SuperServer®

SYS-221BT-HNR
SYS-221BT-HNTR
SYS-221BT-HNC8R
SYS-221BT-HNC9R



USER'S MANUAL

Revision 1.1

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Manual Revision 1.1

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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 certified service technicians only.

Please refer to the SYS-221BT-H Series server specifications page on our website for updates on supported memory, processors and operating systems (http://www.supermicro.com).

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

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

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Chapter 1

Introduction

1.1 Overview

This chapter provides a brief outline of the functions and features of the SuperServer SYS-221BT-H Series. It provides four nodes for efficient power sharing, OCP 3.0 interfaces, and an optional M.2 NVMe physical RAID controller. The SuperServer SYS-221BT-H Series is based on the X13DET-B motherboard and the CSE-217BQ2-R3K04P chassis.

System Overview	
Motherboard	X13DET-B
Chassis	CSE-217BQ2-R3K04P
Processor Support	Supports dual 4th and 5th Gen Intel Xeon Scalable Processors (in Socket E LGA 4677) with four UPIs (20 GT/s max.) and a TDP (Thermal Design Power) up to 350 W. Supports SP XCC, Max Series (HBM), and SP MCC SKUs on the X13DET-B.
Chipset	Intel C741 PCH
Memory	Supports up to 4 TB RDIMM DDR5 (288-pin) ECC memory with speeds up to 4800 MT/s (4th Generation Intel Xeon) and 5600 MT/s in 16 DIMM slots (5th Generation Intel Xeon)
Drive Support	Front hot-swappable drives include: 24 NVMe drives for SYS-221BT-HNR (all drives are PCIe 5.0) 24 NVMe/SATA drives for SYS-221BT-HNTR (the first two drives are PCIe 5.0 in each node) 24 NVMe/SAS drives for SYS-221BT-HNC8R (the first two drives are PCIe 5.0 in each node) 24 NVMe/SAS drives for SYS-221BT-HNC9R (the first two drives are PCIe 5.0 in each node) Internal M.2 drives per node includes one of the following: Carrier with two M.2 NVMe Gen 4 SSDs in the 22110 form factor Carrier with two M.2 NVMe Gen 3 SSDs in the 2280 form factor Internal Connector: VROC key header
Expansion Slots	Two PCIe 5.0 x16 slots for each node
Networking	One AIOM or any compliant OCP 3.0 SFF Network Interface Card per node One dedicated LAN port for BMC per node
I/O Ports	Two USB 3.1 ports per node One VGA port per node One internal COM port per node
System Cooling	Four 8-cm mid-chassis fans Two CPU heatsinks per node One air shroud per node
Power	Redundant 3000 W modules, 80Plus level Titanium Power supply redundancy is supported only with a 240 VAC or 240 VDC input.
Form Factor	2U rackmount; (WxHxD) 17.6 x 3.5 x 28.8 in (447 x 88 x 730 mm)

Notes: A Quick Reference Guide can be found on the product page of the Supermicro website. The following safety models associated with the SYS-221BT-H Series have been certified as compliant with CSA or UL models: 217B-22, 217B-30, 217B-R22X13, 217B-R30X13.

System Models	
Models	**Storage Capabilities (per node)**
SYS-221BT-HNR	Six NVMe drives via backplane and NVMe cables
SYS-221BT-HNTR	Six hybrid NVMe/SATA drives via backplane and NVMe and SATA cables
SYS-221BT-HNC8R	Six hybrid NVMe/SAS drives via backplane and NVMe cables and 3808 SAS card
SYS-221BT-HNC9R	Six hybrid NVMe/SAS drives via backplane and NVMe cables, riser card, and 3908 add-on card

Note: Of the six hybrid drives, two support PCIe 5.0 NVMe and four support PCIe 4.0 NVMe. The SYS-221BT-HNR supports PCIe 5.0 NVMe on all slots.

1.2 System Features

The CSE-217BQ2-R3K04P is a 2U chassis that supports 24 front hot-swappable drives and four rear hot-pluggable nodes.

Front View

The chassis front offers access to the storage drives, a control panel for each node, and a pull-out service tag.



Figure 1-1. Front View

System Features: Front	
Feature	**Description**
Control Panels	Four control panels with labels for each node. The four control panels are located as follows: node A bottom left, node B top left, node C bottom right, and node D top right.
Service Tag	Pull-out service tag with BMC password label
Drive Bays	24 2.5" hot-swappable drive bays
Thumbscrews	Two thumbscrews to secure the server onto the rack

Front View: SYS-221BT-HNR

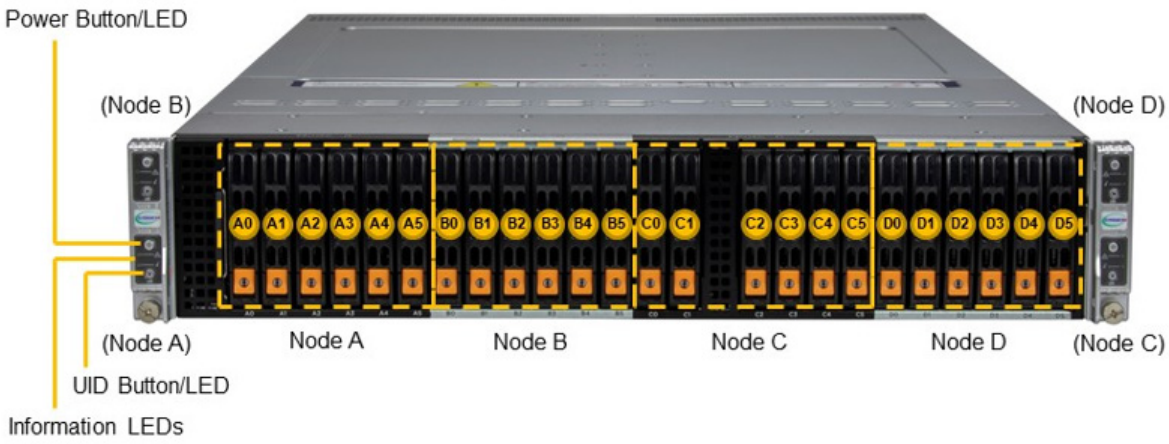


Figure 1-2. Front View

Drive Bays	
Drive Bays (Node A - Node D)	**Description**
0 - 1	Two 2.5" Hot-Swap NVMe Gen 5 (CPU1) Drive Bays
2 - 5	Four 2.5" Hot-Swap NVMe Gen 5 (CPU2) Drive Bays

Front View: SYS-221BT-HNTR

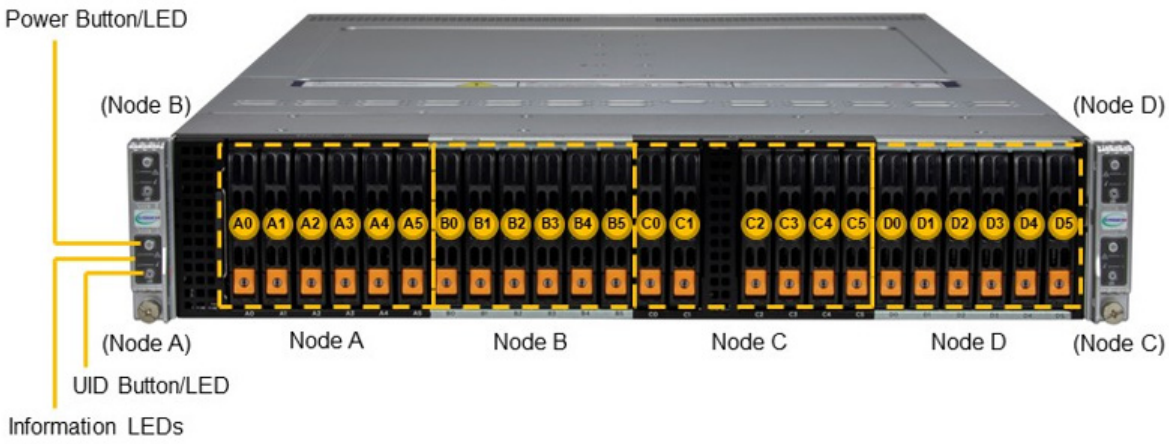


Figure 1-3. Front View

Drive Bays	
Drive Bays (Node A - Node D)	**Description**
0 - 1	Two 2.5" Hot-Swap NVMe Gen 5 (CPU1) Drive Bays
2 - 5	Four 2.5" Hot-Swap NVMe Gen 5 (CPU2) Drive Bays

Front View: SYS-221BT-HNC8R

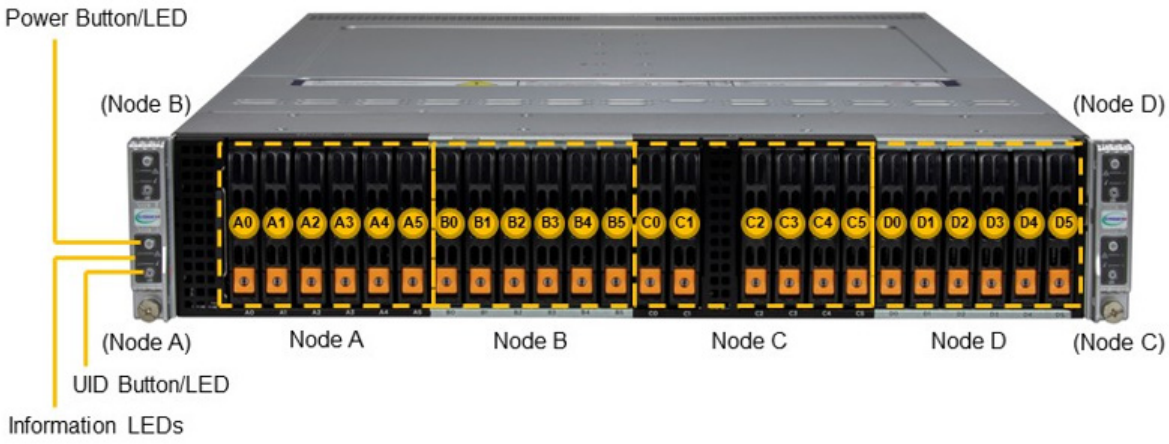


Figure 1-4. Front View

Drive Bays	
Drive Bays (Node A - Node D)	**Description**
0 - 1	Two 2.5" Hot-Swap NVMe Gen 5 (CPU1) Drive Bays
2 - 5	Four 2.5" Hot-Swap NVMe Gen 5 (CPU2) Drive Bays

Front View: SYS-221BT-HNC9R

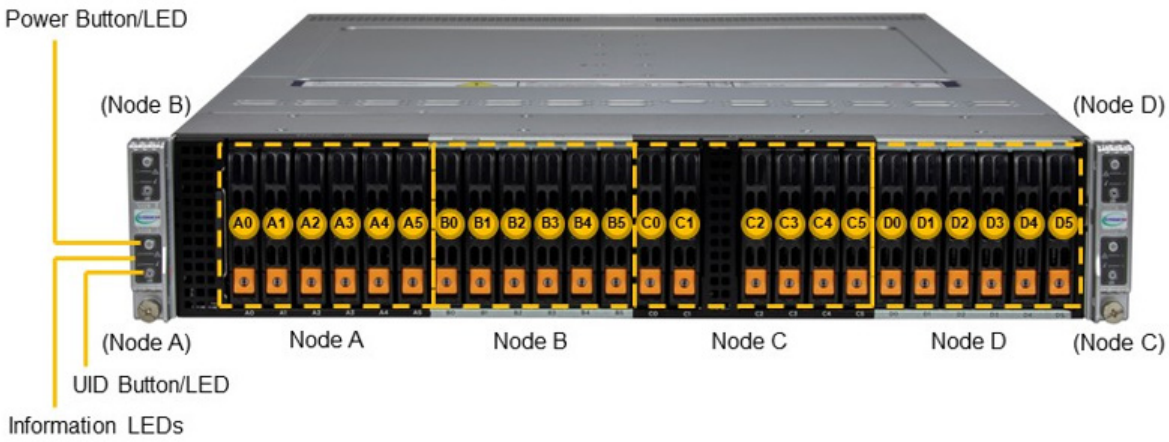


Figure 1-5. Front View

Drive Bays	
Drive Bays (Node A - Node D)	**Description**
0 - 1	Two 2.5" Hot-Swap NVMe Gen 5 (CPU1)/SAS Drive Bays
2 - 5	Four 2.5" Hot-Swap NVMe Gen 4 (CPU2)/SAS Drive Bays

Control Panel

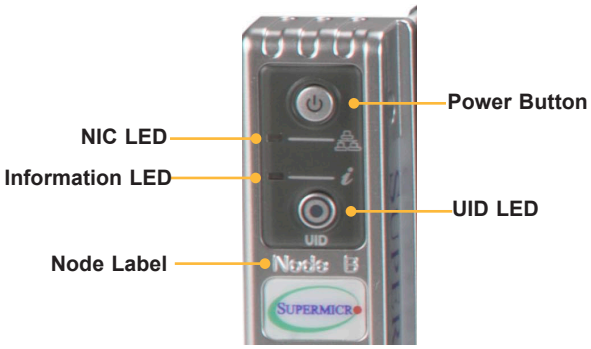


Figure 1-6. Control Panel (One Per Node)

Control Panel Features (One Per Node)	
Feature	**Description**
Power Button	The main power switch applies or removes primary power from the power supply to the server but maintains standby power.
NIC LED	Indicates network activity on the LAN when flashing.
Information LED	Universal information LED (see table below for details).
UID LED	The unit identification (UID) button turns on or off the blue light function of the Information LED and a blue LED on the rear of the chassis. These are used to locate the server in large racks and server banks.
Node Label	Label with the name of the node that is connected to the control panel. Labels for nodes A and C are above their control panel. Labels for nodes B and D are below their control panel.

Information LED	
Color, Status	**Description**
Red, solid	An overheat condition has occurred.
Red, blinking at 1 Hz	Fan failure, check for an inoperative fan.
Red, blinking at 0.25 Hz	Power failure, check for a non-operational power supply.
Red, solid, with Power LED blinking green	Fault detected
Blue and red, blinking at 10 Hz	Recovery mode
Blue, solid	UID has been activated locally to locate the server in a rack environment.
Blue, blinking at 1 Hz	UID has been activated using the BMC to locate the server in a rack environment.
Blue, blinking at 2 Hz	BMC is resetting
Blue, blinking at 4 Hz	BMC is setting factory defaults
Blue, blinking at 10 Hz with Power LED blinking green	BMC/BIOS firmware is updating

Rear View

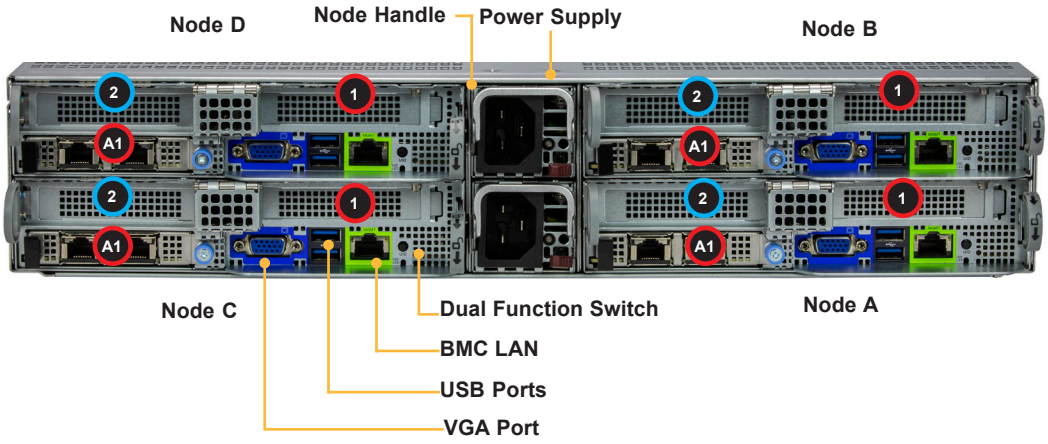


Figure 1-7. System: Rear View

System Features: Rear	
Feature	**Description**
Nodes A, B, C, D	Independent computing nodes
Power Supplies	Two 3000 W redundant power supplies Power supply redundancy is supported only with a 240 VAC or 240 VDC input.
VGA Port	Video port
USB Ports	Two USB 3.1 ports
LAN Port	Dedicated BMC LAN port
Dual Function Switch	A switch that can function as either a UID LED switch or a BMC reset switch. See Chapter 4 for a description of the dual function switch.
A1	x16 AIOM slot (CPU1) in each node

Expansion Slot Locations	
Item	**Description (all PCIe 5.0)**
1	x16 low profile slot (CPU1) in each node
2	x16 low profile slot (CPU2) in each node

CPU1 CPU2

1.3 System Architecture

This section covers the printed circuit board (PCB) locations and the system block diagrams.

Main Components

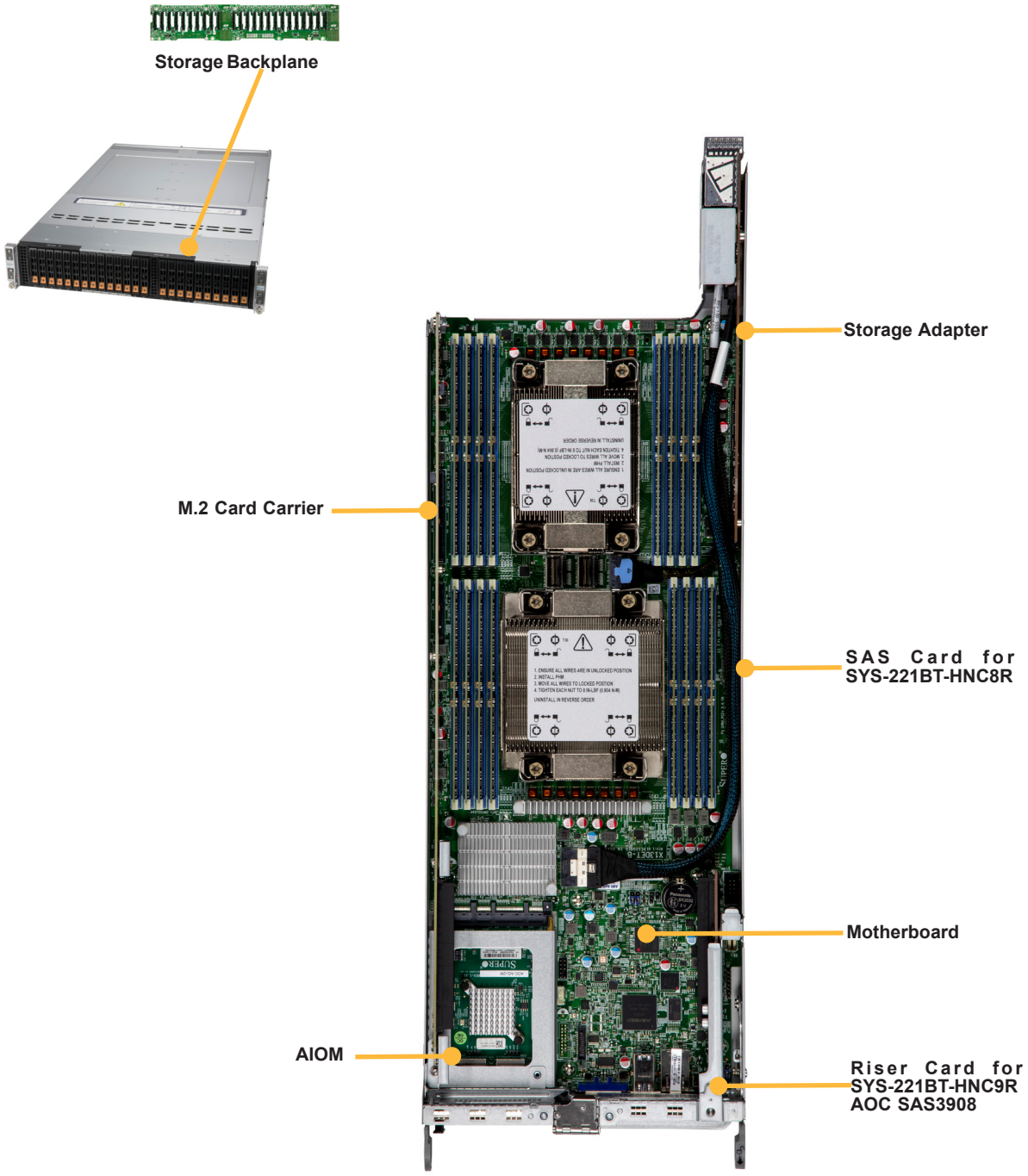


Figure 1-8. SYS-221BT-HNTR Board Locations

System Block Diagram

The block diagram below shows the connections and relationships between the subsystems and major components of the overall system.

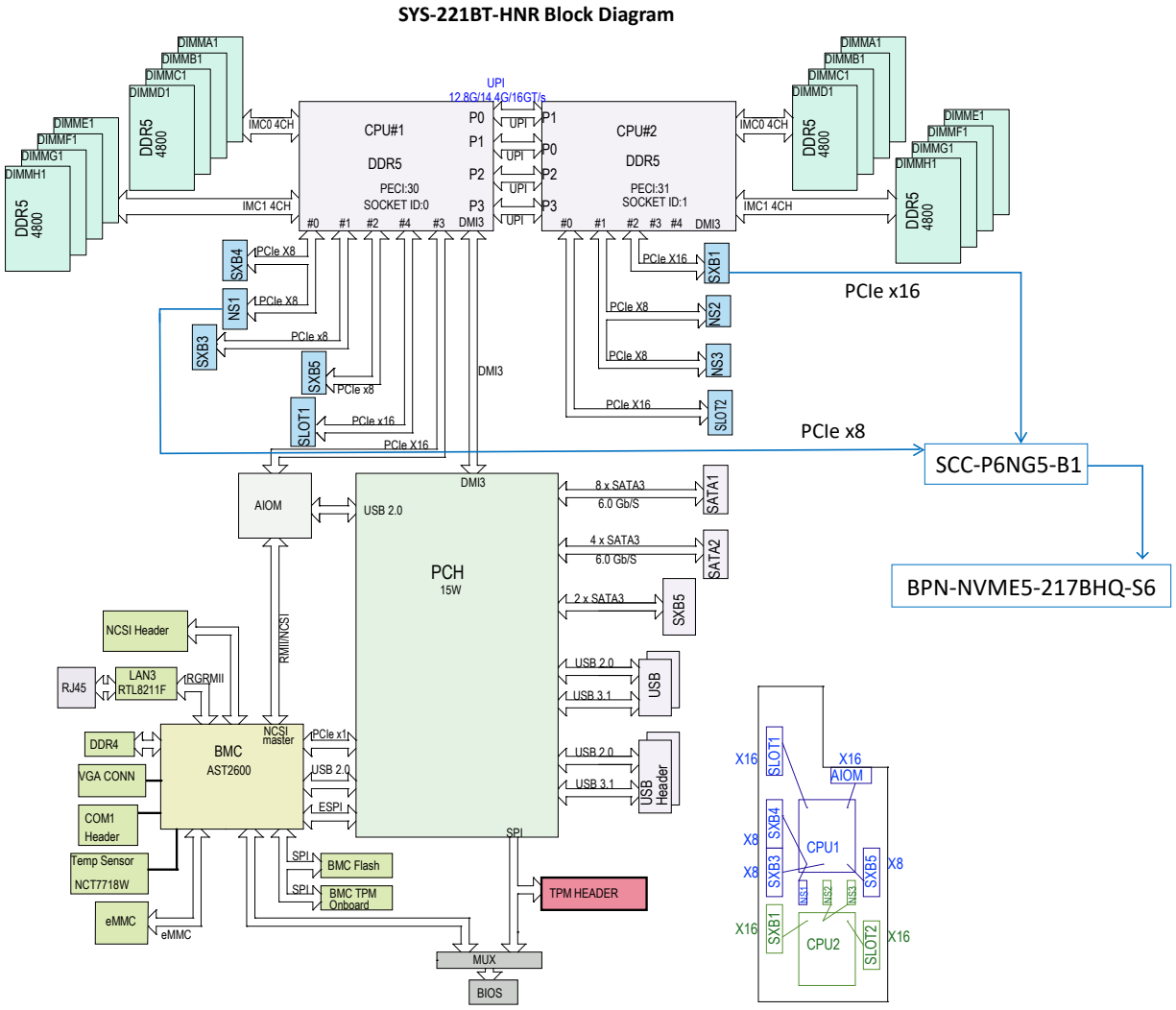


Figure 1-9. SYS-221BT-HNR System Block Diagram

Note: The figure is for illustrative purposes only. See the memory section and expansion card section for more details about possible configurations.

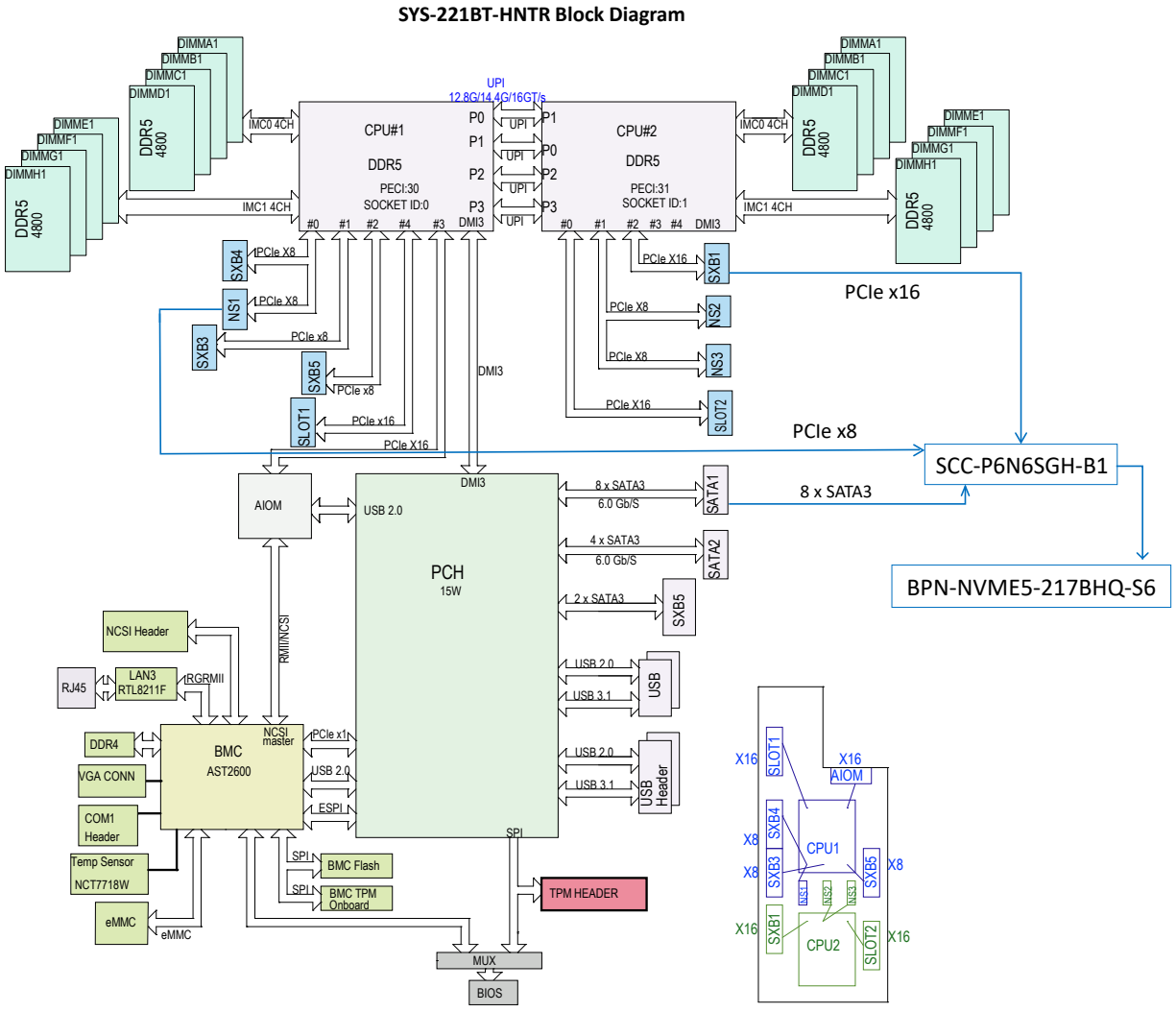


Figure 1-10. SYS-221BT-HNTR System Block Diagram

Note: The figure is for illustrative purposes only. See the memory section and expansion card section for more details about possible configurations.

