SuperServer®

SYS-212B-FN2T

USER'S MANUAL

Revision 1.0 (MNL-2815)

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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 SYS-212B-FN2T server. Installation and maintenance should be performed by certified service technicians only.

Notes

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

- Supermicro product manuals: https://www.supermicro.com/support/manuals
- Product drivers and utilities: https://www.supermicro.com/wdl
- Product safety info: https://www.supermicro.com/about/policies/safety_information.cfm
- 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
- Frequently Asked Questions: https://www.supermicro.com/FAQ/index.php
- If you still have questions after referring to our FAQs, contact our support team. Region-specific Technical Support email addresses can be found at: "Contacting Supermicro" on page 12
- If you have any feedback on Supermicro product manuals, contact our writing team at: Techwriterteam@supermicro.com

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Conventions Used in the Manual

Special attention should be given to the following symbols for proper installation and to prevent damage done to the components or injury to yourself.

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

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

Important: Important information given to ensure proper server installation or to relay safety precautions.

Note: Additional information given to differentiate various models or to provide information for proper server setup.

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Chapter 1:

Introduction

This chapter provides a brief outline of the functions and features of the SYS-212B-FN2T system. It is based on the X14SBM-TF motherboard and the CSE-223M-R000RCNDP chassis.

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1.1 Overview

The SuperServer® SYS-212B-FN2T is a X14 edge GPU system that supports Intel® Xeon® 6700/6500-series processors in a 2U form factor. The system is based on the X14SBM-TF motherboard and the CSE-223M-R000RCNDP chassis.

The following provides an overview of the specifications and capabilities of the SYS-212B-FN2T.

System Overview	
Motherboard	X14SBM-TF
Chassis	CSE-223M-R000RCNDP
Processor	Intel® Xeon® 6700/6500-series processors with P-cores or Intel® Xeon® 6700-series processor with E-cores, and a thermal design power (TDP) of up to 350 W in socket E2 LGA 4710
Memory	Eight DIMM slots Max Memory (1DPC): Up to 2 TB 6400 MT/s ECC DDR5 RDIMM Max Memory (1DPC): Up to 512 GB 8000 MT/s ECC DDR5 MRDIMM (P-core only)
Drive Support	Four hot-swap 2.5" NVMe drive bays (optional) Two M.2 PCIe 5.0 x2 NVMe slots (M-key)
Expansion Slots	Default: Two PCIe 5.0 x16 (in x16) FHFL slots Option A: Two PCIe 5.0 x16 (in x16) FHFL slots One PCIe 5.0 x16 (in x16) FHFL double-width slot One PCIe 5.0 x16 (in x16) HHHL slot One PCIe 5.0 x8 (in x8) HHHL slot Option B: Two PCIe 5.0 x16 (in x16) FHFL slots One PCIe 5.0 x16 (in x16) HHHL slot See the Optional Parts list for details.
I/O Ports	One RJ45 1 GbE Dedicated BMC LAN port Two RJ45 10 GbE LAN ports Two USB 3.2 Gen1 Type-A ports One VGA port
System Cooling	Four 8-cm hot-swap PWM fans
Power	One redundant Titanium Level (96%) power supply
Form Factor	2U Rackmount: 3.5 x 17.2 x 17.72 in. / 89 x 437 x 450 mm (W x H x D)

Notes:

- A Quick Reference Guide can be found on the following page of the Supermicro website: https://www.supermicro.com/en/products/system/iot/2u/sys-212b-fn2t
- The following safety models associated with the SYS-212B-FN2T have been certified as compliant with UL or CSA: 223M-R20X14 , 223M-20.

1.2 System Features

The following views of the system display the main features. Refer to the System Specifications appendix of this manual for additional specifications.

Front View

The following features are located on the front of the SYS-212B-FN2T server.

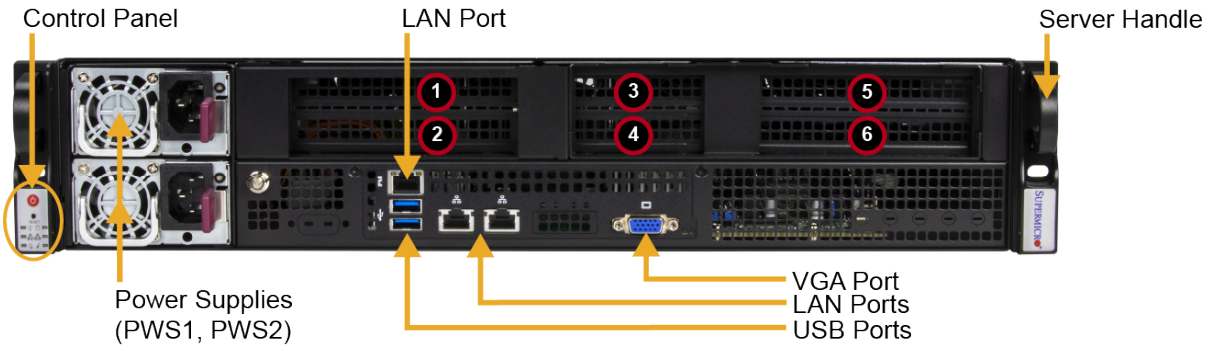

Figure 1-1. SYS-212B-FN2T Front View

Front Features	
Feature	**Description**
Control Panel	Front control panel with LEDs and buttons. See the Control Panel for more details.
Power Supplies	One 2000 W redundant Titanium Level (96%) power supply (PWS1 on the bottom) One optional 2000 W redundant Titanium Level (96%) power supply (PWS2 on top)
LAN Port	One dedicated BMC LAN port Two RJ45 10 GbE ports
USB Ports	Two USB 3.2 Gen1 ports
VGA Port	One video port
Server Handle	Two (left and right) handles supporting server removal.

Expansion Slot Locations			
Slot	**Option 1**	**Option 2**	**Option 3**
1	N/A	PCIe 5.0 x16 FHHL	PCIe 5.0 x16 HHHL
2	N/A	N/A	N/A
3	N/A	PCIe 5.0 x16 HHHL	N/A
4	N/A	PCIe 5.0 x8 HHHL	N/A
5	PCIe 5.0 x16 FHHL	PCIe 5.0 x16 FHHL	PCIe 5.0 x16 FHHL
6	PCIe 5.0 x16 FHHL	PCIe 5.0 x16 FHHL	PCIe 5.0 x16 FHHL
Options 2 and 3 require additional parts from the Optional Parts list and limit processor to a lower TDP.			

Power Supply Indicators

There are two power supply indicators on the rear of each power supply module. 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 normally. These indicators also emit different behaviors to alert of the status of the power supply:

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

Control Panel

The following switches and LEDs are located on the SYS-212B-FN2T server control panel.

