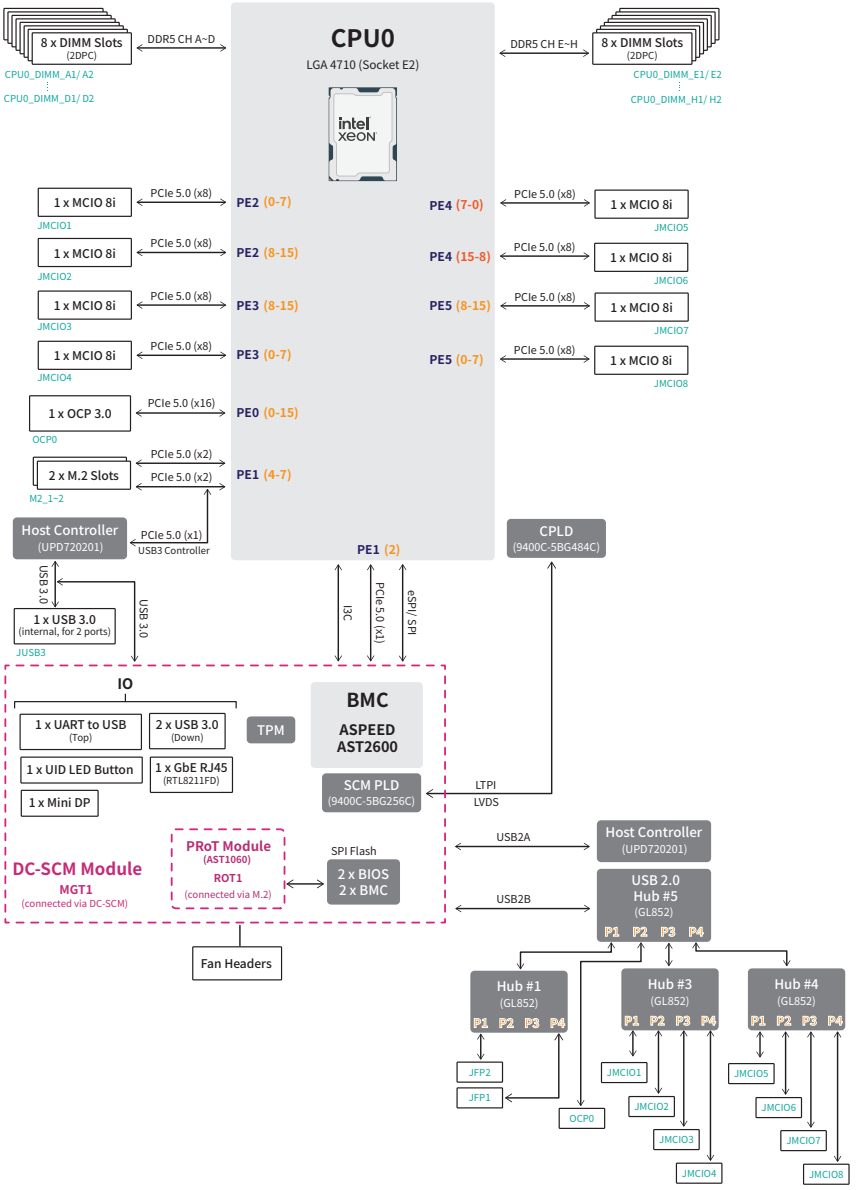
System LED Indicators

MGT1: DC-SCM Module I/O Panel



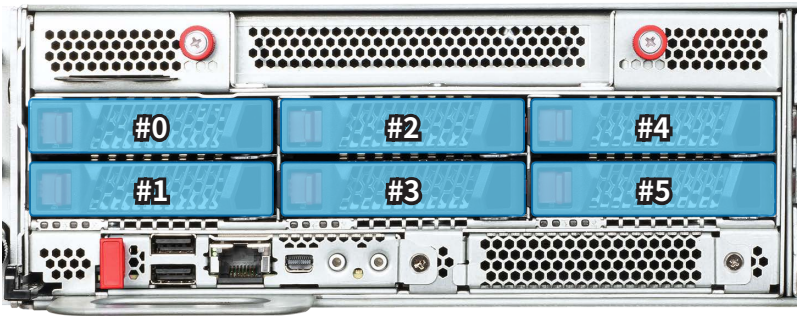
LED	LED State	Description
System Power LED	Green	System power is on
		System power is on ACPI S0 state
	Blinking	System is sleeping
	Off	System power is off
		System power is on ACPI S4, S5 state
UID LED	Blue	Identify active via command or button
	Off	No identification
System Status LED	Green	BMC initialization
	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	1 Gbps
	Orange	100 Mbps
	Off	10 Mbps

Block Diagram



System Storage Topology

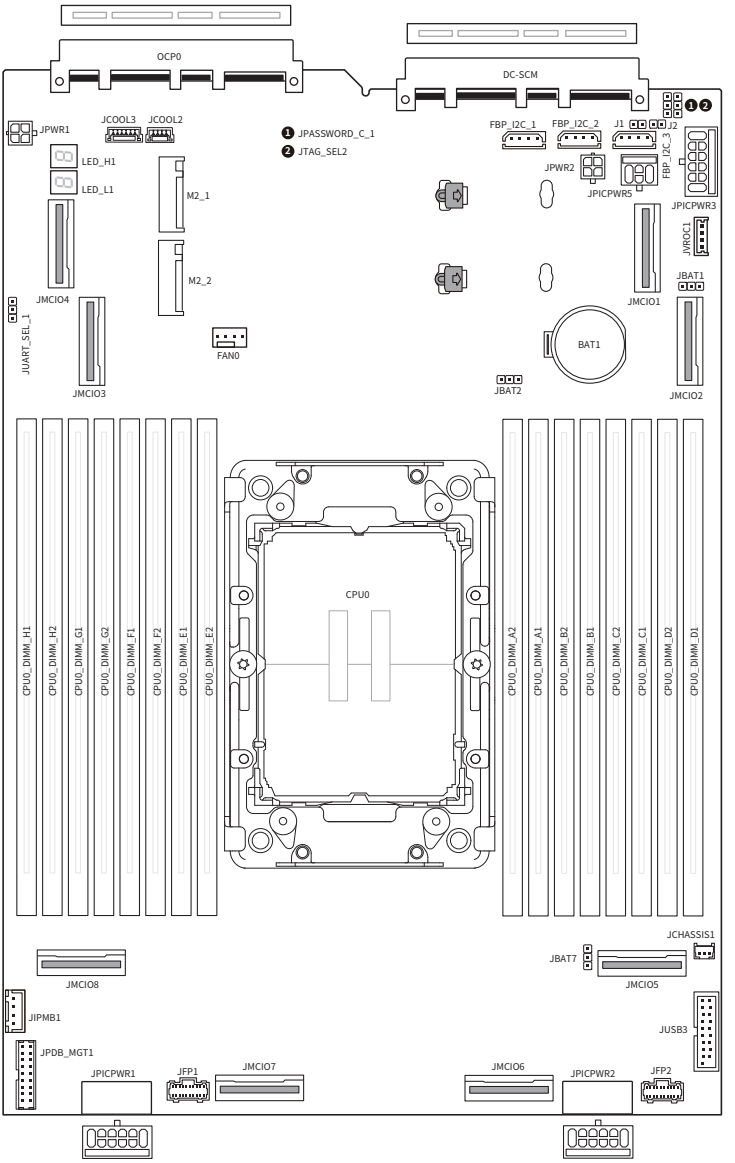
System Node 1/2



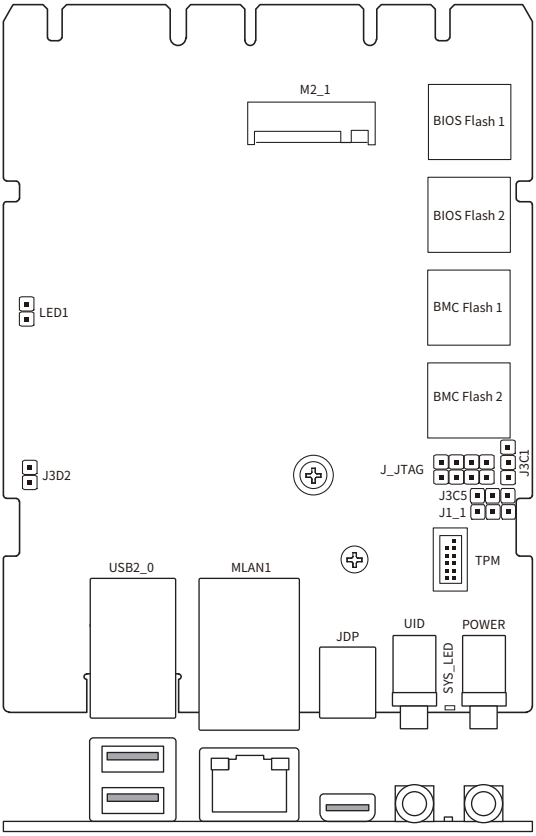
6 x NVMe Signals per Node		
#0	**#2**	**#4**
PE2	PE2	PE5
2A	2E	5A
Lanes 0:7	Lanes 8:15	Lanes 0:7
#1	**#3**	**#5**
PE2	PE2	PE5
2C	2G	5C
Lanes 0:7	Lanes 8:15	Lanes 0:7

Server Board Layouts

System Board



MGT1 DC-SCM Module

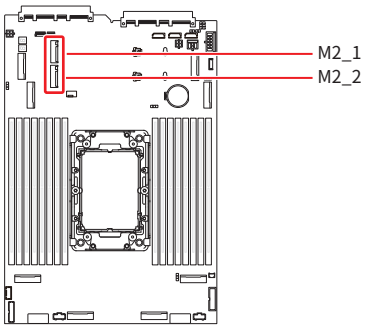


Server Board Connectors

Storage Connectors

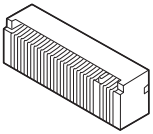
M2_0~1: M.2 Slots (M Key, 2280/ 22110)

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



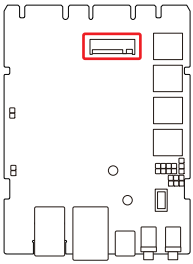
M.2 Transmission Rate Table

Name	Description
M2_1~2	PCIe 5.0 x2, 32GT/s

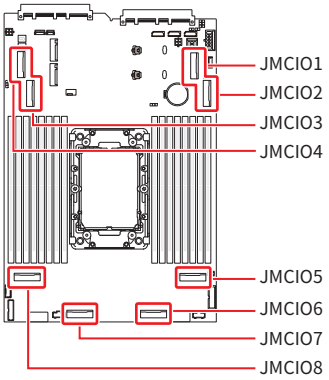


M2_1: M.2 Slot (M Key, for ROT1) (on MGT1)

This M.2 slot supports Root-of-Trust module (RoT module). For Installation procedure, please refer to **"System Setup > M.2 3060 Module"**.



Expansions



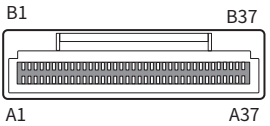
Expansions Transmission Rate Table

Name	Description
JMCIO1~8	PCIe 5.0 x8, 32 GT/s

JMCIO1~8: MCIO 8i Connectors

These are vertical 74-pin Mini Cool Edge IO (MCIO) connectors, which support PCIe 5.0 x8 32GT/s interface.

