SuperServer®
SYS-241E-TNRTTP

USER'S MANUAL

Revision 1.0

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Preface

About this Manual

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

Please refer to the SYS-241E-TNRTTP 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/driver
- 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-241E-TNRTTP. It is based on the X13QEH+ motherboard and the CSE-218HTS-R3K2AWP chassis. The following provides an overview of the specifications and capabilities.

System Overview	
Motherboard	X13QEH+
Chassis	CSE-218HTS-R3K2AWP
Processor Support	Quad Socket E (LGA-4677) 4th Generation Intel® Xeon® Scalable processors supports 165 W-270 W TDP (SRP-SP)
Memory	64 DIMM slots for up to 16 TB (64x 256 GB DRAM) with speeds up to 4800 MT/s ECC DDR5 RDIMM/RDIMM-3DS
Drive Support	Two M.2 NVMe or two M.2 SATA3 24 2.5" hot-swap NVMe/SAS3/SATA3 drive bays **Note**: 24x 2.5" NVMe hybrid (default eight SATA3 drive bays. NVMe, SATA, or SAS support requires additional parts. See the Optional Parts list.)
Expansion Slots	Three PCIe 5.0 x8 FHFL slots One PCIe 5.0 x16 FHFL slot Two PCIe 5.0 x16 FHHL slots One PCIe 5.0 x16 AIOM slot One PCIe 5.0 x8 AIOM slot
I/O Ports	One RJ45 dedicated IPMI port Two front USB 2.0 ports Two rear USB 3.0 ports One VGA port One rear DisplayPort One rear COM port
System Cooling	Six 6-cm heavy duty counter-rotating fans
Power	Four 1600 W redundant Titanium AC power supplies with PMbus 73.5 x 203 x 40 mm
Form Factor	2U: 3.5 x 17.3 x 33.4 in. / 87.9 x 438.4 x 849.3 mm (HxWxD)

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

The following safety models associated with the SYS-241E-TNRTTP have been certified as compliant with UL or CSA: 218H-Q16X13, 218H-16, and 218H-MP4.

1.2 System Features

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

Front View

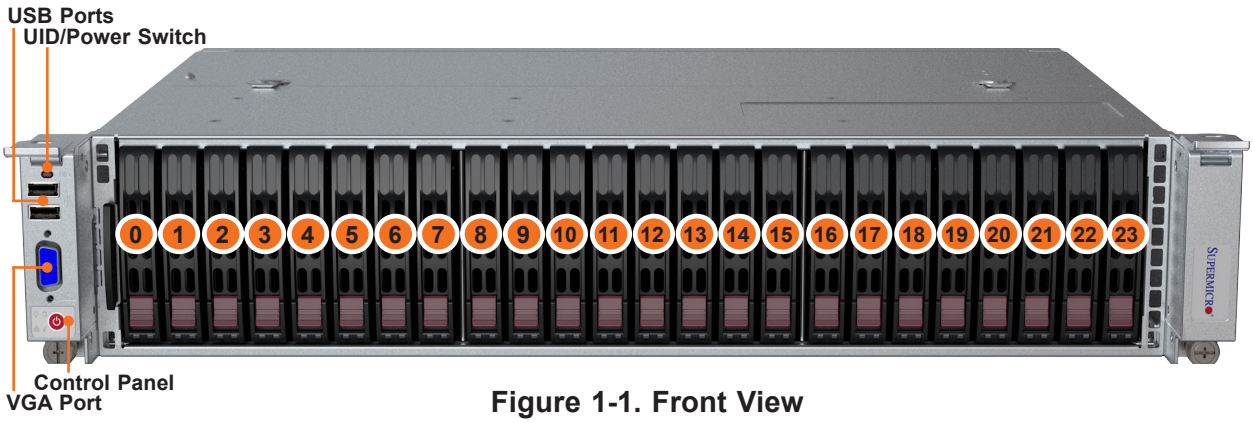


Figure 1-1. Front View

System Features: Front	
Feature	**Description**
UID/Power Switch	A switch that can function as either a UID LED switch or power switch. See Chapter 4 for a description of the dual function switch.
USB Ports	Two USB 2.0 ports (USB ports under handle cover)
VGA Port	One video port
Control Panel	Front control panel with LEDs and buttons (see Control Panel for details)

Logical Storage Drive Numbers	
Item	**Description**
16-23	Default: eight 2.5" hot-swap SATA3 drive bays
0-23	24 hot-swap 2.5" NVMe5/SAS3/SATA3 drive bays (via optional cable or RAID controller)

Drive Carrier Indicators

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

Drive Carrier LED Indicators			
	Color	**Blinking Pattern**	**Behavior for Device**
Activity LED	Blue	Solid On	Idle SAS/NVMe drive installed
	Blue	Blinking	I/O activity
	Off		Idle SATA 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
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support

Control Panel

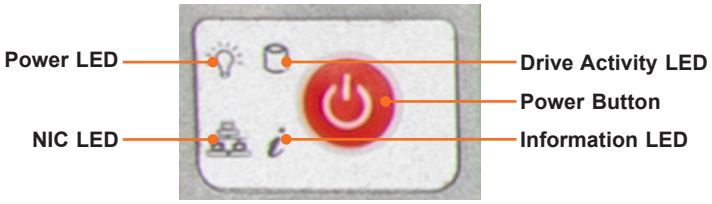


Figure 1-2. Control Panel

Control Panel Features	
Feature	**Description**
Power LED	Indicates power is being supplied to the system power supply units. This LED is illuminated when the system is operating normally.
NIC LED	Indicates network activity when flashing.
Information LED	Alerts operator to several states, as noted in the table below.
Power Button	The main power switch applies or removes primary power from the power supplies to the server but maintains standby power.
Drive Activity LED	Indicates activity on the storage drives when flashing.

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

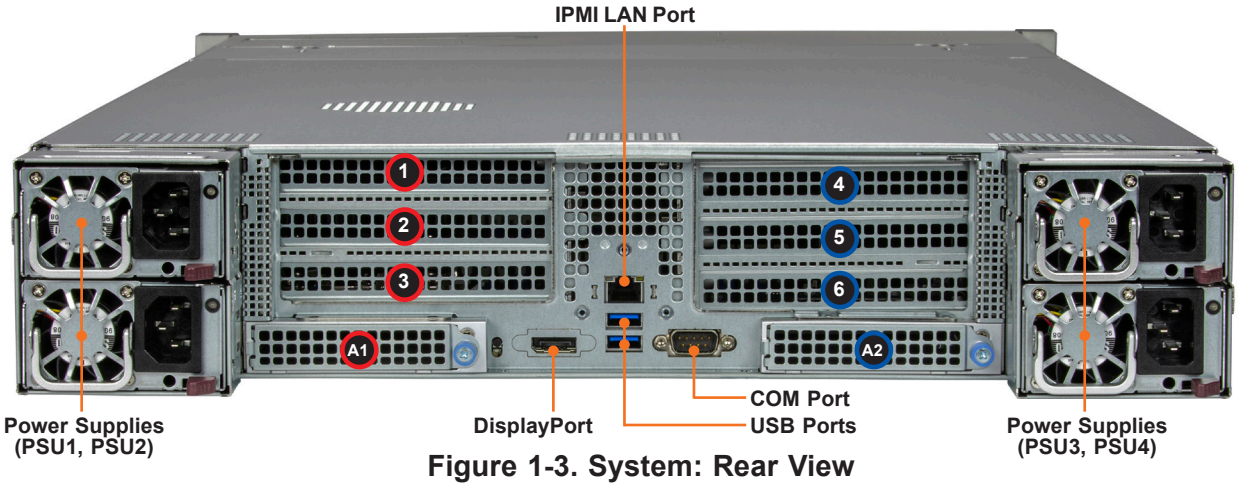


Figure 1-3. System: Rear View

System Features: Rear	
Feature	**Description**
Power Supplies	Four redundant 1600 W Titanium Level power supplies (PSU1/PSU3 on top, PSU2/PSU4 below)
DisplayPort	One DisplayPort video interface
IPMI LAN Port	One IPMI port for remote management
USB Ports	Two USB 3.0 ports
COM Port	One serial communication port

Expansion Slot Locations	
Item	**Description**
1	PCIe 5.0 x8 in x16 FHHL slot (x8 FL optional)
2	PCIe 5.0 x16 FHHL slot (x16 FL optional)
3	PCIe 5.0 x16 FHHL slot
A1	PCIe 5.0 x8 AIOM slot (OCP 3.0)

Expansion Slot Locations	
Item	**Description**
4	PCIe 5.0 x8 in x16 FHHL slot (x16 FL optional)
5	PCIe 5.0 x8 in x16 FHHL slot (x0 FL optional)
6	PCIe 5.0 x16 FHHL slot
A2	PCIe 5.0 x16 AIOM slot (OCP 3.0)

CPU1 CPU2

Note: FHFL = full height, full length. FHHL = full height, half length. HHHL = half height, half length.

Full height = 4.2", low profile = 2.5", full length = 10.5", half length = 6.6"

Power Supply Indicators		
Power Supply Condition	**Green LED**	**Amber LED**
No AC Power to Power Supply	OFF	OFF
Power Supply critical events causing a shutdown/ failure/ OCP/ OVP/ Fan Fail/ OTP/ UVP	OFF	Amber LED
Power Supply Warning Events Where the power supply continues to operate; High temperature; Over voltage; under voltage, etc	OFF	1 Hz blinking Amber
AC present only 12 vsb on (PS off)	1 Hz blinking Green	OFF
Output ON and OK	Green	OFF
AC cord unplugged and in redundant mode	OFF	Amber

1.3 System Architecture

This section shows the locations of the system's main components and block diagram.

Main Components

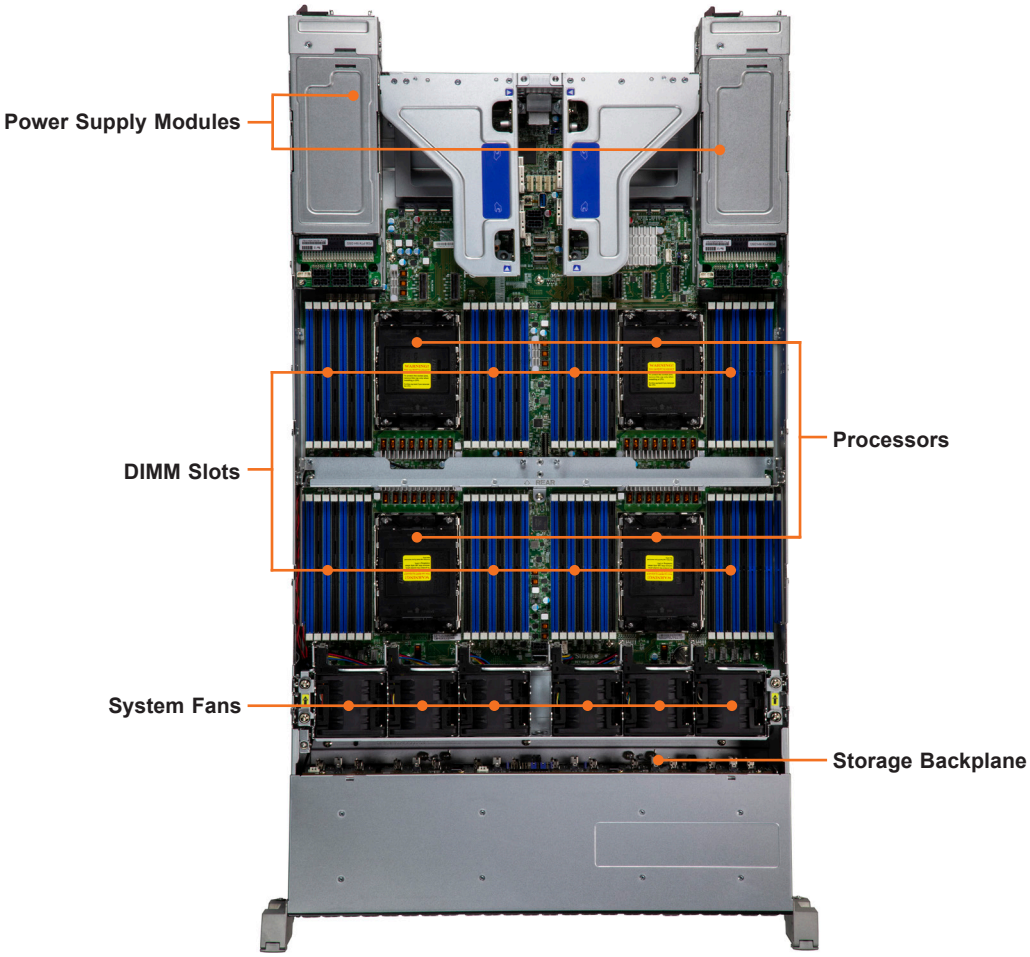


Figure 1-4. Main Component Locations

System Features: Top	
Feature	**Description**
Power Supplies	Dual (redundant) power supply modules, PWS-1K62A-1R
DIMM Slots	64 dual in-line memory module slots
System Fans	Six 6-cm heavy duty fans, FAN-0237L4
Storage Backplane	Storage device backplane for 24 SATA3/SAS/NVMe5 drives, BPN-NVME5-HS219N-S24
Processors	Onboard 4th Generation Intel® Xeon® Scalable processors

System Block Diagram

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

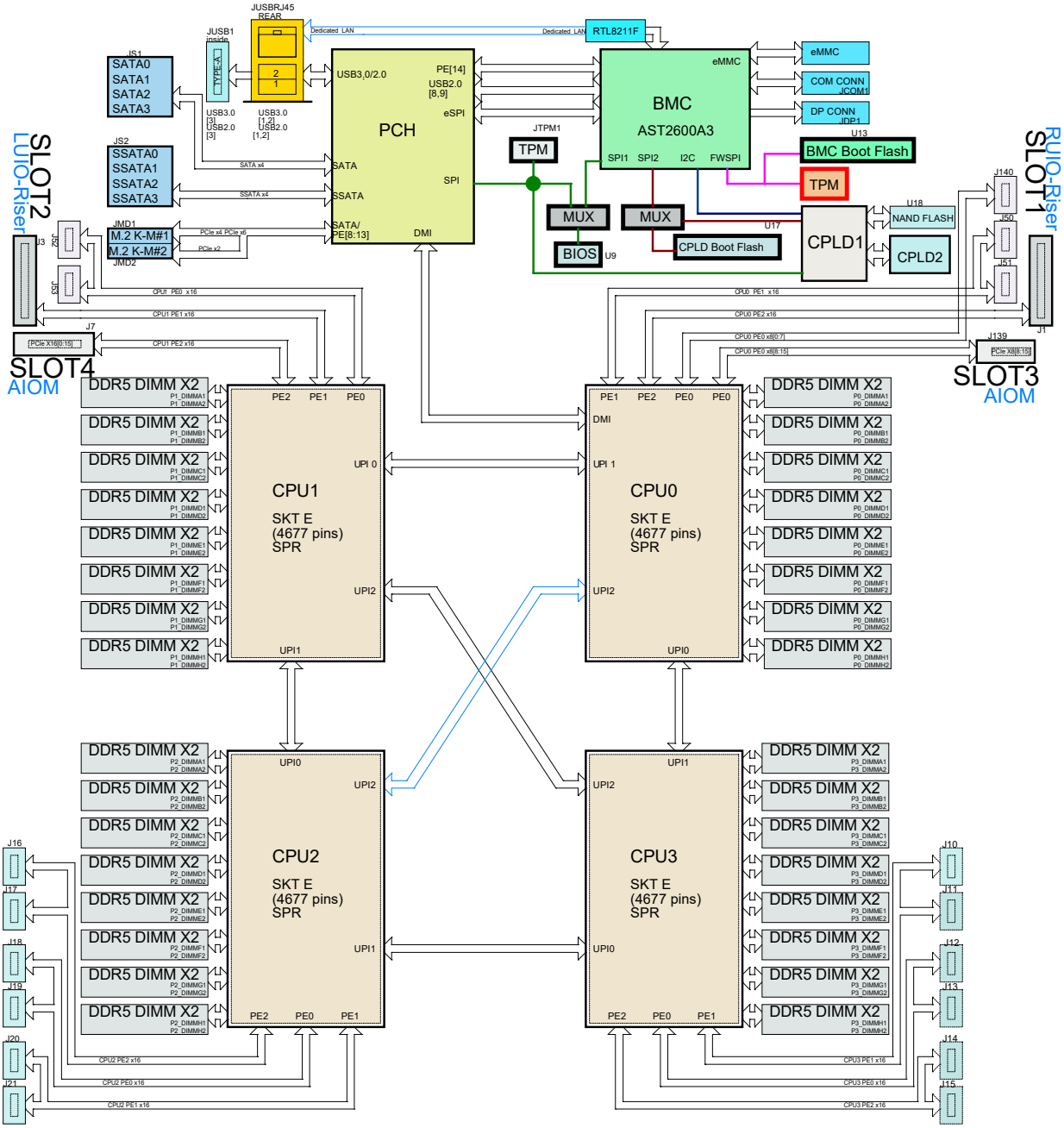


Figure 1-5. System Block Diagram

1.4 Motherboard Layout

Below is a layout of the X13QEH+ motherboard with the 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.

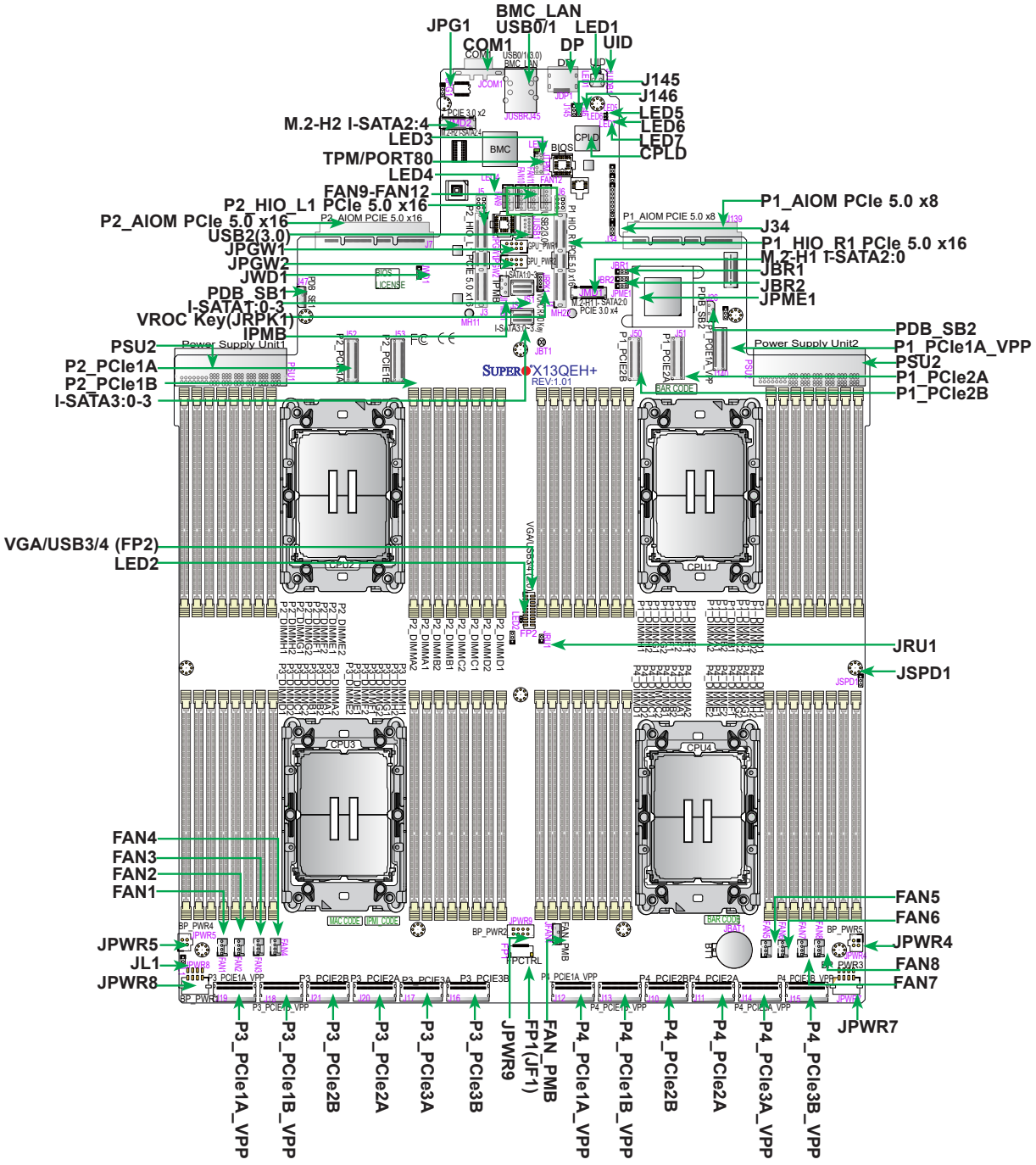


Figure 1-6. Motherboard Layout

Quick Reference Table

Jumper	Description	Default Setting
J34	VRM Programming Write Protection	Pins 1/2: Normal
J145/J146	Storage Backpanel (BP) ID	Closed/Closed: 4 x 2 drives
JBR1	ADR Complete	Pins 1/2: Normal
JBR2	BIOS Recovery	Pins 1/2: Normal
JBT1	Clear CMOS	Open (Normal)
JPG1	Video Display Enabled	Pins 1/2: Video Display Enabled
JPME1	ME Recovery	Pins 1/2: Normal
JRU1	UID LED/BMC Reset	Closed: Normal (UID LED)
JSPD1	Memory SPD Remote	Open: BMC
JWD1	Watch Dog Timer Enabled	Pins 1/2: Reset

LED	Description	Status
LED1 (UID-LED)	Unit Identifier (UID) LED	Solid Blue: Unit Identified
LED2 (LEDPWR)	Power LED	LED On: Onboard Power On
LED3	BMC Heartbeat LED	Blinking Green: BMC Normal (Active), Solid Green: (During BMC Reset or during a Cold Reboot)
LED4	CPU1 Power Status LED	Solid Red: Power Failure
LED5	CPU2 Power Status LED	Solid Red: Power Failure
LED6	CPU3 Power Status LED	Solid Red: Power Failure
LED7	CPU4 Power Statu LED	Solid Red: Power Failure

Connector	Description
BT1 (JBAT1)	Onboard battery
BMC_LAN (JUSBRJ45)	Dedicated BMC LAN on the rear I/O panel
COM1 (JCOM1)	COM/serial port on the rear I/O panel
DP1 (JDP1)	I/O device display port on the rear I/O panel
FAN1-4, FAN5-8	4-pin fan headers
FAN9-FAN12	6-pin cooling fan headers
FAN_PMB (JFAN1)	Fan for I²C temperature sensor
FP1 (JF1)	Front Control Panel header with I²C
FP2	Front Control Panel header with USB and VGA support
IPMB (JIPMB1)	4-pin BMC external I²C header
I-SATA1 0-3 (JS1)	SATA header with four SATA connections (SATA1 0-3) from Intel PCH (with RAID 0, RAID 1, RAID 5, and RAID 10 supported)
I-SATA3 0-3 (JS2)	SATA 3.0 header with four SATA 3.0 connections (SATA3 0-3) from Intel PCH (with RAID 0, RAID 1, RAID 5, and RAID 10 supported)
JL1	Chassis Intrusion header
JMD1	M.2-H SATA2:0/PCIe 3.0 x4 hybrid slot 1 (with support of M-Key 2280 and 22110)
JMD2	M.2-H SATA2:4/PCIe 3.0 x2 hybrid slot 2 (with support of M-Key 2280 and 22110)
JPGW1/JPGW2	8-pin GPU power Connector 1/Connector 2

JPWR4 (BP_PWR5)/ JPWR5 (BP_PWR4)	4-pin power headers for backplane devices
JPWR7 (BP_PWR3)	8-pin backplane power Connector 3
JPWR8(BP_PWR1)	8-pin backplane power Connector 1
JPWR9 (BP_PWR2)	8-pin backplane power Connector 2
JTPM1	Trusted Platform Module/Port 80 connector (See Note 1 below.)
P1_PCIe1A_VPP	PCIe 5.0 x8 by CPU1 (J140)
P1_PCIe2A/2B	PCIe 5.0 x8 by CPU1 (J51)/(J50)
P2_PCIe1A/1B	PCIe 5.0 x8 by CPU2 (J52/J53)
P3_PCIe1A_VPP/1B_VPP	PCIe 5.0 x8 by CPU3 (J19/J18)
P3_PCIe2A/2B	PCIe 5.0 x8 by CPU3 (J20/J21)
P3_PCIe3A/3B	PCIe 5.0 x8 by CPU3 (J17/J16)
P4_PCIe1A_VPP/1B_VPP	PCIe 5.0 x8 by CPU4 (J12/J13)
P4_PCIe2A/2B	PCIe 5.0 x8 by CPU4 (J11/J10)
P4_PCIe3A_VPP/3B_VPP	PCIe 5.0 x8 by CPU4 (J14/J15)
P1_AIOM PCIe 5.0 x8	Advanced I/O Module (AIOM) PCIe 5.0 x8 slot supported by CPU1 (J139)
P2_AIOM PCIe 5.0 x16	Advanced I/O Module (AIOM) PCIe 5.0 x16 slot supported by CPU2 (J7)
P1_HIO_R1 PCIe 5.0 x16 (J1)	PCIe 5.0 x16 hybrid slot for right riser card supported by CPU1
P2_HIO_L1 PCIe 5.0 x16 (J3)	PCIe 5.0 x16 hybrid slot for left riser card supported by CPU2
P2_PCIe1A (J52)	PCIe 5.0 x8 MCIO connector supported by CPU2
PDB_SB1 (J47)	SMB I²C for 4U power distribution board
PDB_SB2 (J26)	SMB I²C for 4U power distribution board
PSU1/PSU2	Supermicro proprietary power supply units 1/2 for system use
UID (JUIDB1)	UID (Unit Identifier)/BMC Reset switch
USB0/1 (JUSBRJ45)	USB 3.0 ports 0/1 on rear I/O panel
USB2 (3.0) (JUSB1)	Type A USB 3.0 connector (USB2) for front access
VROC RAID Key (JRK1)	Intel VROC key header for NVMe RAID support (See Note 2 below.)

Note 1: For TPM support, an optional note is needed. Contact Supermicro Tech Support for more information.

Note 2: 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.

Caution: Electrostatic Discharge (ESD) can damage electronic components. To preventsuch damage to PCBs (printed circuit boards), it is important to use a grounded wrist strap, handleall 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 SYS-241E-TNRTTP 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 (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.
- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).

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

Rack Precautions

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

Server Precautions

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

Rack Mounting Considerations

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.).

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.

Slide rail mounted equipment is not to be used as a shelf or a work space.

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

2.4 Installing the Rails

There are a variety of rack units on the market, which may require a slightly different assembly procedure. This rail set fits a rack between 25.6" and 33" deep.

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

If you are installing into a two-post "telco" rack, skip to that section later in this chapter.

Installing the Inner Rails

The chassis comes with two sets of rack rails, one set for the right side of the chassis and one for the left. Each set consists of an inner rail that attaches to the chassis, and an outer rail that attaches to the rack.

