SUPERSERVER®
SYS-621H-TN12R



USER'S MANUAL

Revision 1.1b

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Manual Revision 1.1b

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Preface

About this Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the server. Installation and maintenance should be performed by experienced technicians only.

Please refer to the SYS-621H-TN12R server specifications page on our website for updates on supported memory, processors and operating systems.

Notes

For your system to work properly, please follow the links below to download all necessary drivers/utilities and the user's manual for your server.

- Supermicro product manuals: https://www.supermicro.com/support/manuals/
- Product drivers and utilities: https://www.supermicro.com/wdl
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm

If you have any questions, please contact our support team at:
support@supermicro.com

This manual may be periodically updated without notice. Please check the Supermicro website for possible updates to the manual revision level.

Secure Data Deletion

A secure data deletion tool designed to fully erase all data from storage devices can be found on our website: https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility/

Warnings

Special attention should be given to the following symbols used in this manual.



Warning! Indicates important information given to prevent equipment/property damage or personal injury.



Warning! Indicates high voltage may be encountered when performing a procedure.



Warning! Indicates hazardous moving parts may be encountered while handling a fan or components near a fan.

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Chapter 1

Introduction

1.1 Overview

This chapter provides an outline of the functions and features of the SuperServer SYS-621H-TN12R. The following provides an overview of the specifications and capabilities.

System Overview	
Motherboard	X13DEM
Chassis	HS829-R1K24P
Processor	Dual 4th and 5th Gen Intel Xeon Scalable in Socket E (LGA-4677) with four UPIs (20 GT/s max.) and a thermal design power (TDP) up to 350 W; Supports SP XCC, SP MCC, and Max Series (HBM) SKUs
Memory	Supports up to 8 TB 3DS RDIMM/RDIMM DDR5 ECC memory in 32 DIMM slots - 4th Gen CPU: speeds of up to 4800 MT/s (1DPC) and up to 4400 MT/s (2DPC) . - 5th Gen CPU: speeds of up to 5600 MT/s (1DPC) and up to 4400 MT/s (2DPC)
Storage	Twelve 3.5" or 2.5" hot-swap NVMe/SAS/SATA front drive bays Two M.2 NVMe/SATA hybrid slots with support for M-key 2280 and 22110
Expansion Slots	Optional eight PCIe 5.0 x8 slots or four PCIe 5.0 x16 slots (see Section 3.10 for details)
I/O Ports	One OCP 3.0 compatible slim AIOM slot (second slot optional) One RJ45 dedicated BMC LAN port Two rear USB 2.0 ports One VGA port
System Cooling	Four heavy duty fans w/optimal fan speed control Two air shrouds
Power	Two redundant power supplies Default: 1200 W, 80Plus Titanium level
Form Factor	2U Rackmount 3.5 x 17.2 x 31.6 in. / 89 x 437 x 803 mm (HxWxD)

A Quick Reference Guide can be found on the product page of the Supermicro website.

The following safety models associated with the SYS-621H-TN12R have been certified as compliant with UL or CSA: HS829-R12X12, HS829-12, HS829-R26X12, HS829-26, HS829-R16X12, HS829-16, HS829-16DX12, HS829-16D, HS829-R13DX12, and HS829-13D

1.2 System Features

The following views of the system display the main features. Refer to Appendix B for additional specifications.

Front View



Figure 1-1. System Front View

Logical Storage Drive Numbers	
Item	**Description**
0-11	Twelve 3.5-inch or 2.5-inch front drive bays, NVMe, SAS, orSATA with additional parts*

* see optional parts list

Drive Carrier Indicators

Each drive carrier has two LED indicators: an activity indicator and a status indicator. For RAID configurations using a controller, the meaning of the status indicator is described in the table below. For OS RAID or non-RAID configurations, some LED indications are not supported, such as hot spare. For VROC configurations, refer to the VROC section in this manual.

Drive Carrier LED Indicators			
	Color	**Blinking Pattern**	**Behavior for Device**
Activity LED	Blue	Solid On	Idle SAS/NVMe drive installed
	Blue	Blinking	I/O activity
	Off		Idle SATA or no drive
Status LED	Red	Solid On	Failure of drive with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive with RSTe support
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support
	Green	Solid Green LED	Safe to remove NVMe device
	Amber	Blinking at 1Hz	Do not remove NVMe device
	Off		Idle SATA or no drive

Control Panel

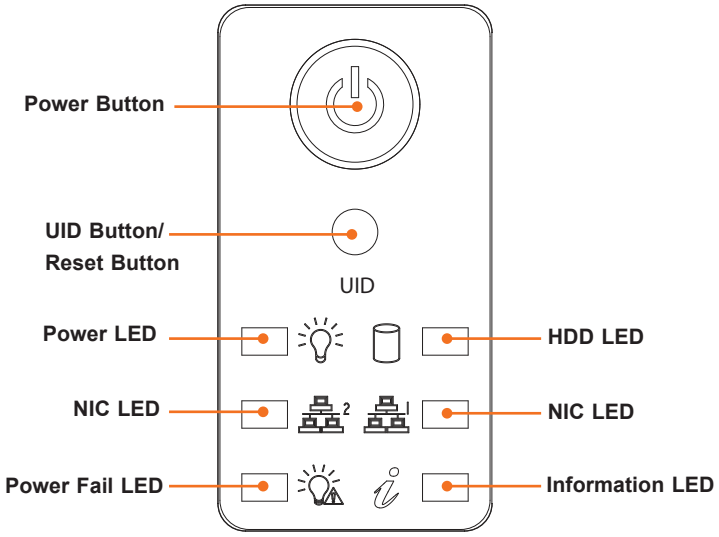


Figure 1-2. Control Panel

Control Panel Features	
Features	**Description**
Power Button	The main power switch applies or removes primary power from the power supply to the server but maintains standby power.
UID Button/ Reset Button	The unit identification (UID) button turns on or off the blue light function of the Information LED. This button can also be used to reset the system, depending on the JRU1 settings.
Power LED	Steady on – Power on Blinking at 4Hz – Checking BIOS/BMC integrity Blinking at 4Hz and "i" LED is blue – BIOS firmware updating Two blinks at 4Hz, one pause 2hz and "i" LED blue – BMC firmware updating Blinking at 1Hz and "i" LED red – Fault detected
NIC LEDs	Indicates network activity on a LAN when flashing; defaults to the first two ports of CPU1 AIOM.
Power Fail LED	Indicates a power supply module has failed.
HDD LED	Indicates activity on the hard drive when flashing.
Information LED	Alerts operator to several states (noted in the table below).

Information LED	
Color, Status	**Description**
Red, solid	An overheating condition has occurred
Red, blinking at 1Hz	Fan failure, check for an inoperative fan
Red, blinking at 0.25Hz	Power failure, check for a non-operational power supply
Red, blinking at 10Hz	CPLD recovery mode error

(Table continued on next page)

Information LED	
Color, Status	**Description**
Blue, solid	Unit ID has been activated by switch
Blue, blinking at 1Hz	Unit ID has been activated using the BMC
Blue, blinking at 2Hz, and BMC Heartbeat LED on the motherboard is green	BMC is resetting
Blue, blinking at 4Hz	BMC is setting factory defaults
Blue, blinking at 10Hz	BIOS/BMC is recovering or updating
Red, blinking at 10Hz and the rear UID LED is blue, blinking at 10Hz	CPLD recovery or update is in progress

Rear View

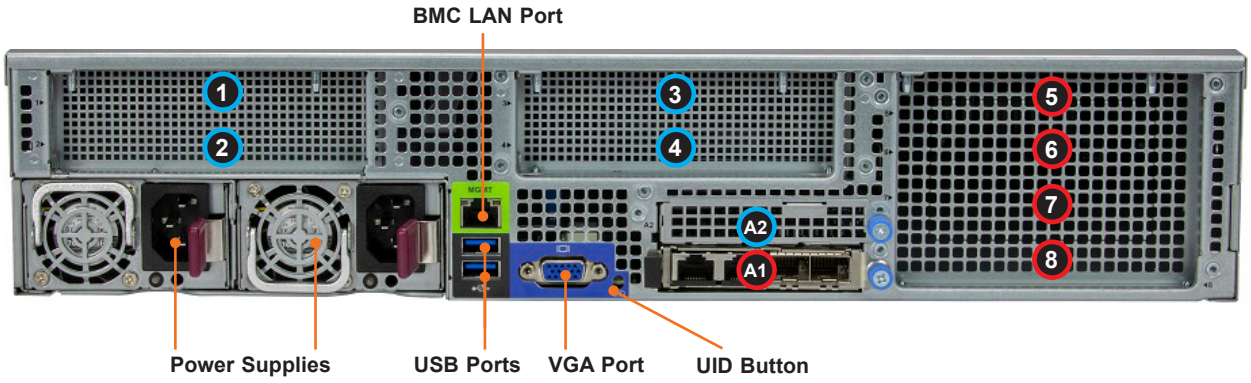


Figure 1-3. System Rear View

System Features: Rear	
Feature	**Description**
Power Supplies	Two redundant power supply modules
VGA Port	Video port
USB Ports	Two USB 2.0 ports
BMC LAN Port	Dedicated port to access the BMC; for indicator details, see BMC LAN LEDs
UID Button	The unit identification (UID) button turns on or off the blue light function of the Information LED. This button can also be used to reset the BMC.

Expansion Slot Locations	
Item	**Description**
1 to 4	Four optional PCIe 5.0 x8 (in x16) or PCIe 5.0 x16 full-height, full-length slots (CPU2)
5 to 8	Four optional PCIe 5.0 x8 (in x16) or PCIe 5.0 x16 full-height, full-length slots (CPU1)
A1	x16 OCP 3.0 AIOM slot (CPU1)
A2	(*Optional*) x16 OCP 3.0 AIOM slot (CPU2)

Note: Some combinations of expansion slot options may not be available due to the limited number of PCIe lanes reserved for expansion slots. See Section 3.10 for details.

Power Supply Indicator

Power Supply Indicator	
LED Color and State	**Power Supply Condition**
Solid Green	Indicates that the power supply is on
Blinking Green	Indicates that the power supply is plugged in and turned off by the system.
Blinking Amber	Indicates that the power supply has a warning condition and continues to operate.
Solid Amber	Indicates that the power supply is plugged in, and is in an abnormal state. The system might need service. Please contact Supermicro technical support.
Off	No AC power to modules

Top View

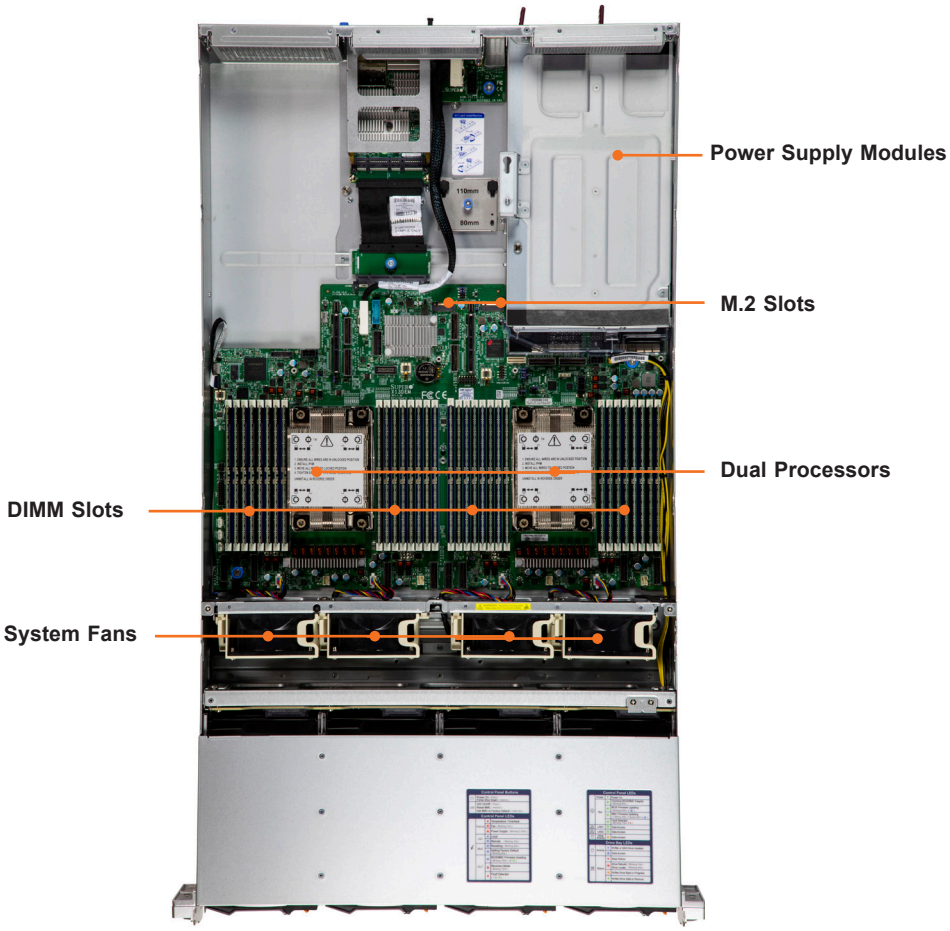


Figure 1-4. System: Top View

System Features: Top	
Feature	**Description**
M.2 Slots	Two slots for M.2, NVMe or SATA
Power Supplies	Dual redundant modules
DIMM Slots	Thirty-two memory slots
Processors	Dual 4th and 5th Gen Intel Xeon Scalable with heatsinks
System Fans	Four 8-cm heavy duty fans with Optimal Fan Speed Control

1.3 System Architecture

This section covers the locations of the subsystem components.

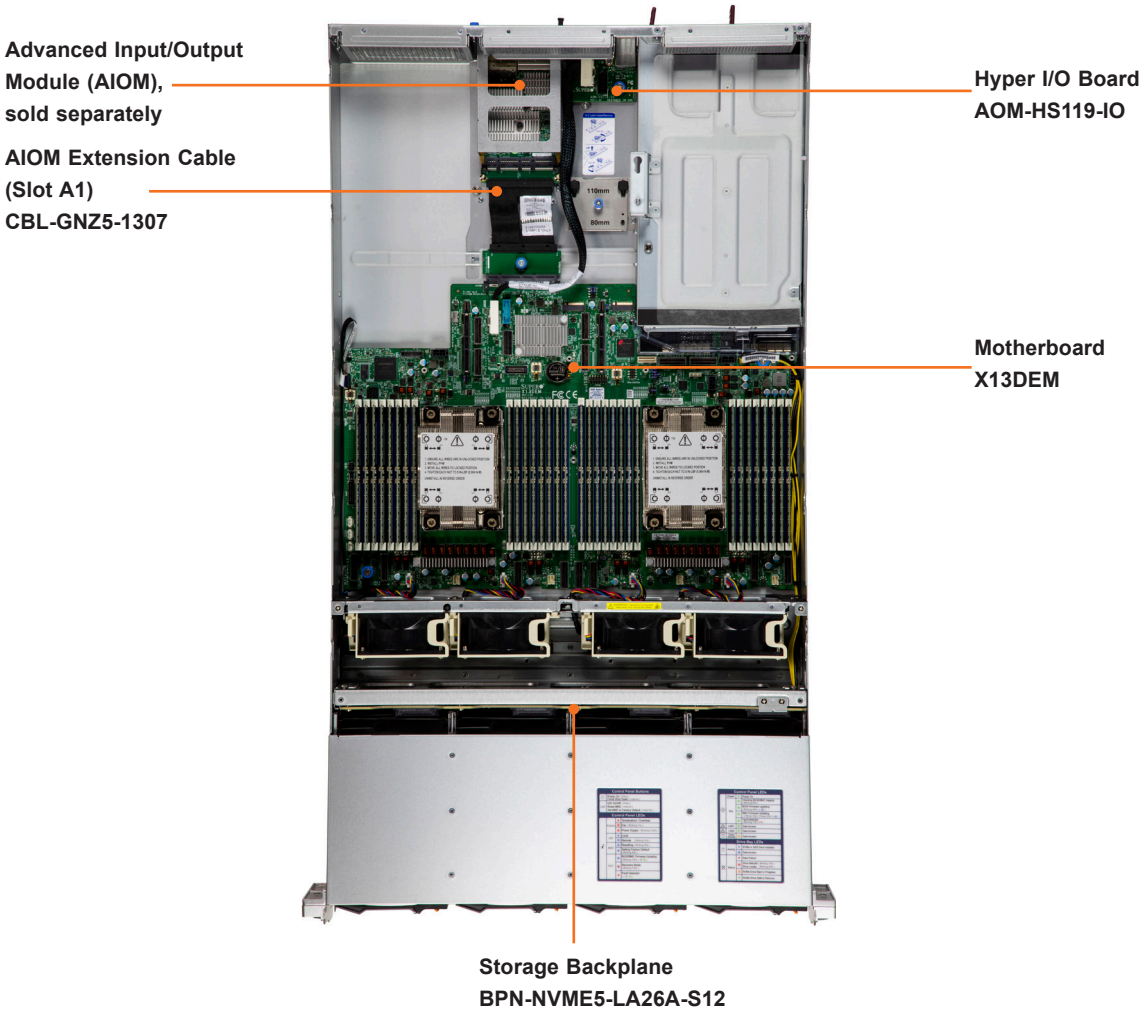


Figure 1-5. Main Component Locations

System Block Diagram

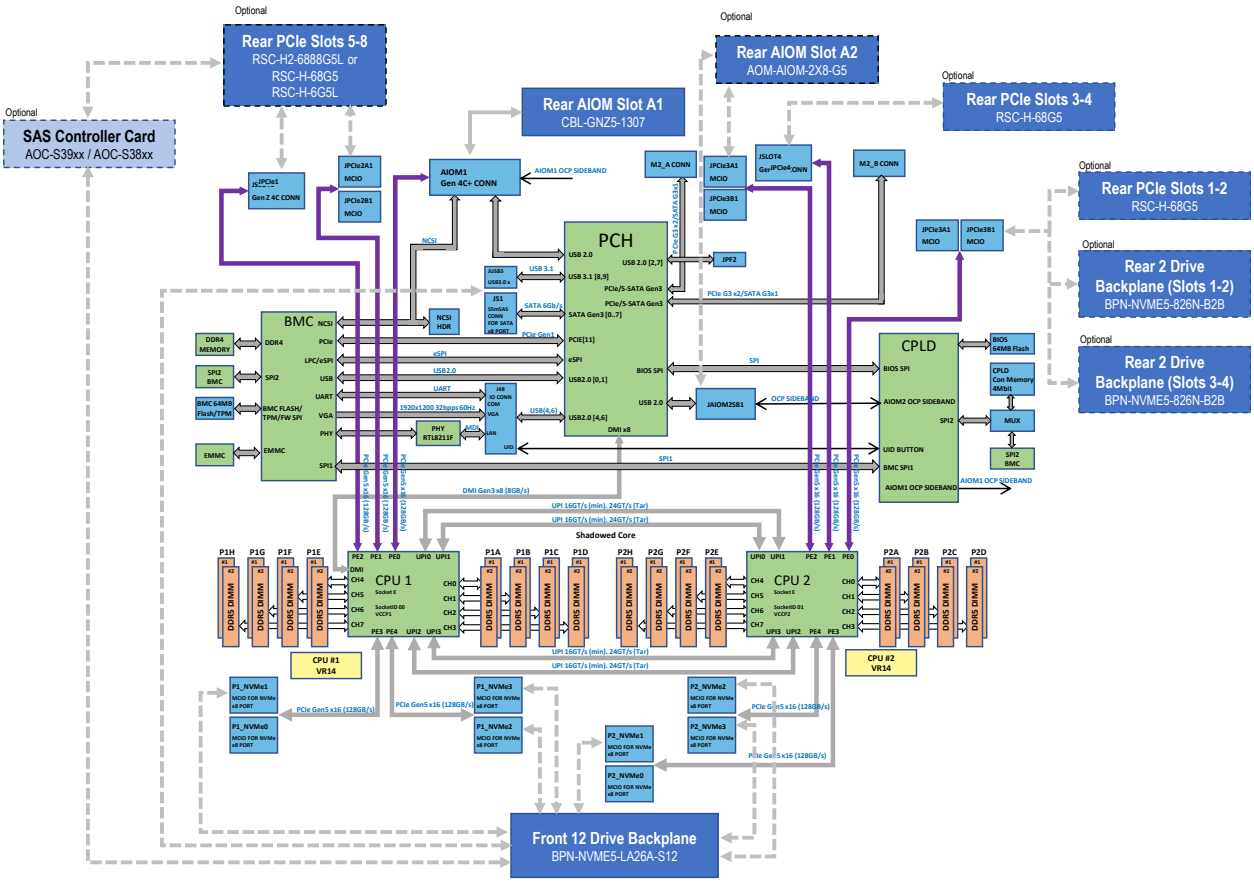


Figure 1-6. System Block Diagram

1.4 Motherboard Layout

Below is a layout of the X13DEM motherboard with jumper, connector and LED locations shown. See the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4 or the Motherboard Manual.

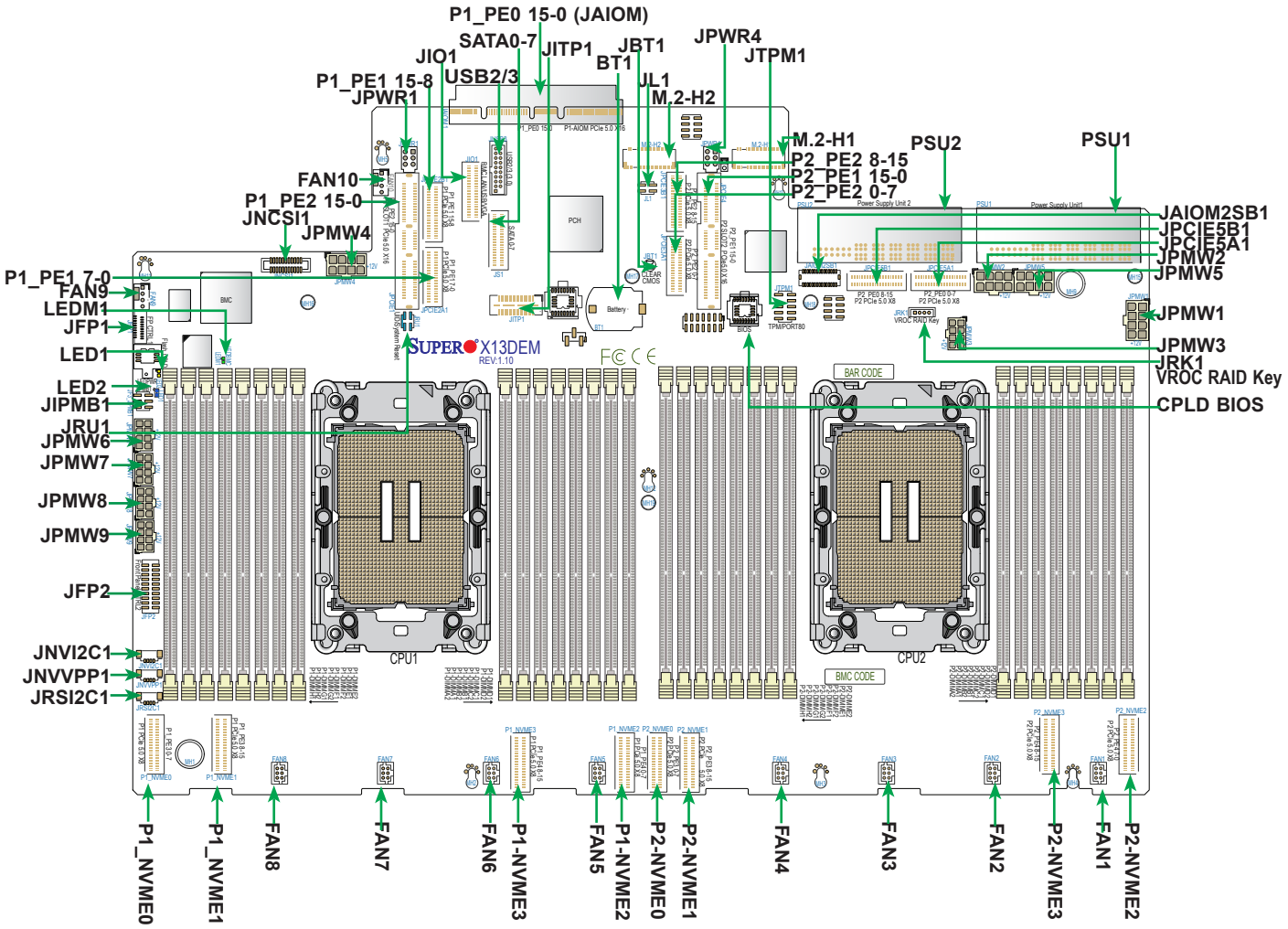


Figure 1-7. Motherboard Layout

Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	Open (Normal)
JRU1	UID LED/System Reset Jumper	Pins 1/2: UID LED (Default), Pins 3/4: System Reset

Connector	Description
Battery (BT1)	Onboard battery
BMCLAN/USB/VGA (JIO1)	Low-profile (LP) Slim SAS I/O connector used for dedicated BMC LAN/USB/VGA connections
FAN1-FAN8, FAN9/ FAN10	Eight 6-pin cooling fan headers (FAN1–FAN 8) and two 4-pin cooling fan headers (FAN9-FAN10)
JAIOM1 (P1_PE0 15-0)	Supermicro Advanced input/output Module (AIOM) PCIe 5.0 x16 connector for rear I/O support
JAIOM2SB1	Supermicro Advanced Input/Output Module (AIOM2) sideband connector
JFP1	Front Control Panel header with I²C
JPMW1 – JPMW9	8-pin power connectors 1–9
JPWR1 and JPWR4	6-pin power connectors
PS1/PS2	Power Supply Unit1/Power Supply Unit2 for system power use
JIPMB1 (JF3_JIPMB1)	6-pin BMC external I2C header
JL1	Chassis Intrusion header
JNCSI1	NC-SI (Network Controller Sideband Interface) connector
JNVI2C1	NVMe SMBus I2C header used for PCIe SMBus clock and data connections with hot-plug support.
JNVVPP1	NVMe VPP SMBus (System Management Bus) with hot-plug support
JRK1	Intel VROC key header for NVMe RAID support
JTPM1	Trusted Platform Module/Port 80 connector
JRSI2C1	Auxiliary I²C header used for PCIe cards to allow the BMC/BIOS to read drive or FRU (Field-Replaceable Unit) information effectively
M.2-H1/M.2-H2	PCIe 3.0 x2/SATA3 Hybrid M.2 slots (with support of M-Key 2280, and 22110)
MH1/MH9	Mounting holes for built-in thumbscrews used to attach the motherboard to the chassis
MH2/MH3/MH4/MH5/ MH10/MH11/MH12	Mounting holes for T-pins used to help lock the motherboard to the proper location in the chassis
MH15 – MH19	Mounting holes for standoffs used for heatsink support
P1_NVME 0-3	(P1) PCIe 5.0 x8 MCIO connectors supported by CPU1 with four NVMe connections (0/1/2/3)
P2_NVME 0-3	(P2) PCIe 5.0 x8 MCIO connectors supported by CPU2 with four NVMe connections (0/1/2/3)
P1_PE0 15-0 (JAIOM1)	PCIe 5.0 x16 AIOM (OCP3.0 compliant) slot supported by CPU1
P1_PE1 7-0 (JPCIE2A1)	(P1) PCIe 5.0 x8 MCIO connector supported by CPU1
P1_PE1 15-8 (JPCIE2B1)	(P1) PCIe 5.0 x8 MCIO connector supported by CPU1
P1_PE2 15-0 (JPCIE1)	(P1-SLOT1) PCIe 5.0 x16 slot supported by CPU1
P2_PE0 0-7 (JPCIE5A1)	(P2) PCIe 5.0 x8 MCIO connector supported by CPU2
P2_PE0 8-15 (JPCIE5B1)	(P2) PCIe 5.0 x8 MCIO connector supported by CPU2

Connector	Description
P2_PE1 15-0 (JPCIE4)	(P2-SLOT2) PCIe 5.0 x16 slot supported by CPU2
P2_PE2 0-7 (JPCIE3A1)	(P2) PCIe 5.0 x8 MCIO connector supported by CPU2
P2_PE2 8-15 (JPCIE3B1)	(P2) PCIe 5.0 x8 MCIO connector supported by CPU2
SATA 0-7 (JS1)	SlimSAS LP (MCIO) connector with support of eight Intel PCH SATA 3.0 connections (RAID 0, RAID 1, RAID 5, and RAID 10 supported)
USB2/3 (3.2) (JUSB3)	USB header with support for two USB 3.2 Gen1 ports (not used in this system)

LED	Description	State: Status
LED1 (UID-LED)	Unit Identifier (UID) LED	Solid Blue: Unit Identified
LED2 (LEDPWR)	Power LED	LED On: Onboard Power On
LEDBMC (LEDM1)	BMC Heartbeat LED	Blinking Green: BMC Normal (Active), Solid Green: (During BMC Reset or during a Cold Reboot)

Motherboard Block Diagram

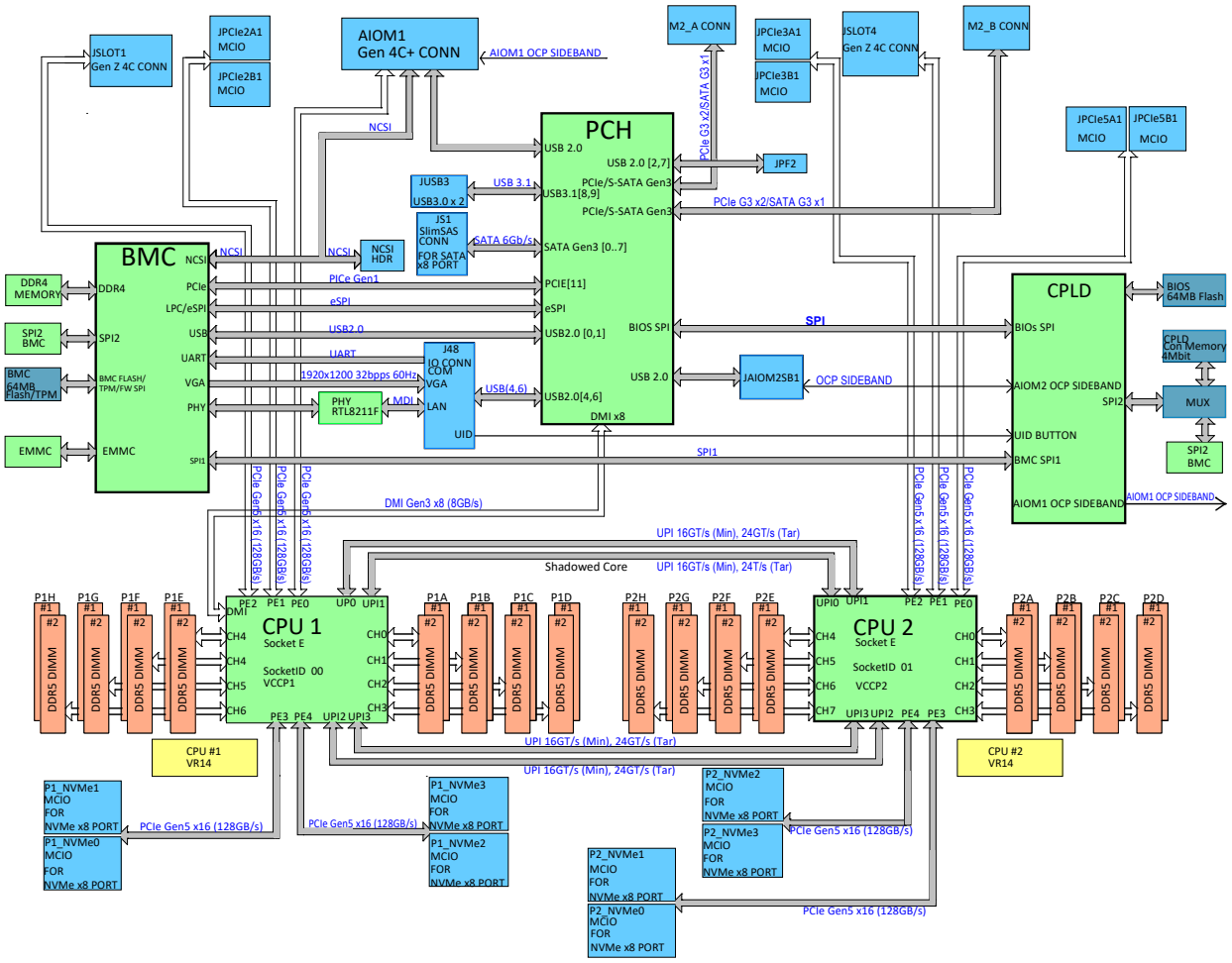


Figure 1-8. Motherboard Block Diagram

Chapter 2

Server Installation

This chapter provides advice and instructions for mounting your system in a server rack. If your system is not already fully integrated with processors, system memory, etc., refer to Chapter 3 for details on installing those specific components.

Important: Electrostatic Discharge (ESD) can damage electronic components. To prevent such damage to PCBs (printed circuit boards), it is important to use a grounded wrist strap, handle all PCBs by their edges and keep them in anti-static bags when not in use.

2.1 Unpacking the System

Inspect the box in which the system was shipped, and note if it was damaged in any way. If any equipment appears damaged, file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise, and electromagnetic fields are generated. It will also require a grounded AC power outlet nearby. Be sure to read the precautions and considerations noted or in Appendix A.

2.2 Preparing for Setup

The box in which the system was shipped should include the rackmount hardware needed to install it into the rack. Please read this section in its entirety before you begin the installation.

Choosing a Setup Location

- The system should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise, and electromagnetic fields are generated.
- Leave enough clearance in front of the rack so that you can open the front door completely (approximately 25 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.
- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).

- This product is not suitable for use with visual display workplace devices according to §2 of the German Ordinance for Work with Visual Display Units.

Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are extended to the floor so that the full weight of the rack rests on them.
- In single rack installations, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a server or other component from the rack.
- You should extend only one server or component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Appendix A.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components at the bottom of the rack first and then work your way up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow any drives and power supply modules to cool before touching them.
- When not servicing, always keep the front door of the rack and all covers/panels on the servers closed to maintain proper cooling.

Rack Mounting Considerations



Warning! Stability hazard. The rack may tip over causing serious personal injury. Before extending the rack to the installation position, read the installation instructions. Do not put any load on the slide-rail mounted equipment in the installation position. Do not leave the slide-rail mounted equipment in the installation position.



Avertissement! Danger d'instabilité. Le rack peut basculer et provoquer des blessures corporelles graves. Avant d'étendre le rack en position d'installation, lire les instructions d'installation. Ne pas charger l'équipement monté sur rail de glissière en position d'installation. Ne pas laisser l'équipement monté sur rail de glissière en position d'installation.

Important: To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- Slide rail mounted equipment is not to be used as a shelf or a work space.
- Do not pick up the server with the front handles. They are designed to pull the system from a rack only.

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the room's ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (TMRA).

Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

Particulate and Gaseous Contamination Limits

Data centers should meet the following requirements to maintain proper air quality.

Particulate Contamination Specifications

All sources of dust inside data centers should be reduced or eliminated. Dust having a deliquescent relative humidity of less than the maximum allowable relative humidity should be filtered out.

The cleanliness of data centers must adhere to ISO Standard 14644-1 Class 8 (ISO 2015) to be within 95% of the levels specified below:

- Each cubic meter of air should contain no more than 3,520,000 particles that are equal to or greater than 0.5 µm in diameter.
- Each cubic meter of air should contain no more than 832,000 particles that are equal to or greater than 1 µm in diameter.
- Each cubic meter of air should contain no more than 29,300 particles that are equal to or greater than 5 µm in diameter.

This level of cleanliness can generally be achieved by an appropriate filtration scheme, as outlined below:

- The room air should be continuously filtered with MERV 8 filters, as recommended by AHRI Standard 1360 (2017).
- The air entering the data center should be filtered with MERV 11 to MERV 13 filters.

Gaseous Contamination Specifications

The total gaseous contamination, i.e., copper and silver corrosion rates, should not exceed ANSI/ISA Standard 71.04-2013, severity level G1 (mild) as described below:

- A copper reactivity rate of less than 300 Å/month.
- A silver reactivity rate of less than 200 Å/month.

2.3 Installing the Rails

There are a variety of rack units on the market, which may require a slightly different assembly procedure. This rail set fits a rack between 26.8" and 36.4" deep.

The following is a basic guideline for installing the system into a rack with the rack mounting hardware provided. You should also refer to the installation instructions that came with the specific rack you are using.

Identifying the Rails

The chassis package includes two rail assemblies. Each assembly consists of three sections: An inner rail that secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis and labeled as such.

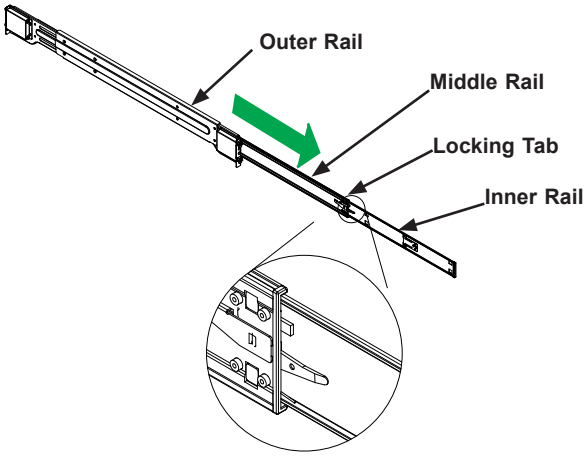


Figure 2-1. Identifying the Outer Rail, Middle Rail and Inner Rail
(Left Rail Assembly Shown)

Releasing the Inner Rail

Each inner rail has a locking latch. This latch prevents the server from coming completely out of the rack when when the chassis is pulled out for servicing.

To mount the rail onto the chassis, first release the inner rail from the outer rails.

1. Pull the inner rail out of the outer rail until it is fully extended as illustrated below.
2. Press the locking tab down to release the inner rail.
3. Pull the inner rail all the way out.

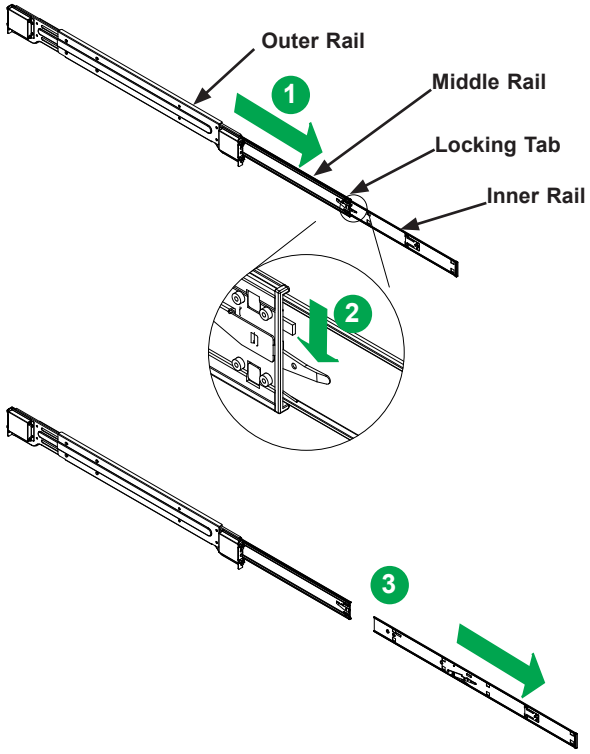


Figure 2-2. Extending and Releasing the Inner Rail

Installing the Inner Rails on the Chassis

Installing the Inner Rails

1. Identify the left and right inner rails. They are labeled.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis until the quick release bracket snaps into place, securing the rail to the chassis.
4. Optionally, you can further secure the inner rail to the chassis with screws.