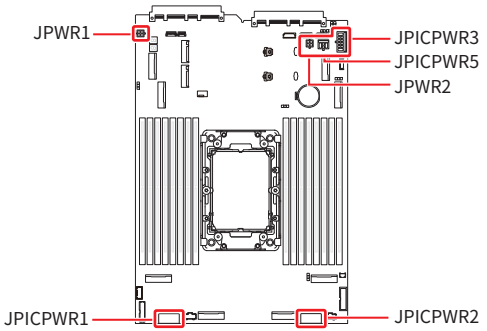
JMCIO1~8



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

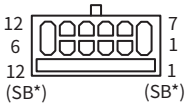


JPICPWR1~2,5 : 12V PICPWR Power Connectors

The PICPWR (Platform Infrastructure Connectivity Power) connector enables the HPM (Host Processor Module) to supply power and manage sideband signals to peripherals, including **PCIe devices** (JPICPWR3), the **storage backplane** (JPICPWR5), and **the Power Distribution Board** (JPICPWR1~2).

JPICPWR1~2: For Power Distribution Board (12-Pin)

JPICPWR1

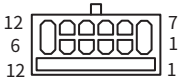


Power Signals			
1	GND	7	+12V
2	GND	8	+12V
3	GND	9	+12V
4	GND	10	+12V
5	GND	11	+12V
6	GND	12	+12V
Sideband Management Signals			
SB1	FM_HPM_SOUTH_7_PICPWR_B_SB1	SB7	FM_HPM_SOUTH_7_PICPWR_A_SB1
SB2	FM_HPM_SOUTH_7_PICPWR_B_SB2	SB8	FM_HPM_SOUTH_7_PICPWR_A_SB2
SB3	FM_PS_PWROK	SB9	PS_ON_N
SB4	FM_QS_EN_N	SB10	FM_HPM_SOUTH_7_PICPWR_A_SB4
SB5	SMB_JPICPWR1_B_SCL	SB11	SMB_JPICPWR1_A_SCL
SB6	SMB_JPICPWR1_B_SDA	SB12	SMB_JPICPWR1_A_SDA

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

JPICPWR2: For Power Distribution Board (12-Pin)

JPICPWR2

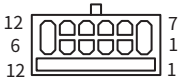


Power Signals			
1	GND	7	+12V
2	GND	8	+12V
3	GND	9	+12V
4	GND	10	+12V
5	GND	11	+12V
6	GND	12	+12V
Sideband Management Signals			
SB1	FM_HPM_SOUTH_6_PICPWR_B_SB1	SB7	FM_HPM_SOUTH_6_PICPWR_A_SB1
SB2	FM_HPM_SOUTH_6_PICPWR_B_SB2	SB8	FM_HPM_SOUTH_6_PICPWR_A_SB2
SB3	FM_HPM_SOUTH_6_PICPWR_B_SB3	SB9	FM_HPM_SOUTH_6_PICPWR_A_SB3
SB4	FM_HPM_SOUTH_6_PICPWR_B_SB4	SB10	FM_HPM_SOUTH_6_PICPWR_A_SB4
SB5	SMB_JPICPWR2_B_SCL	SB11	SMB_JPICPWR2_A_SCL
SB6	SMB_JPICPWR2_B_SDA	SB12	SMB_JPICPWR2_A_SDA

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

JPICPWR3: For PCIe Devices (12-Pin)

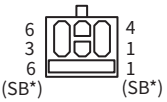
JPICPWR3



Power Signals			
1	GND	7	+12V
2	GND	8	+12V
3	GND	9	+12V
4	GND	10	+12V
5	GND	11	+12V
6	GND	12	+12V
Sideband Management Signals			
SB1	FM_HPM_PICPWR_B	SB7	FM_HPM_PICPWR_A
SB2	FM_HPM_PICPWR_B	SB8	FM_HPM_PICPWR_A
SB3	FM_HPM_PICPWR_B	SB9	FM_HPM_PICPWR_A
SB4	FM_HPM_PICPWR_B	SB10	FM_HPM_PICPWR_A
SB5	SMB_PICPWR_B_SCL	SB11	SMB_PICPWR_A_SCL
SB6	SMB_PICPWR_B_SDA	SB12	SMB_PICPWR_A_SDA

JPICPWR5: For Storage Backplane (6-Pin)

JPICPWR5



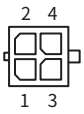
Power Signals			
1	GND	4	+12V
2	GND	5	+12V
3	GND	6	+12V
Sideband Management Signals			
SB1	FM_HPM_PICPWR_B	SB4	FM_HPM_PICPWR_B
SB2	FM_HPM_PICPWR_B	SB5	SMB_PICPWR_A_SCL
SB3	FM_HPM_PICPWR_B	SB6	SMB_PICPWR_A_SDA

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

JPWR1~2: 4-Pin Power Connectors

This connector provides power output to PCIe slot.

JPWR1~2

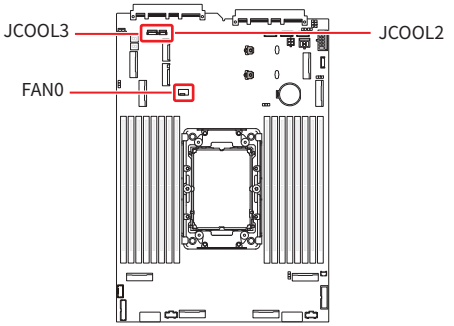


1	P12V
2	P3V3
3	GND
4	GND

Important

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

Cooling Connectors



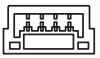
FAN0: 4-Pin Fan Header (debug only)

The fan header supports cooling fans with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND.

FAN0  1 4	1	GND
	2	+12V
	3	NC
	4	NC

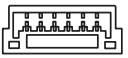
JCOOL2: 4-Pin Liquid Leak Detection Header

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

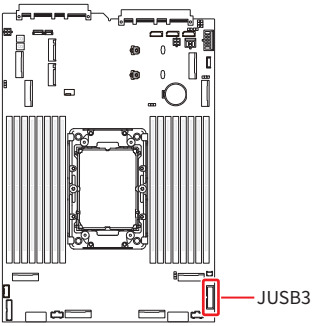
JCOOL2  4 1	1	GND
	2	P12V
	3	LIQUID_LEAKAGE_INT_R_N
	4	LIQUID_CBL_PRSNT_R_N

JCOOL3: 6-Pin Liquid Cooling Header

This header is for **cold plate pump**.

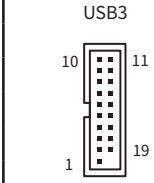
JCOOL3  6 1	1	P12V
	2	GND
	3	PUMP1_TACH
	4	PUMP1_PWM
	5	PUMP2_TACH
	6	PUMP2_PWM

USB Connectors



JUSB3: USB 3.2 Gen 1 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_D+
	2	USB3_P2_ESD_RX-	12	USB2_P3_ESD_D-
	3	USB3_P2_ESD_RX+	13	GND
	4	GND	14	USB3_P3_ESD_TX+
	5	USB3_P2_ESD_TX-	15	USB3_P3_ESD_TX-
	6	USB3_P2_ESD_TX+	16	GND
	7	GND	17	USB3_P3_ESD_RX+
	8	USB2_P2_ESD_D-	18	USB3_P3_ESD_RX-
	9	USB2_P2_ESD_D+	19	P5V_USB_2
	10	NC	20	No Pin

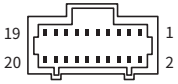
Other Connectors and Components

JFP1~2: DC-MHS Control Panel Header

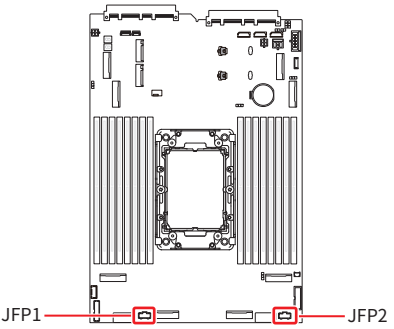
The **DC-MHS** control panel header for **M-PESTI** connects the **HPM** to the server' s front panel, enabling essential controls such as power, LED indicators, buttons, and sideband signals for management and monitoring.

- **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.

JFP1~2

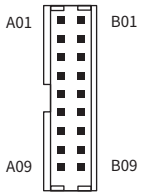


	1	P12V_AUX	2	GND
	3	P12V_AUX	4	BMC_SMB_LVC3_PESTI1_SDA
	5	NC	6	BMC_SMB_LVC3_PESTI1_SCL
	7	GND	8	GND
	9	USB2_BMC_PCP_ESD_D+	10	FM_FP_HPM_PCP_SB4
	11	USB2_BMC_PCP_ESD_D-	12	FM_FP_HPM_PCP_SB3
	13	GND	14	FM_FP_HPM_PCP_SB2
	15	SPI_BMC_FP_MISO_R	16	FM_FP_HPM_PCP_SB1
	17	SPI_BMC_FP_CS0_R	18	GND
	19	SPI_BMC_FP_MOSI_R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

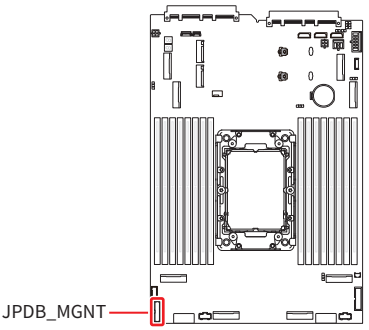


JPDB_MGNT: PDB Management Header

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



A01	P12V_STBY_PSU	B01	P12V_STBY_PSU
A02	ISENSE_I_PSYS	B02	VSENSE_LOCAL_V_PSYS
A03	P12V_STBY_PSU	B03	P12V_STBY_PSU
A04	GND	B04	GND
A05	SGPIO_LD	B05	SGPIO_CK
A06	SGPIO_DO	B06	GND
A07	GND	B07	SGPIO_DI
A08	SMB_PS_CLK	B08	GND
A09	SMB_PS_DAT	B09	NC



J1: Power Button Header

This header is provided to connect the system power button.

J1 1	1	FP_PWR_BTN_N
	2	GND

J2: Reset Button Header

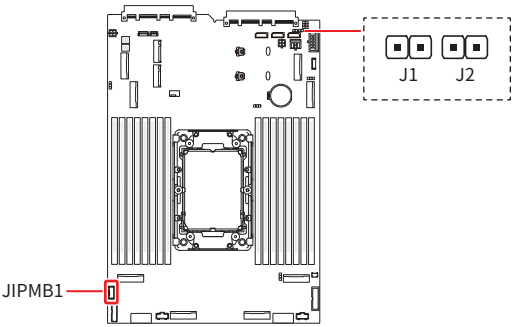
This header is provided to connect the system reset button.

J2 1	1	FM_RST_BTN_N
	2	GND

JIPMB: IPMB Header

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

JIPMB1 1 4	1	SMB_IPMB_LVC5_CON_SDA
	2	GND
	3	SMB_IPMB_LVC5_CON_SCL
	4	P5V_AUX



JVROC1: VROC Connector (debug only)

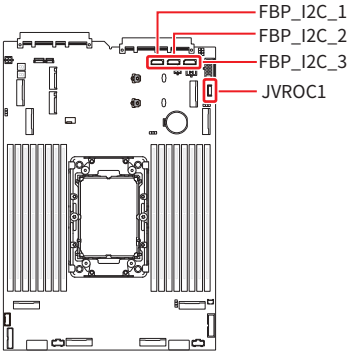
Intel® Virtual RAID on CPU (Intel® VROC) is a hybrid RAID solution specifically designed for NVMe SSDs connected directly to the CPU.