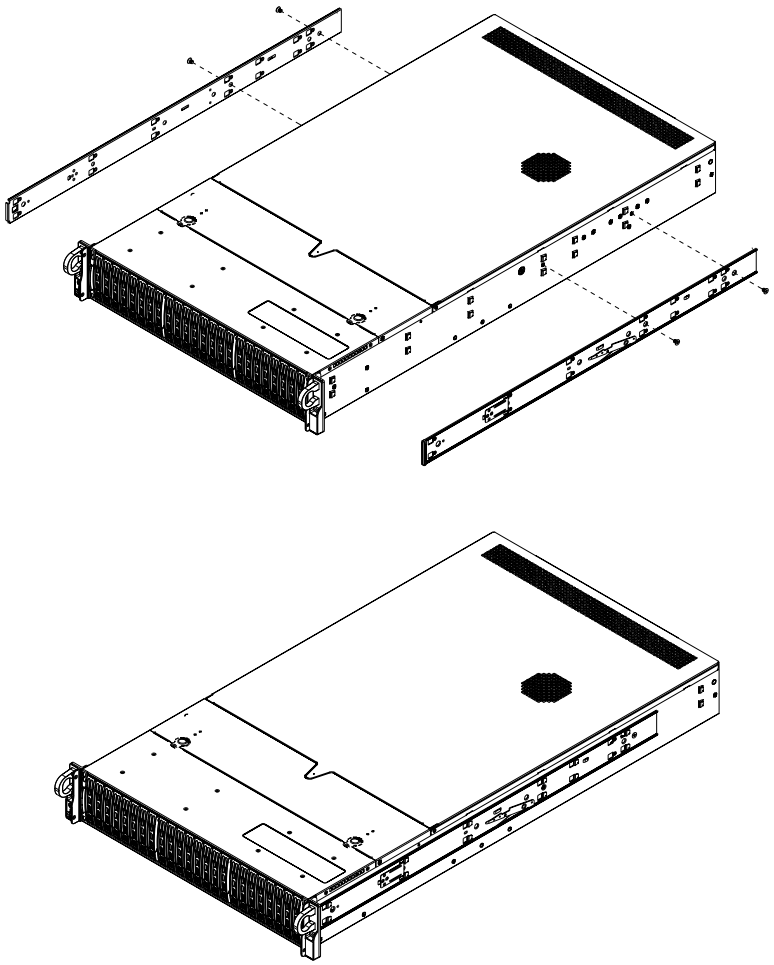


Figure 2-1. Attaching the Inner Rack Rails

Installing the Outer Rails onto the Rack

Installing the Outer Rails

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

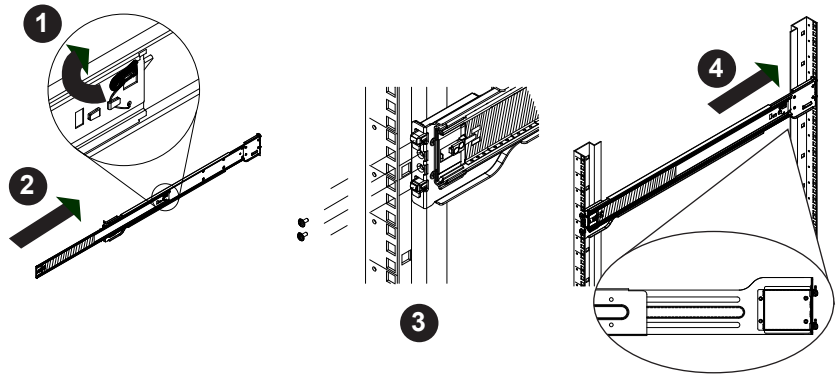


Figure 2-2. Installing the Outer Rails to the Rack

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

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

2.5 Installing the Server into a Rack

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

Installing the Server into a Rack

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

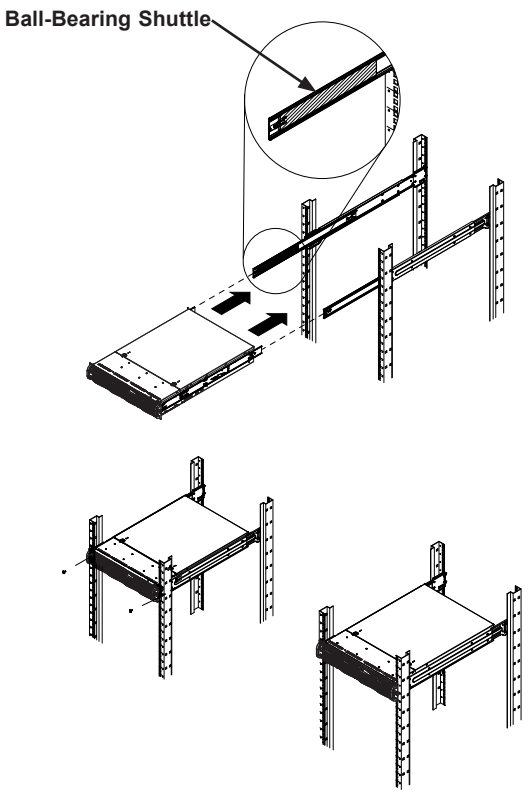


Figure 2-3. Installing the Server into the Rack

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

Removing the Server from the Rack

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

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

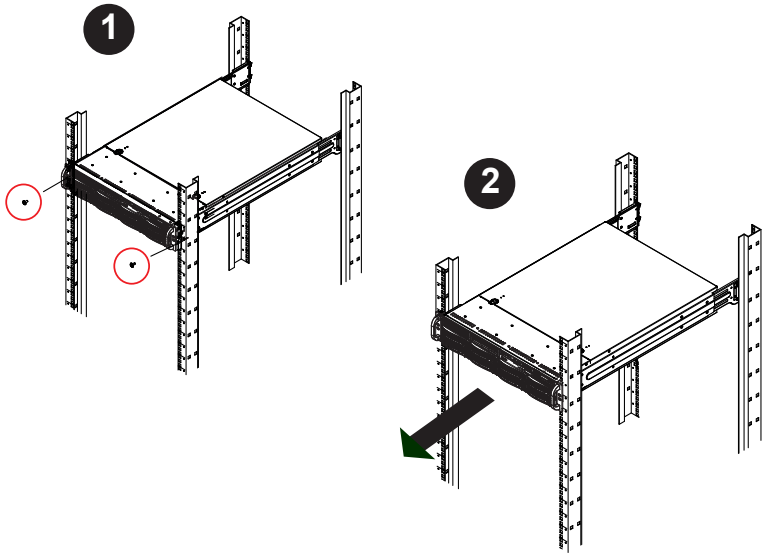


Figure 2-4. Removing the Server from the Rack

Chapter 3

Maintenance and Component Installation

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

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

3.1 Powering Down the System

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

1. Use the operating system to power down the system.
2. After the system has completely shut down, disconnect the AC power cord(s) from the power strip or outlet and remove the AC power cords from all power supply modules.
3. Disconnect the power cord(s) from the power supply module(s).
4. When performing service on non hot-swap components, remove the system from the rack and place it on a bench or desk. Do not service with the system extended from the rack.

3.2 Accessing the System

The SYS-241E-TNRTTP features a removable top cover, which allows easy access to the inside of the chassis.

Removing the Top Cover

1. Remove the two screws located towards the front of the chassis cover.
2. Press the two release buttons and slide the cover toward the rear.
3. Lift the top cover up.

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

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

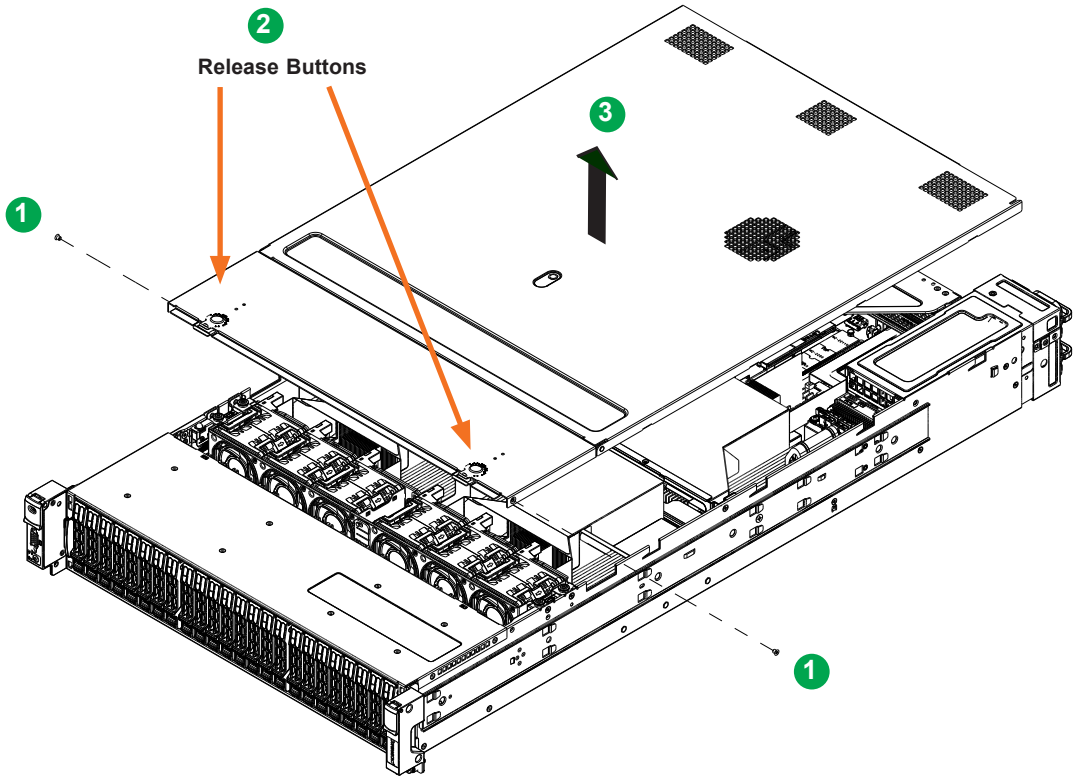


Figure 3-1. Removing the Chassis Cover

3.3 Static-Sensitive Devices

Electrostatic Discharge (ESD) can damage electronic components. To avoid damaging your motherboard, it is important to handle it very carefully. The following measures are generally sufficient to protect the system PCBs from ESD.

Precautions

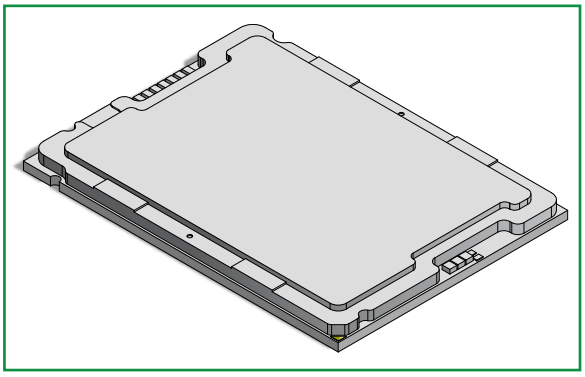
- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any PCB (printed circuit board) from its antistatic bag.
- Handle PCBs by their edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the PCBs back into their antistatic bags when not in use.
- Use only the correct type of onboard CMOS battery. Do not install the onboard battery upside down to avoid possible explosion.

3.4 Processor and Heatsink Installation

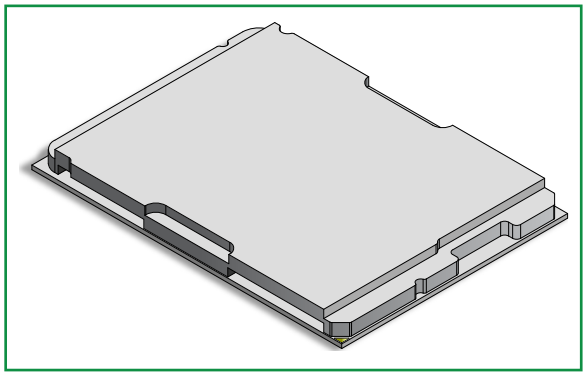
The processor (CPU) and processor carrier should be assembled together first to form the processor carrier assembly. This assembly will be then attached to the heatsink to form the processor heatsink module (PHM) before being installed into the CPU socket. Before installation, be sure to perform the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

- Please carefully follow the instructions given on the previous page to avoid ESD-related damages.
- Unplug the AC power cords from all power supplies after shutting down the system.
- 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.
- 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



SP XCC Series

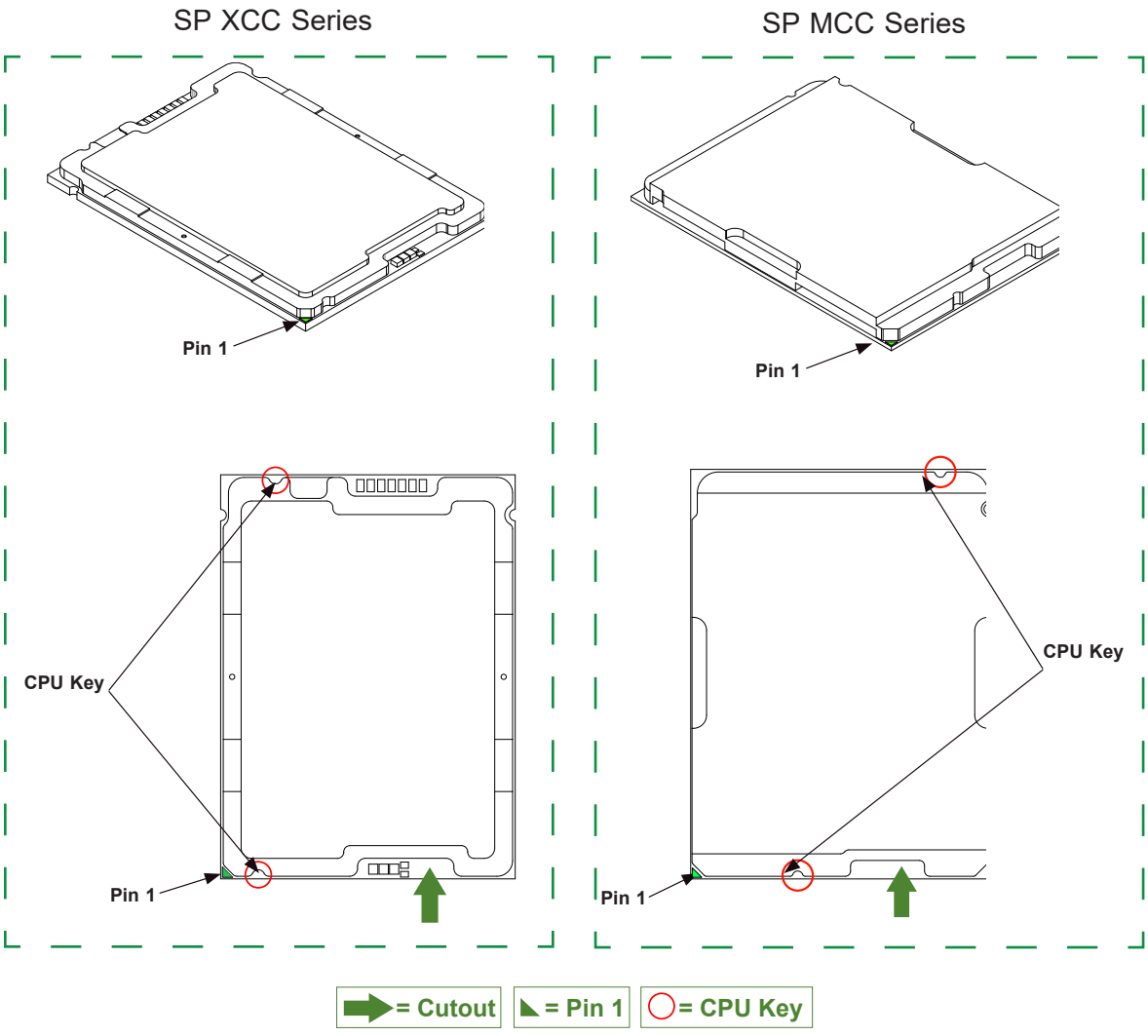


SP MCC Series

Processor Top View

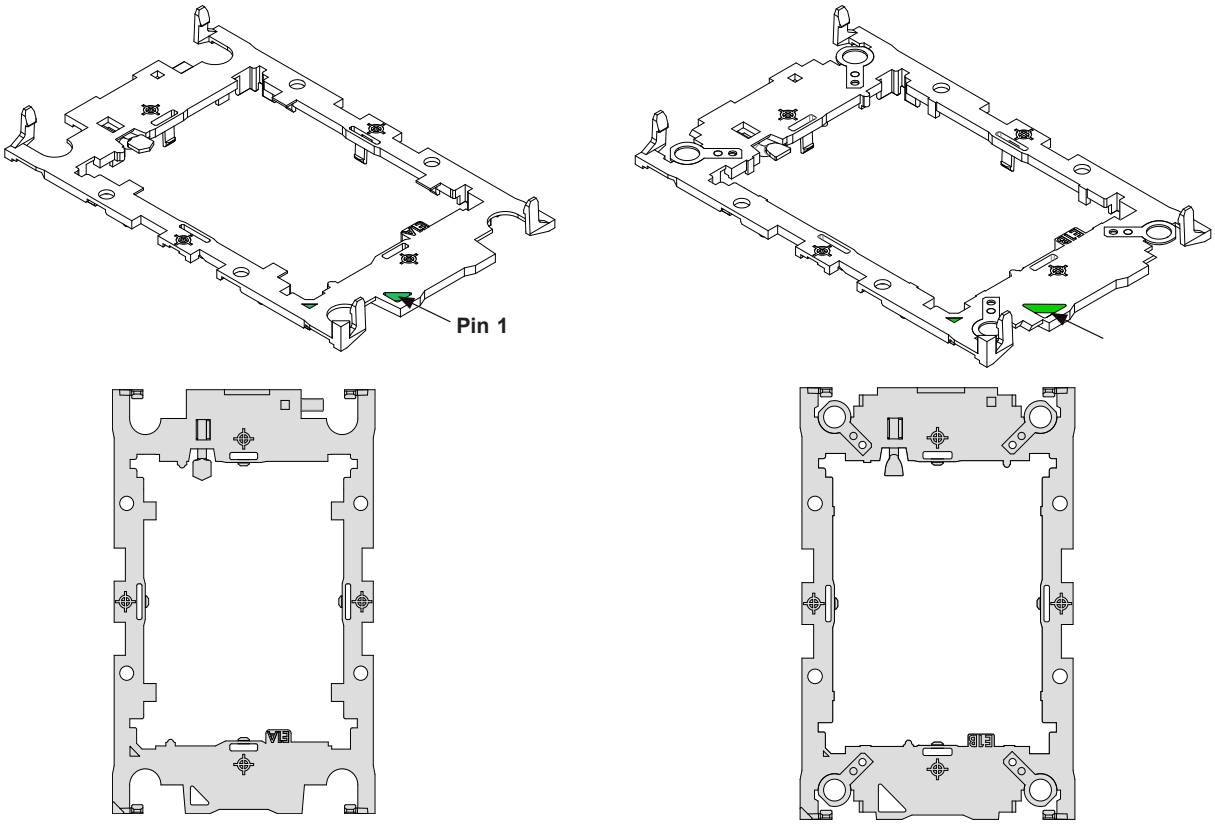
1. The 4th Gen Intel Xeon Scalable Processor

Processor Top View



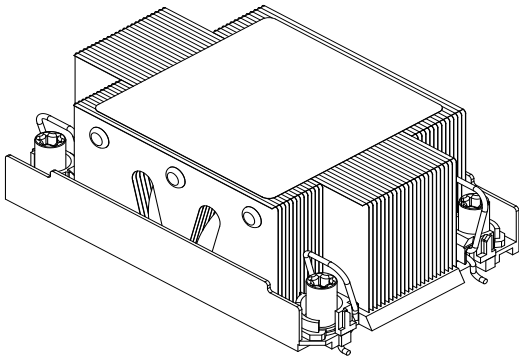
Processor Top View

2. The Processor Carrier

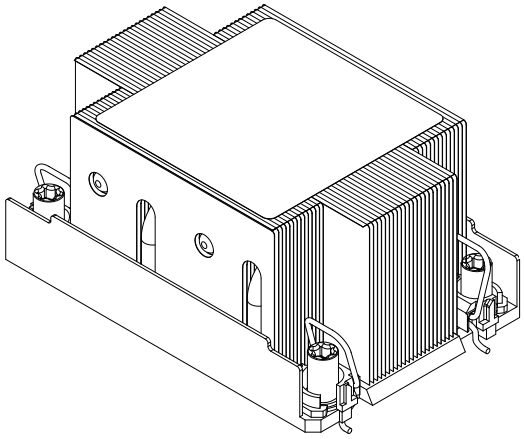


Note: This motherboard supports two CPU SKUs: SP XCC Series and SP MCC Series processors, and each SKU supports a specific carrier. The SP XCC Series CPU supports Carrier E1A, and SP MCC Series, Carrier E1B.

3. Heatsink



1.5U Heatsink



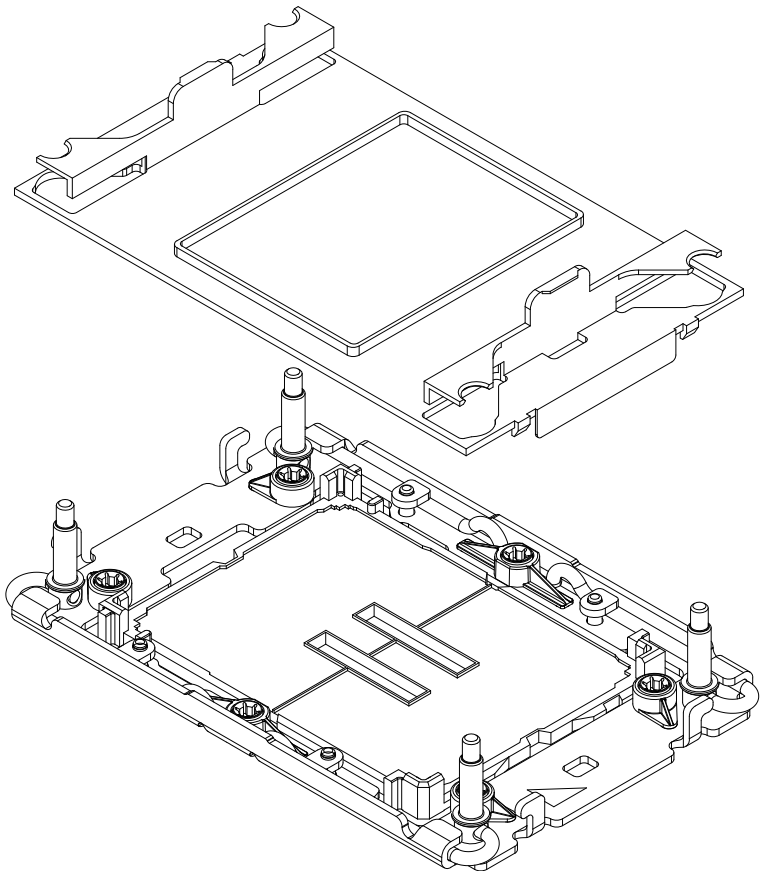
2U Heatsink

Note: Exercise extreme care when handling the heatsink. Pay attention to the edges of heatsink fins, which can be sharp! To avoid damaging the heatsink, please do not apply excessive force on the fins.

Overview of the CPU Socket

The CPU socket is protected by a plastic protective cover.

Plastic Protective Cover



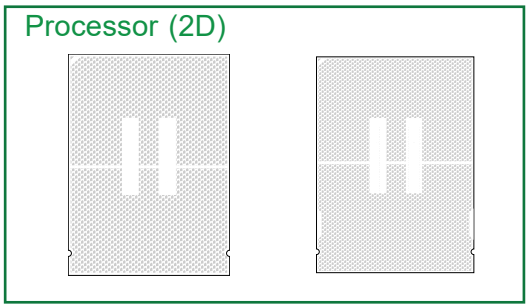
CPU Socket

Overview of the Processor Carrier Assembly

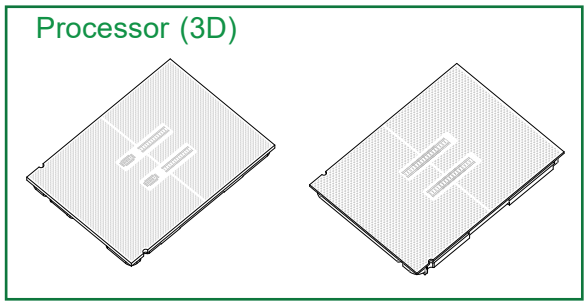
The processor carrier assembly contains a 4th Gen Intel Xeon Scalable processor and a processor carrier. Carefully follow the instructions given in the installation section to place a processor into the carrier to create a processor carrier.

The processor carrier assembly includes a processor and a carrier as shown below:

1. The 4th Gen Intel Xeon Scalable Processor (Component Side)

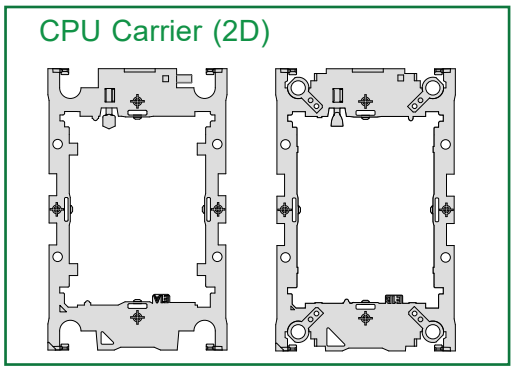


SP XCC Series SP MCC Series

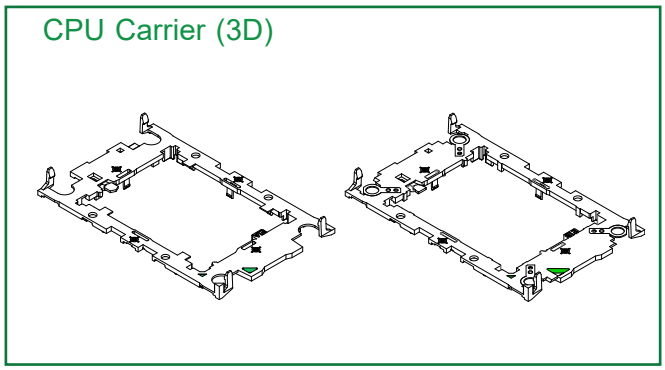


SP XCC Series SP MCC Series

2. CPU Carrier (Top View)

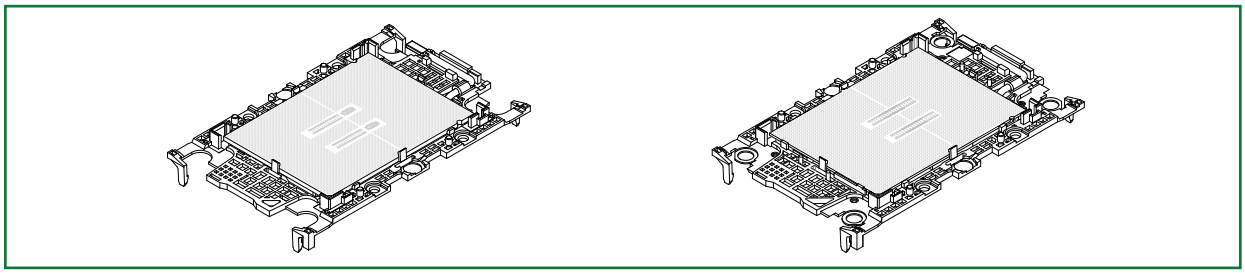


Carrier E1A Carrier E1B



Carrier E1A Carrier E1B

3. Processor Carrier Assembly



SP XCC CPU in Carrier E1A SP MCC CPU in Carrier E1B

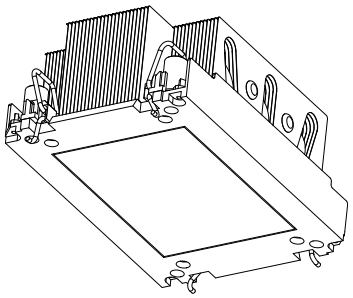
(with Processor Seated in the Carrier)

Overview of the Processor Heatsink Module (PHM)

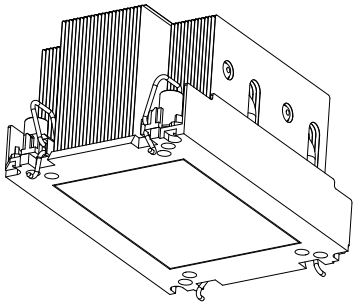
The Processor Heatsink Module (PHM) contains a heatsink, a processor carrier, and a 4th Gen Intel Xeon Scalable processor.