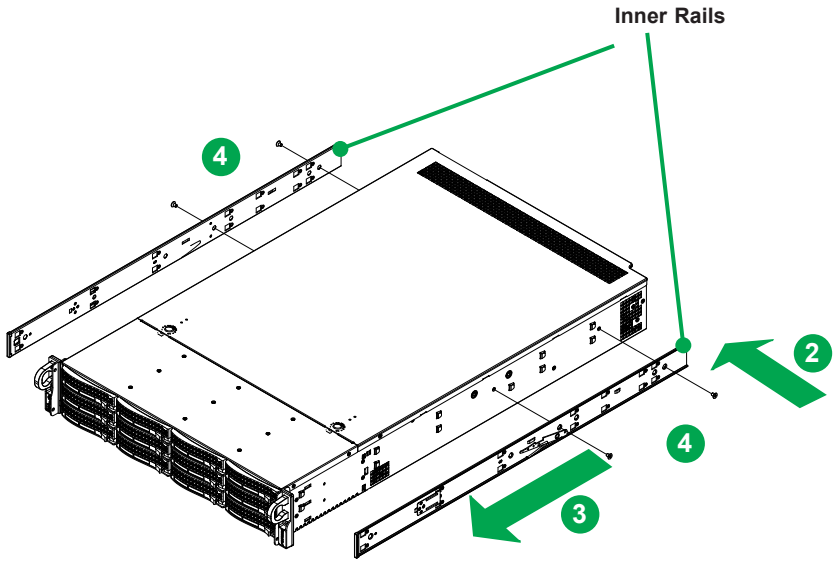


Figure 2-3. Installing the Inner Rails

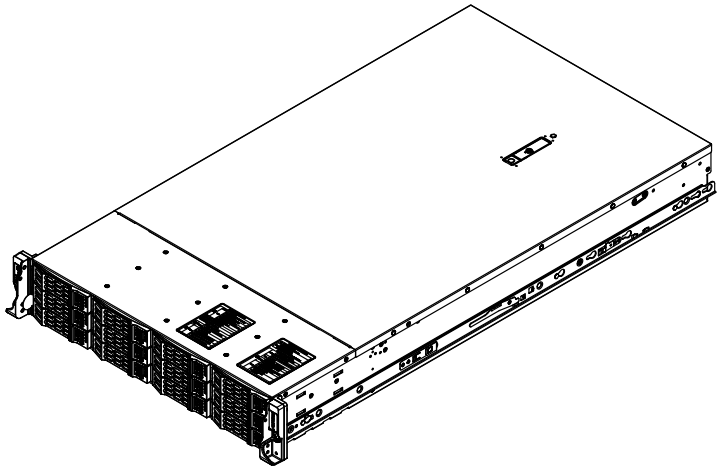


Figure 2-4. Inner Rails Installed on the Chassis

Installing the Outer Rails onto the Rack

Installing the Outer Rails

1. Press upward on the locking tab at the rear end of the middle rail.
2. Push the middle rail back into the outer rail.
3. Hang the hooks on the front of the outer rail onto the square holes on the front of the rack. If desired, use screws to secure the outer rails to the rack.
4. Pull out the rear of the outer rail, adjusting the length until it just fits within the posts of the rack.
5. Hang the hooks of the rear section of the outer rail onto the square holes on the rear of the rack. Take care that the proper holes are used so the rails are level. If desired, use screws to secure the rear of the outer rail to the rear of the rack.
6. Repeat for the other outer rail.

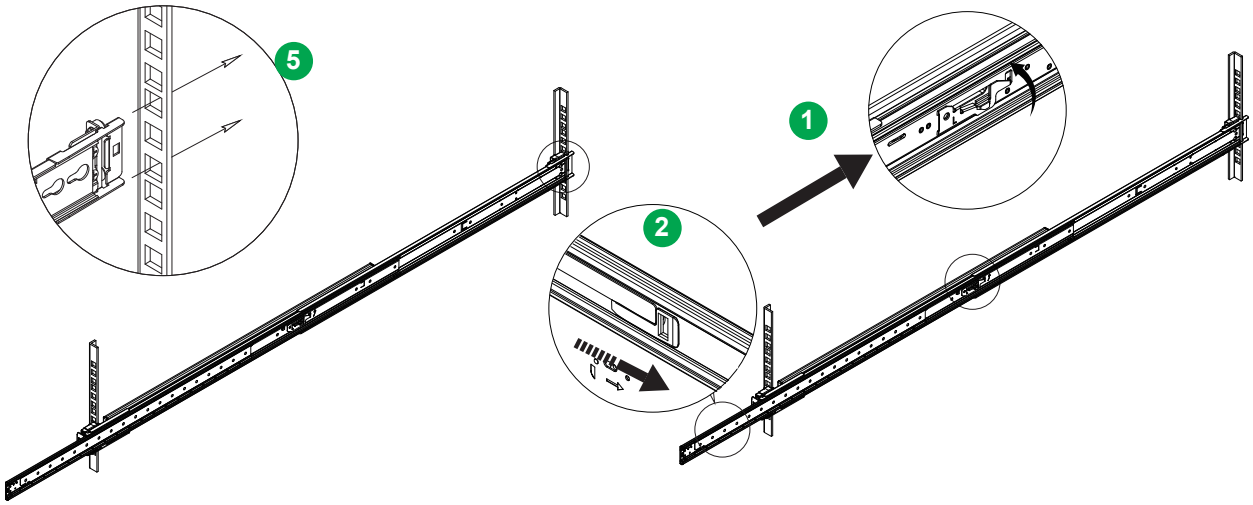


Figure 2-5. Installing the Outer Rails to the Rack

Note: The figure above is for illustrative purposes only. Always install servers at the bottom of the rack first.

Stability hazard. The rack stabilizing mechanism must be in place, or the rack must be bolted to the floor before you slide the unit out for servicing. Failure to stabilize the rack can cause the rack to tip over.

Warning: Do not pick up the server with the front handles. They are designed to pull the system from a rack only.

2.4 Installing the Chassis into a Rack

Once rails are attached to the chassis and the rack, you can install the server.

Warning: Mounting the system into the rack requires at least two people to support the chassis during installation. Please follow safety recommendations printed on the rails.

Installing the Chassis into a Rack

1. Extend the outer rails as illustrated.
2. Align the inner rails of the chassis with the outer rails on the rack.
3. Slide the inner rails into the outer rails, keeping the pressure even on both sides. When the chassis has been pushed completely into the rack, it should click into the locked position.
4. Optional screws may be used to hold the front of the chassis to the rack.

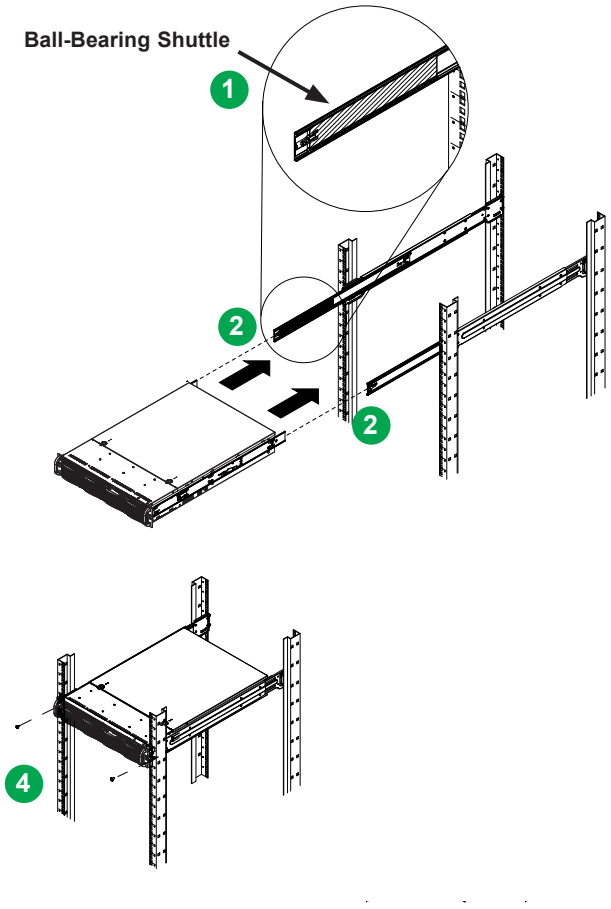


Figure 2-6. Installing the Server into the Rack

Note: Keep the ball bearing shuttle locked at the front of the middle rail during installation.

Note: Figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

Removing the Chassis from the Rack

Caution! It is dangerous for a single person to off-load the heavy chassis from the rack without assistance. Be sure to have sufficient assistance supporting the chassis when removing it from the rack. Use a lift.

1. If necessary, loosen the thumb screws on the front of the chassis that hold it in the rack.
2. Pull the chassis forward out the front of the rack until it stops.
3. Press the release latches on each of the inner rails downward simultaneously and continue to pull the chassis forward and out of the rack.

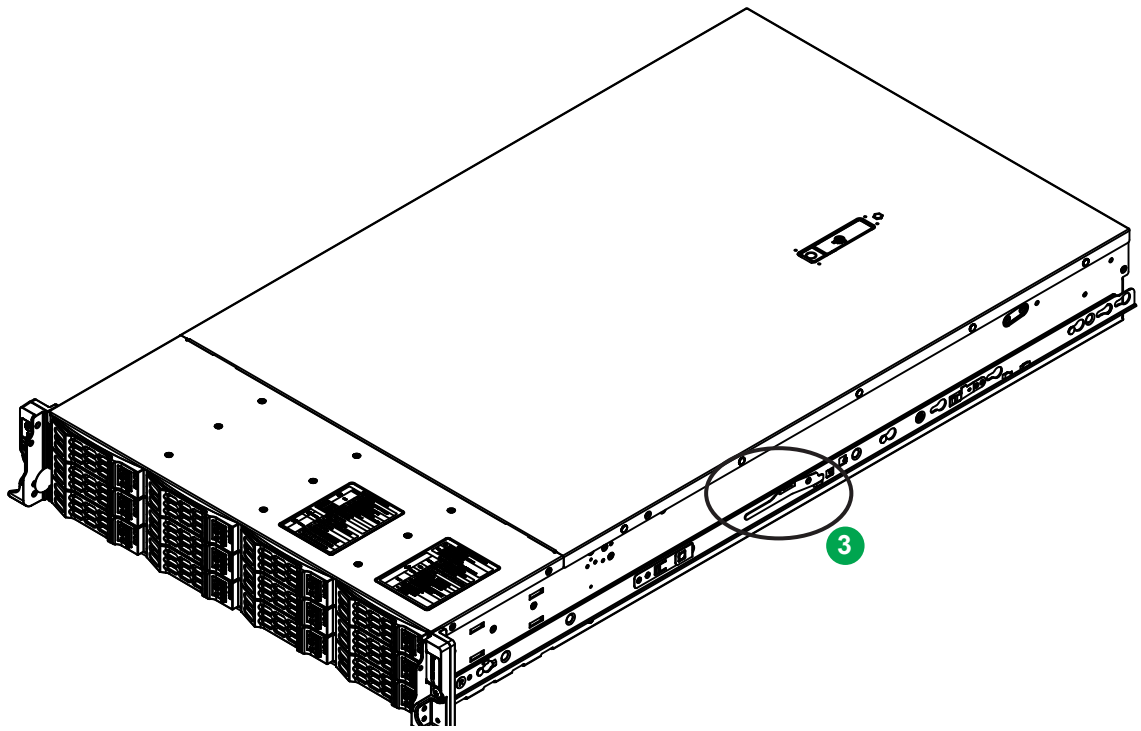


Figure 2-7. Removing the Chassis From the Rack

Chapter 3

Maintenance and Component Installation

This chapter provides instructions on installing and replacing main system components. To prevent compatibility issues, only use components that match the specifications and/or part numbers given.

Installation or replacement of most components require that power first be removed from the system. Please follow the procedures given in each section.

Caution: Electrostatic Discharge (ESD) can damage electronic components. To prevent such damage to printed circuit boards (PCBs), it is important to use a grounded wrist strap, handle all PCBs by their edges and keep them in anti-static bags when not in use.

3.1 Removing Power

Use the following procedure to ensure that power has been removed from the system. This step is necessary when removing or installing non hot-swap components or when replacing a non-redundant power supply.

1. Use the operating system to power down the system.
2. After the system has completely shut-down, disconnect the AC power cord(s) from the power strip or outlet. (If your system has more than one power supply, remove the AC power cords from all power supply modules.)
3. Disconnect the power cord(s) from the power supply module(s).

3.2 Accessing the System

A removable top cover allows access to the inside of the chassis.

Removing the Top Cover

1. Remove the two screws on each side of the cover, which secure the cover to the chassis. These two screws are optional and will not impact functionality if they are not installed.
2. Press the release button and slide the cover toward the rear.
3. Lift the top cover up.

Check that all ventilation openings on the top cover and the top of the chassis are clear and unobstructed.

Caution: Except for short periods of time, do not operate the server without the cover in place. The chassis cover must be in place to allow for proper airflow and to prevent overheating.

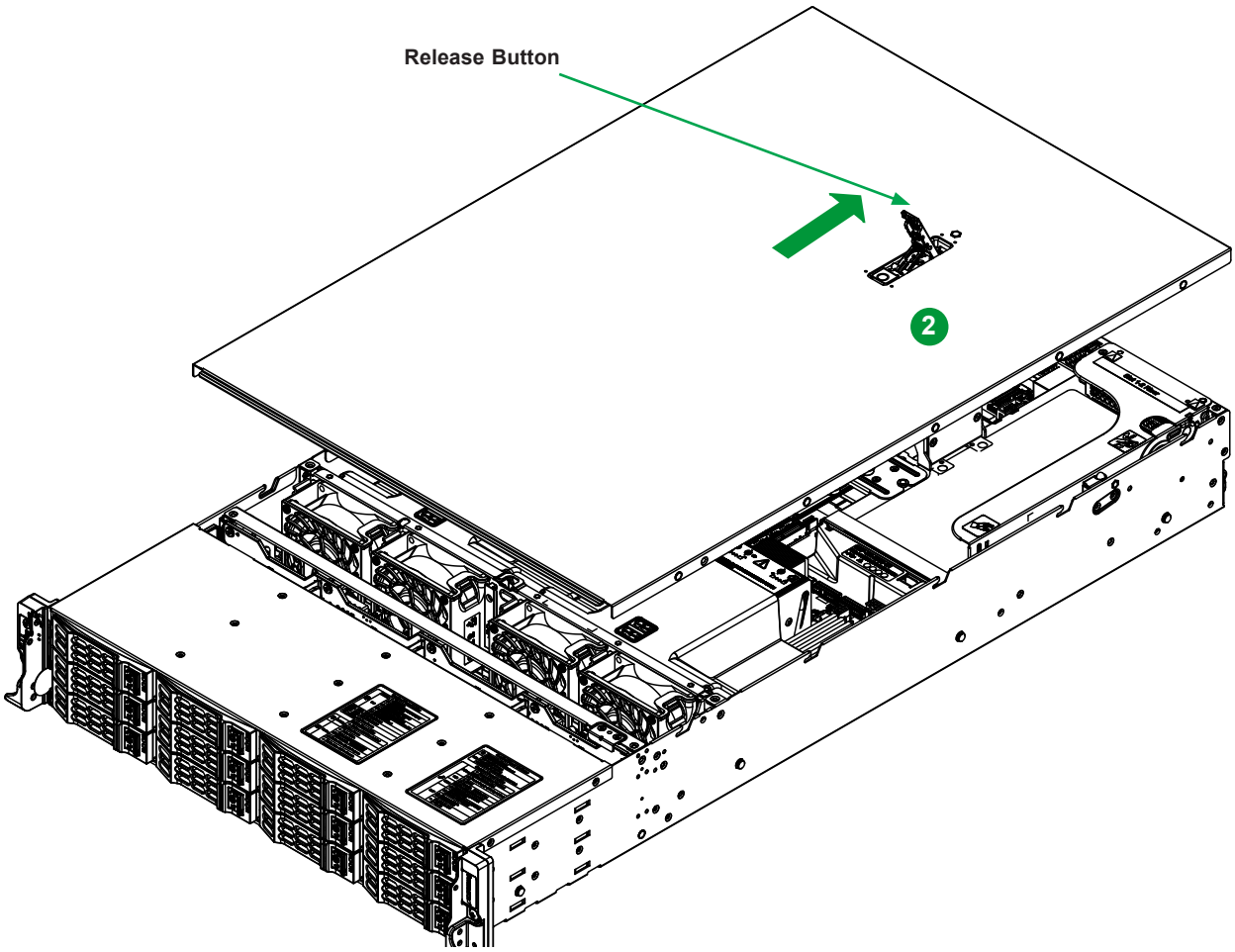
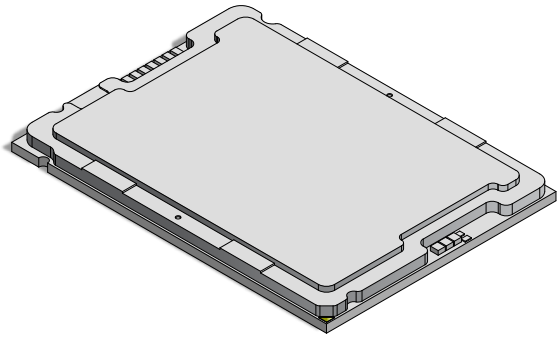


Figure 3-1. Removing the System Cover

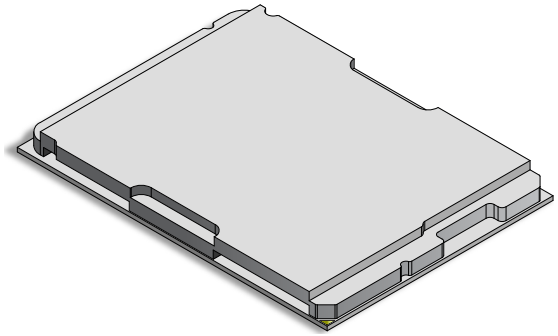
3.3 Processor and Heatsink

Processor Overview

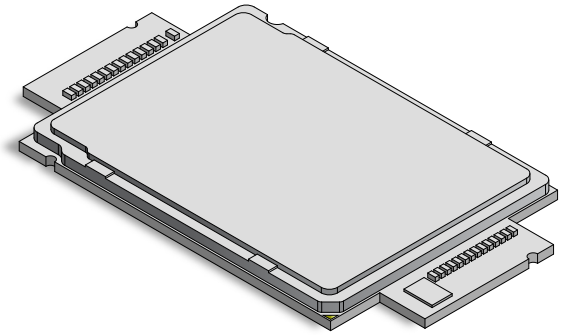
The motherboard supports three versions of the 4th and 5th Gen Intel Xeon Scalable processors. They differ in the number of cores, and each requires a different CPU carrier. The XCC version supports up to 60 cores, the MCC version supports up to 32 cores, and the Max Series for high bandwidth memory (HBM) version supports up to 56 cores. The CPU carriers differ by the presence or absence of shims and levers.



SP XCC



SP MCC



Max (HBM)

CPU and Carrier Type					
CPU Type	**Cores**	**Carrier Type**	**Lever**	**Shim**	**Carrier Part Number**
XCC	60	E1A	Yes	No	SKT-1333L-0000-FXC (alt: SKT-1333L-0001-LTS)
MCC	32	E1B	Yes	Yes	SKT-1424L-001B-FXC (alt: SKT-1424L-001B-LTS)
Max (HBM)	56	E1C	No	No	SKT-1425H-001C-FXC (alt: SKT-1425H-001C-LTS)

Installation Overview

The processor (CPU) and processor carrier should be assembled together first to form the processor carrier assembly. This will be attached to the heatsink to form the processor heatsink module (PHM) before being installed onto the CPU socket.

Notes:

- Use ESD protection.
- The sytem power cords must be removed from all power supplies.
- Check that the plastic protective cover is on the CPU socket and none of the socket pins are bent. If they are, contact your retailer.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or socket, which may require manufacturer repairs.
- Refer to the Supermicro website for updates on processor support.

Installation Procedure Overview

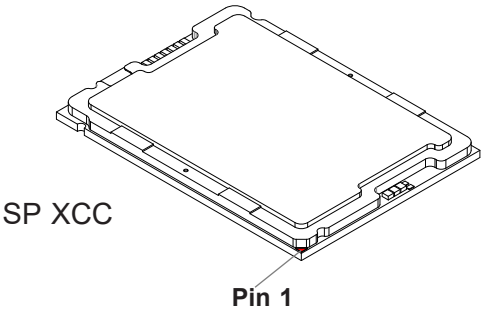
After preparing the system, and following ESD precautions, there are four steps to installing the processor and heatsink onto the motherboard.

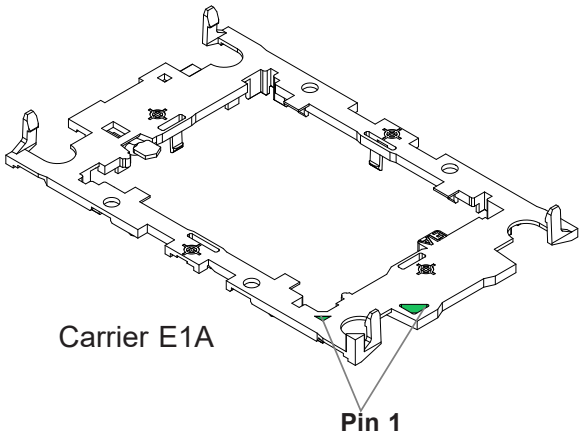
1. Attach the processor to a plastic carrier to create the processor carrier assembly.
2. Attach the processor carrier assembly to the heatsink to create the processor heatsink module (PHM).
3. Remove the socket cover.
4. Install the PHM.

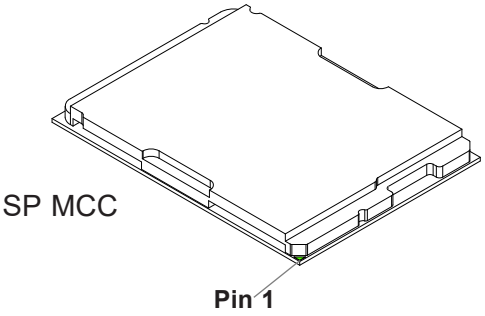
Create the Processor Carrier Assembly

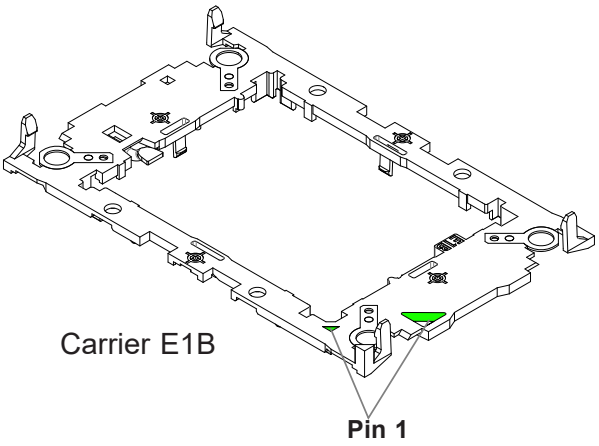
Assembling the Process Carrier Assembly

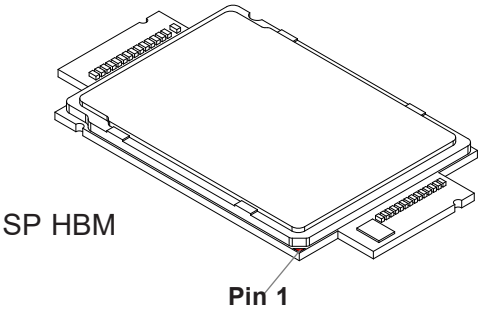
1. Hold the processor with the gold pins (LGA lands) facing down. Locate the gold triangle at the corner of the processor and the corresponding hollowed triangle on the processor carrier as shown below. These triangles indicate the location of pin 1.

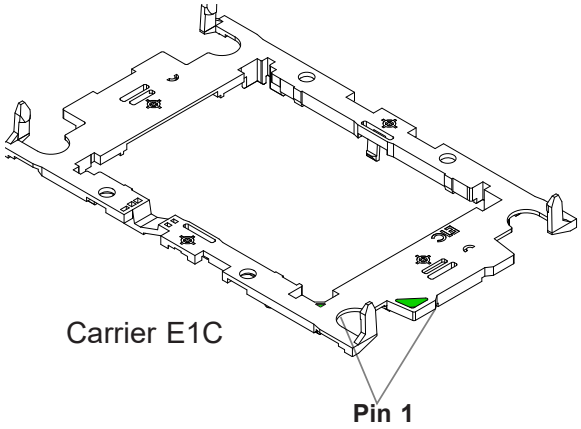






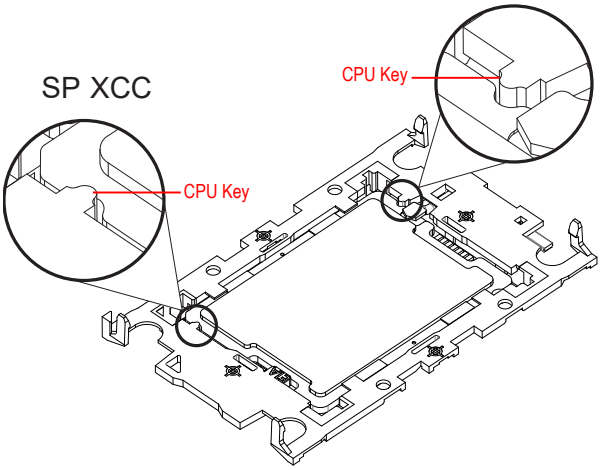


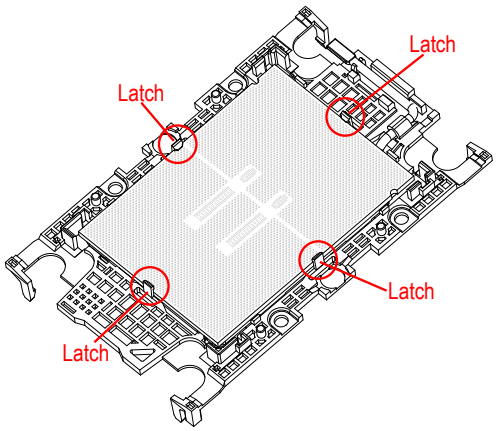




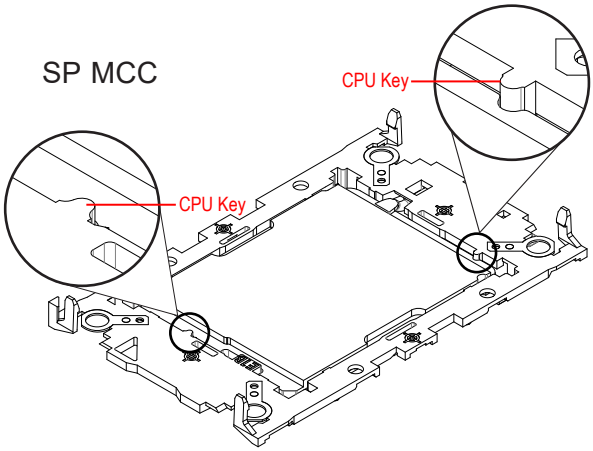
2. Turn the processor over (with the gold pins up). Locate the CPU keys on the processor and the four latches on the carrier.

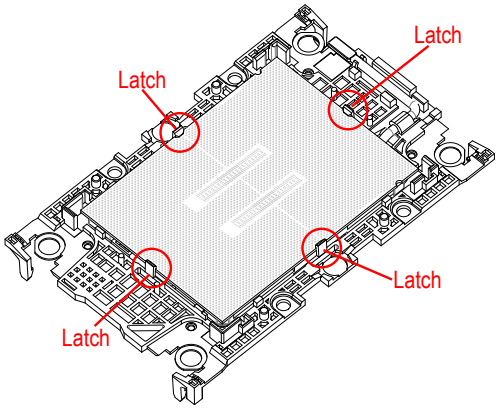
SP XCC



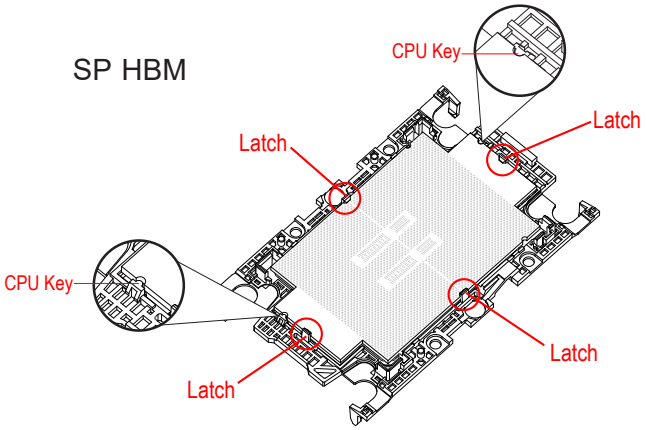


SP MCC

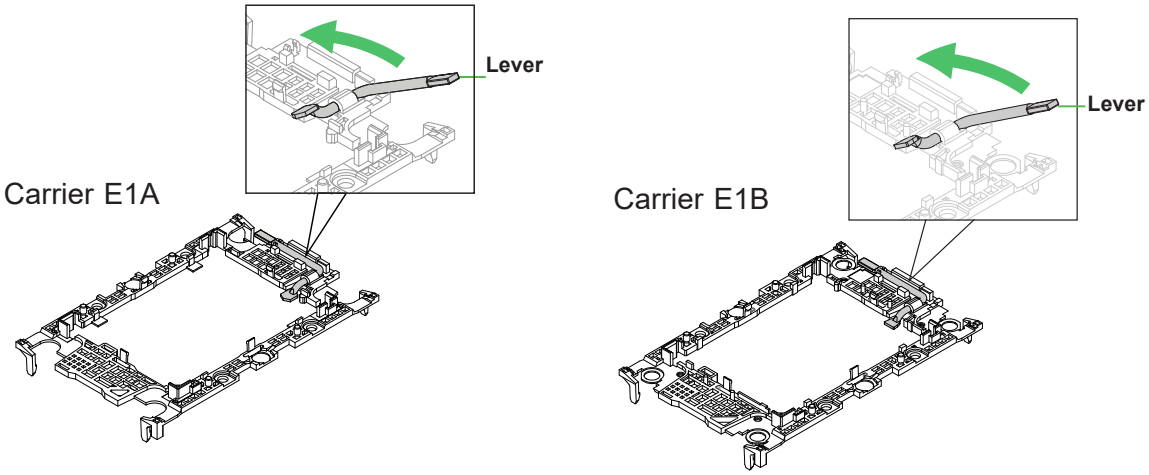




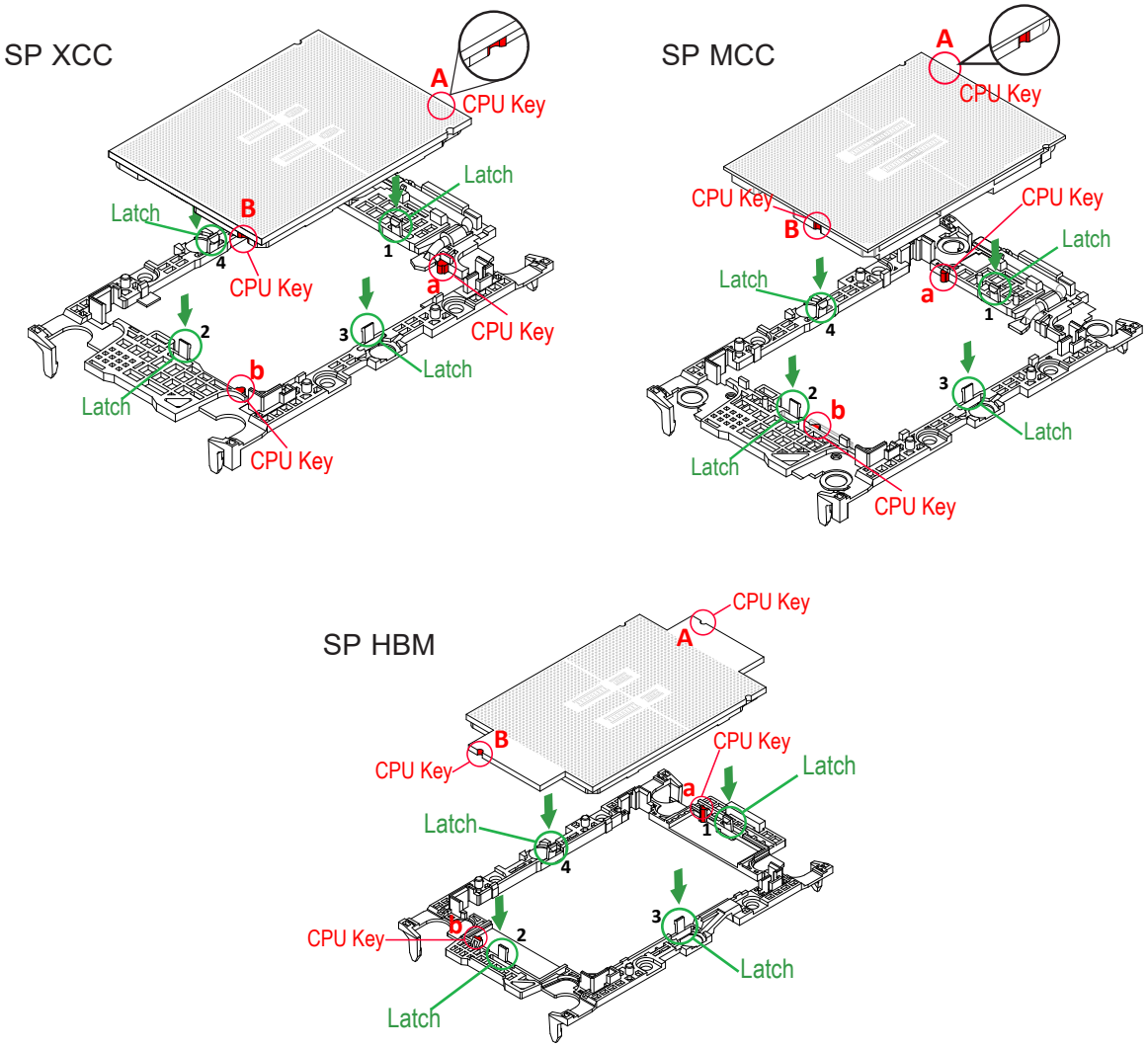
SP HBM



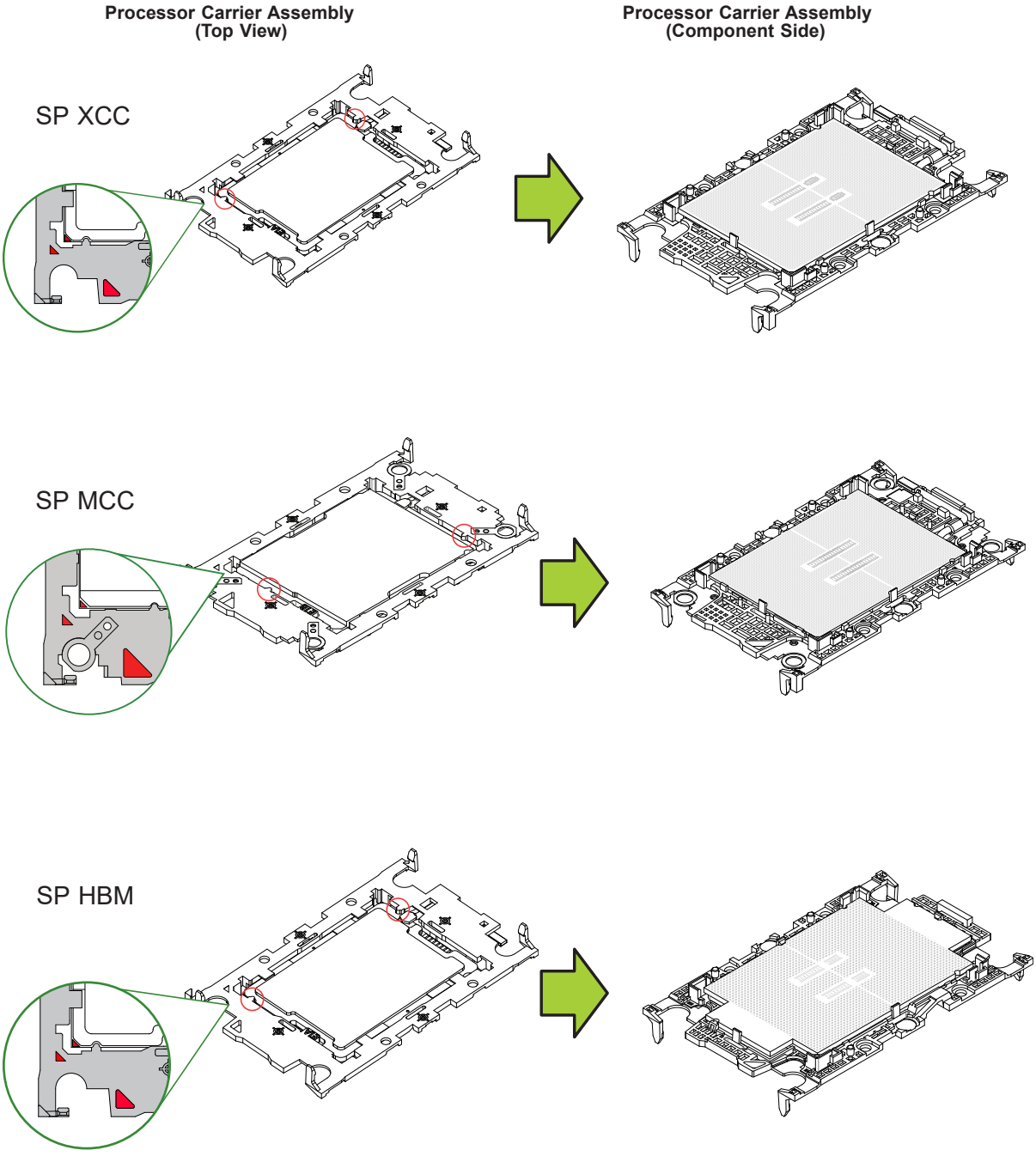
3. Locate the lever on the processor carrier and press it down (E1A and E1B only).



4. Using pin 1 as a guide, carefully align the CPU keys on the processor (A & B) with those on the carrier (a & b).



5. Once aligned, carefully insert the CPU into the carrier, making sure that the CPU is secured by latches 1, 2, 3, and 4.