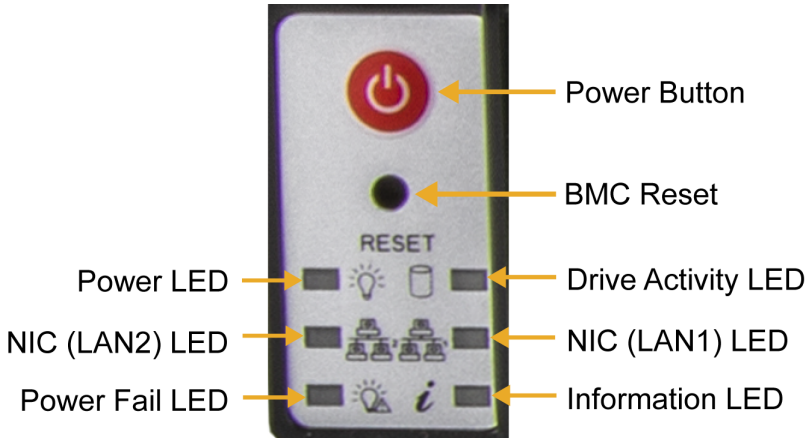

Figure 1-2. SYS-212B-FN2T Control Panel

Control Panel Features	
Feature	**Description**
Power Button	Applies or removes primary power from the power supplies to the server but maintains standby power.
BMC Reset	Resets the BMC when pressed.
Power LED	Indicates power is being supplied to the system power supply units. This LED is illuminated when the system is operating normally.
Drive Activity LED	Indicates activity on the storage drives when flashing.
NIC (LAN1) LED	Indicates network activity on LAN1 when flashing.
NIC (LAN2) LED	Indicates network activity on LAN2 when flashing.
Power Fail LED	Indicates a power supply module has failed.
Information LED	Alerts operator to several states, as noted in the table below.

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 an inoperative 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 via BMC to locate the server in a rack environment.

Information LED	
Color, Status	**Description**
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

The following features are located on the rear of the SYS-212B-FN2T server.

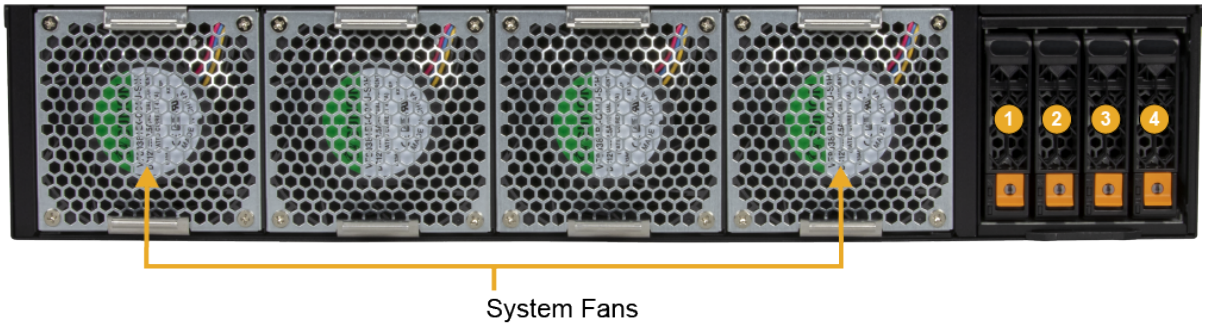

Figure 1-3. SYS-212B-FN2T Rear View

System Features: Rear	
Feature	**Description**
System Fans	Four 8-cm hot-swap fans

Logical Storage Drive Numbers	
Item	**Description**
0-4	Four hot-swap 2.5" NVMe drive bays

NVMe SSD Drive Indicators

Each NVMe SSD module 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.

Rear I/O Ports			
LED	**Color**	**Pattern**	**Device Behavior**
Activity LED	Blue	Solid	Idle SAS/NVMe storage module installed
	Blue	Blinking	I/O activity
	Off	N/A	Idle SATA drive installed
Status LED	Red	Solid	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
	Green	Solid	Safe to remove NVMe storage module
	Amber	Blinking at 1 Hz	Do not remove NVMe storage module

1.3 System Architecture

This section covers the locations of the system's main components and provides a motherboard block diagram.

Main Components

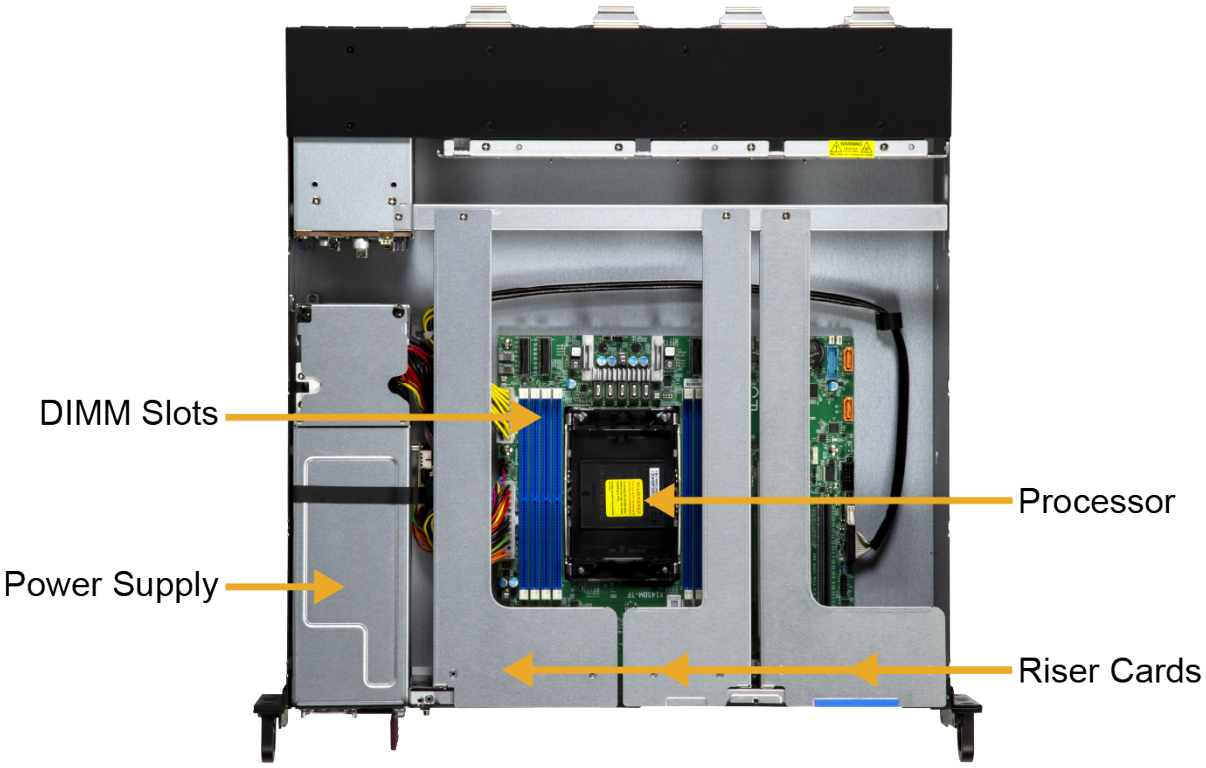

Figure 1-4. SYS-212B-FN2T Main Component Locations

Top Features	
Feature	**Description**
DIMM Slots	Eight DDR5 DIMM slots
Processor	Intel® Xeon® 6700/6500 series processors with P-cores or 6700 series processors with E-cores
Power Supply	One redundant power supply module (PWS-2K09F-1R)
Riser Cards	Three riser card brackets