JVROC1 1 4	1	GND
	2	PU_KEY_CONN_PIN2_R
	3	GND
	4	FM_PCH_SATA_RAID_KEY_R

FBP_I2C_1~3: I2C Headers

I^{2}C (Inter-Integrated Circuit) headers connect to the System Management Bus (SMBus), **FBP_I2C_1~3** are for the backplane.

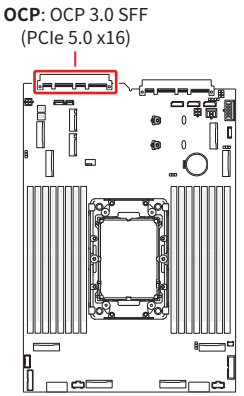
FBP_I2C_1~3 4 1	1	P3V3_AUX
	2	SMB_HSBP_LVC3_R_SCL
	3	SMB_HSBP_LVC3_R_SDA
	4	GND

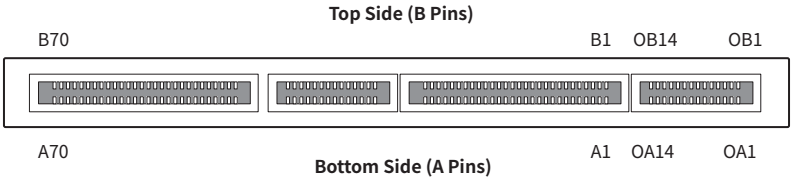


OCP0: OCP 3.0 Mezzanine Slot

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.

For Installation procedure, see **"System Setup > OCP Card".**





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
OB11	NC	OA11	NC
OB12	NC	OA12	NC
OB13	GND	OA13	GND
OB14	RMII_OCP0_CSDV	OA14	CLK_50M_OCP0
Mechanical Key			

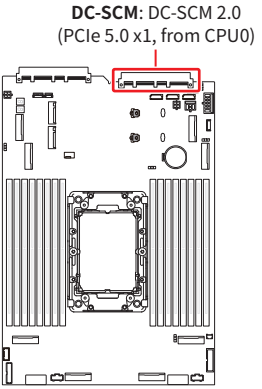
Top Side (B Pins)		Bottom Side (A Pins)	
B1	P12V_AUX_OCP0	A1	GND
B2	P12V_AUX_OCP0	A2	GND
B3	P12V_AUX_OCP0	A3	GND
B4	P12V_AUX_OCP0	A4	GND
B5	P12V_AUX_OCP0	A5	GND
B6	P12V_AUX_OCP0	A6	GND
B7	PD_OCP0_NIC_BIF0_N	A7	SMB_CPU0_PE0_OCP0_LVC3_SCL
B8	PD_OCP0_NIC_BIF1_N	A8	SMB_CPU0_PE0_OCP0_LVC3_SDA
B9	PD_OCP0_NIC_BIF2_N	A9	RST_BMC_PCIE_MUX_R_LVC3_N
B10	RST_CPU0_PE0_OCP0_PERST0_N	A10	PD_CPU0_OCP0_NIC_PRSNTA_N
B11	P3V3_AUX_OCP0	A11	RST_CPU0_PE0_OCP0_PERST1_N
B12	FM_OCP_NIC_AUX_PWR_LVC3_R_EN	A12	FM_CPU0_OCP0_NIC_PRSNTB2_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_PE0_OCP_TX_DN15	A17	P5E_CPU0_PE0_OCP_RX_DN15
B18	P5E_CPU0_PE0_OCP_TX_DP15	A18	P5E_CPU0_PE0_OCP_RX_DP15
B19	GND	A19	GND
B20	P5E_CPU0_PE0_OCP_TX_DN14	A20	P5E_CPU0_PE0_OCP_RX_DN14
B21	P5E_CPU0_PE0_OCP_TX_DP14	A21	P5E_CPU0_PE0_OCP_RX_DP14
B22	GND	A22	GND
B23	P5E_CPU0_PE0_OCP_TX_DN13	A23	P5E_CPU0_PE0_OCP_RX_DN13
B24	P5E_CPU0_PE0_OCP_TX_DP13	A24	P5E_CPU0_PE0_OCP_RX_DP13
B25	GND	A25	GND
B26	P5E_CPU0_PE0_OCP_TX_DN12	A26	P5E_CPU0_PE0_OCP_RX_DN12
B27	P5E_CPU0_PE0_OCP_TX_DP12	A27	P5E_CPU0_PE0_OCP_RX_DP12
B28	GND	A28	GND
Mechanical Key			
B29	GND	A29	GND
B30	P5E_CPU0_PE0_OCP_TX_DN11	A30	P5E_CPU0_PE0_OCP_RX_DN11
B31	P5E_CPU0_PE0_OCP_TX_DP11	A31	P5E_CPU0_PE0_OCP_RX_DP11
B32	GND	A32	GND
B33	P5E_CPU0_PE0_OCP_TX_DN10	A33	P5E_CPU0_PE0_OCP_RX_DN10
B34	P5E_CPU0_PE0_OCP_TX_DP10	A34	P5E_CPU0_PE0_OCP_RX_DP10
B35	GND	A35	GND
B36	P5E_CPU0_PE0_OCP_TX_DN9	A36	P5E_CPU0_PE0_OCP_RX_DN9
B37	P5E_CPU0_PE0_OCP_TX_DP9	A37	P5E_CPU0_PE0_OCP_RX_DP9
B38	GND	A38	GND
B39	P5E_CPU0_PE0_OCP_TX_DN8	A39	P5E_CPU0_PE0_OCP_RX_DN8
B40	P5E_CPU0_PE0_OCP_TX_DP8	A40	P5E_CPU0_PE0_OCP_RX_DP8

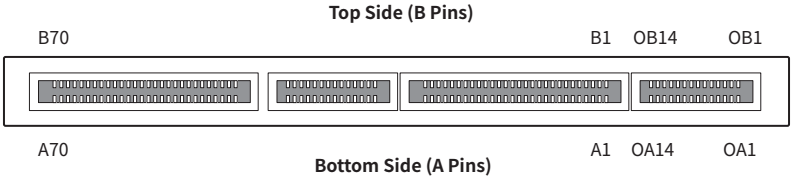
Top Side (B Pins)		Bottom Side (A Pins)	
B41	GND	A41	GND
B42	FM_CPU0_OCP0_NIC_PRSNTB0_N	A42	FM_CPU0_OCP0_NIC_PRSNTB1_N
Mechanical Key			
B43	GND	A43	GND
B44	P5E_CPU0_PE0_OCP_TX_DN7	A44	P5E_CPU0_PE0_OCP_RX_DN7
B45	P5E_CPU0_PE0_OCP_TX_DP7	A45	P5E_CPU0_PE0_OCP_RX_DP7
B46	GND	A46	GND
B47	P5E_CPU0_PE0_OCP_TX_DN6	A47	P5E_CPU0_PE0_OCP_RX_DN6
B48	P5E_CPU0_PE0_OCP_TX_DP6	A48	P5E_CPU0_PE0_OCP_RX_DP6
B49	GND	A49	GND
B50	P5E_CPU0_PE0_OCP_TX_DN5	A50	P5E_CPU0_PE0_OCP_RX_DN5
B51	P5E_CPU0_PE0_OCP_TX_DP5	A51	P5E_CPU0_PE0_OCP_RX_DP5
B52	GND	A52	GND
B53	P5E_CPU0_PE0_OCP_TX_DN4	A53	P5E_CPU0_PE0_OCP_RX_DN4
B54	P5E_CPU0_PE0_OCP_TX_DP4	A54	P5E_CPU0_PE0_OCP_RX_DP4
B55	GND	A55	GND
B56	P5E_CPU0_PE0_OCP_TX_DN3	A56	P5E_CPU0_PE0_OCP_RX_DN3
B57	P5E_CPU0_PE0_OCP_TX_DP3	A57	P5E_CPU0_PE0_OCP_RX_DP3
B58	GND	A58	GND
B59	P5E_CPU0_PE0_OCP_TX_DN2	A59	P5E_CPU0_PE0_OCP_RX_DN2
B60	P5E_CPU0_PE0_OCP_TX_DP2	A60	P5E_CPU0_PE0_OCP_RX_DP2
B61	GND	A61	GND
B62	P5E_CPU0_PE0_OCP_TX_DN1	A62	P5E_CPU0_PE0_OCP_RX_DN1
B63	P5E_CPU0_PE0_OCP_TX_DP1	A63	P5E_CPU0_PE0_OCP_RX_DP1
B64	GND	A64	GND
B65	P5E_CPU0_PE0_OCP_TX_DN0	A65	P5E_CPU0_PE0_OCP_RX_DN0
B66	P5E_CPU0_PE0_OCP_TX_DP0	A66	P5E_CPU0_PE0_OCP_RX_DP0
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_CPU0_OCP0_NIC_PRSNTB3_N	A70	FM_PWRBRK_CPU0_PE0_OCP0_LVC3_N

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.

For Installation procedure, see **"System Setup > DC-SCM Module".**





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
OB11	USB2_BMC_HUB_DN	OA11	NC
OB12	USB2_BMC_HUB_DP	OA12	NC
OB13	GND	OA13	GND
OB14	P1V0_AUX	OA14	PECI_SCM

Top Side (B Pins)		Bottom Side (A Pins)	
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

Top Side (B Pins)		Bottom Side (A Pins)	
B41	NC	A41	I3C_MNG_SCM_LVC1_R_SCL
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
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

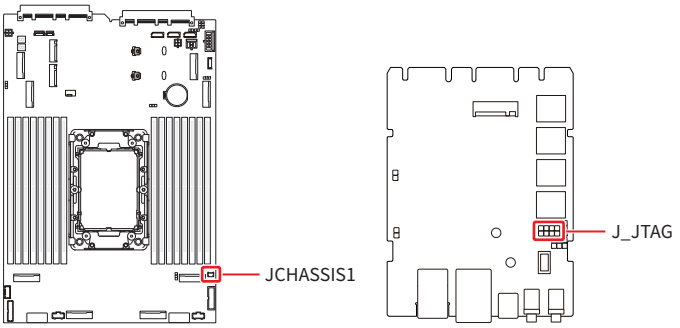
JCHASSIS1: Chassis Intrusion Header

This header connects to the **chassis intrusion switch cable**, which monitors and detects any unauthorized opening in the server' s chassis. When the chassis is opened, this header sends a signal to notify the **Baseboard Management Controller (BMC)** to record the intrusion event or trigger an alert for administrators.

JCHASSIS1  1	1	FM_INTRUSION_CBL_PRES_N
	2	GND
	3	FM_INTRUDER_HDR_BMC_N

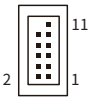
J_JTAG: Manual Programming Header (on MGT1)(debug only)

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



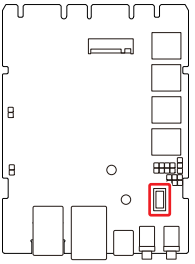
TPM: SPI TPM Header (for TPM20-IRS) (on MGT1)

This header connects to a TPM (Trusted Platform Module) module (optional). Please refer to the TPM security platform manual for more details.
For Installation procedure, see **"System Setup > TPM Module"**.