Assemble the Processor Heatsink Module

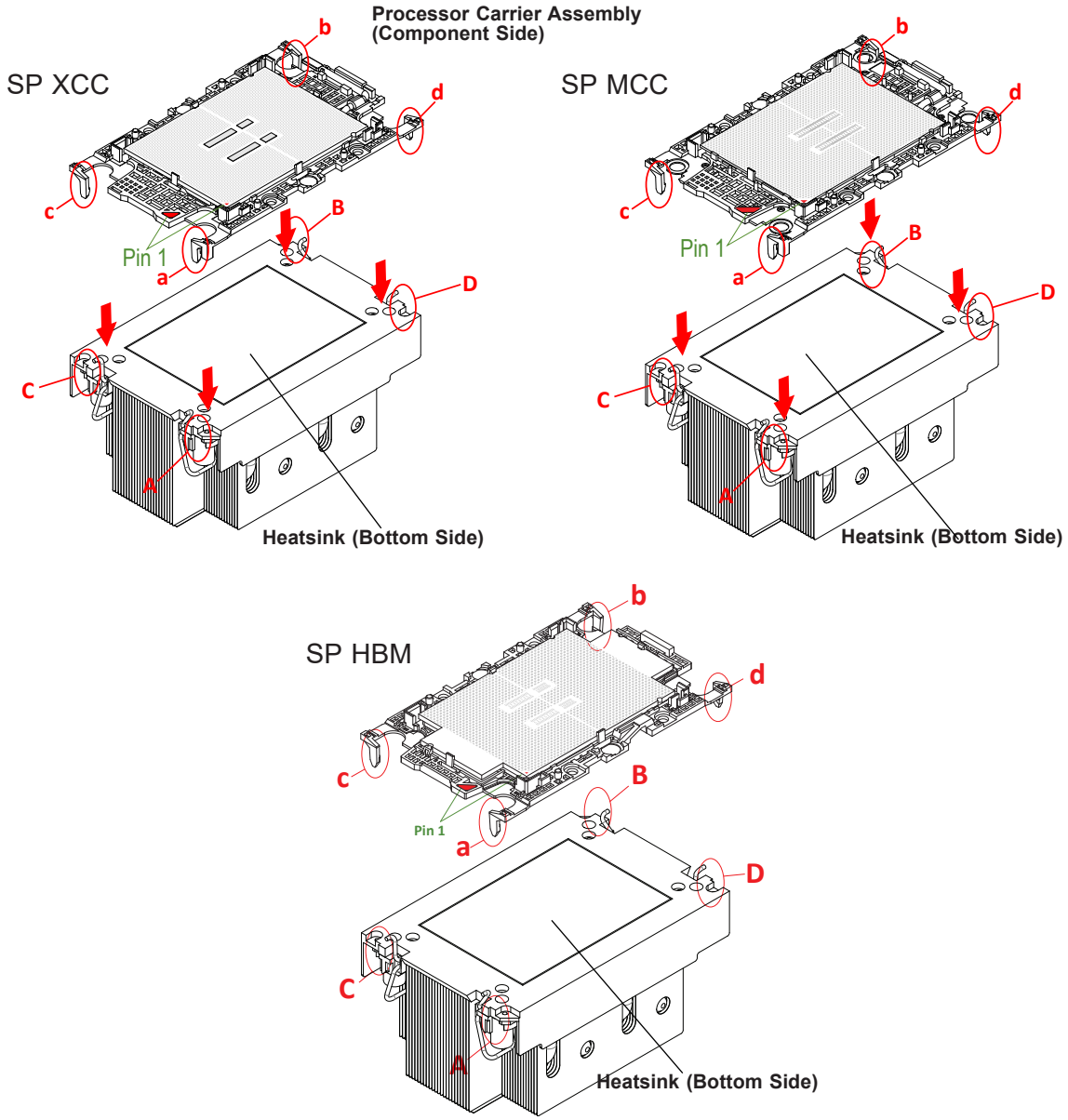
Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed. If this is a re-installation, apply the proper amount of thermal grease to the underside of the heatsink.

Assembling the Processor Heatsink Module (PHM)

1. Turn the heatsink over with the thermal grease facing up. Locate the two triangle cutouts (A, B) at the diagonal corners of the heatsink as shown in the drawing below.

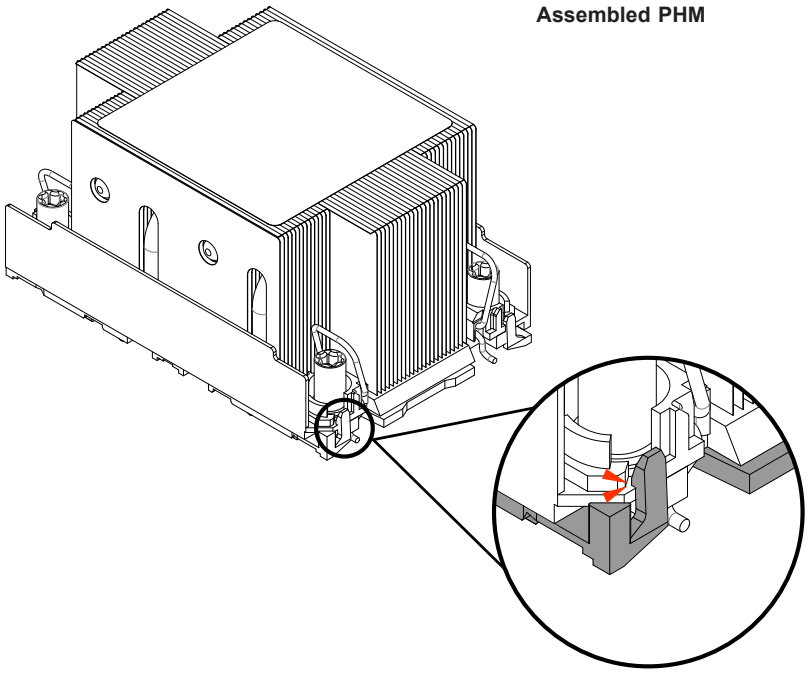
2. Hold the processor carrier assembly component side up to locate the triangles on the processor and the carrier, which indicate pin 1.

3. Turn the processor carrier assembly over so that the gold pins are facing up, noting the two pin 1 locations ("A" on the processor and "a" on the processor carrier assembly).



4. Align "a" on the processor carrier assembly with the triangular cutout "A" on the heatsink along with "b", "c", "d" on the processor assembly with "B", "C", "D" on the heatsink.

5. Once properly aligned, place the heatsink on the processor carrier assembly with all corners matched up, making sure that the four clips are properly securing the heatsink.

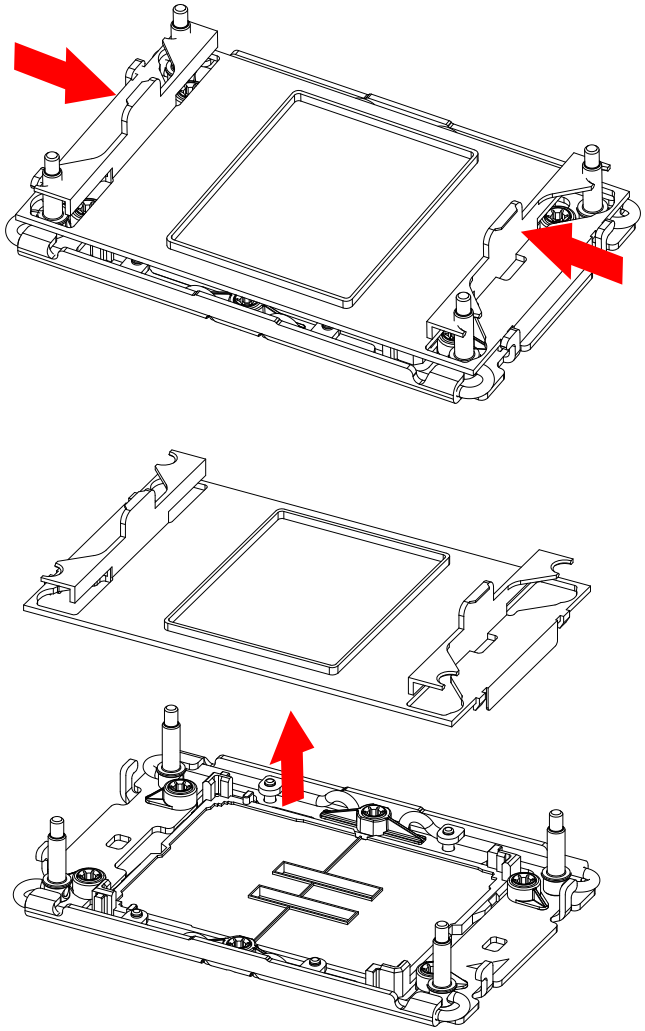


Note: The figure is for illustrative purposes. Your components may differ slightly from the components shown.

Remove the Socket Cover

Remove the plastic protective cover from the socket by gently squeezing the grip tabs and pulling the cover off.

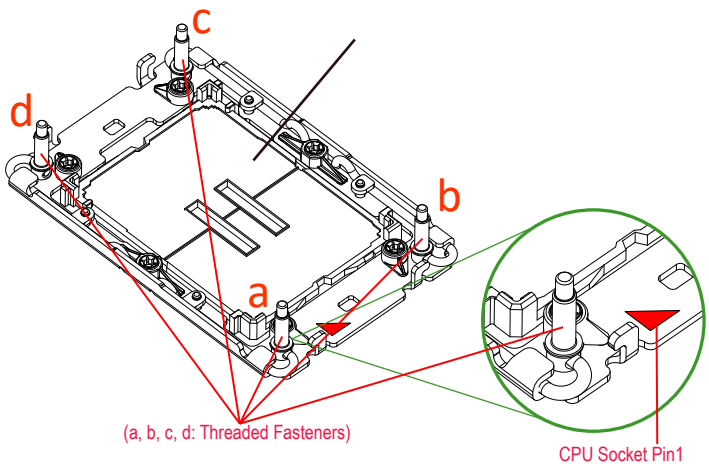
CPU Socket with Plastic Protective Cover



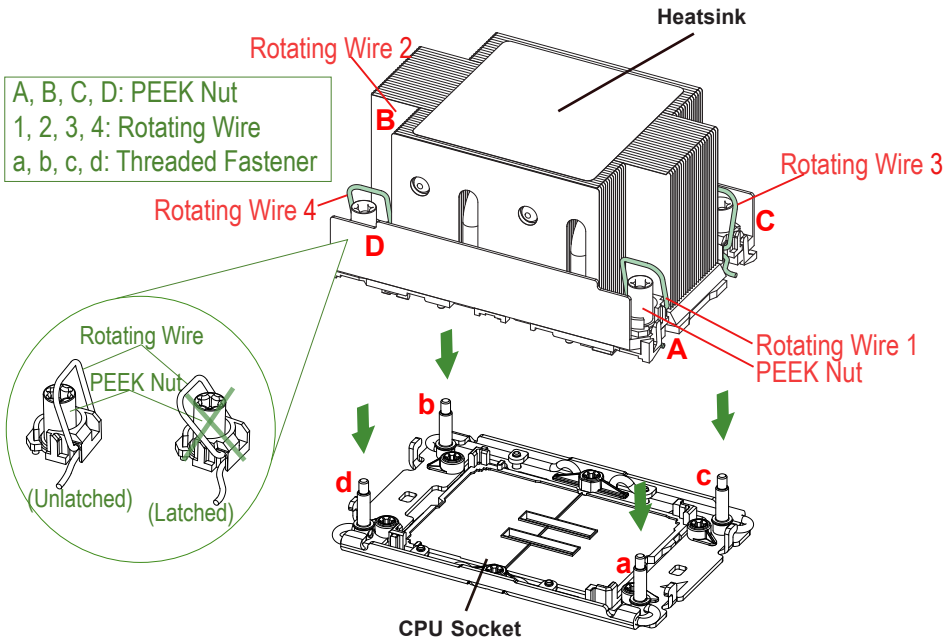
Install the PHM

To install the PHM into the CPU socket, follow these steps.

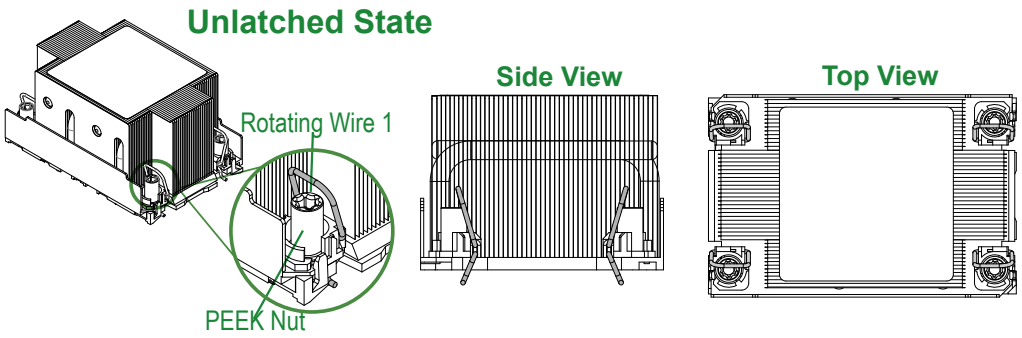
1. Locate four threaded fasteners (a, b, c, d) and Pin 1 on the CPU socket.



2. Locate four PEEK nuts (A, B, C, D) and four rotating wires (1, 2, 3, 4) on the heatsink.

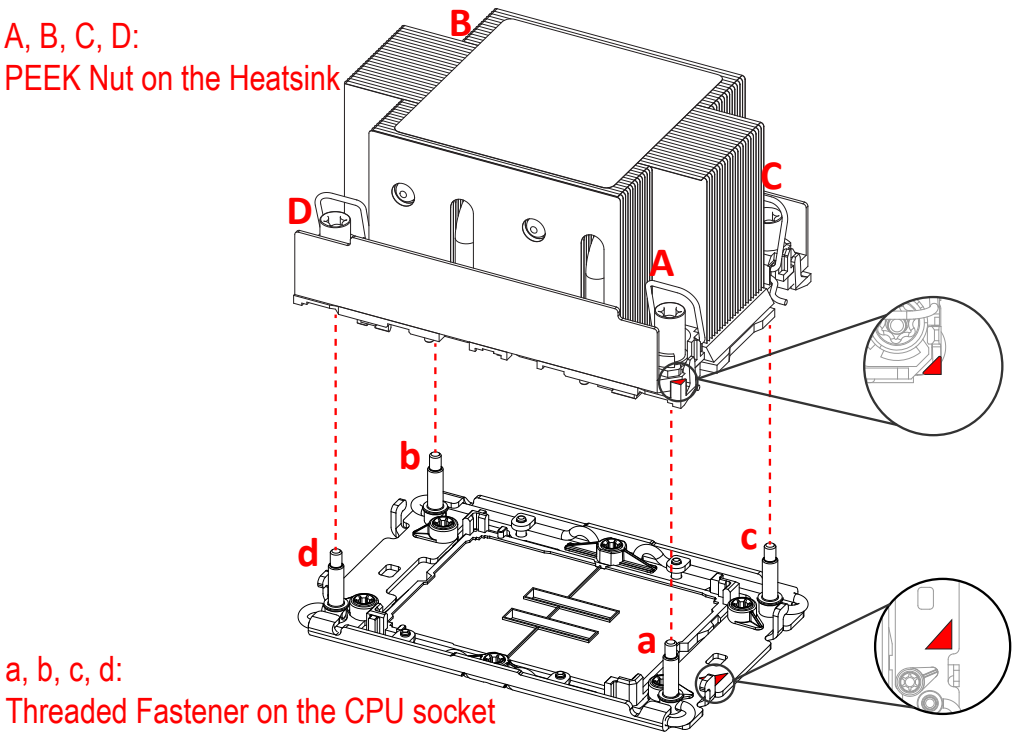


3. Check the rotating wires (1, 2, 3, 4) to make sure that they are in the unlatched position.

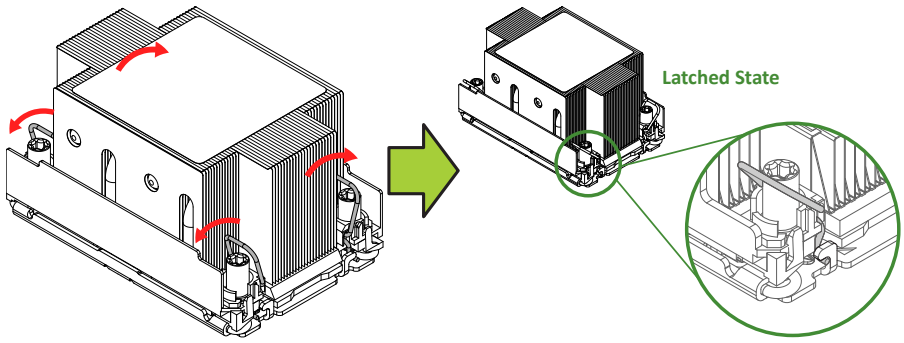


4. Align PEEK nut "A" (next to the trianglular pin 1 on the heatsink) with threaded fastener "a" on the CPU socket. Then align PEEK nuts "B", "C", "D" on the heatsink with threaded fasteners "b", "c", "d" on the CPU socket.

5. Once aligned, gently place the PHM on the CPU socket, making sure that each PEEK nut is properly attached to its corresponding threaded fastener.

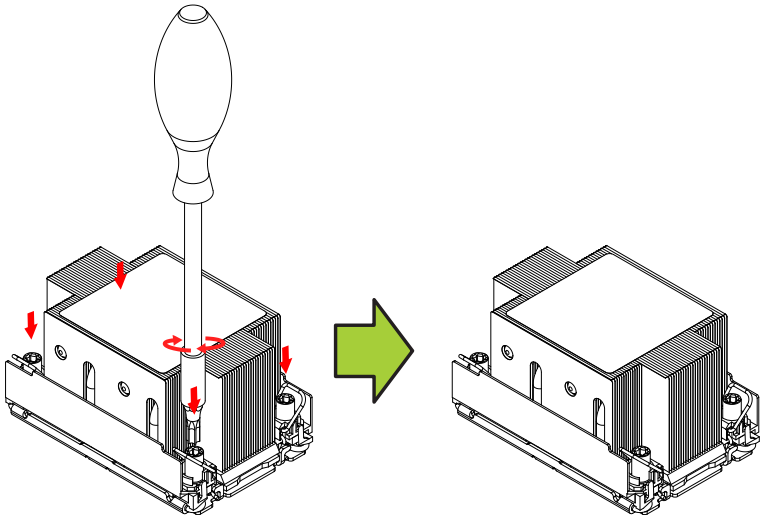


6. Press all four rotating wires outward and make sure that the heatsink is securely latched into the CPU socket.



7. With a t30-bit screwdriver, tighten all PEEK nuts in the sequence of "A", "B", "C", and "D" with even pressure. Note the torque specifications written on the heatsink, and do not exceed them when tightening the screws.

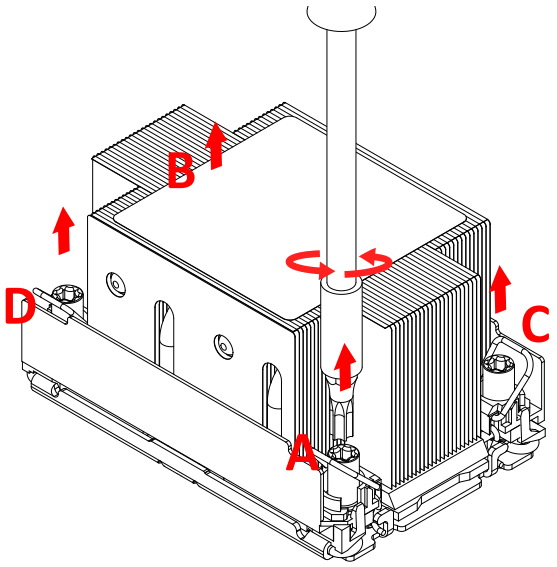
8. Examine all corners of the heatsink to ensure that the PHM is firmly attached to the CPU socket.



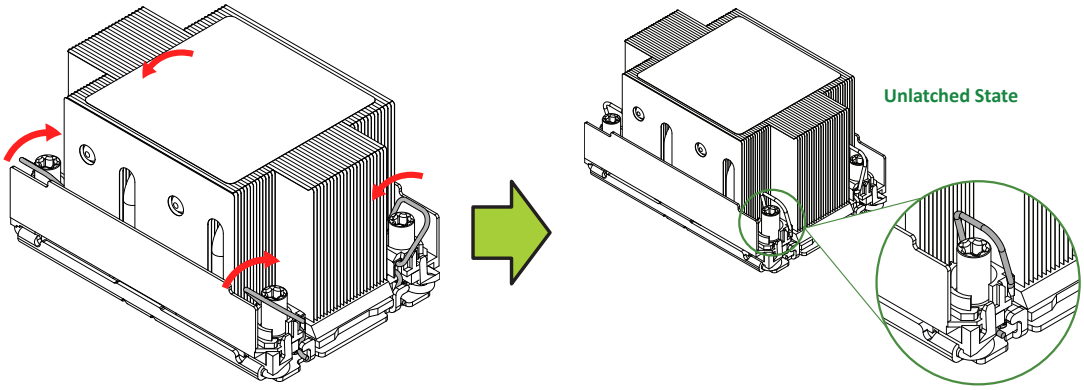
Removing the PHM

To remove the processor heatsink module (PHM) from the motherboard, follow these steps.

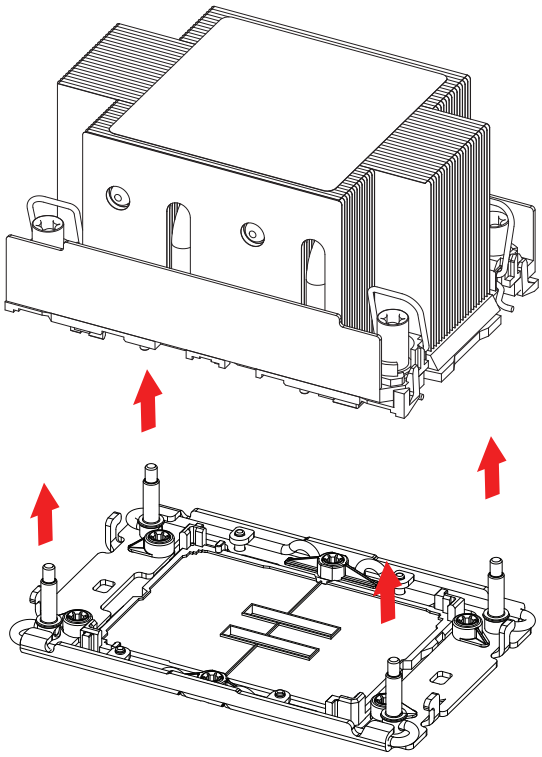
1. Shut down the system and unplug the AC power cord from all power supplies.
2. Use a T30-bit screwdriver to loosen the four PEEK nuts on the heatsink in the sequence of A, B, C, and D.



3. Press the rotating wires inward to unlatch the PHM from the socket as shown below.



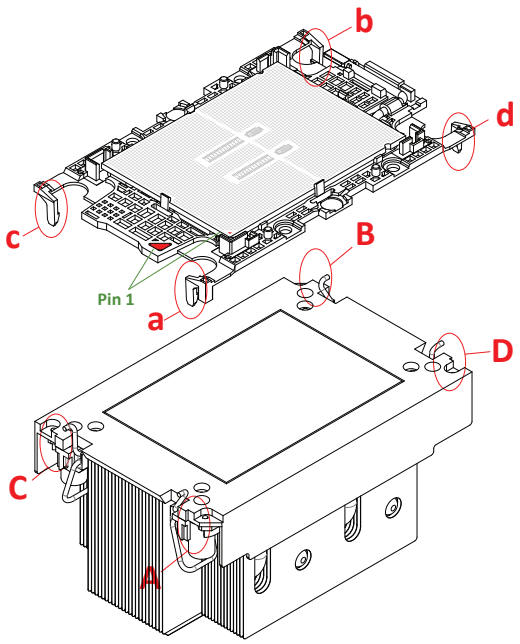
4. Gently lift the PHM upward to remove it from the CPU socket.



Removing the Carrier Assembly from the Heatsink

To remove the processor carrier assembly from the PHM, follow these steps:

1. Detach the four plastic clips (marked a, b, c, d) on the processor carrier assembly from the four corners of the heatsink (marked A, B, C, D) as shown below.

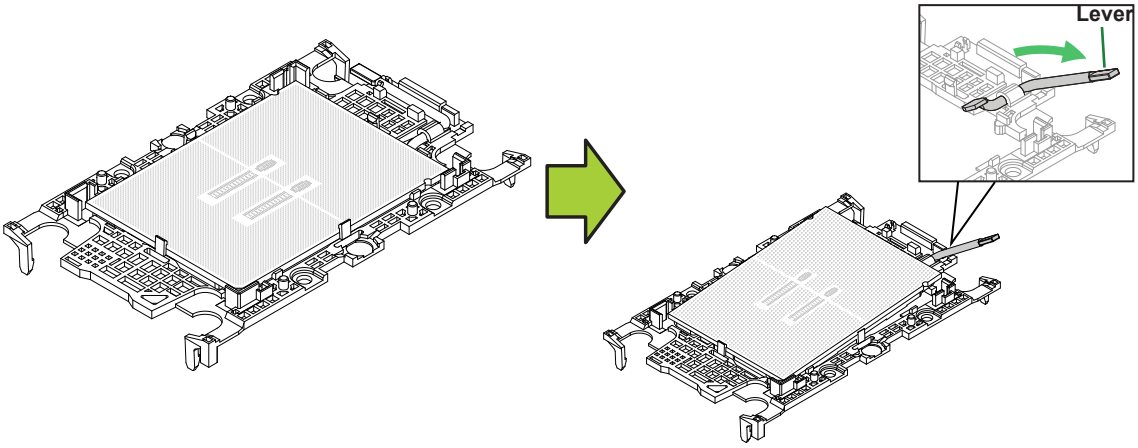


2. When all plastic clips have been detached from the heatsink, remove the processor carrier assembly from the heatsink

Removing the Processor from the Carrier Assembly

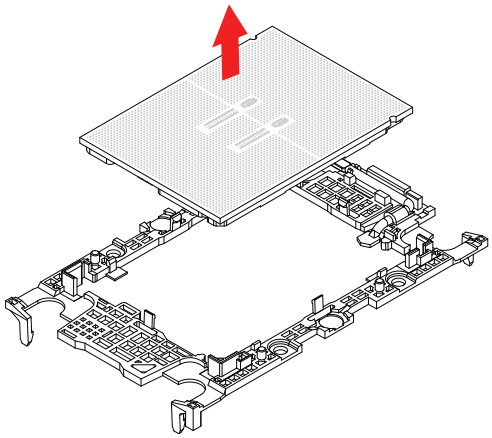
To remove the processor from the processor carrier, follow these steps.

1. Unlock the lever from its locked position and push it upwards to disengage the processor from the processor carrier as shown below right.



2. Once the processor has been loosened from the carrier, carefully remove the processor from the carrier.

Note: Handle the processor with care.



3.4 Memory

Memory Support

The X13DEM supports up to 8 TB 3DS RDIMM/RDIMM DDR5 (288-pin) ECC memory in 32 DIMM slots. For validated memory, use our Product Resources page.

DDR5 Memory Support for the 4th Gen Scalable Processors-SP					
Type	Ranks Per DIMM and Data Width (Stack)	DIMM Capacity (GB)		Speed (MT/s)	
				One DIMM per Channel [1]	Two DIMMs per Channel
		Memory Density 16 Gb	Memory Density 24 Gb[2]	1.1 Volts	
RDIMM	SRx8 (RC D)	16 GB	24 GB	4800*	4400*
	SRx4 (RC C)	32 GB	48 GB		
	SRx4 (RC F) 9x4	32 GB	NA		
	DRx8 (RC E)	32 GB	48 GB		
	DRx4 (RC A)	64 GB	96 GB		
	DRx4 (RC B) 9x4	64 GB	NA		
RDIMM 3DS	(4R/8R) x4 (RC A)	2H-128 GB 4H-256 GB	NA		

*Memory speed and capacity support depends on the processors used in the system.

Note 1: 1DPC applies to 1SPC or 2SPC implementations (SPC - sockets per channel).

Note 2: 24 Gb XCC only with limited configs: 1DPC all DIMM types, 2DPC 96GB only. Only 8 and 16 DIMM configs, no failbacks.

DDR5 Memory Support for the 5th Gen Scalable Processors-SP					
Type	Ranks Per DIMM and Data Width (Stack)	DIMM Capacity (GB)		Speed (MT/s)	
				One DIMM per Channel [1]	Two DIMMs per Channel
		Memory Density 16 Gb	Memory Density 24 Gb[2]	1.1 Volts	
RDIMM	SRx8 (RC D)	16 GB	24 GB	5600*	4400*
	SRx4 (RC C)	32 GB	48 GB		
	SRx4 (RC F) 9x4	NA	NA		
	DRx8 (RC E)	32 GB	48 GB		
	DRx4 (RC A)	64 GB	96 GB		
	DRx4 (RC B) 9x4	NA	NA		
RDIMM 3DS	(4R/8R) x4 (RC A)	2H-128 GB 4H-256 GB	NA		

*Memory speed and capacity support depends on the processors used in the system.

Note 1: 1DPC applies to 1SPC or 2SPC implementations (SPC - sockets per channel).

Note 2: 24 Gb XCC only with limited configs: 1DPC all DIMM types, 2DPC 96GB only. Only 8 and 16 DIMM configs, no failbacks.

Note 3: Memory speed will be 5600MT/s 1DPC or 4400MT/s 2DPC.

Note 4: For 1DPC 5600MT/s speed, DDR5-5600 DIMMs are required

Note 5: Mixing DRAM density (16 Gb/24 Gb) and/or frequency is not allowed.

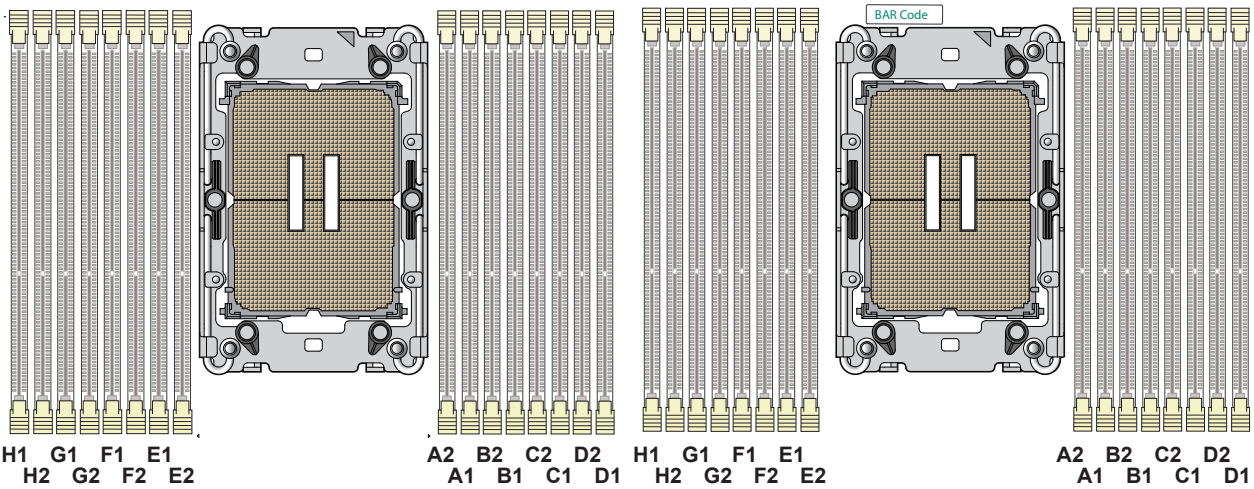


Figure 3-2. Memory Slots

XCC and MCC CPUs

Use the DIMM slots listed below for memory modules. This memory population table is based on guidelines provided by Intel to support Supermicro motherboards.

Memory Population for the X13 DP Motherboard, 32 DIMM Slots	
CPUs/DIMMs	**DIMM Slots**
1 CPU & 1 DIMM	A1 or B1 or E1 or F1
1 CPU & 2 DIMMs	A1, G1 or C1, E1
1 CPU & 4 DIMMs	A1, C1, E1, G1
1 CPU & 6 DIMM	A1, C1, D1, E1, F1, G1 or A1, B1, C1, E1, G1, H1 or B1, C1, D1, E1, F1, H1 or A1, B1, D1, F1, G1, H1
1 CPU & 8 DIMMs	A1, B1, C1, D1, E1, F1, G1, H1
1 CPU & 12 DIMMs	A1, A2, B1, C1, C2, D1, E1, E2, F1, G1, G2, H1 or A1, B1, B2, C1, D1, D2, E1, F1, F2, G1, H1, H2
1 CPU & 16 DIMMs	A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2
2 CPUs & 2 DIMMs	CPU1 A1, and CPU2: A1 or CPU1 B1, and CPU2: B1 or CPU1 E1, and CPU2: E1 or CPU1 F1, and CPU2: F1
2 CPUs & 4 DIMMs	CPU1 A1, G1 and CPU2: A1, G1 or CPU1 C1, E1 and CPU2: C1, E1
2 CPUs & 8 DIMMs	CPU1: A1, C1, E1, G1, and CPU2: A1, C1, E1, G1
2 CPUs & 10 DIMMs	CPU1: A1, C1, D1, E1, F1, G1, and CPU2: A1, C1, E1, G1
2 CPUs & 12 DIMMs	CPU1: A1, C1, D1, E1, F1, G1 and CPU2: A1, C1, D1, E1, F1, G1 or CPU1: A1, B1, C1, E1, G1, H1 and CPU2: A1, B1, C1, E1, G1, H1 or CPU1: B1, C1, D1, E1, F1, H1 and CPU2: B1, C1, D1, E1, F1, H1 or CPU1: A1, B1, D1, F1, G1, H1 and CPU2: A1, B1, D1, F1, G1, H1
2 CPUs & 16 DIMMs	CPU1: A1, B1, C1. D1, E1, F1, G1, H1, and CPU2: A1, B1, C1. D1, E1, F1, G1, H1
2 CPUs & 22 DIMMs	CPU1: A1, A2, B1, B2, C1. C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2 CPU2: A1, C1. D1, E1, F1, G1
2 CPUs & 24 DIMMs	CPU1: A1, A2, B1, B2, C1. C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2 CPU2: A1, B1, C1. D1, E1, F1, G1, H1
2 CPUs & 32 DIMMs	CPU1: A1, A2, B1, B2, C1. C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2 CPU2: A1, A2, B1, B2, C1. C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2

Max Series CPUs

Memory Population, 32 DIMM Slots, Max Series CPUs	
CPUs/DIMMs	**Slots**
1 CPU & 1 DIMM	A1 or E1
1 CPU & 2 DIMMs	A1, G1 or C1, E1
1 CPU & 4 DIMMs	A1, C1, E1, G1
1 CPU & 8 DIMMs	A1, B1, C1, D1, E1, F1, G1, H1
1 CPU & 16 DIMMs	A1, A2, B1, B2, C1, C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2
2 CPUs & 2 DIMMs	CPU1: A1; CPU2: A1 or CPU1: E1; CPU2: E1
2 CPUs & 4 DIMMs	CPU1: A1, G1; CPU2: A1, G1 or CPU1: C1, E1; CPU2: C1, E1
2 CPUs & 8 DIMMs	CPU1: A1, C1, E1, G1 CPU2: A1, C1, E1, G1
2 CPUs & 16 DIMMs	CPU1: A1, B1, C1. D1, E1, F1, G1, H1 CPU2: A1, B1, C1. D1, E1, F1, G1, H1
2 CPUs & 32 DIMMs	CPU1: A1, A2, B1, B2, C1. C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2 CPU2: A1, A2, B1, B2, C1. C2, D1, D2, E1, E2, F1, F2, G1, G2, H1, H2

Notes:

- Max Series (HBM) CPU supports 1DPC (4800MT/s) / 2DPC (4400MT/s) to optimize the memory bandwidth. Max Series (HBM) CPU supports 1, 2, 4, 8, or 16 DIMMs in Flat Mode as well as Cache Mode, and 0 DIMMs in HBM-Only mode. HBM-Only mode runs exclusively using HBM memory.
- SPR+HBM supports 4, 8, or 16 DIMMs in all modes (Flat / Cached and Quadrant / SNC4)

  4 DIMMs -> populate 1 DIMM/iMC
  8 DIMMs -> populate 1 DIMM/Channel, 2 DIMM/iMC
  16 DIMMs -> populate 1 DIMM/Channel, 4 DIMM/iMC

- All other configurations not listed above are not supported.
- For 2S design, each socket has to be populated identically.

Memory Population Guidelines

- All DIMMs must be DDR5.
- Balanced memory. Using unbalanced memory topology, such as populating two DIMMs in one channel while populating one DIMM in another channel, reduces performance. It is not recommended for Supermicro systems.
- In single-CPU configurations, memory must be installed in the DIMM slots associated with the installed CPU.
- For MM, NM/FM ratio is between 1:4 and 1:16. The capacity not used for FM can be used for AD. (NM = Near Memory; FM = Far Memory).

Guidelines Regarding Mixing DIMMs

- Populating slots with a pair of DIMM modules of the same type and size results in interleaved memory, which improves memory performance.
- Use memory modules of the same type and speed, as mixing is not allowed.
- x4 and x8 DIMMs can be mixed in the same channel.

DIMM Construction

- RDIMM (*non-3DS*) Raw Cards: A/B (2Rx4), C (1Rx4), D (1Rx8), E (2Rx8)
- 3DS RDIMM Raw Cards: A/B (4Rx4)
- LRDIMM (*non-3DS*) Raw Cards: D/E (4Rx4)
- 3DS LRDIMM Raw Cards: A/B (8Rx4)

Installing Memory

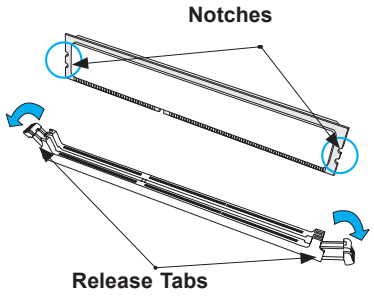
Electrostatic Discharge (ESD) can damage electronic components including memory modules. To avoid damaging DIMM modules, it is important to handle them carefully. The following measures are generally sufficient.

- Use a grounded wrist strap designed to prevent static discharge.
- Handle the memory module by its edges only.
- Put the memory modules into the antistatic bags when not in use.

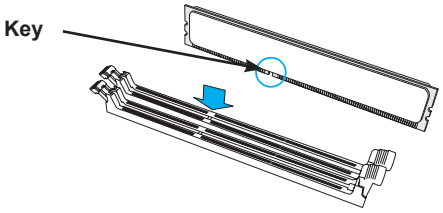
Installing Memory

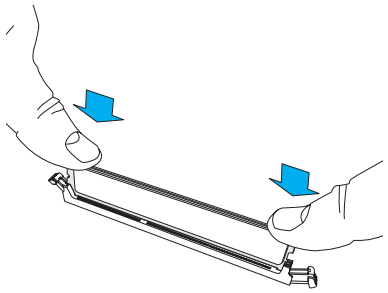
Begin by removing power from the system as described in Section 3.1. Follow the memory population sequence in the table above.

1. Push the release tabs outwards on both ends of the DIMM slot to unlock it.



2. Align the key of the DIMM with the receptive point on the memory slot and with your thumbs on both ends of the module, press it straight down into the slot until the module snaps into place.





3. Press the release tabs to the locked position to secure the DIMM module into the slot.

Caution: Exercise extreme caution when installing or removing memory modules to prevent damage to the DIMMs or slots.

Removing Memory

To remove a DIMM, unlock the release tabs then pull the DIMM from the memory slot.

3.5 Motherboard Battery

The motherboard uses non-volatile memory to retain system information when system power is removed. This memory is powered by a lithium battery residing on the motherboard.

Replacing the Battery

Begin by removing power from the system.

1. Push aside the small clamp that covers the edge of the battery. When the battery is released, lift it out of the holder.
2. To insert a new battery, slide one edge under the lip of the holder with the positive (+) side facing up. Then push the other side down until the clamp snaps over it.

Note: Handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

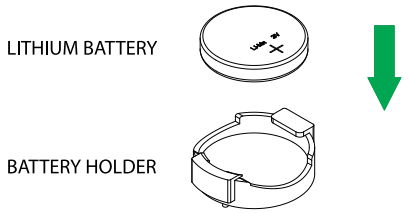


Figure 3-3. Installing the Onboard Battery

Warning: There is a danger of explosion if the onboard battery is installed upside down (which reverses its polarities). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (BR2032).

3.6 Storage Drives

The system supports up to twelve 3.5" or 2.5" storage drives. The 3.5" storage drives are mounted in tool-less 3.5" drive carriers that simplify their removal from the chassis. These 3.5" drive carriers can also support 2.5" drives through screw mounting. These carriers also help promote proper airflow. For compatible storage drives, see the SYS-621H-TN12R product page.

For VROC configurations, refer to the VROC section in this manual.

SAS, SATA, and NVMe drives are supported using optional parts that are sold separately. See Section 6.1 for drive bay configuration ordering information. SAS support can be afforded with an optional controller card and cables, while SATA and NVMe support just require additional cables. Refer to the optional parts list for more details.