Motherboard Block Diagram

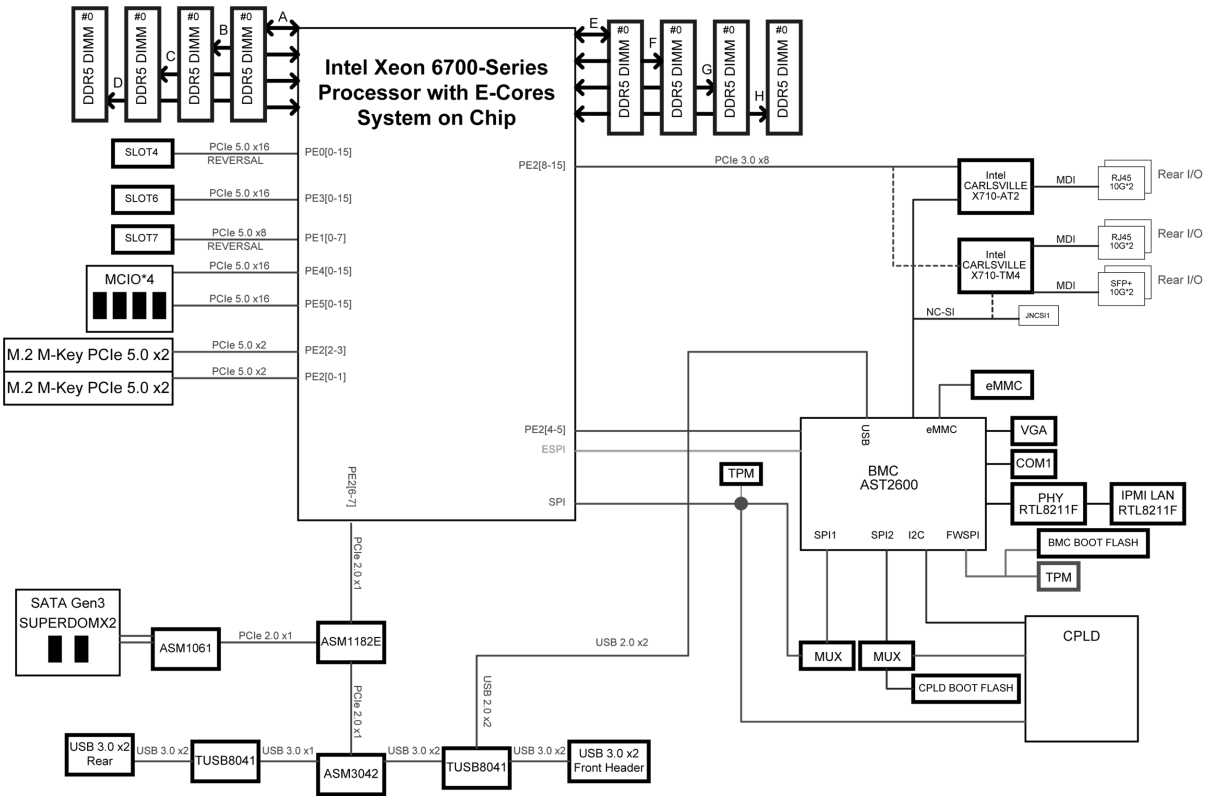

Figure 1-5. Motherboard Block Diagram

Note: This is a general block diagram and may not exactly represent the features on your motherboard. For the actual specifications of your motherboard, see "Motherboard Quick Reference" on the next page.

1.4 Motherboard Quick Reference

For details on the X14SBM-TF motherboard layout and other quick reference information, refer to the content below.