1. Heatsink (Bottom View Shown Below)

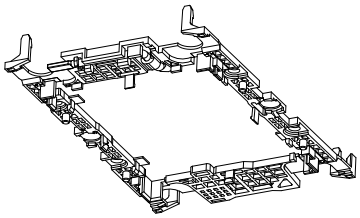
1.5U Heatsink

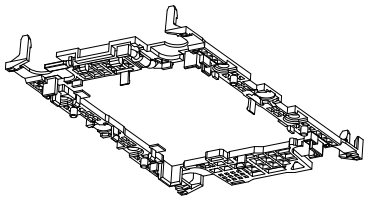


2U Heatsink

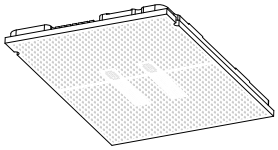


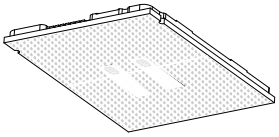
2. Processor Carrier E1A (for SP XCC CPU)



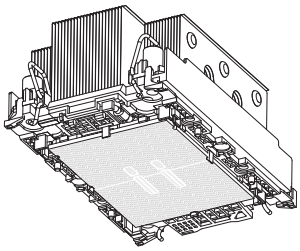


3. The 4th Gen Intel Xeon Scalable Processor (SP XCC) (Component Side Shown Below)

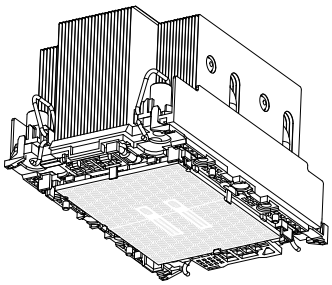




4. Processor Heatsink Module (PHM) (Bottom View Shown Below)



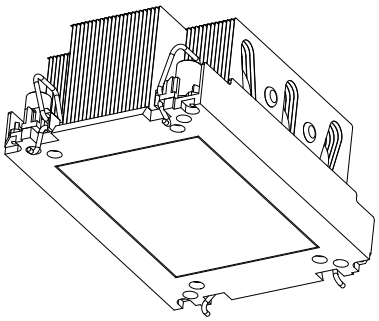
1.5U Heatsink



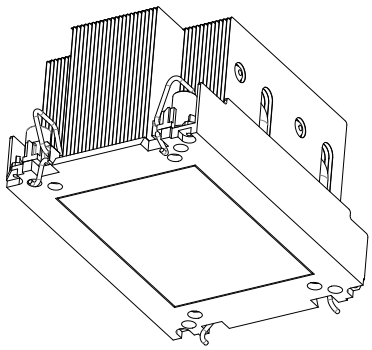
2U Heatsink

1. Heatsink (Bottom View Shown Below)

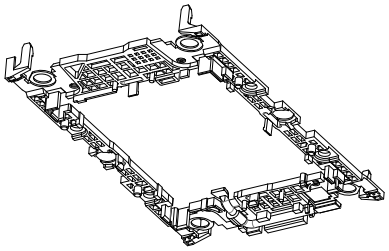
1.5U Heatsink

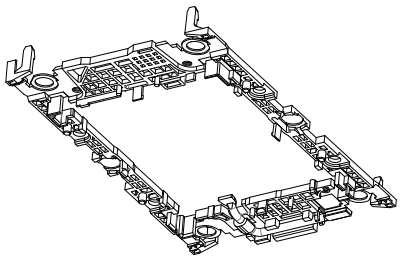


2U Heatsink

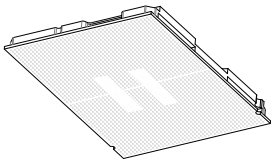


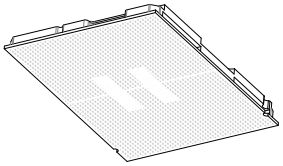
2. CPU Carrier E1B (for SP MCC CPU)



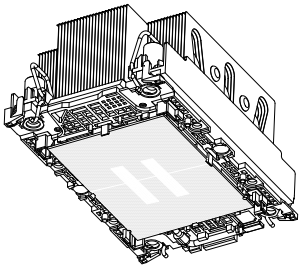


3. The 4th Gen Intel Xeon Scalable Processor (MCC CPU) (Component Side Shown Below)

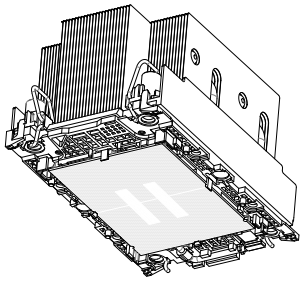




4. Processor Heatsink Module (PHM) (Bottom View Shown Below)



1.5U Heatsink



2U Heatsink

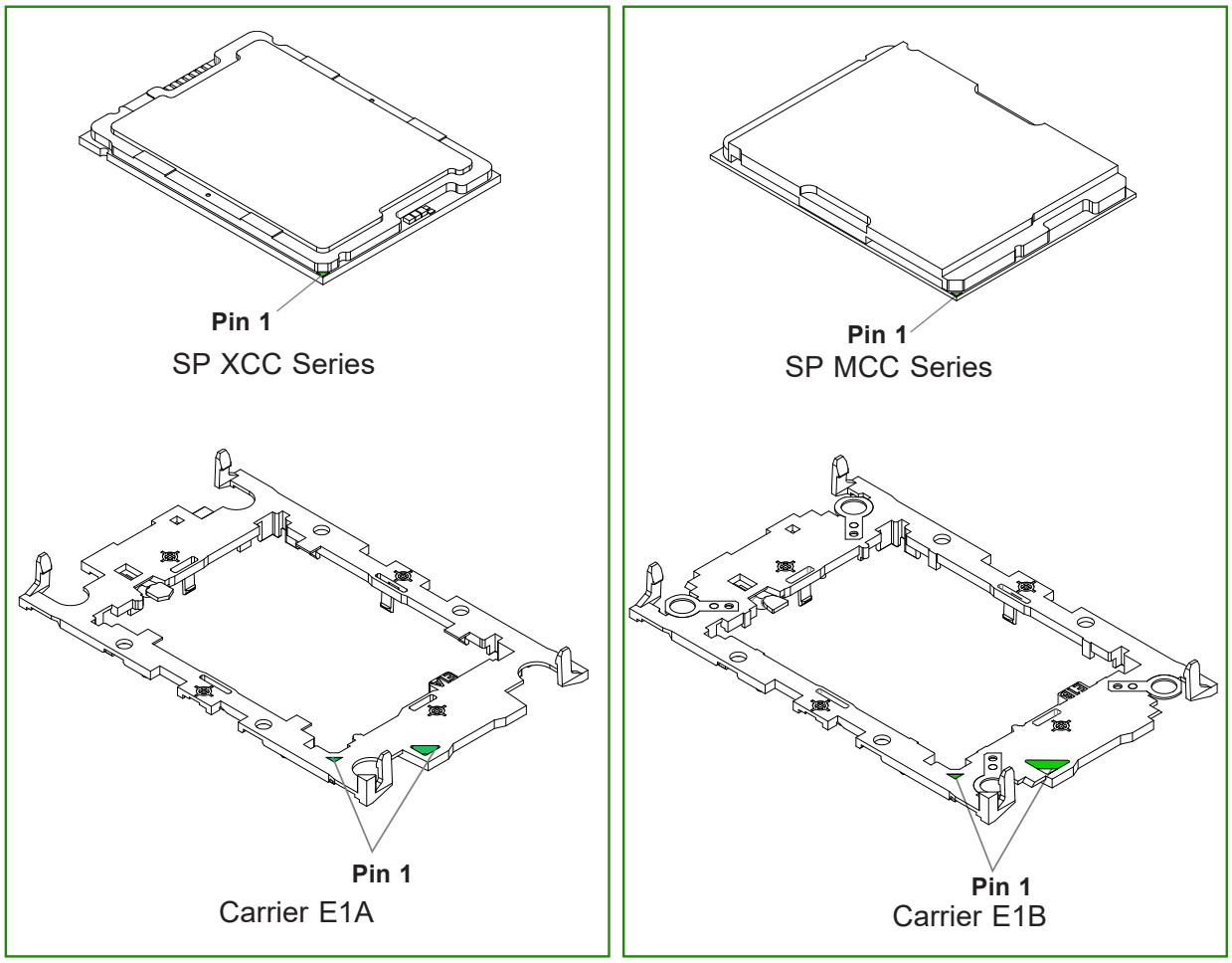
Creating the Processor Carrier Assembly

The processor carrier assembly contains a 4th Gen Intel Xeon Scalable processor and a processor carrier.

To create the processor carrier assembly, please follow the steps below:

Note: Before installation, be sure to follow the instructions given on the first two pages of this chapter to properly prepare for installation.

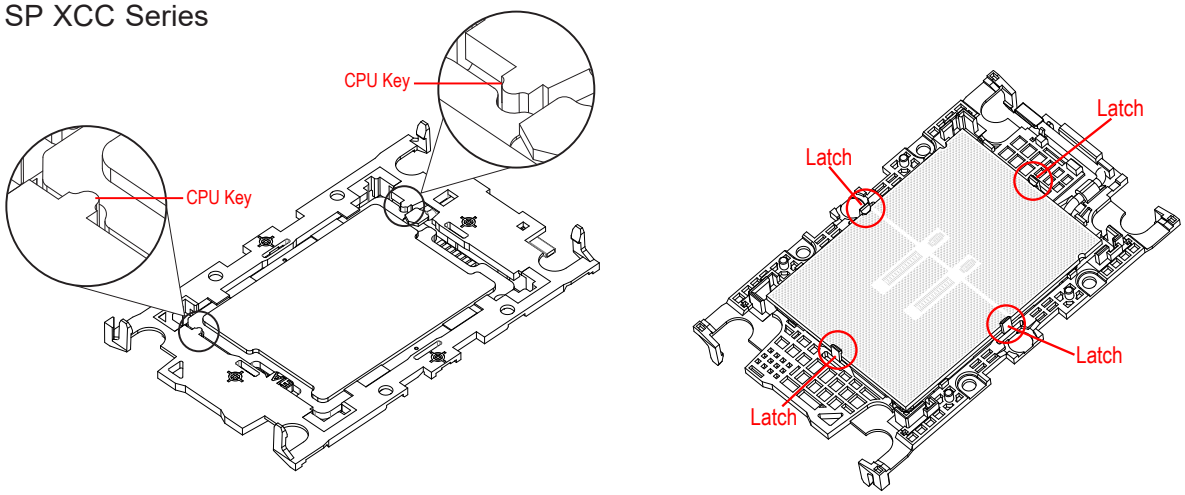
1. Hold the processor with the component side (including the gold contacts) facing down. Locate the small, gold triangle at the corner of the processor and the corresponding hollowed triangle on the processor carrier as shown in the graphics below. Please note that the triangle indicates the Pin 1 location.



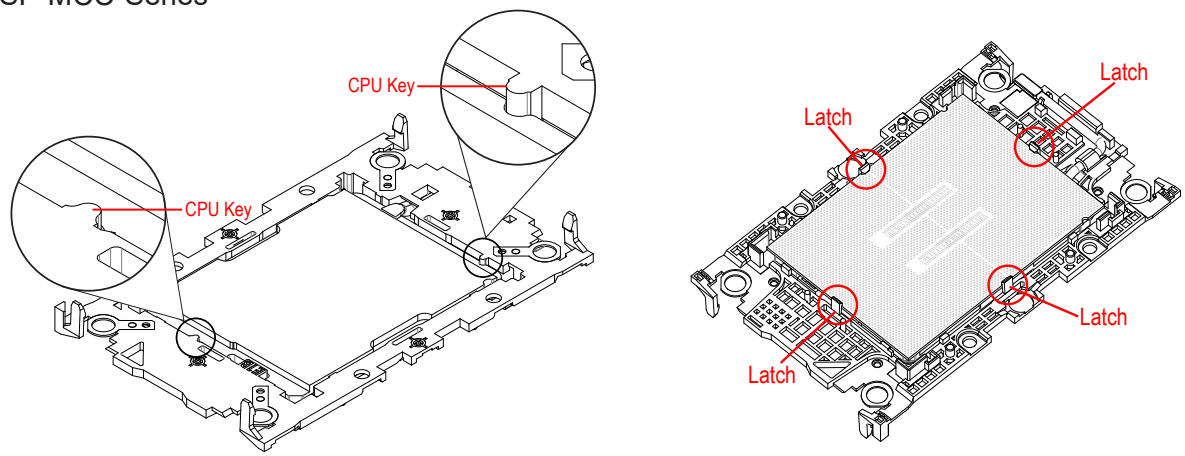
The Processor with its Matching Carrier

2. First, turn over the processor carrier and locate Pin 1 on the CPU and Pin 1 on the carrier. Then, turn the processor over with component side (including the gold contacts) facing up and locate CPU keys on the processor. Finally, locate the CPU keys and four latches on the carrier as shown below.

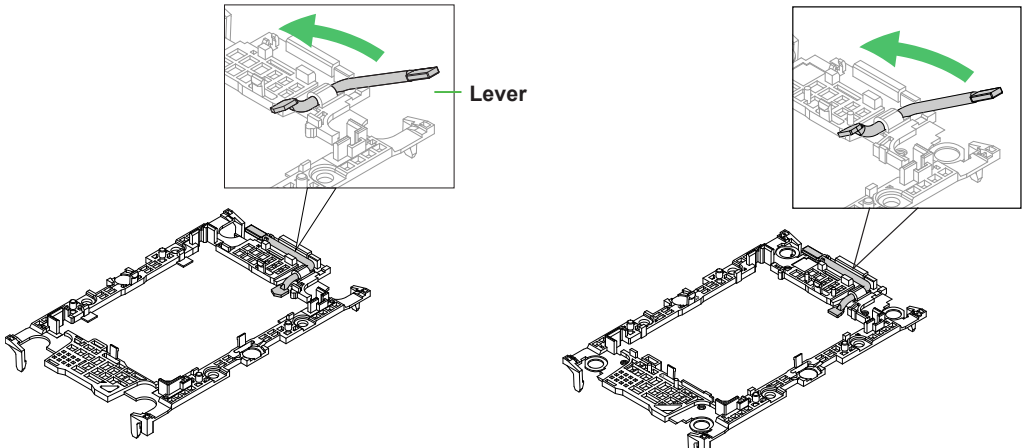
SP XCC Series



SP MCC Series



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

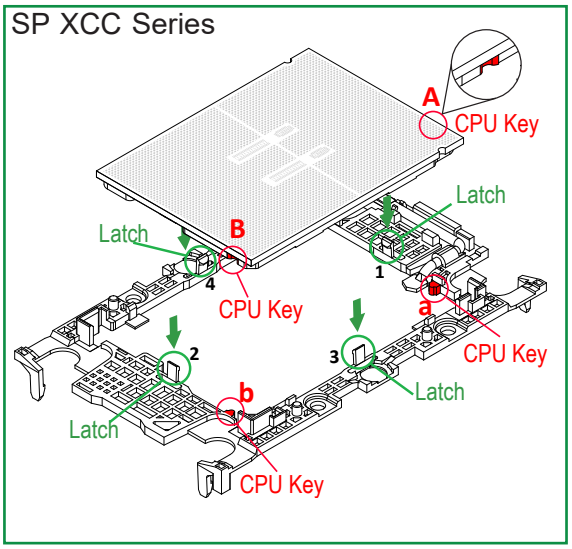


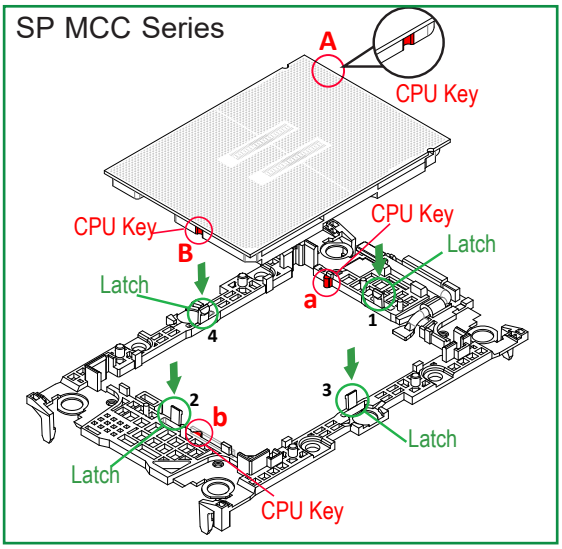
Carrier E1A

Carrier E1B

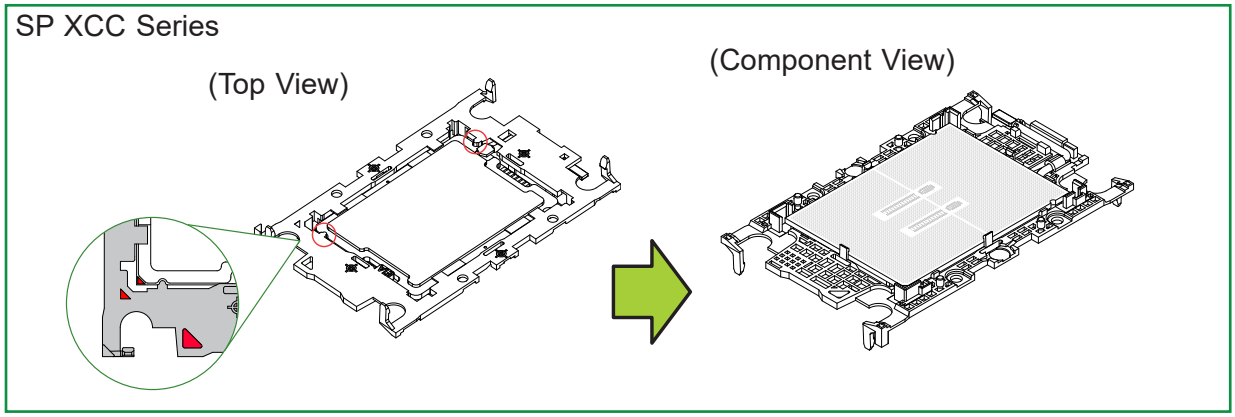
4. Using Pin 1 as a guide, carefully align the CPU keys (A and B) on the processor against the CPU keys on the carrier (a and b) as shown in the drawing below.

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.

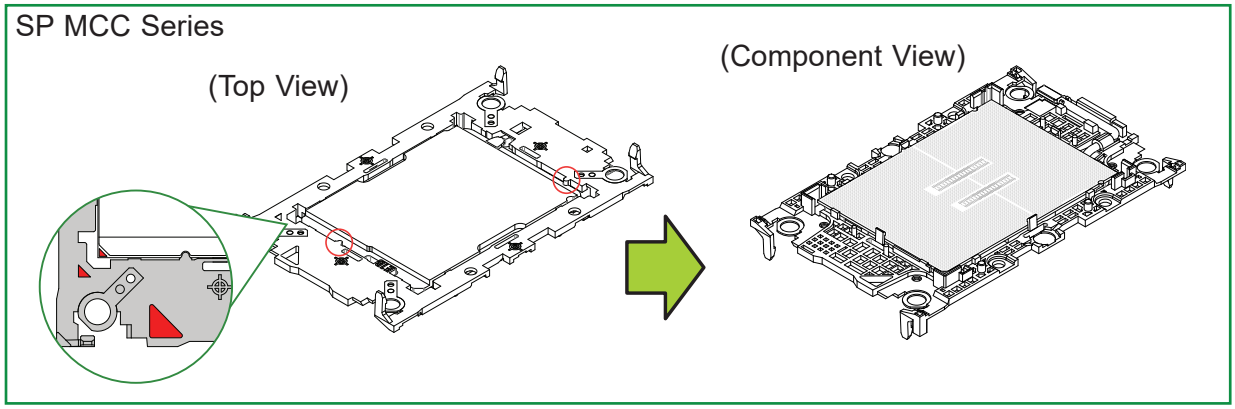




6. After the processor is placed inside the carrier, examine the four sides of the processor, making sure that the processor is properly seated on the carrier.



CPU Carrier Assembly



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.)

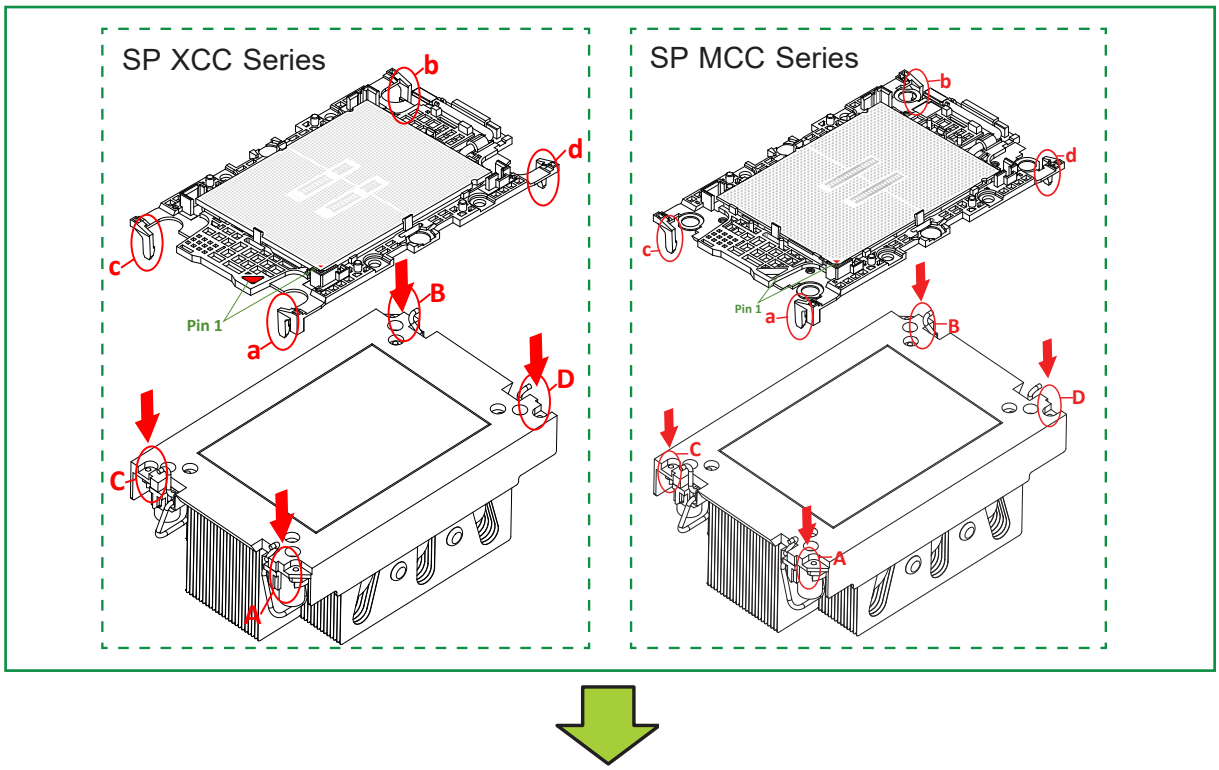
3. Using Pin 1 as a guide, turn the processor carrier assembly over with the gold contacts facing up. Locate Pin 1 (A) on the processor and Pin 1 (a) on the processor carrier assembly.

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.

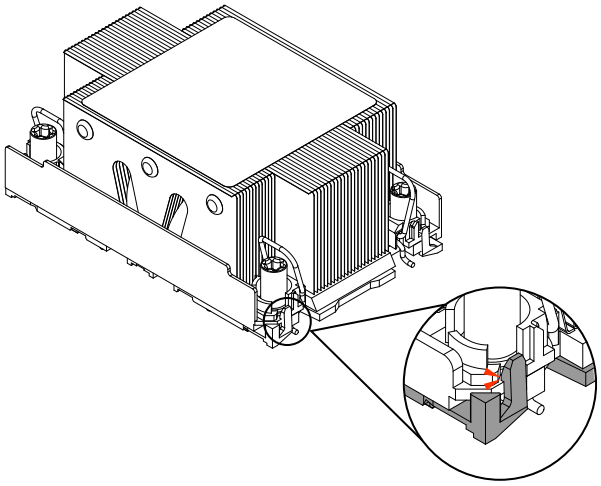
5. Once they are properly aligned, place the corners marked a, b, c, and d on the processor carrier assembly into the corners of the heatsink marked A, B, C, and D making sure that all plastic clips are properly attached to the heatsink.