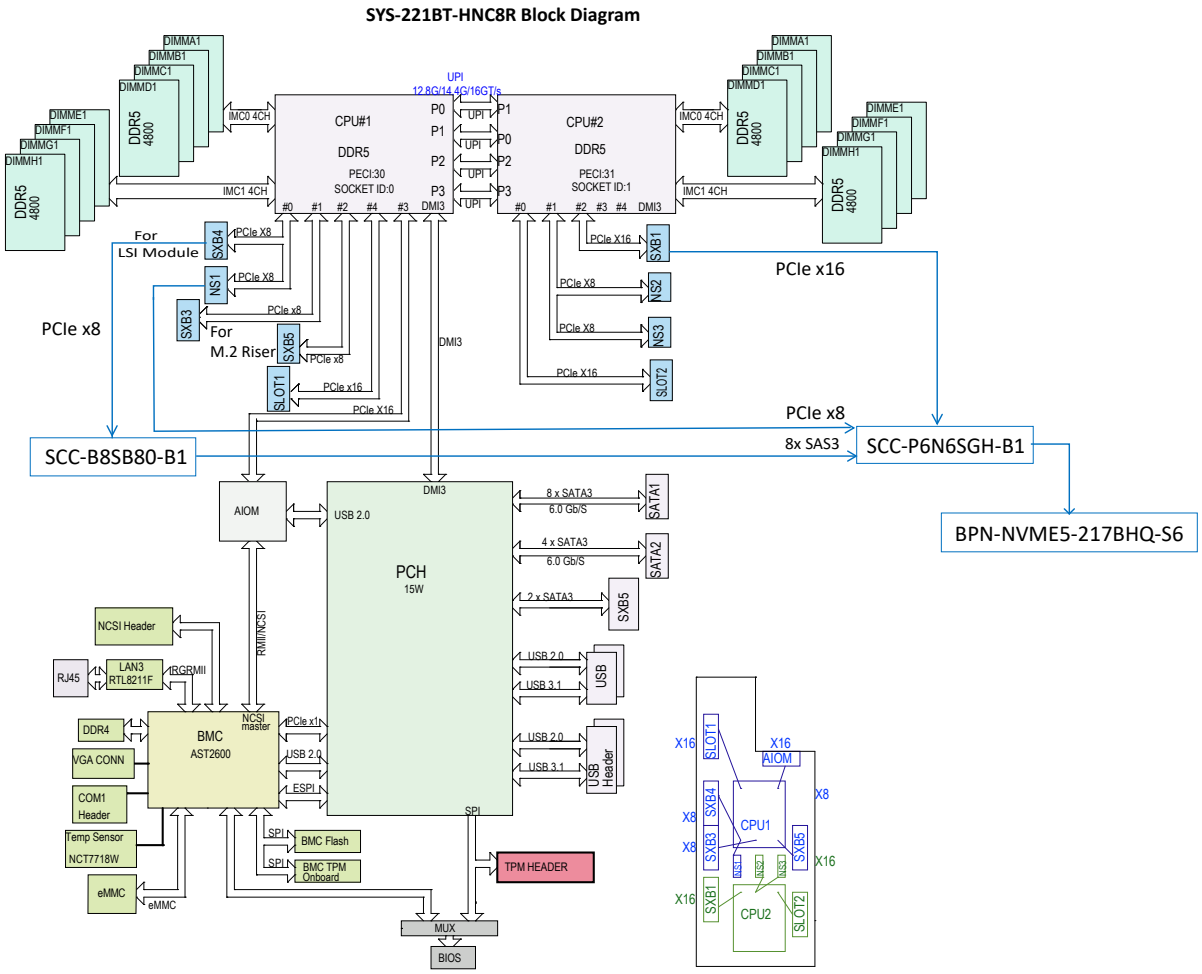


Figure 1-11. SYS-221BT-HNC8R System Block Diagram

Note: The figure is for illustrative purposes only. See the memory section and expansion card section for more details about possible configurations.

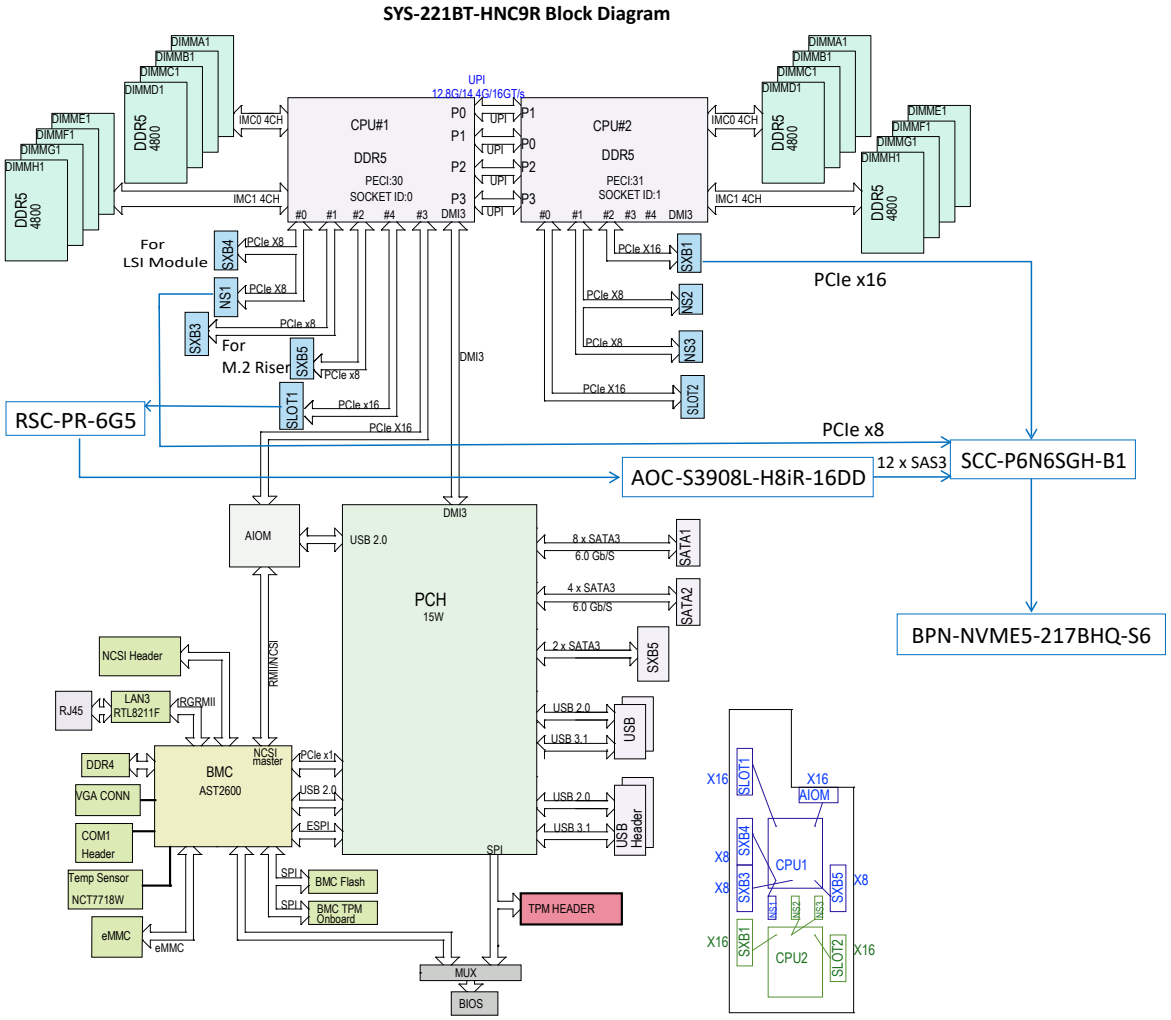


Figure 1-12. SYS-221BT-HNC9R System Block Diagram

Note: The figure is for illustrative purposes only. See the memory section and expansion card section for more details about possible configurations.

1.4 Motherboard Layout

Below is a layout of the X13DET-B motherboard with jumper, connector and LED locations shown. See the table on the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4 or the Motherboard Manual.

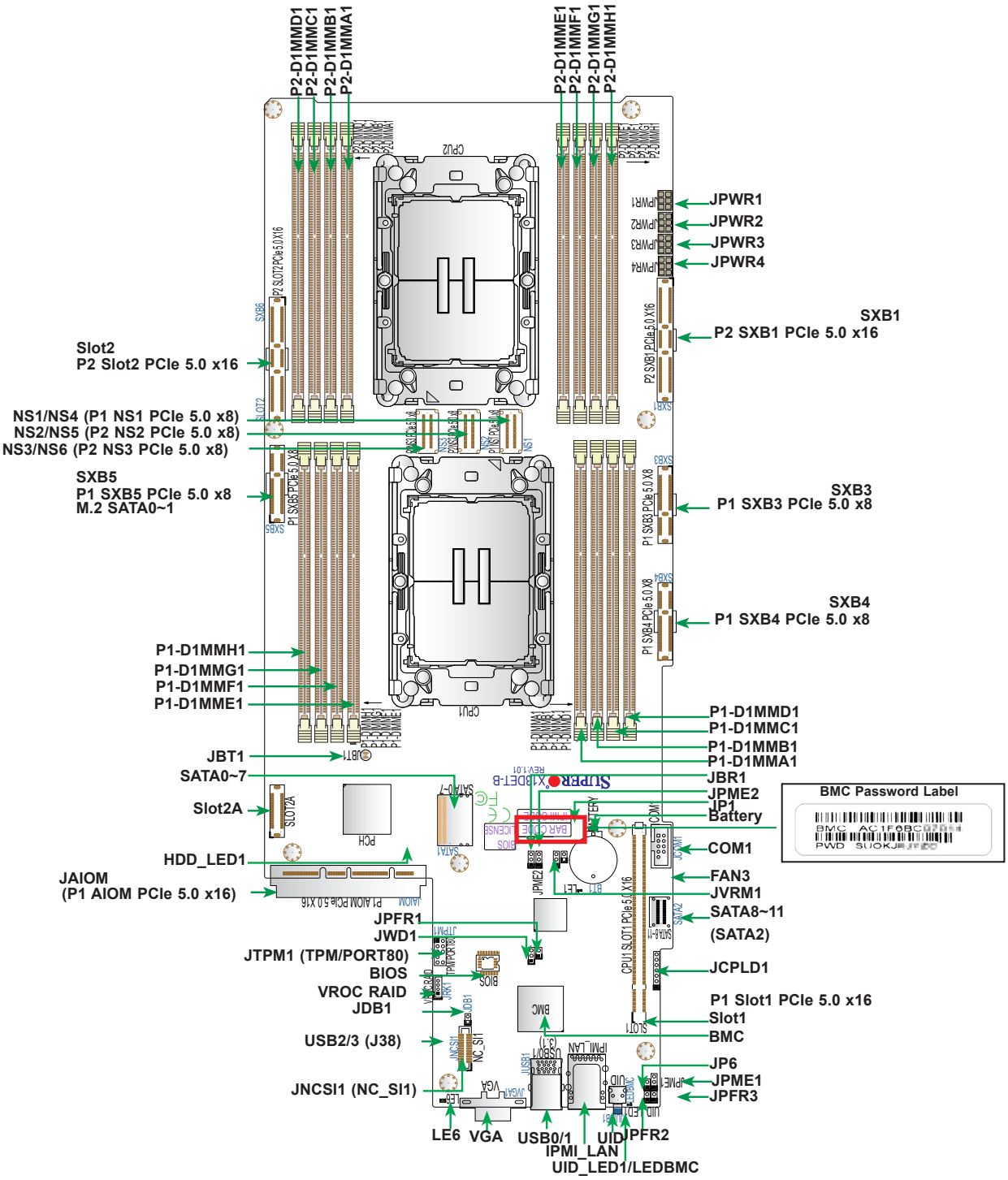


Figure 1-13. Motherboard Layout

Quick Reference Table

Jumper	Description	Jumper Setting (Bold: Default)
JBT1	CMOS Clear	**Open (Normal)**
JPME1	ME Recovery	**Pins 1/2: Normal**, Pins 2/3: ME Recovery
JPME2	ME (Manufacture Mode) Select	**Pins 1/2: ME Mode**

LED	Description	Status
LE1	CPLD Heartbeat LED	On: Complex Programmable Logical Device (CPLD) Normal (Active)
LE6	Power Status LED	Green: Power On Amber: Standby Power Red: Power Failure
UID_LED1/ LEDBMC	Rear Unit Identifier (UID) LED/BMC Heartbeat LED	Solid Blue (working as a UID LED): Unit Identified Blinking Green (working as a BMC LED): BMC Normal (Active) Solid Green: During BMC Reset or during a Cold Reboot

Connector	Description
Battery (BT1)	Onboard battery
BMC_LAN (IPMI_LAN1)	Dedicated BMC LAN port on the I/O backplane
COM1 (JCOM1)	Serial/COM port header
JAIOM	Supermicro Advanced input/output Module (AIOM) PCIe 5.0 x16 slot supported by CPU1
JNCSI1	NC-SI (Network Controller Sideband Interface) connector (See Note 1 on the next page.)
JTPM1	Trusted Platform Module/Port 80 connector
JPWR1~JPWR4	6-pin power connectors (1~4)
NS1	P1 NS1 PCIe 5.0 x8 connector supported by CPU1
NS2	P2 NS2 PCIe 5.0 x8 connector supported by CPU2
NS3	P2 NS3 PCIe 5.0 x8 connector supported by CPU2
Slot1	P1 Slot1 PCIe 5.0 x16 supported by CPU1
Slot2 + Slot2A	P2 Slot2/Slot2A PCIe 5.0 x16 to support riser card(s)
SXB1	P2 SXB1 PCIe 5.0 x16 supported by CPU2
SXB3	P1 SXB3 PCIe 5.0 x8 supported by CPU1
SXB4	P1 SXB4 PCIe 5.0 x8 supported by CPU1
SXB5 (NVMe M.2)	P1 SXB5 PCIe 5.0 x8 for two NVMe M.2 devices in the M-Key 2280 or 22110 format (depending on the type of riser card used) supported by CPU1 (See Note 2 on the next page.)
SATA 0~7 (SATA1)	SATA connector with support of eight Intel® PCH SATA 3.0 connections (RAID 0, RAID 1, RAID 5, and RAID 10 supported)
SATA 8~11 (SATA2)	SATA connector with four SATA connections (SATA 8~11)
UID Button (JUIDB1)	Unit Identifier/BMC Reset switch/button on the rear I/O panel
USB0/1 (3.1) (JUSB1)	USB 3.1 connector on the rear I/O panel for two USB parts (Port0/Port1)
VGA (JVGA1)	Rear VGA connector
VROC RAID Key (JRK1)	Intel VROC key header for NVMe RAID support (See Note 3 on the next page.)

Note 1: For details on how to configure Network Interface Card (NIC) settings, please refer to the Network Interface Card Configuration User's Guide posted on our website under the link: http://www.supermicro.com/support/manuals/.

Note 2: The SXB5 slot supports the SCC-P2HM2G4-B1 and the SCC-A2NM2241G3-B1. The SCC-P2HM2G4-B1 supports two NVMe M.2 devices (up to Gen 4) in the 22110 form factor, and the SCC-A2NM2241G3-B1 supports two NVMe M.2 devices (up to Gen 3) in the 2280 form factor.

Note 3: For detailed instructions on how to configure VROC RAID settings, please refer to the VROC RAID Configuration User's Guide posted on the web page under the link: http://www.supermicro.com/support/manuals/

Chapter 2

Server Installation

2.1 Overview

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.

2.2 Unpacking the System

Inspect the box in which the SuperServer SYS-221BT-H Series 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 in Appendix A.

2.3 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.
- To maintain proper cooling, always keep all chassis panels closed and all SATA carriers installed when not being serviced.

Rack Mounting Considerations

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.

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.).

2.4 Installing the Rails

This section provides information on installing the chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using.

Note: This rail will fit a rack between 28" and 33.5" deep.

Identifying the Rails

The package includes two rail assemblies. Each is specifically designed for the left or right side of the chassis, and so marked. Each rail consists of two sections: a front section which secures to the front post of the rack and a rear section which adjusts in length and secures to the rear post of the rack.

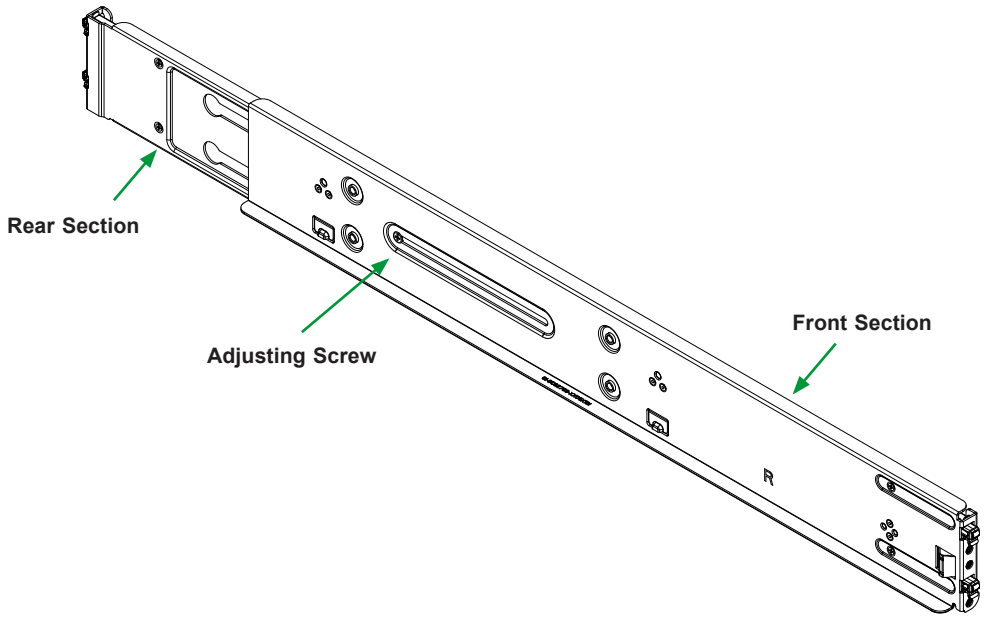


Figure 2-1. Rackmount Rail
(Right rail assembly shown)

Adjusting the Rail Length

Each rail assembly has a locking screw to adjust the length of the rail to fit the depth of your rack.

Installing the Rails on a Rack

1. Loosen the adjusting screw to allow the rear section to slide in the front section.
2. Push the small hooks on the front section of the rail into the holes on the front post of the rack and then down, until the spring-loaded pegs snap into the rack holes. Secure the rail to the rack with screws.
3. Pull out the rear section of the outer rail, adjusting the length until it fits within the posts of the rack and align the small hooks with the appropriate holes on the rear post of the rack. Be sure the rail is level, then mount the rear section onto the rack. Secure the rail with screws.
4. Tighten the adjusting screw.

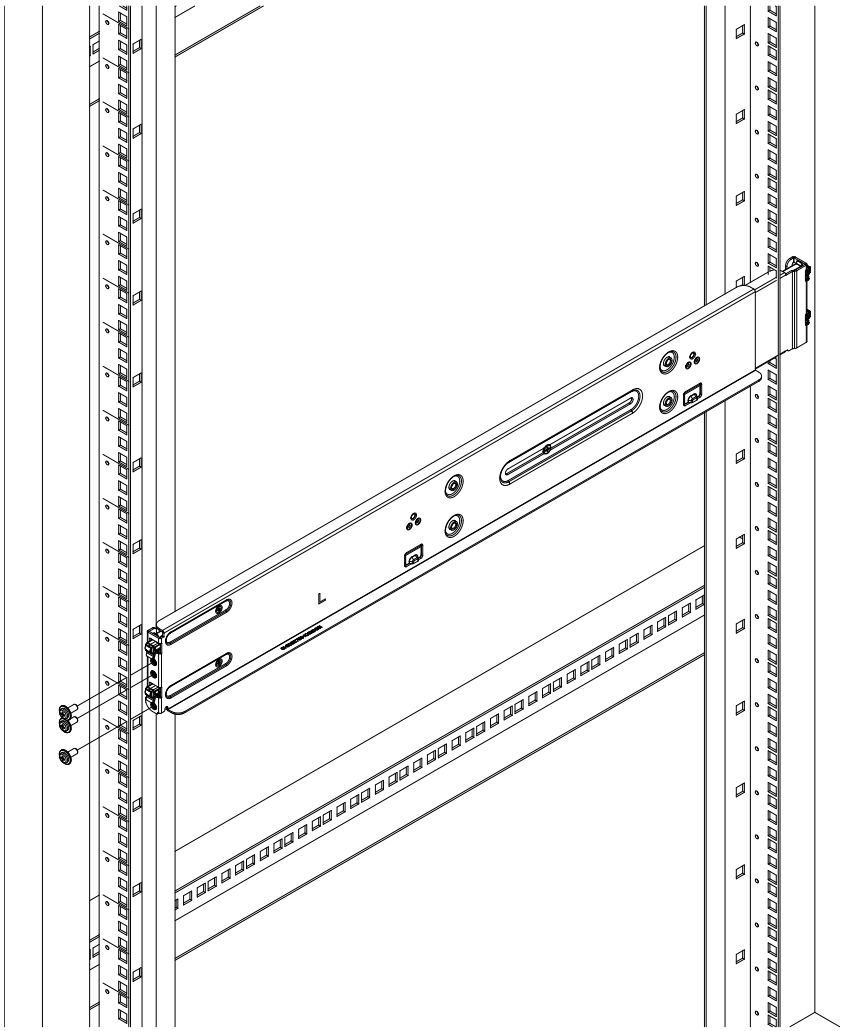


Figure 2-2. Attaching the Rail Front to the Rack
(Left rail shown)

Note: Figures are for illustrative purposes only. Always install servers into racks from the bottom up.

2.5 Inserting Chassis

Slide the chassis into the rack so that the bottom of the chassis slides onto the bottom lip of the rails.

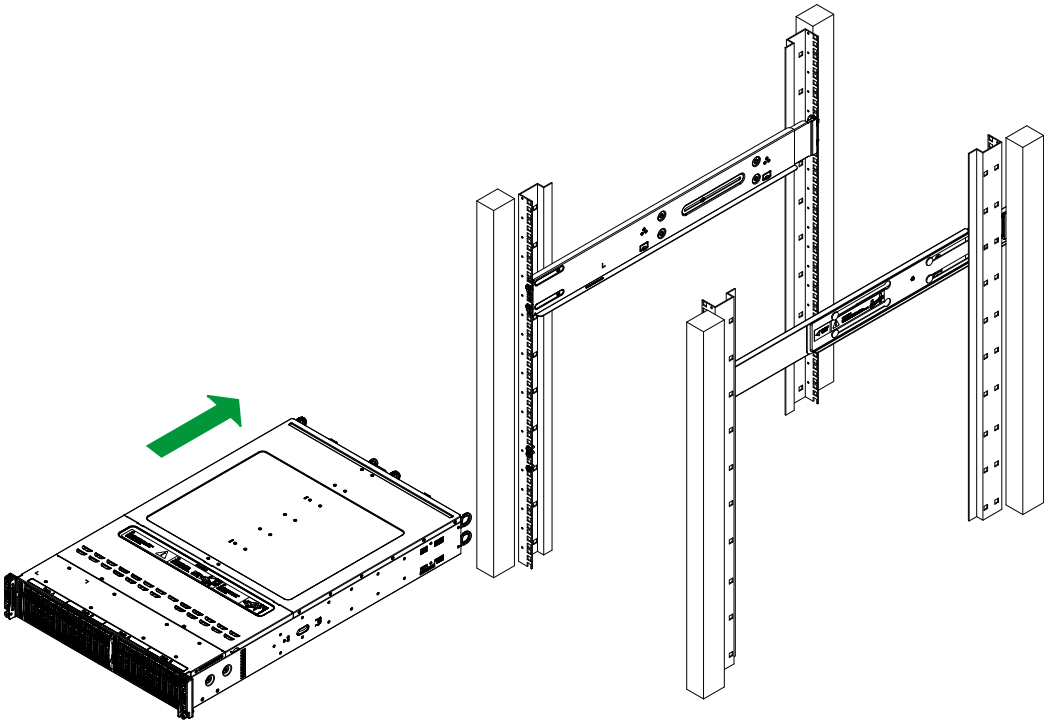


Figure 2-3. Sliding the Chassis into the Rack

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.

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.

3.1 Removing Power

Before performing some setup or maintenance tasks, use the following procedure to ensure that power has been removed from the system.

Removing Power from a Node

- Use the operating system to power down the node.

Removing Power from the System

1. Use the operating system to power down all nodes.
2. Grasp the head of each power cord and gently pull it out of the back of the power supply.
3. Disconnect the cords from the power strip or wall outlet.

3.2 Accessing the System

Removing a Computing Node Drawer

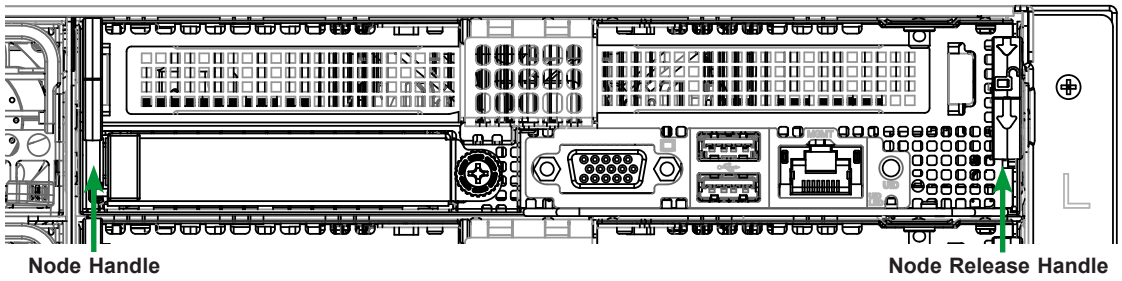


Figure 3-1. Removing a Node Tray

Removing a Node

1. Use the operating system to power down the node.
2. Remove any cables attached to the node.
3. Pull down the node release handle (the handle with the lock and downward arrow icon) and use both handles to slide the node out the chassis rear.

Removing the Chassis Cover

You can access some chassis components, such as fans, by removing the cover.

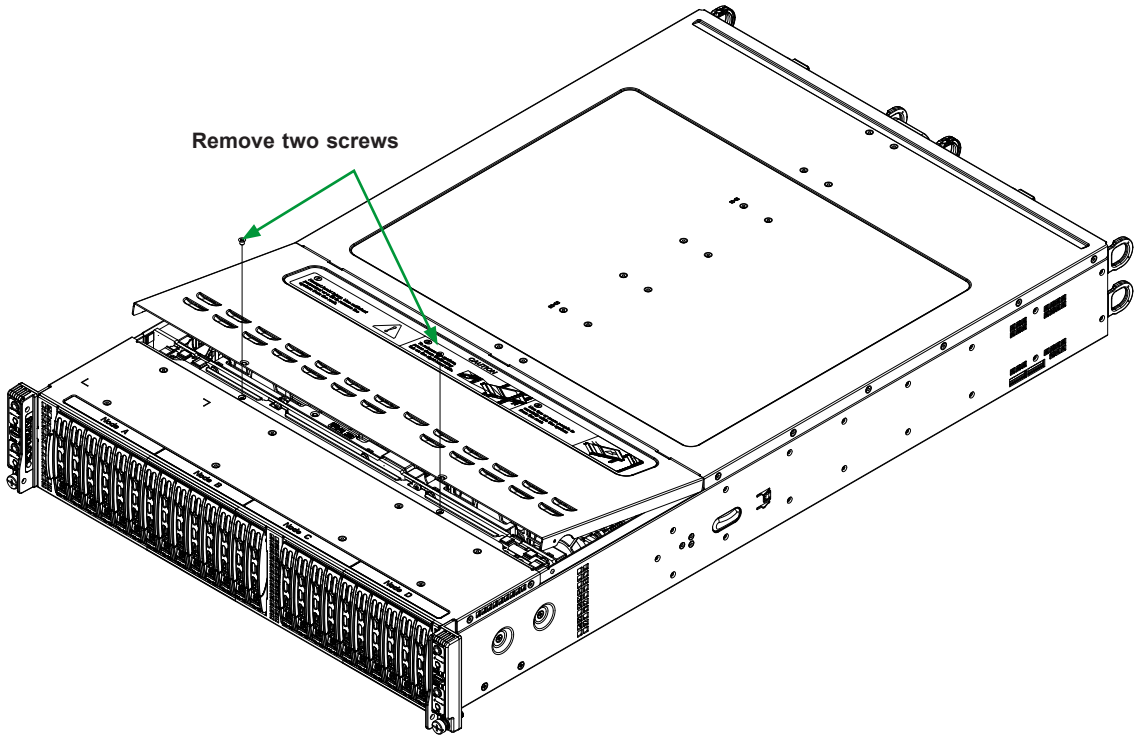


Figure 3-2. Removing the Chassis Cover

Removing the Chassis Cover

The chassis top cover can be lifted off after removing two screws.

Caution: Except for short periods of time, do not operate the server without the cover in place. It provides proper airflow to prevent overheating.

3.3 Processor and Heatsink Installation

The processor (CPU) and processor carrier should be assembled together first to form the processor carrier assembly. This assembly will be then attached to the heatsink to form the processor heatsink module (PHM) before being installed into the CPU socket. Before installation, be sure to perform the following steps below:

- Use ESD protection.
- Shut down the system and then unplug the AC power cord 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 CPU socket, which may require manufacturer repairs.
- When installing the processor and heatsink, ensure a torque driver set to the correct force is used for each screw.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.
- Refer to the Supermicro website for updates on processor and memory support.
- All graphics in this manual are for illustrations only. Your components may look different.
- The 4th Gen Intel® Xeon® Scalable Processor comes with three CPU SKUs: SP XCC, SP MCC, and Max Series (HBM). The 5th Gen Intel® Xeon® Scalable Processor comes with two CPU SKUs: SP XCC and SP MCC.
- The SP XCC CPU supports Carrier E1A, HBM CPU supports Carrier E1C, and SP MCC CPU supports Carrier E1B.
- The installation process is the same for both 4th and 5th Gen Intel Xeon Scalable processors.