Motherboard Layout

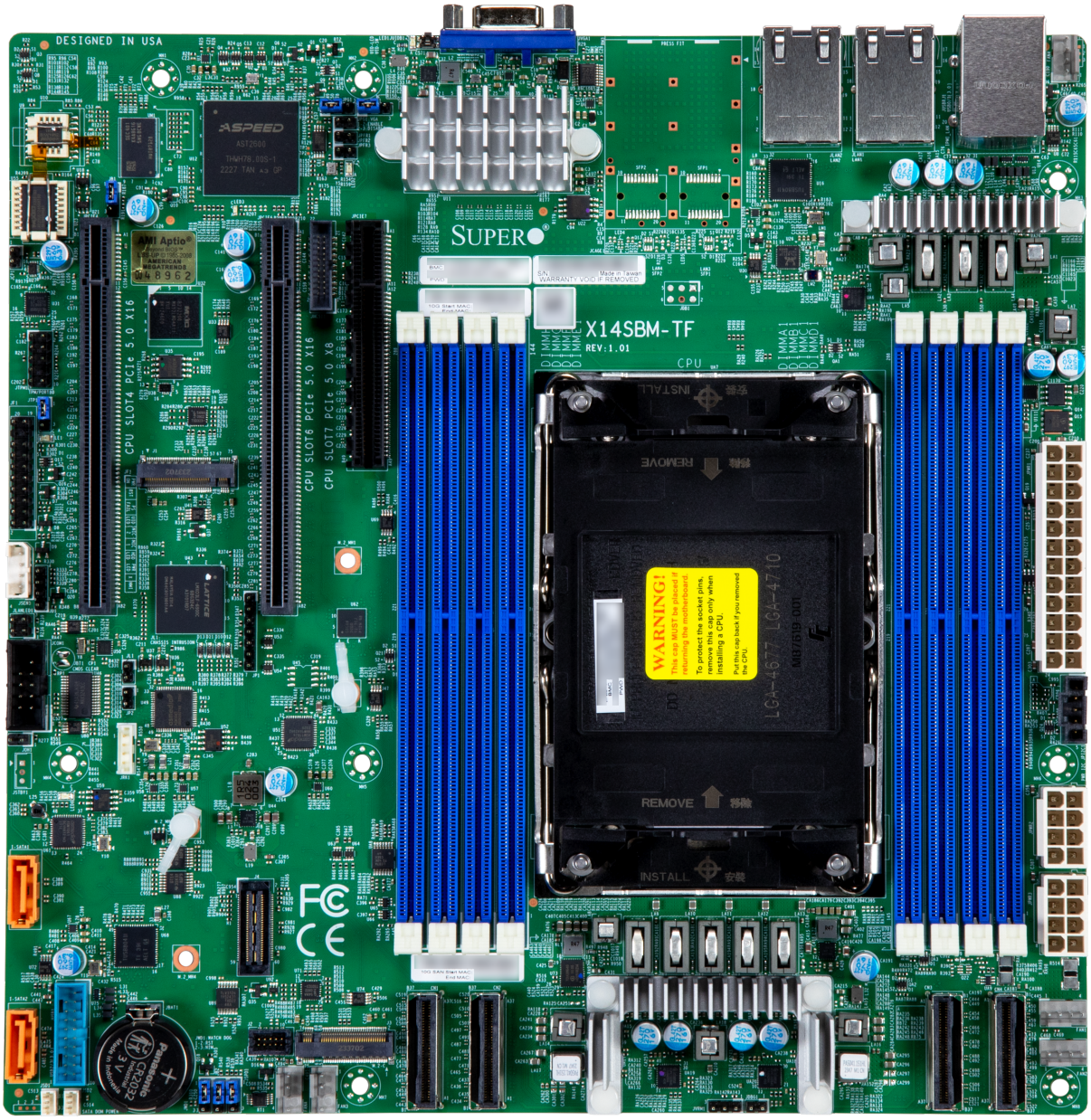

Figure 1-6. X14SBM-TF Motherboard Photograph

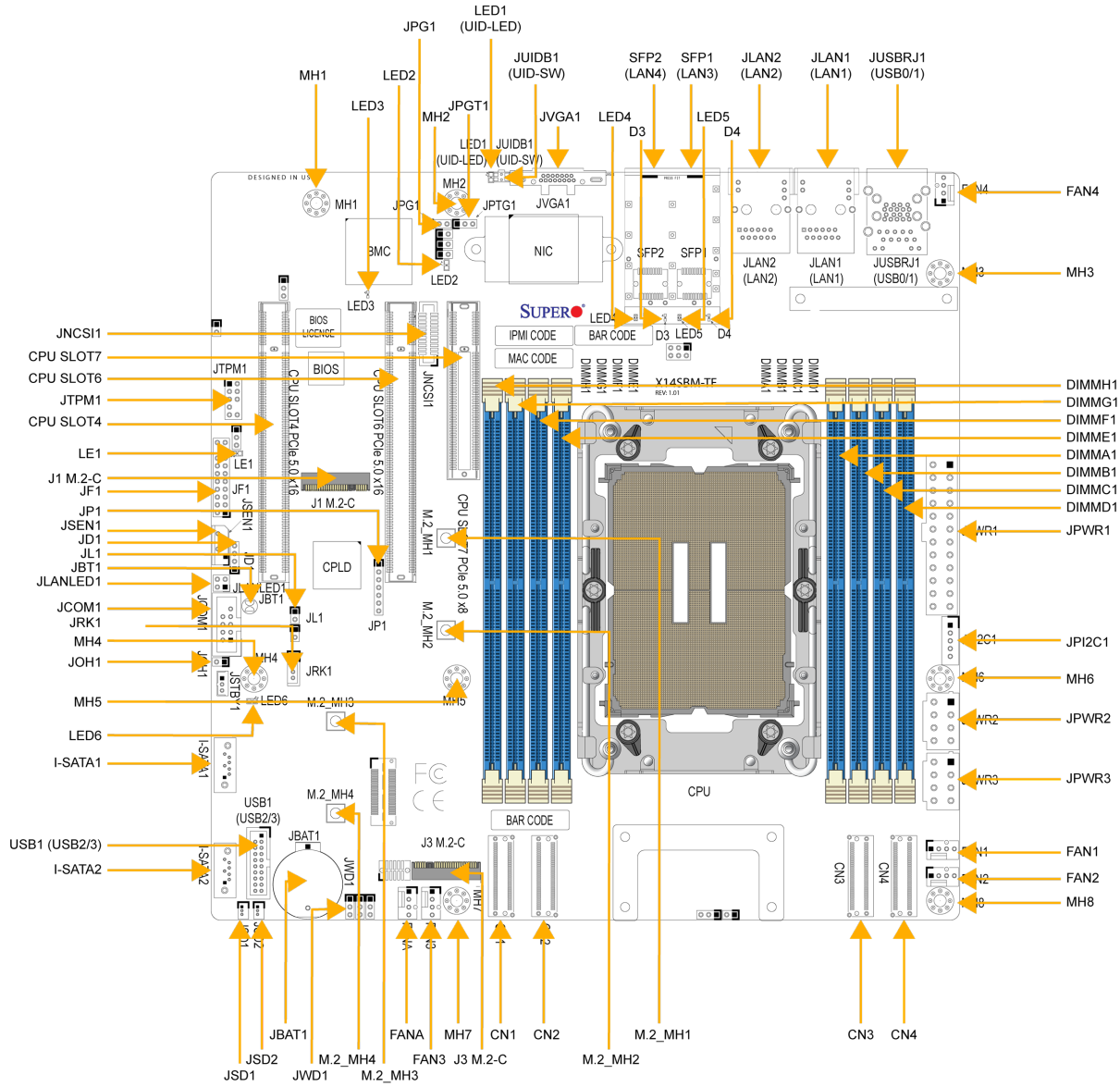

Figure 1-7. X14SBM-TF Motherboard Layout

Notes:

- For detailed information on jumpers, connectors, and LED indicators, see "Maintenance and Component Installation" on page 43.
- "■" indicates the location of pin 1.
- "MH" indicates the location of a mounting hole.
- Components not documented are for internal testing purposes only.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. To avoid possible explosion, do not install the onboard battery upside down.

Quick Reference

Jumper	Description	Default Setting
JBT1	Onboard CMOS Clear	Open (Normal)
JPG1	VGA Enable/Disable	Pins 1–2 (Enable)
JTP1	Onboard TPM 2.0 Enable/Disable	Pins 1–2 (Enable)
JPTG1	LAN Enable/Disable	Pins 1–2 (Enable)
JWD1	Watchdog Timer	Pins 1–2 (Reset)

Connector	Description
JBAT1	Onboard CMOS Battery
CPU SLOT4 PCIe 5.0 x16	PCIe 5.0 x16 Slot
CPU SLOT6 PCIe 5.0 x16	PCIe 5.0 x16 Slot
CPU SLOT7 PCIe 5.0 x8	PCIe 5.0 x8 Slot
CN1–CN4	MCIO PCIe 5.0 x8 Connectors
FAN1–FAN4. FANA	4-pin Fan Headers
I-SATA1–I-SATA2	SATA 3.0 Connectors
J1 M.2-C	M.2 M-Key PCIe 5.0 x2 Slot (2280/22110)
J3 M.2-C	M.2 M-Key PCIe 5.0 x2 Slot (2280/22110)
JCOM1	COM Header (COM1)
JD1	Internal Speaker Header
JF1	Front Control Panel Header
JL1	Chassis Intrusion Header
JLAN1–JLAN2	10 GbE RJ45 LAN Ports (LAN1–LAN2)
JLANLED1	LAN3/LAN4 Activity LED
JNCSI1	NC-SI Header for IPMI Support
JOH1	Overheat LED Header