CPU Carrier Assembly (for 1.5U Heatsink)

(CPU Component Side and Heatsink Bottom Side)



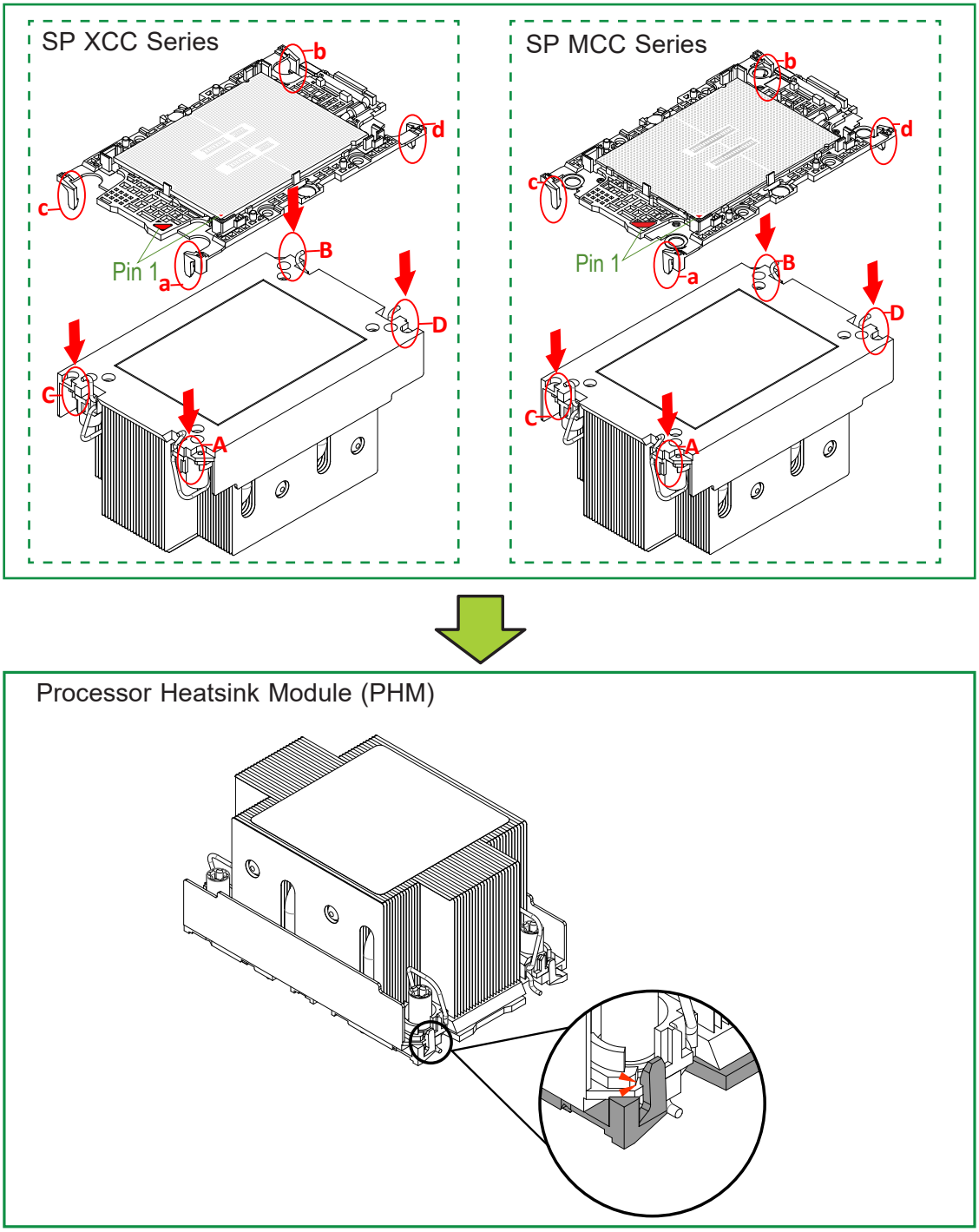
Processor Heatsink Module (PHM)



1.5U Heatsink

CPU Carrier Assembly (for 2U Heatsink)

(CPU Component Side and Heatsink Bottom Side)

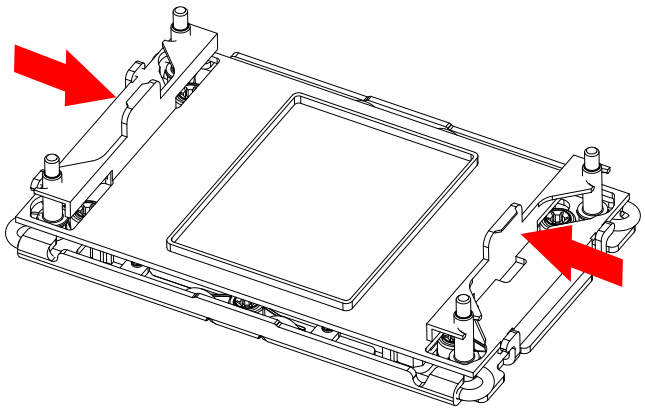


2U Heatsink

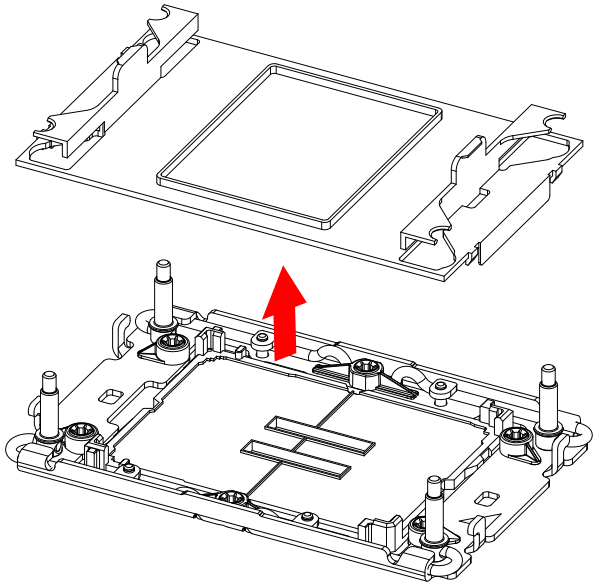
Preparing the CPU Socket for Installation

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.



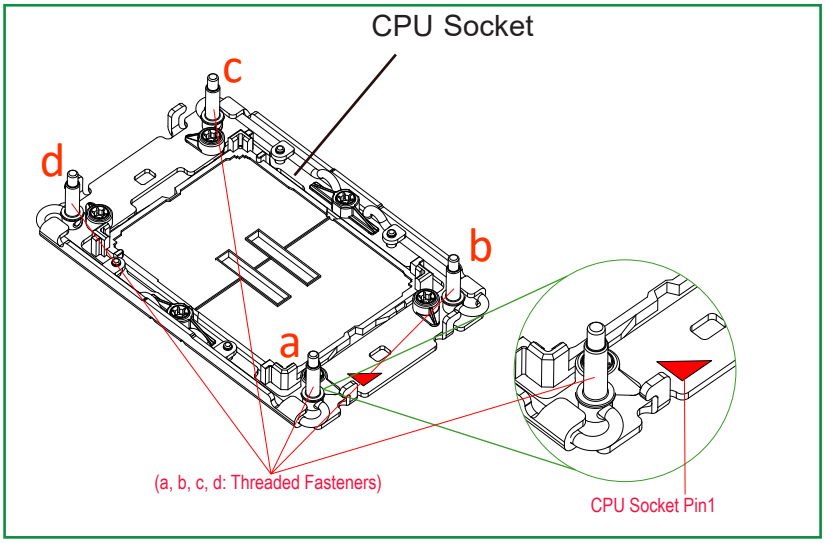
2. Pull up the protective cover from the socket.



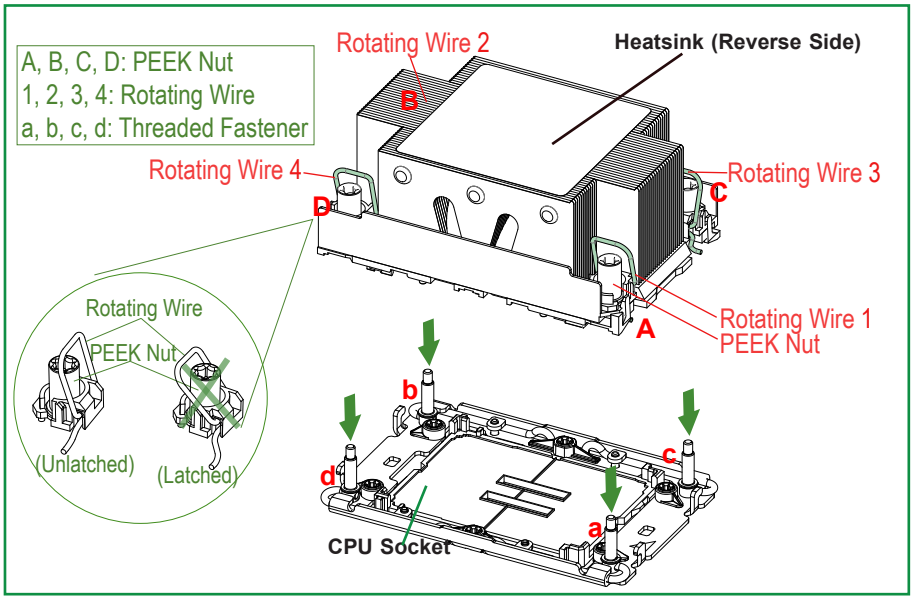
Preparing to Install the PHM into the CPU Socket

After assembling the Processor Heatsink Module, you are ready to install it into the CPU socket. To ensure the proper installation, please follow the procedures below:

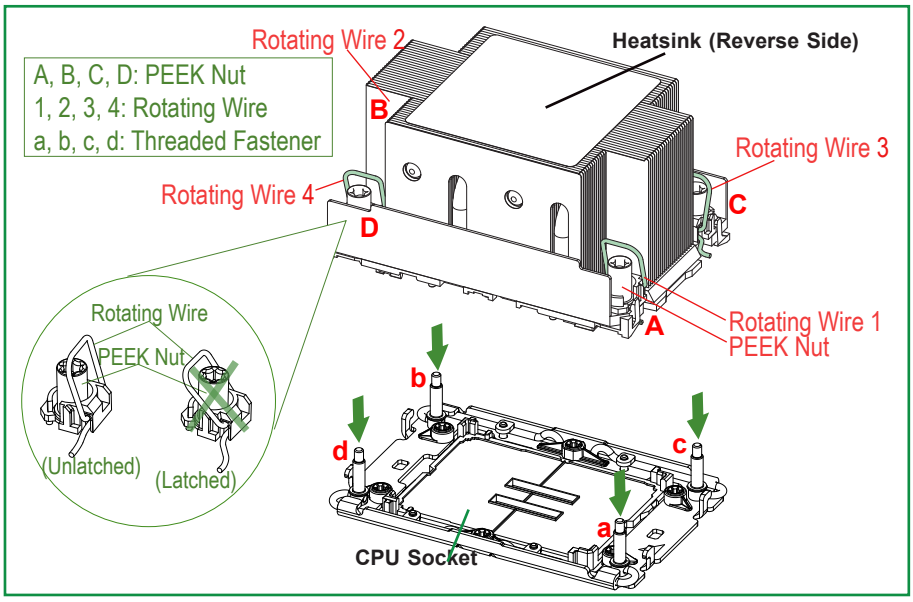
1. Locate four threaded fasteners (a, b, c, d) on the CPU socket.



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

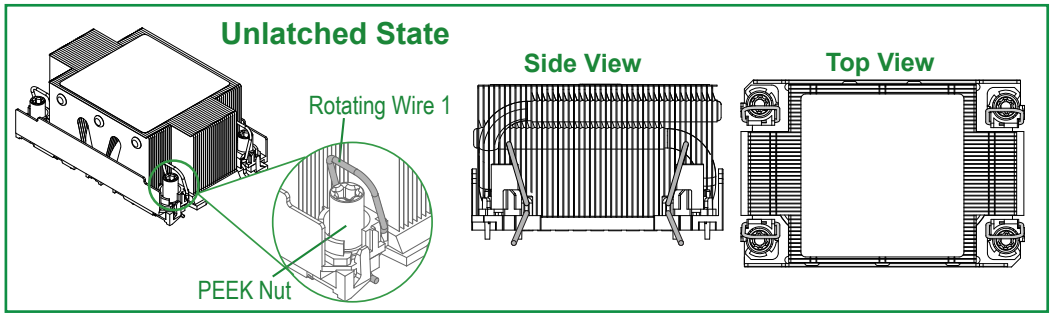


1.5U Heatsink

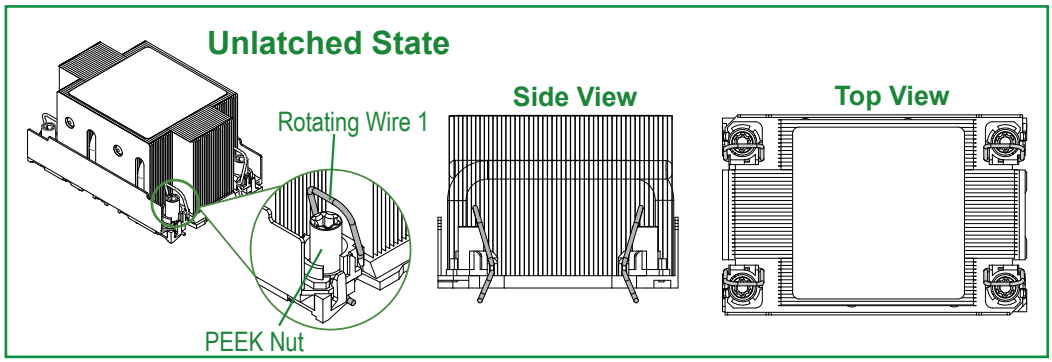


2U Heatsink

3. Check the rotating wires (1, 2, 3, 4) to make sure that they are at unlatched positions as shown in the drawing below before installing the PHM into the CPU socket.



1.5U Heatsink

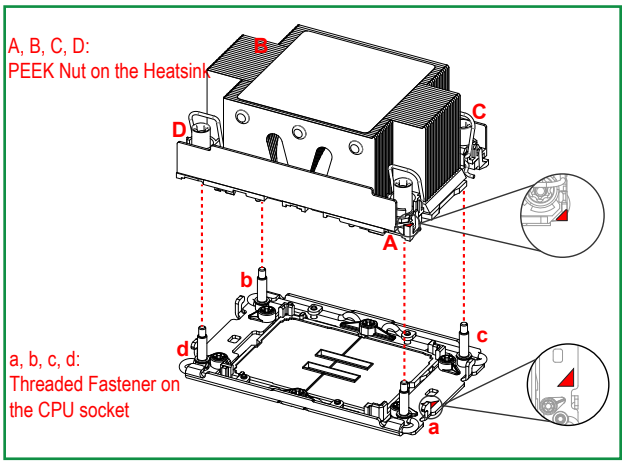


2U Heatsink

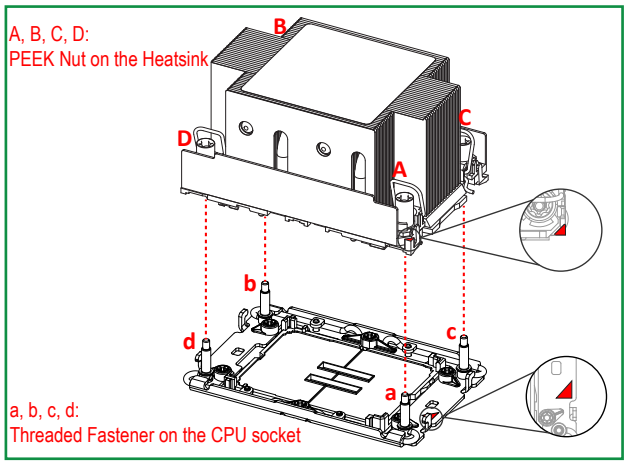
Installing the PHM into the CPU Socket

1. 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.

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

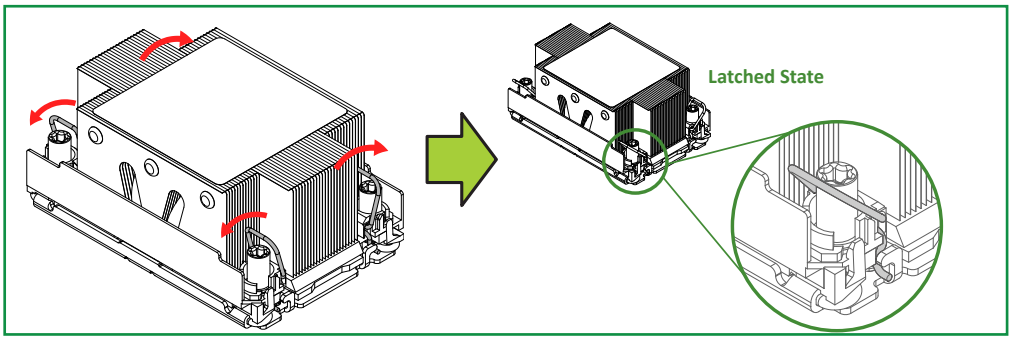


1.5U Heatsink

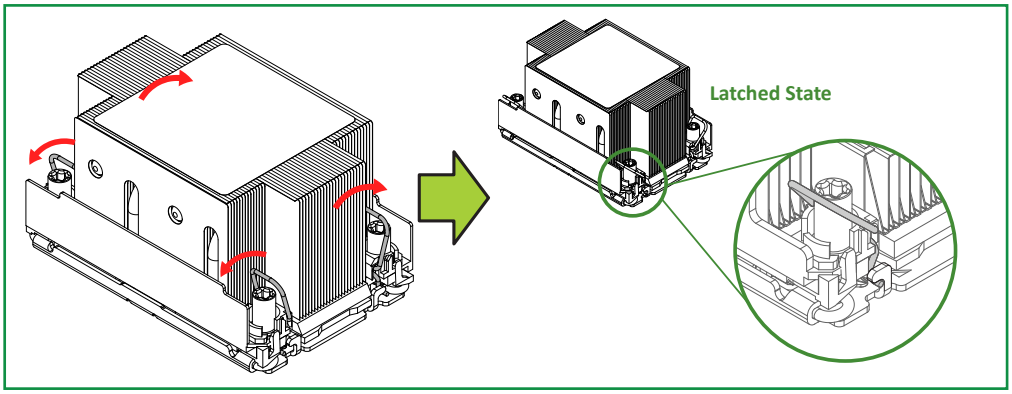


2U Heatsink

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

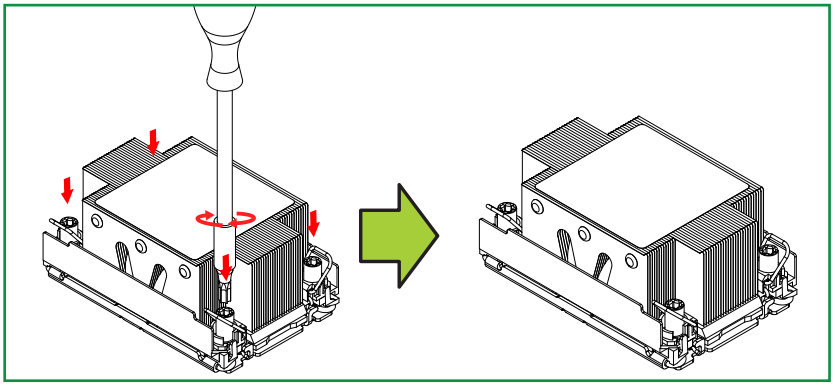


1.5U Heatsink

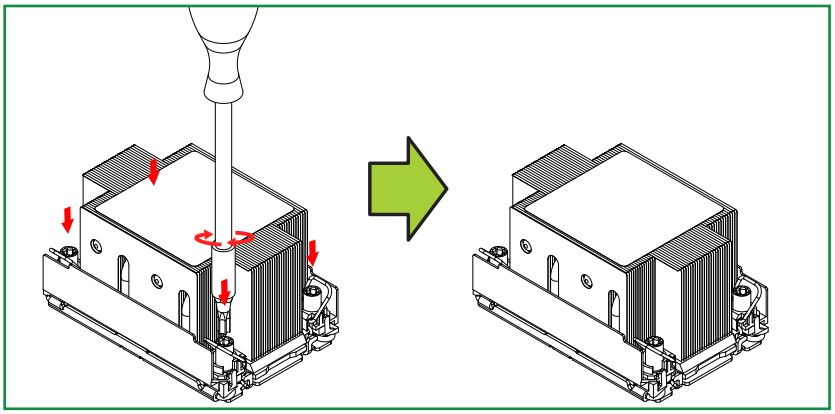


2U Heatsink

4. With a T30 screwdriver, tighten all PEEK nuts in the sequence of A, B, C, and D with even pressure. To avoid damaging the processor or socket, do not use excessive force when tightening the PEEK nuts. (For best durability, 8in-lbf torque is recommended.)
5. Examine all corners of the heatsink to ensure that the PHM is firmly attached to the CPU socket.



1.5U Heatsink

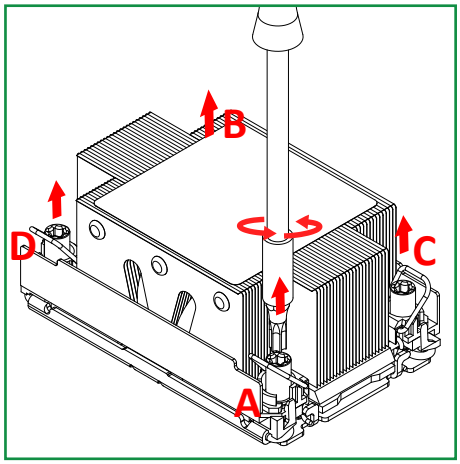


2U Heatsink

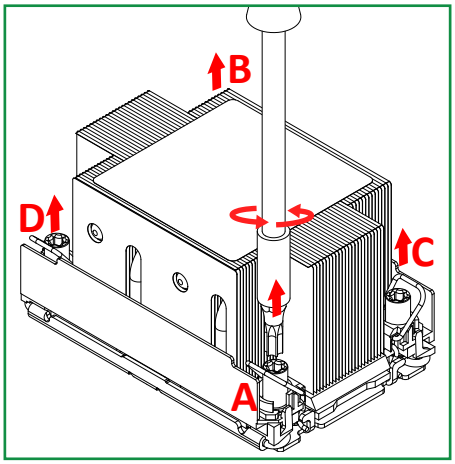
Removing the PHM from the CPU Socket

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.

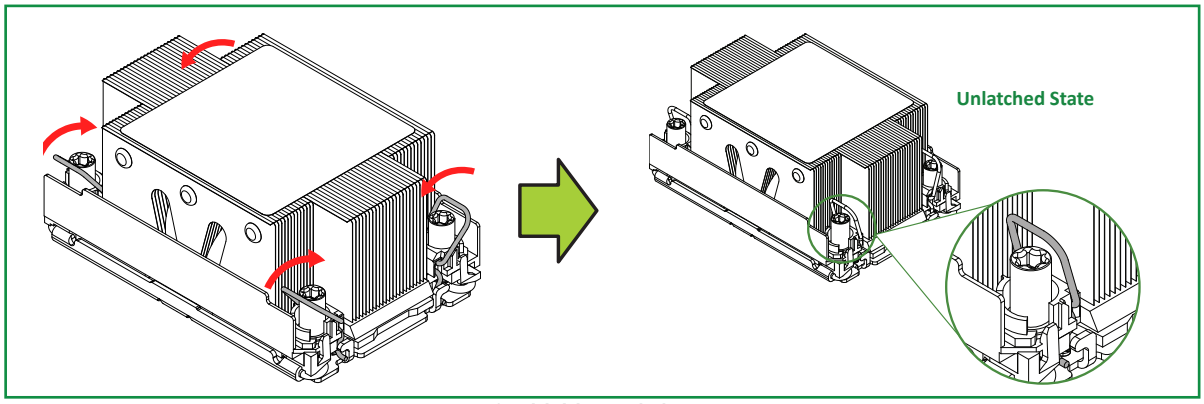


1.5U Heatsink

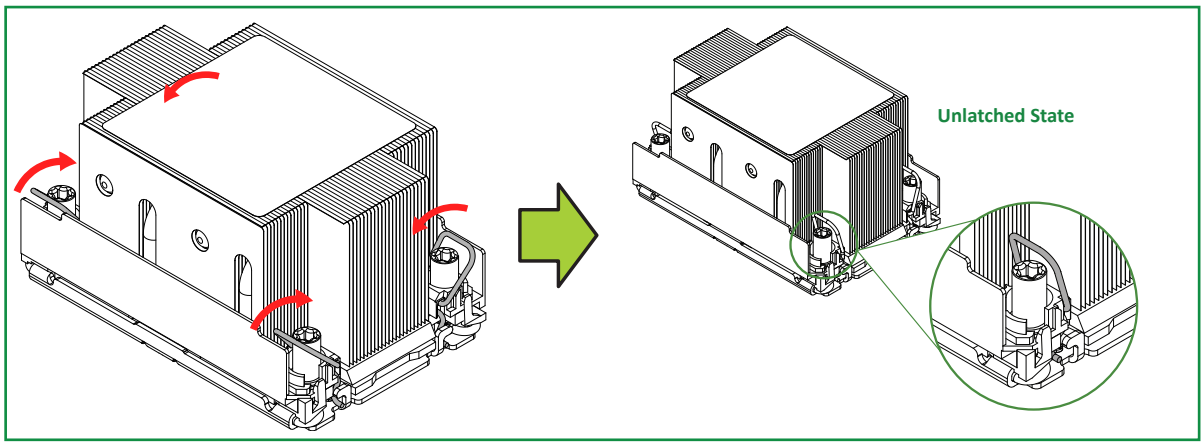


2U Heatsink

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.

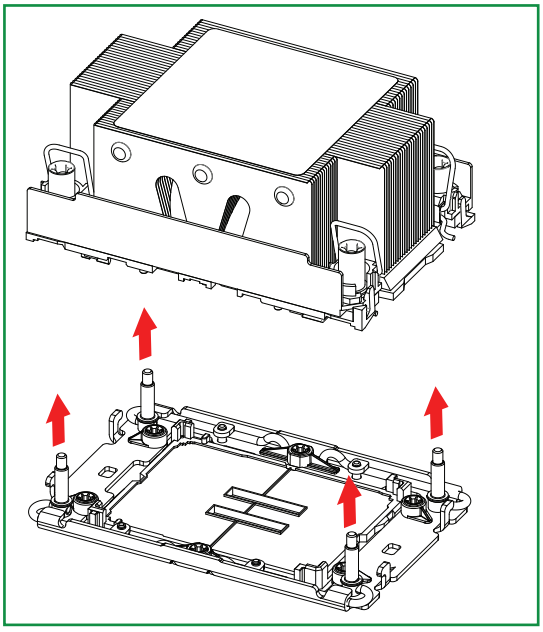


1.5U Heatsink

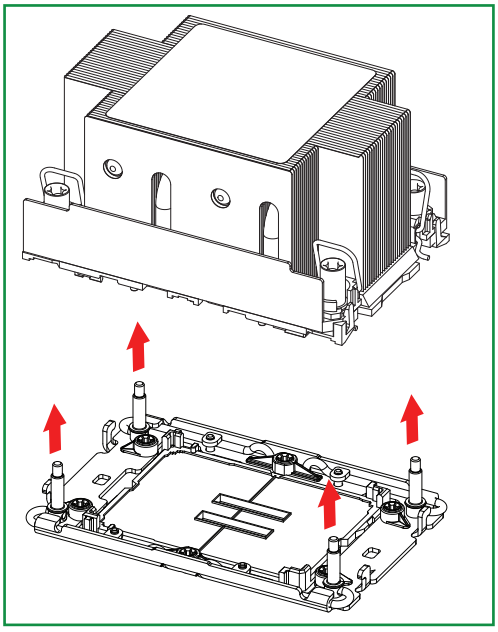


2U Heatsink

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



1.5U Heatsink



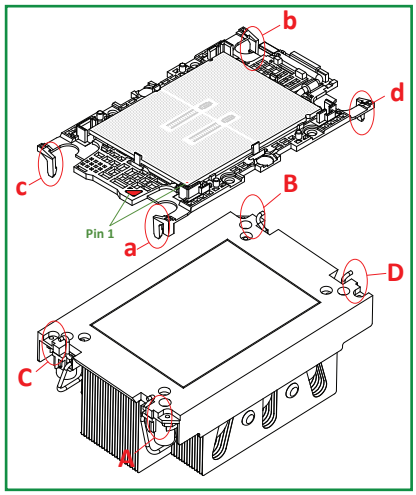
2U Heatsink

Removing the Processor Carrier Assembly from the PHM

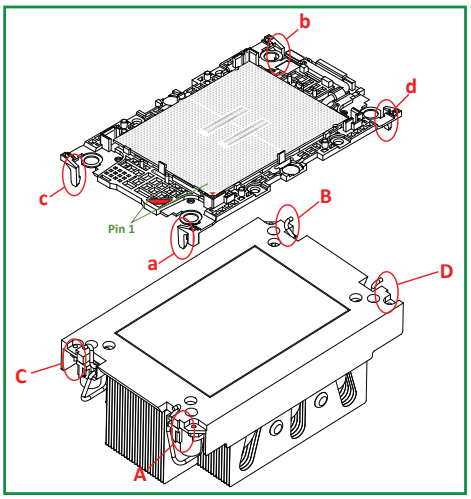
To remove the processor carrier assembly from the PHM, please follow the steps below:

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.