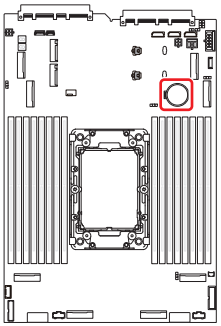
TPM

	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



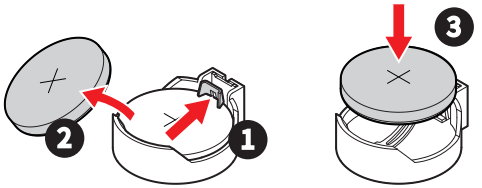
BAT1: CMOS Battery

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



Replacing CMOS battery

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



WARNING

KEEP OUT OF REACH OF CHILDREN

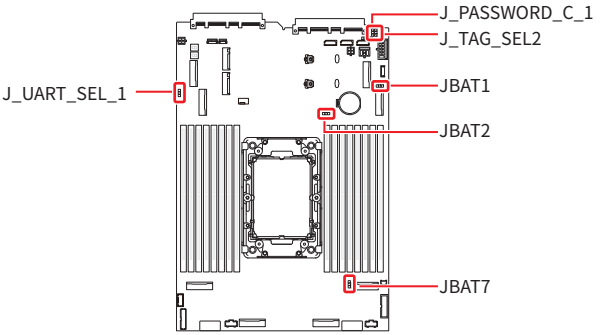
- *Swallowing can cause chemical burns, perforation of soft tissue, and even death.*
- *Severe burns can occur within 2 hours of ingestion.*
- *If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.*

Server Board Jumpers

Important

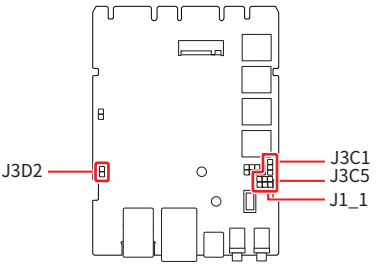
Avoid adjusting jumpers when the system is on; it will damage the motherboard.

System Board Jumpers



Jumper Name	Default Setting	Description
J_PASSWORD_C_1	1	**Password Clear Jumper** 1-2: Normal (default) 2-3: Clear password
JTAG_SEL_2	1	**JTAG Select Jumper** 1-2: BMC to CPLD 2-3: BMC to CPU (default)
JUART_SEL_1	1	**UART BMC/ CPLD Select Jumper** 1-2: UART BMC to CPU (default) 2-3: UART CPLD to CPU
JBAT1	1	**MBP/ I3C Select Jumper** 1-2: MBP (default) 2-3: I3C
JBAT2	1	**RTC Clear Jumper** 1-2: Normal (default) 2-3: Clear RTC
JBAT7	1	**PESTI Flash Select Jumper** 1-2: PESTI1 flash 2-3: PESTI2 flash (default)

MGT1 DC-SCM Module Jumpers

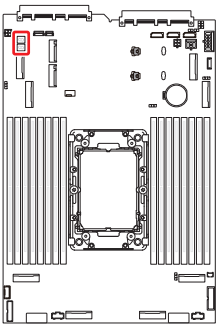


Jumper Name	Default Setting	Description
J3D2	1	**Force BMC Update Jumper** 1-X: Normal (default) 1-2: BMC Force Update
J3C1	1	**FRU Jumper** 1-2: FRU write protected 2-3: FRU normal operated (default)
J3C5	1	**JTAG SW Jumper** 1-2: JTAG SW disable 2-3: JTAG SW enable (default)
J1_1	1	**ID/ Reset Button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

Server Board LEDs

LED_H1, LED_L1: Port 80 Debug LEDs

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

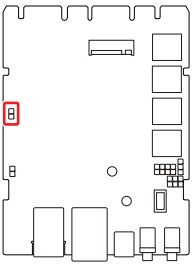


Hexadecimal Character Table

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

LED1: BMC Heartbeat LED (on MGT1)

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



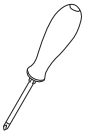
Status	Description
Off	BMC is not activated
Blinking	BMC is functioning normally

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.*

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.

System Node

Removing System Node Tray

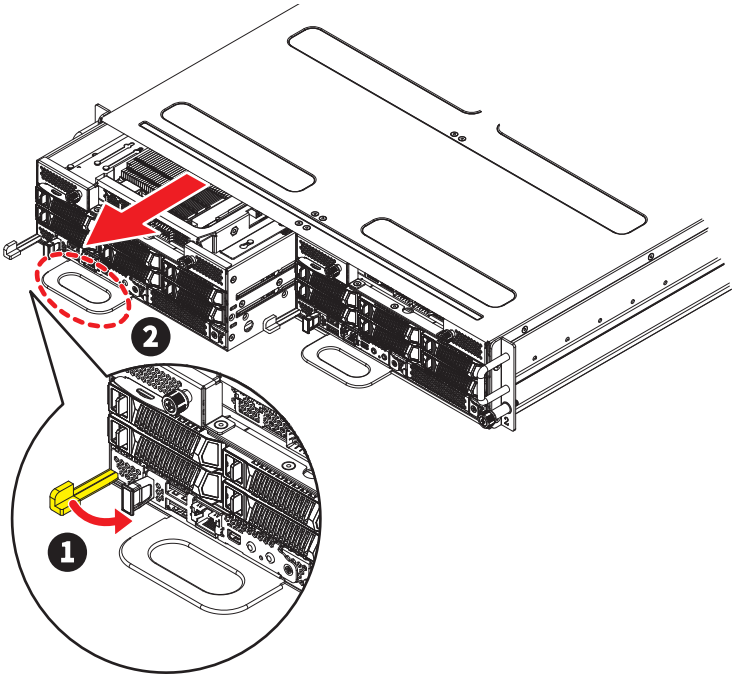
Important

- ***Power Off Node First!*** *Removing a powered-on node will cause immediate power loss.*
- *Each node is* ***independently powered****. Turning off one node will not affect the other.*

Removal Procedure:

1. **Pull the node latch to the right side** to release the node.
2. Grasp the **handle** to gently slide the node out of its slot.

- *Support the weight of the node while removing it to prevent accidental drops.*



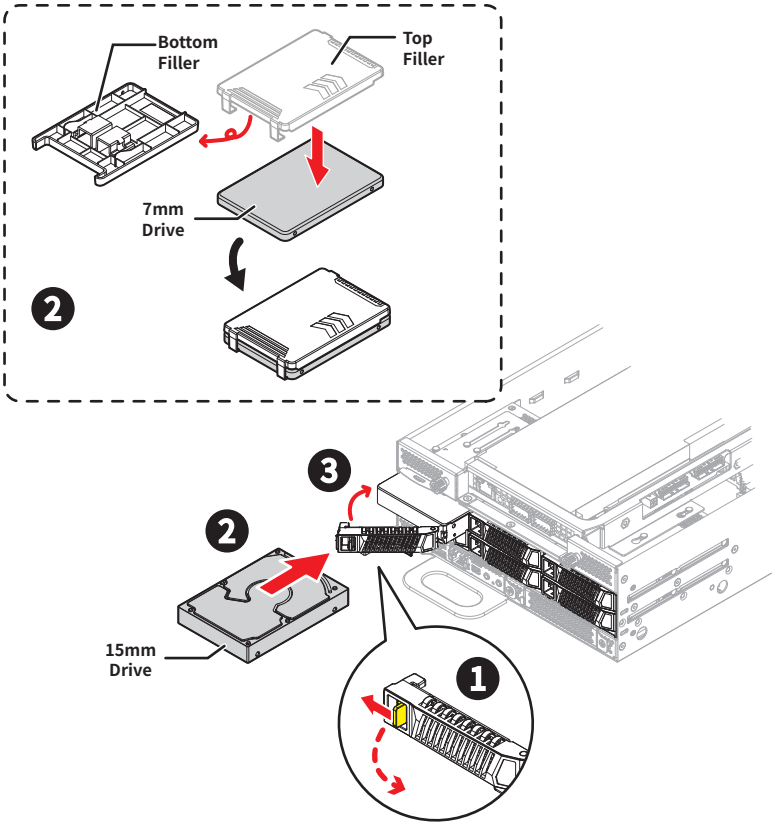
Drive Bay

Installing 2.5" Drives (15mm/ 7mm)

1. Push the **tray button** to release the lever.
2. With the **drive carrier rail fully extended,** insert the 2.5" drive into the bay.

- *For **15mm drives**, remove the entire filler; for **7mm drives**, remove the bottom piece and leave the top piece engaged as a spacer.*

3. Push the drive carrier lever back until it locks.

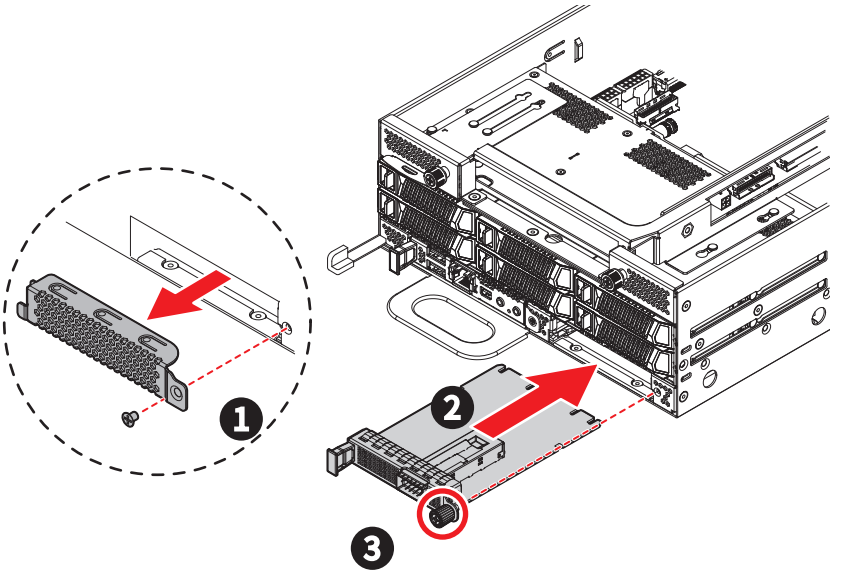


OCP Card

Installing OCP card

Follow the steps below:

1. Remove the **filler panel**.
2. Slide the OCP card into the slot in the chassis, then puch until the OCP card is **connected to the connector** on the system board.
3. Secure the OCP card with the provided **thumb screw** to the chassis.

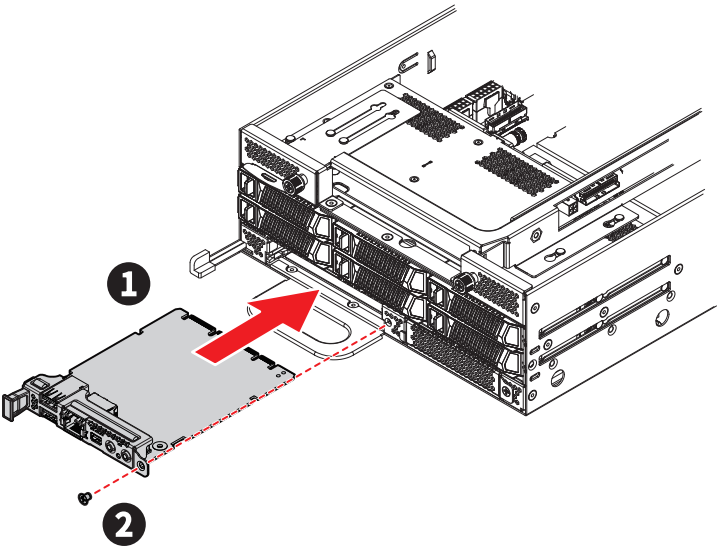


DC-SCM Module

Installing DC-SCM Module

Follow the steps below:

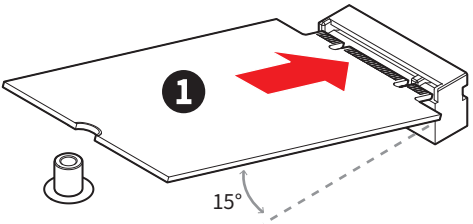
1. Slide the DC-SCM module into the slot, then puch until the module is **connected to the connector** on the system board.
2. Secure the DC-SCM module with the provided **screw** to the chassis.