Connector	Description
JPI2C1	Power Supply SMBus I²C Header
JPWR1	24-pin ATX Main Power Connector
JPWR2–JPWR3	8-pin 12 V CPU Power Connectors
JRK1	Intel VROC RAID Key Header
JSD1–JSD2	SuperDOM Power Connectors
JSEN1	Inlet Sensor Header
JTPM1	Trusted Platform Module/Port 80 Connector
JUIDB1	Unit Identifier Switch
JUSBRJ1	Two USB 3.2 Gen1 Type-A Ports (USB0/1) and one dedicated BMC LAN Port (BMC LAN)
JVGA1	VGA Port
USB1	Two USB 3.2 Gen1 Ports from On-board Header (USB2/3)

LED	Description	Status
LE1	Power LED	Solid Green: Power On
LED1	Unit Identifier LED	Solid Blue: Unit Identified
LED2	BMC Heartbeat LED	Blinking Green: BMC Normal
LED6	Disk Activity LED	Flashing Green: Disk Activity

Chapter 2:

Server Installation

This chapter provides advice and instructions for mounting your server in a server rack. If your server is not already fully integrated with processors, system memory, etc., refer to "Maintenance and Component Installation" on page 43 for details on installing those specific components.

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

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2.1 Unpacking the System

Inspect the box the SYS-212B-FN2T server was shipped in 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 "Standardized Warning Statements for AC Systems" on page 155.

2.2 Preparing for Setup

The box in which the SYS-212B-FN2T server was shipped should include the rackmount hardware needed to install it into the rack. Read this section in its entirety before you begin the installation.

Choosing a Setup Location

- The server 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.

System Precautions

- Review the electrical and general safety precautions in "Standardized Warning Statements for AC Systems" on page 155.
- Determine the placement of each component in the rack before you install the rails.
- Install the heaviest server components at the bottom of the rack first and then work your way up.

- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges and voltage spikes and to keep your system operating in case of a power failure.
- Allow any drives and power supply modules to cool before touching them.
- When not servicing, always keep the front door of the rack and all covers/panels on the servers closed to maintain proper cooling.

Rack Mounting Considerations

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

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

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

- If this unit is the only unit in the rack, it should be mounted at the bottom of the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top, placing 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 workspace.
- Do not pick up the server with the front handles. They are designed to pull the system from a rack only.

Ambient Operating Temperature

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

Airflow

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

Mechanical Loading

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

Circuit Overloading

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

Reliable Ground

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

2.3 Installing the Rails

This section provides information on installing the CSE-223M-R000RCNDP chassis into a rack unit with the rails provided. There are a variety of rack units on the market, which may mean that the assembly procedure will differ slightly from the instructions provided. You should also refer to the installation instructions that came with the rack unit you are using.

Note: The short rail will fit a rack between 17" and 24" deep. The long rail will fit a rack between 22" and 33" deep.

Wall Mounting Procedure

The SYS-212B-FN2T can be mounted directly on a surface using the mounting brackets and mounting screws or nails. The following procedure describes how to mount the server to a sturdy surface. Use screws or nails of sufficient strength to support the weight of the server.

Note: The weight of a fully populated system can reach up to 24.5 lbs or 11 kg.

Mounting the Chassis

1. Attach the two mounting brackets to the server using the four T-pins and two screws for each side. Push the T-pins through the holes in the mounting bracket, highlighted in yellow. Then, secure the M4 screws that came with the server as shown below.

   Note: Images displayed are for illustrative purposes only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.