1.5U Heatsink (View of Component Side and Heatsink Bottom Side)

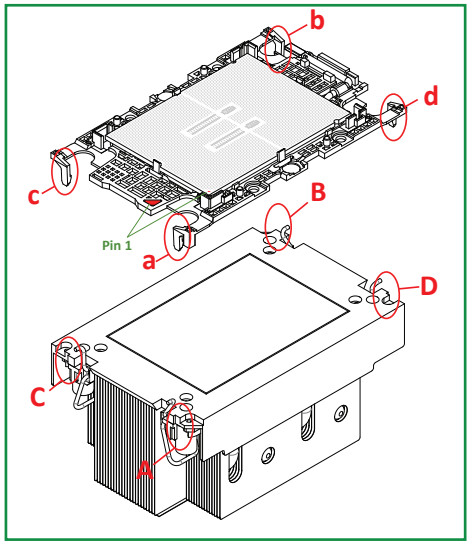


SP XCC Series

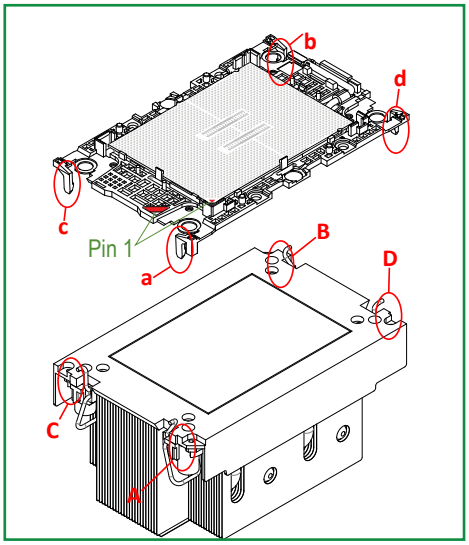


SP MCC Series

2U Heatsink (View of Component Side and Heatsink Bottom Side)



SP XCC Series

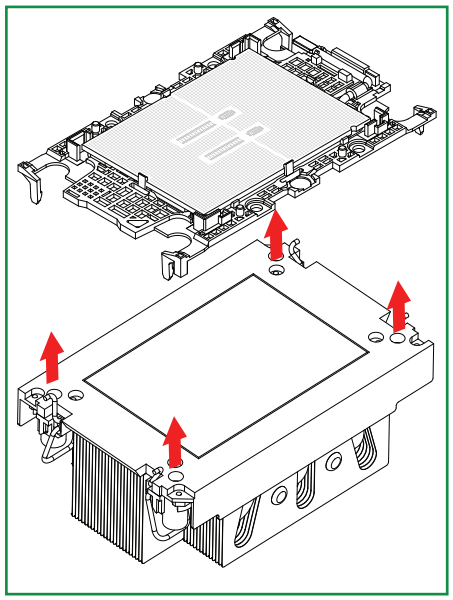


SP MCC Series

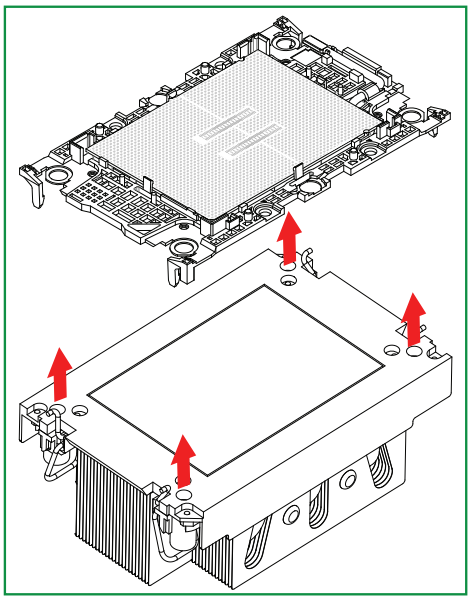
Heatsink (Bottom View)

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

1.5U Heatsink (View of Component Side and Heatsink Bottom Side)

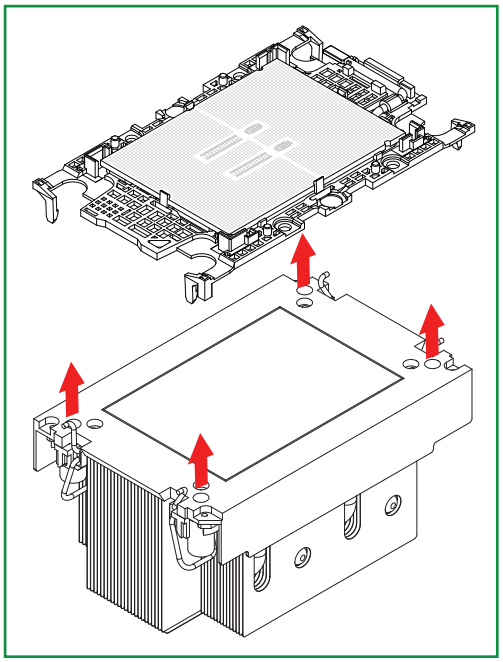


SP XCC Series

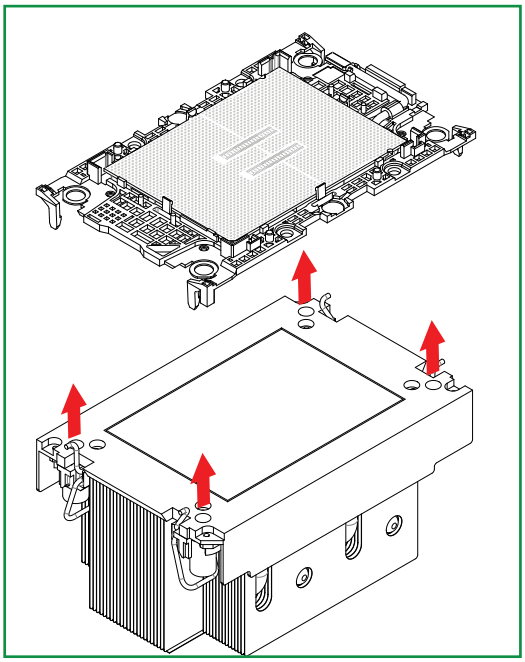


SP MCC Series

2U Heatsink (View of Component Side and Heatsink Bottom Side)



SP XCC Series

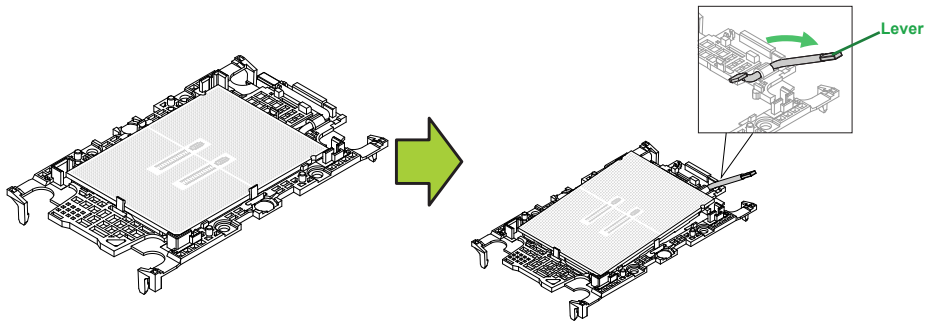


SP MCC Series

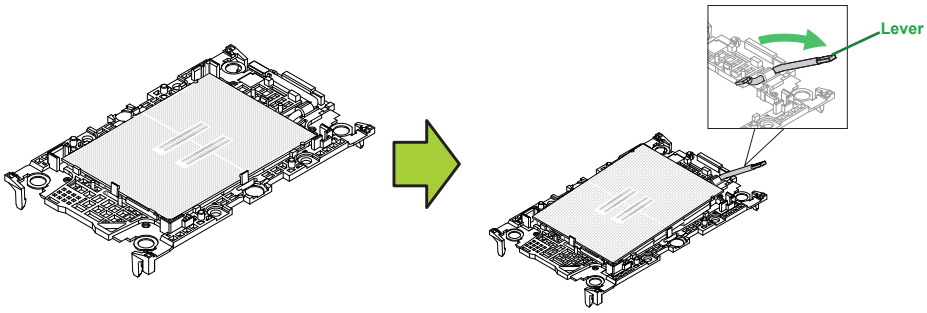
Removing the Processor from the Processor Carrier Assembly

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.



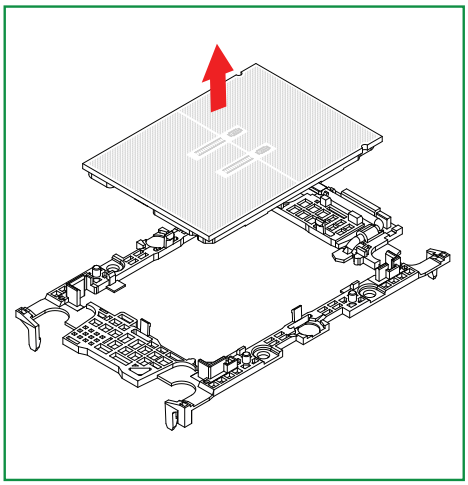
CPU Carrier Assembly (carrier E1A)



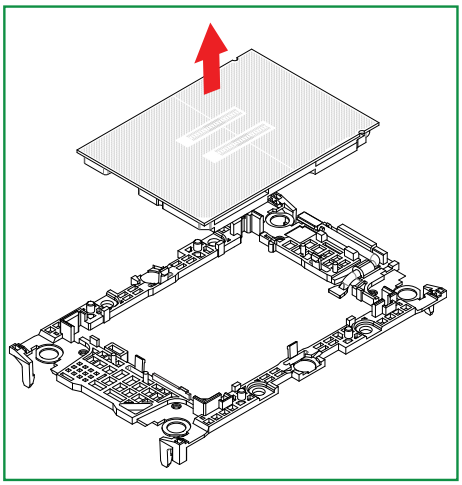
CPU Carrier Assembly (carrier E1B)

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 Series



SP MCC Series

3.5 Memory Support and Installation

This motherboard supports up to 16 TB 3DS RDIMM/RDIMM DDR5 ECC memory with speeds up to 4800 MT/s in 64 DIMM slots.

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

DDR5 Memory Support for 4th Gen Intel Xeon Scalable Processors

DDR5 Memory Support for the 4th Gen Intel Xeon Scalable Processors				
Type	**Ranks Per DIMM & Data Width (Stack)**	**DIMM Capacity (GB)**	**Speed (MT/s); Voltage (V); DIMM Per Channel (DPC)**	
			1 DPC (Note)	**2 DPC**
		16 Gb	**1.1V**	
RDIMM	SRx8 (RC D)	16 GB	4800	4400
	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)	2 H-128 GB 4 H-256 GB		
LRDIMM/LRDIMM-3DS	N/A	N/A	Not Supported	Not Supported

Note: 1 DPC applies to 1 SPC or 2 SPC implementations (SPC: Sockets Per Channel).

DDR5 Memory Population Table

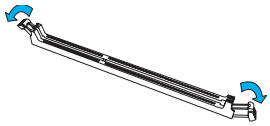
DDR5 Memory Population Table for X13QEH+ (with 64-DIMM Slots Supported)	
1 CPU:	***Memory Population Sequence***
1 CPU & 1 DIMM	P1-DIMMA1
1 CPU & 2 DIMMs	P1-DIMMA1/P1-DIMMG1
1 CPU & 4 DIMMs	P1-DIMMA1/P1-DIMMC1/P1-DIMME1/P1-DIMMG1
1 CPU & 6 DIMMs	P1-DIMMA1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1
1 CPU & 8 DIMMs	P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1
1 CPU & 12 DIMMs	P1-DIMMA1/P1-DIMMA2/P1-DIMMB1/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1
1 CPU & 16 DIMMs	P1-DIMMA1/P1-DIMMA2/P1-DIMMB1/P1-DIMMB2/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMMD2/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMF2/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1/P1-DIMMH2
2 CPUs:	***Memory Population Sequence***
2 CPUs & 2 DIMMs	**CPU1:** P1-DIMMA1 **CPU2:** P2-DIMMA1
2 CPUs & 4 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMG1
2 CPUs & 6 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMC1/P1-DIMME1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMG1
2 CPUs & 8 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMC1/P1-DIMME1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMC1/P2-DIMME1/P2-DIMMG1
2 CPUs & 10 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/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
2 CPUs & 14 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMG1
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
2 CPUs & 18 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMM2/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 20 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMM2/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 22 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMM2/P1-DIMMB1/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1
2 CPUs & 24 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMA2/P1-DIMMB1/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMC1/P2-DIMMC2/P2-DIMMD1/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMG1/P2-DIMMG2/P2-DIMMH1
2 CPUs & 32 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMA2/P1-DIMMB1/P1-DIMMB2/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMMD2/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMF2/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1/P1-DIMMH2 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMB2/P2-DIMMC1/P2-DIMMC2/P2-DIMMD1/P2-DIMMD2/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMF2/P2-DIMMG1/P2-DIMMG2/P2-DIMMH1/P2-DIMMH2
4 CPUs:	***Memory Population Sequence***
****4 CPUs & 4 DIMMs**	**CPU1:** P1-DIMMA1 **CPU2:** P2-DIMMA1 **CPU3:** P3-DIMMA1 **CPU4:** P4-DIMMA1

****4 CPUs & 8 DIMMs**	**CPU1:** P1-DIMMA1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMG1 **CPU3:** P3-DIMMA1/P3-DIMMG1 **CPU4:** P4-DIMMA1/P4-DIMMG1
4 CPUs & 12 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMC1/P1-DIMME1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMG1 **CPU3:** P3-DIMMA1/P3-DIMMC1/P3-DIMME1/P3-DIMMG1 **CPU4:** P4-DIMMA1/P4-DIMMG1
****4 CPUs & 16 DIMMs**	**CPU1:** P1-DIMMA1/P1-DIMMC1/P1-DIMME1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMC1/P2-DIMME1/P2-DIMMG1 **CPU3:** P3-DIMMA1/P3-DIMMC1/P3-DIMME1/P3-DIMMG1 **CPU4:** P4-DIMMA1/P4-DIMMC1/P4-DIMME1/P4-DIMMG1
4 CPUs & 20 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1 **CPU2:** P2-DIMMA1/P2-DIMMC1/P2-DIMME1/P2-DIMMG1 **CPU3:** P3-DIMMA1/P3-DIMMC1/P3-DIMMD1/P3-DIMME1/P3-DIMMF1/P3-DIMMG1 **CPU4:** P4-DIMMA1/P4-DIMMC1/P4-DIMME1/P4-DIMMG1
****4 CPUs & 24 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 **CPU3:** P3-DIMMA1/P3-DIMMC1/P3-DIMMD1/P3-DIMME1/P3-DIMMF1/P3-DIMMG1 **CPU4:** P4-DIMMA1/P4-DIMMC1/P4-DIMMD1/P4-DIMME1/P4-DIMMF1/P4-DIMMG1
4 CPUs & 28 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMG1 **CPU3:** P3-DIMMA1/P3-DIMMB1/P3-DIMMC1/P3-DIMMD1/P3-DIMME1/P3-DIMMF1/P3-DIMMG1/P3-DIMMH1 **CPU4:** P4-DIMMA1/P4-DIMMC1/P4-DIMMD1/P4-DIMME1/P4-DIMMF1/P4-DIMMG1
****4 CPUs & 32 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 **CPU3:** P3-DIMMA1/P3-DIMMB1/P3-DIMMC1/P3-DIMMD1/P3-DIMME1/P3-DIMMF1/P3-DIMMG1/P3-DIMMH1 **CPU4:** P4-DIMMA1/P4-DIMMB1/P4-DIMMC1/P4-DIMMD1/P4-DIMME1/P4-DIMMF1/P4-DIMMG1/P4-DIMMH1
4 CPUs & 36 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMM2/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 **CPU3:** P3-DIMMA1/P3-DIMM2/P3-DIMMB1/P3-DIMMC1/P3-DIMMD1/P3-DIMME1/P3-DIMME2/P3-DIMMF1/P3-DIMMG1/P3-DIMMH1 **CPU4:** P4-DIMMA1/P4-DIMMB1/P4-DIMMC1/P4-DIMMD1/P4-DIMME1/P4-DIMMF1/P4-DIMMG1/P4-DIMMH1
4 CPUs & 40 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMM2/P1-DIMMB1/P1-DIMMC1/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 **CPU3:** P3-DIMMA1/P3-DIMM2/P3-DIMMB1/P3-DIMMC1/P3-DIMMD1/P3-DIMME1/P3-DIMME2/P3-DIMMF1/P3-DIMMG1/P3-DIMMH1 **CPU4:** P4-DIMMA1/P4-DIMMA2/P4-DIMMB1/P4-DIMMC1/P4-DIMMD1/P4-DIMME1/P4-DIMME2/P4-DIMMF1/P4-DIMMG1/P4-DIMMH1
4 CPUs & 44 DIMMs	**CPU1:** P1-DIMMA1/P1-DIMM2/P1-DIMMB1/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMC1/P2-DIMMD1/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMG1/P2-DIMMH1 **CPU3:** P3-DIMMA1/P3-DIMM2/P3-DIMMB1/P3-DIMMC1/P3-DIMMC2/P3-DIMMD1/P3-DIMME1/P3-DIMME2/P3-DIMMF1/P3-DIMMG1/P3-DIMMG2/P3-DIMMH1 **CPU4:** P4-DIMMA1/P4-DIMMA2/P4-DIMMB1/P4-DIMMC1/P4-DIMMD1/P4-DIMME1/P4-DIMME2/P4-DIMMF1/P4-DIMMG1/P4-DIMMH1
****4 CPUs & 48 DIMMs**	**CPU1:** P1-DIMMA1/P1-DIMMA2/P1-DIMMB1/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMC1/P2-DIMMC2/P2-DIMMD1/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMG1/P2-DIMMG2/P2-DIMMH1 **CPU3:** P3-DIMMA1/P3-DIMMA2/P3-DIMMB1/P3-DIMMC1/P3-DIMMC2/P3-DIMMD1/P3-DIMME1/P3-DIMME2/P3-DIMMF1/P3-DIMMG1/P3-DIMMG2/P3-DIMMH1 **CPU4:** P4-DIMMA1/P4-DIMMA2/P4-DIMMB1/P4-DIMMC1/P4-DIMMC2/P4-DIMMD1/P4-DIMME1/P4-DIMME2/P4-DIMMF1/P4-DIMMG1/P4-DIMMG2/P4-DIMMH1
****4 CPUs & 64 DIMMs**	**CPU1:** P1-DIMMA1/P1-DIMMA2/P1-DIMMB1/P1-DIMMB2/P1-DIMMC1/P1-DIMMC2/P1-DIMMD1/P1-DIMMD2/P1-DIMME1/P1-DIMME2/P1-DIMMF1/P1-DIMMF2/P1-DIMMG1/P1-DIMMG2/P1-DIMMH1/P1-DIMMH2 **CPU2:** P2-DIMMA1/P2-DIMMA2/P2-DIMMB1/P2-DIMMB2/P2-DIMMC1/P2-DIMMC2/P2-DIMMD1/P2-DIMMD2/P2-DIMME1/P2-DIMME2/P2-DIMMF1/P2-DIMMF2/P2-DIMMG1/P2-DIMMG2/P2-DIMMH1/P2-DIMMH2 **CPU3:** P3-DIMMA1/P3-DIMMA2/P3-DIMMB1/P3-DIMMB2/P3-DIMMC1/P3-DIMMC2/P3-DIMMD1/P3-DIMMD2/P3-DIMME1/P3-DIMME2/P3-DIMMF1/P3-DIMMF2/P3-DIMMG1/P3-DIMMG2/P3-DIMMH1/P3-DIMMH2 **CPU4:** P4-DIMMA1/P4-DIMMA2/P4-DIMMB1/P4-DIMMB2/P4-DIMMC1/P4-DIMMC2/P4-DIMMD1/P4-DIMMD2/P4-DIMME1/P4-DIMME2/P4-DIMMF1/P4-DIMMF2/P4-DIMMG1/P4-DIMMG2/P4-DIMMH1/P4-DIMMH2

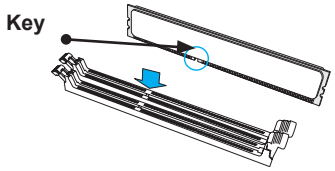
Note 1: ** This memory configuration is recommended by Supermicro for optimal memory performance. Please use this configuration to maximize your memory performance.

DIMM Installation

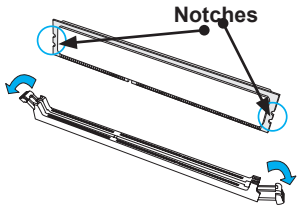
1. Insert the desired number of DIMMs into the slots based on the recommended DIMM population tables shown above.
2. Push the release tabs on both ends of the DIMM slot outwards to unlock it.



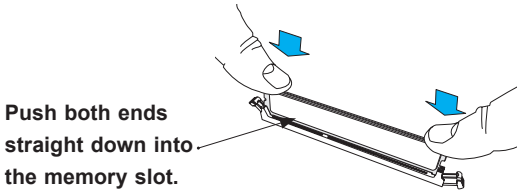
3. Align the key of the DIMM module with the receptive point on the memory slot.



4. Align the notches on both ends of the module with the receptive points on the ends of the slot.



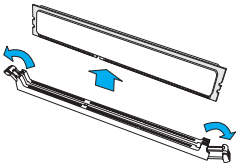
5. Push both ends of the module straight down into the slot until the module snaps into place.



6. Press the release tabs to the lock positions to secure the DIMM module into the slot.

DIMM Removal

Press both release tabs on the ends of the DIMM module to unlock it. Once the DIMM module is loose, remove it from the memory slot.



Warning! To avoid causing any damage to the DIMM module or the DIMM socket, do not use excessive force when pressing the release tabs on the ends of the DIMM socket. Handle DIMMs with care. Be aware and follow the ESD instructions given at he beginning of this chapter.

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.

Replacing the Battery

Begin by removing power from the system.

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

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

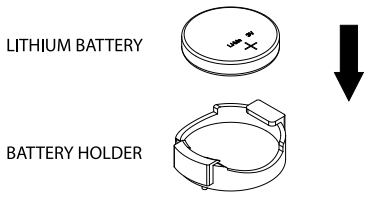


Figure 3-2. Installing the Onboard Battery

Warning: There is a danger of explosion if the onboard battery is installed upside down (which reverses its polarities). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032).

3.7 Storage Drives

The system supports 24 2.5" NVMe/SAS3/SATA3 drive bays. Four optional rear 2.5” SAS/SATA drive bays and two M.2 SATA3 slots are also supported. For compatible storage drives, see the motherboard page.

The drives are mounted in toolless drive carriers that simplify their removal from the chassis. These carriers also help promote proper airflow.

Note: Enterprise level drives are recommended for use in Supermicro chassis and servers. For information on recommended drives, visit the Supermicro website product pages at https://www.supermicro.com/products/nfo/Ultra.cfm.

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.

Installing Drives

The front of the system has 24 drive bays that support NVMe5, SAS3 and SATA3 drives.

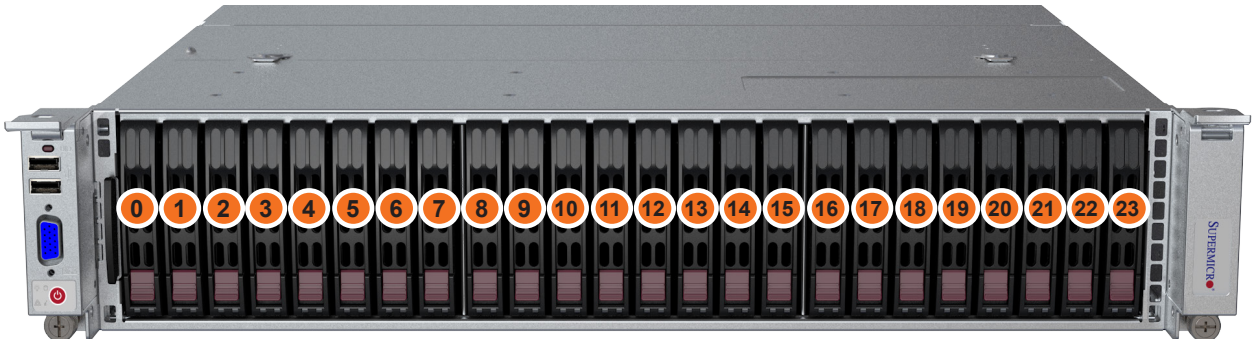


Figure 3-3. Logical Drive Numbers

Removing a Hot-Swap Drive Carrier from the Chassis

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

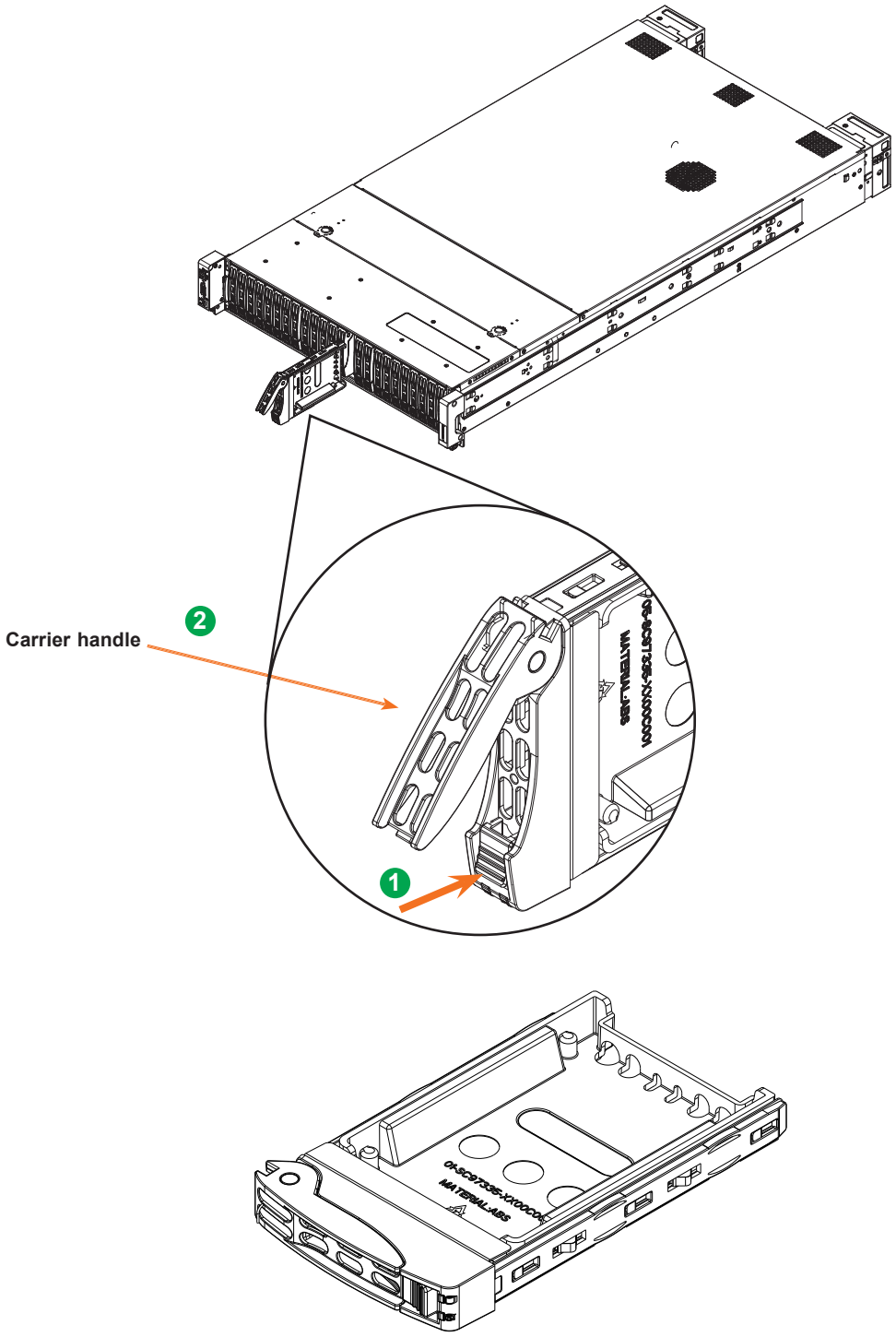


Figure 3-4. Removing a Drive Carrier

Installing a Storage Drive into a Drive Carrier

1. Remove the dummy drive, which comes pre-installed in the drive carrier. Pull out the two locking clasps on the left outside of the carrier and lift out the dummy drive.
2. Position the drive above the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

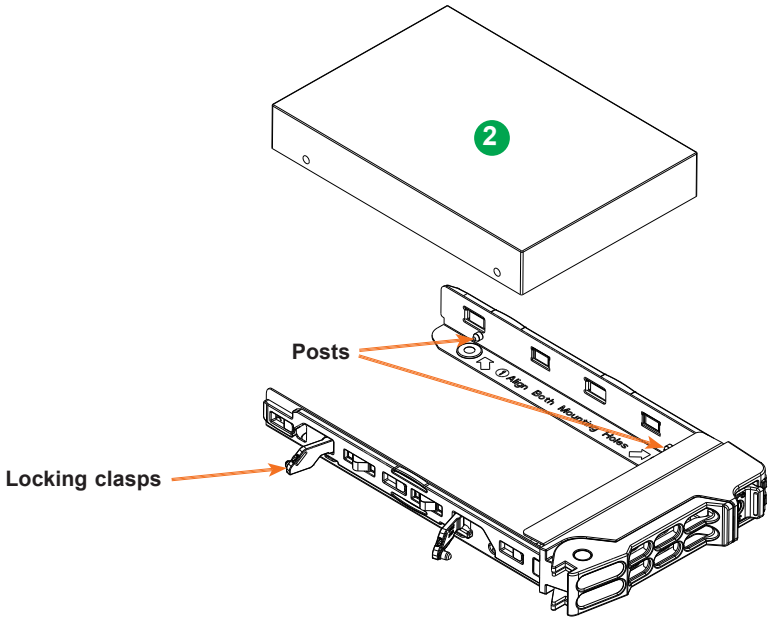


Figure 3-5. Installing a Drive into a Carrier

3. Tilt the drive to insert it onto the two posts inside of the carrier.
4. Pull out the two spring locking clasps and allow the drive to sit fully in the carrier, then close them to secure the drive.
5. Insert the drive carrier into its bay, keeping the release button on the bottom. When the carrier reaches the rear of the bay, the release handle will retract.
6. Push the handle in until it clicks into its locked position.