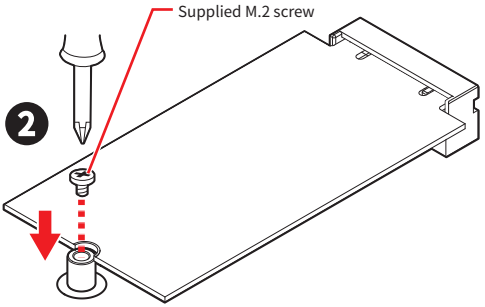
M.2 3060 Module

Installing M.2 3060 Module (on the DC-SCM Module)

1. Insert your M.2 module into the M.2 slot at a 15-degree angle.



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

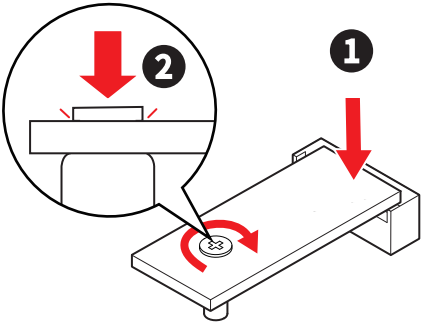


TPM Module

Installing TPM Module (on the DC-SCM Module)

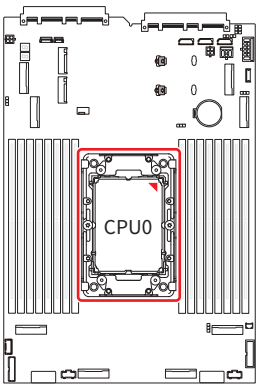
1. Place the TPM20-IRS module atop the SPI TPM header.

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



CPU & Heatsink

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



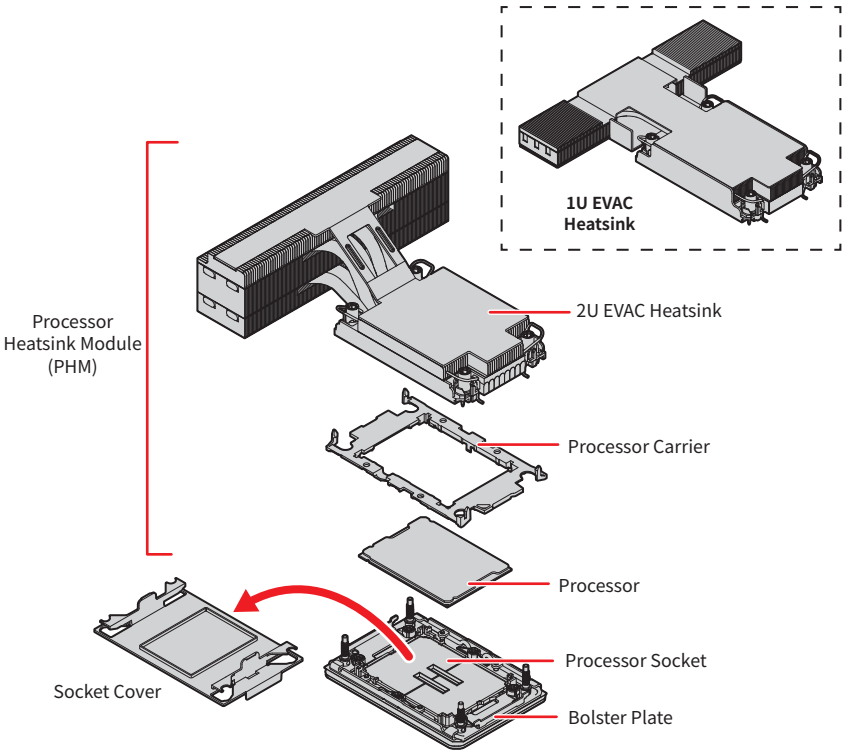
Important

- *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.*
- ***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 to apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.*

Assembly Overview

Important

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

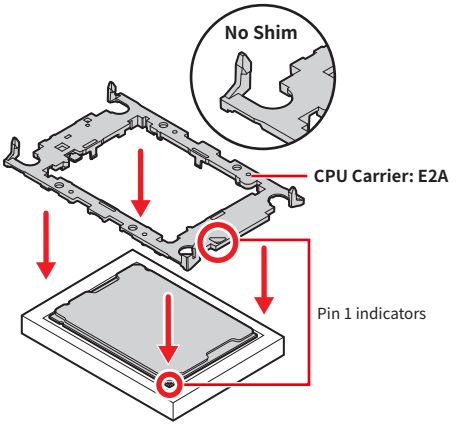


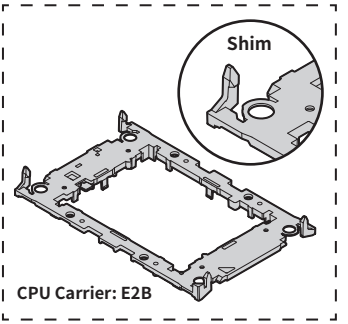
Important

- *Please check the instruction that come with your heatsink and thermal paste for more details before starting.*
- *Confirm if your heatsink is firmly installed before turning on your system.*
- *Whenever CPU is not installed, always protect your CPU socket pins with the plastic cap covered.*
- *Do not touch the CPU socket content to avoid damage.*
- *Read the CPU status in BIOS.*

Installing CPU & Heatsink

1. Place the processor carrier on top of the processor in the tray with their **pin 1 indicators aligned**. If installed properly, the CPU will snap into the carrier' s side latches and the carrier will latch firmly to it.





Important

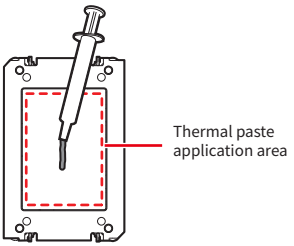
- *Do not touch the CPU package land to avoid damage.*
- *Please refer to the following table for the corresponding CPU carrier.*

CPU Package Type	Thin Package	Thick Package
CPU Package Name	· Granite Rapids- SP XCC	· Granite Rapids- SP HCC/ LCC · Sierra Forest- SP
CPU Carrier Code	E2A	E2B
Shim	No	Yes
Integrated TIM Break Lever	Yes	Yes

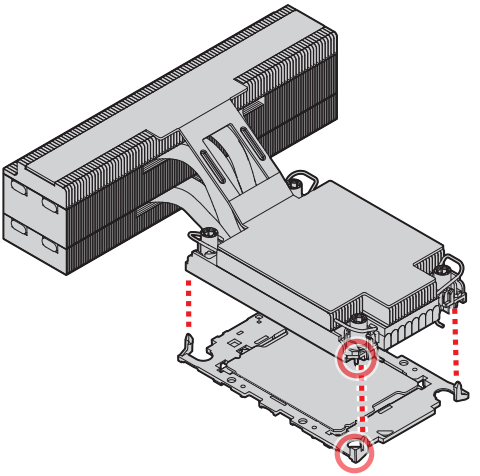
2. Remove the **protective film** at the bottom of the heatsink if any.

- *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.*

3. Make sure the heatsink has **pre-applied thermal paste**. If there isn' t, you' ll need to apply thermal paste to the bottom center of the heatsink.

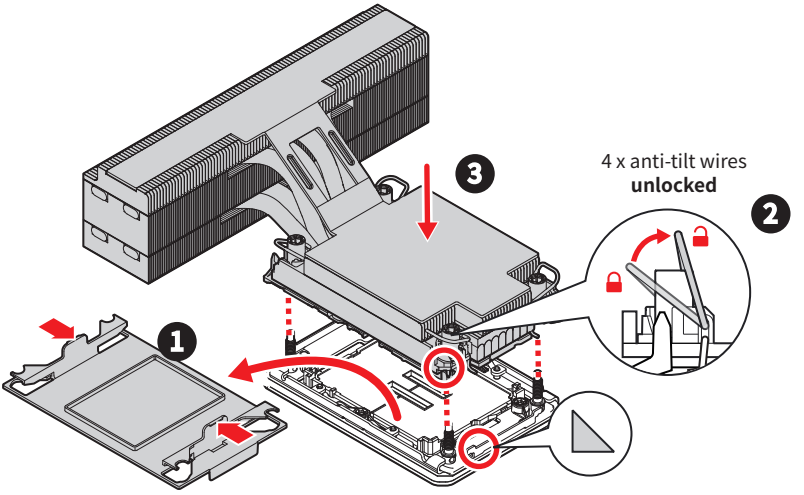


4. Check the heatsink for a diagonally cut corner or the #1clip on the heatsink label if present. Align the **processor carrier' s Pin 1 indicator** with the **heatsink' s cut corner (#1 clip)**, then gently press the heatsink down to engage the carrier' s latching mechanism to the heatsink at four corners.

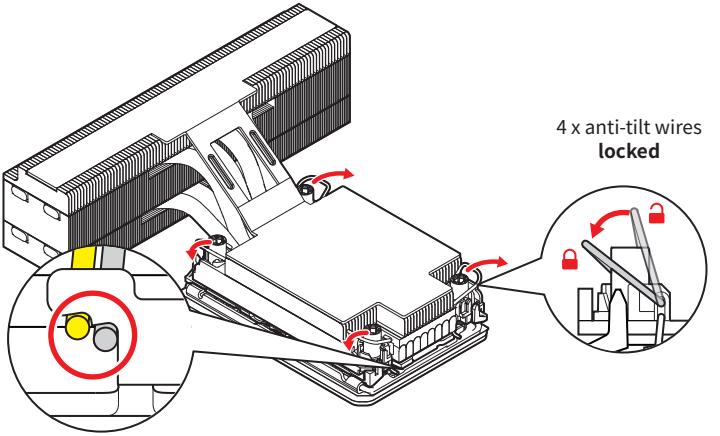


5. Make sure the attached clips on the carrier grab onto the heatsink and firmly secure the carrier, CPU and heatsink as one **Processor Heatsink Module (PHM)**.

6. Remove the socket cover by squeezing the finger grips in, then flip **4 anti-tilt wires** on the heatsink to the **unlocked position (inward)** and place the PHM on top of the bolster plate with the Pin 1 indicators aligned. Hold the PHM horizontally, carefully lower down to engage PHM to bolster the plate' s alignment pin.