Installation 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. Prepare the socket for PHM installation.
4. Install the PHM.

Removal Overview

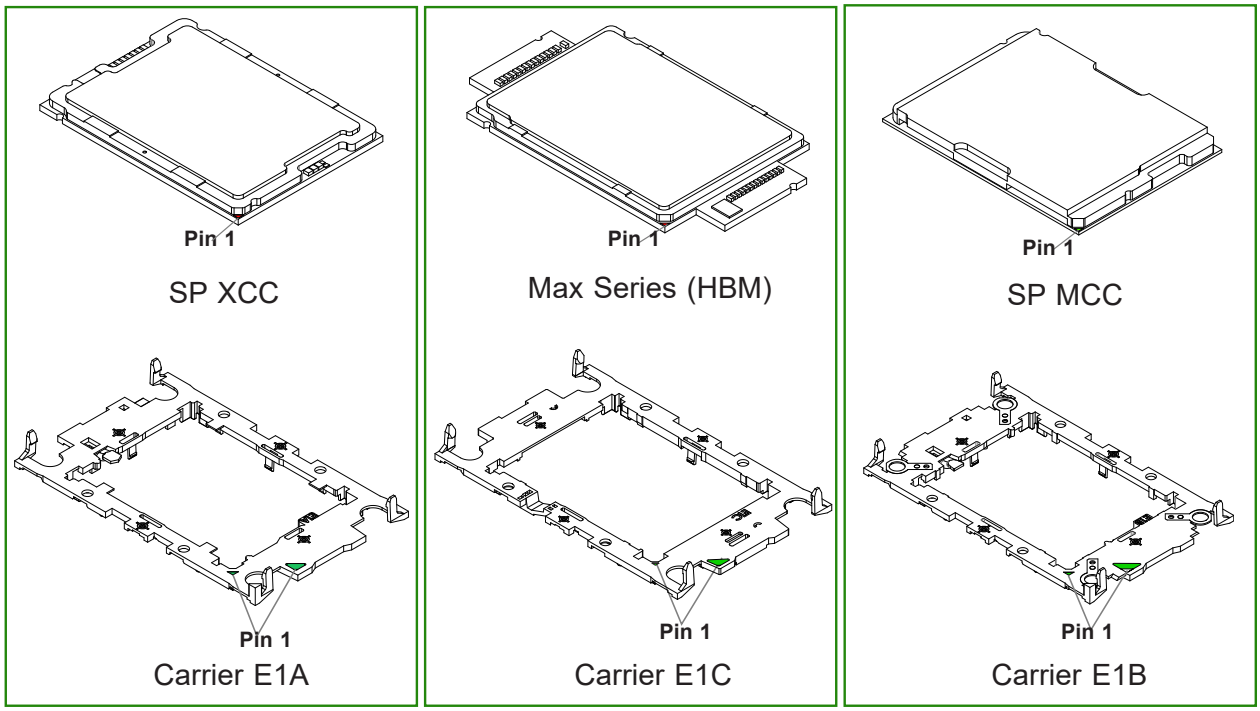
After preparing the system and following ESD precautions, there are three steps to removing the processor and heatsink from the motherboard.

1. Remove the PHM from the motherboard.
2. Remove the processor carrier assembly from the heatsink.
3. Remove the processor from the carrier.

Create the Processor Carrier Assembly

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.

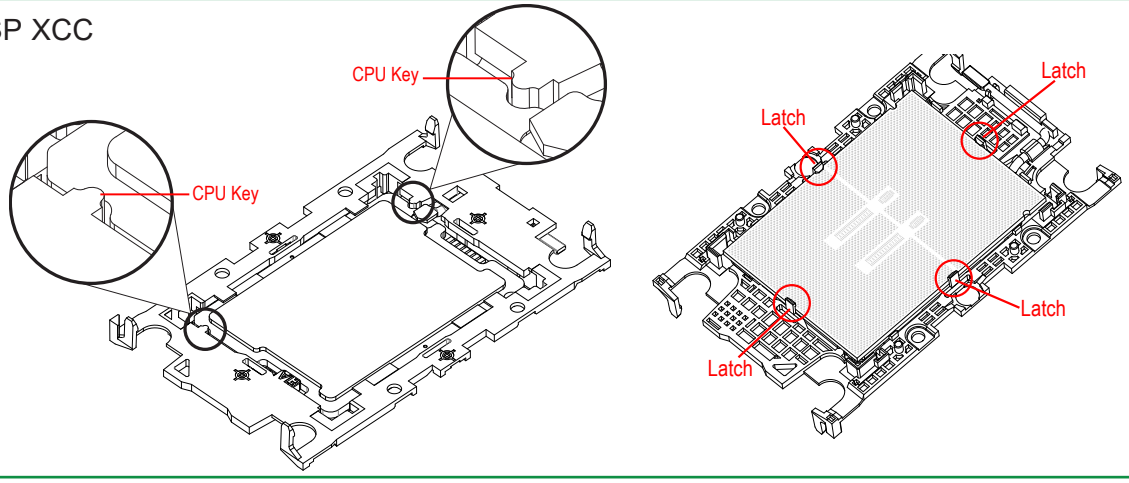


The Processor with its Matching Carrier

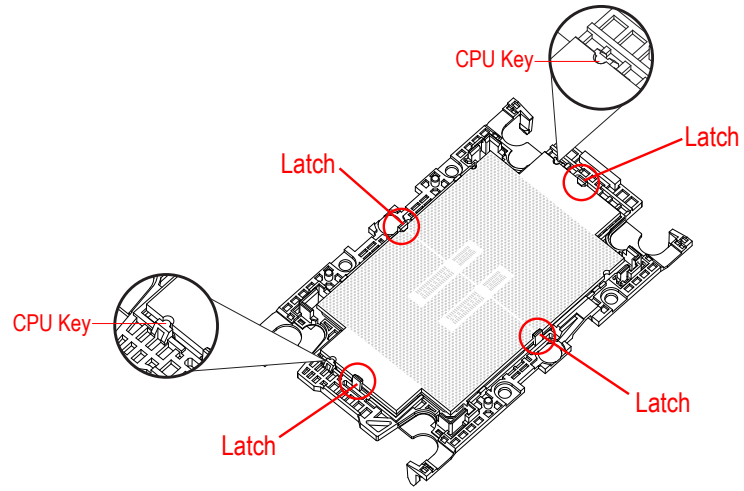
Note: Please note that HBM (1 TB/s bandwidth maximum) is only applicable for 4th Gen Intel® Xeon® Scalable Processors.

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

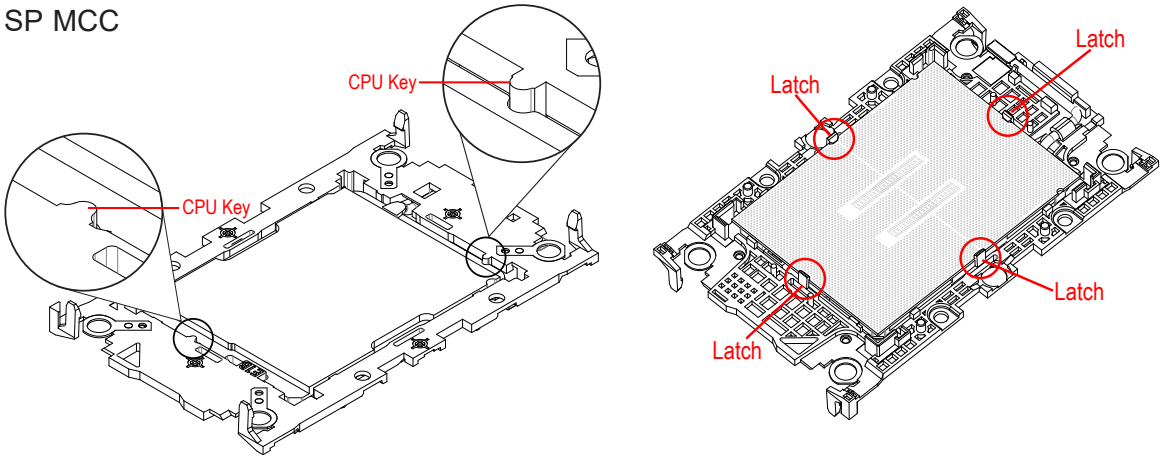
SP XCC



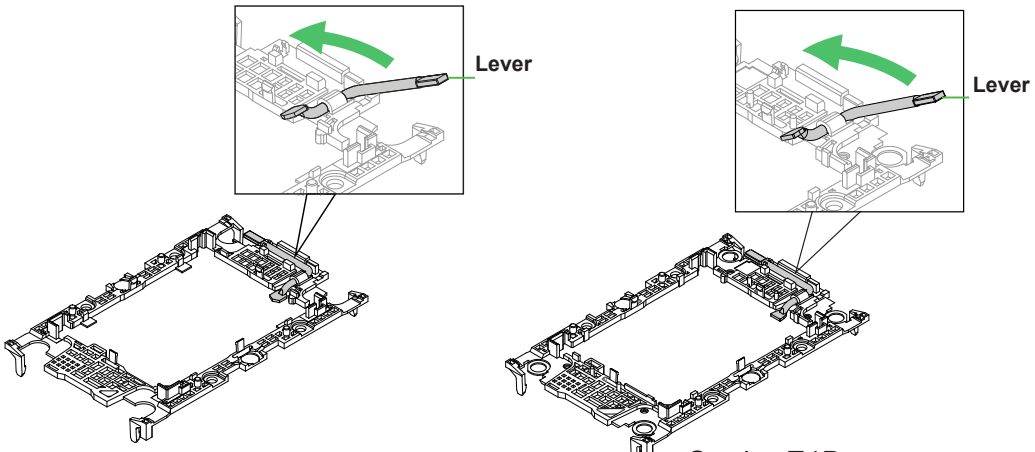
HBM



SP MCC



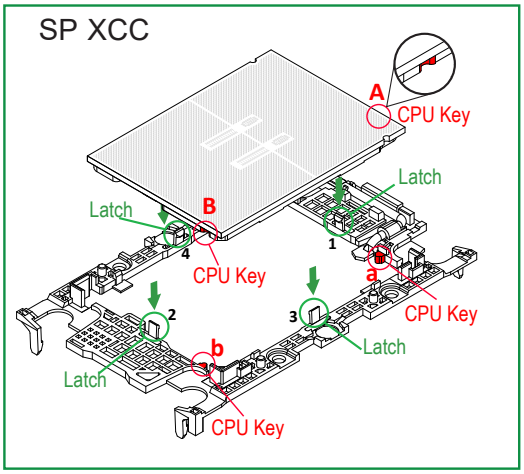
3. Locate the lever on the CPU socket and press it down as shown below.

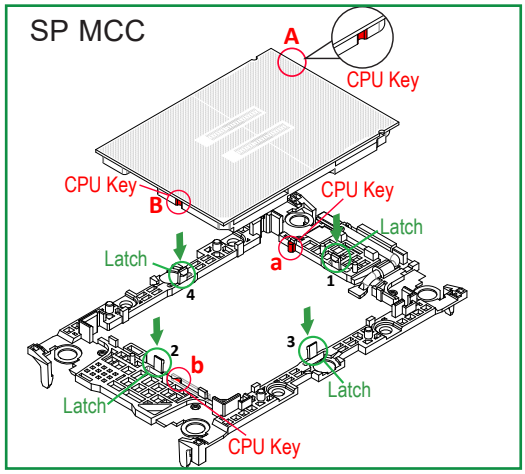


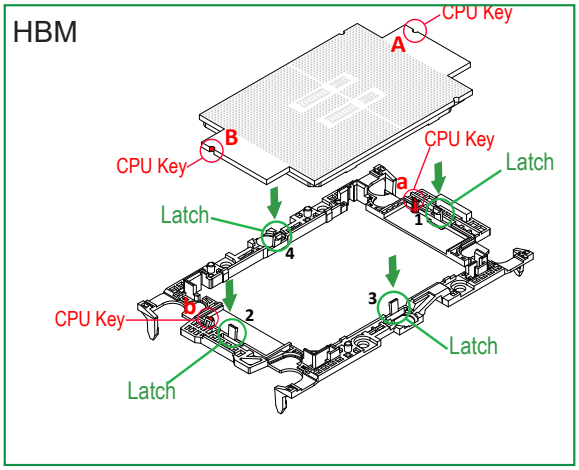
Carrier E1A Carrier E1B

4. Using Pin 1 as a guide, carefully align the CPU keys (A and B) on the processor against the CPU keys on the carrier (a and b) as shown in the drawing below.

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

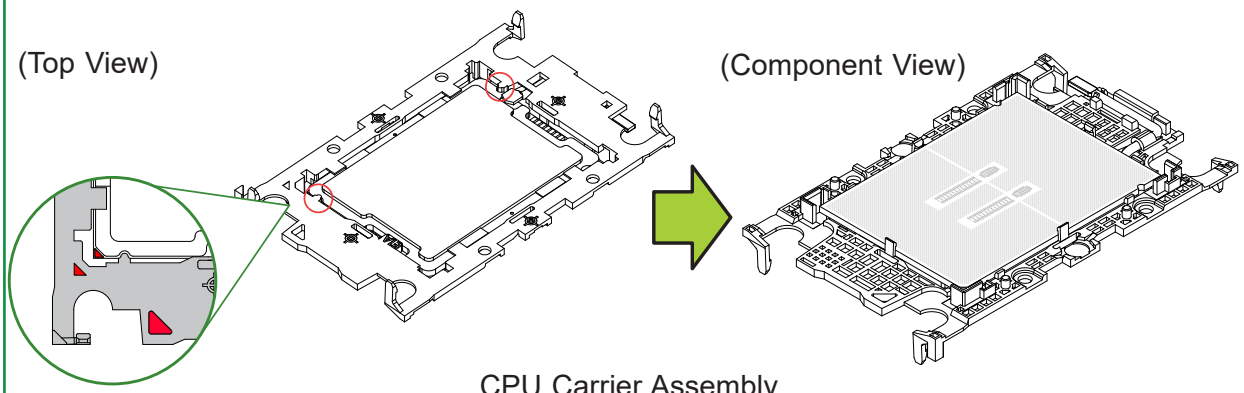






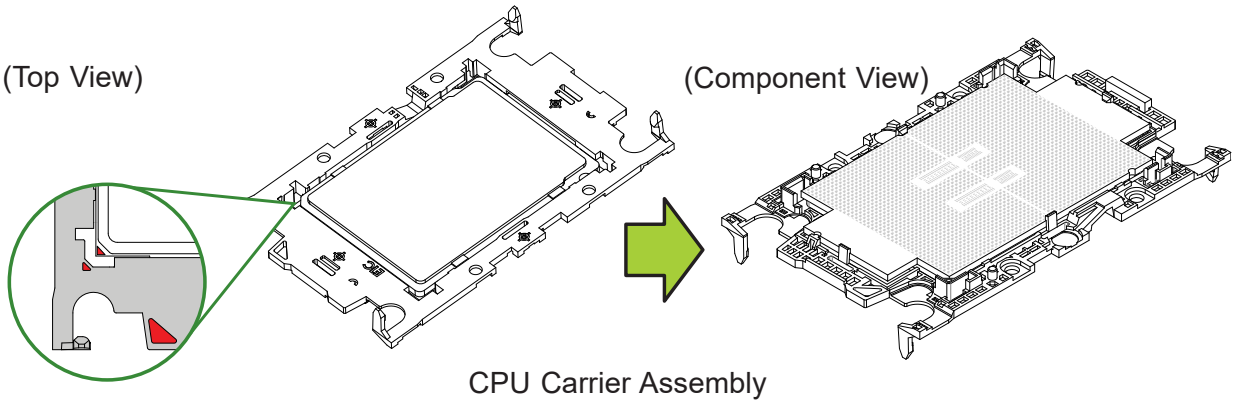
6. After the processor is placed inside the carrier, examine the four sides of the processor, making sure that the processor is properly seated on the carrier.

SP XCC



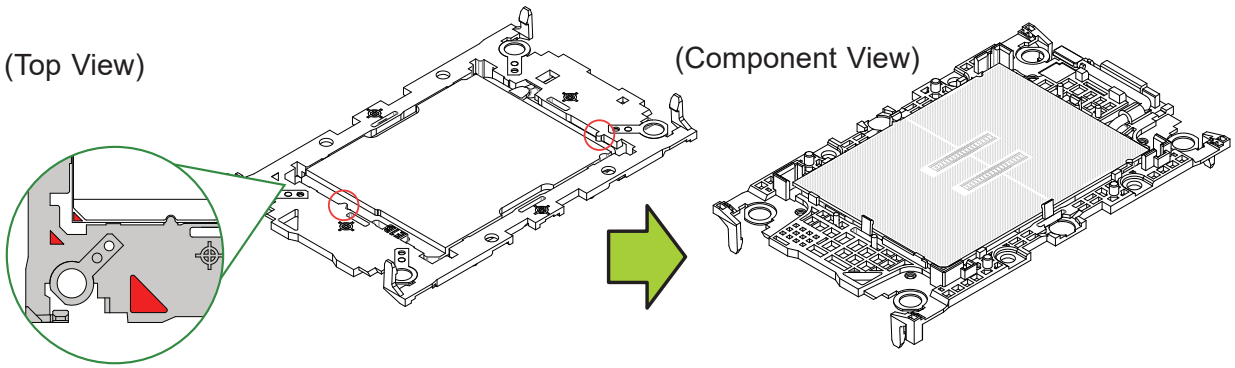
CPU Carrier Assembly

HBM



CPU Carrier Assembly

SP MCC



CPU Carrier Assembly

Creating the PHM

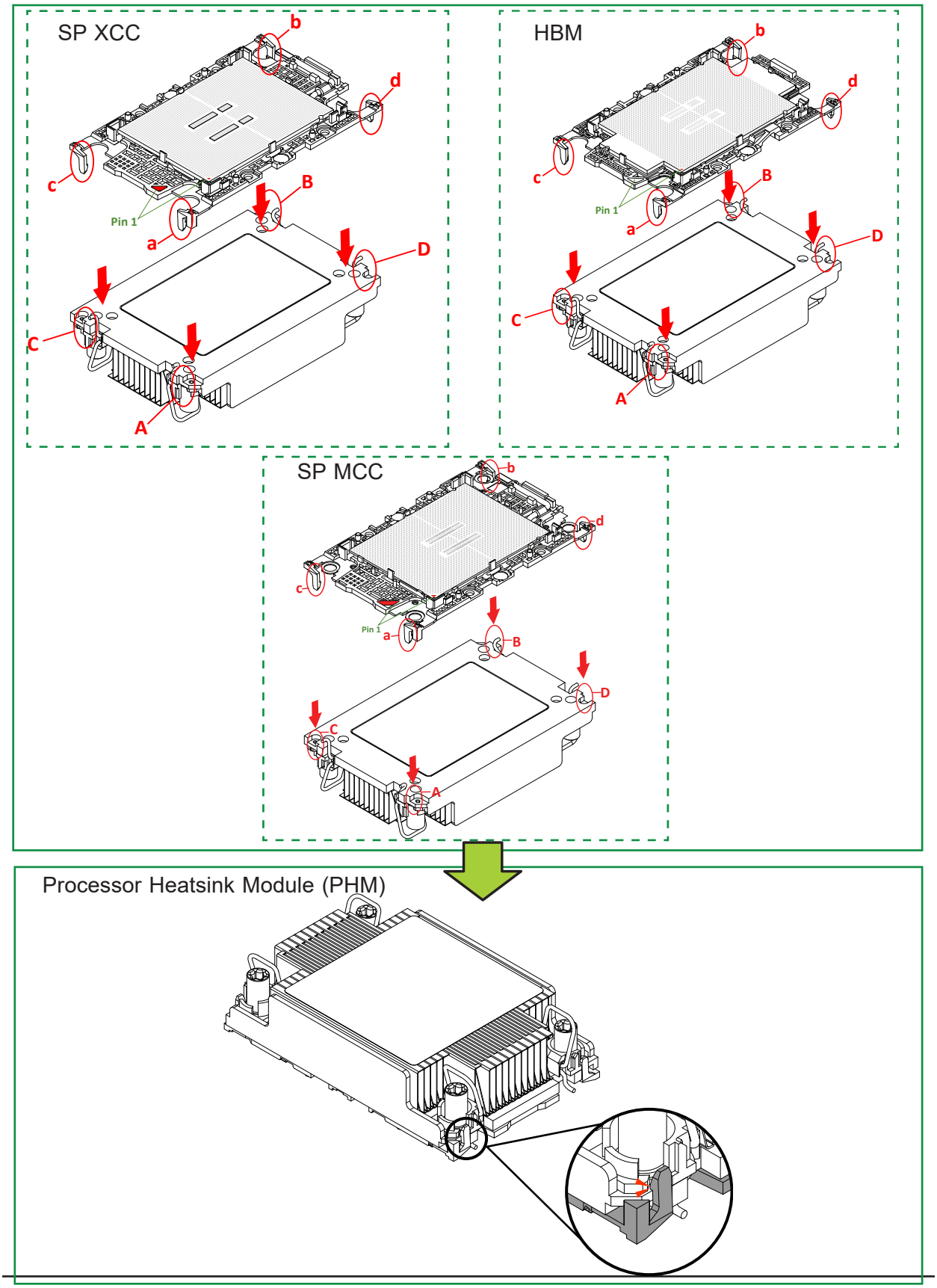
After creating the processor carrier assembly, please follow the instructions below to mount the processor carrier into the heatsink to form the PHM.

Note: If this is a new heatsink, the thermal grease has been pre-applied on the underside. Otherwise, apply the proper amount of thermal grease.

1. Turn the heatsink over with the thermal grease, which is on the reverse side of the heatsink, facing up. Pay attention to the two triangle cutouts (A, B) located at the diagonal corners of the heatsink as shown in the drawing below.
2. Hold the processor carrier component side facing up, and locate the triangle on the CPU and the triangle on the carrier. (Triangle indicates Pin 1.)
3. Using Pin 1 as a guide, turn the processor carrier assembly over with the gold contacts facing up. Locate Pin 1 (A) on the processor and Pin 1 (a) on the processor carrier assembly.
4. Align the corner marked a on the processor carrier assembly against the triangle cutout A on the heatsink, and align the corners marked b, c, and d on the processor assembly against the corners marked B, C, and D on the heatsinks.
5. Once they are properly aligned, place the corners marked a, b, c, and d on the processor carrier assembly into the corners of the heatsink marked A, B, C, and D making sure that all plastic clips are properly attached to the heatsink.

CPU Carrier Assembly

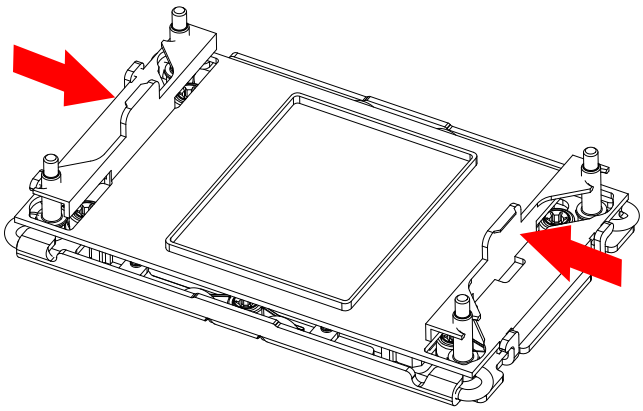
(CPU Component Side and Heatsink Bottom Side)



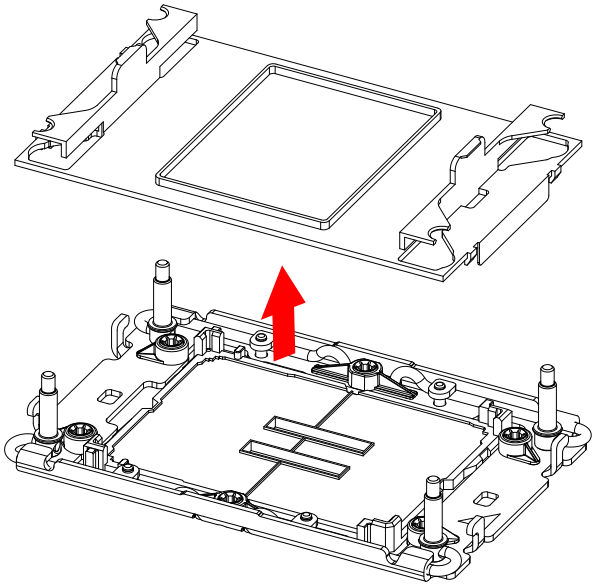
Preparing the CPU Socket for Installation

This motherboard comes with a plastic protective cover installed on the CPU socket. Remove it from the socket by following the instructions below:

1. Press the tabs inward.

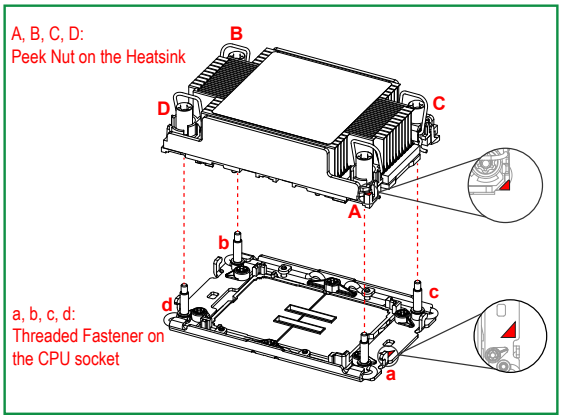


2. Pull up the protective cover from the socket.

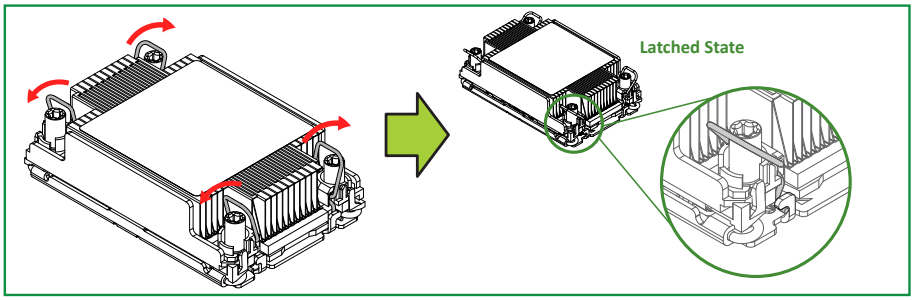


Installing the PHM into the CPU Socket

1. Locate four threaded fasteners (a, b, c, d) on the CPU socket.
2. Align PEEK nut A, which is next to the triangle (Pin 1) on the heatsink, against threaded fastener a on the CPU socket. Then align PEEK nuts B, C, and D on the heatsink against threaded fasteners b, c, and d on the CPU socket, making sure that all PEEK nuts on the heatsink are properly aligned with the correspondent threaded fasteners on the CPU socket.



3. Once they are aligned, gently place the heatsink on top of the CPU socket, making sure that each PEEK nut is properly attached to its corresponding threaded fastener.

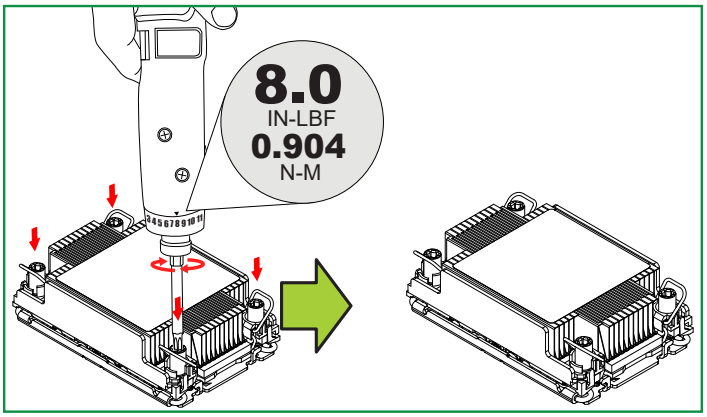


4. Press all four rotating wires outwards and make sure that the heatsink is securely latched onto the CPU socket.

5. With a T30 bit torque driver set to a force of 8.0 in-lbf (0.904 N-m), gradually tighten the four screws to ensure even pressure. You can start with any screw, but make sure to tighten the screws in a diagonal pattern.

Note: Do not use a force greater than 8.0 in-lbf (0.904 N-m). Exceeding this force may over-torque the screw, causing damage to the processor, heatsink, and screw.

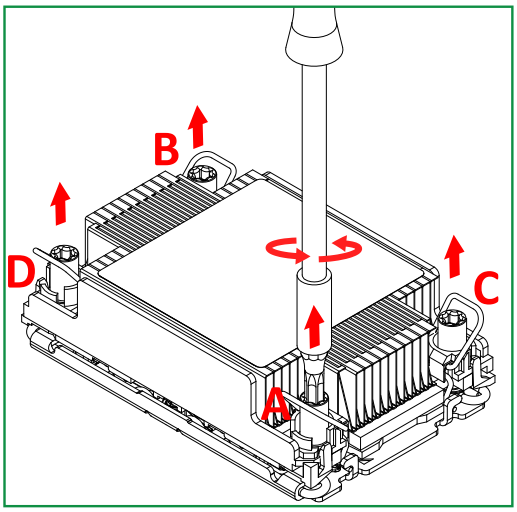
6. Examine all corners of the heatsink to ensure that the PHM is firmly attached to the CPU socket.