Note: Enterprise level drives are recommended for use in Supermicro chassis and servers.

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 VROC appendix in this manual instead.

Ejecting a Drive

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

Note that *Device* and *Group* are categorized by the CPLD design architecture. The SYS-241E-TNRTTP server has one Device and one Group.

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

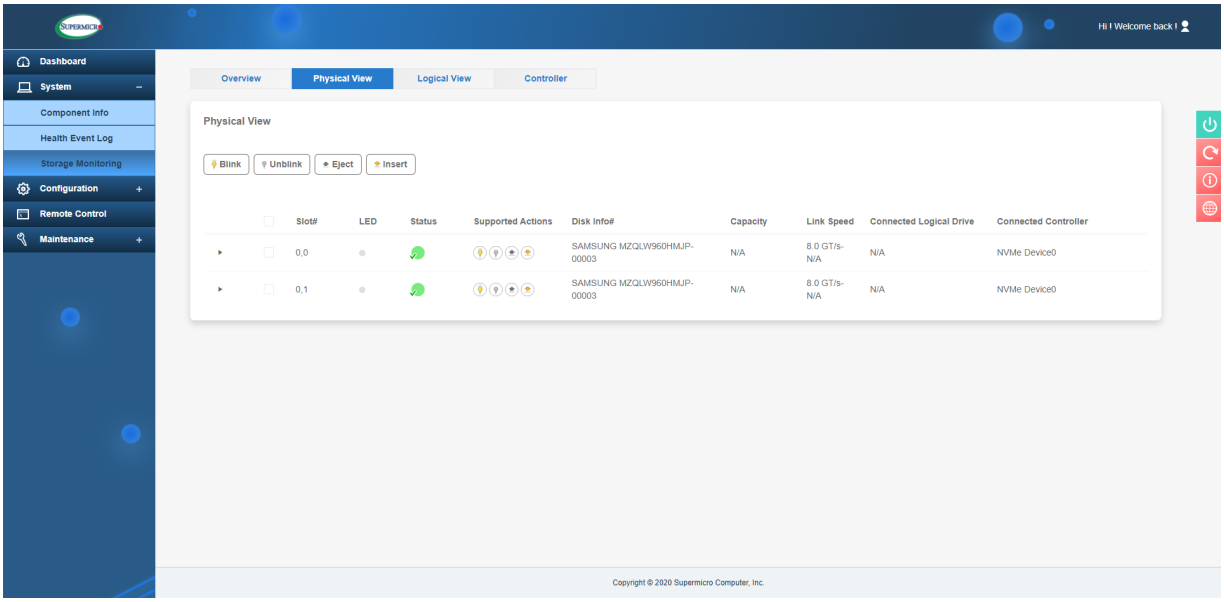


Figure 3-6. BMC Screenshot

Replacing the Drive

1. Insert the replacement drive.
2. **BMC > System > Storage Monitor > 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.

Installing M.2 Solid State Drives

The X13QEH+ supports M.2 SSDs with a PCIe 3.0 M.2 slot (PCIe M.2) and two M.2-HC S-SATA slots (JMD1/JMD2), which support PCIe 3.0 x4 NVMe/SATA SSDs. These M.2 slots support 2280 and 22110 form factors via SlimSAS x8 cables.

Caution: DO NOT perform this service with the system mounted inside the rack.

Caution: The handles used for pulling the system from the rack are not intended to be used to pick up or lift the system.

Installing M.2 Drives

1. Power down the system as described in Section 3.1.
2. Remove the system from the rack and place it on a bench, then remove the cover as described in Section 3.2.
3. Begin by removing the riser brackets from the chassis.
4. Insert the M.2 sideways into the connector so that it lays flat, then secure it to the bracket with the plastic clip.
5. Repeat as necessary for more M.2 drives.
6. With the drives installed and secured to the bracket, replace the bracket back into the chassis as before.
7. Finish by replacing the cover and restoring power to the system.

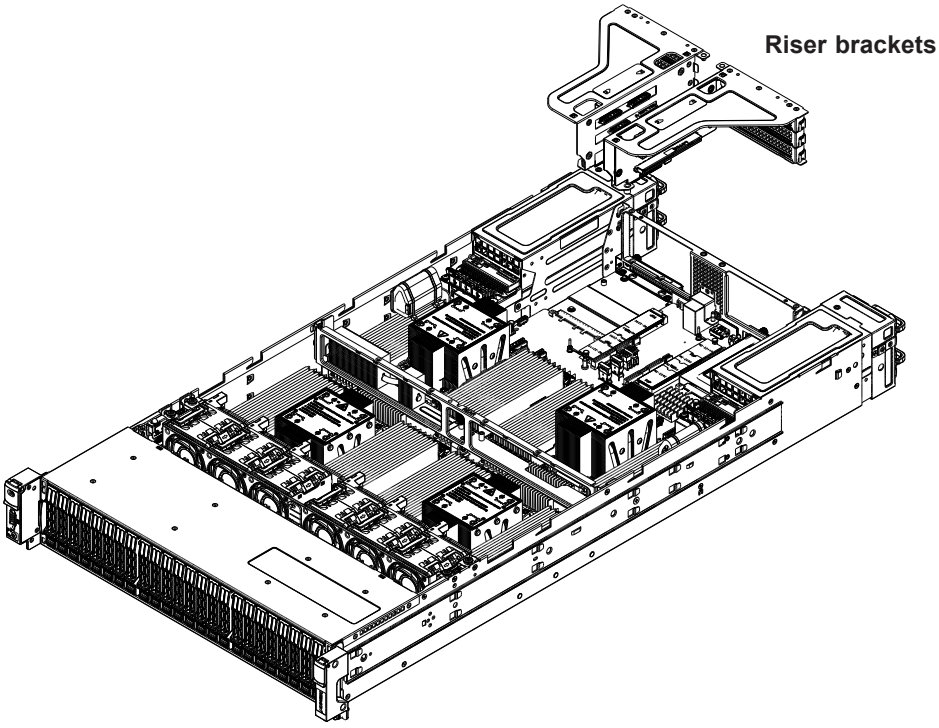


Figure 3-7. Installing an M.2 SSD

3.8 System Cooling

Fans

Six 6-cm heavy duty fans provide the cooling for the system. Fans are hot-swap and can be replaced without powering down the system. The electrical connections are automatically made when a fan is inserted into its slot.

Ensure the chassis cover is only off for a short time and makes a good seal when replaced for the cooling air to circulate properly. Fan speed is controlled by system temperature via BMC. If a fan fails, the remaining fans will ramp up to full speed. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan).

Changing a System Fan

1. Determine which fan has failed using BMC if possible. If not, remove the chassis cover while the power is on and examine the fans to determine which one has failed.
2. Pull the system partially out from the rack.
3. With the top cover partially pushed back, depress the release buttons on the front section of the top cover to swing it open on its hinges.
4. Locate the failed fan and lift the fan up and out of the chassis.
5. To install a fan, push it into the proper location until it clicks.
6. Finish by fully closing the cover and pushing the system back into the rack.

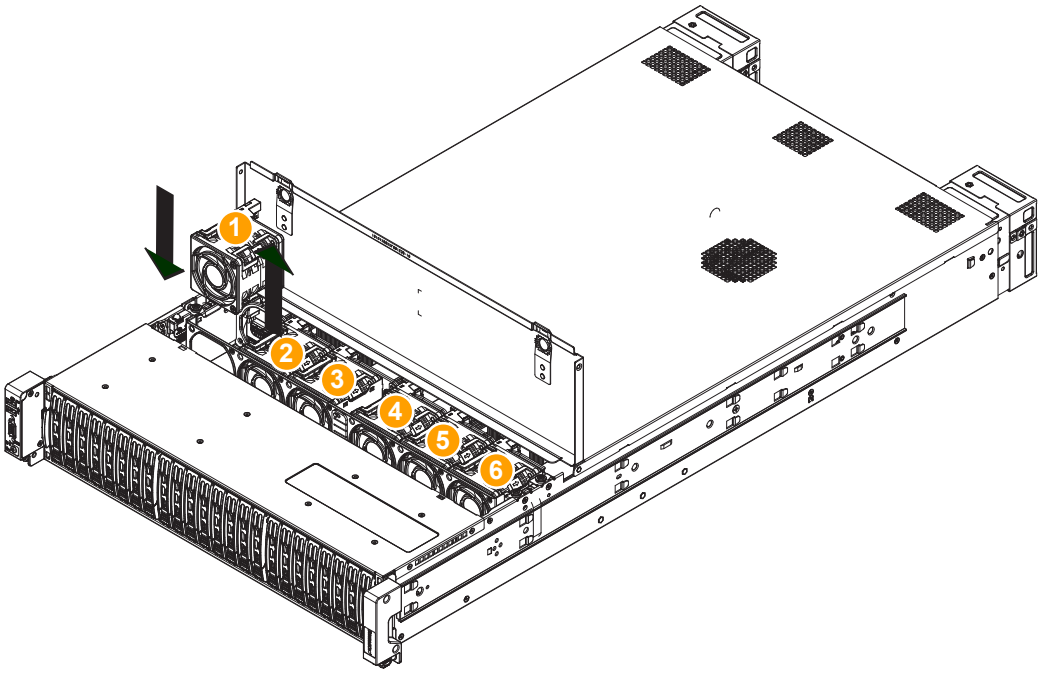


Figure 3-8. Installing a Fan (positions indicated)

Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency. The SYS-241E-TNRTTP includes three different sets of air shrouds.

Caution: DO NOT perform this service with the system mounted inside the rack.

Air Shroud for Memory (CPU1/2)

Four air shrouds cool the DIMM slots controlled by CPUs 1 and 2 (see figure below).

1. Power down the system as described in Section 3.1.
2. Remove the system from the rack and place it on a bench, then remove the cover as described in Section 3.2.
3. Place each air shroud over eight DIMM slots at a time for both CPU1 and CPU2-controlled DIMM slots, as illustrated below.
4. Close the cover and push the system back into the rack.

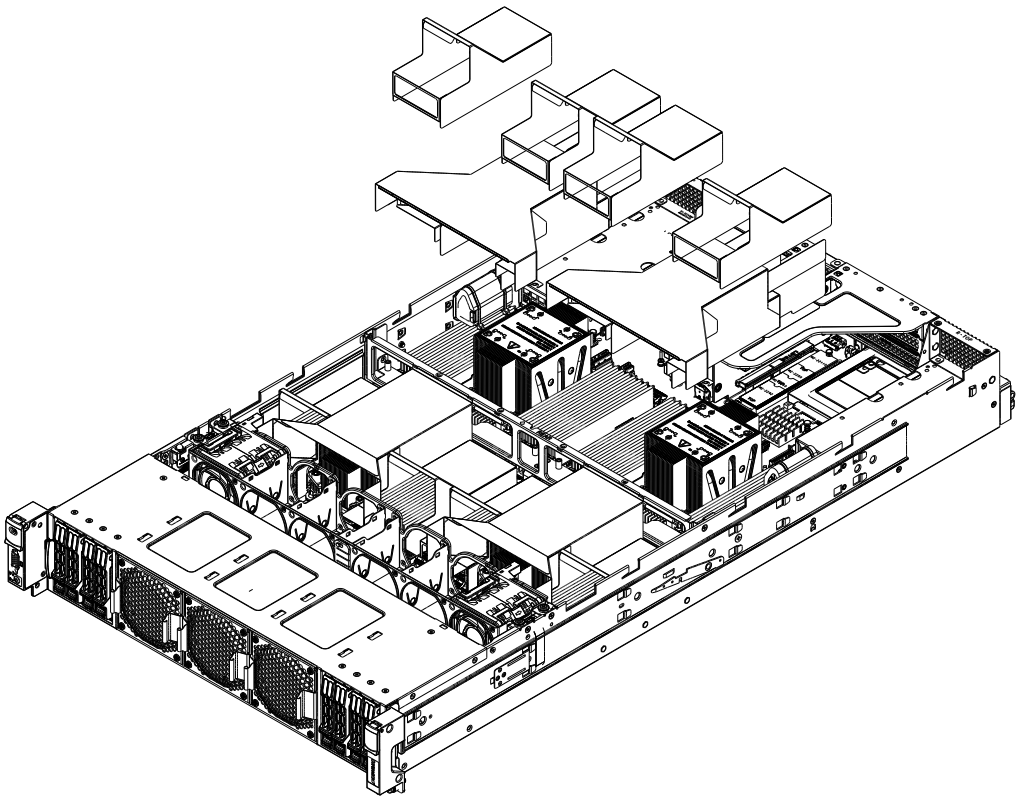


Figure 3-9. Installing Air Shrouds for CPU1/2 DIMMs

Caution: The handles used for pulling the system from the rack are not intended to be used to pick up or lift the system.

Air Shroud for Memory (CPU3/4)

Four air shrouds cool the DIMM slots controlled by CPUs 3 and 4 (see figure below).

Caution: DO NOT perform this service with the system mounted inside the rack.

1. Power down the system as described in Section 3.1.
2. Remove the system from the rack and place it on a bench, then remove the cover as described in Section 3.2.
3. Place each air shroud over six DIMM slots at a time for both CPU3 and CPU4-controlled DIMM slots, as illustrated below. Close the cover and push the system back into the rack.

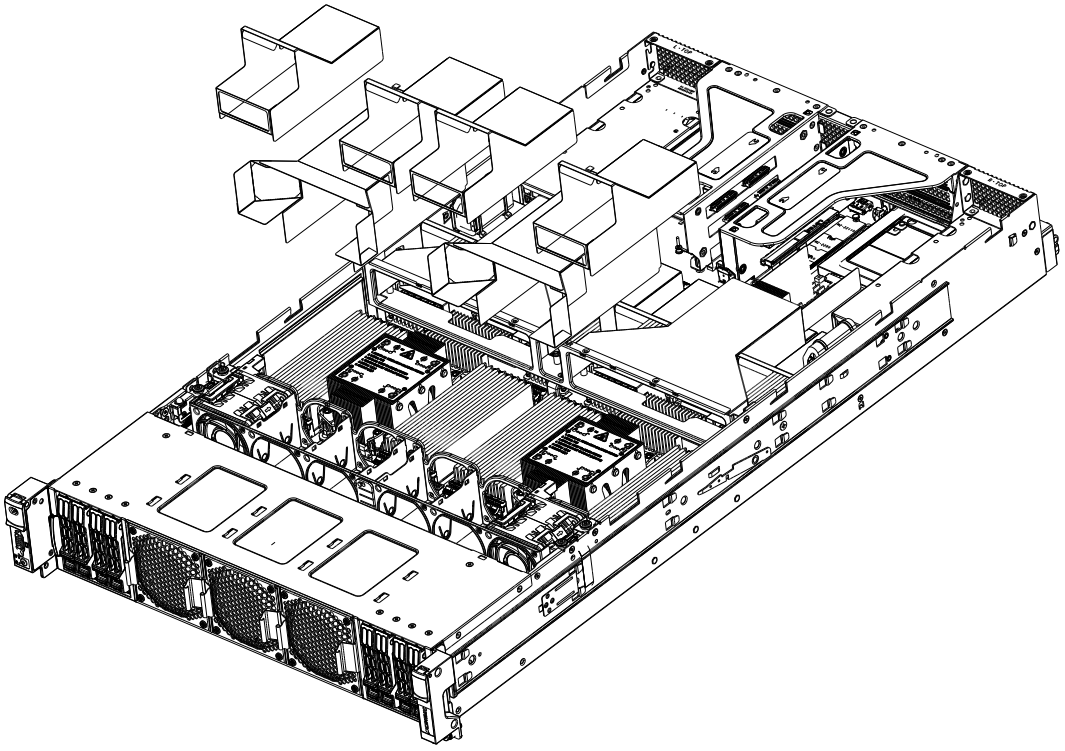


Figure 3-10. Installing Air Shrouds for CPU3/4 DIMMs

Caution: The handles used for pulling the system from the rack are not intended to be used to pick up or lift the system.

3.9 Expansion Cards

The SYS-241E-TNRTTP includes two riser cards to support the use of expansion (add-on) cards.

Caution: DO NOT perform this service with the system mounted inside the rack.

Installing Expansion Cards

1. Power down the system as described in Section 3.1.
2. Remove the system from the rack and place it on a bench, then remove the cover as described in Section 3.2.
3. Pull up the riser card brackets.
4. Remove the blank PCI shield from the bracket.
5. Slide the expansion card into the open slot while plugging the expansion card into the riser card.

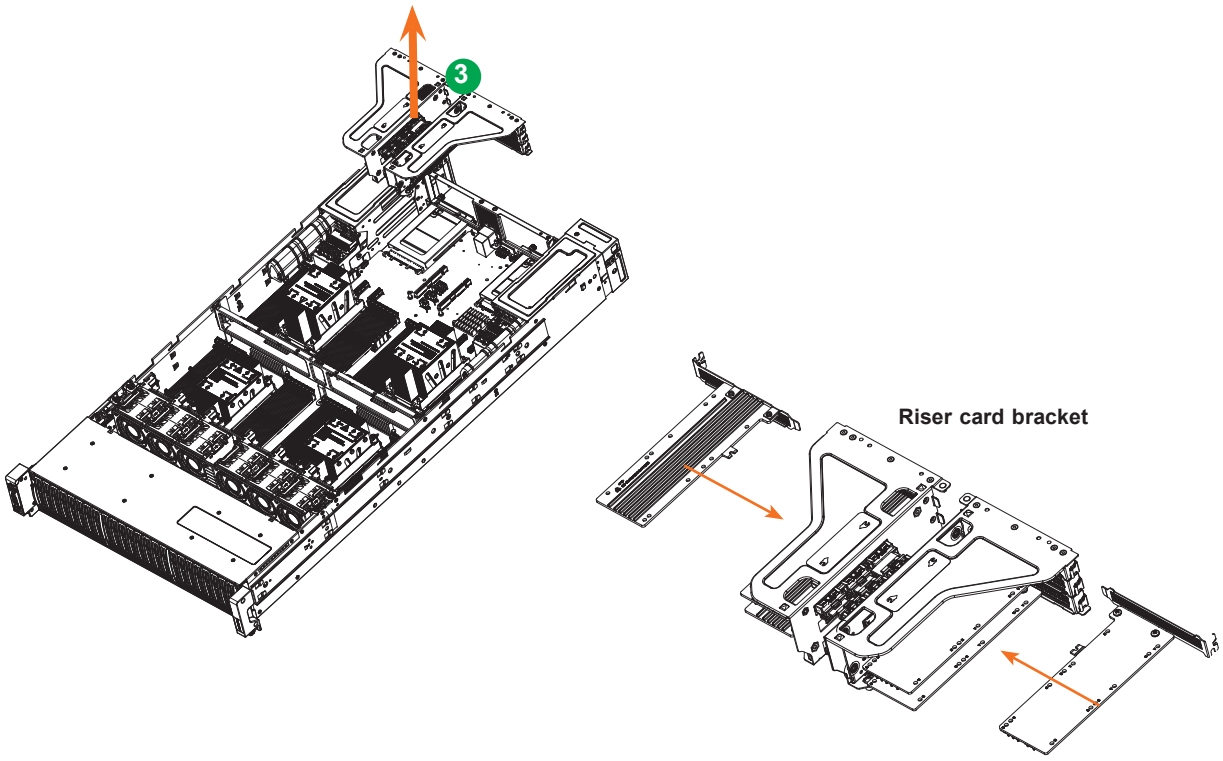


Figure 3-11. Installing PCIe Expansion Cards

3.10 Power Supply

The system includes four hot-plug, 1600 W power supply modules. These modules will automatically sense and operate at an input voltage between 100 V to 240 V. Note that different input voltages will result in different maximum power output levels.

In the event of a power module failure, the other power module will continue to power the system on its own. Failed power supply modules can be replaced without powering-down the system. Replacement modules can be ordered directly from Supermicro.

An amber light on the power supply is illuminated when the power is switched off. A green light indicates that the power supply is operating.

Replacing the Power Supply

1. Unplug the AC power cord from the failed power supply module.
2. Push and hold the release tab on the back of the power supply.
3. Grasp the handle of the power supply and pull it out of its bay.
4. Push the new power supply module into the power bay until it clicks into the locked position.
5. Plug the AC power cord back into the power supply module.

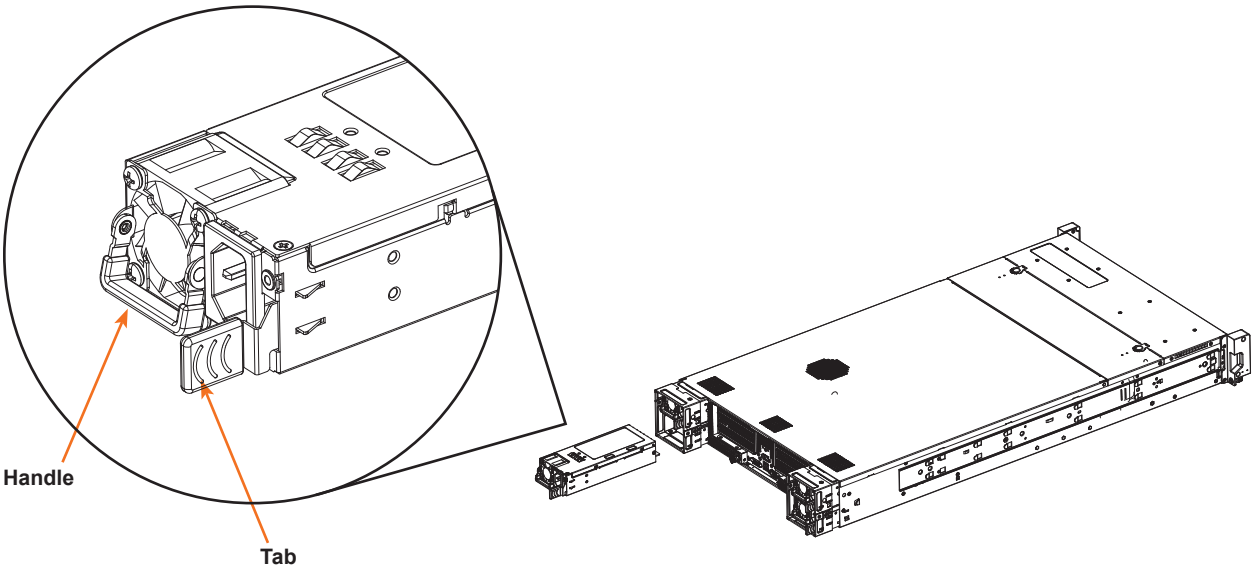


Figure 3-12. Installing a Power Supply Module

3.11 Cable Routing Diagram

Refer to the diagram below for a representation of how the main cables are routed throughout the system. When disconnecting cables to add or replace components, refer to this diagram when adding or replacing components so you can reroute them in the same manner. Proper cable routing is important in maintaining proper airflow through the system.

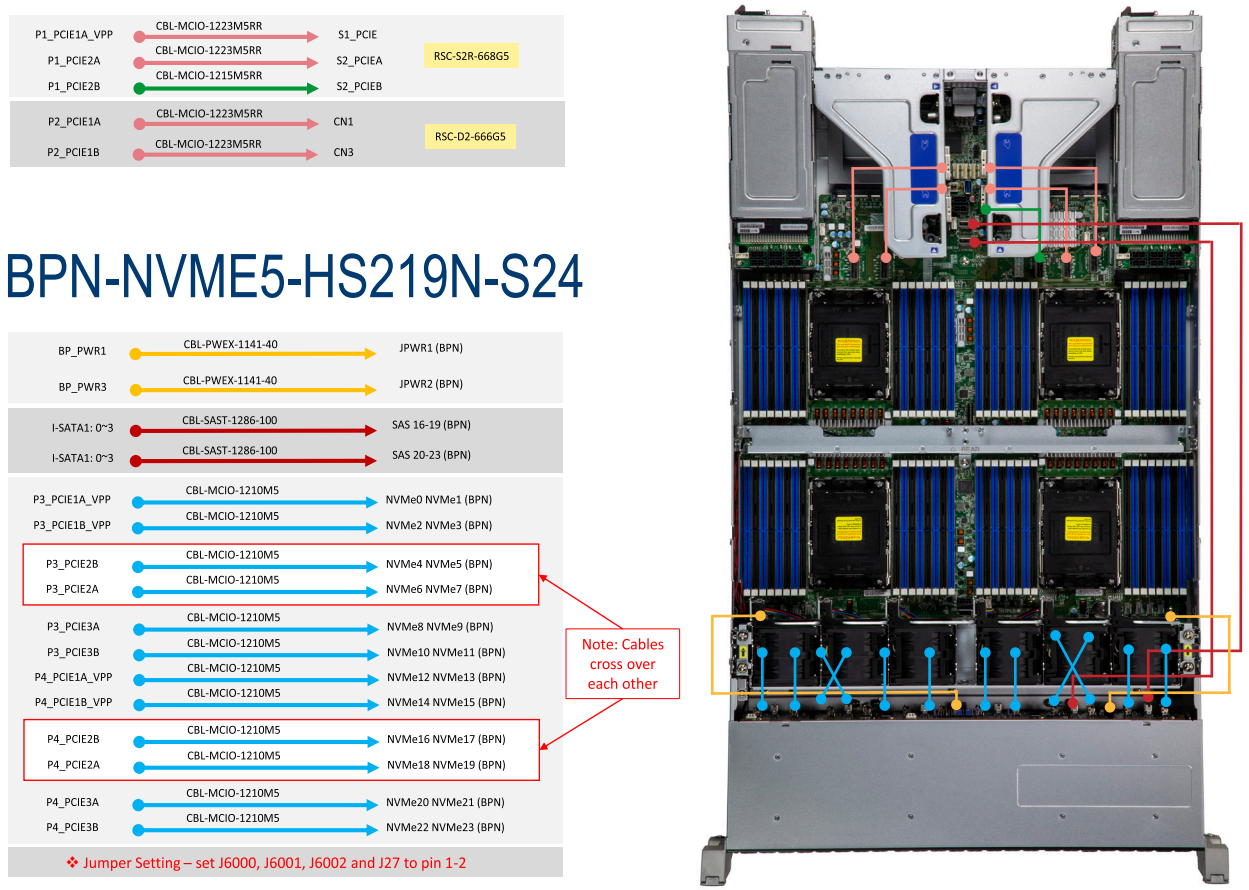


Figure 3-13. Cable Routing Diagram

3.12 BMC

The BMC can be reset using the button on the front control panel or on the chassis rear.