Installing Drives



Figure 3-6. Logical Drive Numbers

Removing a Hot-Swap Drive Carrier from the Chassis

1. Press the release button on the drive carrier, which will extend the drive carrier handle.
2. Use the drive carrier handle to pull the drive out of the chassis.

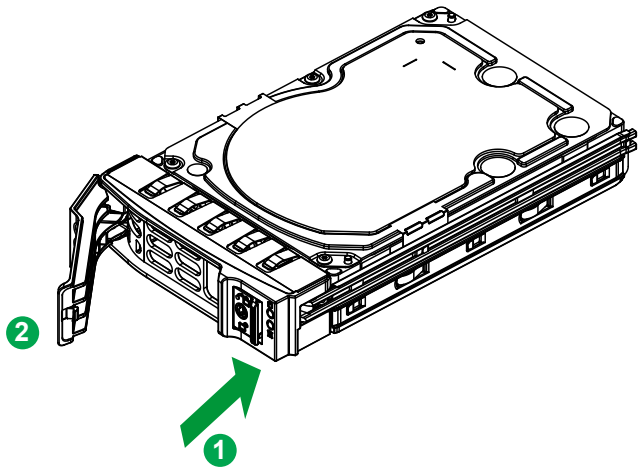


Figure 3-7. Removing a Drive Carrier

Installing a 3.5" Drive

1. Remove the dummy drive, which comes pre-installed in the drive carrier. Pull out the two locking clasps on the right outside of the carrier and lift out the dummy drive.

2. Position the drive above the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

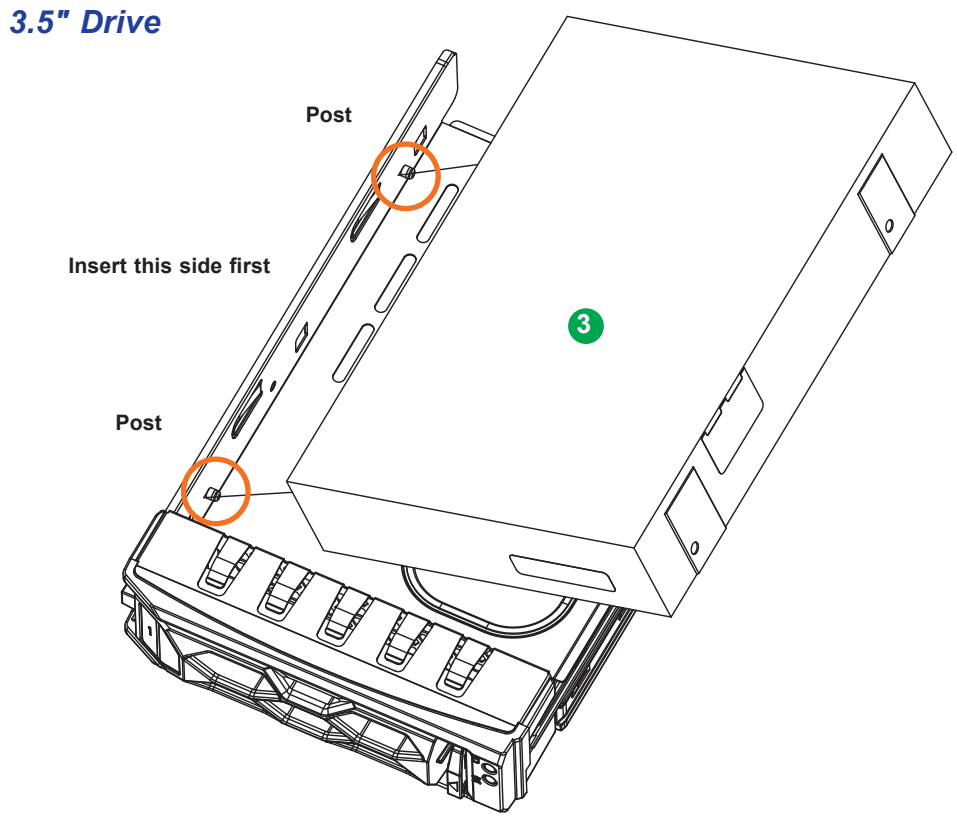


Figure 3-8. Installing a 3.5" Drive into a Carrier

3. Tilt the drive to insert it onto the two posts on the left inside of the carrier.

4. Push the right side of the drive fully into the carrier and allow the two spring locking clasps to secure the drive.

5. Insert the drive carrier into its bay, keeping the release button on the right. When the carrier reaches the rear of the bay, the release handle will retract.

6. Push the handle in until it clicks into its locked position

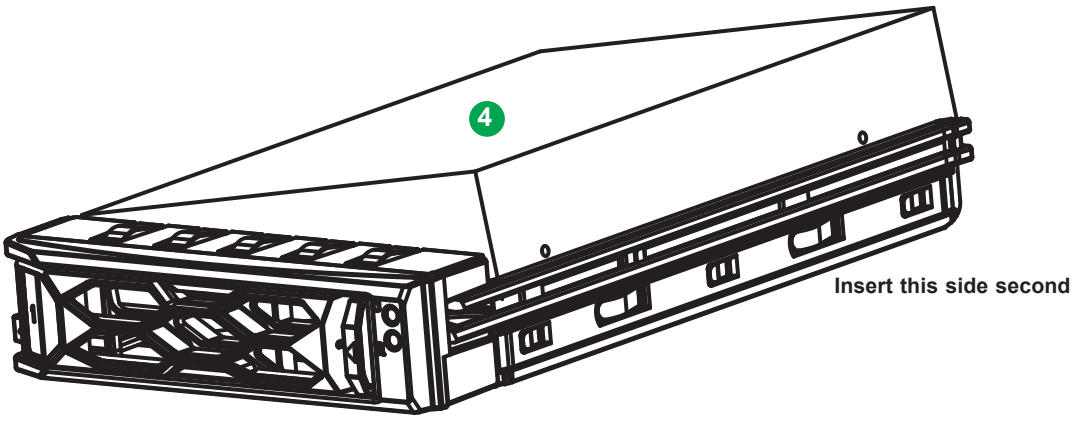


Figure 3-9. Installing a 3.5" Drive into a Carrier

Installing a 2.5" Drive

1. Remove the dummy drive, which comes pre-installed in the drive carrier. Pull out the two locking clasps on the left outside of the carrier and lift out the dummy drive.
2. Install the drive directly into the tray with four screws underneath.
3. Insert the drive carrier into its bay, keeping the release button on the right. When the carrier reaches the rear of the bay, the release handle will retract.
4. Push the handle in until it clicks into its locked position

2.5" Drive

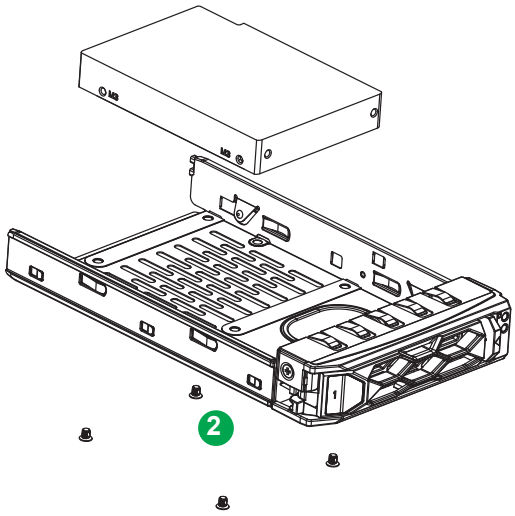


Figure 3-10. Installing a 2.5" Drive into a Carrier

Hot-Swap for NVMe Drives

Supermicro servers support NVMe surprise hot-swap. For even better data security, NVMe orderly hot-swap is recommended. NVMe drives can be ejected and replaced remotely using the BMC Dashboard.

Ejecting a Drive

1. **BMC Dashboard > Server Health > NVMe SSD**
2. Select Device, Group and Slot, and click **Eject**. After ejecting, the drive Status LED indicator turns green.
3. Remove the drive.

Note that *Device* and *Group* are categorized by the CPLD design architecture.

Slot is the slot number on which the NVMe drives are mounted.

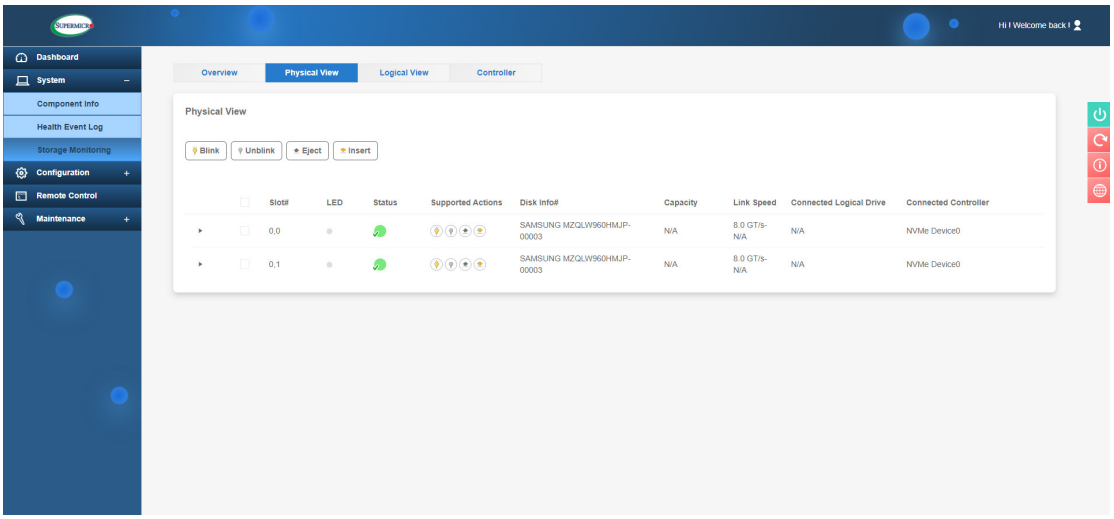


Figure 3-11. BMC Dashboard Screenshot

Replacing the Drive

1. Insert the replacement drive.
2. **BMC Dashboard > Server Health > NVMe SSD**
3. Select Device, Group and slot and click **Insert**. The drive Status LED indicator flashes red, then turns off. The Activity LED turns blue.

Checking the Temperature of an NVMe Drive

There are two ways to check using the BMC Dashboard.

Checking a Drive

- **BMC Dashboard > Server Health > NVMe SSD –** Shows the temperatures of all NVMe drives.
- **BMC Dashboard > Server Health > Sensor Reading > NVME_SSD –** Shows the single highest temperature among all the NVMe drives.

Installing M.2 Solid State Drives

The motherboard has two M.2 slots (M.2-H1, M.2-H2) for NVMe or SATA. The M.2 slot on the motherboard supports PCIe 3.0 x2 or SATA 3.0 devices in the 2280 and 22110 form factors. **Note**: M.2 slots are intended to be used for boot devices only. Write intensive workloads may result in the SSDs overheating.

Installing M.2 Drives

1. Power down the system and then remove the top cover as described in Sections 3.1 and 3.2.

2. Locate the plastic clips that will lock the M.2 SSD in place.

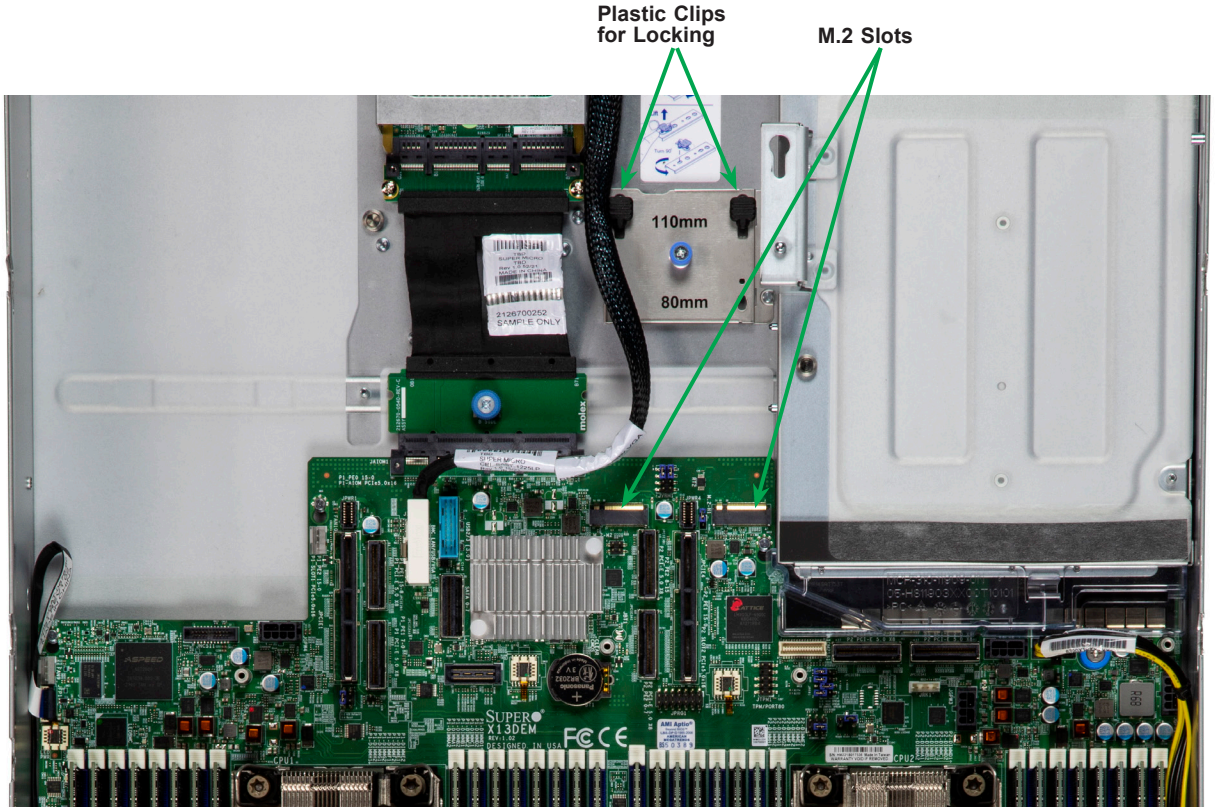


Figure 3-12. Location of the M.2 Slots and Locking Clips

3. Determine whether your M.2 SSD is 80mm or 110mm. If the plastic clip is not in the correct hole, move it.

   a. To remove the plastic clip, twist it 90 degrees and pull up.
   b. To insert the plastic clip, push it into the correct mounting hole and twist 90 degrees.

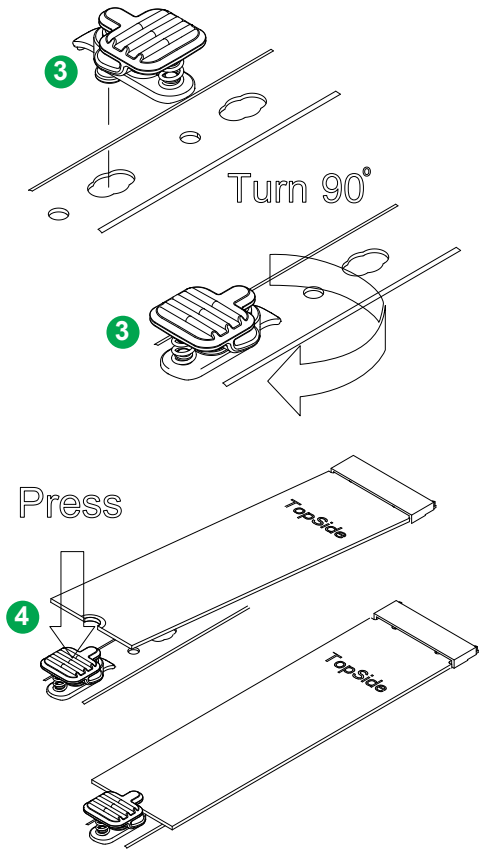


Figure 3-13. Installing a Plastic Locking Clip and M.2 SSD

4. Insert the M.2 SSD sideways into the connector on the motherboard so that it lays flat, then secure it to the motherboard with the plastic clip.

5. Replace the cover and restore the power to the system.

3.7 System Cooling

Fans

The chassis contains four 8-cm high-performance fans. Fan speed is controlled by the BMC depending on the system temperature. If a fan fails, the remaining fans will ramp up to full speed. The system will continue to run with a failed fan, although it may shut down if the heat gets too great. Replace any failed fan at your earliest convenience with the same model. Failed fans can be identified through the BMC.

Changing a System Fan

1. Replace the failed fan with an identical fan, available from Supermicro. Push the new fan into the housing, making sure the air flow direction is the same.
2. Check that the fan is working properly and that the LED on the control panel has turned off. Finish by replacing the chassis cover.

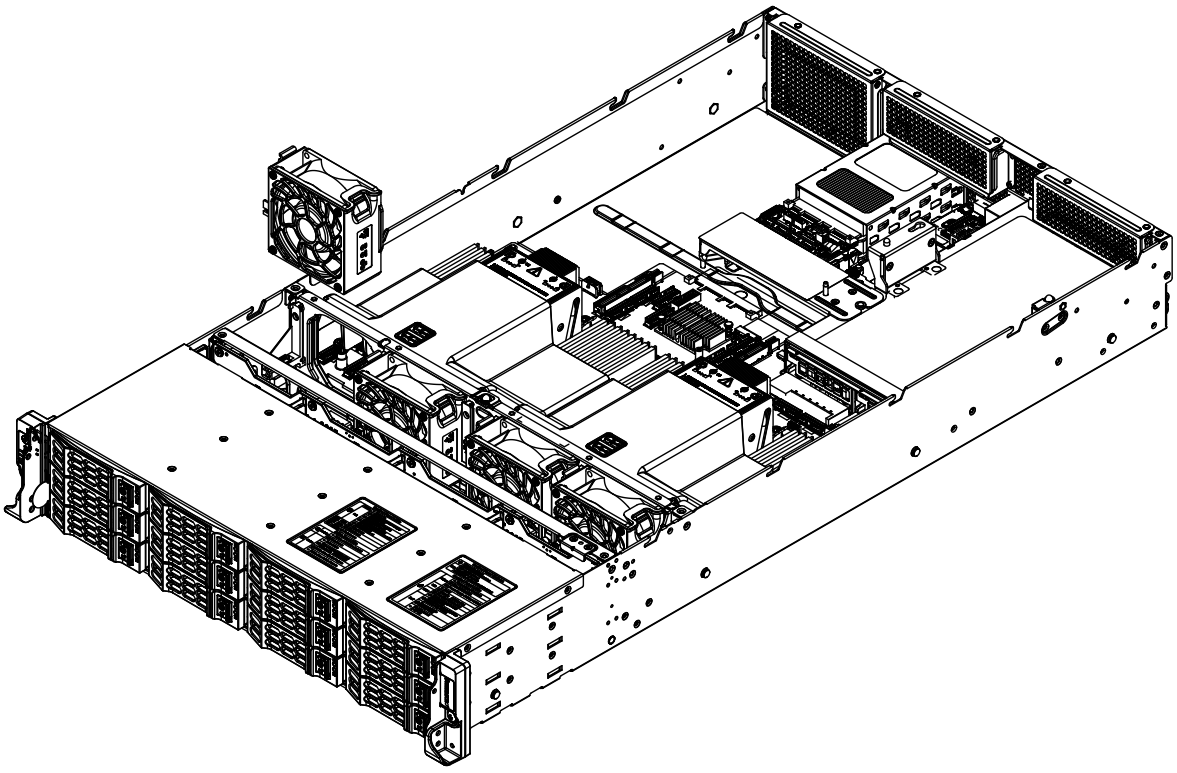


Figure 3-14. Replacing a Fan

Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency. They do not require screws to install.

Installing the Standard Air Shrouds

- Position the air shrouds as illustrated in the figure below.

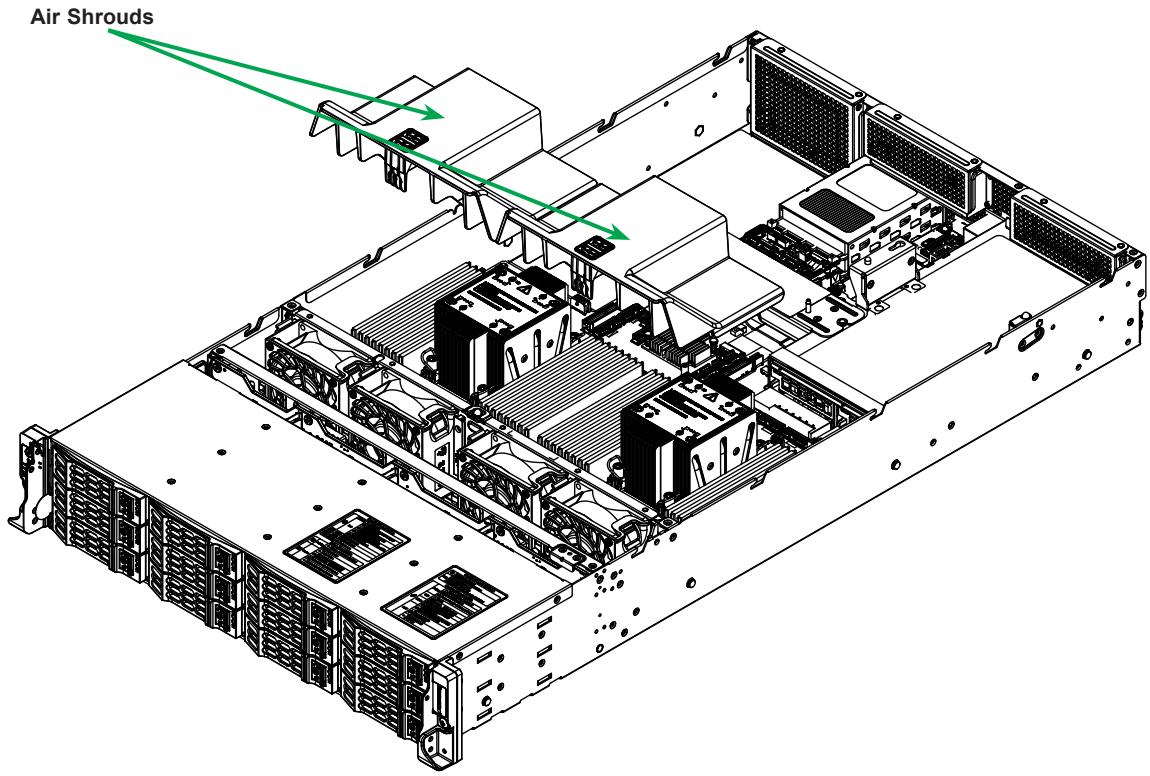


Figure 3-15. Installing the Air Shrouds

3.8 Power Supply

The chassis features redundant power supplies. The power modules can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors.

These power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 100-120v or 180-240v.

Power Supply LEDs

On the rear of the power supply module, an LED displays the status.

- **Solid Green**: When illuminated, indicates that the power supply is on.
- **Blinking Green**: When blinking, indicates that the power supply is plugged in and turned off by the system.
- **Blinking Amber:** When blinking, indicates that the power supply has a warning condition and continues to operate.
- **Solid Amber**: When illuminated, indicates that the power supply is plugged in, and is in an abnormal state. The system might need service. Please contact Supermicro technical support.

Replacing the Power Supply

1. Unplug the AC cord from the module to be replaced.
2. Push the release tab on the back of the power supply as illustrated.
3. Pull the power supply out using the handle.
4. Replace the failed power module with the same model.
5. Push the new power supply module into the power bay until it clicks.
6. Plug the AC power cord back into the module.

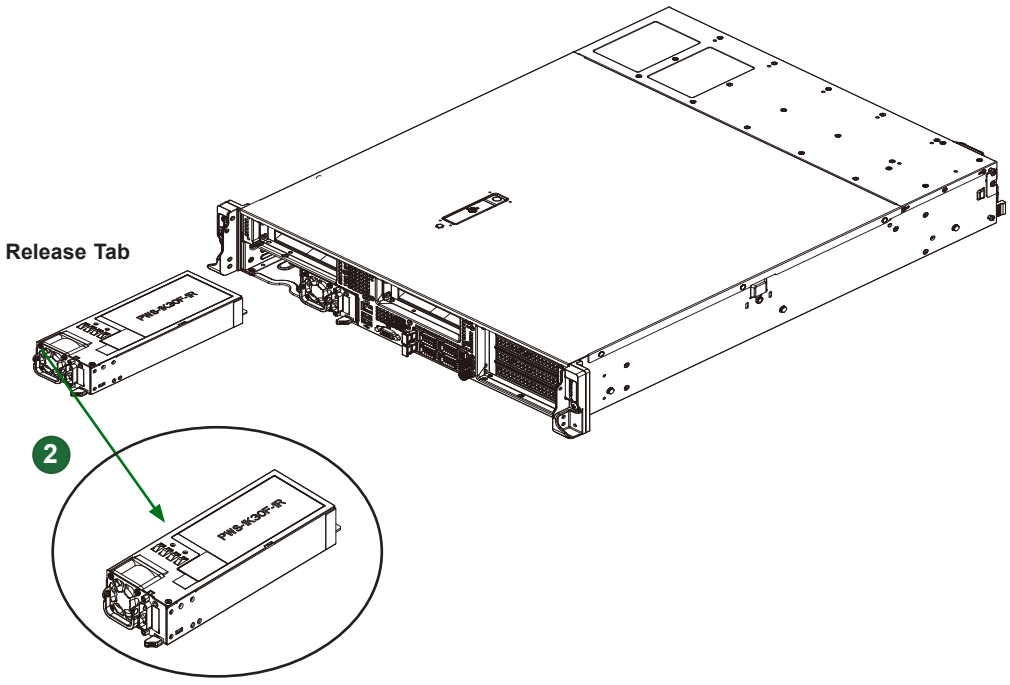


Figure 3-16. Installing a Power Supply Module

3.9 AIOM Network Cards

The system provides network connection by means of up to two advanced input/output module (AIOM) OCP 3.0 network port cards.



Figure 3-17. AIOM Chassis Slots

AIOM Slots			
Item	**Mechanical**	**Electrical**	**Slot Class**
A1	Small Form Factor, OCP 3.0	x16 (CPU1)	Up to 50W*
A2 (*Optional*)	Small Form Factor, OCP 3.0	x16 (CPU2)	Up to 35W*

*AIOM cards exceeding the 15W slot class may require restricted conditions to meet thermal specifications of the AIOM card. Contact your Supermicro account representative for more information.

Installing AIOM Cards

1. Remove the blank cover plate (A1 or A2), unscrewing the thumbscrew.
2. Slide the AIOM card in the opening until it seats in the connector slot.
3. Secure with the thumbscrew.

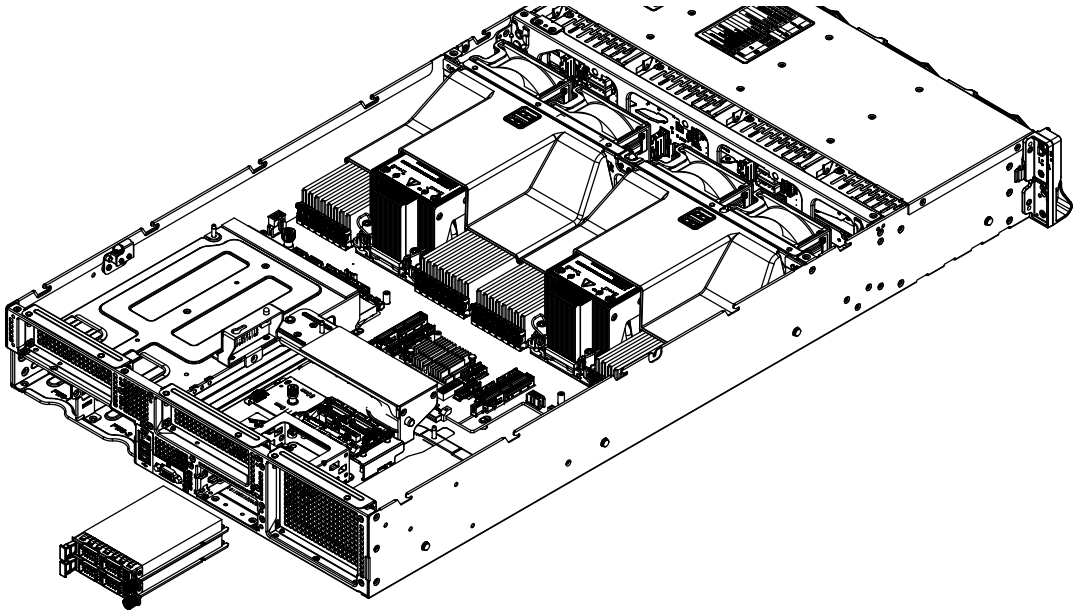


Figure 3-18. Installing AIOMs

3.10 Expansion Cards

The system can accommodate eight PCIe 5.0 cards or up to four double-width GPUs.



Figure 3-19. Expansion Card Chassis Slots

To enable any of the eight expansion card slots in this system it will require optional parts that are sold separately. See Section 6.2 for expansion card slot configuration ordering information.

Each expansion card slot is assigned to specific motherboard PCIe x8 MCIO connectors or PCIe x16 slots. The following table shows the possible expansion card slot configuration options and the corresponding motherboard PCIe connector assignment.

Expansion Card Slot Configurations		
Slot Configurations	**Slot Width**	**Motherboard Connection**
Up to Eight PCIe x8 slots	Slot 1: PCIe x8	Cable connection from JPCIE5A1 (CPU2)
	Slot 2: PCIe x8	Cable connection from JPCIE5B1 (CPU2)
	Slot 3: PCIe x8	Cable connection from JPCIE4 (CPU2)
	Slot 4: PCIe x8	Cable connection from JPCIE4 (CPU2)
	Slot 5: PCIe x8	Cable connection from JPCIE2A1 (CPU1)
	Slot 6: PCIe x8	Cable connection from JPCIE2B1 (CPU1)
	Slot 7: PCIe x8	Edge connection from JPCIE1 (CPU1)
	Slot 8: PCIe x8	Edge connection from JPCIE1 (CPU1)
Up to Four PCIe x16 slots	Slot 1: PCIe x16	Cable connection from JPCIE5A1 + JPCIE5B1 (CPU2)
	Slot 2: No Connection	No Connection
	Slot 3: PCIe x16	Cable connection from JPCIE4 (CPU2)
	Slot 4: No Connection	No Connection
	Slot 5: PCIe x16	Cable connection from JPCIE2A1 + JPCIE2B1 (CPU1)
	Slot 6: No Connection	No Connection
	Slot 7: PCIe x16	Edge connection from JPCIE1 (CPU1)
	Slot 8: No Connection	No Connection

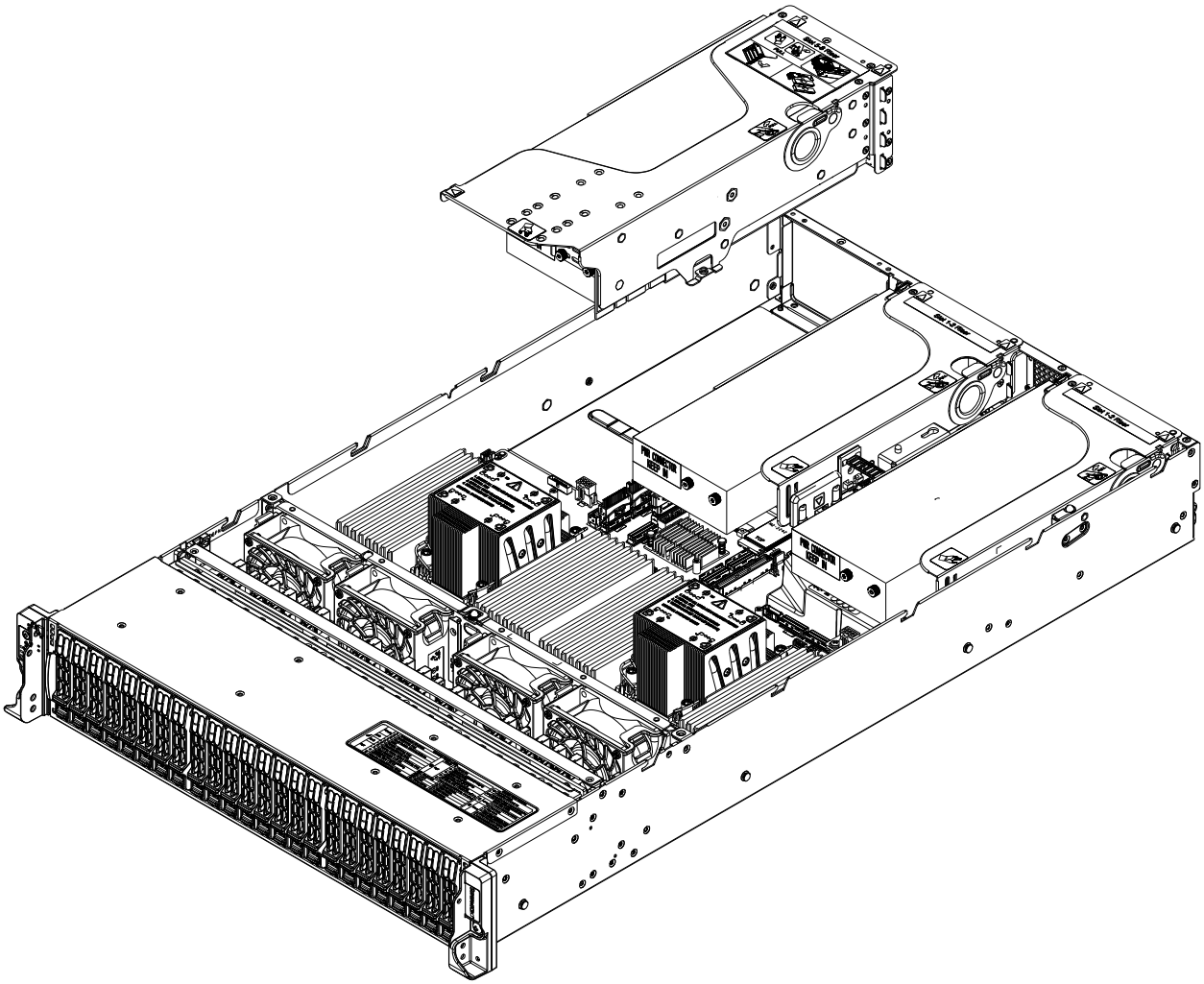


Figure 3-20. Left-side Riser Card and Expansion Cards

Installing Expansion Cards

1. Remove power from the system as described in Section 3.1, then remove the top cover.
2. Remove any slimline SAS cables connected to the riser card and pull up the riser card brackets.
3. Remove the appropriate riser card bracket, pictured above. On the rear of the chassis, each bracket is secured by a small black plastic flip-lever with an arrow on it. Flip open the appropriate lever to release the bracket, then pull the bracket out of the chassis. For the center bracket, there is a thumbscrew to a standoff in the chassis center.
4. Insert the expansion card into the riser card slot while aligning the expansion card rear L-shaped mounting bracket.
5. Place the riser card bracket with expansion card into the chassis. Align and insert the riser card into the motherboard slot while aligning the bracket into the chassis.

6. Secure the bracket into the chassis. At the chassis rear, flip the small black plastic flip-lever to secure it. For the center bracket, use the thumbscrew to secure the bracket to the standoff in the chassis center. For the left or right side brackets, an optional screw can secure it to the chassis side.

7. Close and power up the system.

3.11 Cable Routing Diagrams

The below diagrams indicate the cable routing for the storage, PCIe, IO, and power cables. When disconnecting cables to add or replace components, refer to the diagrams so you can reroute them in the same manner. If cables are not connected or routed properly it may lead to device detection or performance issues.

Storage Cables - NVMe

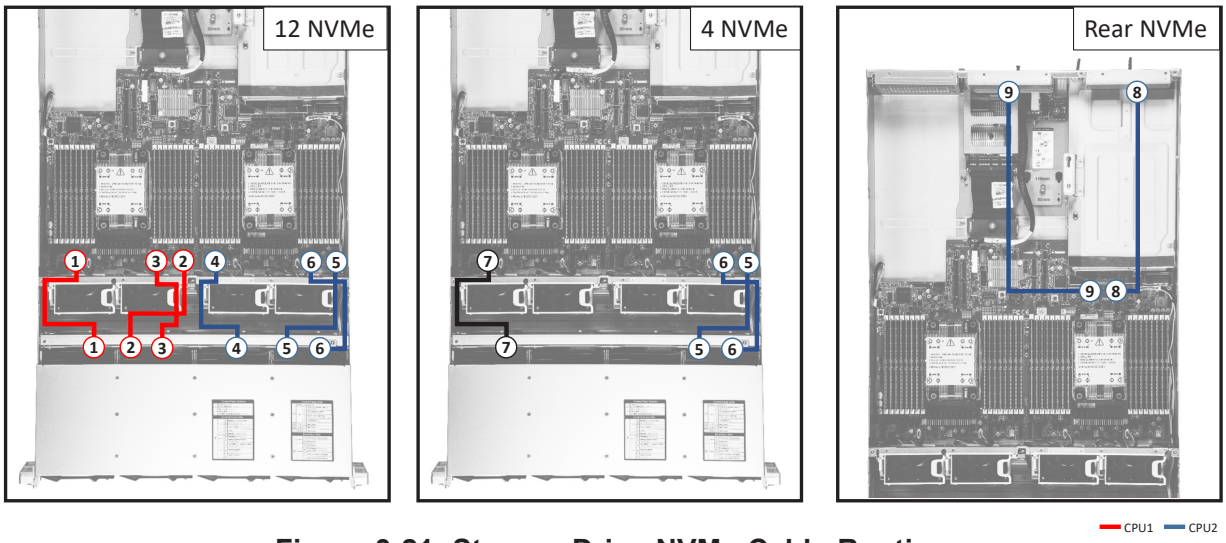


Figure 3-21. Storage Drive NVMe Cable Routing

NVMe Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1*	CBL-MCIO-1224M5	Motherboard, P1_NVME1	Front Backplane, NVME1
2	CBL-MCIO-1221M52LF	Motherboard, P1_NVME2	Front Backplane, NVME2
3	CBL-MCIO-1221M5	Motherboard, P1_NVME3	Front Backplane, NVME3
4	CBL-MCIO-1218M5-1	Motherboard, P2_NVME1	Front Backplane, NVME4
5	CBL-MCIO-1215AM5LRE	Motherboard, P2_NVME2	Front Backplane, NVME5
6	CBL-MCIO-1221M5	Motherboard, P2_NVME3	Front Backplane, NVME6
7*	CBL-MCIO-1221M5	Motherboard, P1_NVME1	Front Backplane, NVME1
8*	CBL-MCIO-1217M5	Motherboard, JPCIE5A1	Rear Backplane 1, CN2000
9*	CBL-MCIO-1224M5	Motherboard, JPCIE5B1	Rear Backplane 2, CN2000

*This cable connection provides NVMeSMBus and NVMeVPP bus communication links between the system and the storage backplane. NVMe devices attached to the storage backplane may have detection or hot-swap issues if this cable is not connected properly.