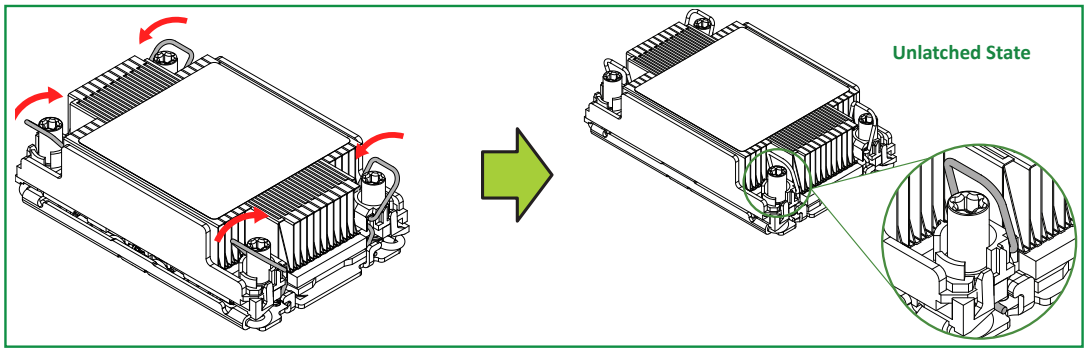
Removing the PHM from the CPU Socket

Before removing the PHM from the motherboard, be sure to shut down the system and unplug the power cables from the power supply. Then follow the steps below:

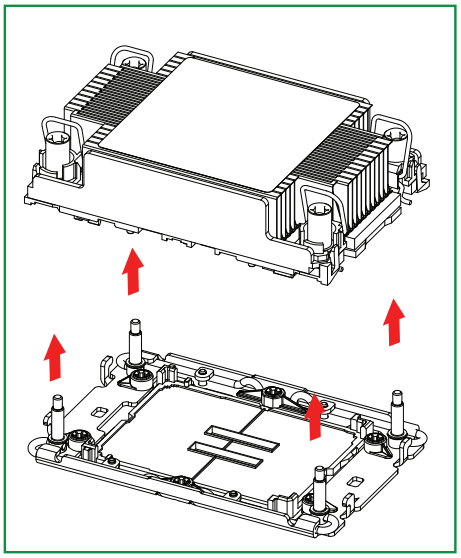
1. Use a T30 screwdriver to loosen the four PEEK nuts on the heatsink in the sequence of A, B, C, and D.



2. Once the PEEK nuts are loosened from the CPU socket, press the rotating wires inwards to unlatch the PHM from the socket as shown in the drawings below.



3. Gently pull the PHM upwards to remove it from the CPU socket.

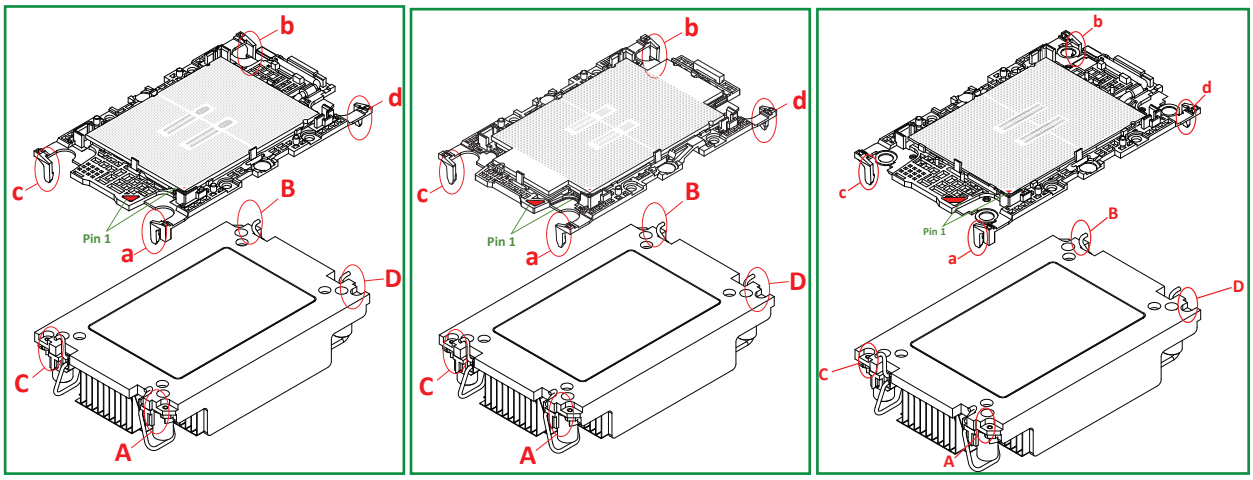


Removing the Processor Carrier Assembly from the PHM

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

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 in the drawings below.

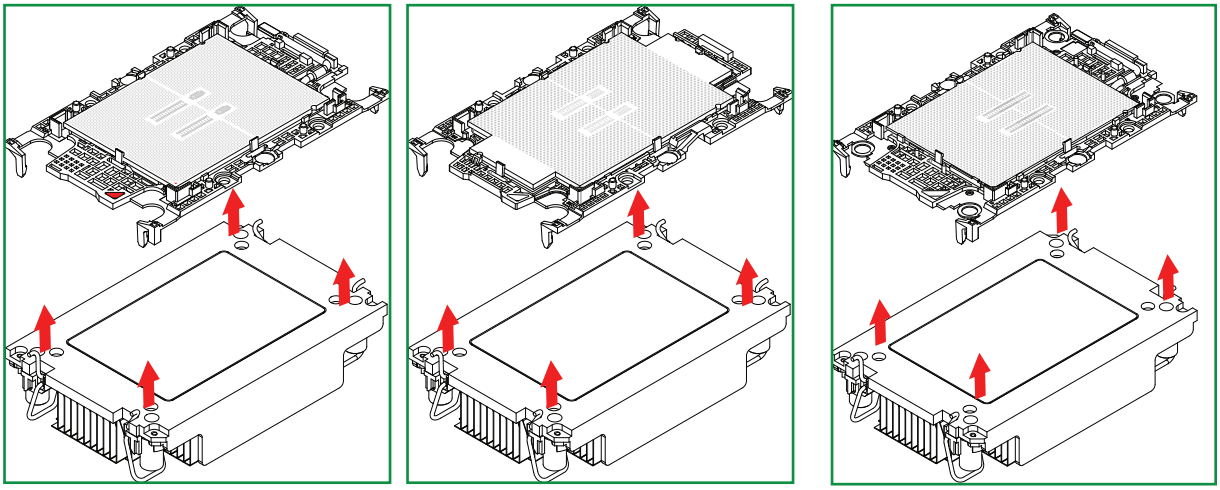
1U Heatsink (View of Component Side and Heatsink Bottom Side)



SP XCC HBM SP MCC

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

1U Heatsink (View of Component Side and Heatsink Bottom Side)

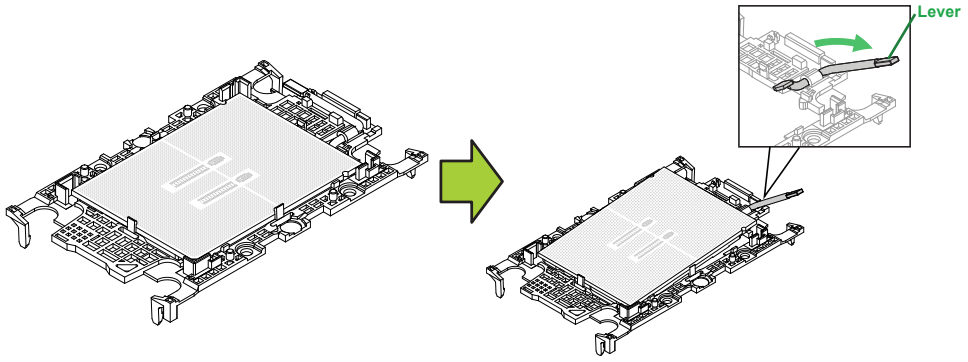


SP XCC HBM SP MCC

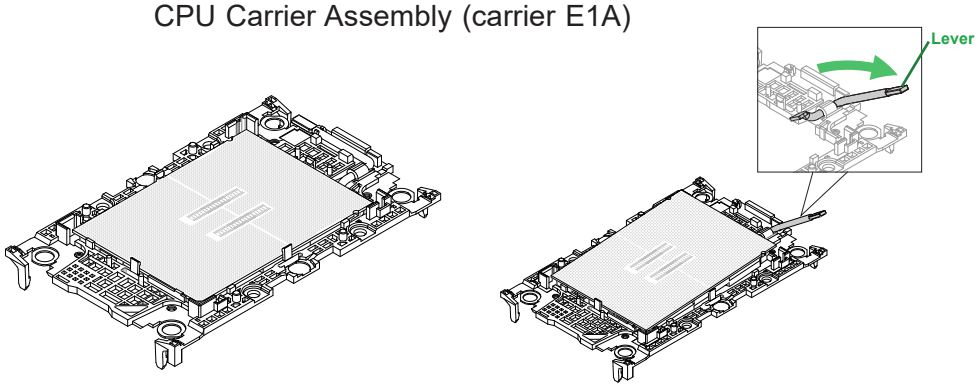
Removing the Processor from the Processor Carrier Assembly

Once you have removed the processor carrier assembly from the PHM, you are ready to remove the processor from the processor carrier by following the steps below.

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



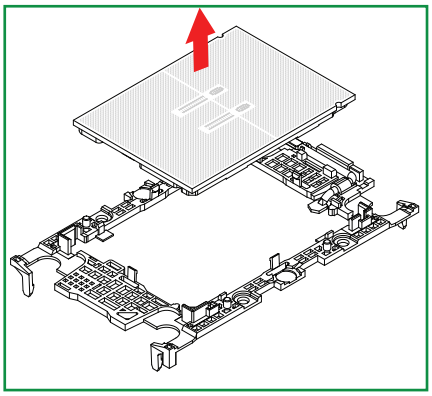
CPU Carrier Assembly (carrier E1A)



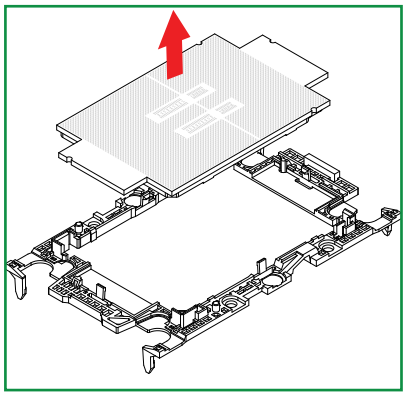
CPU Carrier Assembly (carrier E1B)

2. Once the processor is loosened from the carrier, carefully remove the processor from the processor carrier.

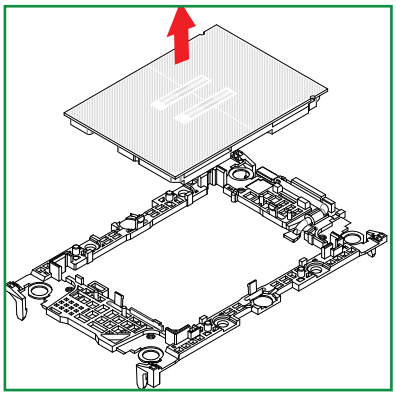
   Note: Please handle the processor with care to avoid damaging the processor and its pins.



SP XCC



HBM

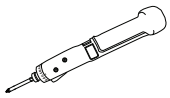


SP MCC

3.4 Motherboard Installation

All motherboards have standard mounting holes to fit different types of chassis. Make sure that the locations of all the mounting holes for both the motherboard and the chassis match. Although a chassis may have both plastic and metal mounting fasteners, metal ones are highly recommended because they ground the motherboard to the chassis. Make sure that the metal standoffs click in or are screwed in tightly.

Tools Needed



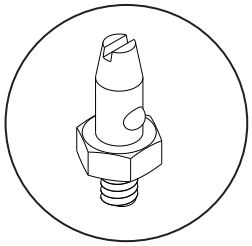
Torque Driver (1)



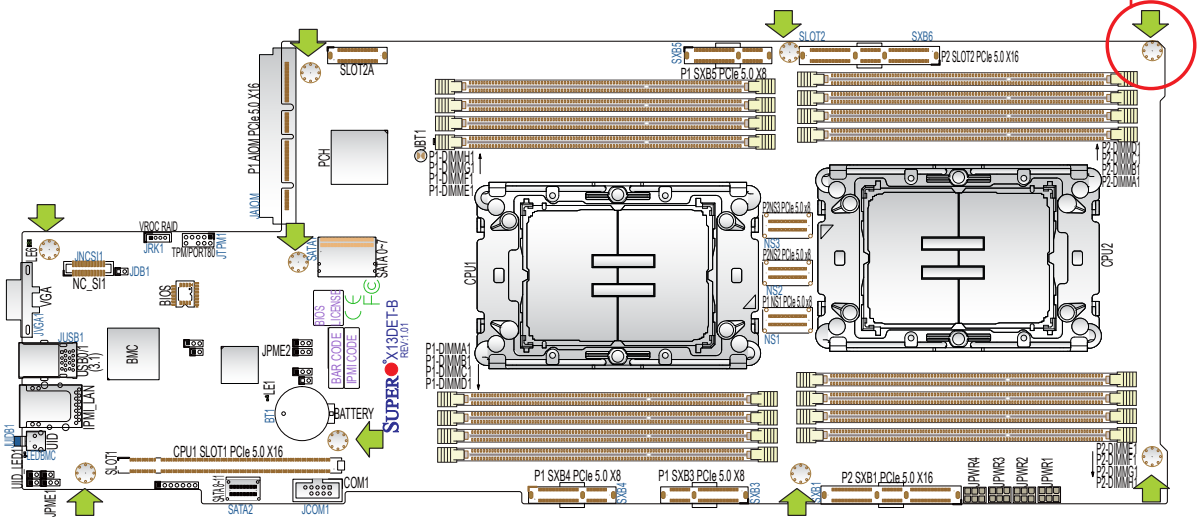
Phillips Screws (9)



Standoffs (9) (Only if Needed)



*Optional Ball Pin Screw



Location of Mounting Holes

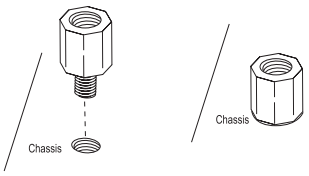
Note 1: To avoid damaging the motherboard and its components, please do not use a force greater than 8 lbf-in on each mounting screw during motherboard installation.

Note 2: Some components are very close to the mounting holes. Please take precautionary measures to avoid damaging these components when installing the motherboard to the chassis.

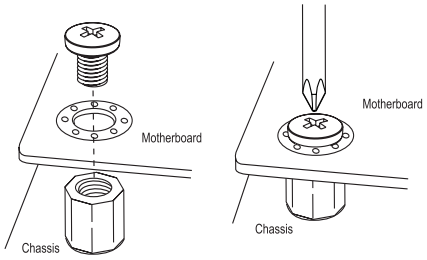
Note 3: If installing an M.2 long riser, instead of the standard Phillips Screw, there will need to be a Ball Pin Screw installed at the location specified on the motherboard layout.

Installing the Motherboard

1. Install the I/O shield into the back of the chassis, if applicable.
2. Locate the mounting holes on the motherboard. See the previous page for the location.



3. Locate the matching mounting holes on the chassis. Align the mounting holes on the motherboard against the mounting holes on the chassis.



4. Install standoffs in the chassis as needed.
5. Install the motherboard into the chassis carefully to avoid damaging other motherboard components.
6. Using the Phillips torque driver, insert a pan head #6 screw into a mounting hole on the motherboard and its matching mounting hole on the chassis.
7. Repeat Step 5 to insert #6 screws into all mounting holes.
8. Make sure that the motherboard is securely placed in the chassis.

Note: Images displayed are for illustration only. Your chassis or components might look different from those shown in this manual.

3.5 Memory

Memory Support

The X13DET-B motherboard supports up to 4 TB of 3DS RDIMM/RDIMM DDR5 (288-pin) memory with speeds up to 4800 MT/s (4th Gen Intel Xeon) and 5600 MT/s (5th Gen Intel Xeon) in 16 DIMM slots.

Important: Exercise extreme care when installing or removing memory modules to prevent any damage.

Note: Memory speed and capacity support depend on the processors used in the system.

Note: Check the Supermicro website for recommended memory modules.

For validated memory, use our Product Resources page. Check the Supermicro website for possible updates to memory support.

Memory Installation Sequence

Memory for this motherboard is populated using the "Fill First" method. The DIMM slots with blue release tabs are considered the first DIMM of their channel, and those with white release tabs are the second of the channel. When installing memory modules, be sure to populate the memory slots with the blue release tabs first and then populate those with the white release tabs.

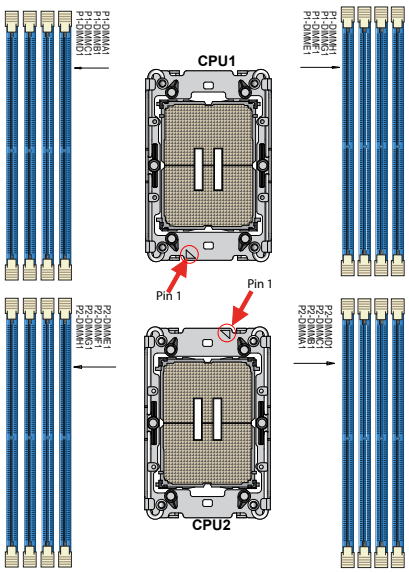
General Memory Population Requirements

1. Be sure to use the memory modules of the same type and speed on the motherboard. Mixing of memory modules of different types and speeds is not allowed.
2. Using unbalanced memory topology such as populating two DIMMs in one channel while populating one DIMM in another channel will result in reduced memory performance.
3. Populating memory slots with a pair of DIMM modules of the same type and size will result in interleaved memory, which will improve memory performance.

DDR5 Memory Population Guidelines

The following memory population table was created based on guidelines provided by Intel to support Supermicro motherboards.

DDR5 Memory Population Table for X13DP Motherboards (with 16 DIMMs installed)	
1 CPU:	***Memory Population Sequence***
1 CPU & 1 DIMM	P1-DIMMA1 P1-DIMME1 P1-DIMMB1 P1-DIMMF1
1 CPU & 2 DIMMs	P1-DIMMA1 / P1-DIMMG1 P1-DIMMC1 / P1-DIMME1
1 CPU & 4 DIMMs	P1-DIMMA1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1
1 CPU & 6 DIMM	P1-DIMMA1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1 P1-DIMMA1 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1 / P1-DIMMH1 P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMH1 P1-DIMMA1 / P1-DIMMB1 / P1-DIMMD1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1
1 CPU & 8 DIMMs	P1-DIMMA1 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1
2 CPUs: (Recommended)	***Memory Population Sequence***
2 CPUs & 2 DIMMs	**CPU1:** P1-DIMMA1, **CPU2:** P2-DIMMA1 **CPU1:** P1-DIMME1, **CPU2:** P2-DIMME1 **CPU1**: P1-DIMMB1, **CPU2:** P2-DIMMB1 **CPU1:** P1-DIMMF1, **CPU2:** P2-DIMMF1
2 CPUs & 4 DIMMs	**CPU1:** P1-DIMMA1 / P1-DIMMG1, **CPU2:** P2-DIMMA1 / P2-DIMMG1 **CPU1:** P1-DIMMC1 / P1-DIMME1, **CPU2:** P2-DIMMC1 / P2-DIMME1
2 CPUs & 8 DIMMs	**CPU1:** P1-DIMMA1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1 **CPU2:** P2-DIMMA1 / P2-DIMMC1 / P2-DIMME1 / P2-DIMMG1
2 CPUs & 12 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMG1 **CPU1:** P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMME1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMB1/P2-DIMMC1/P2-DIMME1/P2-DIMMG1/P2-DIMMH1 **CPU1:** P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMH1 **CPU2:** P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMH1 **CPU1:** P1-DIMMA1/P1-DIMMB1/P1-DIMMD1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMB1/P2-DIMMD1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 16 DIMMs	**CPU1**: P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2**: P2-DIMMA1/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1



Note: The drawing above shows DIMM module population for each CPU installed on the motherboard. Please install your processors starting with CPU Socket 1.

DDR5 Memory Support for the 4th Gen Intel Xeon Scalable Processors			
Type	**Ranks Per DIMM & Data Width (Stack)**	**DIMM Capacity (GB)**	**1DPC (Note)**
		16 GB	1.1V
RDIMM	SRx8 (RC D)	16 GB	4800
	SRx4 (RC C)	32 GB	
	SRx4 (RC F) 9x4	32 GB	
	DRx8 (RC E)	32 GB	
	DRx4 (RC A)	64 GB	
	DRx4 (RC B) 9x4	64 GB	
RDIMM 3DS	(4R/8R) x4 (RC A)	2H-128 GB 4H-256 GB	
LRDIMM/LRDIMM-3DS	N/A	N/A	Not Supported

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

Note 2: 24Gb XCC only with limited configs: 1DPC all DIMM types.

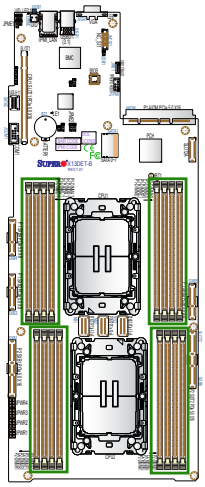
Note 3: Memory speed will be 4800 MT/s 1DPC.

Note 4: Mixing DRAM Density (16 Gb/ 24 Gb) and/or frequency is not allowed.

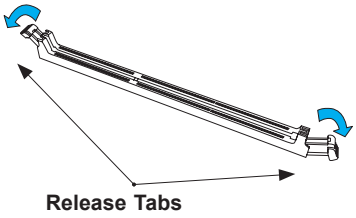
DDR5 Memory Support for the 5th Gen Intel Xeon Scalable Processors			
Type	**Ranks Per DIMM & Data Width (Stack)**	**DIMM Capacity (GB)**	**1DPC (Note)**
		16 GB	1.1V
RDIMM	SRx8 (RC D)	16 GB	5600
	SRx4 (RC C)	32 GB	
	SRx4 (RC F) 9x4	32 GB	
	DRx8 (RC E)	32 GB	
	DRx4 (RC A)	64 GB	
	DRx4 (RC B) 9x4	64 GB	
RDIMM 3DS	(4R/8R) x4 (RC A)	2H-128 GB 4H-256 GB	
LRDIMM/LRDIMM-3DS	N/A	N/A	Not Supported

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

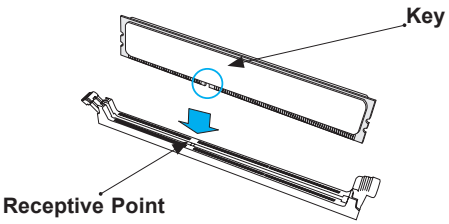
DIMM Installation

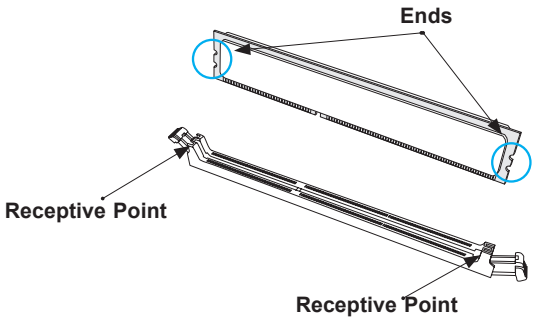


1. Find the DIMMs slots based on the recommended DIMM population table in Section 3.5.
2. Open the release tabs by pushing the tabs outwards on both ends of the DIMM slot.

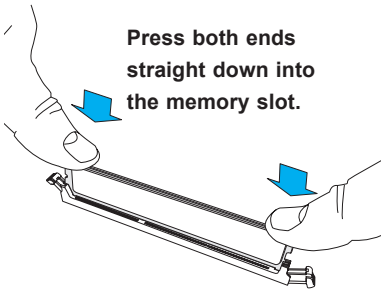


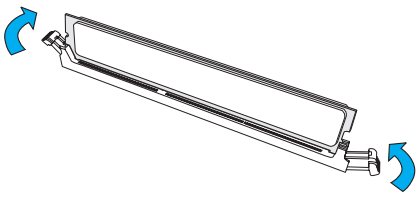
3. Align the key at the bottom edge of the DIMM module with the receptive point on the memory slot.
4. Align the ends of the module against the receptive points on the ends of the slot.





5. Press the ends of the module straight down into the slot until the module snaps into place.
6. Close the release tabs to secure the DIMM module into the slot.





DIMM Removal

Open the release tabs by pushing the tabs outwards on both ends of the DIMM slot. Once the DIMM module is loosened, remove it from the memory slot.

3.6 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.

Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Locate the onboard battery as shown below.
3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
4. Remove the battery.

Proper Battery Disposal

Important: 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.

Battery Installation

To install an onboard battery, follow steps 1 and 2 above and continue below:

Important: When replacing a battery, be sure to only replace it with the same type.

1. Identify the battery's polarity. The positive (+) side should be facing up.
2. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

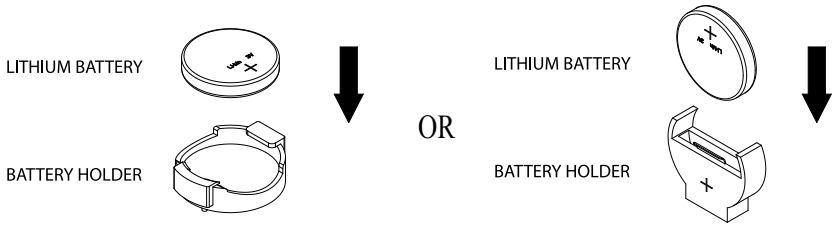


Figure 3-3. Installing the Onboard Battery

3.7 Storage Drives

The CSE-217BQ2 chassis supports 24 hot-swap 2.5" solid-state drives (SSDs). Each node controls six drives. All the drives in the SYS-221BT-HNR support PCIe 5.0. In the other four systems, the first two drives of each node are PCIe 5.0 and the remaining four drives are PCIe 4.0.

- HNR: 24 PCIe 5.0 NVMe drives
- HNTR: 24 hybrid SATA3/NVMe drives
- HNC8R: 24 hybrid SAS3/NVMe drives (SAS supported via onboard Broadcom 3808)
- HNC9R: 24 hybrid SAS3/NVMe drives (SAS supported via Broadcom 3908 AOC)

Drive Carriers

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.

Drive Carrier LED Indicator			
	Color	**Blinking Pattern**	**Behavior for Device**
Activity LED	Blue	Solid On	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	Blinking with two blinks and one stop at 1 Hz	Hot spare for drive with RSTe support (not supported in VMD mode)
	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 On	Safe to remove NVMe device (not supported in VMD mode)
	Amber	Blinking at 1 Hz	Attention state---do not remove NVMe device (not supported in VMD mode)
	Off		Idle SATA or no drive

Note: Enterprise level drives are recommended for use in Supermicro chassis and servers. For information on recommended drives, see the Supermicro website, http://www.supermicro.com/products/nfo/files/storage/SBB-HDDCompList.pdf.

Drive Configuration

The CSE-217BQ2 chassis contains four separate computing node drawers, each with its own motherboard. Each node controls a set of six drives. If a node drawer is pulled out of the chassis, the drives associated with that node will power down.

Node Drawer Locations	
Node B controls drives B1, B2, B3, B4, B5, and B6	Node D controls drives D1, D2, D3, D4, D5, and D6
Node A controls drives A1, A2, A3, A4, A5, and A6	Node C controls drives C1, C2, C3, C4, C5, and C6

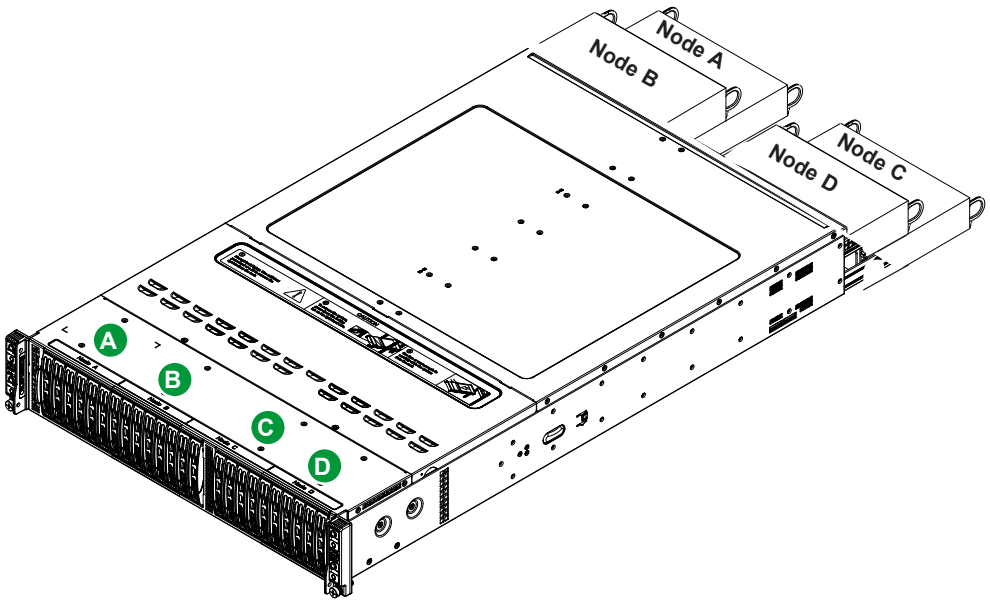


Figure 3-4. Storage Drives and the Corresponding Nodes

Installing Drives

Removing Drive Carriers from the Chassis

1. Press the release button on the drive carrier. This extends the drive carrier handle.
2. Use the handle to pull the carrier out of the chassis (Figure 3-5).
3. Remove the dummy drive from the carrier (Figure 3-6).