- Reset—Press and hold the button. After six seconds, the LED blinks at 2 Hz. The BMC resets and the reset duration is approximately 250 ms. Then the BMC starts to boot.
- Restore factory default configuration—Hold the button for twelve seconds. The LED blinks at 4 Hz while defaults are configured.
- Firmware update—the UID LED blinks at 10 Hz during a firmware update.

BMC Reset Options	
Event	**LED (Green)**
Reset	Blinks at 2 Hz
Restore Defaults	Blinks at 4 Hz
Update	Blinks at 10 Hz

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 Supermicro proprietary power supply units (PSU1/PSU2/PSU3/PSU4) provide main power to your system. Two 8-pin power connectors (JPGW1/JPGW2) are used for GPU devices, and additional three 8-pin connectors (JPWR7-JPWR9) are used to provide power to backplane devices. In addition, two 4-pin power connectors (JPWR4/JPWR5) are also used for backplane devices. All these power connectors meet the ATX SSI EPS 12 V specification and must be connected to your power supply to provide adequate power to your system.

Important: To provide adequate power to your system, be sure to connect the main power supplies (PSU1/PSU2/PSU3/PSU4), five 8-pin PWR connectors (JPGW1/JPGW2/JPWR7/JPWR8/JPWR9), and the 4-pin power connectors (JPWR4/JPWR5) to the power supply. Failure to do so may void the manufacturer warranty on your power supply and motherboard.

Power Supply Pin Definitions

Pin#	Definition
1 - 4	Ground
5 - 8	+12 V

4.2 Headers and Connectors

Fan Headers

There are eight 4-pin fan headers (FAN1 - FAN8) used for your system cooling fans. Additionally, four 6-pin fan headers (FAN9 - FAN 12), located at the rear side of the chassis, to provide cooling for backplane components. JFAN1 also includes a Fan_PMB header for I2C temperature sensor cooling. Fan speed control for these fans is supported by Thermal Management via BMC interface.

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 drives. It allows the motherboard to deny access if the TPM, which is associated with the 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.

Note: For TPM support, an optional part is needed. Contact Supermicro Tech Support for more information.

Trusted Platform Module Header Pin Definitions

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

VROC RAID Key Header

An Intel 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.

Note: 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/.

Intel VROC Key Pin Definitions

Pin#	Definition
1	Ground
2	3.3 V Standby
3	Ground
4	PCH RAID Key

BMC SMB I²C Header

A System Management Bus I²C header for the BMC is located at JIPMB1. Connect the appropriate cable here to use the 4-pin BMC external I²C connection on your system.

SMB I²C for 4U Power Distribution Board (PDB) Headers

Two System Management Bus I²C headers for 4U Power Distribution Board headers are located at J47 (PBD_SB1) and J26 (PBD_SB2). Connect a cable to J47 for Power Distribution Board 1 support, and connect a cable to J26 for Power Distribution Board 2 support.

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the motherboard. Attach the appropriate cable from the chassis to inform you when the chassis is opened. Refer to the table below for pin definitions.

Chassis Intrusion Pin Definitions

Pin#	Definition
1	Intrusion Input
2	Ground

JMD1/JMD2 Slots

Two hybrid M.2 slots are located at JMD1 and JMD2. JMD1 supports M.2 SATA 2:0/PCIe 3.0 x4 hybrid slot, and JMD2 supports M.2 SATA 2:4/PCIe 3.0 x2 hybrid slot. Both JMD1 and JMD2 slots support PCIe 3.0 devices in the 2280/22110 form factors. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency.

SATA 1.0 and SATA 3.0 Ports

Two SATA headers, supported by Intel PCH, are located at JS1 and JS2 on the motherboard. JS1 supports I-SATA 1.0 Port 0-Port 3, and JS2 supports I-SATA 3.0 Port 0-Port 3. Connect proper SATA cables to JS1 and JS2 to use SATA 1.0 and 3.0 connections.

4.3 Input/Output Ports

See the figures below for the locations and descriptions of the I/O ports on the rear of the motherboard.

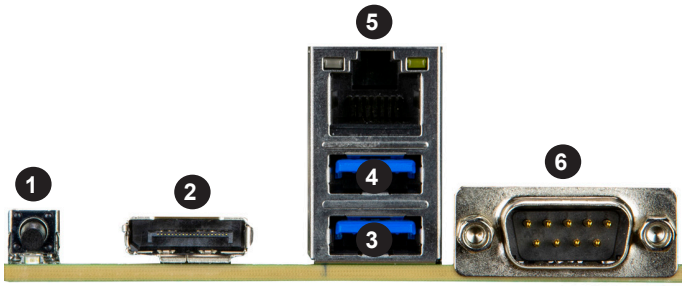


Figure 4-1. Rear I/O Ports

Rear I/O Ports	
#	**Description**
1	UID Switch/LED
2	DP1
3	USB 0 (3.0)
4	USB 1 (3.0)
5	BMC LAN (IPMI LAN)
6	COM1

I/O Device DisplayPort

An I/O Device DisplayPort (DP) is located at JDP1 on the rear I/O panel. This display port provides visual display support for your I/O devices installed on the rear I/O panel.

Universal Serial Bus (USB) Ports and Headers

There are two USB 3.0 ports (USB0/1), located at JUSBRJ45, on the rear I/O panel. Type A USB 3.0 connector (USB 2) is located at JUSB1 for front access. These USB connections can be used for USB support via USB cables (not included).

Rear I/O Panel USB 2/3 (3.0) 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

Type A USB 6 (3.0) Pin Definitions			
Pin#	**Definition**	**Pin#**	**Definition**
1	VBUS	5	SSRX-
2	USB_N	6	SSRX+
3	USB_P	7	GND
4	Ground	8	SSTX-
		9	SSTX+

BMC LAN

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

COM Port

A COM (communication) port that supports serial link interface is on the motherboard. COM1 (JCOM1) is located on the rear I/O panel.

UID (Unit Idenfication)/BMC Reset Switch and LED Indicators

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

When functioning as a BMC reset switch, JUIDB1 will trigger a cold reboot when the user presses and holds the switch for 6 seconds. It will also restore the BMC to the manufacturer's default setting when the user presses and holds the switch for 12 seconds.

When functioning as a UID LED switch, JUIDB1 will turn both rear UID LED (LED1) and front UID LED (Pin 2 of FP1) on and off when the user presses the switch on/off.

To achieve these dual purposes, the UID LED/BMC Reset switch works in conjunction with the BMC Heartbeat LED (LED3) and front/rear UID LEDs. Please note that UID can also be triggered via BMC on the motherboard. For details on the UID LEDs and BMC LEDs, refer to the tables below. Also, refer to the BMC User's Guide posted on our website at http://www.supermicro.com for more information on BMC.

UID/BMC Reset Switch (JUIDB1)
Features & Settings

When Used as a UID LED Switch			When Used as a BMC Reset Switch		
Work w/Rear UID LED (LED1) & Front UID LED (FP1: Pin 2)			**Work with BMC Heartbeat LED (LED3)**		
Rear UID LED	LED1	Blue: Unit identified	BMC Heartbeat LED	LED3	Green Blinking: BMC Normal
Front UID LED	Pin 2 of FP1	Blue: Unit identified	BMC Reset: Press & hold the switch (JUIDB1) 6 seconds	LED3: Solid green: during reboot	
Press the switch (JUIDB1) to turn both rear and front UID LED indicators on and off;				Triggering a cold reboot; LED: solid green on during cold reboot	
			BMC Reset: Press & hold the switch (JUIDB1) 12 seconds	LED3: Solid green: during BMC reset	
				BMC: Reset to the manufacturer's default; LED solid on during BMC Reset	

UID/BMC Reset Switch (JUIDB1)
Pin Definitions

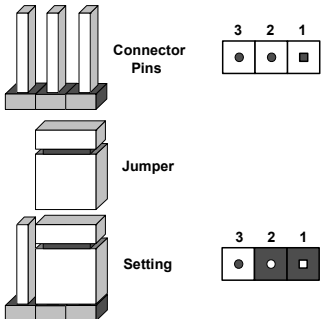
Pin#	Definition
1	Ground
2	Ground
3	Button In
4	Button In

4.4 Jumpers

Explanation of Jumpers

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

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



CMOS Clear

JBT1 is used to clear CMOS, 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 with a metal object such as a small screwdriver for at least four seconds.
4. Remove the screwdriver (or shorting device).
5. Replace the cover, reconnect the power cord(s), and power on the system.

Notes: Clearing CMOS will also clear all passwords. Do not use the PW_ON connector to clear CMOS.

Power Button and Front UID Button Select Jumper

Jumper JRU1 is used to configure Pin 2 of Front Control Panel header 1 (FP1) to function as a Power button or as the Front UID button. To set Pin 2 of FP1 for Front UID use in a chassis that supports front UID connection, close Pin 1 and Pin 2 of Jumper JRU1. To set Pin 2 of FP1 for Power Signal use, keep jumper JRU1 open. Please refer to the table below for JRU1 settings.

Front UID Button/Power Button Select Jumper (JRU1) Jumper Settings	
State	**Description**
Close Pin 1 and Pin 2 of JRU1	Pin 2 of FP1: used for Front UID button **(Default)**
Keep Pin 1 and Pin 2 of JRU1 Open	Pin 2 of FP1: used for system reset with front UID button

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

Video Display Enable

Jumper JPG1 is used to enable or disable the onboard VGA connector. The default setting is 1-2 to enable the connection. See the table below for jumper settings.

Video Display Enable Jumper Settings (JPG1)	
Jumper Setting	**Definition**
Pins 1-2	Video Display Enabled **(Default)**
Pins 2-3	Video Display Disabled

BIOS Recovery

Use Jumpers JBR1 and JBR2 to reset the BIOS settings. Resetting BIOS settings is not recommended unless you are experiencing difficulties with BIOS settings. See the table below for jumper settings.

BIOS Reset Jumpers (JBR1/JBR2) Jumper Settings	
Jumper Setting	**Definition**
Pins 1-2	Normal **(Default)**
Pins 2-3	BIOS Reset

Storage Backplane (BP) ID Jumpers

Two storage backplane ID jumpers (J145/J146) allow the user to change the storage backplane settings for different storage device support. When both J145 and J146 are closed, the backplane supports 4 x2 storage devices (default). Refer to the table for more information.

Storage Backplane (BP) ID Jumpers (J145/J146) Jumper Settings		
J145	**J146**	**Storage Backplane**
Open	Open	1 x24 drive
Open	Closed	Reserve
Closed	Open	Reserve
Closed	Closed	4 x2 drives **(Default)**

4.5 LED Indicators

BMC LAN LEDs

A dedicated BMC LAN connection is provided on the rear I/O panel of the motherboard. The LED on the right side of the BMC LAN 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 LED Status		
	Color/State	**Definition**
Link (left)	Green: Solid Amber: Solid	100 Mbps 1 Gbps
Activity (Right)	Amber: Blinking	Active

Unit ID LED

The front UID-LED indicator is located at (LED1). This UID indicator provides easy identification of a system that may need service.

UID LED (LED1) LED Status	
LED Color	**Definition**
Blue: On	System Identified

Onboard Power LED

The Onboard Power LED (LEDPWR) is located at LED2 on the motherboard. When this LED is on, the system power is on. Be sure to turn off the system power and unplug the power cords before removing or installing components. Refer to the table below for more information.

Onboard Power LED Indicator (LED2) LED Status	
LED Color	**Definition**
Off	System Power Off (power cable not connected)
Green	System Power On

BMC Heartbeat LED

A BMC Heartbeat LED is located at LED3 on the motherboard. When LED3 is blinking green, the BMC is functioning normally.

BMC Heartbeat LED Indicator (LED3) LED Status	
LED Color	**Definition**
Green: Blinking	BMC Normal

CPU Power Status LED Indicators

CPU Power Status LED indicators are located at LED4, LED5, LED6, and LED7. When a CPU power supply fails, the corresponding Power Status LED will turn solid red. Refer to the table below for more details.

CPU Power Status LED Indicators (LED4, LED5, LED6, LED7) LED Status		
LED#	**Color**	**Definition**
LED4	Solid Red	CPU1 Power Failure
LED5	Solid Red	CPU2 Power Failure
LED6	Solid Red	CPU3 Power Failure
LED7	Solid Red	CPU4 Power Failure

4.6 Front Control Panel

There are two Front Control Panel headers located on this motherboard. Front Control Panel Header 1, located at FP1, contains header pins for various buttons and LED indications with I²C support for front access. Front Control Panel Header 2, located at FP2, provides additional functions, including USB and VGA support to the system. These Front Control Panel headers are designed specifically for use with Supermicro chassis.

1. Front Control Panel Header with I²C (FP1)

Pin Definitions of FP1 (JF1)

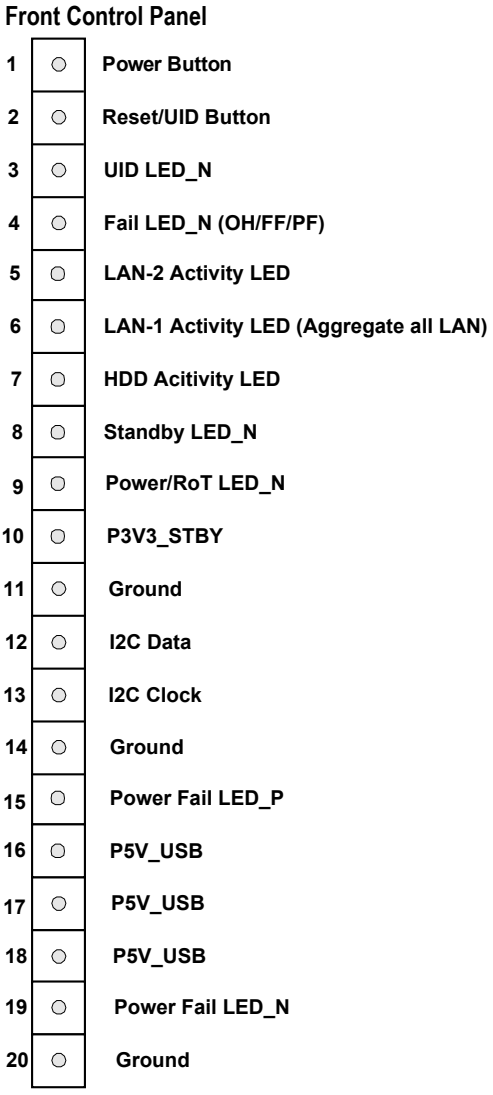


Figure 4-2. FP1 (JF1) Header Pins

Power On and BMC/BIOS Status LED Button

The Power On and BMC/BIOS Status LED button is located on Pin 1 of Front Control Panel Header 1 (FP1). Momentarily contacting Pin 1 of FP1 will power on/off the system or display BMC/BIOS status. Refer to the table below for more information.

Power Button BMC/BIOS Status LED Indicator	
Status	**Event**
Green: solid on	System power on
BMC/BIOS blinking green at 4 Hz	BMC/BIOS checking
BIOS blinking green at 4 Hz	BIOS recovery/update in progress
BMC blinking red x2 (2 blinks red) at 4 Hz, 1 pause at 2 Hz (on-on-off-off)	BMC recovery/update in progress
BMC/BIOS blinking green at 1 Hz	Flash not detected or golden image checking failure

BMC Reset Button/Front UID Switch

The BMC Reset button/Front UID switch connection is on Pin 2 of FP1, and it is used in conjunction with the JRU1 Reset button/UID switch select jumper. Close Pin 1 and Pin 2 of jumper JRU1 to configure Pin 2 of FP1 for front UID switch use in a chassis that supports front UID connection. To set Pin 2 of FP1 for BMC Reset, close Pin 3 and Pin 4 of jumper JRU1.

Front UID Switch/Reset Button Select Jumper (JRU1) Jumper Settings	
State	**Description**
Close Pin 1 and Pin 2 of JRU1	Pin 2 of FP1: used for front UID switch support
Close Pin 3 and Pin 4 of JRU1	Pin 2 of FP1: used for BMC Reset support

UID LED

The unit identifier LED connection is located on Pin 3 of FP1.

Fail LED (Information LED for OH/FF/PF)

The Fail LED (Information LED for OH/Fan Fail/PWR Fail) connection is located on Pin 4 of FP1. This LED provides warnings of overheating, power failure, or fan failure. See the table below for FP1 pin definitions.

Fail LED (Information LED) (OH/Fan Fail/PWR Fail) LED States	
Status	**Description**
Solid red (on)	An overheat condition has occurred.
Blinking red (1 Hz)	Fan failure: check for an inoperative fan.
Blinking red (0.25 Hz)	Power failure: check for a non-operational power supply
Blinking red (10 Hz) (FP red LED)	CPLD recovery mode error(s)
Solid blue	UID has been activated locally. Use this function to locate a unit in a rack mount environment that might be in need of service.
Blinking blue (1 Hz)	Local UID has been activated locally on. Use this function to identify a unit that might be in need of service.
BIOS/BMC blinking blue (10 Hz)	BIOS/BMC: recovery and/or update in progress
Red Info LED blinking (10 Hz) and MB UID LED blue blinking (10 Hz)	CPLD: recovery and/or update in progress

LAN1/LAN2 (NIC1/NIC2)

The NIC (Network Interface Controller) LED connection for LAN Port 1 is located on Pin 6 of FP1, and LAN Port 2 is on Pin 5. See the table below for FP1 pin definitions.

LAN1/LAN2 LED LED States	
Color	**State**
NIC 2: Blinking green	LAN 2: Active
NIC 1: Blinking green	LAN 1: Active

Drive Activity LED

The drive activity LED connection is located on Pin 7 of FP1. When this LED is blinking green, it indicates drive activity. Refer to the table below.

Drive Activity LED LED State	
Color	**State**
Blinking Green	Drive Active

Standby Power LED

The LED indicator for standby power is located on Pin 8 of FP1. If this LED is on, standby power is on.

RoT (Root of Trust) Power LED

The Power LED for RoT (Root of Trust) connection is located on Pin 9 of FP1. If this LED is on, power for the RoT chip is on.

Standby Power

A Standby Power (I^2C) connection is located on Pin 10 - Pin 14 of FP1 to provide power to the system when it is in standby mode. Refer to the table below for pin definitions.

3.3 V Standby PWR Pin Definitions

Pin#	Definition
10	P3V3 Standby
11	Ground
12	I^2C Data
13	I^2C Clock
14	Ground

Power Fail LED Indicators

Power Failure LED Indicators are located on Pin 15 and Pin 19 of FP1. Refer to the table below for pin definitions.

FP Power LED Pin Definitions (FP1)

Pin#	Definition
15	PWR Failure LED-Positive
19	PWR Failure LED-Negative

FP USB Power

Front Panel USB power connections are located on Pin 16 - Pin 18 of FP1 to provide power to front USB devices. Refer to the table below for pin definitions.

FP USB PWR Pin Definitions

Pin#	Definition
16	+5 V USB PWR
17	
18	

2. Front Control Panel Header (FP2)

In addition to Front Control Panel header 1 (FP1), another Front Control Panel header, located at FP2, supports a VGA connector and two USB 2.0 ports (USB 3/4).

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.
3. Boot from a bootable device with Windows OS installation. You can see a bootable device list by pressing **F11** during the system startup.

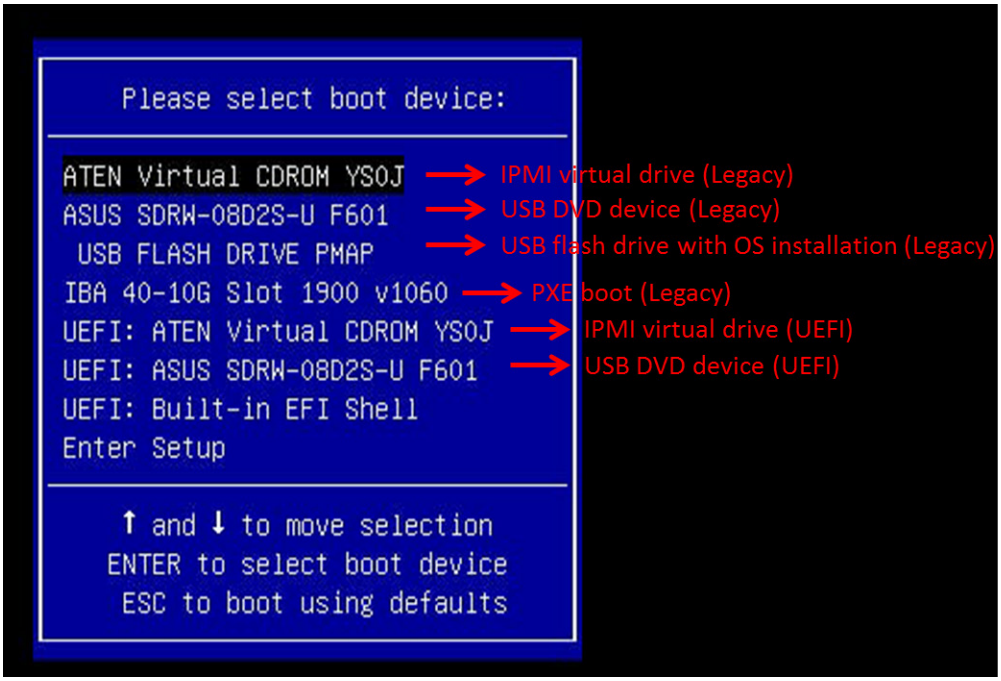


Figure 5-1. Select Boot Device

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.

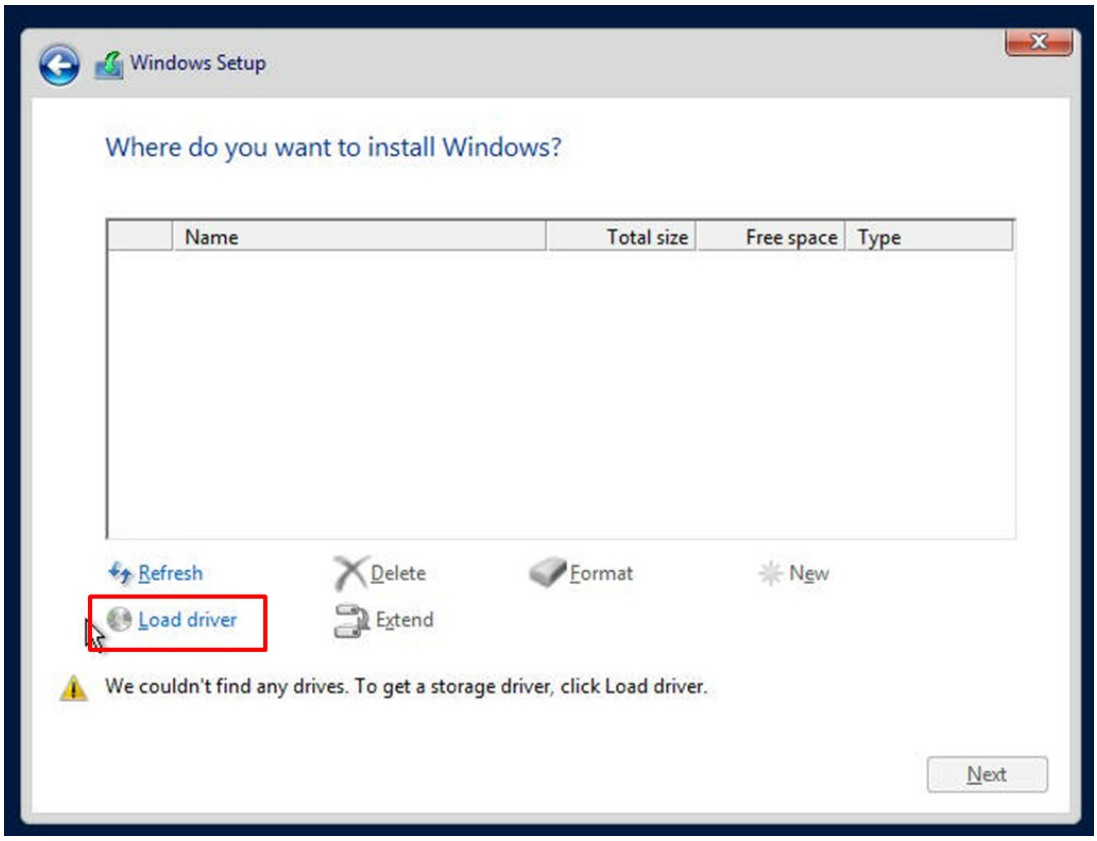


Figure 5-2. Load Driver Link

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

- For 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 or media drive and the screenshot shown below should appear.

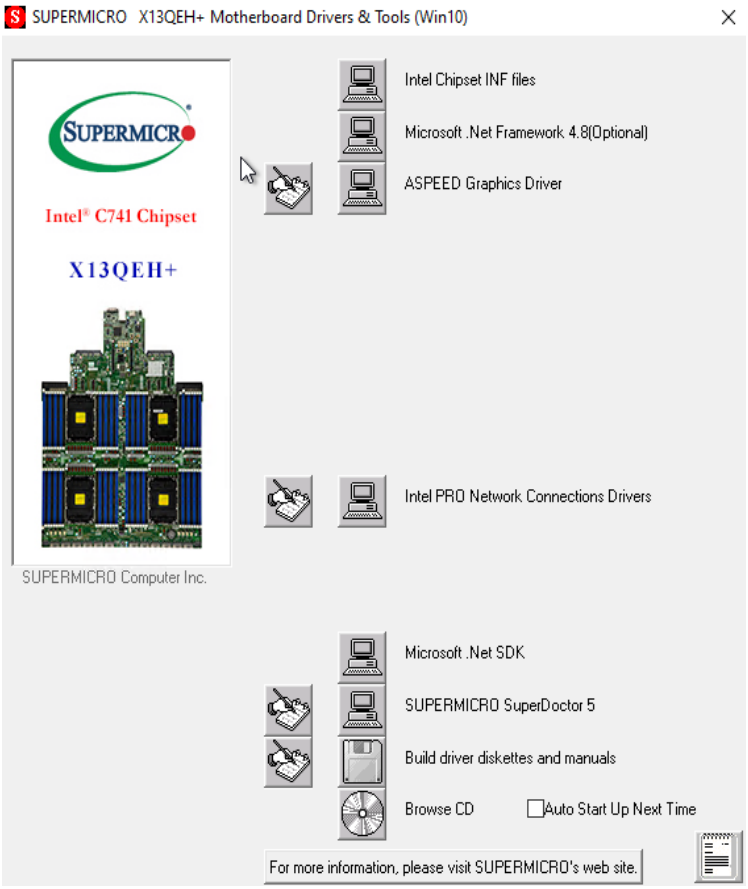


Figure 5-3. Driver & Tool Installation Screen

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

5.3 BMC

The X13QEH+ 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: http://www.supermicro.com/products/nfo/BMC.cfm.