Storage Cables - SAS/SATA (from Storage Add-on Card)

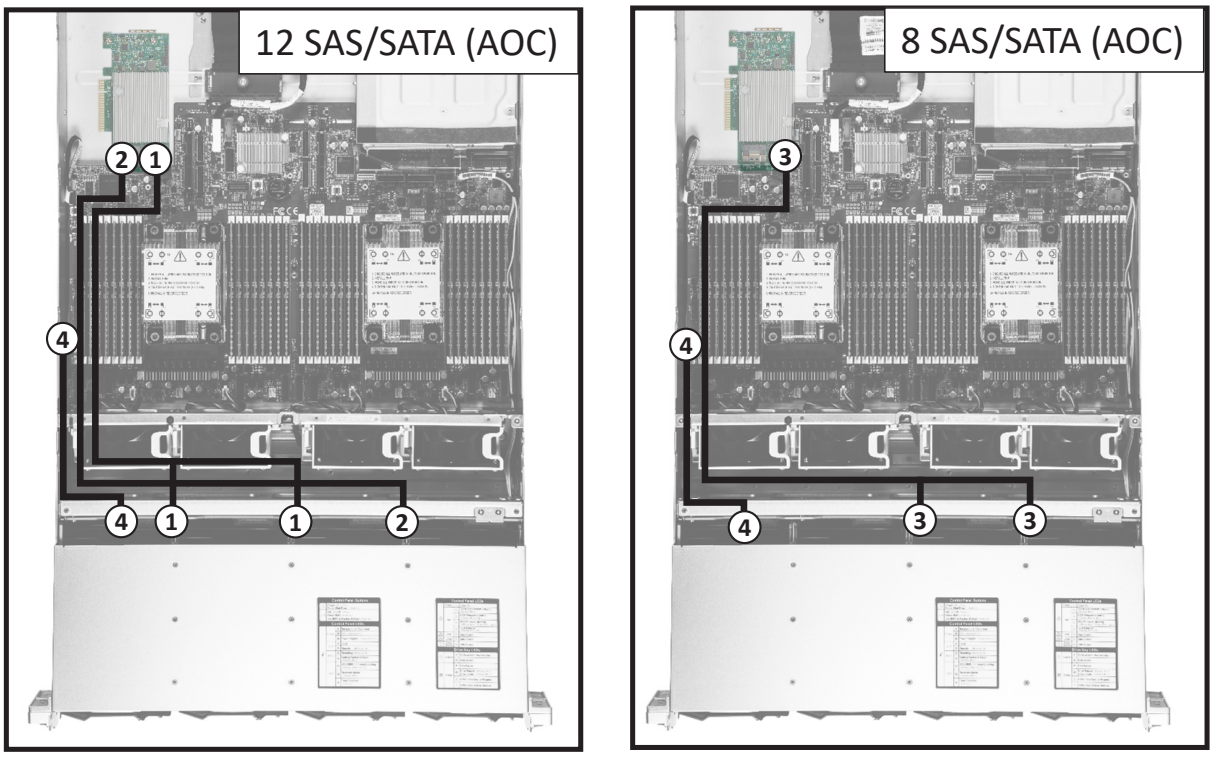


Figure 3-22. Storage Drive SAS/SATA Cable Routing

SAS/SATA Card Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1	CBL-SAST-1276F-100	Storage AOC, CN0	Backplane, CN1 & CN2
2	CBL-SAST-1201F-100	Storage AOC, CN1	Backplane, CN3
3	CBL-SAST-1296F-100	Storage AOC, CN0	Backplane, CN2 & CN3
4	CBL-CDAT-0845-48	Motherboard, JNVI2C1	Backplane, JIPMB1

Storage Cables - PCH SATA

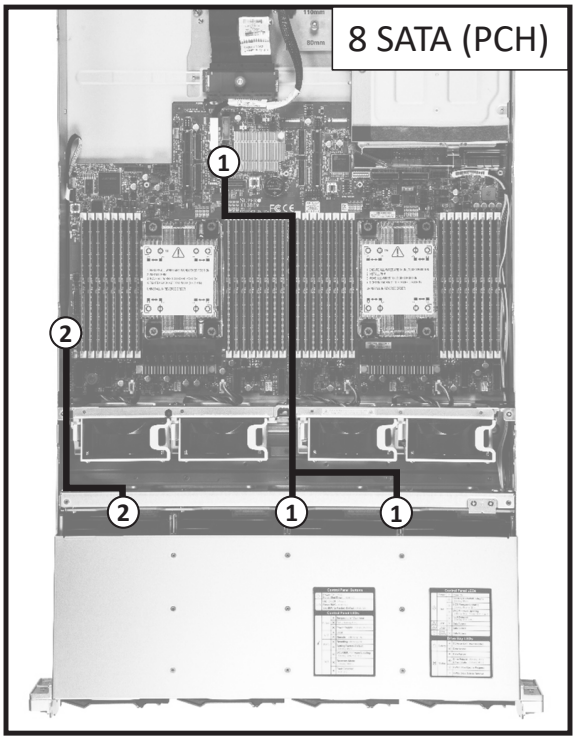


Figure 3-23. Storage Drive PCH SATA Cable Routing

PCH SATA Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1	CBL-SAST-1258LP-100	Motherboard, JS1	Backplane, CN2 & CN3
2	CBL-CDAT-0845-48	Motherboard, JNVI2C1	Backplane, JIPMB1

PCIe Cables - Expansion Card Slots

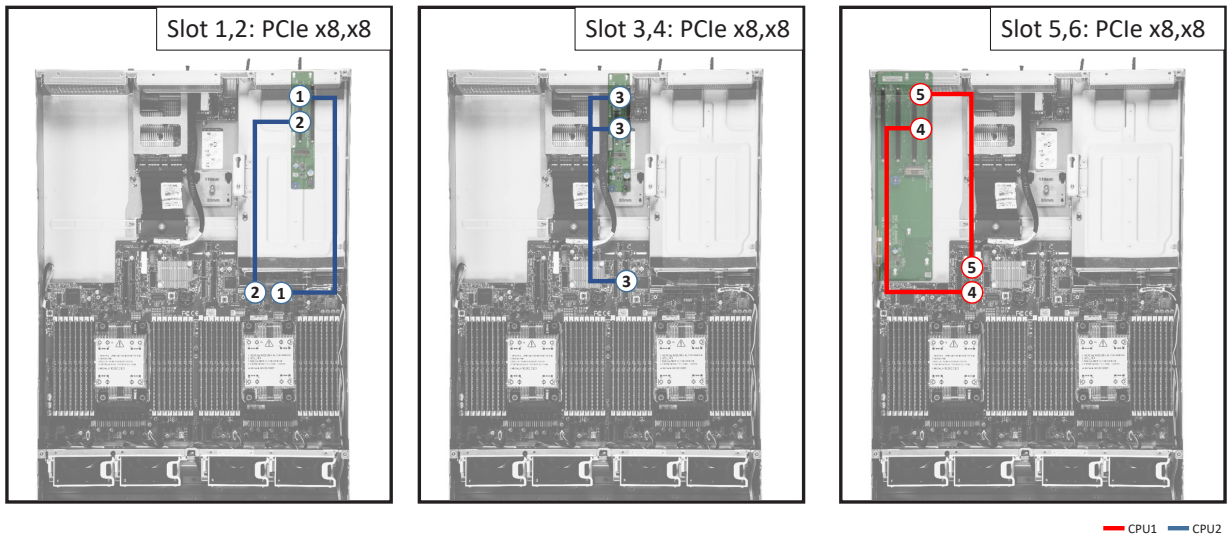


Figure 3-24. Expansion Card Cable Routing, 1 of 2

PCIe Card Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1	CBL-MCIO-1233M5R	Motherboard, JPCIE5A1	Riser Card, JPCIE1A1
2	CBL-MCIO-1232M5	Motherboard, JPCIE5B1	Riser Card, JPCIE2A1
3	CBL-GNZ4-1227M5YR21	Motherboard, JPCIE4	Riser Card, JPCIE1A1 & JPCIE2A1
4	CBL-MCIO-1222AM5	Motherboard, JPCIE2A1	Riser Card, JPCIE2A1
5	CBL-MCIO-1222AM5	Motherboard, JPCIE2B1	Riser Card, JPCIE1A1

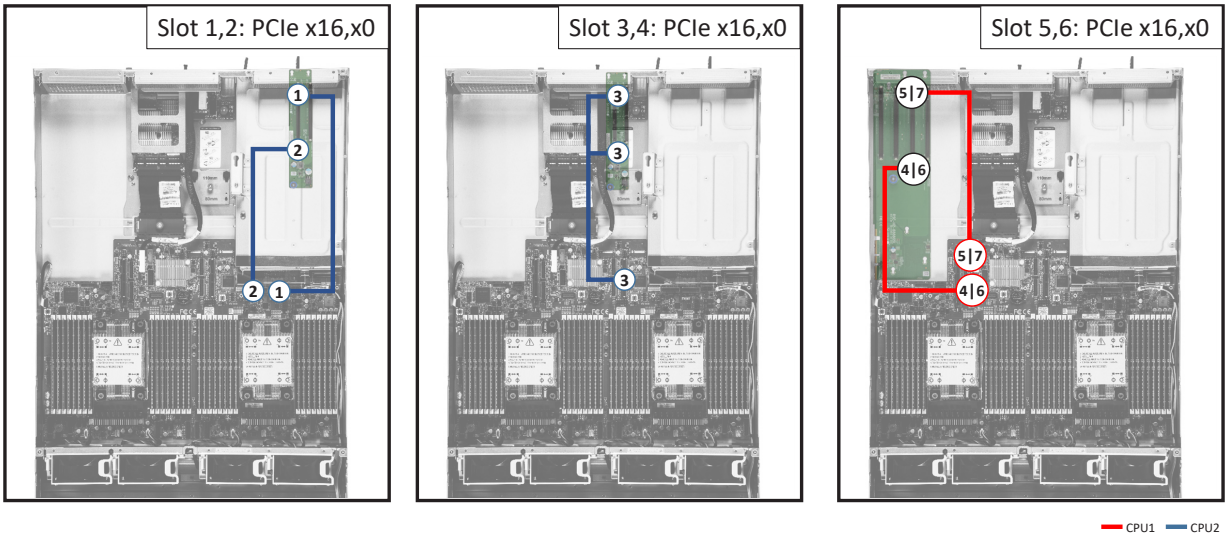


Figure 3-25. Expansion Card Cable Routing, 2 of 2

PCIe Card Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1	CBL-MCIO-1233M5R	Motherboard, JPCIE5A1	Riser Card, JPCIE1A1
2	CBL-MCIO-1233M5R	Motherboard, JPCIE5B1	Riser Card, JPCIE1B1
3	CBL-GNZ4-1227M5YRR16	Motherboard, JPCIE4	Riser Card, JPCIE1A1 & JPCIE1B1
4	CBL-MCIO-1222AM5	Motherboard, JPCIE2A1	Riser Card (RSC-H2-6888G5L), JPCIE2A1
5	CBL-MCIO-1226AM5	Motherboard, JPCIE2B1	Riser Card (RSC-H2-6888G5L), JPCIE2B1
6	CBL-MCIO-1226AM5R	Motherboard, JPCIE1A1	Riser Card (RSC-H-68G5), JPCIE1A1
7	CBL-MCIO-1226AM5R	Motherboard, JPCIE2B1	Riser Card (RSC-H-68G5), JPCIE1B1

PCIe Cables - AIOM/OCP 3.0 NIC Slots

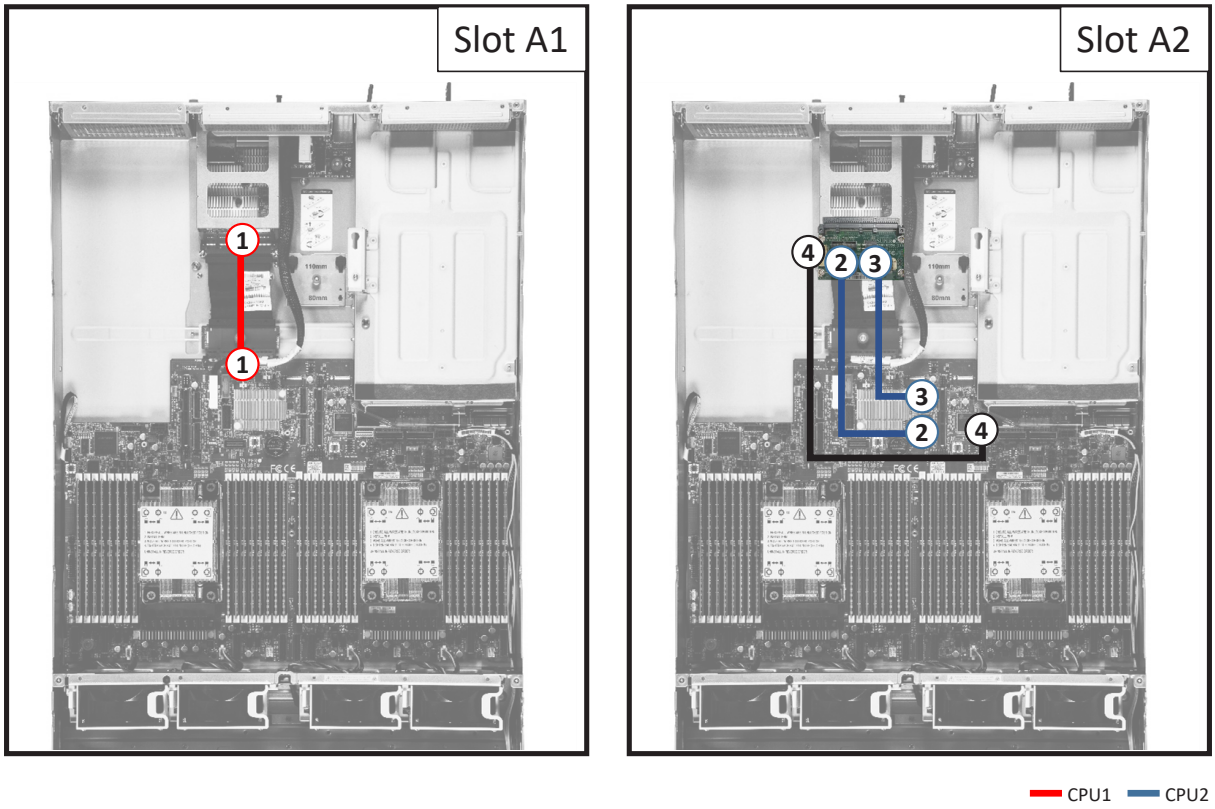


Figure 3-26. AIOM Cable Routing, 1 of 2

PCIe Card Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1	CBL-GNZ5-1307	Motherboard, JAIOM1	AIOM/OCP 3.0 NIC
2	CBL-MCIO-1221M5	Motherboard, JPCIE3A1	AIOM Board, JPCIE1A1
3	CBL-MCIO-1218M5-1	Motherboard, JPCIE3B1	AIOM Board, JPCIE1B1
4	CBL-CDAT-1060-30	Motherboard, JAIOM2SB1	AIOM Board, JAIOMSB1

Input/Output Board Cable

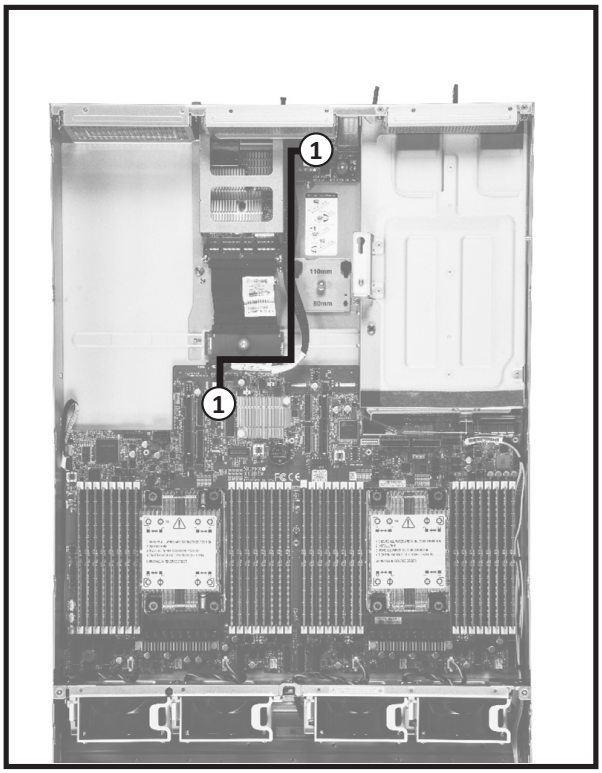


Figure 3-27. I/O Board Cable Routing

PCIe Card Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1	CBL-SAST-1225LP	Motherboard, JIO1	I/O Board, JIO1

Power Cables

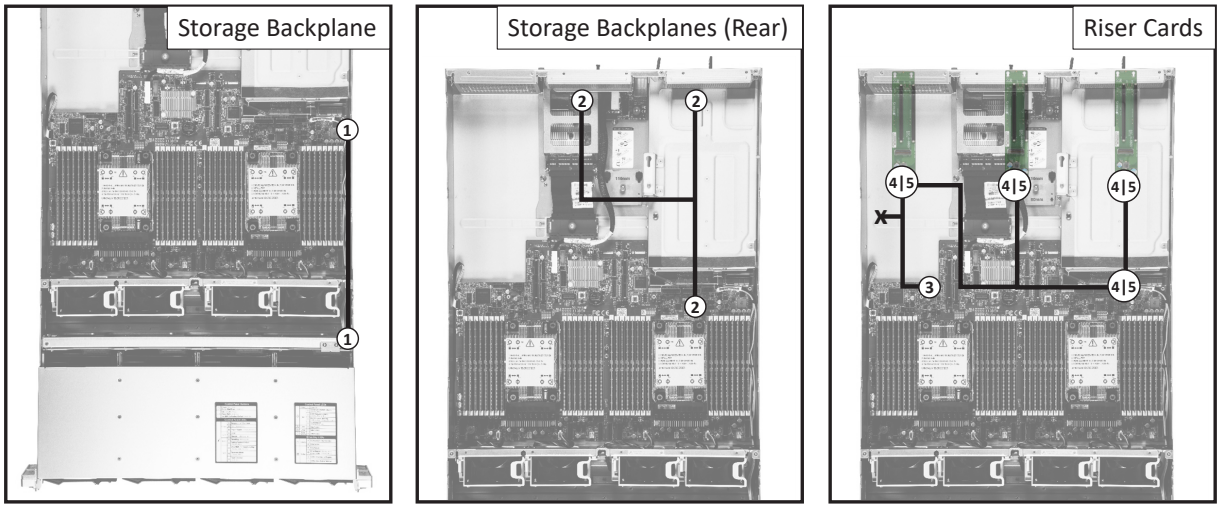


Figure 3-28. Power Cable Routing

<Does this change?>

Power Cable Routing			
Cable	**Part Number**	**Connection From**	**Connection To**
1	CBL-PWEX-1142-40	Motherboard, JPMW1	Backplane, JPWR1
2	CBL-PWEX-1136YB-25	Motherboard, JPMW3	Backplane, JPWR1
3*	CBL-PWEX-1136YB-25	Motherboard, JPMW4	Riser Card (Slot 5-6, RSC-H-68G5), JPWR1
4*	CBL-PWEX-1136YB-25	Motherboard, JPMW2	Riser Card (Slot 1-2), JPWR1 & Riser Card (Slot 3-4), JPWR1
5*	CBL-PWEX-1136YVB-45	Motherboard, JPMW2	Riser Card (Slot 1-2), JPWR1 & Riser Card (Slot 3-4), JPWR1 & Riser Card (Slot 5-6, RSC-H-68G5), JPWR1

*The riser card power cable(s) installed in the system may vary depending on the optional riser cards or GPUs installed in the system.

Chapter 4

Motherboard Connections

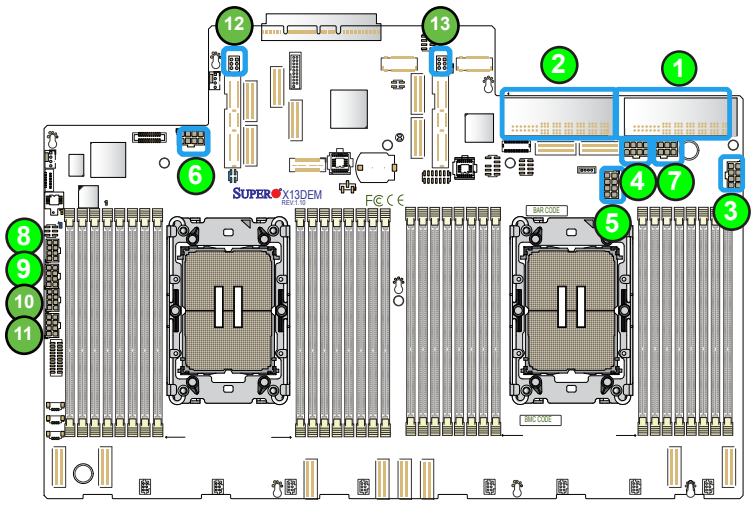
This section describes the jumpers, connections and LEDs on the motherboard and provides pinout definitions. Some connections might not be used in this system. A motherboard layout indicating component locations may be found in Chapter 1. More detail can be found in the Motherboard Manual.

4.1 Power Connections

Two power supply connections, located at PSU1/PSU2, provide main power to the system, and nine 8-pin power connectors (JPMW1–JPMW9) are used for +12V devices. Another two 6-pin power connectors (JPWR1 and JPWR4) provide additional power for system use. All these power connectors meet the ATX SSI EPS 12V specification.

Important: To provide adequate power to the motherboard, connect all power connectors to the power supply. Failure to do so may void the manufacturer's warranty on your power supply and motherboard.

8-pin Power Pin Definitions	
Pin#	**Definition**
1 - 4	Ground
5 - 8	+12 V



1. PSU1: Main PWR Supply Unit 1
2. PSU2: Main PWR Supply Unit 2
3. JPMW1: 8-pin +12V PWR Connector 1
4. JPMW2: 8-pin +12V PWR Connector 2
5. JPMW3: 8-pin +12V PWR Connector 3
6. JPMW4: 8-pin +12V PWR Connector 4
7. JPMW5: 8-pin +12V PWR Connector 5
8. JPMW6: 8-pin +12V PWR Connector 6
9. JPMW7: 8-pin +12V PWR Connector 7
10. JPMW8: 8-pin +12V PWR Connector 8
11. JPMW9: 8-pin +12V PWR Connector 9
12. JPWR1: 6-pin PWR Connector 1
13. JPWR4: 6-pin PWR Connector 2

4.2 Headers and Connectors

Fan Headers

There are eight 6-pin fan headers (FAN1–FAN8) and two 4-pin fan headers (FAN9/FAN10). Fan speed control for these fans is supported by Thermal Management using the BMC interface.

6-pin Fan Header Pin Definitions

Pin#	Definition
1	Ground
2	3A, +12V
3	Tachometer
4	PWM_Control
5	3A/12V
6	Ground

4-pin Fan Header Pin Definitions

Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

TPM Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro. A TPM/Port 80 connector is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the storage drive is not installed in the system. For more information on the TPM: www.supermicro.com/manuals/other/TPM.pdf.

Trusted Platform Module/Port 80 Header Pin Definitions

Pin#	Definition	Pin#	Definition
1	P3V3	2	SPI_TPM_CS_N
3	PCIe_RESET_N#	4	SPI_PCH_MISO
5	SPI_PCH_CLK#	6	Ground
7	SPI_PCH_MOSI	8	N/A
9	JTPM1_P3V3A	10	IRQ_TPM_SPIN_N

BMC External I²C Header

A System Management Bus 6-pin header for BMC is located at JIPMB1. Connect a cable to this header to use the IPMB I²C connection on your system.

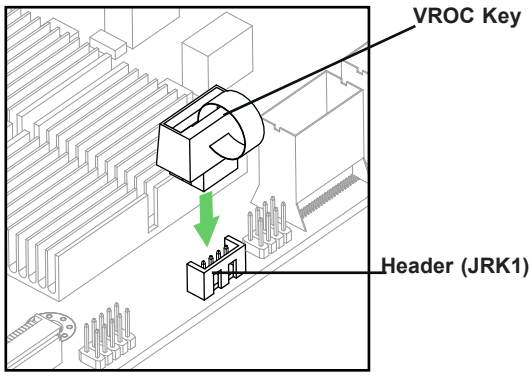
External I²C Header Pin Definitions

Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection
5	???
6	???

RAID Key Header

An Intel VROC RAID Key header is located at JRK1. It supports VMD used in creating optional advanced NVMe RAID configurations.

RAID Key Header Pin Definitions	
Pin#	**Definition**
1	Ground
2	RAID_KEY_PU
3	Ground
4	PCH_RAID_KEY



Note: This drawing is for illustration only. Your motherboard may look different.

NC-SI Connector

The Network Controller Sideband Interface (NC-SI) connector is located at JNCSI1. This is used to connect a Network Interface Card (NIC) to the motherboard to allow the onboard Baseboard Controller (BMC) to communicate with a network.

Note: For detailed instructions on how to configure NIC settings, refer to the Network Interface Card Configuration User's Guide posted on the web page under the link: http://www.supermicro.com/support/manuals/.

NVMe SMBus Headers

NVMe SMBus (I^2C) header (JNVI2C1), used for PCIe SMBus clock and data connections, provides hot-plug support via a dedicated SMBus interface. This feature is only available for a Supermicro complete system with an Supermicro proprietary NVMe add-on card and the proper cable.

NVMe SMBus Header Pin Definitions	
Pin#	**Definition**
1	Data
2	Ground
3	Clock
4	VCCIO

NVMe VPP Bus Connector

A NVMe VPP Bus connector is located at JNVVPP1 on the motherboard. The NVMe VPP connector provides hot plug support for the NVMe devices, which will allow the user to replace NVMe devices without shutting down and powering off the system.

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable from the chassis to the header to alert when the chassis is opened.

Chassis Intrusion Pin Definitions

Pins	Definition
1	Intrusion Input
2	Ground

AIOM Sideband Connector (JAIOM2SB1)

A Supermicro proprietary Advanced I/O Module (AIOM) sideband connector is located at JAIOM2SB1 on the motherboard. This connector provides the AIOM sideband signals for an optional second AIOM IO board.

PCIe I²C Header

A PCIe I²C (SMBus) header is located at JRSI2C1. It is used for PCIe cards to allow the BMC or the BIOS to read disk drive information or FRUs more effectively.

PCIe 3.0 M.2-H1/M.2-H2 Slots

Two PCIe 3.0/SATA3 Hybrid M.2 slots are located at M.2-H1 and M.2-H2 on the motherboard. These M.2/SATA3 Hybrid slots support PCIe 3.0 x4 M.2 NVMe/SATA3 SSDs in the 2280 and 22110 form factors. To accommodate the 2280 and 22110 form factors, two M.2 mounting holes (MH17/MH18) are provided on the motherboard. Use Mounting Hole MH17 for M.2-H2 slot support, and MH18 for M.2-H1 slot support. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency.

MCIO NVMe Connectors

MCIO NVMe connectors, located at P1_NVME 0–3 and P2_NVME 0–3, provide eight PCIe 5.0 x8 connections on the motherboard. P1_NVME 0–3 connections are supported by CPU1, and P2_NVME 0–3 connections supported by CPU2. NVMe VPP and NVMe SMBus signals are included in MCIO NVMe connectors P1_NVME 1 and P2_NVME 1. Use these MCIO connectors to support high-speed PCIe storage devices.

Note: When installing an NVMe device on a motherboard, please be sure there is a valid NVMe VPP and NVMe SMBus connection from the motherboard to the storage backplane in order for the NVMe device to work properly.

SATA 3.0 0-7 Ports

A SATA 3.0 header, located at JS1, supports eight SATA 3.0 connections (SATA0–7) on the motherboard. These SATA 3.0 ports are supported by the Intel C741 PCH chipset. Connect a proper SATA cable to JS1 to use SATA 3.0 connections.

Low-profile (LP) Slim SAS I/O Connector

A low-profile slim SAS I/O connector, located on JIO1, provides dedicated BMC LAN/USB/VGA support on the rear side of the motherboard.

Control Panel

JFP1 contains header pins for the front control panel connections. All JFP1 wires have been bundled into a single cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the motherboard. The other end connects to the control panel PCB board.

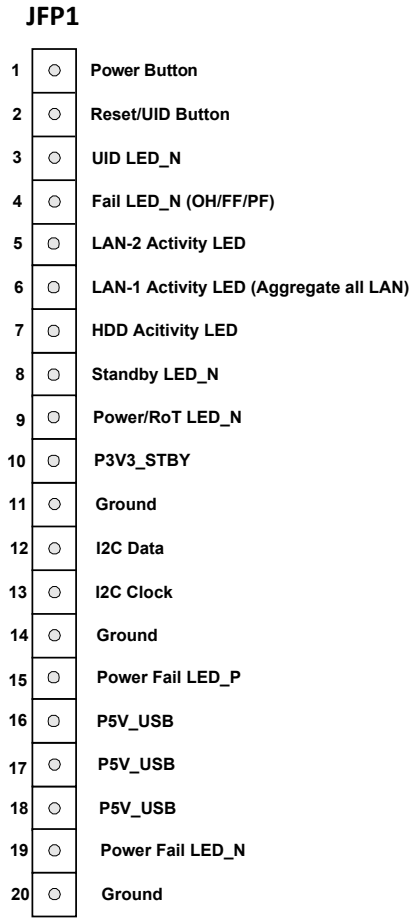


Figure 4-1. JFP1 Control Panel Pins

Power Button and BMC/BIOS Status LED Button

The Power On and BMC/BIOS Status LED button is connected to Pin 1 of the header JFP1. Momentarily contacting Pin 1 of JFP1 will power on/off the system, or display the BMC/BIOS status.

Reset Button/Front UID Switch

The Reset button/Front UID switch is configured in conjunction with the jumper, JRU1. Depending on the JRU1 settings, the button either resets the BMC or toggles the UID LED. See the JRU1 description for details. The button is connected to Pin 2 of JFP1.

UID LED

The unit identifier LED connection is located on Pin 3.

Fail LED (Information LED)

The Fail LED connection is Pin 4 of JFP1. It provides stimulus to the Information LED that indicates overheating, fan failure, and power failure. A description of the Information LED can be found in Chapter 1

LAN1/LAN2 (NIC1/NIC2)

The NIC (Network Interface Controller) LED connection for LAN Port 1 is Pin 6, and for LAN Port 2 is Pin 5. When this LED is blinking green, it indicates LAN activity.

HDD Activity LED

The HDD activity LED connection is Pin 7. When this LED is blinking green, it indicates HDD activity.

Standby Power LED

The LED indicator for standby power is Pin 8. If this LED is on, standby power is on.

RoT (Root of Trust) Power LED

The Power LED for RoT (Root of Trust) connection is l Pin 9. If this LED is on, power for the RoT chip is on.

Standby Power

A Standby Power (I2C) connections are Pins 10 through Pin 14 to provide power to the system when it is in standby mode.

Power Fail LED Indicators

Power Failure LED Indicators are Pin 15 and Pin 19.

FP USB Power

Front Panel USB power connections are Pins 16 through Pin 18 to provide power to front USB devices.

4.3 Input/Output Ports

The low-profile slimSAS I/O connector, located at JIO1, is used to connect a Hyper I/O mezzanine board to the motherboard. This connector provides dedicated BMC LAN, VGA, USB, and a COM port header connections for rear chassis access.

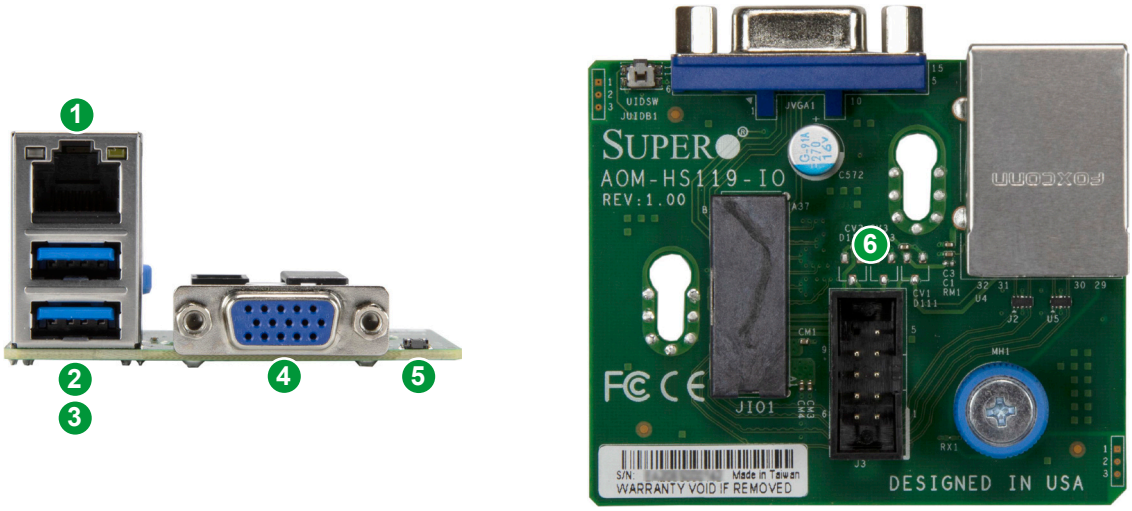


Figure 4-2. Rear System I/O Ports

Rear I/O Ports			
#	Description	#	Description
1	Dedicated BMC LAN	4	VGA
2	USB (2.0)	5	UID Switch
3	USB (2.0)	6	COM header

BMC LAN Port

There is a dedicated LAN port on the I/O back panel to provide access to the BMC.

Unit Identifier Switch/UID LED Indicator

A Unit Identifier (UID) switch and a UID LED indicator are located on the rear of the system. When you press the UID switch, both front and rear UID LED indicators are toggled on or off. The UID indicators provide easy identification of a system in a rack. The UID can also be triggered using the BMC.

The UID switch can also be used to reset the BMC. See Section 7.8 for details.

Advanced I/O Module (AIOM) for Rear I/O Support (JAIOM1)

An Supermicro proprietary Advanced I/O Module (AIOM) connector used for a PCIe 5.0 x16 add-on module is located at JAIOM1. This AIOM connector (P1_PE0 15-0), supported by CPU1, provides input/output connections on the rear side of your system. (An AIOM extension cable is required.)

AIOM Sideband Connector (JAIOM2SB1)

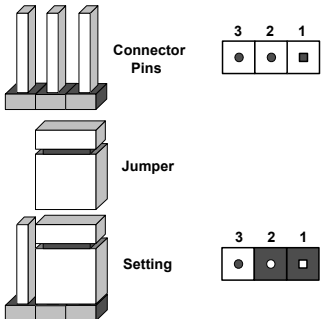
An Supermicro proprietary Advanced I/O Module (AIOM) sideband connector is located at JAIOM1 on the motherboard. This AIOM slot provides support for AIOM sideband connections.

4.4 Jumpers

Explanation of Jumpers

To modify the operation of the motherboard, jumpers are used to choose between optional settings. Jumpers create shorts between two pins to change the function associated with it. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout page for jumper locations.

Note: On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" indicates the jumper is either on only one pin or has been completely removed.



CMOS Clear

JBT1 is used to clear CMOS. See Section 7.7 for details.

UID and System Reset Button Select Jumper

Jumper JRU1 is used to configure the function of the Control Panel Reset or UID LED button (Pin 2 of JFP1). To set the button to toggle the UID LEDs (in a chassis that supports front UID), close Pins 1 and 2 of jumper JRU1. To set the button to reset the system, close Pins 3 and 4 of jumper JRU1.

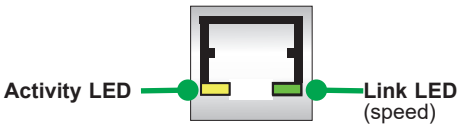
Front UID Switch/Reset Button Select Jumper (JRU1) Jumper Settings	
State	**Description**
Close Pin 1 and Pin 2 of JRU1	Button UID support **(Default)**
Close Pin 3 and Pin 4 of JRU1	Button system reset support

4.5 LED Indicators

BMC-Dedicated LAN LEDs

A dedicated BMC LAN port provided a connection to the BMC. The Link LED indicates the speed of the connection. The other LED indicates activity.

BMC Link LED	
Color	**Definition**
Off	No Connection
Green	100 Mb/s
Amber	1 Gb/s



Unit ID LED

A rear unit identifier (UID) indicator at LE6 is located near the UID switch on the I/O back panel. It provides easy identification of a unit that may need service.

Onboard Power LED

The Onboard Power LED is LE3. When this LED is on, the system power is connected.

BMC Heartbeat LED

LEDM1 is the BMC heartbeat LED. When the LED is blinking green, BMC is functioning normally.

Chapter 5

Software

After the hardware has been installed, you can install the Operating System (OS), configure RAID settings and install the drivers.

5.1 Microsoft Windows OS Installation

If you will be using RAID, you must configure RAID settings before installing the Windows OS and the RAID driver. Refer to the RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the MS Windows installation ISO file. That can be a USB flash or media drive.
2. Retrieve the proper RST/RSTe driver. Go to the Supermicro web page for your motherboard and click on "Download the Latest Drivers and Utilities", select the proper driver, and copy it to a USB flash drive.
3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing **F11** during the system startup.

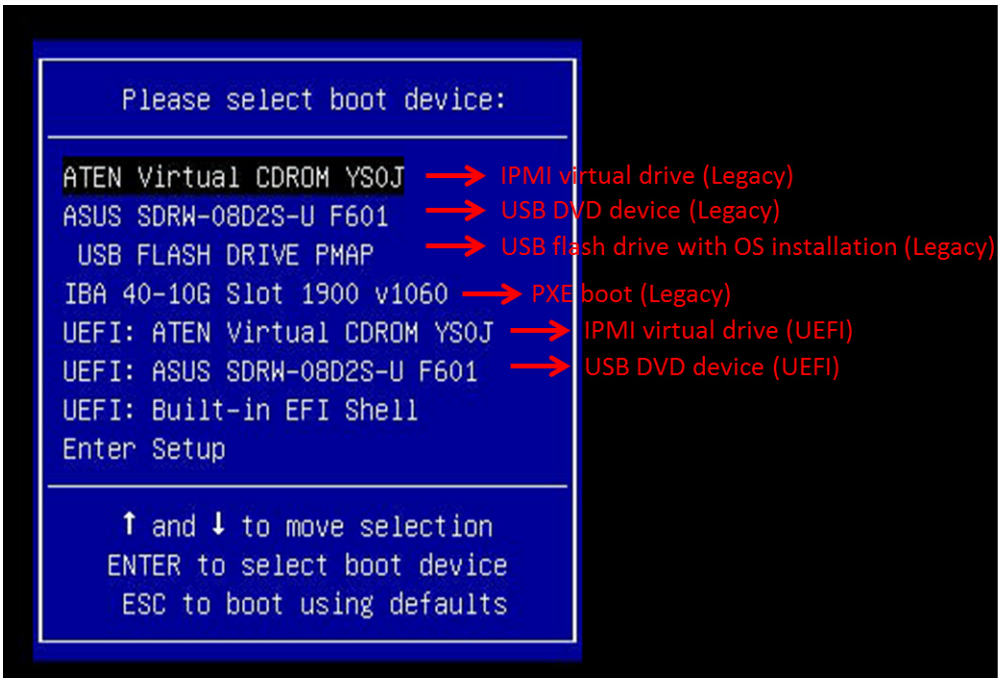


Figure 5-1. Select Boot Device

4. During Windows Setup, continue to the dialog where you select the drives on which to install Windows. If the disk you want to use is not listed, click on “Load driver” link at the bottom left corner.