7. Flip 4 anti-tilt wires to the **locked position (outward)** and make sure the wires are firmly secure.



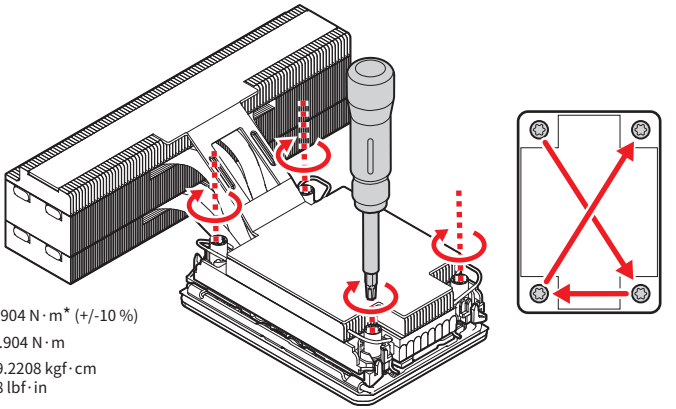
Important

*Ensure the 4 anti-tilt wires rotate and lock into the **designated positions** on the stepped flanges, as specified in the table below for each CPU carrier.*

CPU Package Type	Thin Package	Thick Package
CPU Package Name	· Granite Rapids- SP XCC	· Granite Rapids- SP HCC/ LCC · Sierra Forest- SP
CPU Carrier Code	E2A	E2B
Anti-tilt Wire Position	◯ Lower step flange	◯ Upper step flange

8. Tighten all heatsink nuts using a **Torx T30 screwdriver** in a diagonal sequence to secure the PHM to the motherboard.

- *To ensure even pressure on the CPU, first loosely fasten all four screws, then gradually tighten them.*



Torque: 0.904 N·m* (+/-10 %)

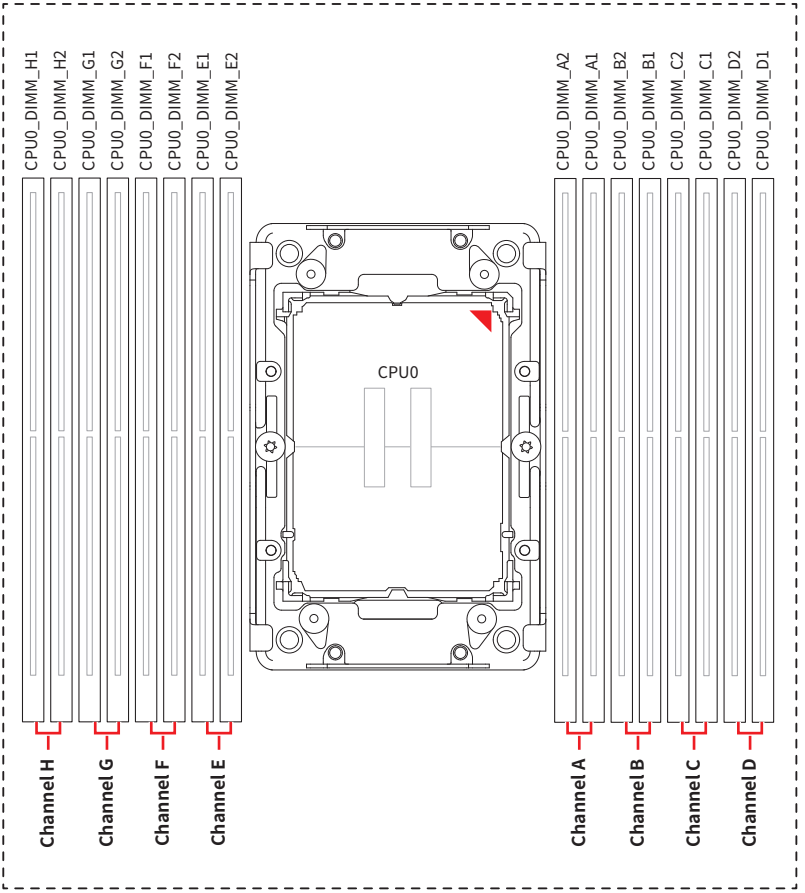
*0.904 N·m

= 9.2208 kgf·cm

= 8 lbf·in

Memory Slots

CPU0_DIMM_A1/A2~H1/H2: DDR5 DIMM Slots



Recommended Memory Population

Please read the following Guidelines before populating memory.

General Memory Population Rules

- **Single DIMM Type Usage:** Only one type of DIMM is allowed across the system. Mixing different DIMM types is not permitted.
  - Example: All DDR5 RDIMMs or all MRDIMMs.
- **Consistent Rank Configuration:** All DIMMs within a channel must have the same number of ranks unless explicitly stated otherwise.
- **Uniform Speed:** All DDR5 DIMMs associated with a given processor (e.g., CPU0 or CPU1) must operate at the same speed.
- **Uniform Density:** All DDR5 DIMMs must have the same density.
- **Vendor Restrictions:** Unless explicitly stated otherwise, DIMMs from different vendors cannot be mixed for RDIMMs, 3DS RDIMMs, and MRDIMMs.

DIMM Mixing Restrictions

- Mixing of **non-3DS** and **3DS-RDIMMs** is not allowed in the same channel, across different channels, and across different processor sockets.
- **9x4 RDIMMs** cannot be mixed with other DIMM types.
- Mixing of DDR5 operating frequencies is not validated:
  - If DIMMs with varying maximum frequencies are mixed, the **BIOS determines and sets the DIMM speed** to the highest common frequency across all channels on the platform.
  - Example: If a 6000 MT/s DIMM is installed in one channel, and a 6400 MT/s DIMM in another, the BIOS sets the platform speed to 6000 MT/s.
- **x8 DIMMs and x4 DIMMs** cannot be mixed in the same channel or same processor socket. (Refer to the following "DIMMs Population (x4/x8)" section)

DIMMs Population (x4/x8)

Intel® Xeon® 6700E Series

DDR Type	DIMM population within IMC	
	Config Set A (x8)	Config Set B (x4)
	Slot 1, Slot 2	Slot 1, Slot 2
RDIMM	x8, None	x4, None x4, x4

Intel® Xeon® 6700P/ 6500P Series

DDR Type	DIMM population within IMC	
	Config Set A (x8)	Config Set B (x4)
	Slot 1, Slot 2	Slot 1, Slot 2
RDIMM	x8, None x8, x8	x4, None x4, x4
3DS-RDIMM		x4, None x4, x4
MRDIMM	x8, None	x4, None

Key Parameters for DIMM

Intel® Xeon® 6700E Series

DDR Type	Ranks Per DIMM & Data Width	DIMM Capacity (GB)						Speed (MT/s); Voltage (V); & DIMMs per Channel (DPC)	
		DRAM Density						1DPC	2DPC
		16 Gb		24 Gb		32 Gb		1.1 V	
		1DPC	2DPC	1DPC	2DPC	1DPC	2DPC		
RDIMM	1Rx4	32 GB						6400	5200
	2Rx8	32 GB							
	2Rx4	64 GB		96 GB		128 GB			

Intel® Xeon® 6700P/ 6500P Series

DDR Type	Ranks Per DIMM & Data Width	DIMM Capacity (GB)						Speed (MT/s); Voltage (V); & DIMMs per Channel (DPC)	
		DRAM Density						1DPC	2DPC
		16 Gb		24 Gb		32 Gb		1.1 V	
		1DPC	2DPC	1DPC	2DPC	1DPC	2DPC		
RDIMM	1Rx8	16 GB		24 GB				6400	5200
	1Rx4	32 GB		48 GB					
	2Rx8	32 GB		48 GB					
	2Rx4	64 GB		96 GB		128 GB			
3DS-RDIMM	8Rx4		256 GB					6400	5200
MRDIMM	2Rx8	32 GB						8000	
	2Rx4	64 GB							

DIMM Configuration

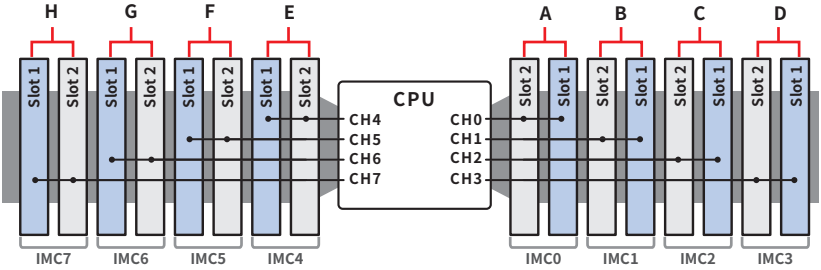
Intel® Xeon® 6700E Series

DDR Type	Memory Channels	Slots per Channel (SPC)	DIMMs per Channel (DPC)	Slot 1		Slot 2		DIMM Organization	DRAM Density (Gb)
				DIMM Ranks & Width	DIMM Capacity (GB)	DIMM Ranks & Width	DIMM Capacity (GB)		
RDIMM	8	1 or 2	1	2Rx8	32 GB			5x8	16 Gb
				1Rx4	32 GB			10x4	
				2Rx4	64 GB				
		2	2	2Rx4	64 GB	2Rx4	64 GB		
		1 or 2	1	2Rx4	96 GB			10x4	24 Gb
		2	2	2Rx4	96 GB	2Rx4	96 GB	10x4	24 Gb
		1 or 2	1	2Rx4	128 GB			10x4	32 Gb
		2	2	2Rx4	128 GB	2Rx4	128 GB	10x4	32 Gb

Intel® Xeon®6700P/ 6500P Series

DDR Type	Memory Channels	Slots per Channel (SPC)	DIMMs per Channel (DPC)	Slot 1		Slot 2		DIMM Organization	DRAM Density (Gb)
				DIMM Ranks & Width	DIMM Capacity (GB)	DIMM Ranks & Width	DIMM Capacity (GB)		
RDIMM	4	1 or 2	1	2Rx8	32 GB			5x8	16 Gb
					48 GB				24 Gb
				2Rx4	64 GB			10x4	16 Gb
	8	1 or 2	1	1Rx8	16 GB			5x8	16 Gb
					24 GB				24 Gb
				2Rx8	32 GB			5x8	16 Gb
				1Rx4				10x4	
		2	2	2Rx8	32 GB	2Rx8	32 GB	5x8	16 Gb
		1 or 2	1.5	2Rx8	32 GB	2Rx8	32 GB	5x8	16 Gb
			1	2Rx8	48 GB			5x8	24 Gb
				1Rx4				10x4	
		2	2	2Rx8	48 GB	1Rx8	24 GB	5x8	24 Gb
		1 or 2	1	2Rx4	64 GB			10x4	16 Gb
					96 GB				24 Gb
		2	2	2Rx4	64 GB	2Rx4	64 GB	10x4	16 Gb
					96 GB		96 GB		24 Gb
		1 or 2	1	2Rx4	128 GB			10x4	32 Gb
		2	2	2Rx4	128 GB	2Rx4	128 GB	10x4	32 Gb
				4H 3DS	256 GB	4H 3DS	256 GB		16 Gb
MRDIMM	8	1 or 2	1	2Rx8	32 GB			5x8	16 Gb
				2Rx4	64 GB			10x4	

DDR5 Only DIMM Configuration Diagram



IMC#	IMC7		IMC6		IMC5		IMC4			IMC0		IMC1		IMC2		IMC3	
Channel	H		G		F		E			A		B		C		D	
	Chan 7		Chan 6		Chan 5		Chan 4			Chan 0		Chan 1		Chan 2		Chan 3	
DDR5	H1	H2	G1	G2	F1	F2	E1	E2		A2	A1	B2	B1	C2	C1	D2	D1
1									C		V						
4			V				V		P		V				V		
	V				V				U				V				V
8	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
16	V	V	V	V	V	V	V	V		V	V	V	V	V	V	V	V

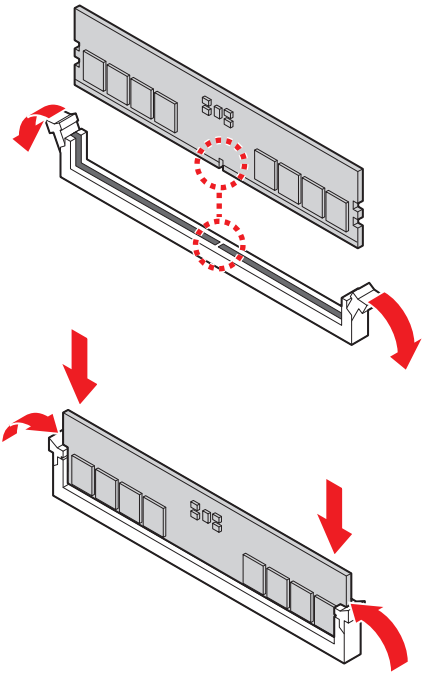
"**V**" indicates DIMMs are populated with **DDR5**.