Caution: Except for short periods of time (swapping drives), do not operate the server with the drive carriers removed from the bays, regardless of how many drives are installed, for proper airflow.

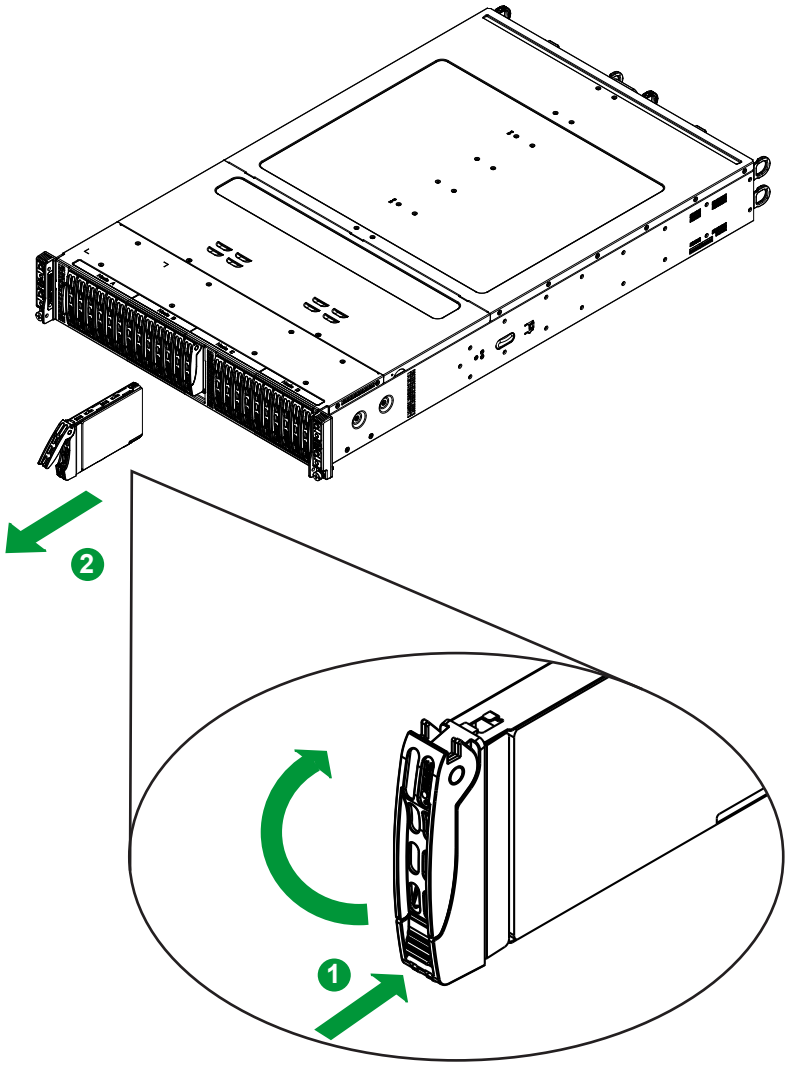


Figure 3-5. Removing a Drive Carrier

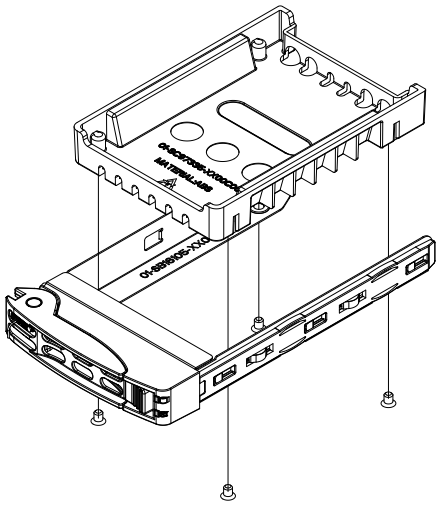


Figure 3-6. Removing a Dummy Drive from the Drive Carrier

Installing a Drive

1. Install a new drive into the carrier with the printed circuit board side facing down so that the mounting holes in the drive align with those in the carrier.

2. Secure the hard drive into the carrier with the screws.

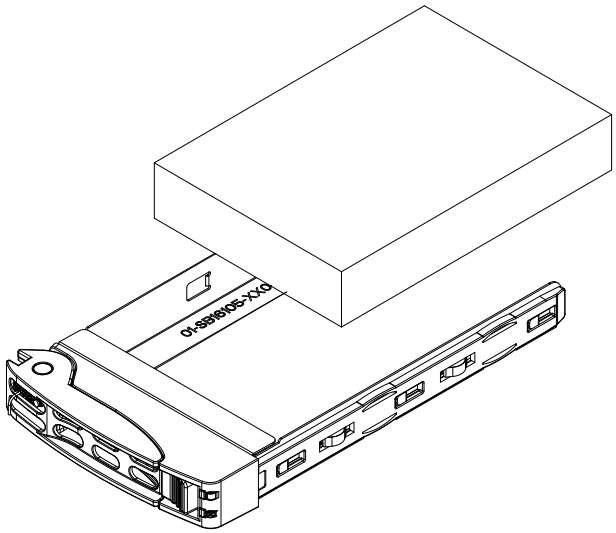


Figure 3-7. Installing the Hard Drive

3. Insert the drive and carrier into its bay vertically, keeping the carrier oriented so that the release button is on the bottom. When the carrier reaches the rear of the bay, the release handle starts to retract.

4. Push the upper part of the drive carrier handle until it clicks into the locked position.

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 BMC.

Note: If you are using VROC, see the Hot-Swap Drives section in Chapter 6 instead.

Ejecting a Drive

1. **BMC > System > Storage Monitoring > Physical View**
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. The SYS-221BT-H Series server has one Device and one Group.

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

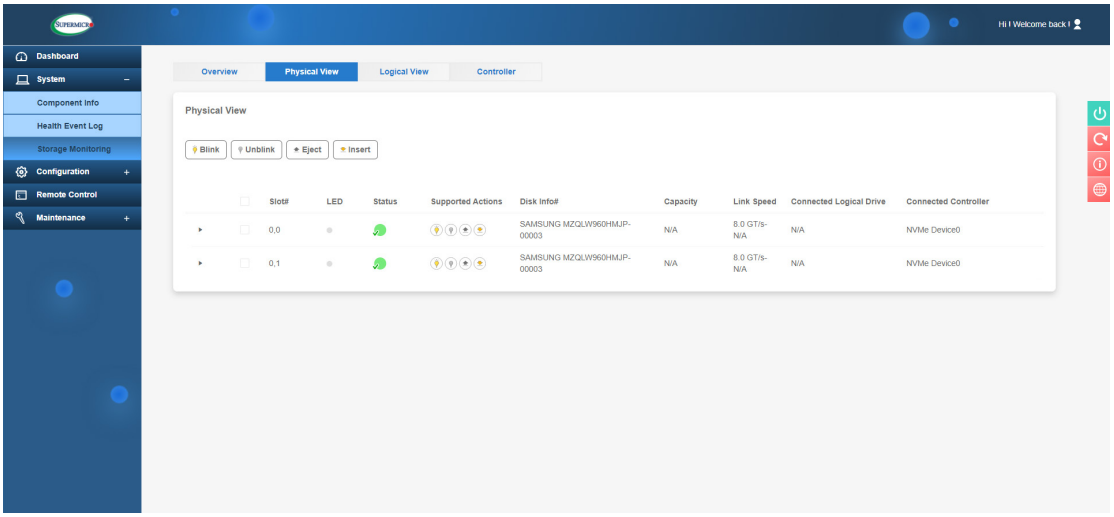


Figure 3-8. BMC Screenshot

Replacing the Drive

1. Insert the replacement drive.
2. **BMC > System > Storage Monitoring > Physical View**
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 BMC.

Checking a Drive

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

3.8 System Cooling

Fans

Fan speed is controlled by a system temperature setting in BMC. If a fan fails, the remaining fans will ramp up to full speed. The system can continue to run with a failed fan. Replace any failed fan at your earliest convenience with the same type and model.

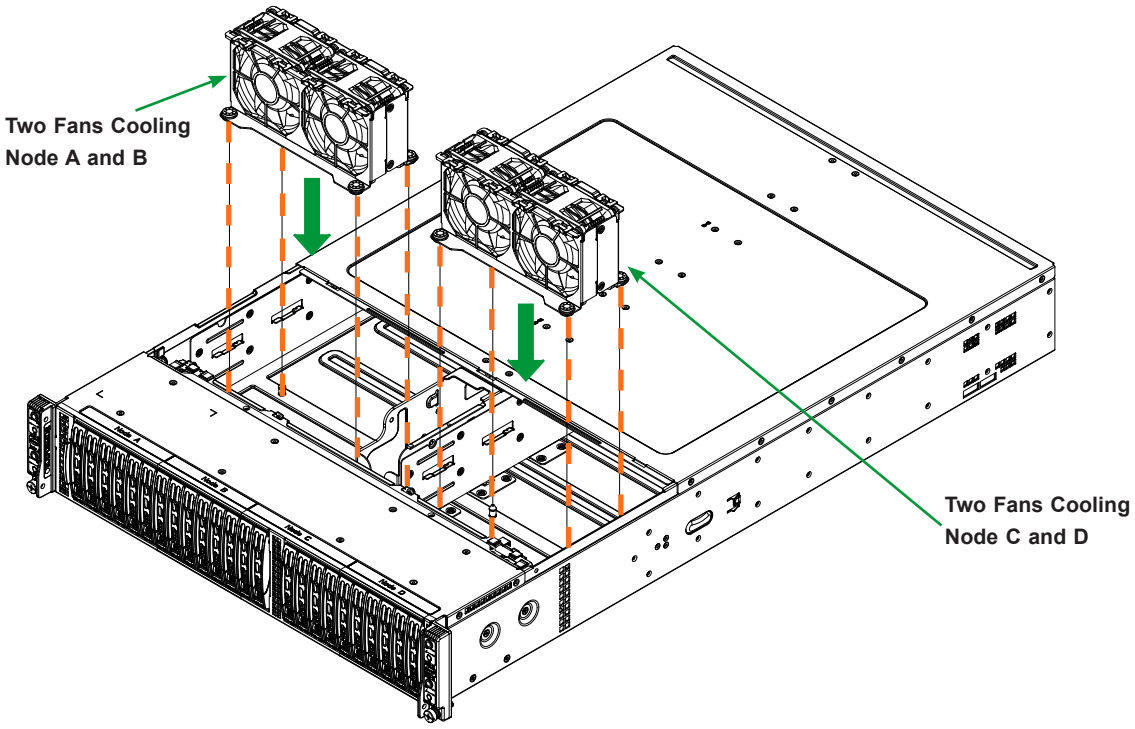


Figure 3-9. System Fan Placement

Changing a System Fan

1. Determine which fan is failing. If possible, use BMC. If not, remove the chassis cover while the power is on, and examine the fans to determine which one has failed.
2. Remove power from the system as described in Section 3.1.
3. Remove the fan cable from the backplane for the failed fan and the adjacent fan.
4. Lift the fan housing up and out of the chassis.
5. Push the fan up from the bottom and out of the top of the housing.

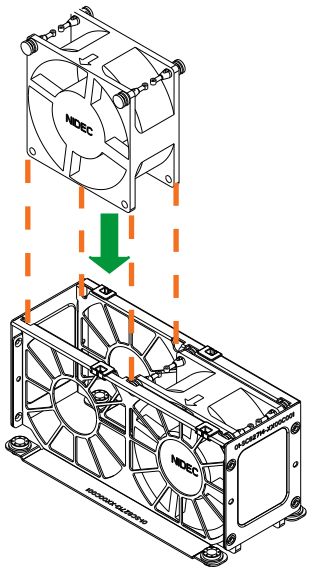


Figure 3-10. Replacing a System Fan in the Fan Housing

6. Place the replacement fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
7. Put the fan housing back into the chassis and reconnect the cable.
8. Power on the system to confirm that the fan is working properly before replacing the chassis cover.

Installing the Air Shroud

The system requires air shrouds for each node to maximize airflow efficiency.

Installing the Air Shrouds

The motherboard, any expansion cards, and all components must be installed in the node tray.

Place the air shroud as pictured below.

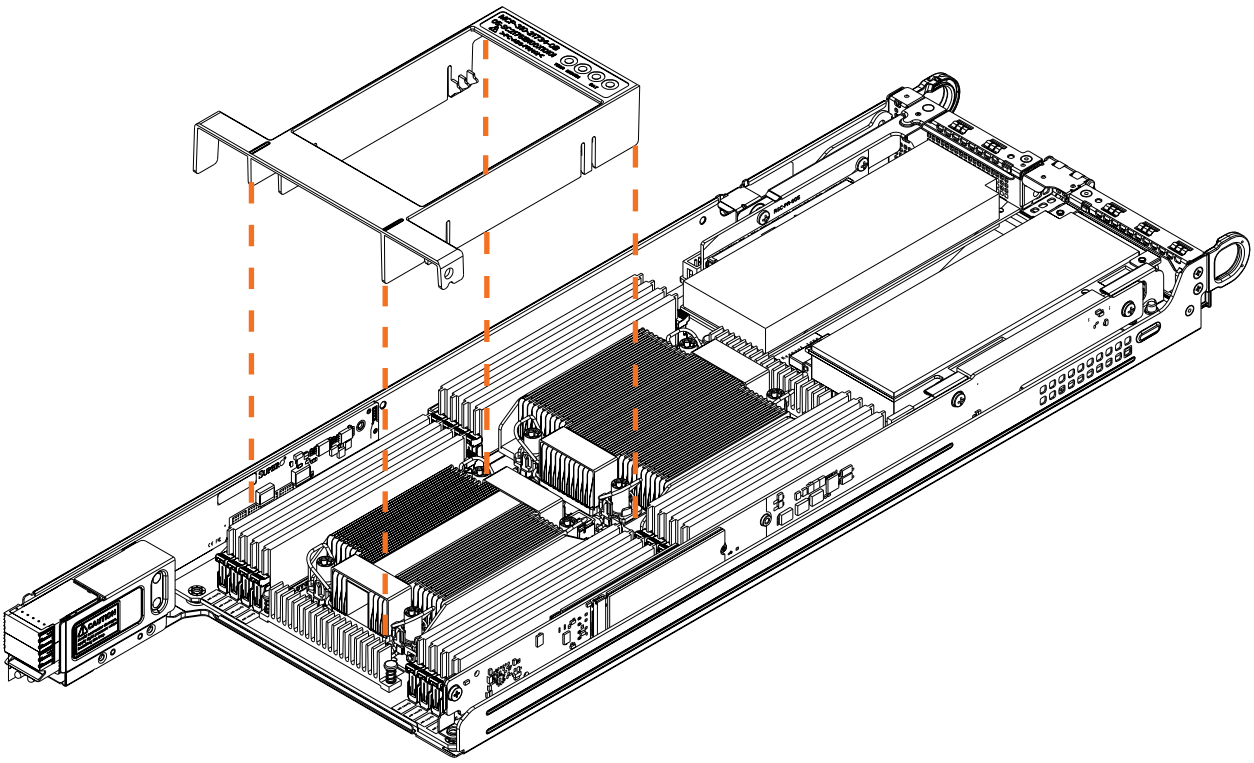


Figure 3-11. Installing the Air Shroud

3.9 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.

Important: Power supply redundancy is supported only with a 240 VAC or 240 VDC input.

These power supplies are auto-switching capable. This feature enables them to automatically sense the input voltage and operate at a 100-120 V or 180-240 V. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

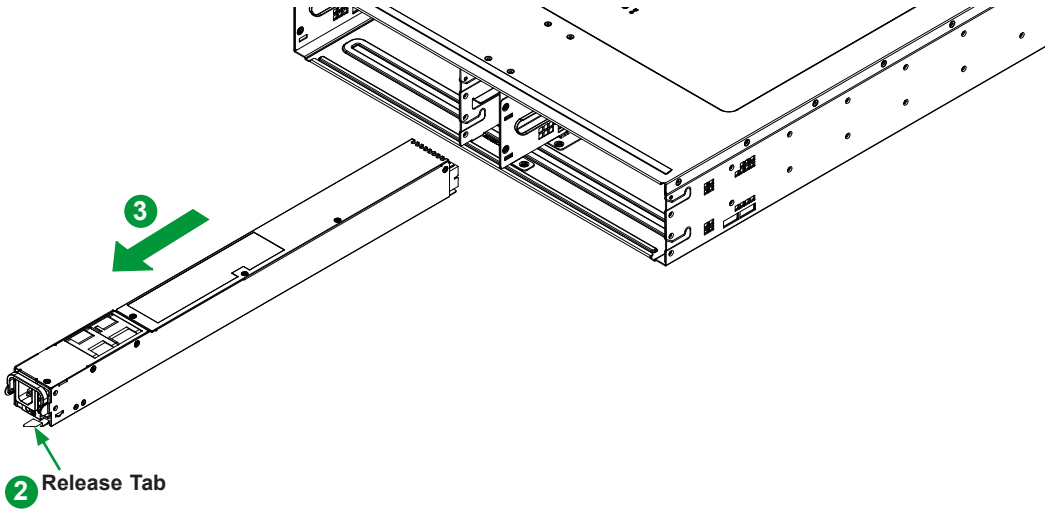


Figure 3-12. Power Supply Release Tab

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 provided.
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.

3.10 AIOM Card

The system supports various AIOM cards to provide networking functionality. See the Supermicro product page for details about the different AIOM cards.

Removing the AIOM Card

1. Press the release tab and loosen the thumbscrew on the AIOM card.
2. Grasp the release tab and the thumbscrew and pull the AIOM out of the node tray.

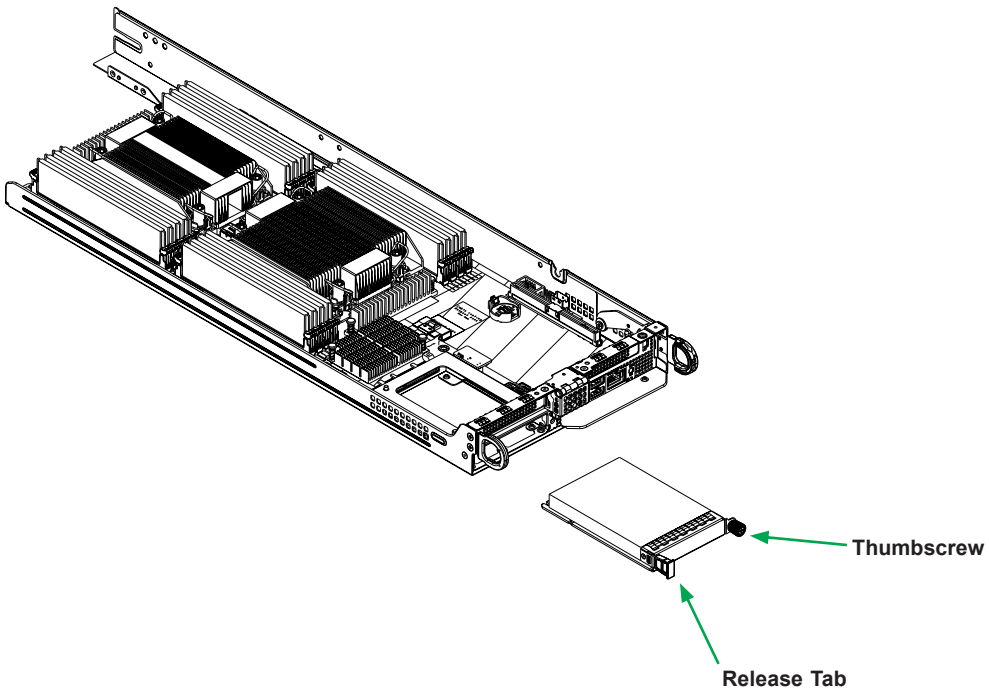


Figure 3-13. AIOM Card Node Position

Installing the AIOM Card

1. If necessary, loosen the thumbscrew and remove the shield
2. Insert the card into the node until it is connected to the motherboard slot.
3. Tighten the thumbscrew.

3.11 Expansion Cards

The SYS-221BT-H Series supports two low-profile, half-length x16 expansion cards in each node. Riser cards are used to mount the expansion cards.

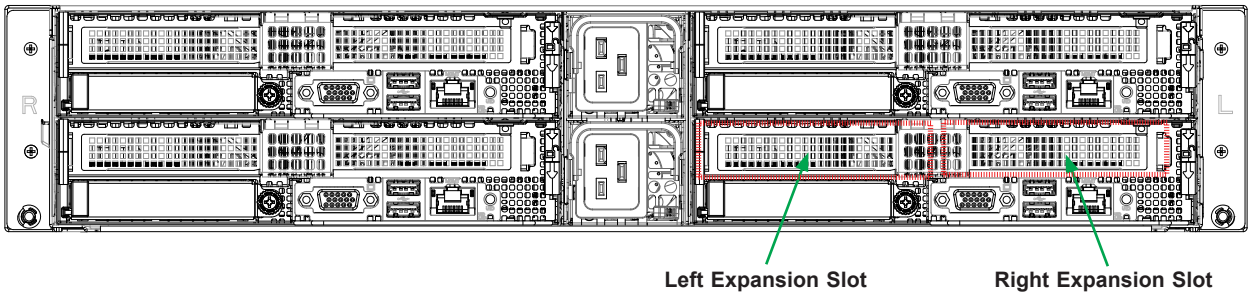


Figure 3-14. PCI Slot Configuration

Expansion Slot Locations (per node)			
Expansion Slot	**Description (all PCIe 5.0)**	**Riser Card**	**Model**
Left	x16 low-profile slot (CPU2)	SCC-P2HM2G4-B1 (Default) SCC-A2NM2241G3-B1 (Optional)	SYS-221BT-HNR SYS-221BT-HNTR SYS-221BT-HNC8R SYS-221BT-HNC9R
Right	x16 low-profile slot (CPU1)	RSC-PR-6G5	SYS-221BT-HNR SYS-221BT-HNTR SYS-221BT-HNC8R

Populating Right Expansion Slot (SYS-221BT-HNC9R)

1. If necessary, power down the node and remove it from the chassis.
2. Open the latch at the center of the node and remove the I/O slot shield by sliding it towards the center.

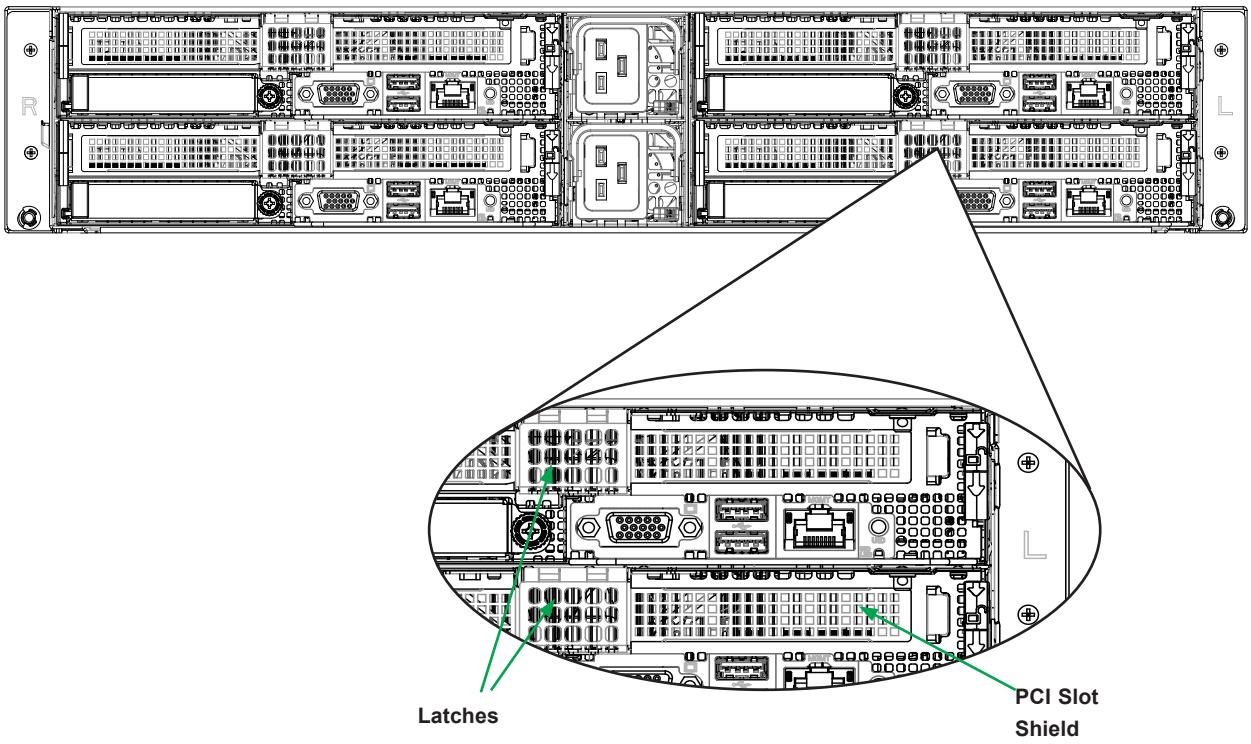


Figure 3-15. PCI Slot Shield and Latches

3. Attach the riser card to the riser card bracket and insert the expansion card into the riser card slot.

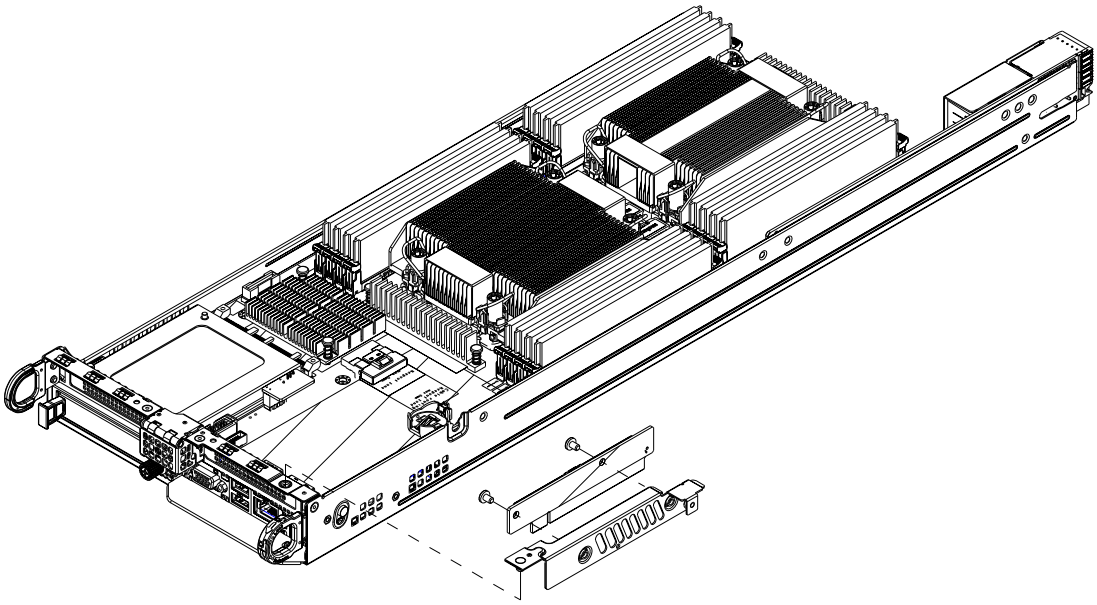


Figure 3-16. Riser Card and Riser Bracket

4. Align the assembly with slots on the motherboard and the PCI slot shield at the node rear. Insert the assembly into the motherboard.

5. Connect cables. See Section 3.14 Cable Routing Diagrams, Figure 3-25.

6. Close the latch, reinsert the node into the chassis, and power up the system.

Populating Left Expansion Slot (All Models)

1. If necessary, power down the node and remove it from the chassis.
2. Open the latch at the center of the node and remove the I/O slot shield by sliding it towards the center.