5.4 Logging into the BMC (Baseboard Management Controller)

Supermicro ships standard products with a unique password for the BMC ADMIN user. This password can be found on a label on the motherboard.

When logging in to the BMC for the first time, please use the unique password provided by Supermicro to log in. You can change the unique password to a user name and password of your choice for subsequent logins.

For more information regarding BMC passwords, please visit our website at http://www.supermicro.com/bmcpassword.

BMC ADMIN User Password

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

Figure 5-4. BMC Password Label

Chapter 6

Optional Components

This chapter describes optional system components and installation procedures.

6.1 Optional Parts List

Optional Parts List		
Description	**Part Number**	**Quantity**
2U CPU heatsink	SNK-P2088P	2
CPU carrier (require 4pcs of one PN only)	SKT-1424L-001B-FXC	4
	SKT-1333L-0001-LTS	4
	SKT-1333L-0000-FXC	4
	SKT-1424L-001B-LTS	4
GPU support kit	MCP-310-21820-0B	2
	MCP-240-21828-0N	1
	SNK-P2087PV-2	1
	SNK-P2087PV-1	1
GPU power cables	CBL-PWEX-1040	1/GPU
	CBL-PWEX-1148-20	1/GPU
	CBL-PWEX-0962Y-20	1/GPU
NVMe Intel VROC controller	AOC-VROCPREMOD	1
	AOC-VROCSTNMOD	1
NVMe support kit	CBL-MCIO-1210M5	1 - 12
	MCP-220-00196-0B	1 - 24
RAID controller 01-08pcs SATA3/SAS	CBL-SAST-1281-100	1
	AOC-S3908L-H8IR-16DD	1
RAID controller 09-16pcs SATA3/SAS	AOC-S3916L-H16IR-32DD	1
	CBL-SAST-1281-100	2
RAID controller 17-24pcs SATA3/SAS	AOC-S3916L-H16IR-32DD	1
	AOC-S3908L-H8IR-16DD	1
	CBL-SAST-1281-100	3
RAID controller CacheVaults	BTR-CV3916-U1	1 - 2
	MCP-240-00203-0N	1
	BTR-CVPM05	1 - 2
Support kit for rail with cable arm	MCP-290-00128-0N	1
	MCP-290-00127-0N	1
TPM security module	AOM-TPM-9672V-FIPS	1
	AOM-TPM-9672V	1

6.2 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.

Strip 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 to due to performance issues, even though it is supported.

Supported SSDs and Operating Sytems

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

Additional Information

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

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

Hardware Key

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

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

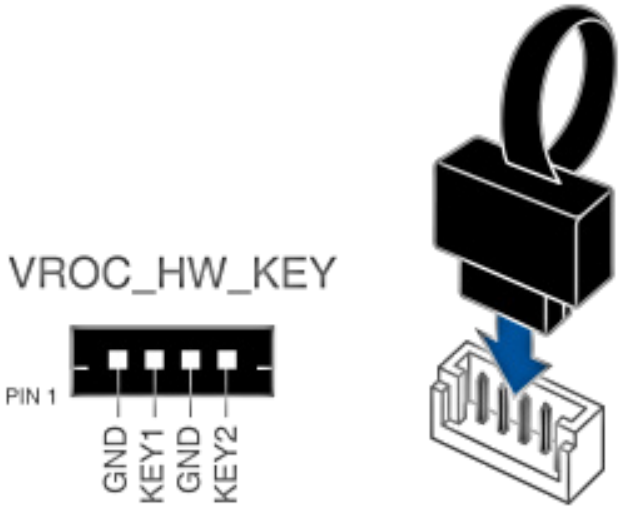


Figure 6-1. Intel® VROC RAID Key and Motherboard Connector JRK1

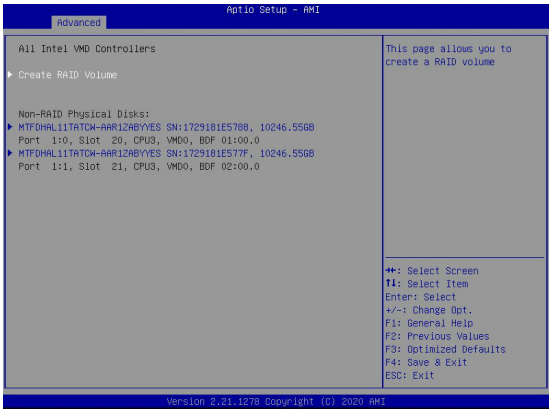
Enabling NVMe RAID

RAID for NVMe SSDs must be enabled through the UEFI BIOS.

1. Install the patch as described in the Restrictions and Requirements section on a previous page.
2. Reboot the server.
3. Press [DEL] key to enter BIOS.
4. Switch to **Advanced > Chipset Configuration > North Bridge > IIO Configuration > Intel® VMD Technology > CPU3 & CPU4**.
5. **Enable** the VMD according to the following rules.
   - For U.2 NVMe, enable all the sub-items under each PStack, based on the your model server:
   - For M.2 NVMe or NVMe AIC, enable the VMD according to which AOC card/slot it used.

   Examples for some U.2 configurations follow.
6. Press [F4] to save the configuration and reboot the system.
7. Press [DEL] to enter BIOS.
8. Switch to **Advanced > Intel(R) Virtual RAID on CPU > All Intel VMD Controllers > Create RAID Volume**.
9. Set **Name**.
10. Set **RAID Level**.
11. If cross-controller RAID is required, select **Enable RAID spanned over VMD Controller** as shown in Figure 6-4.
12. Select specific disks for RAID with an [X].
    - RAID0: Select at least two [2 - 24] disks
    - RAID1: Select only two disks
    - RAID5: Select at least three [3 - 24] disks
    - RAID10: Select only four disks

Figure 6-2. BIOS VMD Setting Examples



13. Select **Strip Size** (Default 64KB).
14. Select **Create Volume**.
15. If another RAID is needed, start again at step 6.
16. Press [F4] to save and reboot.

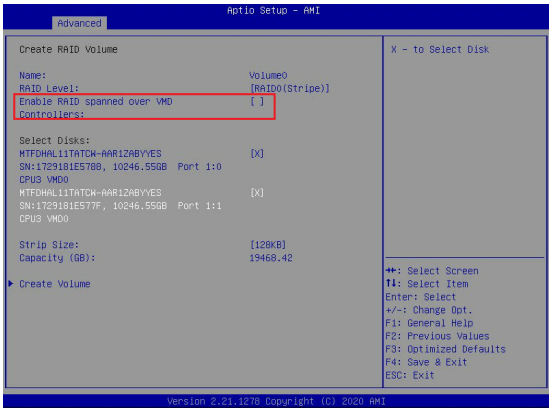


Figure 6-3. Created Volume *without* enabling RAID spanned over VMD Controller

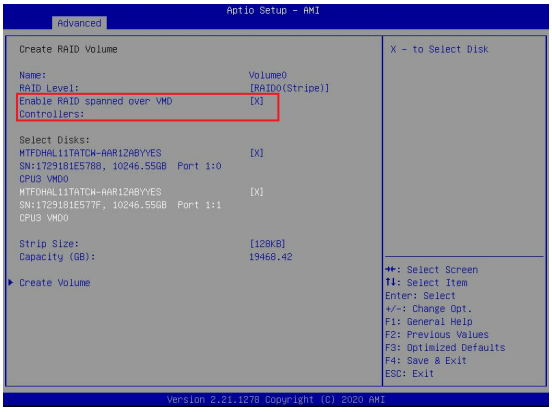


Figure 6-4. Created Volume *with* enabling RAID spanned over VMD Controller

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 blinking
Fault	Solid on
Rebuilding	1 Hz blinking

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 link [1] below.

Hot-unplug

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

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

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

Hot-plug

- Physically install the device.

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

Related Information Links

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

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

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

6.3 TPM Security Module

SPI capable TPM 2.0 with Infineon 9672 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 drives. It enables the motherboard to deny access if the TPM associated with the drive is not installed in the system.

Details and installation procedures are at:

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

- AOM-TPM-9672V-FIPS 1
- AOM-TPM-9672V

Chapter 7

Troubleshooting and Support

7.1 Information Resources

Website

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

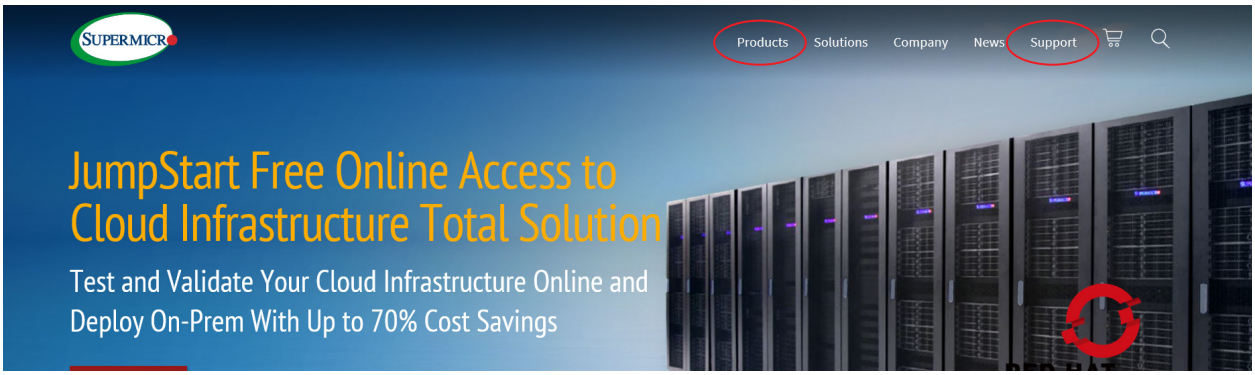


Figure 7-1. Supermicro Website

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

Direct Links for the SYS-241E-TNRTTP System

SYS-241E-TNRTTP specifications page

X13QEH+ motherboard page for links to the Quick Reference Guide, User Manual, validated storage drives, etc.

Direct Links for General Support and Information

Frequently Asked Questions

Add-on card descriptions

TPM User Guide

General Memory Configuration Guide: X13

BMC User Guide

Direct Links (continued)

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/en/solutions/management-software/bmc-resources.

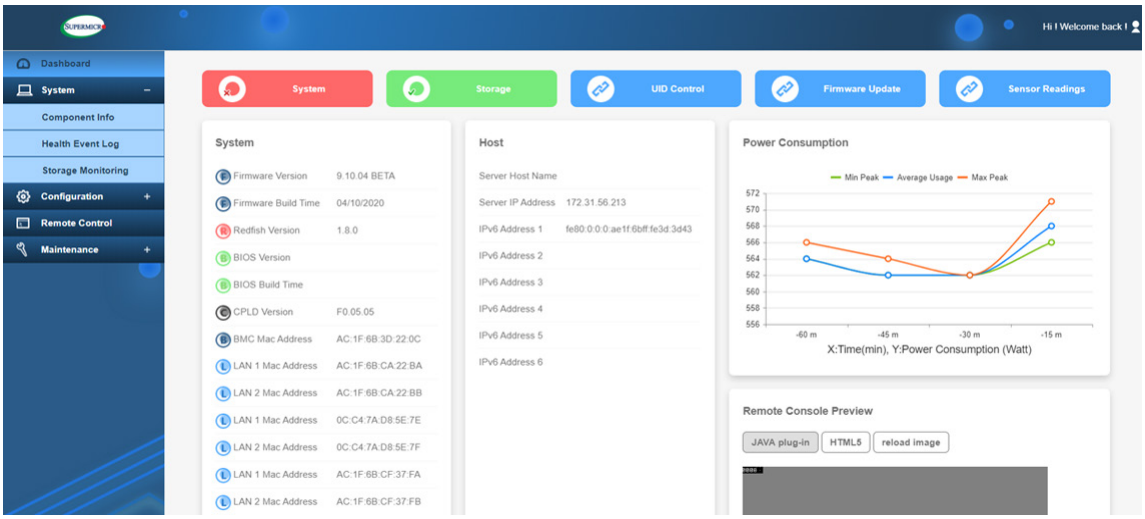


Figure 7-2. BMC Sample

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.

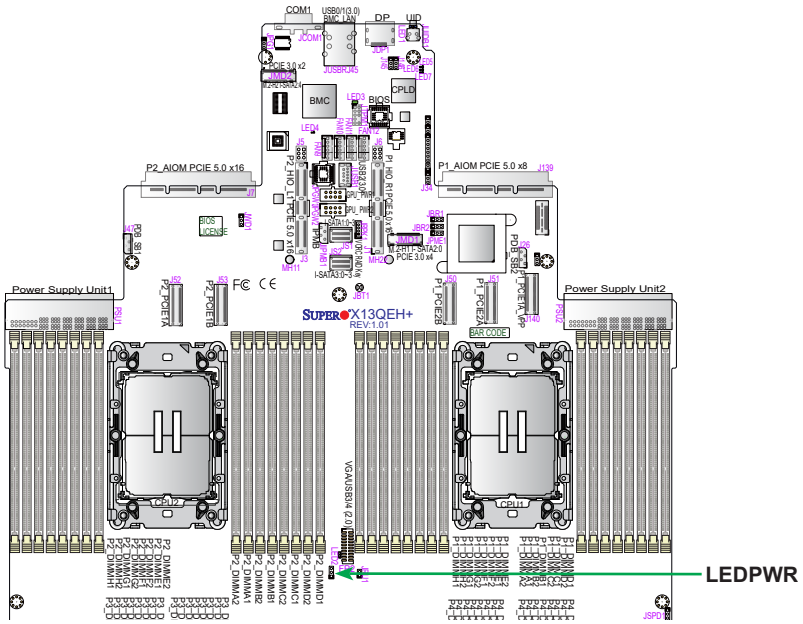


Figure 7-3. Location of the MB Power LED

- 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.

When the System Becomes Unstable

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

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

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

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

7.4 POST Codes

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

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

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

7.5 Crash Dump Using 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.

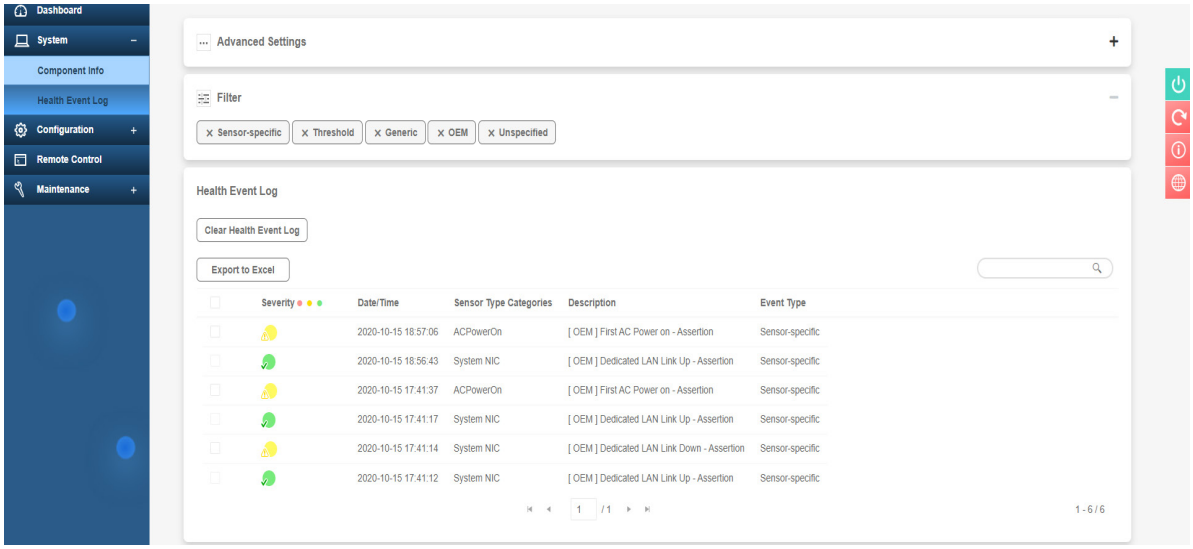


Figure 7-4. BMC Event Log

2. Click the **Server Health** tab, then **Event Log** to verify an IERR error.

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

7.6 UEFI BIOS Recovery

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

Overview

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

Recovering the UEFI BIOS Image

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

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

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

Recovering the Main BIOS Block with a USB Device

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

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

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

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

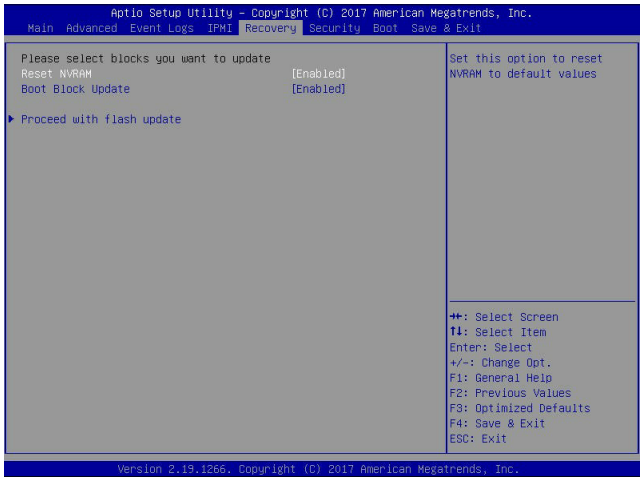
   Note 1: If you cannot locate the "Super.ROM" file in your drive disk, visit our website at www.supermicro.com to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

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

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

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

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

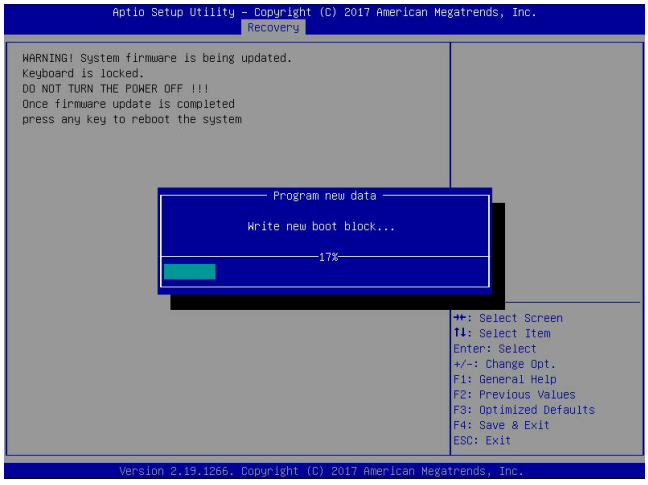


4. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.

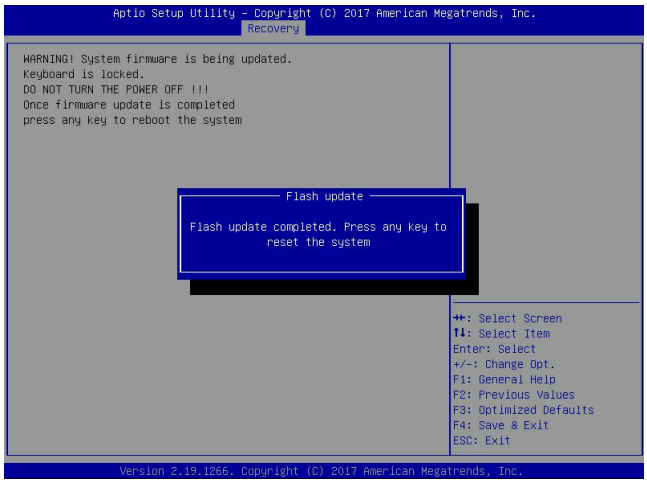
   Note: *Do not interrupt the BIOS flashing process until it has completed*.

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

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

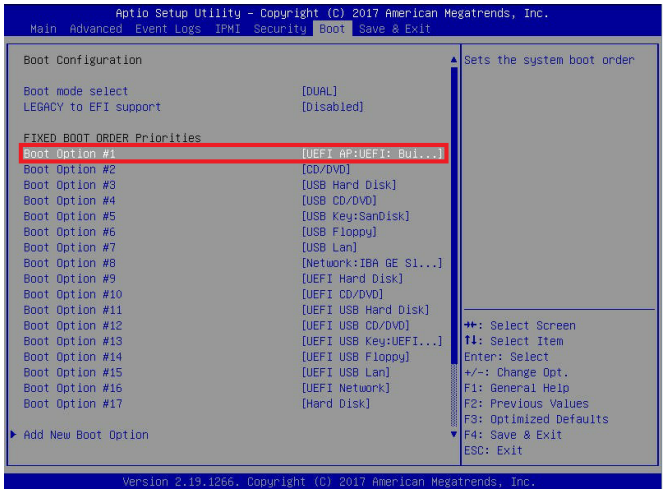


7. Press <Del> continuously during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot

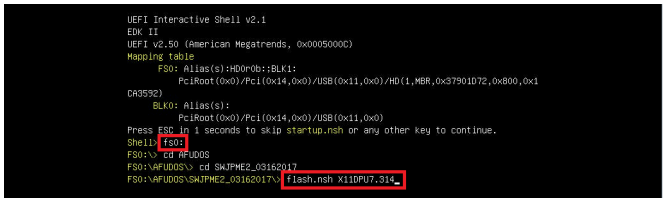


Option #1 as shown below. Then, set Boot Option #1 to [UEFI AP:UEFI: Built-in EFI Shell]. Press <F4> to save the settings and exit the BIOS Setup utility.

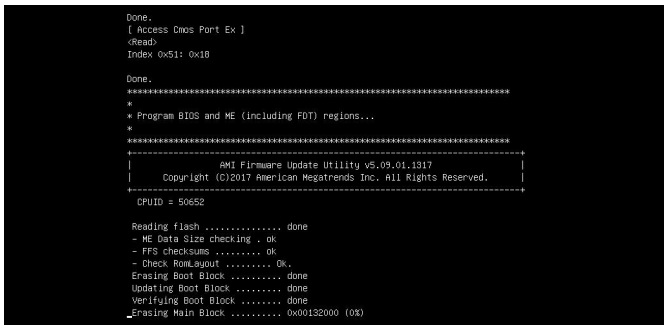
8. When the UEFI Shell prompt appears, type fs# to change the device directory path. Go to the directory that contains the BIOS package you extracted earlier from Step 6. Enter flash.nsh BIOSname.### at the prompt to start the BIOS update process.



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

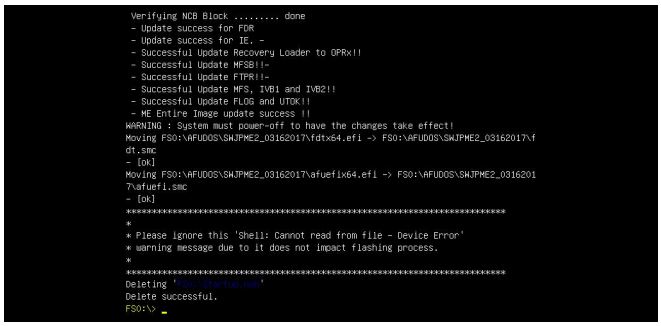


9. The screen above indicates that the BIOS update process is complete. When you see the screen above, unplug the AC power cable from the power supply, clear CMOS, and plug



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

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



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

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

7.7 CMOS Clear

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

To Clear CMOS

1. First power down the system completely.
2. Remove the cover of the chassis to access the motherboard.
3. Remove the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.
5. Remove the screwdriver or shorting device.
6. Replace the cover, reconnect the power cords and power on the system.

Notes: Clearing CMOS will also clear all passwords.

Do not use the PW_ON connector to clear CMOS.

JBT1 contact pads

7.8 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.

7.9 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.

7.10 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

A.1 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。

您目前所處的工作環境可能讓您受傷。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.

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 انتظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد
انطاقت قبم
انصل إنى اثماطق 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 trained and qualified personnel 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

Das Installieren, Ersetzen oder Bedienen dieser Ausrüstung sollte nur geschultem, qualifiziertem Personal gestattet werden.

¡Advertencia!

Solamente el personal calificado debe instalar, reemplazar o utilizar este equipo.

Attention

Il est vivement recommandé de confier l'installation, le remplacement et la maintenance de ces équipements à des personnels qualifiés et expérimentés.

אזהרה!

צוות מוסמך בלבד רשאי להתקין, להחליף את הציוד או לתת שירות עבור הציוד.

والمدربيه لتزكيب واستبدال أو خدمة هذا الجهاس يجب أن يسمح فقط للمظفيه المؤهليه

경고!

훈련을 받고 공인된 기술자만이 이 장비의 설치, 교체 또는 서비스를 수행할 수 있습니다.

Waarschuwing

Deze apparatuur mag alleen worden geïnstalleerd, vervangen of hersteld door geschoold en gekwalificeerd personeel.

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.

Hot Swap 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・ホットスワップの警告

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 Adapter

Warning! When installing the product, use the provided or designated connection cables, power cables and AC adaptors. Using any other cables and adaptors could cause a malfunction or a fire. Electrical Appliance and Material Safety Law prohibits the use of UL or CSA -certified cables (that have UL/CSA shown on the code) 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 מיילמשח מילבכ

!הרהזא

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

تحذير!

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
Quad Socket E (LGA-4677) 4th Generation Intel® Xeon® Scalable processors suppports 165 W-270 W TDP (SRP-SP)
Chipset
Intel® C741
BIOS
AMI 32 MB SPI Flash EEPROM
Memory
64 DIMM slots for up to 16 TB (64x 256 GB DRAM) with speeds up to 4800 MT/s ECC DDR5 RDIMM/RDIMM-3DS
Storage Drives
Two M.2 NVMe or two M.2 SATA3 24 hot-swap 2.5" NVMe/SAS3/SATA3 drive bays **Note**: 24x 2.5" NVMe hybrid (default eight SATA3 drive bays. NVMe, SATA, or SAS support requires additional parts. Please see the Optional Parts list.)
PCI Expansion Slots
Three PCIe 5.0 x8 FHFL slots One PCIe 5.0 x16 FHFL slot Two PCIe 5.0 x16 FHHL slots One PCIe 5.0 x16 AIOM slot One PCIe 5.0 x8 AIOM slot
Input/Output
One RJ45 dedicated IPMI port Two front USB 2.0 ports Two rear USB 3.0 ports One VGA port One rear DisplayPort One rear COM port
Motherboard
X13QEH+; 16.8 x 22.87 in. / 426.72 x 580.9 cm (LxW)
Chassis
CSE-218HTS-R3K2AWP; 2U Rackmount, 3.5 x 17.3 x 33.4 in. / 87.9 x 438.4 x 849.3 mm (HxWxD)
System Cooling
Six 6-cm heavy duty counter-rotating fans
Power Supply
Four 1600 W redundant Titanium AC power supplies with PMbus 73.5 x 20 3x 40 mm

Operating Environment

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

Regulatory Compliance

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

Applied Directives, Standards

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

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

Product Safety: 2014/35/EU (LVD Directive)
UL/CSA 62368-1 (USA and Canada)
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