Note

1. **Intel® Xeon® 6700E Series** does not support **12** DIMMs configuration.
2. There should be at least one DDR5 DIMM per socket.

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 SSD

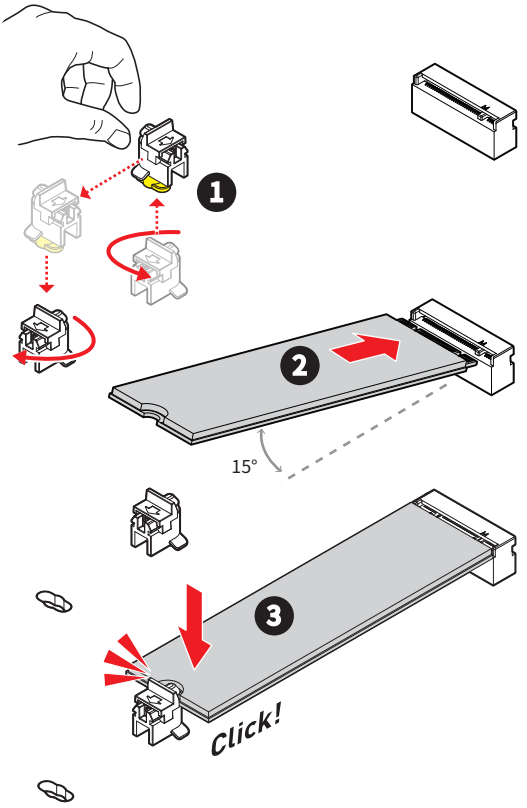
Installing M.2 SSD (on the system board, M.2 M Key)

1. Adjust the **M.2 board latch** to fit your M.2 SSD size.

- ***Turn the M.2 board latch counterclockwise to release, and clockwise to lock.***

2. Insert your M.2 SSD into the M.2 slot at a 15-degree angle.

3. Push down the M.2 SSD till it clicks in place.

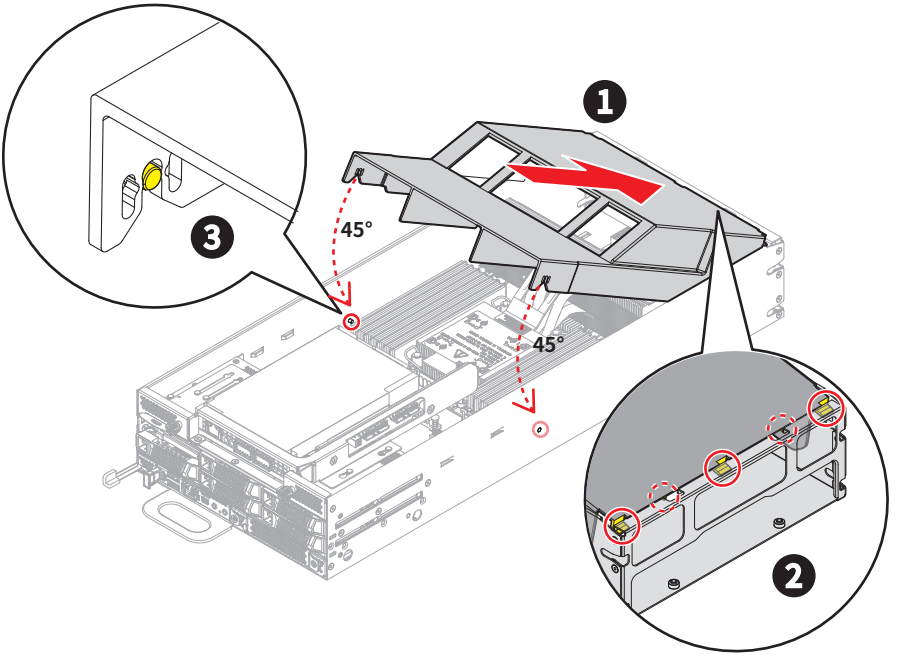


Air Duct

Installing Air Duct

To install the air duct, follow these steps:

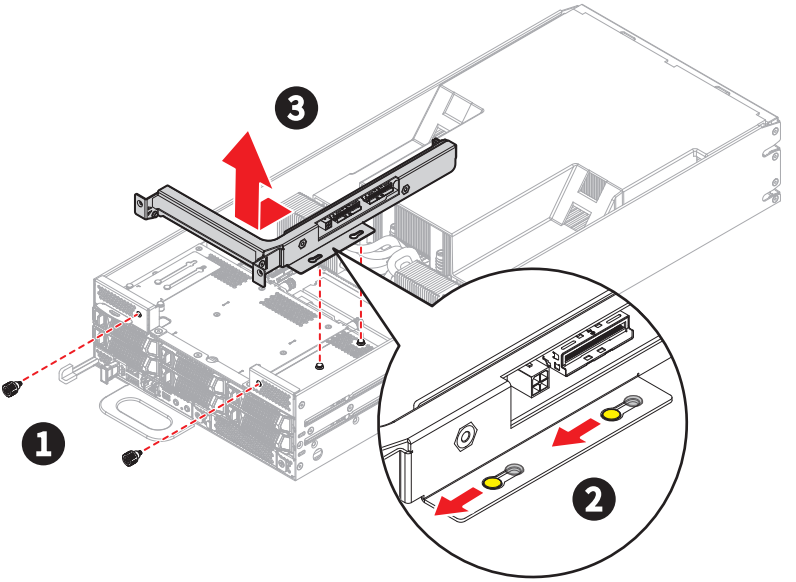
1. Insert the **back edge** of the air duct in the system node with a 45-degree angle.
2. Ensure the **two stops (red-dotted circles)** on the air duct are properly aligned with the corresponding stops on the node, and the **three hooks (red circles)** snap securely into place.
3. Rotate the air duct downward until it hooks to the **pins** on both sides of the chassis.



PCIe Add-in Card

Removing Riser Brackets

1. Remove the screws located on the rear side of the chassis.
2. Slide the riser bracket backward to disengage it.
3. Carefully lift the riser bracket out of the chassis.

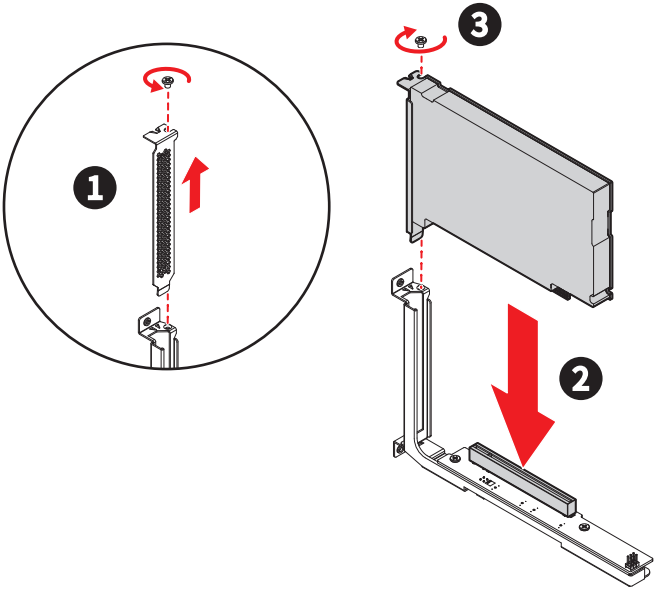


Installing PCIe Add-in Card

1. Loosen the screws on the riser bracket to remove the filler panels.
2. Align the PCIe add-in card with the connector on the riser card, and insert it until it is fully seated.
3. Tighten the screws to securely fix the PCIe add-in card in place.

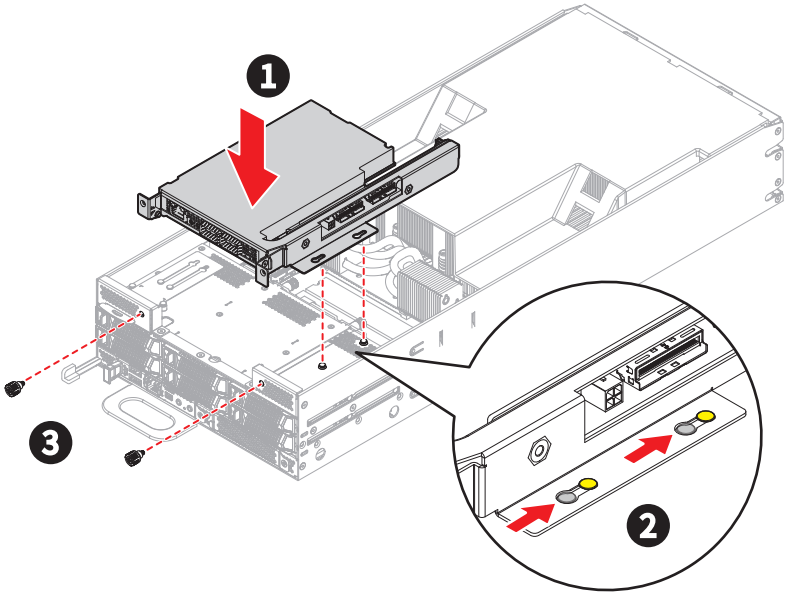
Important

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



Installing Riser Card Assembly

1. Align the holes on the riser card assembly with the corresponding mounting pins in the system, and lower the assembly into place.
2. Slide the riser bracket backward to secure the riser card assembly.
3. Tighten the screws to firmly fasten the riser card assembly.



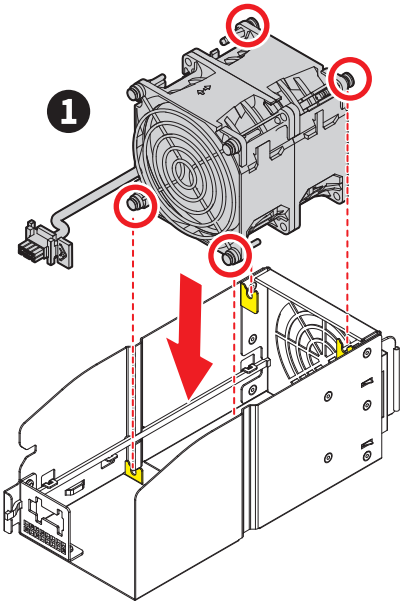
System Fan

Installing 8080 System Fan Assembly

Install Fan into Fan Cage

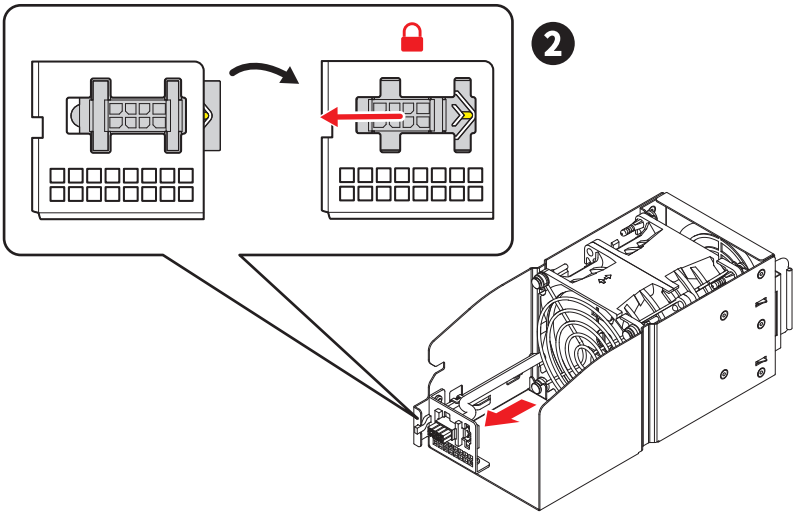
1. With the fan aligned, place the fan securely into the fan cage.