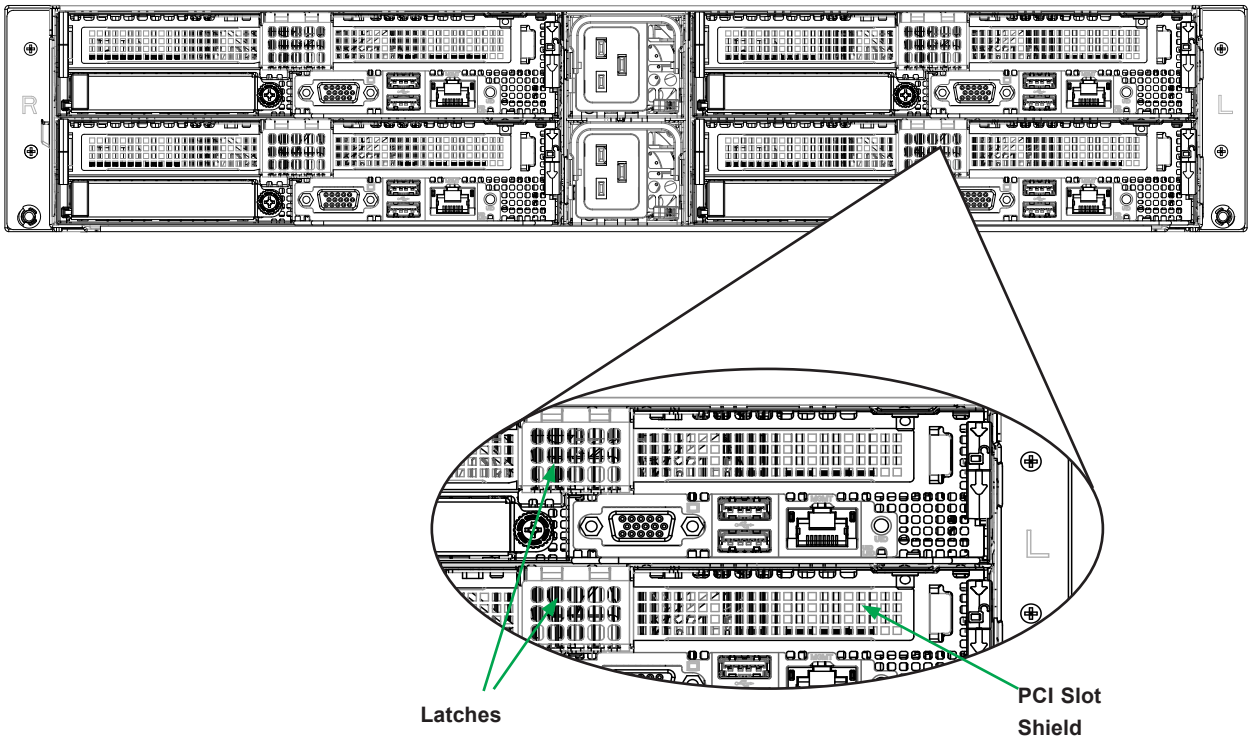


Figure 3-17. PCI Slot Shield and Latches

3. If necessary, install M.2 SSDs (not shown) on SCC-P2HM2G4-B1 or SCC-A2NM2241G3-B1.
4. Align the assembly with slots on the motherboard and the PCI slot shield at the node rear. Insert the assembly into the motherboard.
5. Connect cables, if needed.
6. Close the latch, reinsert the node into the chassis, and power up the system.

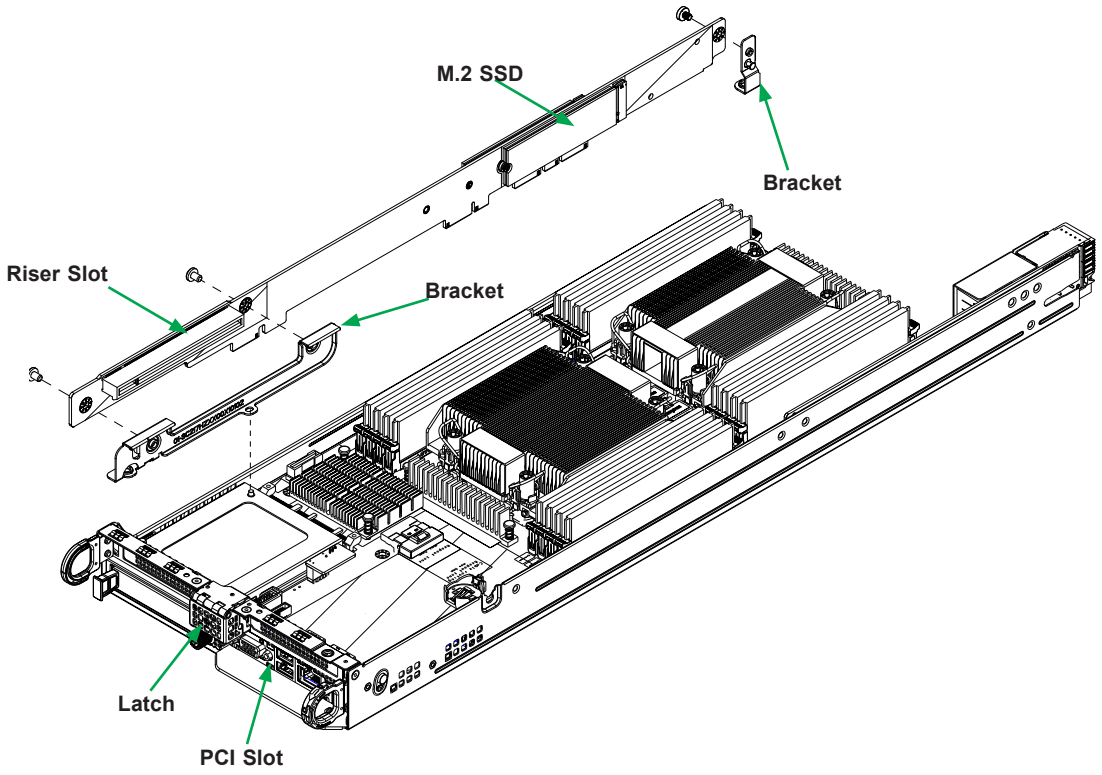


Figure 3-18. Installing Expansion Card

7. Check the PCIe bifurcation and the NVMe Firmware Source settings for the M.2 SSDs.

- BIOS Setup -> Advanced -> Chipset Configuration -> North Bridge -> IIO Configuration -> CPU Configuration -> IOU Setting -> x4x4x4x4
- BIOS Setup -> Advanced -> PCIe/PCI/PnP Configuration -> NVMe Firmware Source -> AMI Native Support

3.12 Backplane

The backplane (BPN-NVME5-217BHQ-S6) supports 24 SATA or NVMe drives. Four connectors are located at the back side of the backplane, one connected to each node. A cable linking the NearStack HD connector on the adapter to a high speed connector (P1 NS1) on the motherboard's PCB provides PCIe 5.0 support. For 24 SAS drive support, additional SAS adapters and cables are required.

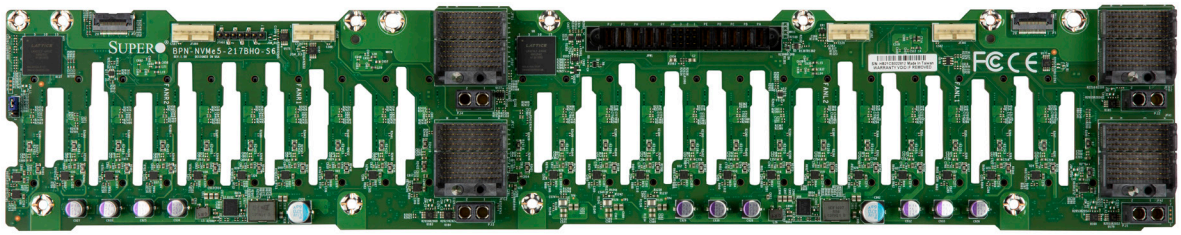


Figure 3-19. SATA/NVMe Backplane (Side Facing Chassis Rear)

3.13 Storage Adapters

The storage adapter (SCC-P6N6SGH-B1) connects directly to the backplane and provides a SlimSAS x8 connector. It is connected to the motherboard on SXB1 and powered by four 6-pin power connectors (JPWR1 to 4). The SCC-P6N6SGH-B1 adapter is included for the SYS-221BT-HNTR, SYS-221BT-HNC8R, and SYS-221BT-HNC9R.



Figure 3-20. Storage Adapter (SCC-P6N6SGH-B1**)**

The storage adapter (SCC-P6NG5-B1) connects directly to the backplane and provides a NearStack HD x8 connector. It is connected to the motherboard on SXB1 and powered by four 6-pin power connectors (JPWR1 to 4). The SCC-P6NG5-B1 is included for the SYS-221BT-HNR.



Figure 3-21. Storage Adapter (SCC-P6NG5-B1**)**

3.14 Cable Routing Diagrams

Refer to the storage cable diagrams in the next few pages. When disconnecting cables to add or replace components, refer to the diagrams so you can reroute them in the same manner.

All Flash NVMe Gen5

NVMe connections from the backplane to the motherboard.

NVMe PCIe 5.0 Cable **CBL-NSH5-1326**

Online Cable Matrix

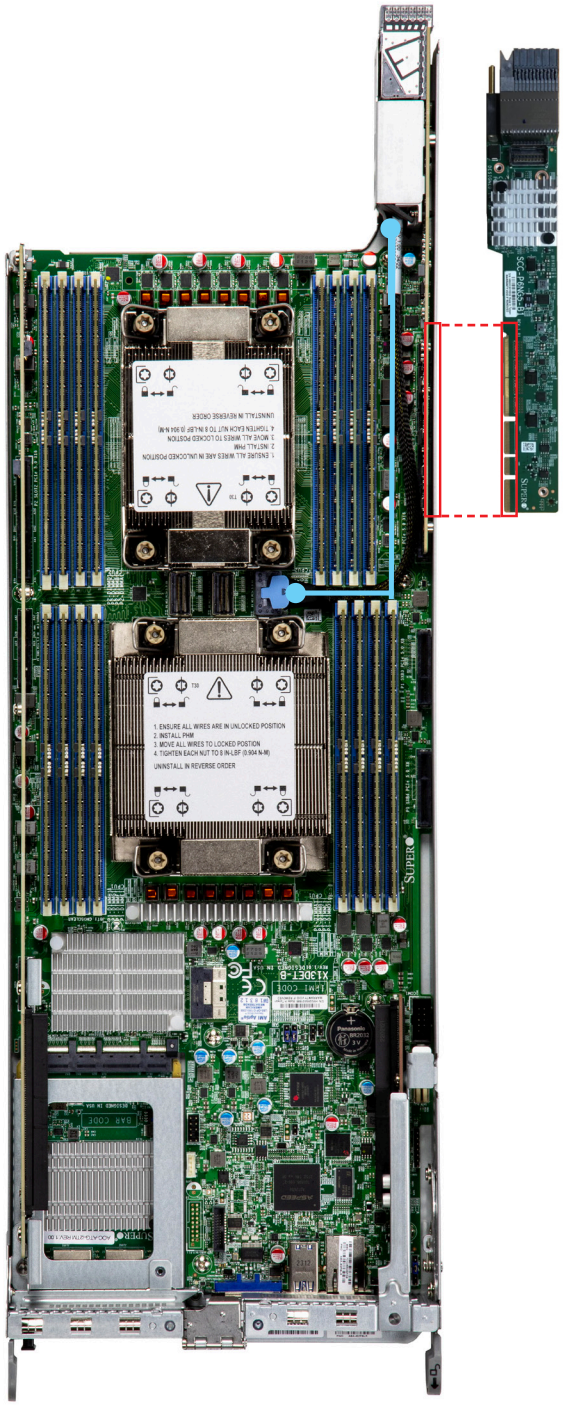


Figure 3-22. SYS-221BT-HNR Cable Routing Diagram

NVMe and SATA

NVMe connections from the backplane to the motherboard. SATA connections from the backplane to the motherboard.

NVMe PCIe 5.0 Cable **CBL-NSH5-1326**

SATA Cable **CBL-SAST-1243-100**

Online Cable Matrix

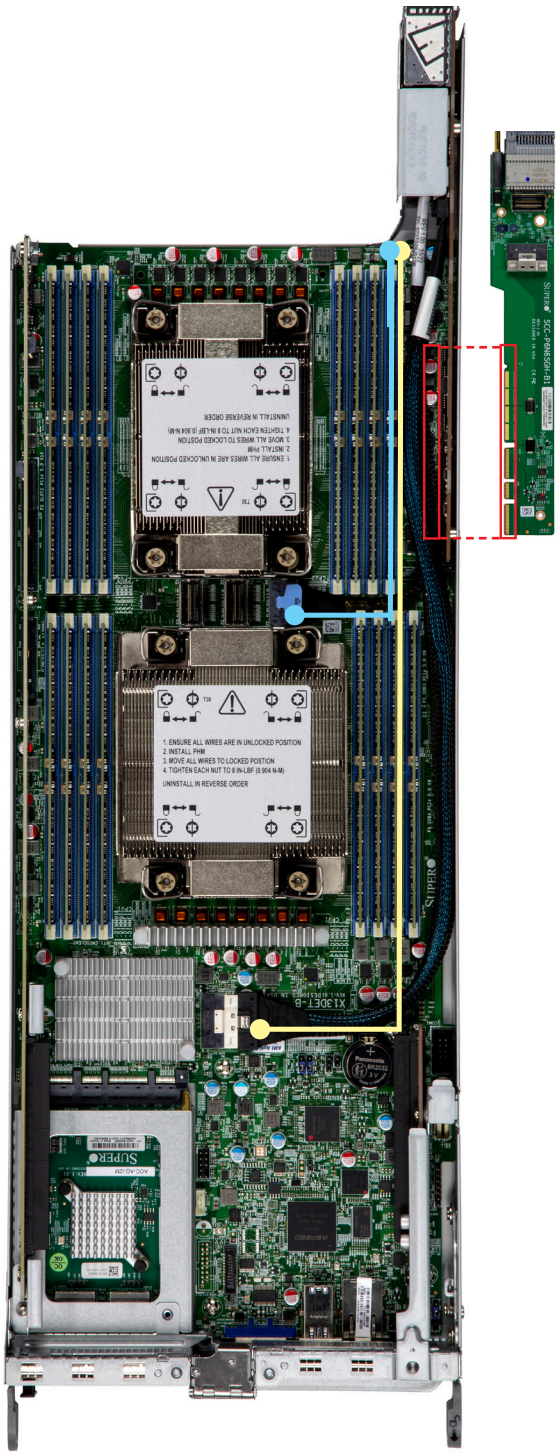


Figure 3-23. SYS-221BT-HNTR Cable Routing Diagram

NVMe and SAS via onboard 3808

NVMe connections from the backplane to the motherboard. SAS connections from the backplane to the SCC-B8SB80-B1. The SCC-B8SB80-B1 connects to the motherboard SXB4. The SXB3 is blocked by the SCC-B8SB80-B1 and is unusable.

NVMe PCIe 5.0 Cable **CBL-NSH5-1326**

SAS Cable **CBL-SAST-1221-100**

Online Cable Matrix

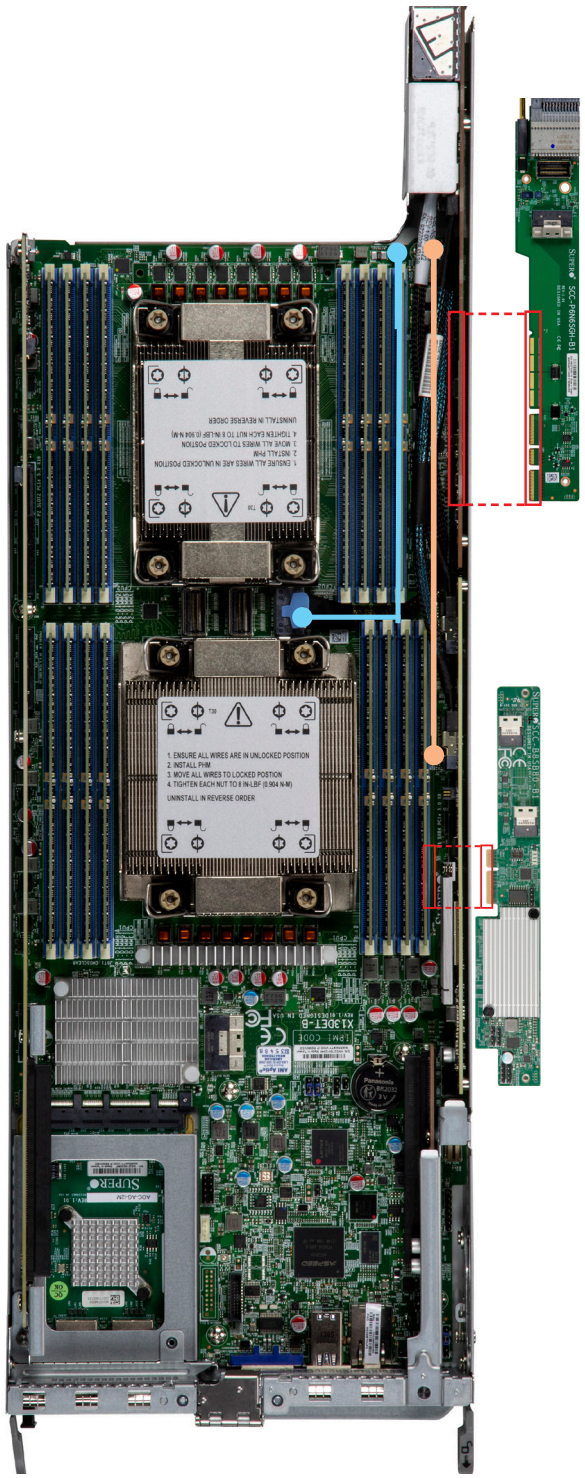


Figure 3-24. SYS-221BT-HNC8R Cable Routing Diagram

NVMe and SAS via 3908 AOC

NVMe connections from the backplane to the motherboard. SAS connections from the backplane to the AOC-S3908L-H8iR-16DD. The riser card connects to the motherboard Slot 1.

NVMe PCIe 5.0 Cable **CBL-NSH5-1326**

Hardware RAID Cable **CBL-SAST-1234F-100**

Online Cable Matrix

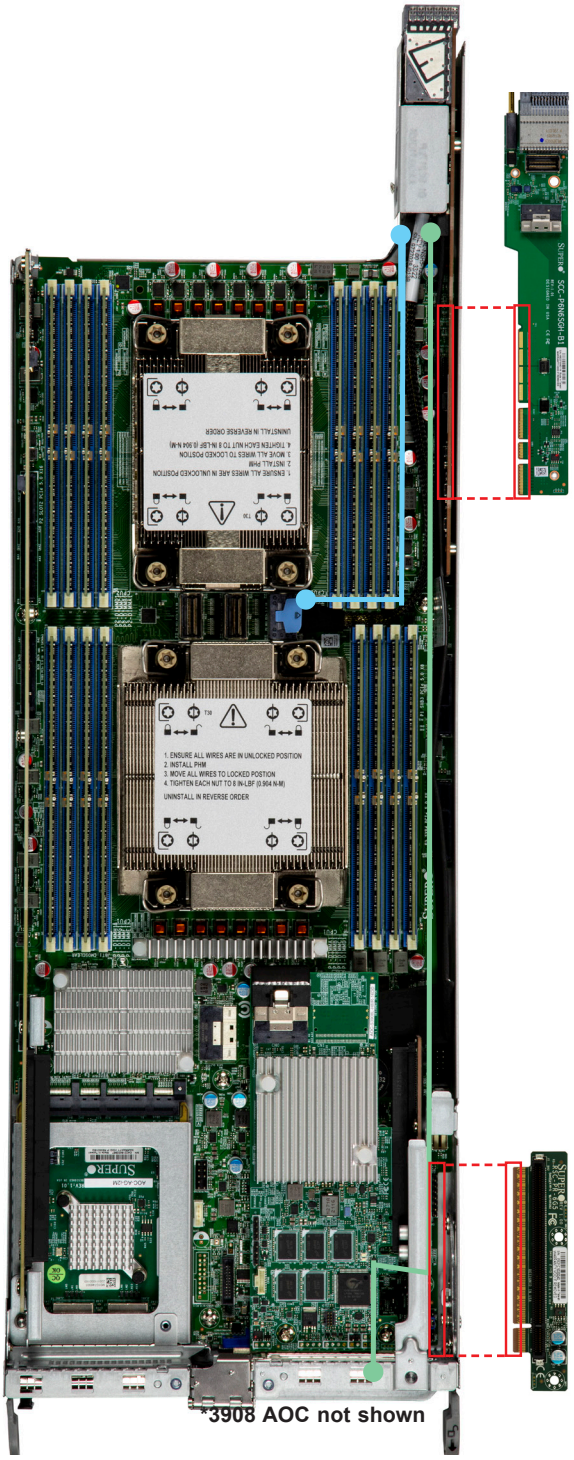


Figure 3-25. SYS-221BT-HNC9R Cable Routing Diagram

Chapter 4

Motherboard Connections

This section describes the connections on the motherboard and provides pinout definitions. Note that depending on how the system is configured, not all connections are required. The LEDs on the motherboard are also described here. A motherboard layout indicating component locations may be found in Chapter 1. More detail can be found in the Motherboard Manual.

Please review the Safety Precautions in Appendix A before installing or removing components.

4.1 Power Connections

Power Supply Connectors

Four 6-pin power connectors, located at JPWR1 ~JPWR4, provide main power to your system. All these power connectors meet the ATX SSI EPS 12V specification and must be connected to your power supply to provide adequate power to your system.

12V 6-pin Power Pin Definitions

Pin#	Definition
1 - 3	Ground
4 - 6	+12 V

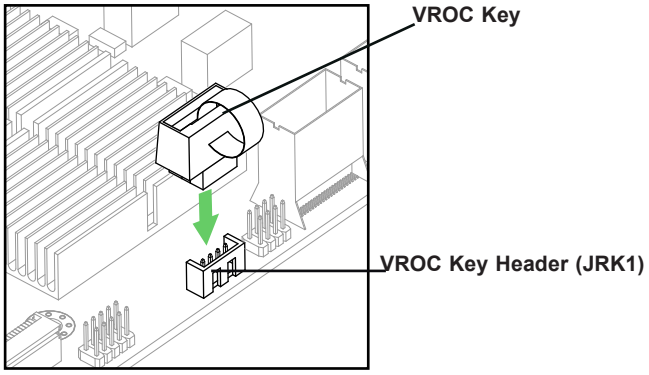
4.2 Headers and Connectors

Fan Headers

A 4-pin fan header (FAN3) is used for your system cooling fan. Fan speed control is supported by Thermal Management via the BMC 2.0 interface.

VROC RAID Key Header

A VROC RAID Key header is located at JRK1 on the motherboard. Install a VROC RAID Key on JRK1 for NVMe RAID support as shown in the illustration below.



Intel VROC Key Pin Definitions	
Pin#	**Definition**
1	Ground
2	3.3V Standby
3	Ground
4	PCH RAID Key

Note: The graphics contained in this user's manual are for illustration only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.

CPLD Header

A CPLD header is at JCPLD1 on the motherboard. This header supports a Complex Programmable Logic device (CPLD) for system firmware enhancement.

TPM/Port 80 Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro (optional). 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 hard drive is not installed in the system. Please go to the following link for more information on the TPM: http://www.supermicro.com/manuals/other/TPM.pdf.

Trusted Platform Module Header Pin Definitions

Pin#	Definition	Pin#	Definition
1	+3.3V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	GND
7	SPI_MOSI	8	NC
9	+3.3V Stdby	10	SPI_IRQ#

NC-SI Connector

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

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

P1 NS1/P2 NS2/P2 NS3 Connectors

Three PCIe 5.0 x8 connectors are located at P1 NS1, P2 NS2, and P2 NS3 headers. P1 NS1 PCIe 5.0 x8 connector (NS1) is supported by CPU1, while P2 NS2 5.0 x8 (NS2) and P2 NS3 5.0 x8 (NS3) are supported by CPU2. Refer to the X13DET-B for the locations of P1 NS1, P2 NS2, and P2 NS3 slots.

PCIe 5.0 x8 NVMe M.2 Slot

A PCIe 5.0 x8, located at SXB5, supports two NVMe M.2 connections in the 2280 or 22110 form factor, which depends on the type of the riser card used on the slot. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. Refer to the layout below for the location of the SXB5 slot.

Note: The SXB5 slot supports the SCC-P2HM2G4-B1 and the SCC-A2NM2241G3-B1. The SCC-P2HM2G4-B1 supports two NVMe M.2 devices (up to Gen 4) in the 22110 form factor, and the SCC-A2NM2241G3-B1 supports two NVMe M.2 devices (up to Gen 3) in the 2280 form factor.

SATA 3.0 Ports 0~7/8~11

Two SATA 3.0 headers, located at (SATA1/SATA2), supports 12 SATA 3.0 connections (SATA 0~7 and SATA 8~11). These SATA 3.0 ports are supported by the Intel C741 Emmitsburg PCH chipset. Connect proper SATA cables to SATA1 and SATA2 to use the SATA 3.0 connections.

AIOM PCIe 5.0 x16 Slot (JAIOM)

A PCIe 5.0 x16 slot, supported by CPU1, is located at JAIOM. This slot is used for an Advanced I/O module or riser card.

PCIe 5.0 x8 NVMe M.2 Slot

A PCIe 5.0 x8, located at SXB5, supports two NVMe M.2 connections in the 2280 or 22110 form factor, which depends on the type of the riser card used on the slot. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency.

Note: The SXB5 slot supports the SCC-P2HM2G4-B1 and the SCC-A2NM2241G3-B1. The SCC-P2HM2G4-B1 supports two NVMe M.2 devices (up to Gen 4) in the 22110 form factor, and the SCC-A2NM2241G3-B1 supports two NVMe M.2 devices (up to Gen 3) in the 2280 form factor.

4.3 Input/Output Ports

VGA Connector

A VGA connection is located at JVGA1 on the rear I/O panel. This VGA connector provides analog interface between the computer and the video displays.

COM Port

A COM (communication) port that supports serial link interface is located on the rear side of the motherboard.

BMC LAN

A dedicated BMC LAN (BMC LAN) is located on the rear I/O panel. The dedicated BMC LAN provides LAN support for the BMC (Baseboard Management Controller). Connect an RJ45 cable to JUSBRJ45 on the I/O rear panel for BMC LAN support.

Universal Serial Bus (USB) Ports and Headers

There are two USB 3.1 ports (USB0/1), located at JUSB1, on the rear I/O panel. These USB ports and headers can be used for USB support via USB cables (not included).

Rear I/O Panel USB 0/1 (3.1)
Pin Definitions

Pin#	Definition	Pin#	Definition
A1	VBUS	B1	Power
A2	D-	B2	USB_N
A3	D+	B3	USB_P
A4	GND	B4	GND
A5	Stda_SSRX-	B5	USB3_RN
A6	Stda_SSRX+	B6	USB3_RP
A7	GND	B7	GND
A8	Stda_SSTX-	B8	USB3_TN
A9	Stda_SSTX+	B9	USB3_TP

UID/BMC Reset Switch and UID_LED/BMC LED Indicator

A UID LED/BMC Reset switch (JUIDB1) is located on the rear I/O panel of the motherboard. This switch has dual functions. It can function as a unit identifier (UID) to identify a system unit that is in need of service, and it can also be used for BMC reset.

To achieve these purposes, JUIDB1 works in conjunction with the UID_LED1/LEDBMC LED indicator located on the rear I/O panel and the UID/BMC LED indicator on the front panel. When functioning as a UID LED switch, JUIDB1 will turn on/off both blue UID indicators located on the front and the rear panels when the user presses this switch on/off.

When functioning as a BMC reset switch, JUIDB1 will reset the BMC settings to the manufacturer defaults when the user presses and holds the switch for 12 seconds, and it will trigger a cold reboot when the user presses and holds it for 6 seconds.

Refer to the BMC User's Guide posted on our website at http://www.supermicro.com for more information.

<table>
<tr><th colspan="3">UID/BMC Reaset Switch (JUIDB1)
Features & Settings</th></tr>
<tr><th>When Used as a UID LED Switch</th><th colspan="2">When Used as a BMC Reset Switch</th></tr>
<tr><td>UID_LED1/LEDBM acting as a rear UID LED indicator</td><td colspan="2">UID_LED1/LEDBMC acting as a BMC Reset LED indicator.</td></tr>
<tr><td rowspan="2">UID_LED1/LEDBMC: Blue: Unit in need of services is identified</td><td colspan="2">UID_LED1/LEDBMC: Green Blinking: BMC (BMC Heartbeat) Normal</td></tr>
<tr><td rowspan="2">BMC Reset: Press & hold the switch (JUIDB1) 6 seconds</td><td>UID_LED1/LEDBMC: Solid green during reboot</td></tr>
<tr><td rowspan="3">Press the switch (JUIDB1) on/off to turn on/off both rear UID LED (located at UID_LED1/LEDBMC LED) and front UID LED (located on the front control panel) for UID indications</td><td>Triggering a cold reboot; the UID_LED1/LEDBMC indicator: Solid green on during cold reboot</td></tr>
<tr><td rowspan="2">BMC Reset: Press & hold the switch (JUIDB1) 12 seconds</td><td>UID_LED1/LEDBMC: Solid green during BMC reset</td></tr>
<tr><td>BMC: Reset to the manufacturer default; UID_LED1/LEDBMC: Solid on during BMC Reset</td></tr>
</table>

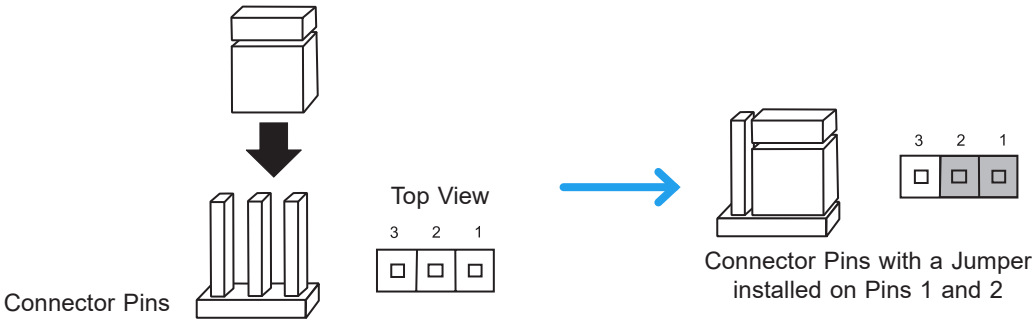
UID/BMC Reset Switch (JUIDB1) Pin Definitions	
Pin#	**Definition**
1	Ground
2	Ground
3	Button In
4	Button In

4.4 Jumpers

How Jumpers Work

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. Refer to the diagram below for an example of jumping pins 1 and 2. Refer to the motherboard layout page for jumper locations.