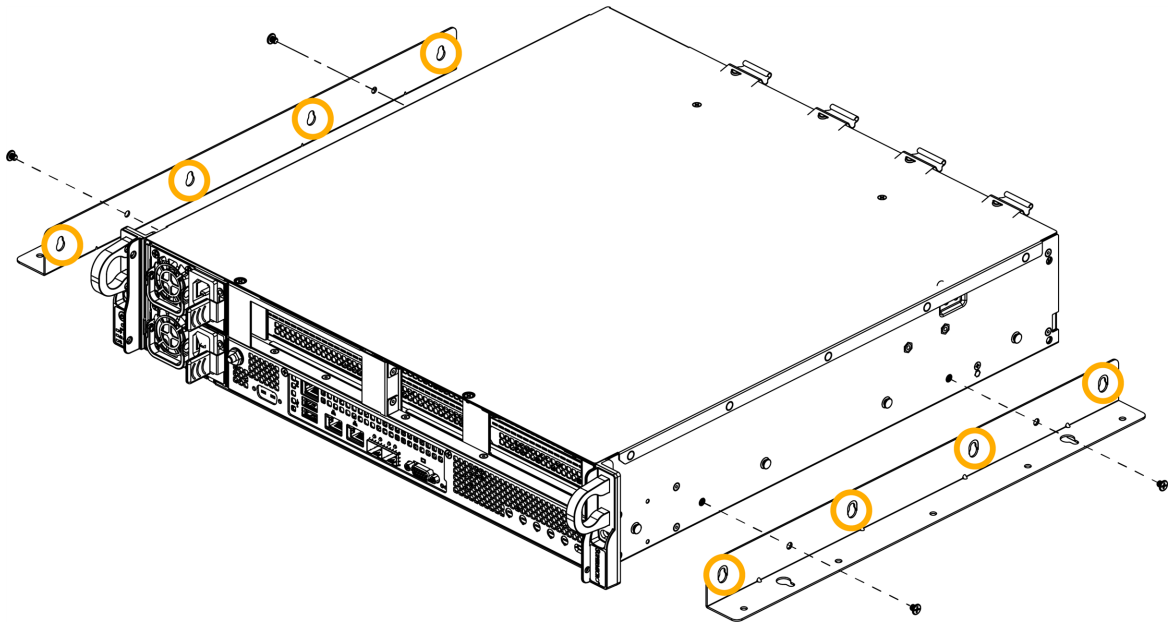

Figure 2-1. Installing the Mounting Brackets

2. Decide on an orientation to mount the server. The server can only be mounted with the I/O panel facing left or right.

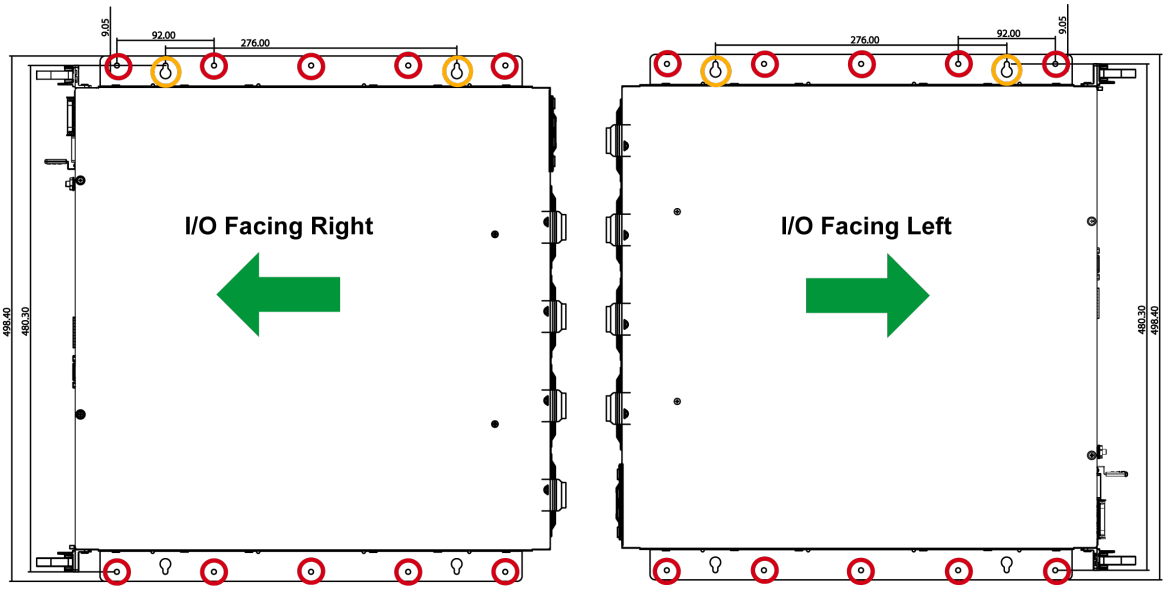

Figure 2-2. Possible Mounting Orientations

3. Mark two keyhole spots on the surface where the server will be mounted. The two keyholes for each orientation are circled in yellow above.
4. Install the two keyhole screws or nails.
5. Mount the server onto the two screws or nails.

6. Install screws or nails in all the holes circled in red above.

Identifying the Rails

The CSE-223M-R000RCNDP chassis package includes two rail assemblies. Each assembly consists of three sections: an inner rail that secures directly to the chassis, an outer rail that secures to the rack, and a middle rail which extends from the outer rail. These assemblies are specifically designed for the left and right side of the chassis and labeled.

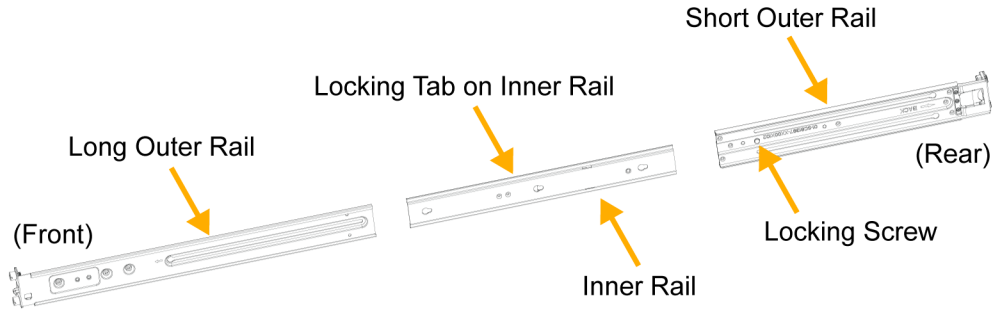

Figure 2-3. Identifying the Inner and Outer Rails

Locking Tabs

The inner rails have a locking tab. These tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Separating the Inner and Outer Rails

1. Locate the rail assembly in the server packaging.
2. Extend the rail assembly by pulling it outward.
3. Press the quick-release tab.
4. Separate the inner rail extension from the outer rail assembly.

Assembling the Inner and Outer Rails

1. Identify the left and right outer rails. Begin by assembling the left outer rail set.
2. Align the rear side of the long outer rail with the short outer rail. Ensure that the locking screw on the shorter rail fits between the longer rail.

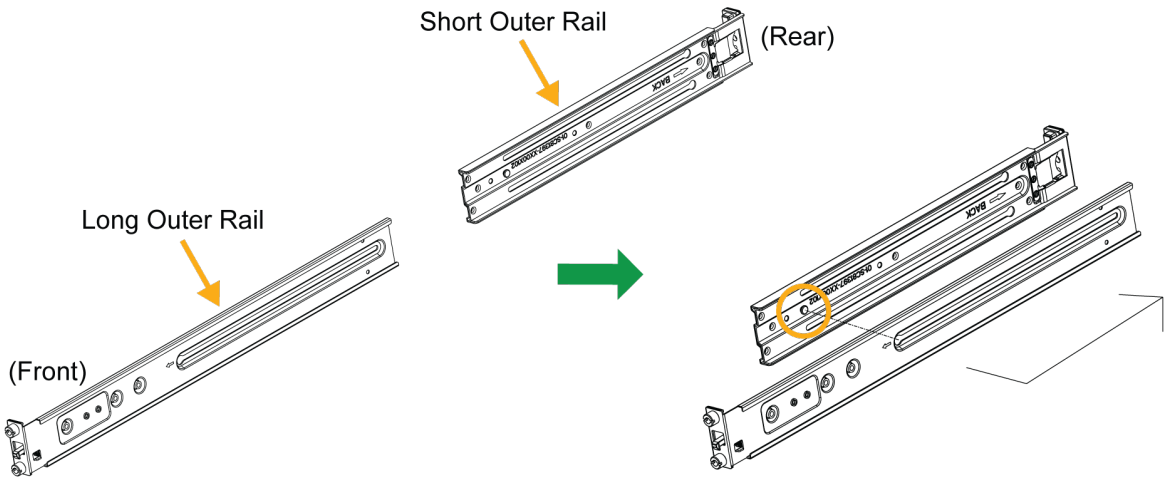

Figure 2-4. Assembling the Outer Rails

3. Slide the long outer rail to the front until it is fully extended and the locking screw is secure.

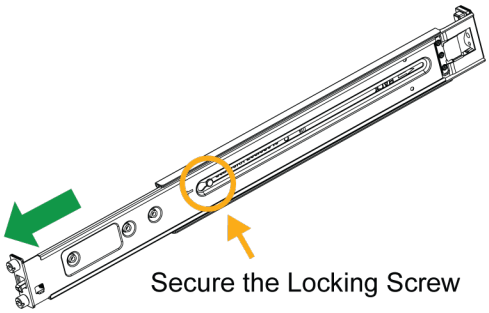

Figure 2-5. Extending the Long Outer Rail

4. Insert the inner rail in the longer outer rail, then secure it by pressing the locking tab on the back side as shown below.