- *Ensure the fan' s **rubber parts** are engaged with the **metal hooks**.*



Secure Fan Connector

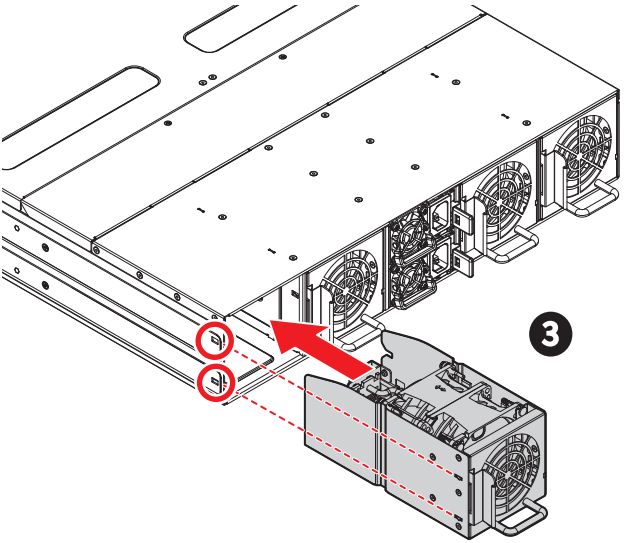
2. Align the fan connector with the designated notch, then slide the connector **to the left** to lock the plastic buckle onto the metal part, securing the connection.



Install Fan Assembly into Chassis

3. Push the fan assembly into the chassis until it locks into place.

- *Ensure the fan module hooks into the **chassis' s grooves** on the side of the chassis.*



Power Supply Unit

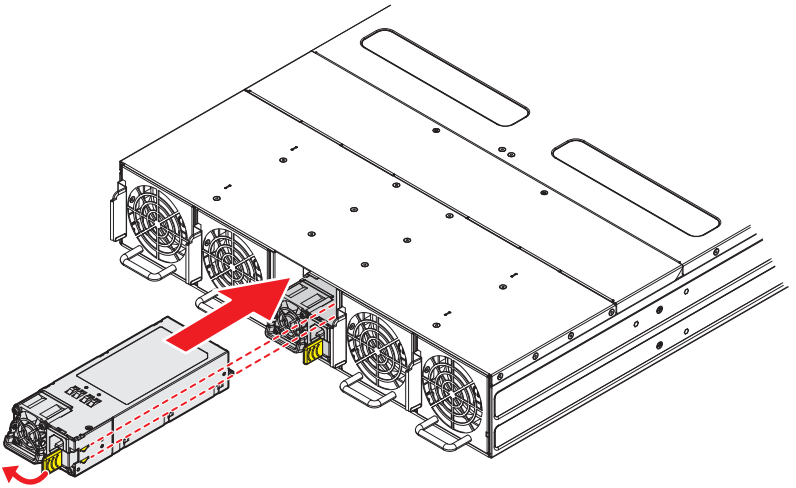
The server system supports two power supplies that can be easily inserted and removed from the rear side of the system without the need for tools.

Important

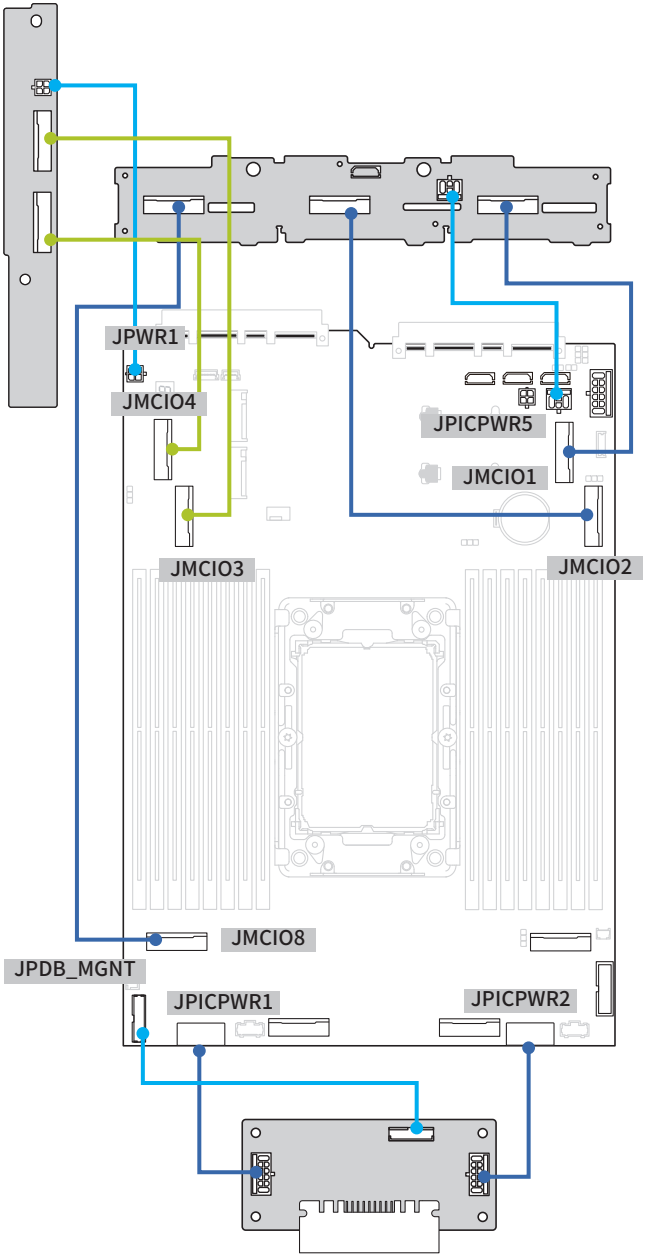
- *Both power supplies must be identical and both power cords should be connected.*
- *Failing to connect both power supplies could result in CPU throttling.*

Installing Power Supply Unit (PSU)

1. Remove the PSU blank if any.
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.



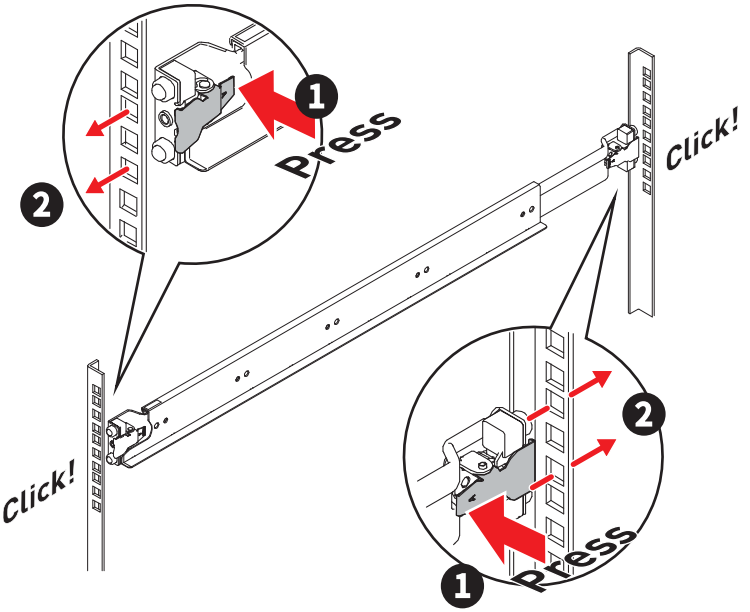
Cable Routing



Slide Rail & Rack

Attaching the Slide Rails to a Rack

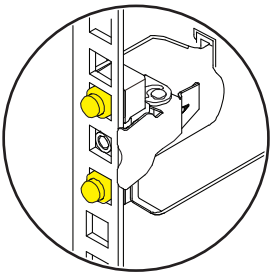
1. While pressing the **release tab**, firmly insert the slide rail's studs into the rack's mounting holes.
2. Release the tab and listen for a "**click**" to confirm secure attachment.



- ***Follow the above procedures in reverse to detach the slide rail from a rack.***

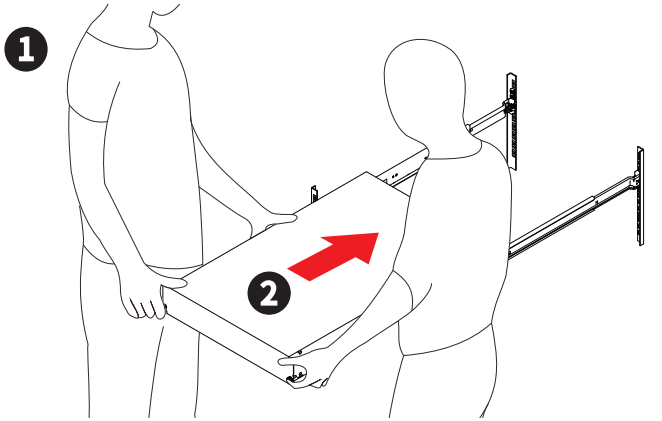
Important

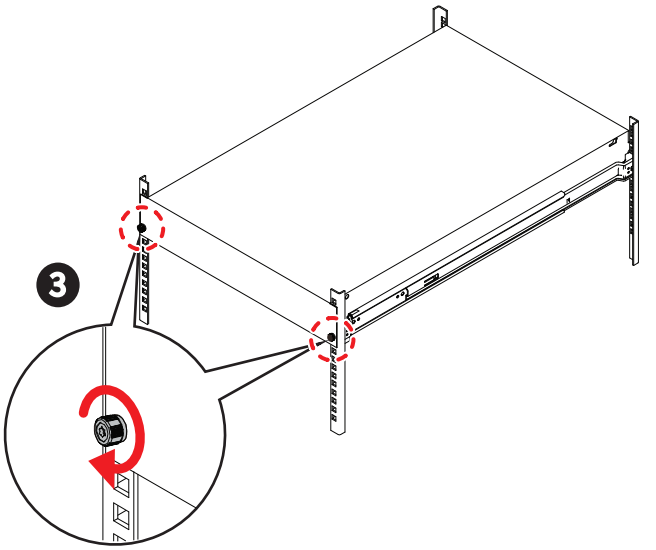
Ensure the square stud is fully inserted into the rack' s square hole until it locks securely. A partially inserted stud may result in instability.



Installing the chassis into a Rack

1. With **at least two people**, carefully lift the chassis and align the chassis with the L-shaped shelf on the rails.
2. Slowly slide the chassis into place, ensuring even alignment on both sides.
3. Tighten the **thumb screws** on both sides of the front brackets to secure the chassis.





- ***Follow the above procedures in reverse to remove the chassis from a rack.***

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