Note: On two-pin jumpers, "Closed" means the jumper is on, and "Open" means the jumper is off the pins.



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 and unplug the power cord(s).
2. Remove the cover of the chassis to access the motherboard and remove the battery from the motherboard.
3. Short the CMOS pads, JBT1, with a metal object such as a small screwdriver for at least four seconds.
4. Remove the screwdriver (or shorting device).
5. Re-install the motherboard battery.
6. Replace the cover, reconnect the power cord(s), and power on the system.

Note 1: Clearing CMOS will also clear all passwords.

Note 2: Do not use the PW_ON connector to clear CMOS.

ME Recovery

JPME1 is used for ME Firmware Recovery mode, which will limit system resource for essential function use only without putting restrictions on power use. In the single operation mode, online upgrade will be available via Recovery mode. See the table below for pin definitions.

ME Recovery (JPME1) Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Normal (**Default**)
Pins 2-3	ME Recovery

ME (Manufacture Mode) Select

Use Jumper JPME2 to set ME Mode for your system to enhance your system performance. See the table below for pin definitions.

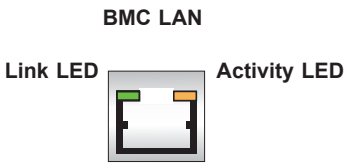
ME Select (JPME2) Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	ME Mode Enabled (Default)
Pins 2-3	ME Mode Disabled

4.5 LED Indicators

BMC LAN LEDs

A dedicated BMC LAN connection, located on the rear I/O panel, provides Ethernet network connection via the BMC (Baseboard Management Control). The LED on the right indicates activity, and the LED on the left indicates the speed of the connection. Refer to the table below for more information.

BMC LAN LEDs		
	Color/State	**Definition**
Link (Left)	Green: Solid Amber: Solid	100 Mbps 1 Gbps
Activity (Right)	Amber: Blinking	Active



CPLD Heartbeat LED

A Complex Programmable Heartbeat LED indicator is located at LE1. When this LED is on, CPLD is active.

CPLD Heartbeat LED (LE1) LED State	
State	**Definition**
On	CPLD Active (Normal)

Power Status LED

The Power Status LED, located at LE6, indicates the status of onboard power. When this LED turns red, it indicates a power failure. When this LED is green, onboard power is on. When the LED turns amber, the standby power is on.

Power Status LED (LE6) LED State	
Color	**Definition**
Green	Power On
Amber	Standby Power On
Red	Power Failure

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 might be a USB flash or media drive, or the BMC KVM console.
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. For Driver Installation instructions see Section 5.2.
3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing **F11** during the system startup.

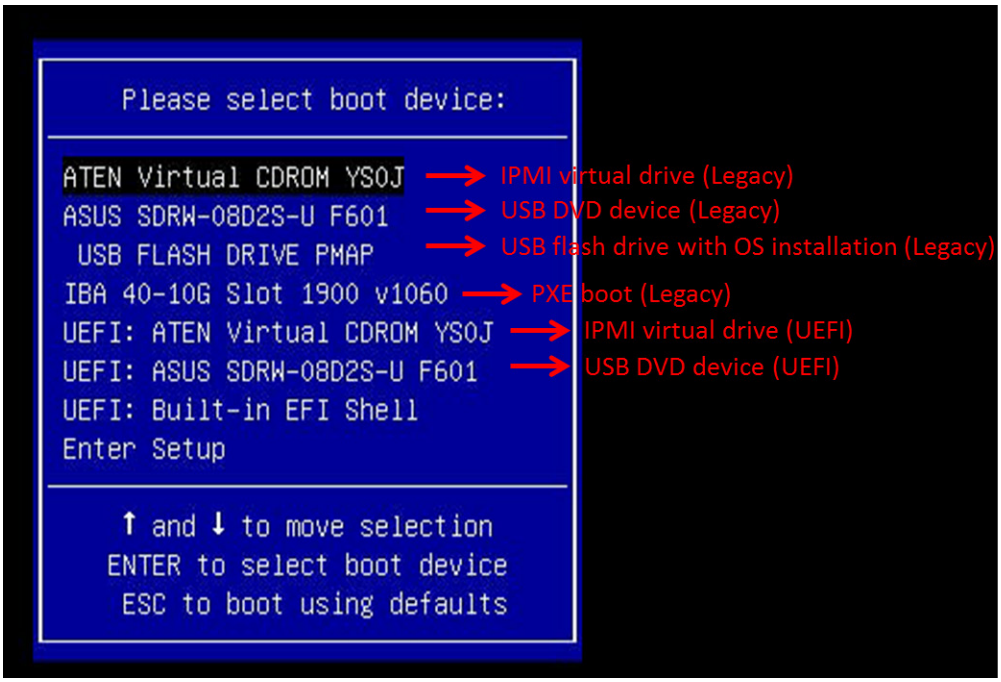


Figure 5-1. Select Boot Device

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.

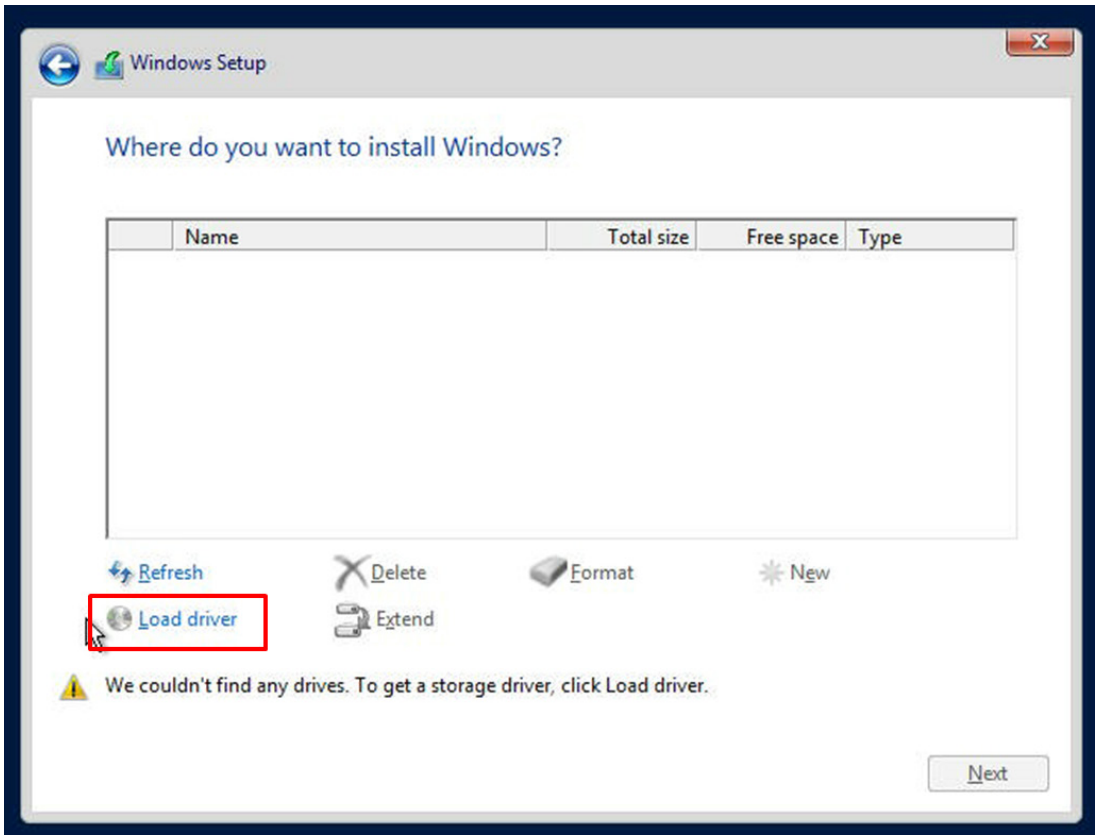


Figure 5-2. Load Driver Link

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 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.

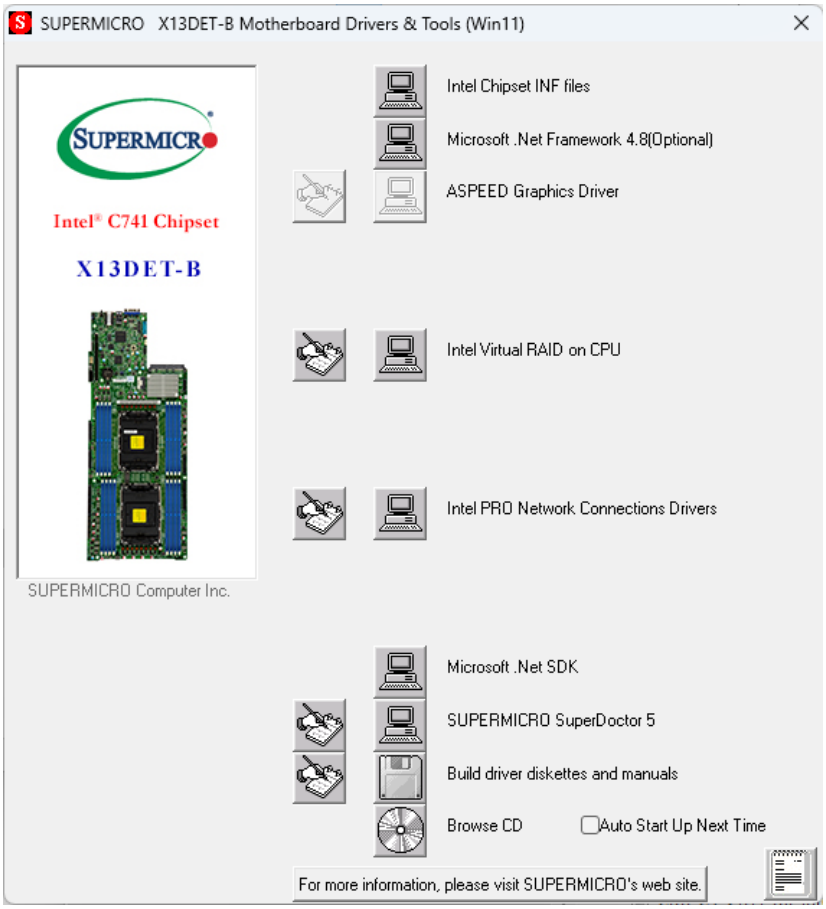


Figure 5-3. Driver and Tool Installation Screen

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 node is assigned a unique default BMC password for the ADMIN user. This can be found on a sticker on the chassis, on each motherboard, or on each node. The stickers also displays the BMC MAC address.



Figure 5-4. BMC Password Label

See Chapter 1 for the location of the labels.

Chapter 6

Optional Components

This chapter describes optional system components and installation procedures.

6.1 Optional Parts List

Optional Parts List	
Description	**Part Number**
Trusted Platform Module (TPM)	AOM-TPM9670 AOM-TPM-9671V
Virtual RAID on CPU (VROC) Hardware Key	AOC-VROCPREMOD AOC-VROCSTNMOD
M.2 NVMe HW RAID Controller Card	SCC-A2NM2241G3-B1

6.2 TPM Security Module

SPI capable TPM 2.0 (or 1.2) with Infineon 9670 controller, vertical 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-9670V
- AOM-TPM-9671V

6.3 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

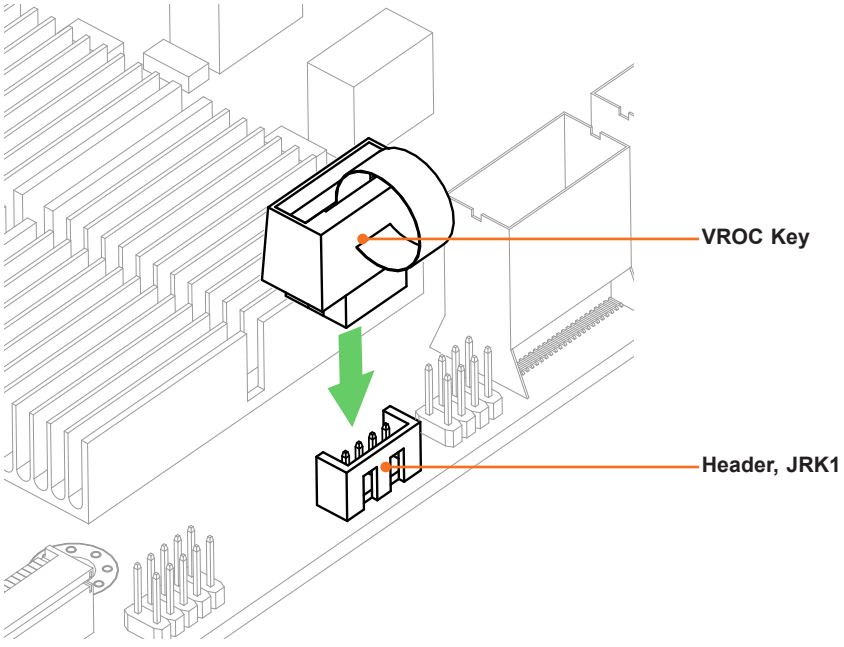


Figure 6-1. Intel VROC RAID Key and Motherboard Connector JRK1

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.

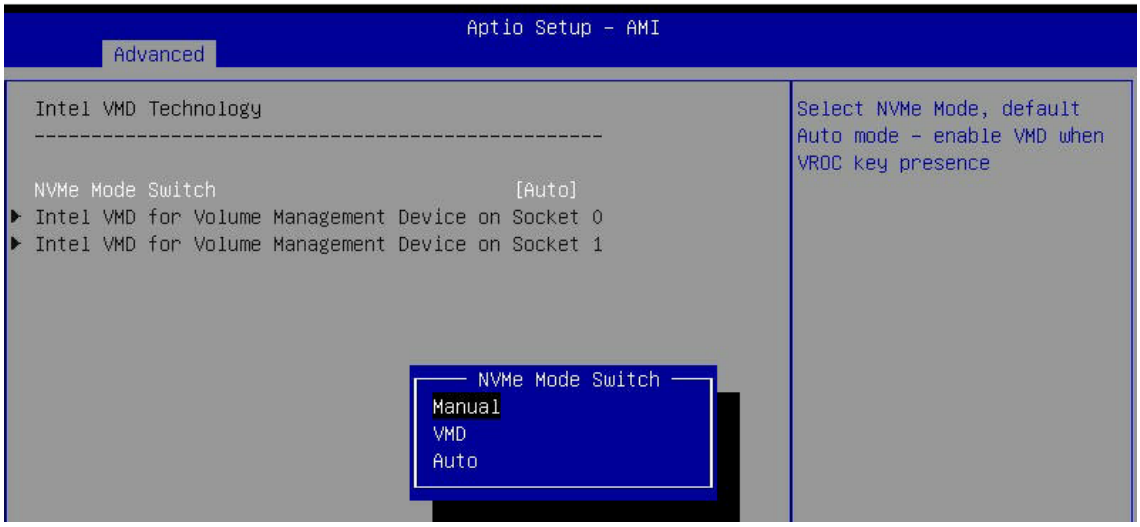
The NVMe Mode Switch can be viewed or selected at **BIOS > Advanced > Chipset Configuration > North Bridge > IIO Configuration > Intel® VMD Technology**.

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 6-2. BIOS, Selecting VMD Mode

Note: Consult the X13DET-B Motherboard Manual for more detailed information on setting up Intel VMD.

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. See the table below.

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.

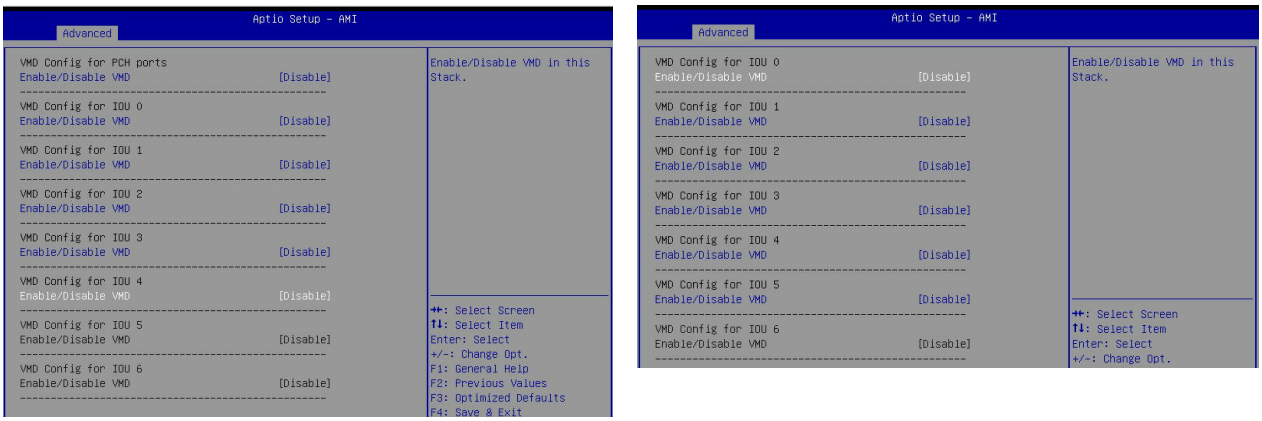


Figure 6-3. Intel VMD for Volume Management Device on Socket 0 and Socket 1

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

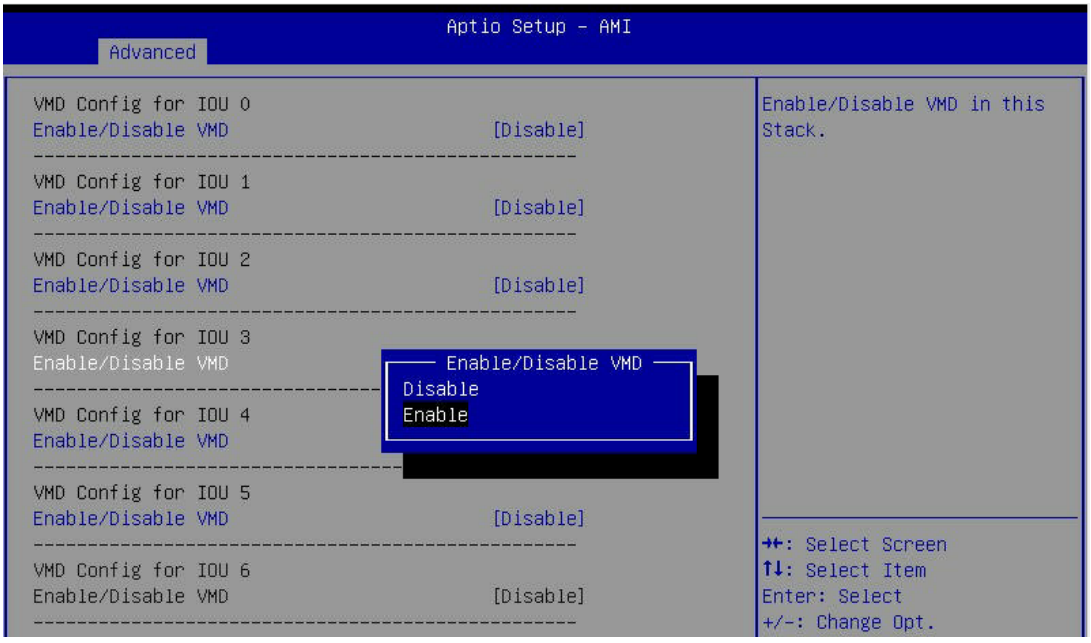


Figure 6-4. BIOS, Enabling VMD on Socket 1 (CPU2) (Example)

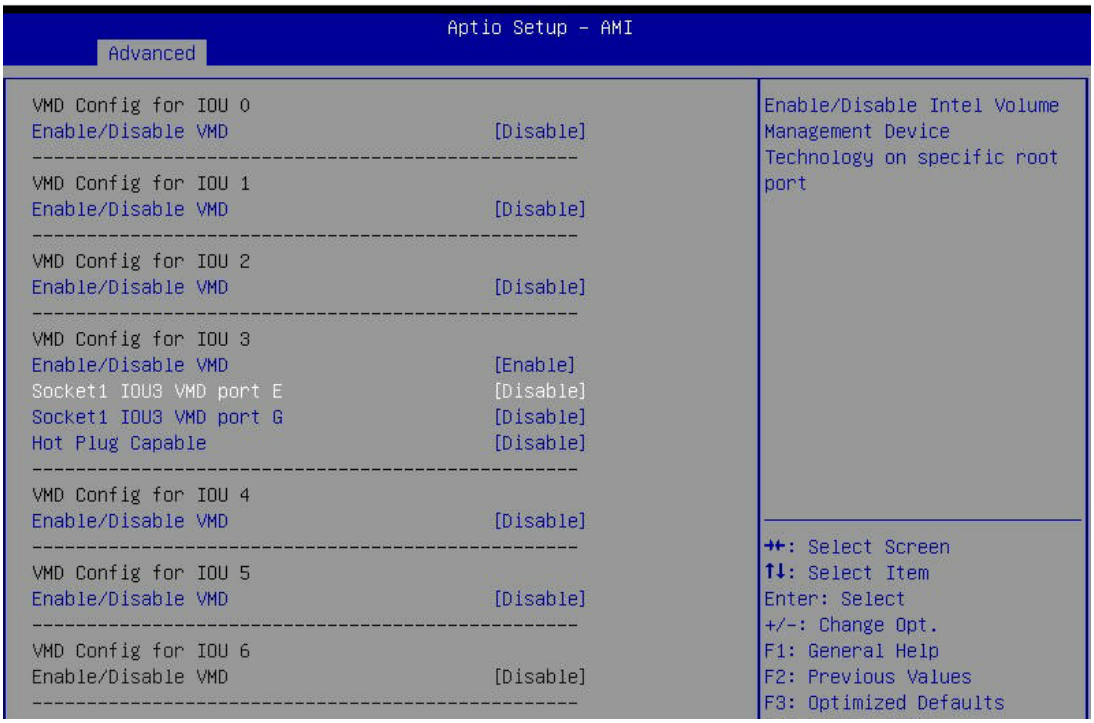


Figure 6-5. BIOS, Enabling VMD on Socket 1 (Example)

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

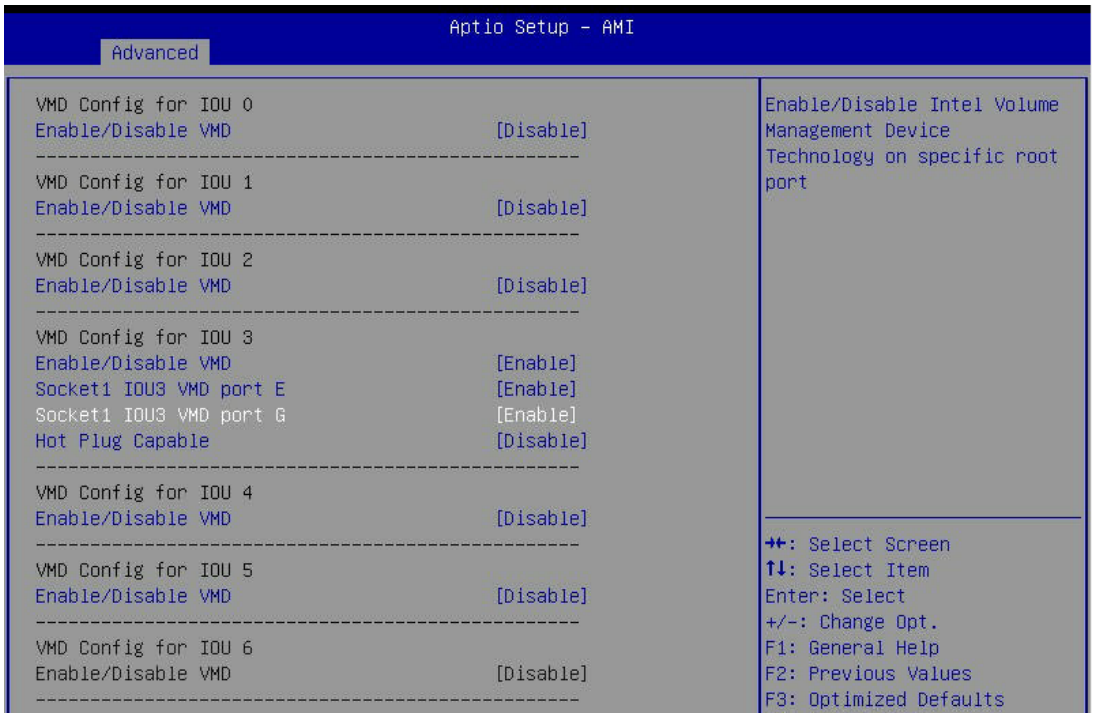


Figure 6-6. BIOS, Enabling Socket 1 (Example)

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.

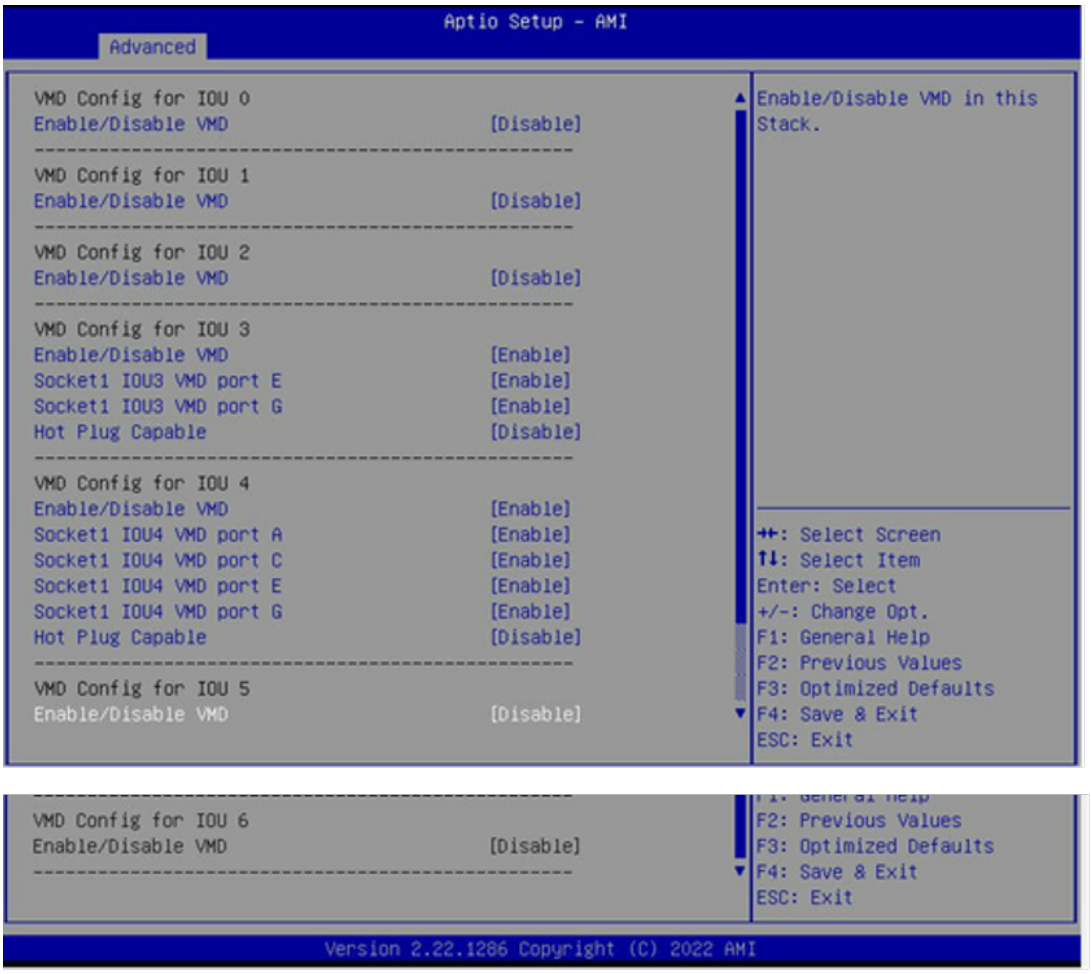


Figure 6-7. BIOS, Enabling Socket 1 Completed (Example)

(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**.