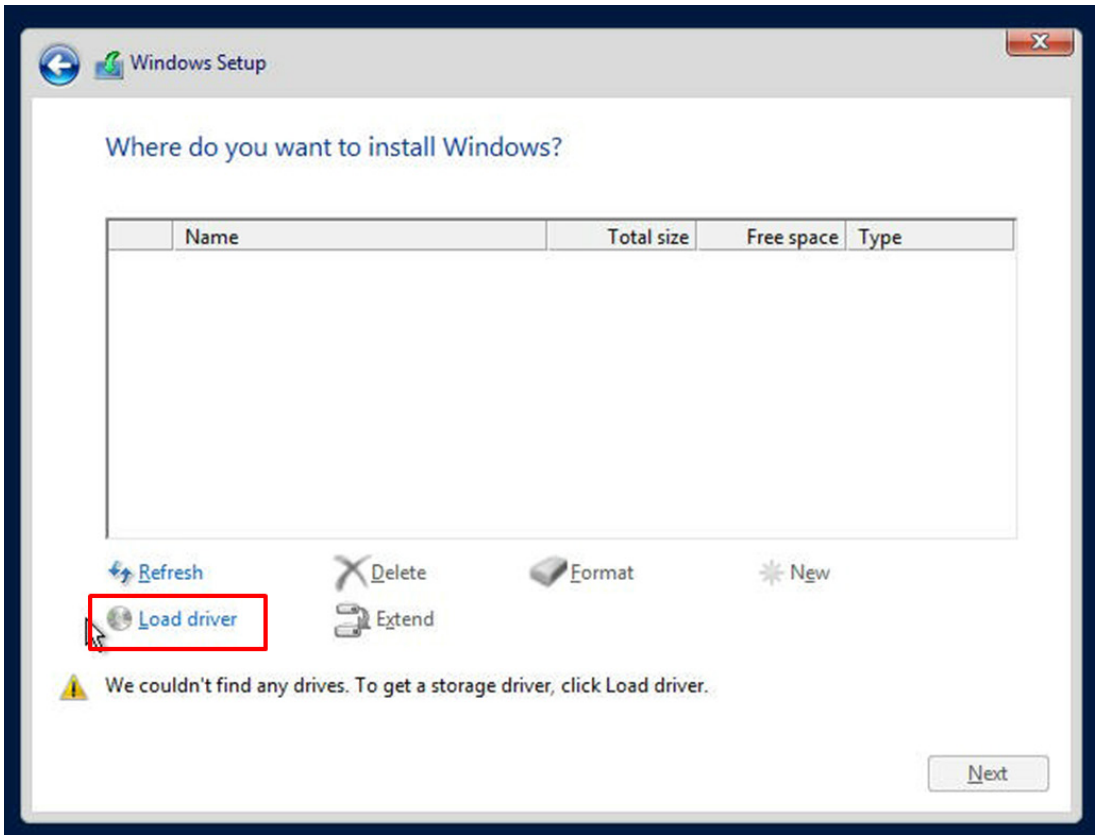


Figure 5-2. Load Driver Link

To load the driver, browse the USB flash drive for the proper driver files.

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.
- For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.

5. Once all devices are specified, continue with the installation.
6. After the Windows OS installation has completed, the system will automatically reboot multiple times.

5.2 Driver Installation

The Supermicro website contains drivers and utilities for your system at https://www.supermicro.com/wdl/driver. Some of these must be installed, such as the chipset driver.

After accessing the website, go into the CDR_Images (in the parent directory of the above link) and locate the ISO file for your motherboard. Download this file to to a USB flash or media drive. (You may also use a utility to extract the ISO file if preferred.)

Another option is to go to the Supermicro website at http://www.supermicro.com/products/. Find the product page for your motherboard, and "Download the Latest Drivers and Utilities".

Insert the flash drive or disk and the screenshot shown below should appear.

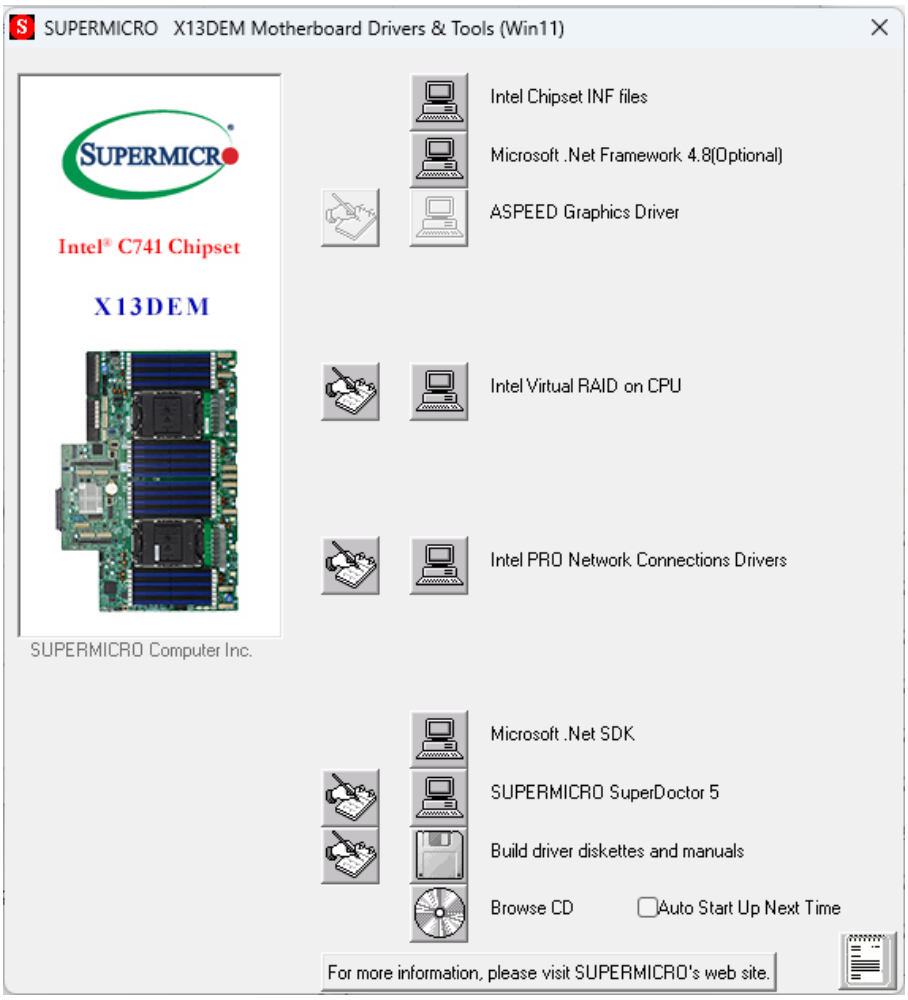


Figure 5-3. Driver & Tool Installation Screen

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents.

5.3 BMC

The motherboard provides remote access, monitoring and management through the baseboard management controller (BMC) and other management controllers distributed among different system modules. There are several BIOS settings that are related to BMC. For general documentation and information on BMC, visit our website at:

www.supermicro.com/en/solutions/management-software/bmc-resources

BMC ADMIN User Password

For security, each system is assigned a unique default BMC password for the ADMIN user. This can be found on a sticker on the chassis and a sticker on the motherboard. The sticker also displays the BMC MAC address. If necessary, the password can be reset using the Supermicro IPMICFG tool.



Figure 5-5. BMC Password Label

The sticker can be found on the pull-out service tag at the front of the chassis. See Chapter 1 for the location.

Chapter 6

Optional Components

This chapter describes alternate configurations and optional system components.

Optional Parts
Storage Protocols
PCIe Options
Power Options
Cable Management Arm
TPM security module
VROC

6.1 Storage Protocols Supported

The storage drive bays can be configured to support either SATA, SAS, or NVMe drives by adding optional parts to the system.

SATA – The system supports up to 12 SATA drive bays by adding an additional storage add-on cards and cables. Alternatively, the system can support up to 8 SATA drive bays using the motherboard's onboard SATA controller. Additional cables are still required.

SAS – They system supports up to 12 SAS drive bays. Additional storage add-on cards and cables are required.

NVMe – The system supports up to 12 NVMe drives. Additional cables are required.

See the following section for the supported storage drive bay configurations and the optional parts required.

Drive Bay Configurations

The following details show the possible configurations and the part numbers of the cables required.





Option 1 — 12 SAS/SATA

Drive Bay #	Drive Type	Part Numbers
Drive Bays 0-11	SAS/SATA	CBL-SAST-1201F-100 CBL-SAST-1276F-100 CBL-CDAT-0845-48 For Non-RAID: AOC-S3816L-L16IT-O[1] For Hardware RAID: AOC-S3916L-H16IR-32DD-O[1]

Option 2 — 12 SAS/SATA + 2 Rear NVMe

Drive Bay #	Drive Type	Part Numbers
Drive Bays 0-11	SAS/SATA	MCP-240-21110-0N MCP-220-00196-0B (x2) BPN-NVME5-826N-B2B CBL-MCIO-1217M5 CBL-SAST-1201F-100 CBL-SAST-1276F-100 CBL-PWEX-1136YB-30 CBL-CDAT-0845-48 LBL-0968 For Non-RAID: AOC-S3816L-L16IT-O[1] For Hardware RAID: AOC-S3916L-H16IR-32DD-O[1]
Rear Drive Bays 0-1	NVMe (from CPU2)	

Option 3 — 12 SAS/SATA + 4 Rear NVMe

Drive Bay #	Drive Type	Part Numbers
Drive Bays 0-11	SAS/SATA	MCP-240-21110-0N (x2) MCP-220-00196-0B (x4) MCP-120-82927-0N BPN-NVME5-826N-B2B (x2) CBL-MCIO-1217M5 CBL-MCIO-1224M5 CBL-SAST-1201F-100 CBL-SAST-1276F-100 CBL-PWEX-1136YB-30 CBL-CDAT-0845-48 LBL-0968 For Non-RAID: AOC-S3816L-L16IT-O[1] For Hardware RAID: AOC-S3916L-H16IR-32DD-O[1]
Rear Drive Bays 0-1	NVMe (from CPU2)	
Rear Drive Bays 2-3	NVMe (from CPU2)	

Option 4 — 8 SAS/SATA + 4 NVMe

Drive Bay #	Drive Type	Part Numbers
Drive Bays 0-7	SAS/SATA	CBL-MCIO-1215AM5LRE CBL-MCIO-1221M5 CBL-SAST-1276F-100 CBL-MCIO-1224M5 For Non-RAID: AOC-S3808L-L8IT-O[1] For Hardware RAID: AOC-S3908L-H8IR-16DD-O[1]
Drive Bays 8-11	NVMe (from CPU2)	

Option 5 — 8 SATA + 4 NVMe

Drive Bay #	Drive Type	Part Numbers
Drive Bays 0-7	SATA	CBL-MCIO-1215AM5LRE CBL-MCIO-1221M5 CBL-SAST-1258LP-100 CBL-MCIO-1224M5
Drive Bays 8-11	NVMe (from CPU2)	

Option 6 — 12 NVMe

Drive Bay #	Drive Type	Part Numbers
Drive Bays 0-5	NVMe (from CPU1)	CBL-MCIO-1224M5 CBL-MCIO-1221M52LF CBL-MCIO-1221M5 (x2) CBL-MCIO-1218M5-1 CBL-MCIO-1215AM5LRE
Drive Bays 6-11	NVMe (from CPU2)	

[1]AOC needs to be installed in PCIe slot 8 so you need to add PCIe Slot 5-8 configuration option 1 or 2

Figure 6-1. Drive Bay Configuration Options

6.2 PCIeConfigurations

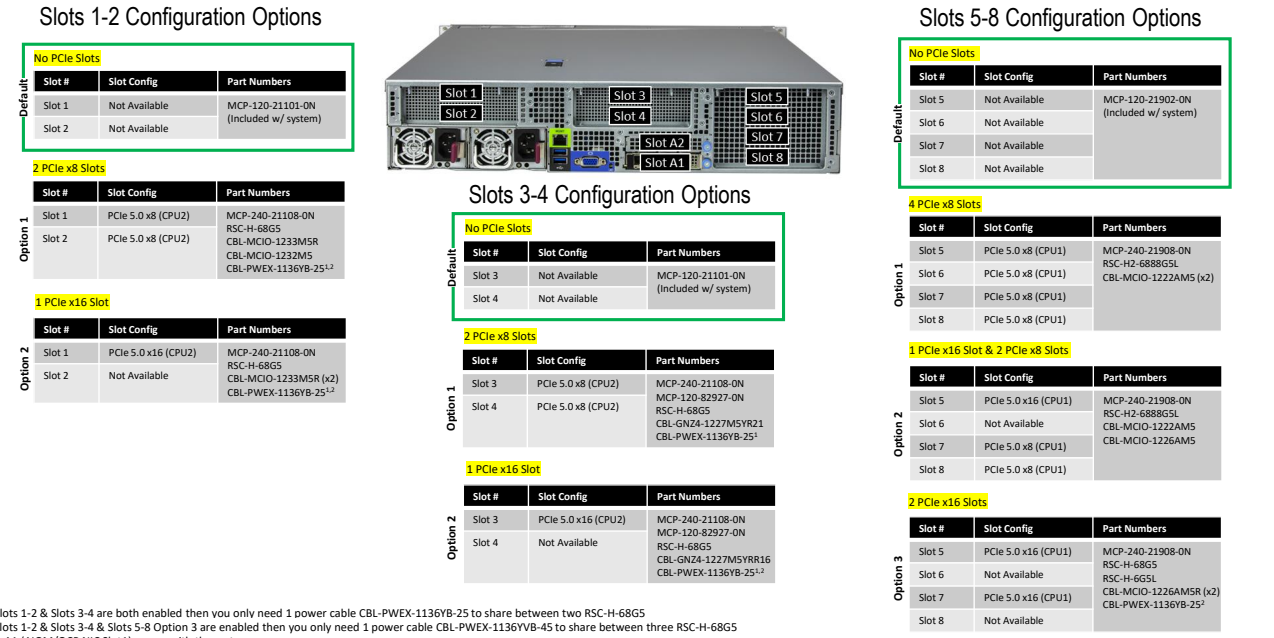


Figure 6-2. PCIe Configuration Options

6.3 Power Supply Configurations

Power Supply Module Options		
Watts	**Part Number**	**80Plus Level**
1200	PWS-1K24A-1R (default)	Titanium
1600	PWS-1K63A-1R	Titanium
2000	PWS-2K07A-1R	Titanium
2600	PWS-2K63A-1R	Titanium

6.4 Cable Management Arm

The system supports a cable management arm (CMA), which keeps the rear cables organized and clear of the rail mechanisms when the system is extended out the front of the rack for maintenance.

The CMA attaches to the rack mounting rails using four connectors. They are labeled on the connectors 1, 2, 3, and 4.

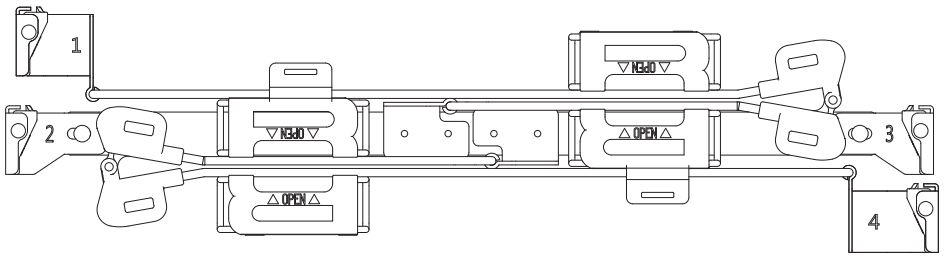


Figure 6-3. Cable Management Arm

Cable Arm Details		
Optional Part	**Part Number**	**Description**
Cable Arm	MCP-290-00168-0N	7.5" deep cable arm
Rail Set	MCP-290-11901-0N	41.2" rails (optimized for 1200 mm deep racks)

Installing the Cable Management Arm

1. Slide CMA connector #1 forward onto the two posts on the rear of the right *inner* rail (right side when viewed from the front). It snaps into place.
2. Slide CMA connector #2 forward onto the two posts on the rear of the right *middle* rail. It snaps into place.

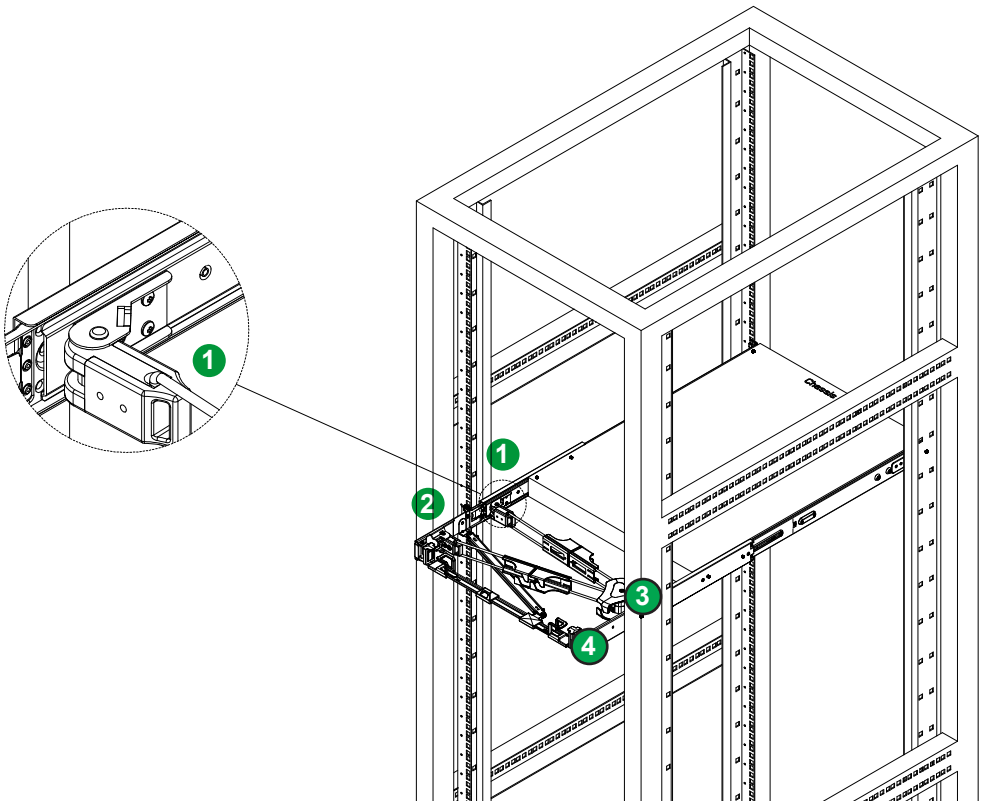


Figure 6-4. Installing the Connectors

3. Slide CMA connector #3 forward onto the two posts on the rear of the left middle rail. It snaps into place.
4. For CMA connector #4, align the metal tabs with the slots on the rear of the left outer rail and push it forward. It snaps into place.
5. Route the cables through the holding brackets, leaving enough slack.

Removing the Cable Management Arm

1. Remove cables from the CMA,
2. For CMA connector #4, pull the metal release tab toward the center of the rack and slide the connector toward the rear to release it.
3. For CMA connectors #3, #2, and #1, depress the front edge of the yellow plastic rocker lock and slide the connector toward the rear to release it.

6.5 TPM Security Module

SPI capable TPM 2.0 with Infineon 9672 controller, horizontal form factor

The JTPM1 header is used to connect a Trusted Platform Module (TPM). A TPM is a security device that supports encryption and authentication in hard drives. It enables the motherboard to deny access if the TPM associated with the hard drive is not installed in the system.

Details and installation procedures are at:

http://www.supermicro.com/manuals/other/TPM.pdf.

- AOM-TPM-9672V-O
- AOM-TPM-9672V-FIPS-O

6.6 Intel Virtual RAID on CPU (VROC)

Intel® Virtual RAID on CPU (Intel VROC) is an enterprise RAID solution for NVMe SSDs directly attached to Intel Xeon Scalable processors. Intel Volume Management Device (VMD) is an integrated controller inside the CPU PCIe root complex.

- A single processor supports up to 12 NVMe SSDs and up to 6 RAID arrays.
- A dual processor system supports up to 24 NVMe SSDs and 12 RAID arrays.

Stripe sizes are 4K, 8K, 16K, 32K, 64K, 128K.

Requirements and Restrictions

- **Intel VROC is only available when the system is configured for UEFI boot mode.**
- To enable the **mdadm** command and support for RSTe, install the patch from
  - Linux: https://downloadcenter.intel.com/download/28158/Intel-Virtual-RAID-on-CPU-Intel-VROC-and-Intel-Rapid-Storage-Technology-enterprise-Intel-RSTe-Driver-for-Linux-
  - Windows: https://downloadcenter.intel.com/download/28108/Intel-Virtual-RAID-on-CPU-Intel-VROC-and-Intel-Rapid-Storage-Technology-enterprise-Intel-RSTe-Driver-for-Windows-
- To enable Intel VROC, a hardware key must be inserted on the motherboard, and the appropriate processor's Virtual Management Devices must be enabled in the BIOS setup.
- It is possible to enable Intel VROC without a hardware key installed, but only RAID0 will be enabled.
- Intel VROC is not compatible with secure boot. This feature must be disabled.
- When creating bootable OS RAID1 devices, you must have both devices on the same CPU, and a VMD on that CPU.
- Spanning drives when creating RAID devices is not recommended due to performance issues, even though it is supported.

Supported SSDs and Operating Sytems

To see the latest support information: https://www.intel.com/content/www/us/en/support/articles/000030310/memory-and-storage/ssd-software.html

Additional Information

Additional information is available on the product page for the Supermicro add-on card and the linked manuals.

www.supermicro.com/products/accessories/addon/AOC-VROCxxxMOD.cfm

Hardware Key

The Intel VROC hardware key is a license key that detects the Intel VROC SKU and activates the function accordingly. The key must be plugged into the Supermicro motherboard (connector JRK1). The key options are:

Intel® VROC Keys			
VROC Package	**Description**	**Part Number**	**Intel MM Number**
Standard	RAID 0, 1, 10 Supports 3rd party SSDs	AOC-VROCSTNMOD	951605
Premium	RAID 0, 1, 5, 10 Supports 3rd party SSDs	AOC-VROCPREMOD	951606
Intel SSD only	RAID 0, 1, 5, 10 Supports Intel SSDs only	AOC-VROCINTMOD	956822

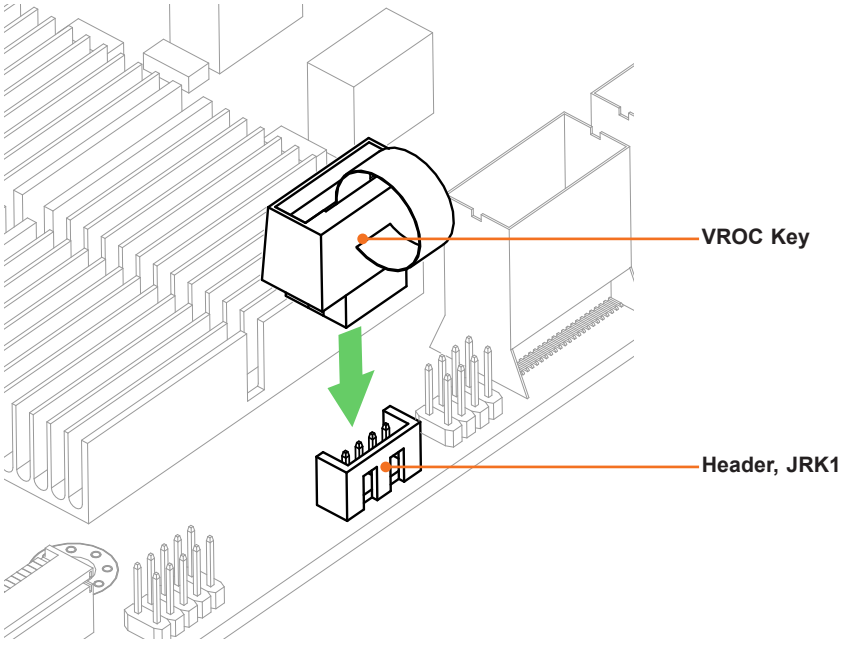


Figure 6-5. Intel VROC RAID Key and Motherboard Connector JRK1

Configuring Intel VMD

VMD must be enabled on PCIe ports which have NVMe drives attached to them in order for those drives to be added to a VROC RAID configuration. The default BIOS setting for the NVMe Mode Switch is **Auto** which automatically enables VMD on all installed NVMe drives.

NVMe Mode Switch :

- **Auto** Enables VMD for all NVMe ports if VROC Key is installed.
- **VMD** Enables VMD for all NVMe ports despite the lack of the VROC Key.
- **Manual** Allows the user to select specific NVMe ports on which to enable VMD.

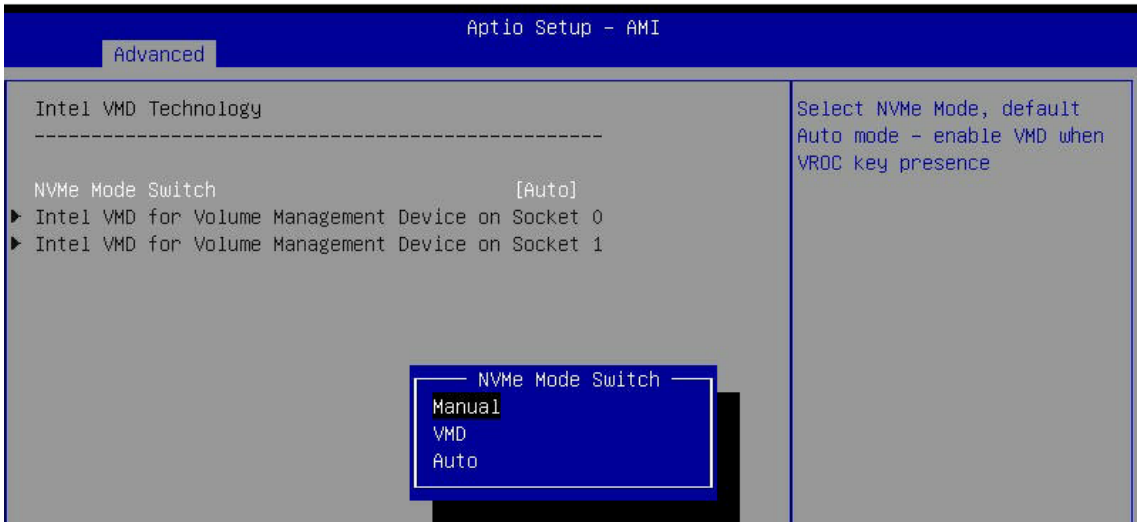
The NVMe Mode Switch can be viewed or selected at **BIOS > Advanced > Chipset Configuration > North Bridge > IIO Configuration > Intel® VMD Technology**.

Note: Without a VROC Key, there is no RAID support with the **Auto** switch. Only RAID 0 is supported with the **VMD** and **Manual** switches.

Configuring VMD Manually

The steps for manually configuring VMD on specific NVMe ports in UEFI BIOS are shown below. Example screenshots may differ from your server.

1. Reboot the server and press [DEL] key to access the BIOS options.
2. Switch to **Advanced > Chipset Configuration > North Bridge > IIO Configuration > Intel® VMD Technology**.
3. Select **VMD Mode Switch**, then select **Manual**.



Note that Socket 0 contains CPU1; Socket 1 contains CPU2

Figure 6-6. BIOS, Selecting VMD Mode

This table identifies the NVMe Port Resources in the X13 Hyper servers. Enable VMD on the NVMe drive's corresponding hardware stack according to the VMD BIOS Settings table.

Intel VMD BIOS Settings for X13 Hyper Systems				
Model	**CPU1**	**NVMe Slots**	**CPU2**	**NVMe Slots**
SYS-121H-TNR 8 NVMe (0-7) 12 NVMe (0-11) 8 SAS/SATA + 4 NVMe (8-11) 8 SATA + 4 NVMe (8-11) 8 NVMe (0-7) + 4 SAS/SATA 8 NVMe (0-7) + 4 SATA	VMD Config for PCH ports: PCH Root Port 8 PCH Root Port 9	M.2 A,B	VMD Config for IOU 0: Socket 1 IOU0 port A Socket 1 IOU0 port C Socket 1 IOU0 port E Socket 1 IOU0 port G	NVMe 4,5,6,7
	VMD Config for IOU 3: Socket 0 IOU3 port E Socket 0 IOU3 port G	NVMe 0,1.	VMD Config for IOU 3: Socket 1 IOU3 port E Socket 1 IOU3 port G	NVMe 8,9
	VMD Config for IOU 4: Socket 0 IOU4 port A Socket 0 IOU4 port C	NVMe 2, 3	VMD Config for IOU 4: Socket 1 IOU4 port E Socket 1 IOU4 port G	NVMe 10,11
SYS-621H-TN12R 12 NVMe (0-11) 8 SAS/SATA + 4 NVMe (8-11) 8 SATA + 4 NVMe (8-11)	VMD Config for PCH ports: PCH Root Port 8 PCH Root Port 9	M.2 A,B	VMD Config for IOU 3: Socket 1 IOU3 port E Socket 1 IOU3 port G	NVMe 6,7
	VMD Config for IOU 3: Socket 0 IOU3 port E Socket 0 IOU3 port G	NVMe 0,1	VMD Config for IOU 4: Socket 1 IOU4 port A Socket 1 IOU4 port C Socket 1 IOU4 port E Socket 1 IOU4 port G	NVMe 8,9,10,11
	VMD Config for IOU 4: Socket 0 IOU4 port A Socket 0 IOU4 port C Socket 0 IOU4 port E Socket 0 IOU4 port G	NVMe 2,3,4,5		
SYS-621H-TN12R 2 Rear NVMe (12-13) 4 Rear NVMe (12-15)	VMD Config for PCH ports: PCH Root Port 8 PCH Root Port 9	M.2 A,B	VMD Config for IOU 0: Socket 1 IOU0 port A Socket 1 IOU0 port C Socket 1 IOU0 port E Socket 1 IOU0 port G	NVMe 12,13,14,15
SYS-221H-TN24R 24 NVMe (0-23) 16 NVMe (8-23) + 8 SAS/SATA 16 NVMe (8-23) + 8 SATA 16 SAS/SATA + 8 NVMe (16-23)	VMD Config for PCH ports: PCH Root Port 8 PCH Root Port 9	M.2 A,B	VMD Config for IOU 0: Socket 1 IOU0 port A Socket 1 IOU0 port C Socket 1 IOU0 port E Socket 1 IOU0 port G	NVMe 10,11,12,13
	VMD Config for IOU 1: Socket 0 IOU1 port A Socket 0 IOU1 port C Socket 0 IOU1 port E Socket 0 IOU1 port G	NVMe 0,1,2,3	VMD Config for IOU 2: Socket 1 IOU2 port A Socket 1 IOU2 port C Socket 1 IOU2 port E Socket 1 IOU2 port G	NVMe 14,15,16,17
	VMD Config for IOU 3: Socket 0 IOU3 port E Socket 0 IOU3 port G	NVMe 4,5.	VMD Config for IOU 3: Socket 1 IOU3 port E Socket 1 IOU3 port G	NVMe 18,19
	VMD Config for IOU 4: Socket 0 IOU4 port A Socket 0 IOU4 port C Socket 0 IOU4 port E Socket 0 IOU4 port G	NVMe 6,7,8,9	VMD Config for IOU 4: Socket 1 IOU4 port A Socket 1 IOU4 port C Socket 1 IOU4 port E Socket 1 IOU4 port G	NVMe 20,21,22,23

Intel VMD BIOS Settings for X13 Hyper Systems				
Model	**CPU1**	**NVMe Slots**	**CPU2**	**NVMe Slots**
SYS-221H-TN24R 2 Rear NVMe (24-25) 4 Rear NVMe (24-27)	VMD Config for PCH ports: PCH Root Port 8 PCH Root Port 9	M.2 A,B	VMD Config for IOU 0: Socket 1 IOU0 port A Socket 1 IOU0 port C Socket 1 IOU0 port E Socket 1 IOU0 port G	NVMe 24,25,26,27
SYS-221H-TNR 16 NVME (0-15) 8 NVMe (8-15) + 8 SAS/SATA 8 NVMe (8-15) + 8 SATA	VMD Config for PCH ports: PCH Root Port 8 PCH Root Port 9	M.2 A,B	VMD Config for IOU 2: Socket 1 IOU2 port A Socket 1 IOU2 port C Socket 1 IOU2 port E Socket 1 IOU2 port G	NVMe 6,7,8,9
	VMD Config for IOU 3: Socket 0 IOU3 port E Socket 0 IOU3 port G	NVMe 0,1	VMD Config for IOU 3: Socket 1 IOU3 port E Socket 1 IOU3 port G	NVMe 10,11
	VMD Config for IOU 4: Socket 0 IOU4 port A Socket 0 IOU4 port C Socket 0 IOU4 port E Socket 0 IOU4 port G	NVMe 2,3,4,5	VMD Config for IOU 4: Socket 1 IOU4 port A Socket 1 IOU4 port C Socket 1 IOU4 port E Socket 1 IOU4 port G	NVMe 12,13,14,15
SYS-221H-TNR 8 NVMe	VMD Config for PCH ports: PCH Root Port 8 PCH Root Port 9	M.2 A,B	VMD Config for IOU 2: Socket 1 IOU2 port E Socket 1 IOU2 port G	NVMe 0,1
			VMD Config for IOU 3: Socket 1 IOU3 port E Socket 1 IOU3 port G	NVMe 2,3
			VMD Config for IOU 4: Socket 1 IOU4 port A Socket 1 IOU4 port C Socket 1 IOU4 port E Socket 1 IOU4 port G	NVMe 4,5,6,7

Caution: VMD must only be enabled on NVMe port resources. If VMD is enabled on other PCIe ports, the functionality of those ports will be impacted.

4. Select “Intel VMD for Volume Management Device on” on Socket 0 (CPU1) or Socket 2 (CPU2) to enable VMD for devices under the respective CPU.

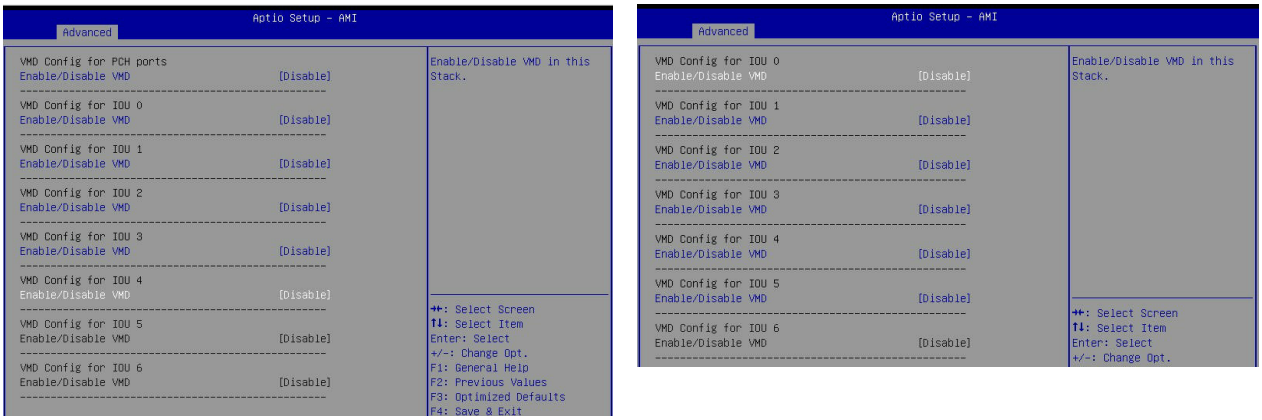


Figure 6-7. Intel VMD for Volume Management Device on Socket 0 and Socket 1

5. Choose Enable for “Enable/Disable VMD” for IOU 3 to list the available devices under IOU 3.

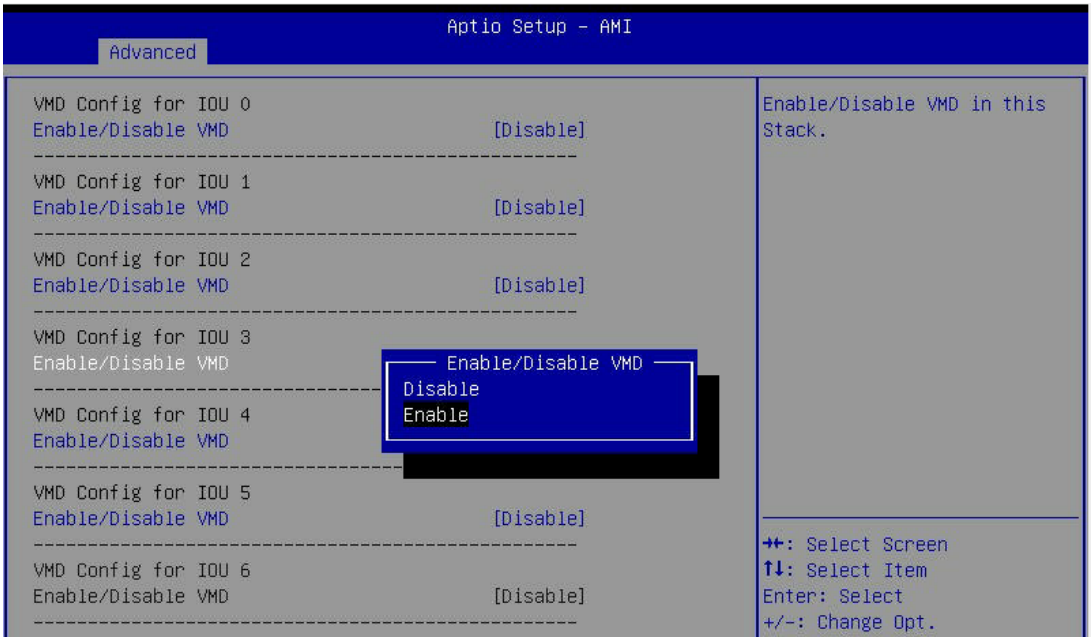


Figure 6-8. BIOS, Enabling VMD on Socket 1 (CPU2) (Example)

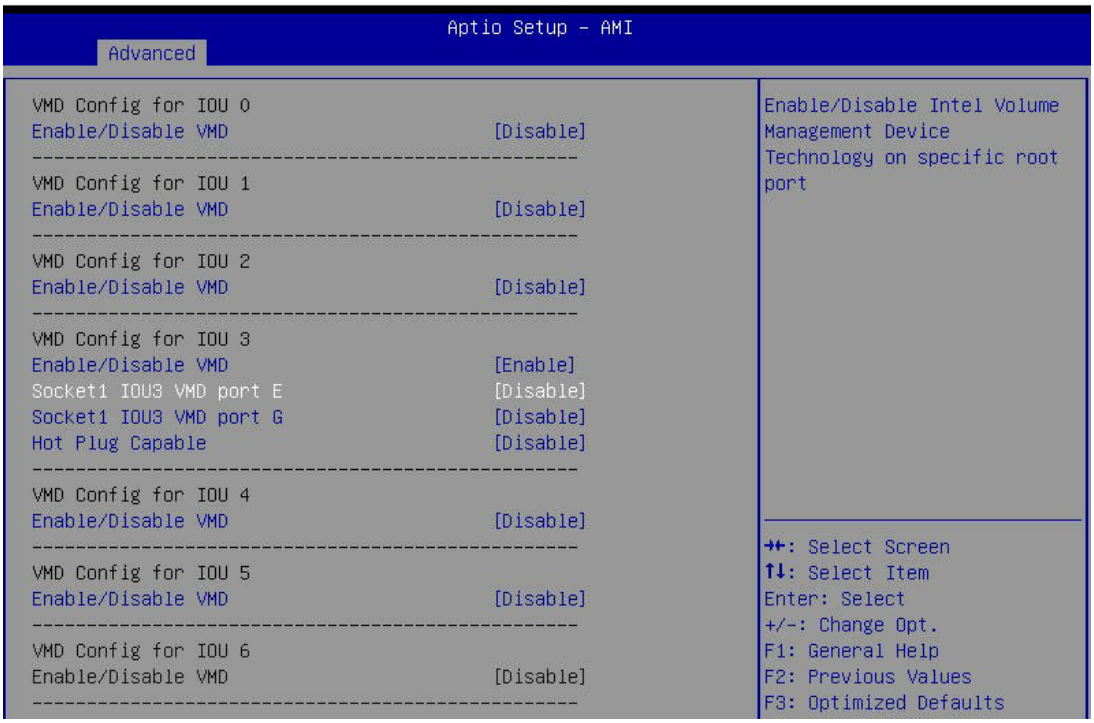


Figure 6-9. BIOS, Enabling VMD on Socket 1 (Example)