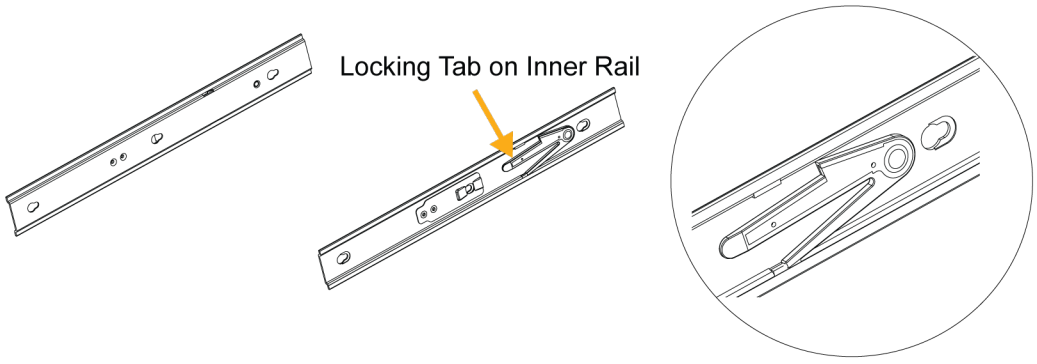

Figure 2-6. Identifying the Locking Tab on the Inner Rail

5. Slide the inner rail inward until the rails are securely connected.
6. Repeat steps 1–5 for the right rail set.

Releasing the Inner Rail

Each inner rail has a locking latch. This latch prevents the CSE-223M-R000RCNDP chassis from coming completely out of the rack when the chassis is pulled out for servicing.

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

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

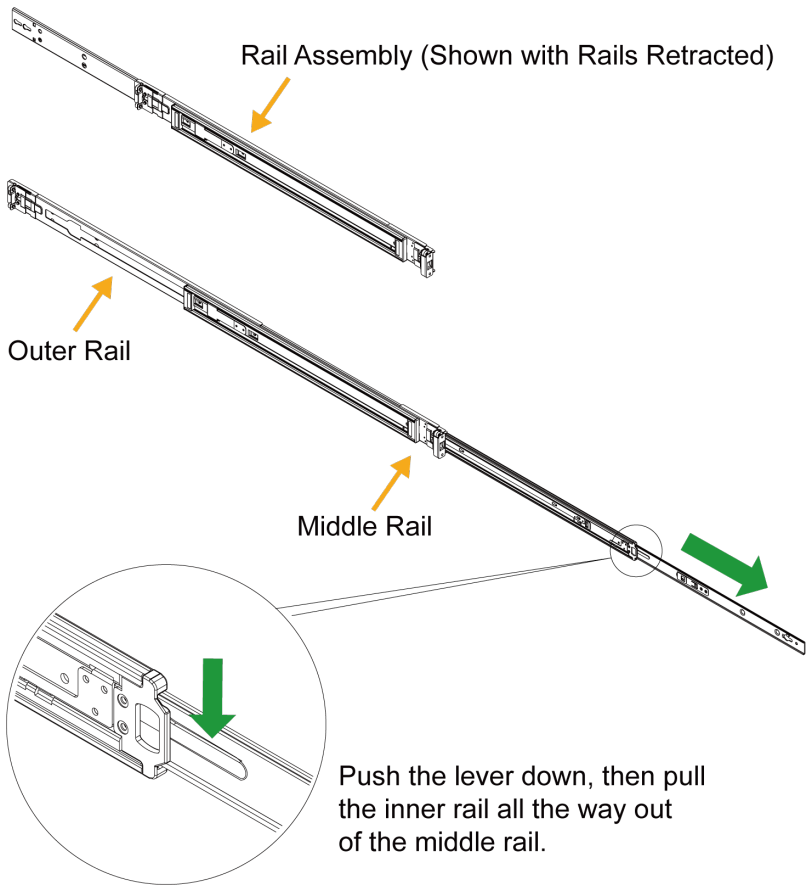

Figure 2-7. Extending and Releasing the Inner Rail

Installing the Inner Rails onto the Chassis

The inner rails can be installed onto the SYS-212B-FN2T server without any tools.

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

Begin the rack mounting procedure by installing the inner rails to the CSE-223M-R000RCNDP chassis.

1. Confirm that the left and right inner rails have been correctly identified.
2. Place the inner rail firmly against the side of the chassis, aligning the hooks on the side of the chassis with the holes in the inner rail.
3. Slide the inner rail forward toward the front of the chassis and under the hooks until the quick release bracket snaps into place, securing the rail to the chassis.
4. Optionally, you can further secure the inner rail to the chassis with a screw.
5. Repeat for the other inner rail.

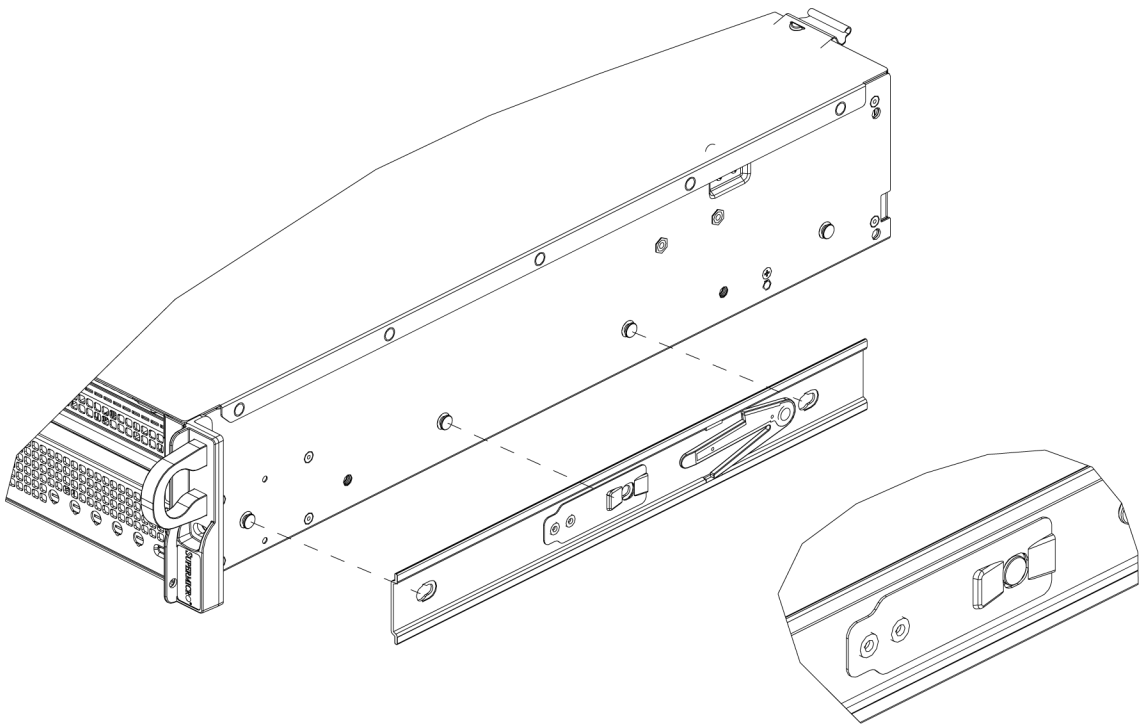

Figure 2-8. Installing the Inner Rails

Installing the Outer Rails onto the Rack

Each end of the assembled outer rail includes a bracket with hooks and square, spring-loaded pegs to fit into the square holes in your rack.