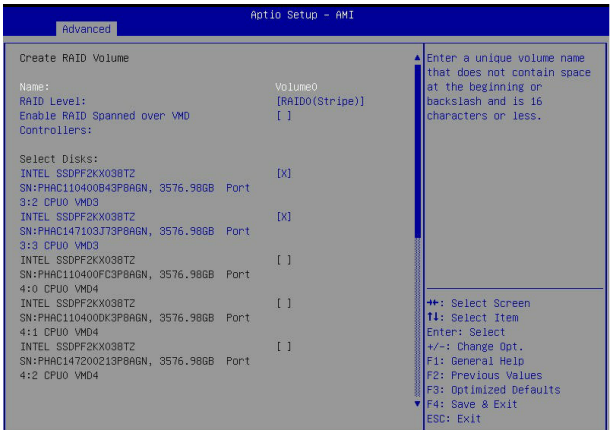


Figure 6-8. Created Volume *without* enabling RAID spanned over VMD controller

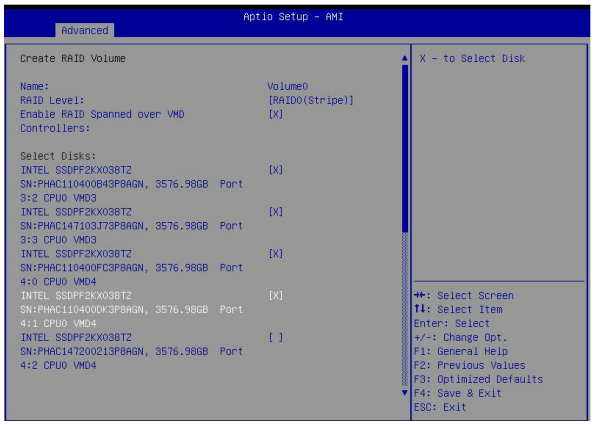


Figure 6-9. Created Volume *with* enabling RAID spanned over VMD controller

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 disks
   - RAID1: Select only two disks
   - RAID5: Select at least three 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

Chapter 7

Troubleshooting and Support

7.1 Information Resources

Website

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

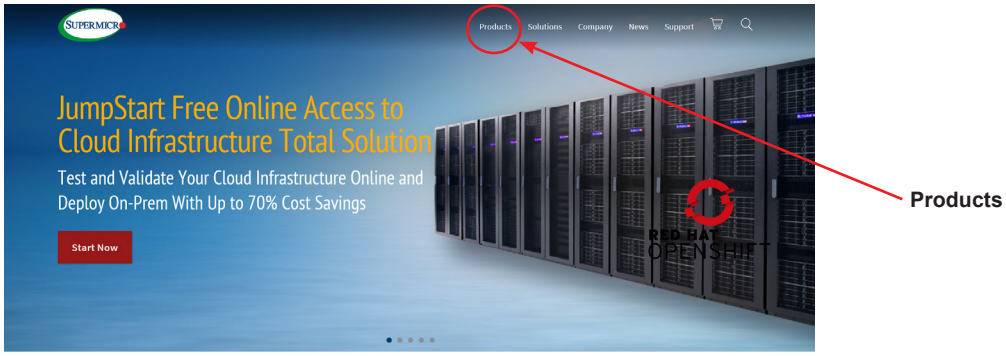


Figure 7-1. Supermicro Website

- Specifications for servers and other hardware are available by the **Products** option.

Direct Links for the SYS-221BT-H Series System

SYS-221BT-HNR specifications page

SYS-221BT-HNTR specifications page

SYS-221BT-HNC8R specifications page

SYS-221BT-HNC9R specifications page

X13DET-B motherboard page for links to the Quick Reference Guide, User Manual, validated storage drives, etc.

SCC-P6NG5-B1

SCC-P6N6SGH-B1

SCC-P2HM2G4-B1

SCC-A2NM2241G3-B1

Direct Links for General Support and Information

Frequently Asked Questions

Add-on card descriptions

TPM User Guide

General Memory Configuration Guide: X13

BMC User Guide

SuperDoctor5 Large Deployment Guide

For validated memory, use our Product Resources page

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 Baseboard Management Controller (BMC)

The system supports the Baseboard Management Controller (BMC). BMC is used to provide remote access, monitoring and management. There are several BIOS settings that are related to BMC.

For general documentation and information on BMC, please visit our website at: https://www.supermicro.com/manuals/other/BMC_Users_Guide_X13.pdf

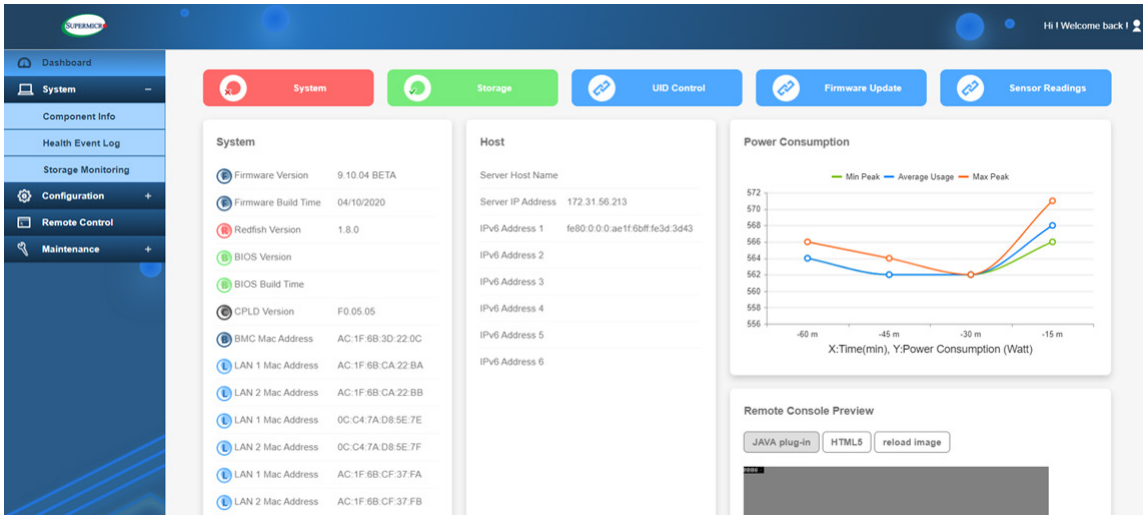


Figure 7-2. BMC Sample

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 section(s) 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.

No Power

- Check that the power LED on the motherboard is on.

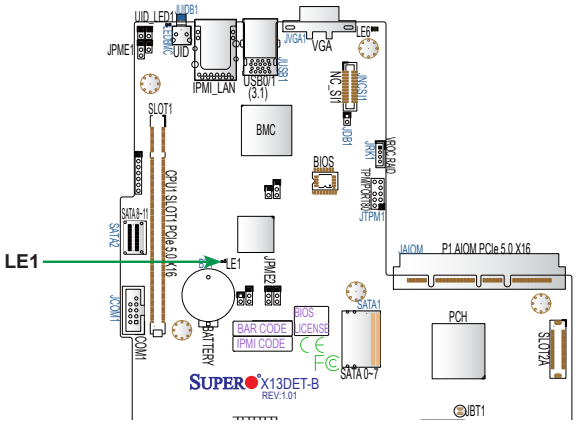


Figure 7-3. Location of the MB Power LED

- Make sure that the power connector is connected to the power supply.
- Check that the motherboard battery still supplies approximately 3 VDC. If it does not, replace it.
- Check that the system input voltage is 100-120 VAC or 180-240 VAC.
- 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 3.5 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 3 VDC. If it does not, replace it.

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

If 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 Crash Dump Using BMC

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 BMC. The BMC manual is available at https://www.supermicro.com/en/solutions/management-software/bmc-resources.

Check BMC Error Log

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

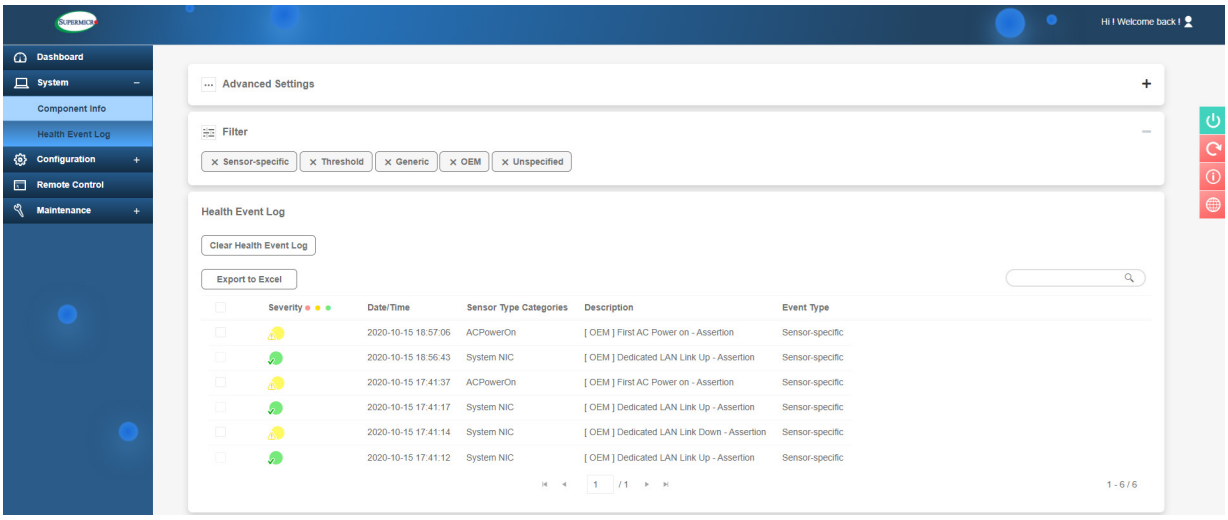


Figure 7-4. BMC Event Log

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

7.5 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 flash or media drive or a writable CD.

   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.

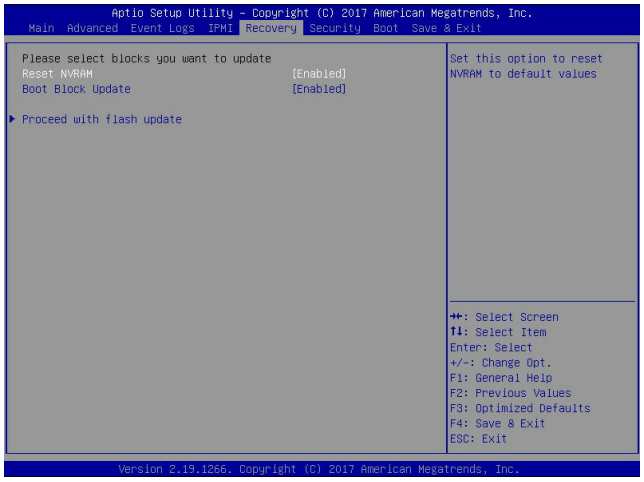
   Note 2: Before recovering the main BIOS image, confirm that the "Super.ROM" binary image file you download is the same version or a close version meant for your motherboard.

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.

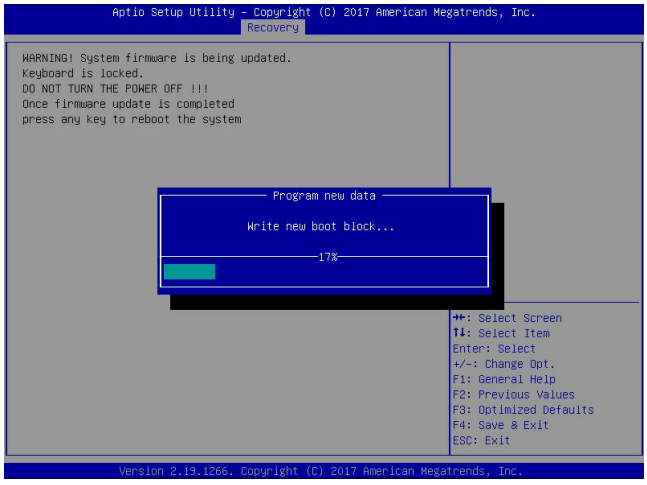


4. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.

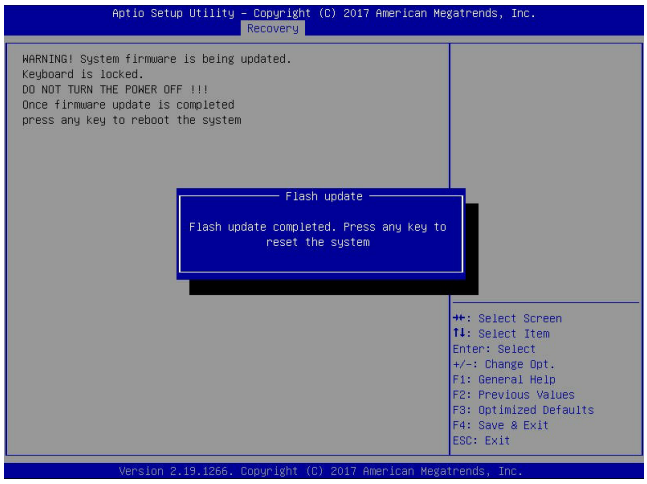
   Note: *Do not interrupt the BIOS flashing process until it has completed*.

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.

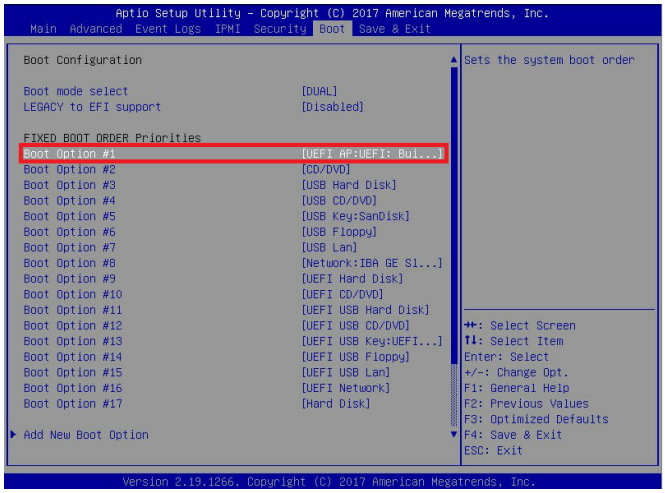


7. Press <Del> continuously during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot

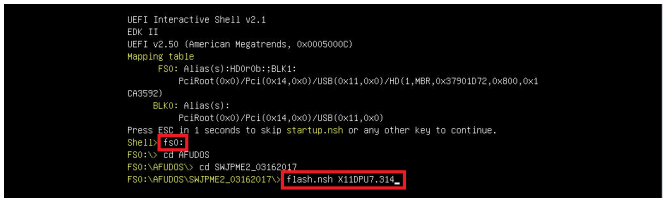


Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the BIOS Setup utility.

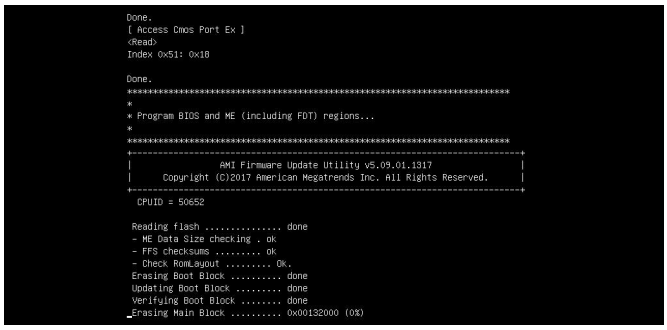
8. When the UEFI Shell prompt appears, type fs# to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter flash.nsh BIOSname.### at the prompt to start the BIOS update process.



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

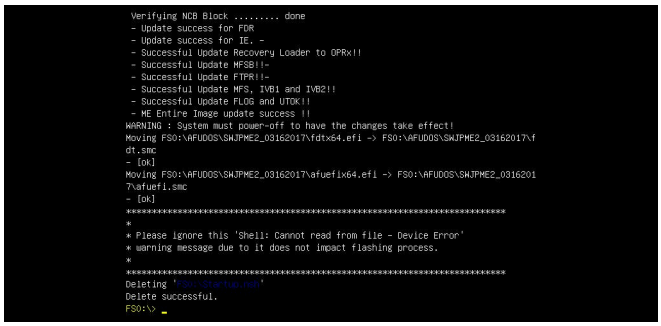


9. The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug



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.

7.6 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 node from 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.
5. Remove the screwdriver or shorting device.
6. Re-install the battery.
7. 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.



JBT1 contact pads

7.7 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.

7.8 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.

7.9 Feedback

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

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.

警告の定義

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。

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。

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。

Warnung

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 جسد ةٌ هذا الزهز عٌ خطز !تحذ زٌ .
قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال ٱجوة عي الذوائز
الكهزبائ ةٍ
وكي على درا ةٌ بالووارسات البقائ ةٍ لو عٌ وقع أي حادث
استخذم رقن الب إٍى الو صٌص ف هًا ةٌ كل تحذ زٌ للعشر تزجوتها

안전을 위한 주의사항

경고!

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.

設置手順書

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.

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

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.

サーキット・ブレーカー

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250V,20A。

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250V,20A。

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.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי
המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-250VDC, 20A

هذا المنتج يعتمد على معداث الحمايت مه الدوائرالقصيرة التي تم تثبيتها في
المبنى
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من : 20A, 250V

경고!

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

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).



電源切断の警告

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 מפני ניתוק חשמלי

!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

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.

機器の設置

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

.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..

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).

アクセス制限区域

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.

אזור עם גישה מוגבלת

אזהרה!

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

تخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .
،مَكن انصبل 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



Warning! There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。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

电池更换不当会有爆炸危险。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

電池更換不當會有爆炸危險。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

Bei Einsetzen einer falschen Batterie besteht Explosionsgefahr. Ersetzen Sie die Batterie nur durch den gleichen oder vom Hersteller empfohlenen Batterietyp. Entsorgen Sie die benutzten Batterien nach den Anweisungen des Herstellers.

Attention

Danger d'explosion si la pile n'est pas remplacée correctement. 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 peligro de explosión si la batería se reemplaza de manera incorrecta. 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 של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף
את הסוללה בסוג התואם מחברת יצרן מומלצת.
סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسحبذال البطارية بطريقة غير صحيحة فعليل
اسحبذال البطارية
فقط بنفس النبع أو ما يعادلها مما أوصث به الشرمة المصنعة
جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

배터리가 올바르게 교체되지 않으면 폭발의 위험이 있습니다. 기존 배터리와 동일하거나 제조사에서 권장하는 동등한 종류의 배터리로만 교체해야 합니다. 제조사의 안내에 따라 사용된 배터리를 처리하여 주십시오.

Waarschuwing

Er is ontploffingsgevaar indien de batterij verkeerd vervangen wordt. 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.

冗長電源装置

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.

אם קיים יותר מספק אחד

אזהרה!

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

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.

バックプレーンの電圧

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.

מתח בפנל האחורי

אזהרה!

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

هناك خطر مه التيار الكهزبائي أوالطاقة المجبدة على اللحة
عندما يكن النظام يعمل كه حذرا عند خدمة هذا الجهاس

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.

地方および国の電気規格に準拠
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.

תיאום חוקי החשמל הארצי
אזהרה!
התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

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.

製品の廃棄
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.

סילוק המוצר

אזהרה!

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

التخلص النهائي من هذا المنتج ينبغي التعامل معه وفقا لجميع القانين واللائح البطنية عند

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.

ファンの警告

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!

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! 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 Adaptor



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.

電源コードとACアダプター

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.

AC ימאתמו סיילמשח סילבכ

!הרהזא

ךרוצל ומאתוה וא ושכרנ רשא AC סימאתמו סיקפס ,סילבכב שמתשהל שי ,רצומה תא סיניקתמ רשאכ לכב שומיש . עקתהו לבכה לש הנוכנ הדימ ללוכ ,תוימוקמה תוחיטבה תושירדל ומאתוה רשאו ,הנקתהה למשחה יריש כמב שומישה יקוחל סאתהב .ילמשח רצק וא הלקתל סורגל לולע ,רחא גוסמ סאתמ וא לבכ לש דוק סהילע עיפומ רשאכ) CSA-ב וא UL -ב סיכמסומה סילבכב שמתשהל רוסיא סייק ,תוחיטבה יקוחו .דבלב Supermicro י"ע סאתוה רשא רצומב קר אלא ,רחא ילמשח רצומ לכ רובע UL/CSA)

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. يحظر قانون السلامة للأجهزة الكهربائية والمعدات استخدام الكابلات المعتمدة من قبل UL أو CSA لأي منتجات المعينة والمحددة من قبل Supermicro. والتي تحمل علامة (UL/CSA) مع أي معدات أخرى غير

전원 케이블 및 AC 어댑터

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 Supermicro 가 지정한 제품 이외의 전기 장치에 사용하는 것을 금지합니다.

Stroomkabel en AC-Adapter

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 (per node)

Supports dual 4th and 5th Gen Intel Xeon Scalable Processors (in Socket E LGA 4677) with four UPIs (20 GT/s max.) and a TDP (Thermal Design Power) up to 350 W.
Supports SP XCC, Max Series (HBM), and SP MCC SKUs on the X13DET-B.
Note: Refer to the motherboard specifications pages on our website for updates to supported processors.

Chipset (per node)

Intel C741 PCH

BIOS (per node)

AMI BIOS
ACPI 3.0 or later, PCI firmware 4.0 support, BIOS rescue hot-key, SPI dual/quad speed support, riser card auto detection support, RTC (Real Time Clock) wakeup, and SMBIOS 3.0 or later

Memory (per node)

Supports up to 4 TB RDIMM DDR5 (288-pin) ECC memory with speeds up to 4800 MT/s (4th Generation Intel Xeon) and 5600 MT/s in 16 DIMM slots (5th Generation Intel Xeon)

Storage Drives

Front hot-swappable drives include:
- 24 NVMe drives for SYS-221BT-HNR
- 24 NVMe/SATA drives for SYS-221BT-HNTR
- 24 NVMe/SAS drives for SYS-221BT-HNC8R
- 24 NVMe/SAS drives for SYS-221BT-HNC9R

Internal M.2 drives per node include:
- Carrier with two M.2 NVMe Gen 4 SSDs in the 22110 form factor
- Carrier with two M.2 NVMe Gen 3 SSDs in the 2280 form factor

Internal Connector:
- VROC key header

PCI Expansion Slots (per node)

Two PCIe 5.0 x16 slots

Networking (per node)

One AIOM or any compliant OCP 3.0 SFF Network Interface Card
One dedicated LAN port for BMC

Input/Output (per node)

Two USB 3.1 ports
One VGA port

Motherboard (per node)

X13DET-B (WxL) 7.4" x 18.86" (187.96 mm x 479.04 mm)

Chassis

CSE-217BQ2-R3K04P; 2U rackmount; (WxHxD) 17.6 x 3.5 x 28.8 in. (447 x 88 x 730 mm)

System Cooling

Four 8-cm mid-chassis fans, two CPU heat sinks per node, and one air shroud per node

Power Supply

Model: PWS-3K04A-1R, 3000 W redundant module, 80Plus Titanium level
Power supply redundancy is supported only with a 240 VAC or 240 VDC input.
Input voltages, input currents
  1400W: 100-127Vac, 16-13A
  2880W: 200-207Vac, 16-15.5A
  3000W: 208-240Vac, 16-14A
  3000W: 240Vdc, 14A (CQC only)
Rated Frequency
  50-60Hz
Output DC Voltage: Input current
  +12 V: 116A (1400W)
  +12 V: 240A (2880W)
  +12 V: 250A (3000W)
Output DC Voltage: Input current
  +12 V standby: 4.5A (1400W)
  +12 V standby: 4.5A (2880W)
  +12 V standby: 4.5A (3000W)

Operating Environment

Operating Temperature: 10º to 35º C (50º to 95º F)
Non-operating Temperature: -30º to 60º C (-22º to 140º F)
Operating Relative Humidity: 8% to 80% (non-condensing)
Non-operating Relative Humidity: 8% to 90% (non-condensing)

Regulatory Compliance

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

Applied Directives, Standards

EMC/EMI: 2014/30/EU (EMC Directive)
Electromagnetic Compatibility Regulations 2016
FCC Part 15 Subpart B
ICES-003
VCCI-CISPR 32
AS/NZS CISPR 32
BS/EN55032
BS/EN55035
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

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

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

BSMI/RoHS

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）：　217B-R30X13
Equipment name　　Type designation (Type)

(系列型號: 217B-30, 217B-R22X13, 217B - 22, 827B-R30X13, 827B-30, 827B -R22X13, 827B -22, SYS-221BT-HNTR, SYS-221BT-HNR, SYS-221BT-HNC8R, SYS-221BT-HNC9R, SYS-621BT-HNTR, SYS-621BT-HNC8R)

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)	-	○	○	○	○	○
硬碟 (SSD)	-	○	○	○	○	○
電源背板 (PDB)	-	○	○	○	○	○
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:

PWS-2K22A-1R
100-127V ~, 60-50Hz, 12-11A (X2)
200-240V ~, 60-50Hz, 10-9.8A (X2)

PWS-3K04A-1R
100-127V ~, 60-50Hz, 16-13A (X2)
200-240V ~, 60-50Hz, 16-14A (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

經 濟 部 標 準 檢 驗 局

BUREAU OF STANDARDS,METROLOGY AND INSPECTION, MINISTRY OF ECONOMIC AFFAIRS

商 品 驗 證 登 錄 證 書

CERTIFICATE OF THE REGISTRATION OF PRODUCT CERTIFICATION

證書號碼： CI362061993108 號 00
Certificate No.

茲據 美超微電腦股份有限公司 申請驗證登錄，經審查結果符合規定，准予登錄並使用商品安全標章及識別號碼： R36199 。其登錄事項如下：
The application made by SUPER MICRO COMPUTER, INC. TAIWAN for Registration of Product Certification has been reviewed and found to be in compliance with related regulations. Therefore, registration is granted with the Product Safety Mark and the Identification No. R36199 . Details of the registration are follows :

申 請 人 ： 美超微電腦股份有限公司 統一編號： 12729477
Applicant Uniform No.

地 址 ： 新北市中和區建一路150號3樓
Address

生產廠場 ： 詳如附表
Factory

廠 址 ： 詳如附表
Factory Address

商品種類名稱：
Type/name of product

商品分類號列： 8471.49.00.00.7
C.C.C Code

中文名稱 ： 伺服器
Chinese name

英文名稱 ： Server
English name

型 式： 217B-R30X13
Type

系列型式 ： 詳如附表
Series of the type

依據標準 ： CNS15598-1（109年06月）、CNS15936（105年09月）、符合CNS 15663第5節「含有標示」規定 102年7月
Standards

標準檢驗局發證（發證地址：100臺北市中正區濟南路1段4號）
This certificate is issued by the BSMI. (No.4, Sec. 1, Jinan Rd., Zhongzheng Dist., Taipei City 100, Taiwan)

本證書以電子文件行之，所載內容若有不符之處，以標準檢驗局系統登錄資料為主，查詢證書資料網址:https://civil.bsmi.gov.tw

登錄日期：中華民國 Registration Date	112 2023	年 (year)	06 06	月 (month)	15 15	日 (day)
本證書有效期限至 Expiration Date	115 2026	年 (year)	06 06	月 (month)	14 14	日 (day)
發證日期：中華民國 Date of issue	112 2023	年 (year)	06 06	月 (month)	15 15	日 (day)

經濟部 標準檢驗局 BSMI

註1：持本證書進口驗證登錄商品時，進口人須與本證書名義人相同。
註2：次年度商品驗證登錄年費繳納期限為當年11月30日，逾期未繳納者，經限期繳納屆期未繳納，即依商品檢驗法第42條第7款規定廢止驗證登錄，並自次年度1月1日起生效。
註3：本證書僅代表完成檢驗程序，不作為其他(如產地)證明。

列印序號:0346315949153161020 第1頁 ， 共3頁

經 濟 部 標 準 檢 驗 局

BUREAU OF STANDARDS,METROLOGY AND INSPECTION, MINISTRY OF ECONOMIC AFFAIRS

商 品 驗 證 登 錄 證 書

CERTIFICATE OF THE REGISTRATION OF PRODUCT CERTIFICATION

證書號碼： CI362061993108 號 00
Certificate No.

系列型式：
Series of the type

217B - 22

217B-30

217B-R22X13

827B -22

827B -R22X13

827B-30

827B-R30X13

SYS-221BT-HNC8R

SYS-221BT-HNC9R

SYS-221BT-HNR

SYS-221BT-HNTR

SYS-621BT-HNC8R

SYS-621BT-HNTR

（以下空白）

經 濟 部 標 準 檢 驗 局

BUREAU OF STANDARDS,METROLOGY AND INSPECTION, MINISTRY OF ECONOMIC AFFAIRS

商 品 驗 證 登 錄 證 書

CERTIFICATE OF THE REGISTRATION OF PRODUCT CERTIFICATION

證書號碼： CI362061993108 號 00
Certificate No.

生產廠場：
Factory：

1. SUPER MICRO COMPUTER, INC.
   782 Ridder Park Drive, San Jose, CA95131, USA

2. Compuware Technology Inc.
   3F., No. 306, Changan St., Bade District, Taoyuan City 33463, Taiwan

3. SUPER MICRO COMPUTER, INC. TAIWAN
   No.1899, Xingfeng Road, Da An Vil, Bade District, Taoyuan City 33463, Taiwan

4. SUPER MICRO COMPUTER B.V.
   Het Sterrenbeeld 12-16, 5215 ML 'S-Hertogenbosch, The Netherlands

5. SUPER MICRO COMPUTER, INC.
   980 Rock Ave, San Jose, CA95131, USA

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BSMI

經濟部 標準檢驗局 BSMI

列印序號:0346315949153161020　　第3頁 ， 共3頁