6. Enable the NVMe port resource according to table above for the NVMe drives that will be used in a RAID configuration.

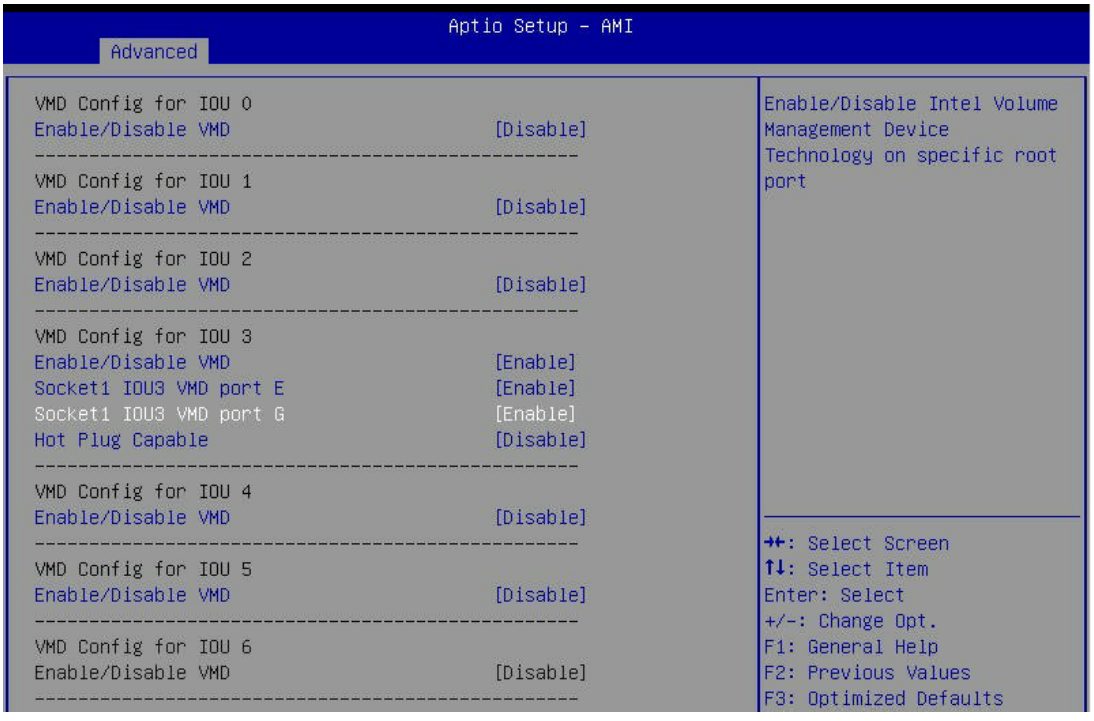


Figure 6-10. BIOS, Enabling Socket 1 (Example)

7. Choose whether to make the NVMe drives in this IOU **Hot Plug Capable** by selecting Enabled or Disabled.

8. Repeat steps 4 through 7 for each IOU # on each CPU to enable VMD on the desired NVMe ports.

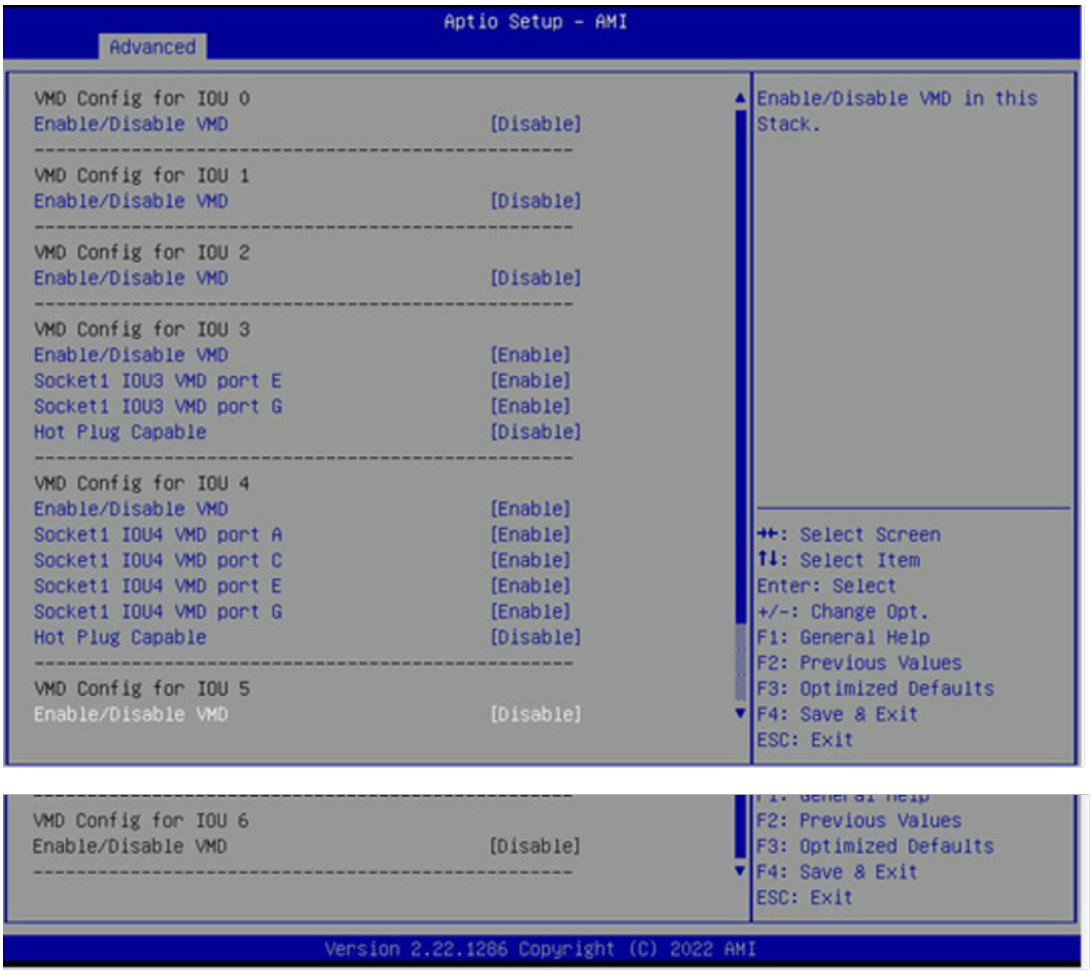


Figure 6-11. BIOS, Enabling Socket 1 Completed (Example)
(This example shows SYS-621H-TN12R with 12 NVMe. Other systems will look different.)

9. Press [F4] to save the configuration and reboot the system.

Note: If there is an existing RAID configuration, delete the RAID volume associated with the VMD controller before disabling the controller. Failure to do so may lead to unexpected behavior.

Note: The effects of physically changing or swapping a CPU on the VMD controller have not been thoroughly tested or documented.

Creating NVMe RAID Configurations

1. Open **Advanced > Intel(R) Virtual RAID on CPU > All Intel VMD Controllers > Create RAID Volume**.

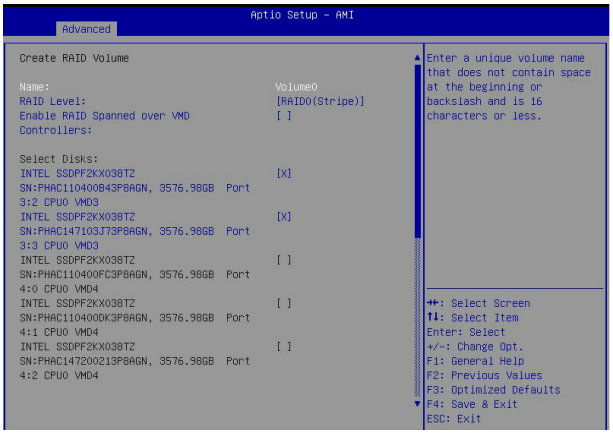


Figure 6-12. Created Volume *without* enabling RAID spanned over VMD controller

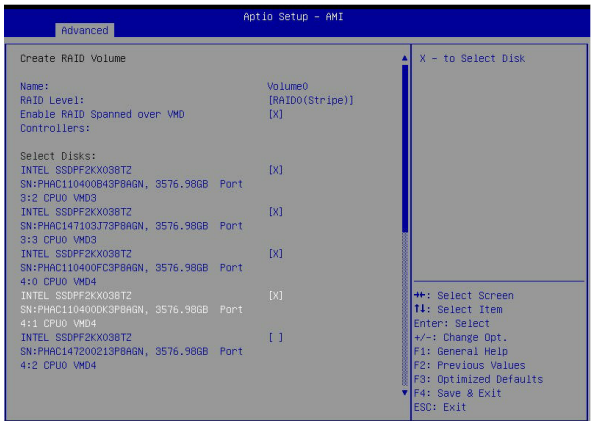


Figure 6-13. Created Volume *with* enabling RAID spanned over VMD controller

2. Set **Name**.
3. Set **RAID Level**.
4. If cross-controller RAID is required, select **Enable RAID spanned over VMD Controller**.
5. Select specific disks for RAID with an [X].
   - RAID0: Select at least two [2 - 24] disks
   - RAID1: Select only two disks
   - RAID5: Select at least three [3 - 24] disks
   - RAID10: Select only four disks
6. Select **Strip Size** (Default 64KB).
7. Select **Create Volume**.
8. If another RAID is needed, start again at step 1.

Status Indications

An LED indicator on the drive carrier shows the RAID status of the drive.

Drive Carrier Status LED Indicator	
Status	**State (Red)**
Normal function	OFF
Locating	4 Hz blink
Fault	Solid ON
Rebuilding	1 Hz Blink

IBPI SFF 8489 Defined Status LED States

Hot-Swap Drives

Intel VMD enables hot-plug and hot-unplug for NVMe SSDs, whether from Intel or other manufacturers. Under vSphere ESXi, several steps are necessary to avoid potential stability issues. See the information at the link [1] below.

Hot-unplug

1. Prevent devices from being re-detected during rescan:

```
esxcli storage core claiming autoclaim --enabled=false
```

2. Unmount the VMFS volumes on the device. Check [2] for details.
3. Detach the device. Check [3] for details.
4. Physically remove the device.

Hot-plug

- Physically install the device.

ESXi will automatically discover NVMe SSDs, but a manual scan may be required in some cases.

Related Information Links

[1] https://kb.vmware.com/s/article/2151404

[2] https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.storage.doc/GUID-1B56EF97-F60E-4F21-82A7-8F2A7294604D.html

[3] https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.storage.doc/GUID-F2E75F67-740B-4406-9F0C-A2D99A698F2A.html

6.7 GPUs

Supermicro 2U Hyper systems support graphic processing units (GPUs) when installed with some additional optional parts. GPUs have cooling requirements that can be assisted by specialized dual-level air shrouds to direct the flow from the system fans. Refer to the Supermicro product page to see the list of compatible GPUs.



Figure 6-15. Expansion Card Chassis Slots

- Single width GPUs can be installed the same as PCIe expansion cards.
- Double width GPUs can be used in slots 1, 3, 5, and 7. When a slot is used the corresponding even numbered slot is not available.

Notes:

- Installing different types of GPUs is not recommended.
- Due to thermal limitations, not all slots can be filled for some GPU models.
- Some GPUs require alternate air shrouds, CPU heatsinks, and restrictions on the physical size of storage drives.
- Standard air shrouds are MCP-310-82938-0N (CPU1) and MCP-310-82039-0N (CPU2).
- 1U air shrouds are MCP-310-82940-0N and MCP-310-82941-0N.

Installing GPUs

1. Power down the system, unplug AC cords, and remove the top chassis cover.
2. Following the instructions in Expansion Card section in Chapter 3, install the GPU in the recommended PCIe slot according to the GPU support table below.

   Note: Install the GPU support bracket for 9.5" or longer GPUs installed in Slots 5 and 7. A single bracket can support a card in either of both.

Supported GPU Configurations							
GPU Types	**QTY**	**Slots**	**GPU Max Power**	**CPU Power**	**System Ambient**	**Air Shrouds**	**Storage**
Double Wide (passive)	4	1,3,5,7	350W	165W	25C	Standard	Only 2.5" storage drives in bays 2,5,8,11
Double Wide (passive)	up to 3	1,3,5 (only)	350W	300W	30C	1U GPU Air shroud/1U Heatsinks	
Double Wide (active)	up to 4	1,3,5,7	350W	350W	25C	Standard	
Single Wide	8	1,2,3,4,5,6,7,8	165W	350W	25C	Standard	
Single Wide	up to 6	1,2,3,4,5,6 (only)	165W	300W	30C	1U GPU Air shroud/1U Heatsinks	

Note: See Supermicro GPU support webpage for CPU Power and System Ambient Limits for specific GPU models.

3. Install the power cables provided with GPU cards according to the table below. See the motherboard layout in Chapter 1 to identify the connectors. Some GPU models may not require power cables.

GPU Cable Connections				
GPU	**Motherboard Connector**	**GPU Connector Type**		
		PCIe 16-pin PWR	**PCIe 8-pin/6-pin PWR**	**CPU 8-pin PWR**
GPU in Slot 1	JPMW5	CBL-PWEX-1364-26	CBL-PWEX-1171-2654	CBL-PWEX-1172-2654
GPU in Slot 3	JPMW2			
GPU in Slot 5	JPMW4			
GPU in Slot 7	JPMW7	CBL-PWEX-1364-12		

4. Determine if your GPUs require replacing the default 2U air shrouds (see previous table). To replace:

   a. Remove the default air shrouds and discard.

   b. Replace both 2U CPU heatsinks with 1U heatsinks (see procedure).

   c. For the 1U GPU air shrouds, use the table below to determine if the air blocks should remain in the blocking position, or be stored in non-blocking position.

GPU Air Block Configurations					
GPU Configuration	**QTY**	**Slots**	**Fan 8 Air Block**	**Fan 6 Air Block**	**Fan 4 Air Block**
Double Wide	3	1,3,5	Stored	Stored	Stored
Double Wide	2	3,5	Stored	Stored	Blocked
Double Wide	1	5	Stored	Blocked	Blocked
Single Wide	5 or 6	1,(2),3,4,5,6	Stored	Stored	Stored
Single Wide	3 or 4	3, (4), 5, 6	Stored	Stored	Blocked
Single Wide	1 or 2	5, (6)	Stored	Blocked	Blocked

* Air blocks are only available on 1U GPU air shrouds.
* Stored means the air block is hidden and not impeding airflow.

   d. Install the the 1U air shroud MCP-310-82940-0N (Fan 8 and Fan 6 air blocks) over CPU1.

   e. Install the the 1U air shroud MCP-310-82941-0N (Fan 4 air blocks) over CPU2.

5. Close and power up the system.

Storing the Air Blocks for 1U GPU Air Shrouds

Remove the air shroud top cover. If an air block must be stored, lift it out of the blocking position and snap it into the stored position as shown below.

Air shroud MCP-310-82940-0N *(top removed)*

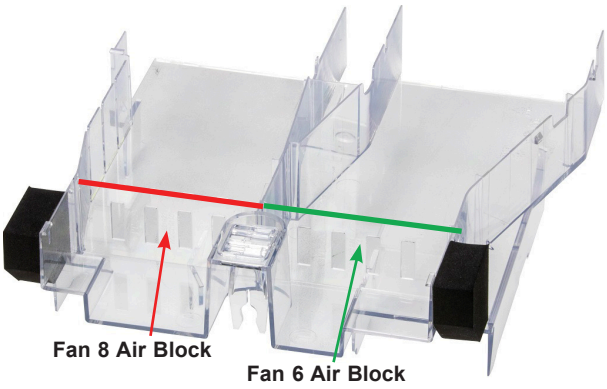


Figure 6-17. Fan 8 and 6 Air Blocks, Blocking Position

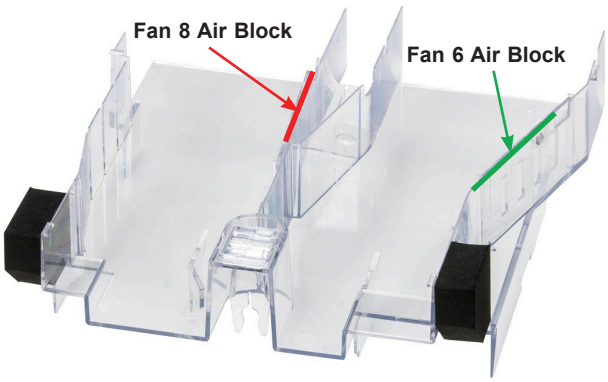


Figure 6-18. Fan 8 and 6 Air Blocks, Stored Position

Air shroud MCP-310-82941-0N *(top removed)*

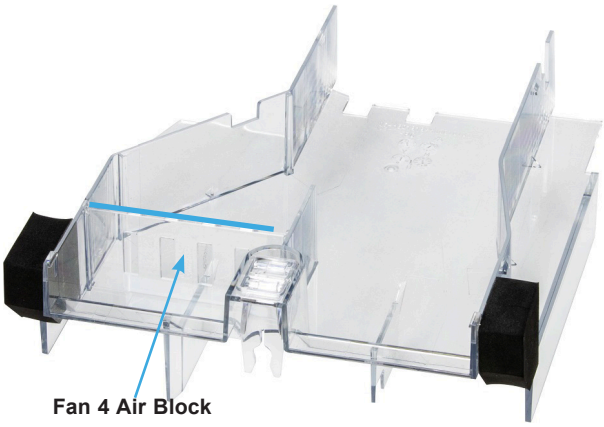


Figure 6-19. Fan 4 Air Block, Blocking Position

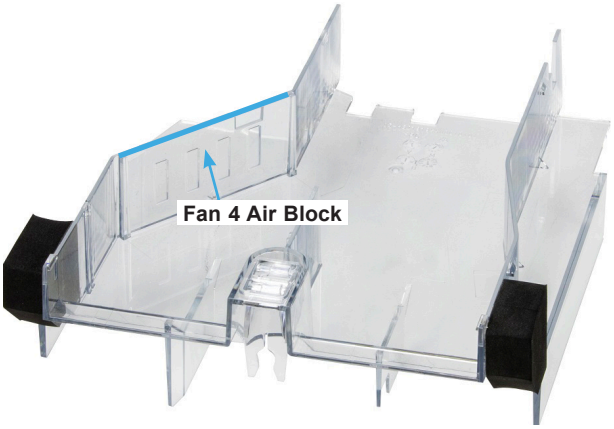


Figure 6-20. Fan 4 Air Block, Stored Position

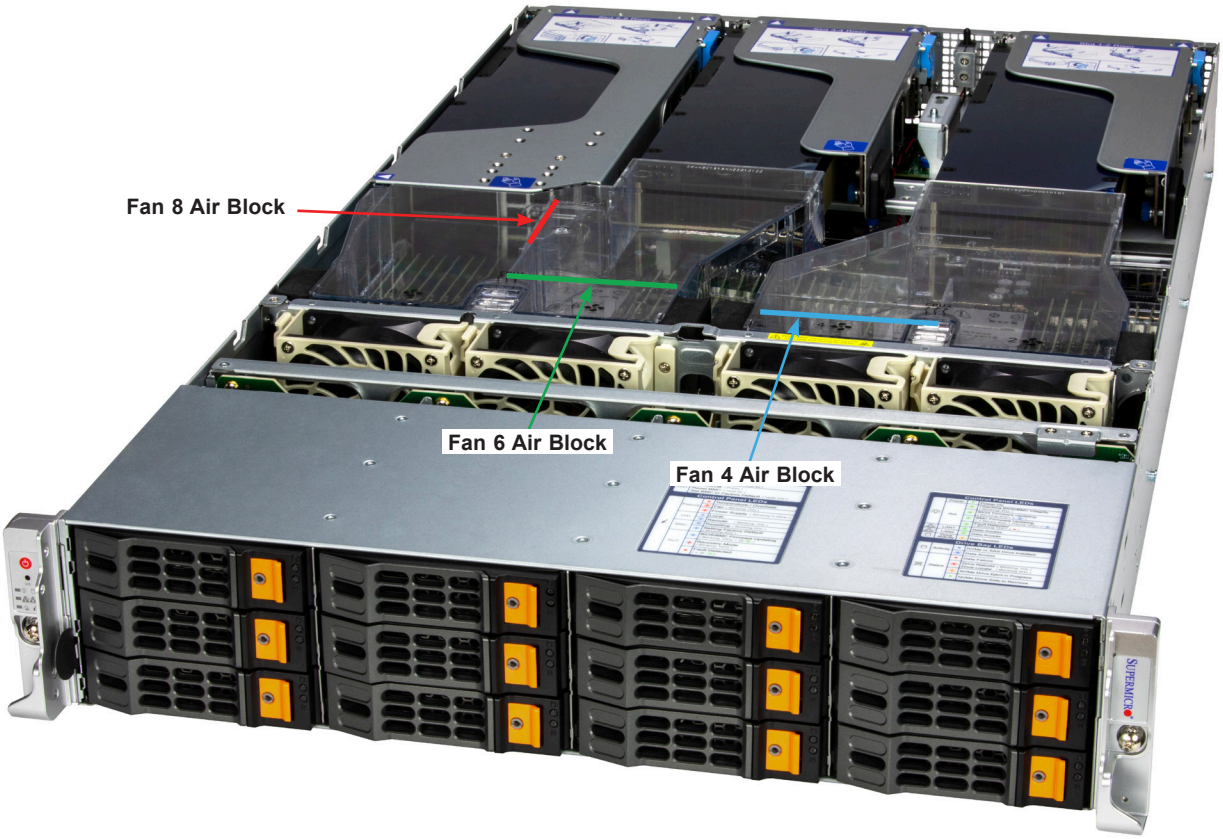


Figure 6-20. Fan 8 Air Block Stored; Fan 6 and Fan 4 Air Block in Blocking Position

Chapter 7

Troubleshooting and Support

7.1 Information Resources

Website

A great deal of information is available on the Supermicro website, supermicro.com.

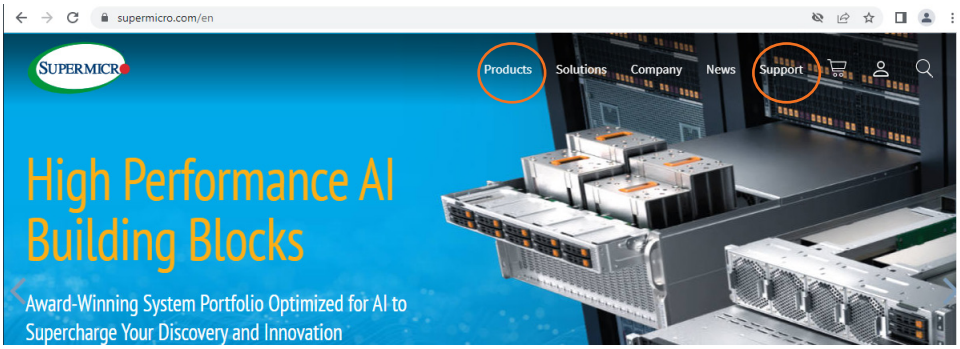


Figure 7-1. Supermicro Website

- Specifications for servers and other hardware are available by clicking the **Products** option.
- The **Support** option offers downloads (manuals, BIOS/BMC, drivers, etc.), FAQs, RMA, warranty, and other service extensions.

Direct Links for the SYS-621H-TN12R System

Web SYS-621H-TN12R specifications page

X13DEM motherboard page for links to the Quick Reference Guide, User Manual, validated storage drives, etc.

Direct Links for General Support and Information

Frequently Asked Questions

TPM User Guide

BMC User Guide

SuperDoctor5 Large Deployment Guide

For validated memory, use our Product Resources page

Direct Links (continued)

Product Matrices page for links to tables summarizing specs for systems, motherboards, power supplies, riser cards, add-on cards, etc.

Security Center for recent security notices

Supermicro Phone and Addresses

7.2 BMC Interface

The system supports a Baseboard Management Controller (BMC) interface. It provides remote access, monitoring and management. There are several BIOS settings related to the BMC.

For general documentation and information on the BMC, please visit our website at: https://www.supermicro.com/manuals/other/BMC_IPMI_X13_H13.pdf.

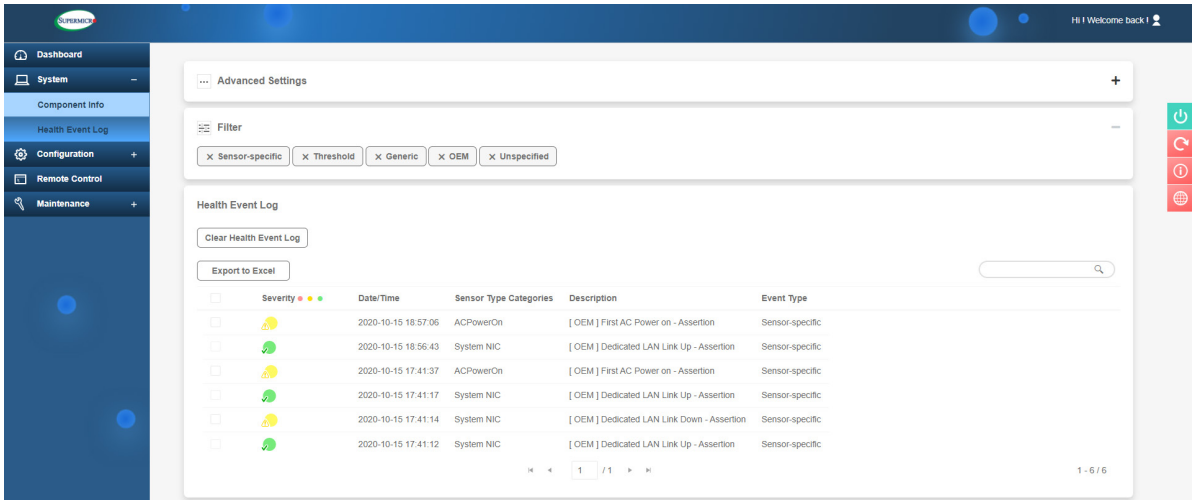


Figure 7-2. BMC Dashboard Sample

7.3 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the Technical Support Procedures or Returning Merchandise for Service sections in this chapter. Power down the system before changing any non hot-swap hardware components.

General Technique

If you experience unstable operation or get no boot response, try:

1. With power off, remove all but one DIMM and other added components, such as add-on cards, from the motherboard. Make sure the motherboard is not shorted to the chassis.
2. Set all jumpers to their default positions.
3. Power up. If the system boots, check for memory errors and add-on card problems.

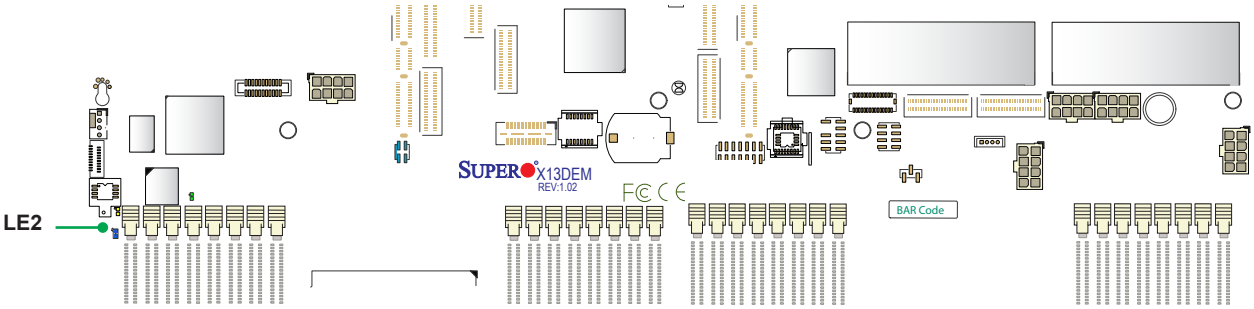


Figure 7-3. Location of the MB Power LED

No Power

- Check that the power LED on the motherboard is on.
- Make sure that the power connector is connected to the power supply.
- Check that the motherboard battery still supplies approximately 3VDC. If it does not, replace it.
- Check that the system input voltage is 100-120v or 180-240v.
- Turn the power switch on and off to test the system

No Video

If the power is on but you have no video, remove all add-on cards and cables.

System Boot Failure

If the system does not display Power-On-Self-Test (POST) or does not respond after the power is turned on, try the following:

- Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure below.

Memory Errors

- Make sure that the DIMM modules are properly and fully installed.
- Confirm that you are using the correct memory. Also, it is recommended that you use the same memory type and speed for all DIMMs in the system. See Section 3.3 for memory details.
- Check for bad DIMM modules or slots by swapping modules between slots and noting the results.

Losing the System Setup Configuration

- Always replace power supplies with the exact same model that came with the system. A poor quality power supply may cause the system to lose the CMOS setup configuration.
- Check that the motherboard battery still supplies approximately 3VDC. If it does not, replace it.

If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

When the System Becomes Unstable

If the system becomes unstable during or after OS installation, check the following:

- CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.
- Memory: Make sure that the memory modules are supported. Refer to the product page on our website at www.supermicro.com. Test the modules using **memtest86** or a similar utility.
- Storage drives: Make sure that all drives work properly. Replace if necessary.
- System cooling: Check that all heatsink fans and system fans work properly. Check the hardware monitoring settings in the BMC to make sure that the CPU and system temperatures are within the normal range. Also check the Control panel Overheat LED.

- Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Refer to the Supermicro website for the minimum power requirements.
- Proper software support: Make sure that the correct drivers are used.

If the system becomes unstable before or during OS installation, check the following:

- Source of installation: Make sure that the devices used for installation are working properly, including boot devices.
- Cable connection: Check to make sure that all cables are connected and working properly.
- Use the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with a CPU and a memory module installed) to identify the trouble areas.
- Identify a bad component by isolating it. Check and change one component at a time.
  - Remove a component in question from the chassis, and test it in isolation. Replace it if necessary.
  - Or swap in a new component for the suspect one.
  - Or install the possibly defective component into a known good system. If the new system works, the component is likely not the cause or the problem.

7.4 POST Codes

The AMI UEFI BIOS supplies checkpoint codes, which are documented online at http://www.supermicro.com/support/manuals/ ("*AMI BIOS POST Codes User's Guide*").

When BIOS performs the Power On Self Test, it writes checkpoint codes to I/O port 0080h. If the computer cannot complete the boot process, the POST codes can be viewed from the BMC using the Post Snooping function.

For information on AMI updates, please refer to http://www.ami.com/products/.

7.5 Crash Dump Using the BMC Dashboard

In the event of a processor internal error (IERR) that crashes your system, you may want to provide information to support staff. You can download a crash dump of status information using the BMC Dashboard. The BMC manual is available at https://www.supermicro.com/manuals/other/BMC_IPMI_X13_H13.pdf.

Check Error Log

1. Access the BMC web interface.
2. Click the **Server Health** tab, then **Event Log** to verify an IERR error.

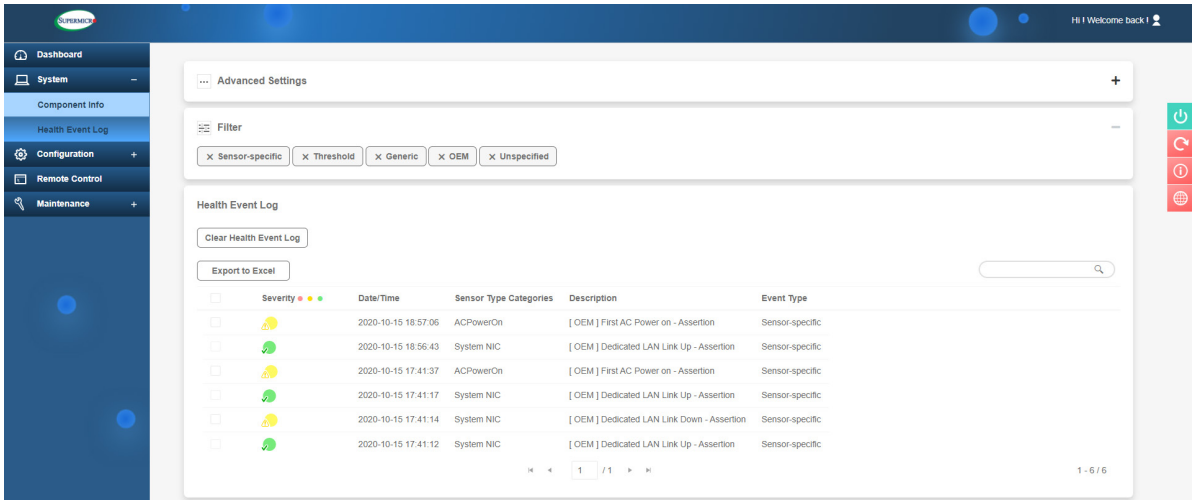


Figure 7-4. BMC Event Log

In the event of an IERR, the BMC executes a crash dump. You must download the crash dump and save it.

7.6 UEFI BIOS Recovery

Warning: Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you do update the BIOS, do not shut down or reset the system while the BIOS is updating to avoid possible boot failure.

Overview

The Unified Extensible Firmware Interface (UEFI) provides a software-based interface between the operating system and the platform firmware in the pre-boot environment. The UEFI specification supports an architecture-independent mechanism that will allow the UEFI OS loader stored in an add-on card to boot the system. The UEFI offers clean, hands-off management to a computer during system boot.

Recovering the UEFI BIOS Image

A UEFI BIOS flash chip consists of a recovery BIOS block and a main BIOS block (a main BIOS image). The recovery block contains critical BIOS codes, including memory detection and recovery codes for the user to flash a healthy BIOS image if the original main BIOS image is corrupted. When the system power is turned on, the recovery block codes execute first. Once this process is complete, the main BIOS code will continue with system initialization and the remaining POST (Power-On Self-Test) routines.

Note 1: Follow the BIOS recovery instructions below for BIOS recovery when the main BIOS block crashes.

Note 2: When the BIOS recovery block crashes, you will need to follow the procedures to make a Returned Merchandise Authorization (RMA) request. Also, you may use the Supermicro Update Manager (SUM) Out-of-Band (https://www.supermicro.com.tw/products/nfo/SMS_SUM.cfm) to reflash the BIOS.

Recovering the Main BIOS Block with a USB Device

This feature allows the user to recover the main BIOS image using a USB-attached device without additional utilities used. A USB flash device such as a USB Flash Drive, or a USB CD/DVD ROM/RW device can be used for this purpose. However, a USB Hard Disk drive cannot be used for BIOS recovery at this time.

The file system supported by the recovery block is FAT (including FAT12, FAT16, and FAT32) which is installed on a bootable or non-bootable USB-attached device. However, the BIOS might need several minutes to locate the SUPER.ROM file if the media size becomes too large due to the huge volumes of folders and files stored in the device.

To perform UEFI BIOS recovery using a USB-attached device, follow the instructions below.

1. Using a different machine, copy the "Super.ROM" binary image file into the Root "\" directory of a USB device or a writable CD/DVD.

   Note 1: If you cannot locate the "Super.ROM" file in your drive disk, visit our website at www.supermicro.com to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

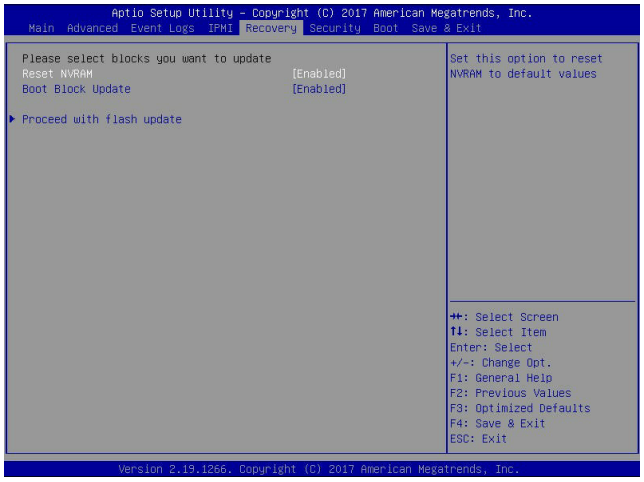
   Note 2: Before recovering the main BIOS image, confirm that the "Super.ROM" binary image file you download is the same version or a close version meant for your motherboard.

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and reset the system when the following screen appears.

3. After locating the healthy BIOS binary image, the system will enter the BIOS Recovery menu as shown below.



Note: At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.

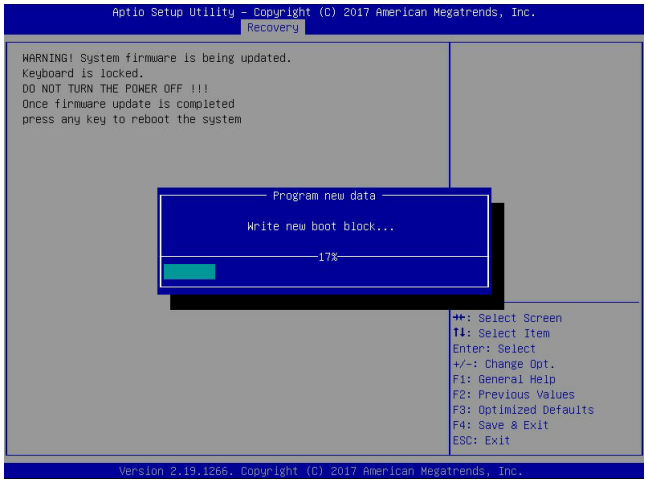


4. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.

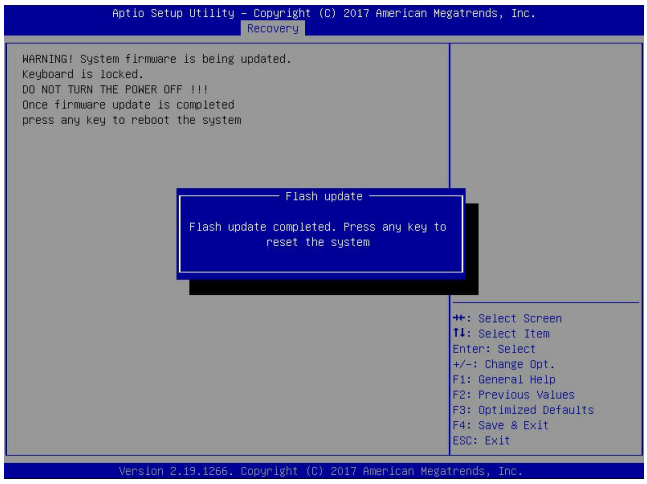
   Note: *Do not interrupt the BIOS flashing process until it has completed*.

5. After the BIOS recovery process is complete, press any key to reboot the system.

6. Using a different system, extract the BIOS package into a USB flash drive.

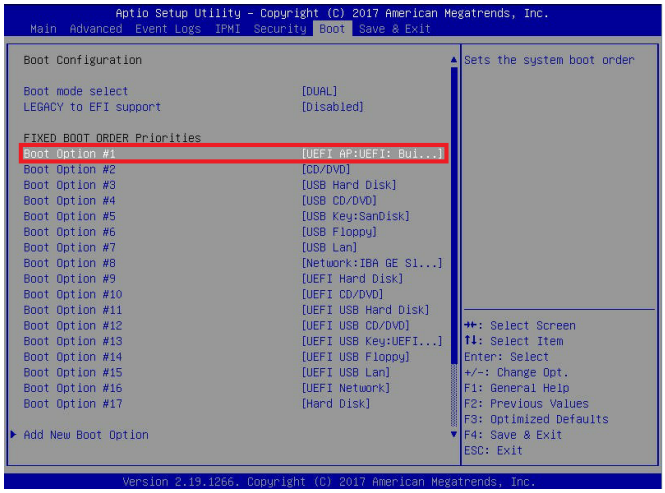


7. Press <Del> continuously during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot

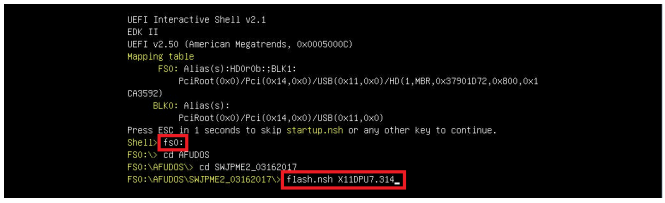


Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the BIOS Setup utility.

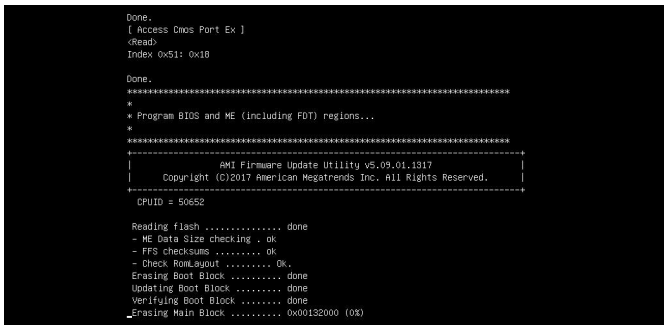
8. When the UEFI Shell prompt appears, type fs# to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter flash.nsh BIOSname.### at the prompt to start the BIOS update process.



Note: *Do not interrupt this process* until the BIOS flashing is complete.

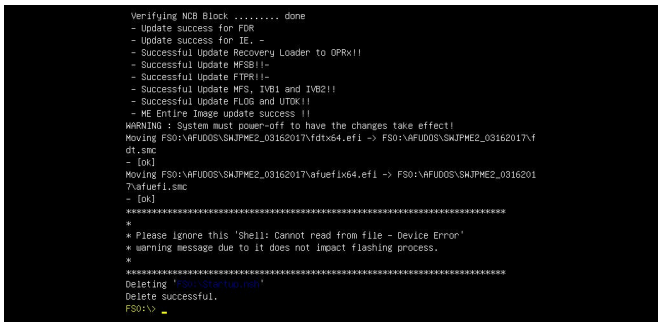


9. The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug



the AC power cable in the power supply again to power on the system.

10. Press <Del> continuously to enter the BIOS Setup utility.



11. Press <F3> to load the default settings.

12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.

7.7 CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system completely.
2. Remove the cover of the chassis to access the motherboard.
3. Remove the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.



JBT1 contact pads

5. Remove the screwdriver or shorting device.
6. Replace the cover, reconnect the power cords and power on the system.

Notes: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.

7.8 BMC Reset

The BMC can be reset using the UID button. First, move the JRU1 jumper to pins 3/4 (see Section 4.4).

- Reset – Press and hold the button. After six seconds, the LED blinks at 2Hz. The BMC resets and the reset duration is approximately 250 ms. Then the BMC starts to boot.
- Restore factory default configuration – Hold the button for twelve seconds. The LED blinks at 4Hz while defaults are configured. **Note**: All BMC settings including username and password will be removed except the FRU and network settings.

Firmware update – When the BMC firmware is being updated, the UID LED blinks at 10Hz.

BMC Reset Options		
Event	**UID LED**	**BMC Heartbeat LED**
Reset	Blue, Blinks at 2Hz	Green, solid
Restore Defaults	Blue, Blinks at 4Hz	Off
Update	Blue, Blinks at 10Hz	

7.9 Where to Get Replacement Components

If you need replacement parts for your system, to ensure the highest level of professional service and technical support, purchase exclusively from our Supermicro Authorized Distributors/System Integrators/Resellers. A list can be found at: http://www.supermicro.com. Click the "Where to Buy" tab.

7.10 Reporting an Issue

Technical Support Procedures

Before contacting Technical Support, please take the following steps. If your system was purchased through a distributor or reseller, please contact them for troubleshooting services. They have the best knowledge of your specific system configuration.

1. Please review the Troubleshooting Procedures in this manual and Frequently Asked Questions on our website before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website. **Note**: Not all BIOS can be flashed depending on the modifications to the boot block code.
3. If you still cannot resolve the problem, include the following information when contacting us for technical support:
   - System, motherboard, and chassis model numbers and PCB revision number
   - BIOS release date/version (this can be seen on the initial display when your system first boots up)
   - System configuration

An example of a Technical Support form is posted on our website. Distributors: For immediate assistance, please have your account number ready when contacting our technical support department by email.

Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

For faster service, RMA authorizations may be requested online (http://www.supermicro.com/support/rma/).

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

Vendor Support Filing System

For issues related to Intel, use the Intel IPS filing system:

https://www.intel.com/content/www/us/en/design/support/ips/training/welcome.html

For issues related to Red Hat Enterprise Linux, since it is a subscription based OS, contact your account representative.

7.11 Feedback

Supermicro values your feedback as we strive to improve our customer experience in all facets of our business. To provide feedback on our manuals, please email us at techwriterteam@supermicro.com.

7.12 Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc. 980 Rock Ave. San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information) Sales-USA@supermicro.com (Sales Inquiries) Government_Sales-USA@supermicro.com (Gov. Sales Inquiries) support@supermicro.com (Technical Support) RMA@supermicro.com (RMA Support) Webmaster@supermicro.com (Webmaster)
Website:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V. Het Sterrenbeeld 28, 5215 ML 's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	Sales_Europe@supermicro.com (Sales Inquiries) Support_Europe@supermicro.com (Technical Support) RMA_Europe@supermicro.com (RMA Support)
Website:	www.supermicro.nl

Asia-Pacific

Address:	Super Micro Computer, Inc. 3F, No. 150, Jian 1st Rd. Zhonghe Dist., New Taipei City 235 Taiwan (R.O.C)
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3992
Email:	Sales-Asia@supermicro.com.tw (Sales Inquiries) Support@supermicro.com.tw (Technical Support) RMA@supermicro.com.tw (RMA Support)
Website:	www.supermicro.com.tw

Appendix A

Standardized Warning Statements for AC Systems

About Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this appendix in its entirety before installing or configuring components in the Supermicro chassis.

These warnings may also be found on our website at http://www.supermicro.com/about/policies/safety_information.cfm.

Warning Definition



Warning! This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

警告!この警告サインは危険を意味します。人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

警告！此警告符号代表危险。您正处于可能受到严重伤害的工作环境中。在您使用设备开始工作之前，必须充分意识到触电的危险，并熟练掌握防止事故发生的标准工作程序。请根据每项警告结尾的声明号码找到此设备的安全性警告说明的翻译文本。

警告！此警告符號代表危險。您正處於可能身體可能會受損傷的工作環境中。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

WICHTIGE SICHERHEITSHINWEISE.

Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Verletzungen führen kann. Machen Sie sich vor der Arbeit mit Geräten mit den Gefahren elektrischer Schaltungen und den üblichen Verfahren zur Vorbeugung vor Unfällen vertraut. Suchen Sie mit der am Ende jeder Warnung angegebenen Anweisungsnummer nach der jeweiligen Übersetzung in den übersetzten Sicherheitshinweisen, die zusammen mit diesem Gerät ausgeliefert wurden. BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD.

Este símbolo de aviso indica peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considere los riesgos de la corriente eléctrica y familiarícese con los procedimientos estándar de prevención de accidentes. Al final de cada advertencia encontrará el número que le ayudará a encontrar el texto traducido en el apartado de traducciones que acompaña a este dispositivo. GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ.

Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant entraîner des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers liés aux circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents. Pour prendre connaissance des traductions des avertissements figurant dans les consignes de sécurité traduites qui accompagnent cet appareil, référez-vous au numéro de l'instruction situé à la fin de chaque avertissement. CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

הצהרות הבאות הן אזהרות על פי תקני התעשייה, על מנת להזהיר את המשתמש מפני חבלה פיזית אפשרית. במידה ויש שאלות או היתקלות בבעיה כלשהי, יש ליצור קשר עם מחלקת תמיכה טכנית של סופרמיקרו. טכנאים מוסמכים בלבד רשאים להתקין או להגדיר את הרכיבים.
יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

ا كً ف حالة وٌكي أى تتسبب ف اصابة جسذ ةٌ هذا الزهز عٌ خطز !تحذ زٌ .
قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال ٌأجوة عي الذوائز
الكهزبائ ةٍ
وكي على درا ةٌ بالووارسات البقائ ةٍ لو عٌ وقع أي حادث
استخذم رقن الب ٍإى الو صٌص ف هًا ةٌ كل تحذ زٌ للعشر تزجوتها

안전을 위한 주의사항.

이 경고 기호는 위험이 있음을 알려 줍니다. 작업자의 신체에 부상을 야기 할 수 있는 상태에 있게 됩니다. 모든 장비에 대한 작업을 수행하기 전에 전기회로와 관련된 위험요소들을 확인하시고 사전에 사고를 방지할 수 있도록 표준 작업절차를 준수해 주시기 바랍니다.

해당 번역문을 찾기 위해 각 경고의 마지막 부분에 제공된 경고문 번호를 참조하십시오

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

Dit waarschuwings symbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij een elektrische installatie betrokken risico's en dient u op de hoogte te zijn van de standaard procedures om ongelukken te voorkomen. Gebruik de nummers aan het eind van elke waarschuwing om deze te herleiden naar de desbetreffende locatie.

BEWAAR DEZE INSTRUCTIES

Installation Instructions



Warning! Read the installation instructions before connecting the system to the power source.

警告!
システムを電源に接続する前に、設置手順書をお読み下さい。

警告!
将此系统连接电源前,请先阅读安装说明。

警告 !
將系統與電源連接前，請先閱讀安裝說明。

Warnung!
Vor dem Anschließen des Systems an die Stromquelle die Installationsanweisungen lesen.

¡Advertencia!
Lea las instrucciones de instalación antes de conectar el sistema a la red de alimentación.

Attention!
Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.

אזהרה!
יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

تحذير!
اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

경고!
시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing!
Raadpleeg de installatie-instructies voordat u het systeem op de voedingsbron aansluit.

Circuit Breaker



Warning! This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 250 V, 20 A.

警告!

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告!

此产品的短路（过载电流）保护由建筑物的供电系统提供，确保短路保护设备的额定电流不大于250 V、20 A。

警告！

此產品的短路（過載電流）保護由建築物的供電系統提供，確保短路保護設備的額定電流不大於250 V、20 A。

Warnung!

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 250 V, 20 A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 250 V, 20 A.

Attention!

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à: 250 V, 20 A.

!אזהרה

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי

המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250 V, 20 A

تحذير!

هذا المنتج يعتمد على معداث الحمايت مه الدوائرالقصيرة التي تم تثبيتها في
المبنى

تأكد من أن تقييم الجهاز الوقائي ليس أكثر من : 20 A, 250 V

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다.
보호장치의 정격이 반드시 250 V(볼트), 20 A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing!

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw electrische installatie. Controleer of het beveiligde aparaat niet groter gedimensioneerd is dan 250 V, 20 A.

Power Disconnection Warning

Warning! The system must be disconnected from all sources of power and the power cord removed from the power supply module(s) before accessing the chassis interior to install or remove system components (except for hot-swap components).



警告!

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告!

在你打开机箱并安装或移除内部器件前，必须将系统完全断电，并移除电源线。

警告！

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

Das System muss von allen Quellen der Energie und vom Netzanschlusskabel getrennt sein, das von den Spg.Versorgungsteilmodulen entfernt wird, bevor es auf den Chassisinnenraum zurückgreift, um Systemsbestandteile anzubringen oder zu entfernen.

¡Advertencia!

El sistema debe ser disconnected de todas las fuentes de energía y del cable eléctrico quitado de los módulos de fuente de alimentación antes de tener acceso el interior del chasis para instalar o para quitar componentes de sistema.

Attention!

Le système doit être débranché de toutes les sources de puissance ainsi que de son cordon d'alimentation secteur avant d'accéder à l'intérieur du chassis pour installer ou enlever des composants de systéme.

אזהרה!

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק
.לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים

تحذير!

يجب فصم اننظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد
انطاقت قبم
انصل إنى انمناطق انداخهيت نههيكم نتثبيج أو إزانت مكناث الجهاز

경고!

시스템에 부품들을 장착하거나 제거하기 위해서는 섀시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Waarschuwing!

Voordat u toegang neemt tot het binnenwerk van de behuizing voor het installeren of verwijderen van systeem onderdelen, dient u alle spanningsbronnen en alle stroomkabels aangesloten op de voeding(en) van de behuizing te verwijderen

Equipment Installation



Warning! Only authorized personnel and qualified service persons should be allowed to install, replace, or service this equipment.

警告!

トレーニングを受け認定された人だけがこの装置の設置、交換、またはサービスを許可されています。

警告！

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告！

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung!

Nur autorisiertes Personal und qualifizierte Servicetechniker dürfen dieses Gerät installieren, austauschen oder warten.

¡Advertencia!

Sólo el personal autorizado y el personal de servicio calificado deben poder instalar, reemplazar o dar servicio a este equipo.

Attention!

Seul le personnel autorisé et le personnel de maintenance qualifié doivent être autorisés à installer, remplacer ou entretenir cet équipement.

אזהרה!

.יש לאפשר רק צוות מורשה ואנשי שירות מוסמכים להתקין, להחליף או לטפל בציוד זה

تحذير!

.ينبغي السماح فقط للموظفين المعتمدين وأفراد الخدمة المؤهلين بتركيب هذا الجهاز أو استبداله أو صيانته

경고!

승인된 직원과 자격을 갖춘 서비스 담당자만이 이 장비를 설치, 교체 또는 서비스할 수 있습니다.

Waarschuwing!

Alleen geautoriseerd personeel en gekwalificeerd onderhoudspersoneel mag deze apparatuur installeren, vervangen of onderhouden.

Rack Stability Hazard



Warning! Stability hazard. The rack may tip over causing serious personal injury. Before extending the rack to the installation position, read the installation instructions.

警告!

安定性に危険があります。ラックが転倒して、重大な人身事故を引き起こす可能性があります。ラックを設置位置まで伸ばす前に、設置手順をお読みください。設置位置にあるスライド レールに取り付けられた機器に負荷をかけないでください。スライド レールに取り付けられた機器を設置位置に放置しないでください。

警告！

稳定性危险。机架可能会翻倒，造成严重的人身伤害。在将机架延伸到安装位置之前，请阅读安装说明。请勿在安装位置对滑轨安装的设备施加任何负载。请勿将滑轨安装的设备留在安装位置。

警告！

穩定性危險。機架可能會翻倒，造成嚴重的人身傷害。將機架延伸至安裝位置前，請先閱讀安裝說明。請勿在安裝位置的滑軌安裝設備上放置任何負載。請勿將滑軌安裝設備留在安裝位置。

Warnung!

Gefahr der Instabilität. Das Rack kann umkippen und schwere Verletzungen verursachen. Lesen Sie die Installationsanweisungen, bevor Sie das Rack in die Einbauposition ausfahren. Belasten Sie die auf den Gleitschienen montierten Geräte nicht in der Einbauposition. Lassen Sie die auf den Gleitschienen montierten Geräte nicht in der Einbauposition.

¡Advertencia!

Peligro de inestabilidad. El rack podría volcarse y causar lesiones personales graves. Antes de extender el rack a la posición de instalación, lea las instrucciones de instalación. No coloque ninguna carga sobre el equipo montado sobre rieles deslizantes en la posición de instalación. No deje el equipo montado sobre rieles deslizantes en la posición de instalación

Sólo el personal autorizado y el personal de servicio calificado deben poder instalar, reemplazar o dar servicio a este equipo.

Avertissement!

Danger d’instabilité. Le rack peut basculer et provoquer des blessures corporelles graves. Avant d’étendre le rack en position d’installation, lire les instructions d’installation. Ne pas charger l’équipement monté sur rail de glissière en position d’installation. Ne pas laisser l’équipement monté sur rail de glissière en position d’installation.

אזהרה!

סכנת חוסר יציבות

המתלה עלול להתהפך ולגרום לפציעה חמורה

לפני הארכת המתלה למצב ההתקנה, קרא את הוראות ההתקנה

אין להעמיס כל עומס על הציוד המותקן על מסילת ההחלקה במצב ההתקנה

אל תשאיר את הציוד המותקן על מסילת ההחלקה במצב ההתקנה

تحذير!

خطر عدم الاستقرار.

قد ينقلب الرف مسبباً إصابات جسدية خطيرة.

قبل تمديد الرف إلى موضع التركيب، اقرأ تعليمات التركيب.

لا تضع أي حمولة على الجهاز المثبت على سكة الانزلاق في موضع التركيب.

لا تترك الجهاز المثبت على سكة الانزلاق في موضع التركيب.

경고!

안정성 위험. 랙이 넘어져 심각한 개인 부상을 입을 수 있습니다. 랙을 설치 위치까지 확장하기 전에 설치 지침을 읽으십시오. 설치 위치에서 슬라이드 레일 장착 장비에 하중을 가하지 마십시오. 슬라이드 레일 장착 장비를 설치 위치에 두지 마십시오.

Waarschuwing

Gevaar voor instabiliteit. Het rek kan kantelen en ernstig persoonlijk letsel veroorzaken. Lees de installatie-instructies voordat u het rek uitschuift naar de installatiepositie. Plaats geen last op de op de glijrail gemonteerde apparatuur in de installatiepositie. Laat de op de glijrail gemonteerde apparatuur niet in de installatiepositie staan.

Restricted Area



Warning! This unit is intended for installation in restricted access areas. A restricted access area can be accessed only through the use of a special tool, lock and key, or other means of security. (This warning does not apply to workstations).

警告!

このユニットは、アクセス制限区域に設置されることを想定しています。アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告！

此部件应安装在限制进出的场所。限制进出的场所指只能通过使用特殊工具、锁和钥匙或其它安全手段进出的场所。

警告！

此裝置僅限安裝於進出管制區域。進出管制區域係指僅能以特殊工具、鎖頭及鑰匙或其他安全方式才能進入的區域。

Warnung!

Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Der Zutritt zu derartigen Bereichen ist nur mit einem Spezialwerkzeug, Schloss und Schlüssel oder einer sonstigen Sicherheitsvorkehrung möglich.

¡Advertencia!

Esta unidad ha sido diseñada para instalación en áreas de acceso restringido. Sólo puede obtenerse acceso a una de estas áreas mediante la utilización de una herramienta especial, cerradura con llave u otro medio de seguridad.

Attention!

Cet appareil doit être installée dans des zones d'accès réservés. L'accès à une zone d'accès réservé n'est possible qu'en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité.

אזהרה!

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת
'כלי אבטחה בלבד)מפתח, מנעול וכד.)

تحذير!

اتخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .

مَكن انصل إن منطقت محظورة فقط من خلال استخذاو أداة خاصت،

أو أ وس هُت أخري نلالأمما قفم ومفتاح

경고!

이 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 특수도구, 잠금 장치 및 키, 또는 기타 보안 수단을 통해서만 접근 제한 구역에 들어갈 수 있습니다.

Waarschuwing!

Dit apparaat is bedoeld voor installatie in gebieden met een beperkte toegang. Toegang tot dergelijke gebieden kunnen alleen verkregen worden door gebruik te maken van speciaal gereedschap, slot en sleutel of andere veiligheidsmaatregelen.

Battery Handling



CAUTION: There is risk of explosion if the battery is replaced by an incorrect type. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

警告!

バッテリーを間違ったタイプに交換すると爆発の危険があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告！

如果更换的电池类型不正确，则存在爆炸危险。请只使用同类电池或制造商推荐的功能相当的电池更换原有电池。请按制造商的说明处理废旧电池。

警告！

如果更換的電池類型不正確，則有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

WARNUNG!

Es besteht Explosionsgefahr, wenn die Batterie durch einen falschen Typ ersetzt wird. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

ATTENTION!

Il existe un risque d'explosion si la batterie est remplacée par un type incorrect. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

ADVERTENCIA!

Existe riesgo de explosión si la batería se reemplaza por un tipo incorrecto. Reemplazar la batería exclusivamente con el mismo tipo o el equivalente recomendado por el fabricante. Desechar las baterías gastadas según las instrucciones del fabricante.

אזהרה!

קיימת סכנת פיצוץ אם הסוללה תוחלף בסוג שגוי. יש להחליף
את הסוללה בסוג התואם מחברת יצרן מומלצת.
סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

تحذير!

.هناك خطر الانفجار إذا تم استبدال البطارية بنوع غير صحيح

اسحبذال البطارية

فقط بنفس النع أو ما يعادلها مما أوصث به الشرمة المصنعة

جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

배터리를 잘못된 종류로 교체하면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

WAARSCHUWING!

Er bestaat explosiegevaar als de batterij wordt vervangen door een verkeerd type. Vervang de batterij slechts met hetzelfde of een equivalent type die door de fabrikant aanbevolen wordt. Gebruikte batterijen dienen overeenkomstig fabrieksvoorschriften afgevoerd te worden.

Redundant Power Supplies



Warning! This unit might have more than one power supply connection. All connections must be removed to de-energize the unit.

警告!

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告！

此部件连接的电源可能不止一个。必须将所有电源断开才能停止给该部件供电。

警告！

此裝置連接的電源可能不只一個。必須切斷所有電源才能停止對該裝置的供電。

Warnung!

Dieses Gerät kann mehr als eine Stromzufuhr haben. Um sicherzustellen, dass der Einheit kein trom zugeführt wird, müssen alle Verbindungen entfernt werden.

¡Advertencia!

Puede que esta unidad tenga más de una conexión para fuentes de alimentación. Para cortar por completo el suministro de energía, deben desconectarse todas las conexiones.

Attention!

Cette unité peut avoir plus d'une connexion d'alimentation. Pour supprimer toute tension et tout courant électrique de l'unité, toutes les connexions d'alimentation doivent être débranchées.

אזהרה!

ליחדה יש יותר מחיבור אחד של ספק. יש להסיר את כל החיבורים על מנת לרוקן

את היחידה.

تحذير!

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

경고!

이 장치에는 한 개 이상의 전원 공급 단자가 연결되어 있을 수 있습니다. 이 장치에 전원을 차단하기 위해서는 모든 연결 단자를 제거해야만 합니다.

Waarschuwing!

Deze eenheid kan meer dan één stroomtoevoeraansluiting bevatten. Alle aansluitingen dienen verwijderd te worden om het apparaat stroomloos te maken.

Backplane Voltage



Warning! Hazardous voltage or energy is present on the backplane when the system is operating. Use caution when servicing.

警告!

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。修理する際には注意ください。

警告！

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告！

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung!

Wenn das System in Betrieb ist, treten auf der Rückwandplatine gefährliche Spannungen oder Energien auf. Vorsicht bei der Wartung.

¡Advertencia!

Cuando el sistema está en funcionamiento, el voltaje del plano trasero es peligroso. Tenga cuidado cuando lo revise.

Attention!

Lorsque le système est en fonctionnement, des tensions électriques circulent sur le fond de panier. Prendre des précautions lors de la maintenance.

אזהרה!

קיימת סכנת מתח בפנל האחורי בזמן תפעול המערכת. יש להיזהר במהלך העבודה.

تحذير!

هناك خطر من التيار الكهربائي أوالطاقة المجسدة على اللحة عندما يكون النظام يعمل كه حذرا عند خدمة هذا الجهاز

경고!

시스템이 동작 중일 때 후면판 (Backplane)에는 위험한 전압이나 에너지가 발생 합니다. 서비스 작업 시 주의하십시오.

Waarschuwing

Een gevaarlijke spanning of energie is aanwezig op de backplane wanneer het systeem in gebruik is. Voorzichtigheid is geboden tijdens het onderhoud.

Comply with Local and National Electrical Codes



Warning! Installation of the equipment must comply with local and national electrical codes.

警告!

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告!

设备安装必须符合本地与本国电气法规。

警告 !

設備安裝必須符合本地與本國電氣法規。

Warnung!

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

La instalacion del equipo debe cumplir con las normas de electricidad locales y nacionales.

Attention!

L'équipement doit être installé conformément aux normes électriques nationales et locales.

אזהרה!

תיאום חוקי החשמל הארצי

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تحذير!

تركيب المعدات الكهربائية يجب أن يمتثل للقاويه المحلية والبطية المتعلقة

بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing!

Bij installatie van de apparatuur moet worden voldaan aan de lokale en nationale elektriciteitsvoorschriften.

Product Disposal



Warning! Ultimate disposal of this product should be handled according to all national laws and regulations.

警告!

この製品を廃棄処分する場合、国の関係する全ての法律・条例に従い処理する必要があります。

警告!

本产品的废弃处理应根据所有国家的法律和规章进行。

警告！

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung!

Die Entsorgung dieses Produkts sollte gemäß allen Bestimmungen und Gesetzen des Landes erfolgen.

¡Advertencia!

Al deshacerse por completo de este producto debe seguir todas las leyes y reglamentos nacionales.

Attention!

La mise au rebut ou le recyclage de ce produit sont généralement soumis à des lois et/ou directives de respect de l'environnement. Renseignez-vous auprès de l'organisme compétent.

אזהרה!

סילוק המוצר

אזהרה!

סילוק סופי של מוצר זה חייב להיות בהתאם להנחיות וחוקי המדינה.

تحذير!

عند التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القوانين والأنظمة الوطنية

경고!

이 제품은 해당 국가의 관련 법규 및 규정에 따라 폐기되어야 합니다.

Waarschuwing!

De uiteindelijke verwijdering van dit product dient te geschieden in overeenstemming met alle nationale wetten en reglementen.

Fan Warning





Warning! Hazardous moving parts. Keep away from moving fan blades. The fans might still be turning when you remove the fan assembly from the chassis. Keep fingers, screwdrivers, and other objects away from the openings in the fan assembly's housing.

警告!

回転部品に注意。運転中は回転部(羽根)に触れないでください。シャーシから冷却ファン装置を取り外した際、ファンがまだ回転している可能性があります。ファンの開口部に、指、ドライバー、およびその他のものを近づけないで下さい。

警告!

危险的可移动性零件。请务必与转动的风扇叶片保持距离。 当您从机架移除风扇装置，风扇可能仍在转动。小心不要将手指、螺丝起子和其他物品太靠近风扇。

警告！

危險的可移動性零件。請務必與轉動的風扇葉片保持距離。 當您從機架移除風扇裝置，風扇可能仍在轉動。小心不要將手指、螺絲起子和其他物品太靠近風扇。

Warnung!

Gefährlich Bewegende Teile. Von den bewegenden Lüfterblätter fern halten. Die Lüfter drehen sich u. U. noch, wenn die Lüfterbaugruppe aus dem Chassis genommen wird. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses entfernt.

¡Advertencia!

Riesgo de piezas móviles. Mantener alejado de las aspas del ventilador. Los ventiladores podran dar vuelta cuando usted quite ell montaje del ventilador del chasis. Mandtenga los dedos, los destornilladores y todos los objetos lejos de las aberturas del ventilador

Attention!

Pieces mobiles dangereuses. Se tenir a l'ecart des lames du ventilateur Il est possible que les ventilateurs soient toujours en rotation lorsque vous retirerez le bloc ventilateur du châssis. Prenez garde à ce que doigts, tournevis et autres objets soient éloignés du logement du bloc ventilateur.

אזהרה!

חלקים נעים מסוכנים. התרחק מלהבי המאוורר בפעולהכאשר מסירים את חלקי המאוורר מהמארז, יתכן והמאוררים עדיין עובדים. יש להרחיק למרחק בטוח את האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

تحذير!

تحذير! أجزاء متحركة خطرة. ابتعد عن شفرات المروحة المتحركة.من الممكن أن المراوح لا تزال تدورعند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 섀시로부터 팬 조립품을 제거할 때 팬은 여전히 회전하고 있을 수 있습니다. 팬 조림품 외관의 열려있는 부분들로부터 손가락 및 스크류드라이버, 다른 물체들이 가까이 하지 않도록 배치해 주십시오.

Waarschuwing!

Gevaarlijk bewegende onderdelen. Houd voldoende afstand tot de bewegende ventilatorbladen. Het is mogelijk dat de ventilator nog draait tijdens het verwijderen van het ventilatorsamenstel uit het chassis. Houd uw vingers, schroevendraaiers en eventuele andere voorwerpen uit de buurt van de openingen in de ventilatorbehuizing.

Power Cable and AC Adapter



Warning! When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the cord) for any other electrical devices than products designated by Supermicro only.

警告!

製品を設置する場合、提供または指定および購入された接続ケーブル、電源コードとAC アダプターを 該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSAマークがコードに表記)をSupermicroが指定する製品以外に使用することを禁止しています。

警告!

安装此产品时,请使用本身提供的或指定的或采购的连接线、电源线和电源适配器，包含遵照当地法规和安全要求的合规的电源线尺寸和插头。使用其它线材或适配器可能会引起故障或火灾。除了Supermicro所指定的产品，电气用品和材料安全法律规定禁止使用未经UL或CSA认证的线材。（线材上会显示UL/CSA符号）。

警告！

安裝此產品時,請使用本身提供的或指定的或採購的連接線、電源線和電源適配器，包含遵照當地法規和安全要求的合規的電源線尺寸和插頭。使用其它線材或適配器可能會引起故障或火災。除了Supermicro所指定的產品，電氣用品和材料安全法律規定禁止使用未經UL或CSA認證的線材。（線材上會顯示UL/CSA符號）。

Warnung!

Nutzen Sie beim Installieren des Produkts ausschließlich die von uns zur Verfügung gestellten Verbindungskabeln, Stromkabeln und/oder Adapater, die Ihre örtlichen Sicherheitsstandards einhalten. Der Gebrauch von anderen Kabeln und Adapter können Fehlfunktionen oder Feuer verursachen. Die Richtlinien untersagen das Nutzen von UL oder CAS zertifizierten Kabeln (mit UL/CSA gekennzeichnet), an Geräten oder Produkten die nicht mit Supermicro gekennzeichnet sind.

¡Advertencia!

Cuando instale el producto, utilice la conexión provista o designada o procure cables, Cables de alimentación y adaptadores de CA que cumplan con los códigos locales y los requisitos de seguridad, incluyendo el tamaño adecuado del cable y el enchufe. El uso de otros cables y adaptadores podría causar un mal funcionamiento o un incendio. La Ley de Seguridad de Aparatos Eléctricos y de Materiales prohíbe El uso de cables certificados por UL o CSA (que tienen el certificado UL / CSA en el código) para cualquier otros dispositivos eléctricos que los productos designados únicamente por Supermicro.

Attention!

Lors de l'installation du produit, utilisez les cables de connection fournis ou désigné ou achetez des cables, cables de puissance et adaptateurs respectant les normes locales et les conditions de securite y compris les tailles de cables et les prises electriques appropries. L'utilisation d'autres cables et adaptateurs peut provoquer un dysfonctionnement ou un incendie. Appareils électroménagers et la Loi sur la Sécurité Matériel interdit l'utilisation de câbles certifies- UL ou CSA (qui ont UL ou CSA indiqué sur le code) pour tous les autres appareils électriques sauf les produits désignés par Supermicro seulement.

!הרהזא

ךרוצל ומאתוה וא ושכרנ רשא AC מימאתמו מיקפס ,מילבכב שמתשהל שי ,רצומה תא מיניקתמ רשאכ לכב שומיש . עקתהו לבכה לש הנוכנ הדימ ללוכ ,תוימוקמה תוחיטבה תושירדל ומאתוה רשאו ,הנקתהה למשחה יריש כמב שומישה יקוחל מאתהב .ילמשח רצק וא הלקתל מורגל לולע ,רחא גוסמ מאתמ וא לבכ לש דוק מהילע עיפומ רשאכ) CSA-ב וא UL -ב מיכמסומה מילבכב שמתשהל רוסיא מייק ,תוחיטבה יקוחו .דבלב Supermicro י"ע מאתוה רשא רצומכ קר אלא ,רחא ילמשח רצומ לכ רובע UL/CSA)

ريذحت!

عند تركيب المنتج، قم باستخدام التوصيلات المتوفرة أو المحددة أو قم بشراء الكابلات الكهربائية ومحولات التيار المتردد مع الالتزام بقوانين ومتطلبات السلامة المحلية بما في ذلك حجم الموصل والقابس السليم. استخدام أي كابلات ومحولات أخرى قد يتسبب في عطل أو حريق. CSA أو UL يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام الكابلات المعتمدة من قبل مع أي معدات أخرى غير المنتجات المعينة والمحددة من قبل (UL/CSA) والتي تحمل علامة.

경고!

경고! 제품을 설치할 때 현지 코드 및 적절한 굵기의 코드와 플러그를 포함한 안전 요구 사항을 준수하여 제공되거나 지정된 연결 혹은 구매 케이블, 전원 케이블 및 AC 어댑터를 사용하십시오.

다른 케이블이나 어댑터를 사용하면 오작동이나 화재가 발생할 수 있습니다. 전기 용품 안전법은 UL 또는 CSA 인증 케이블 (코드에 UL / CSA가 표시된 케이블)을 Supermicro가 지정한 제품 이외의 전기 장치에 사용하는 것을 금지합니다.

Waarschuwing!

Bij het aansluiten van het Product uitsluitend gebruik maken van de geleverde Kabels of een andere geschikte aan te schaffen Aansluitmethode, deze moet altijd voldoen aan de lokale voorschriften en veiligheidsnormen, inclusief de juiste kabeldikte en stekker. Het gebruik van niet geschikte Kabels en/of Adapters kan een storing of brand veroorzaken. Wetgeving voor Elektrische apparatuur en Materiaalveiligheid verbied het gebruik van UL of CSA -gecertificeerde Kabels (met UL/CSA in de code) voor elke andere toepassing dan de door Supermicro hiervoor beoogde Producten.

Appendix B

System Specifications

Processors

Dual 4th and 5th Gen Intel Xeon Scalable processors in a Socket E (LGA-4677) with four UPIs (20 GT/s max.) and a thermal design power (TDP) of up to 350 W. Supports SP XCC, SP MCC, and Max Series (HBM) processor SKUs

Chipset

Intel C741 PCH

BIOS

AMI SPI BIOS

Memory

Supports up to 8 TB 3DS RDIMM/RDIMM DDR5 ECC memory in 32 DIMM slots
- 4th Gen CPU: speeds of up to 4800 MT/s (1DPC) and up to 4400 MT/s (2DPC) .
- 5th Gen CPU: speeds of up to 5600 MT/s (1DPC) and up to 4400 MT/s (2DPC)

DIMM size up to 512 GB at P12 V.

Storage Drives

Twelve 3.5" or 2.5" hot-swap NVMe/SAS/SATA front drive bays
Two M.2 NVMe/SATA hybrid slots with support for M-key 2280 and 22110

PCI Expansion Slots

Optional eight PCIe 5.0 x8 slots or four PCIe 5.0 x16 slots

Input/Output

Network: One or two AIOM modules (OCP 3.0 NIC)
BMC: Dedicated LAN port
USB: Two rear USB 2.0 ports
Video: One VGA port

Motherboard

X13DEM; 17.0" (W) x 11.5" (L) E-ATX (431.80 mm x 292.1 mm)

Chassis

HS829-R1K24P; 2U Rackmount, 3.5 x 17.2 x 31.6 in. / 89 x 437 x 803 mm (HxWxD)

System Cooling

Four 80x80x38 mm, 13.5K RPM, hot-swap middle cooling fans, two CPU heatsinks, two air shrouds to direct air flow

Power Supply

Model: PWS-1K24A-1R, 1200 W redundant modules, 80Plus Titanium level
AC Input
  800 W: 100-127 Vac, 50-60 Hz
  1200 W: 200-240 Vac, 50-60 Hz
+12V
Max: 83 A, Min: 0 A (100 Vac–127 Vac)
Max: 166 A, Min: 0 A (200 Vac–240 Vac)
+12V standby: Max: 2.1 A, Min: 0 A

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -40º to 60º C (-40º to 140º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5% to 95% (non-condensing)

Regulatory Compliance

FCC, ICES, CE, VCCI, RCM, UKCA, NRTL, CB

Certified Safety Models

Compliant with UL and CSA: HS829-R12X12, HS829-12, HS829-R26X12, HS829-26, HS829-R16X12, HS829-16, HS829-16DX12, HS829-16D, HS829-R13DX12, and HS829-13D

Applied Directives, Standards

EMC/EMI: 2014/30/EU (EMC Directive)
Electromagnetic Compatibility Regulations 2016
FCC Part 15
ICES-003
VCCI-CISPR 32
AS/NZS CISPR 32
BS/EN55032
BS/EN55035
CISPR 32
CISPR 35
BS/EN 61000-3-2
BS/EN 61000-3-3
BS/EN 61000-4-2
BS/EN 61000-4-3
BS/EN 61000-4-4
BS/EN 61000-4-5
BS/EN 61000-4-6
BS/EN 61000-4-8
BS/EN 61000-4-11

Environment:
2011/65/EU (RoHS Directive)
EC 1907/2006 (REACH)
2012/19/EU (WEEE Directive)
California Proposition 65

Product Safety: 2014/35/EU (LVD Directive)
UL/CSA 62368-1 (USA and Canada)
Electrical Equipment (Safety) Regulations 2016
IEC/BS/EN 62368-1

Perchlorate Warning

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

この装置は、クラスＡ機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI ー A

General Data Center Environmental Specifications

Particulate contamination specifications

- Air filtration: Data centers must be kept clean to Class 8 of ISO 14644-1 (ISO 2015). The air entering the data center should be filtered with a MERV 11 filter or better. The air within the data center should be continuously filtered with a MERV 8 filter or better.
- Conductive dust: Air should be free fo conductive dust, zinc whiskers, or other conductive particles.
- Corrrosive dust: Air should be free of corrosive dust.

Gaseous* contamination specifications

- Copper coupon corrosion rate: <300 Å/month per class G1 as defined by ANSI.ISA71.04-2013, reference by ASHRAE TC 9.9
- Silver coupon corrosion rate: <200 Å/month per class G1 as defined by ANSI.ISA71.04-2013, reference by ASHRAE TC 9.9
- *If testing with silver or copper coupons results in values less that 200 Å/month or 300 Å/month, respectively, then operating up to 70% relative humidity (RH) is acceptable. If the testing shows corrosion levels exceed these limits, then catalyst-type pollutants are probably present and RH should be driven to 50% or lower.

BSMI RoHS Statement

限用物質含有情況標示聲明書

Declaration of the Presence Condition of the Restricted Substances Marking

設備名稱: 伺服器/ Server　型號（型式）：HS219-R20X13
Equipment name　Type designation (Type)

(系列型號: HS219-R12X13/ HS219-R16X13/ HS219-12/ HS219-16/ HS219-20/ HS829-R20X13

HS829-R12X13/ HS829-R16X13/ HS829-12/ HS829- 16/ HS829- 20/SYS-221H-TN24R

/SYS-221H-TNR/SYS-621H-TN12R)

單元Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
機殼 (Chassis)	○	○	○	○	○	○
機殼風扇 (Chassis Fan)	-	○	○	○	○	○
線材 (Cable)	○	○	○	○	○	○
主機板 (Motherboard)	-	○	○	○	○	○
電源供應器 (Power Supply)	-	○	○	○	○	○
電源背板 (PDB)	-	○	○	○	○	○
硬碟 (HDD)	-	○	○	○	○	○
附加卡 (Add-on Card)	-	○	○	○	○	○

備考1.〝超出0.1 wt %〞及〝超出0.01 wt %〞係指限用物質之百分比含量超出百分比含量基準值。
Note 1：“Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2.〝○〞係指該項限用物質之百分比含量未超出百分比含量基準值。
Note 2：“○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3.〝-〞係指該項限用物質為排除項目。
Note 3：The “–” indicates that the restricted substance corresponds to the exemption.

警告: 為避免電磁干擾, 本產品不應安裝或使用於住宅環境。

輸入額定:

100-127V ~, 60-50Hz, 12-9A (x2)
200-240V ~, 60-50Hz, 10-9.8A (x2)

*使用者不能任意拆除或替換內部配備

*報驗義務人之姓名或名稱：美超微電腦股份有限公司

*報驗義務人之地址：新北市中和區建一路 150 號 3 樓