Important: 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.

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

1. 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.
2. Pull out the rear of the outer rail, adjusting the length to fit just within the rack posts.
3. 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.
4. Install a screw at the center of the rail.
5. Repeat for the other outer rail.

Important: This figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

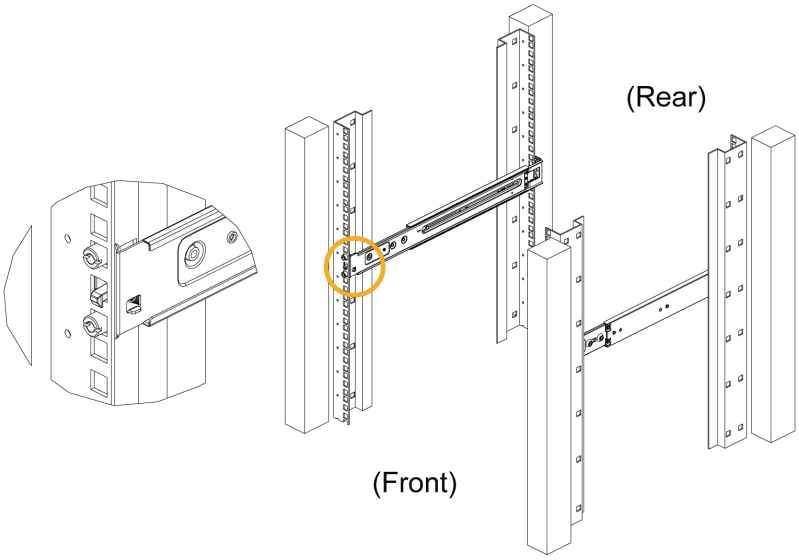

Figure 2-9. Installing the Outer Rails

2.4 Installing the Chassis into the Rack

After the rails are installed on the SYS-212B-FN2T server and on the rack, the server can be installed in the rack.

Important: Use caution when mounting or removing the system from the rack. For large systems, at least one other person must assist during installation or removal. Follow the safety recommendations printed on the rails. Depending on the size of the system, you might need to use a lift.

Slide the server into the rack so that the bottom of the SYS-212B-FN2T server slides onto the bottom lip of the rails. Carefully align the left and right inner rails on the server to the matching outer rails on the rack.

Note: Images displayed are for illustrative purposes only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.

Important: This figure is for illustrative purposes only. Always install servers to the bottom of a rack first.

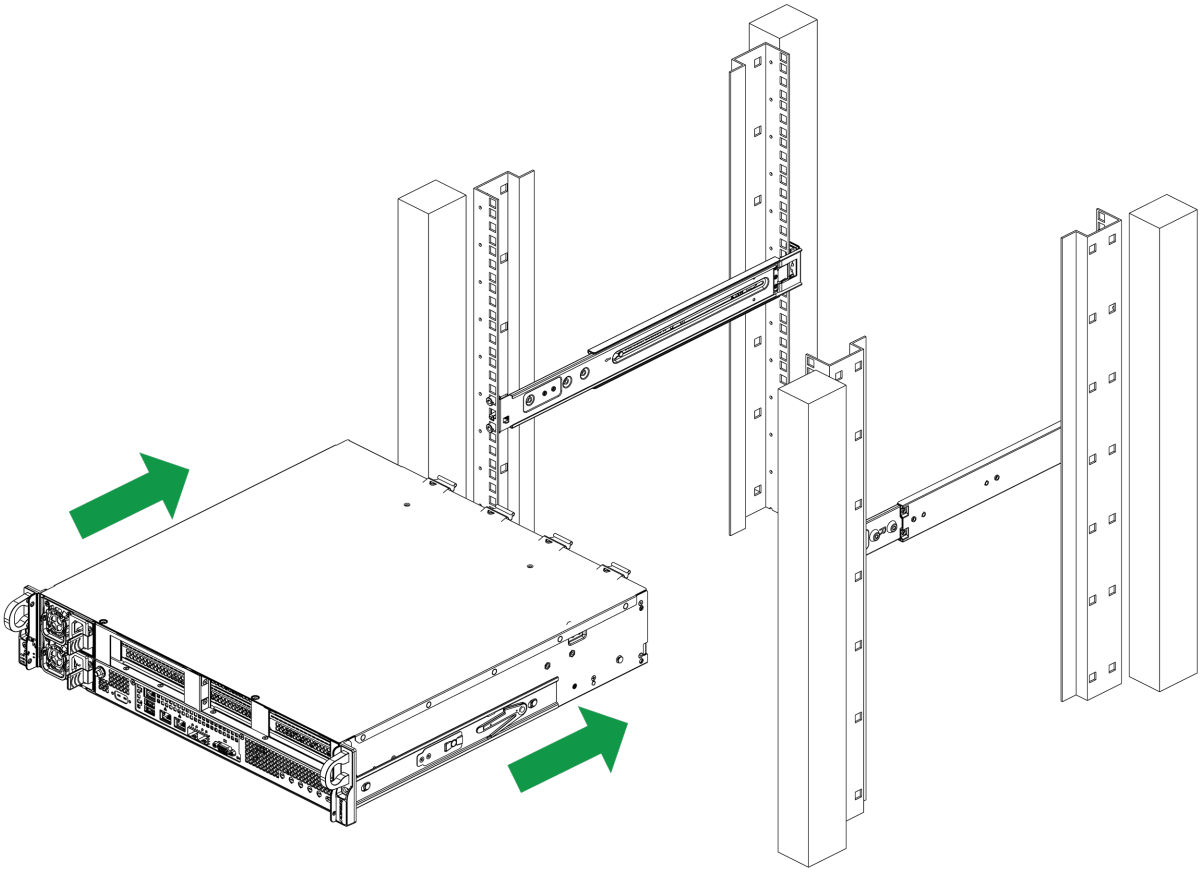

Figure 2-10. Sliding the SYS-212B-FN2T into the Rack

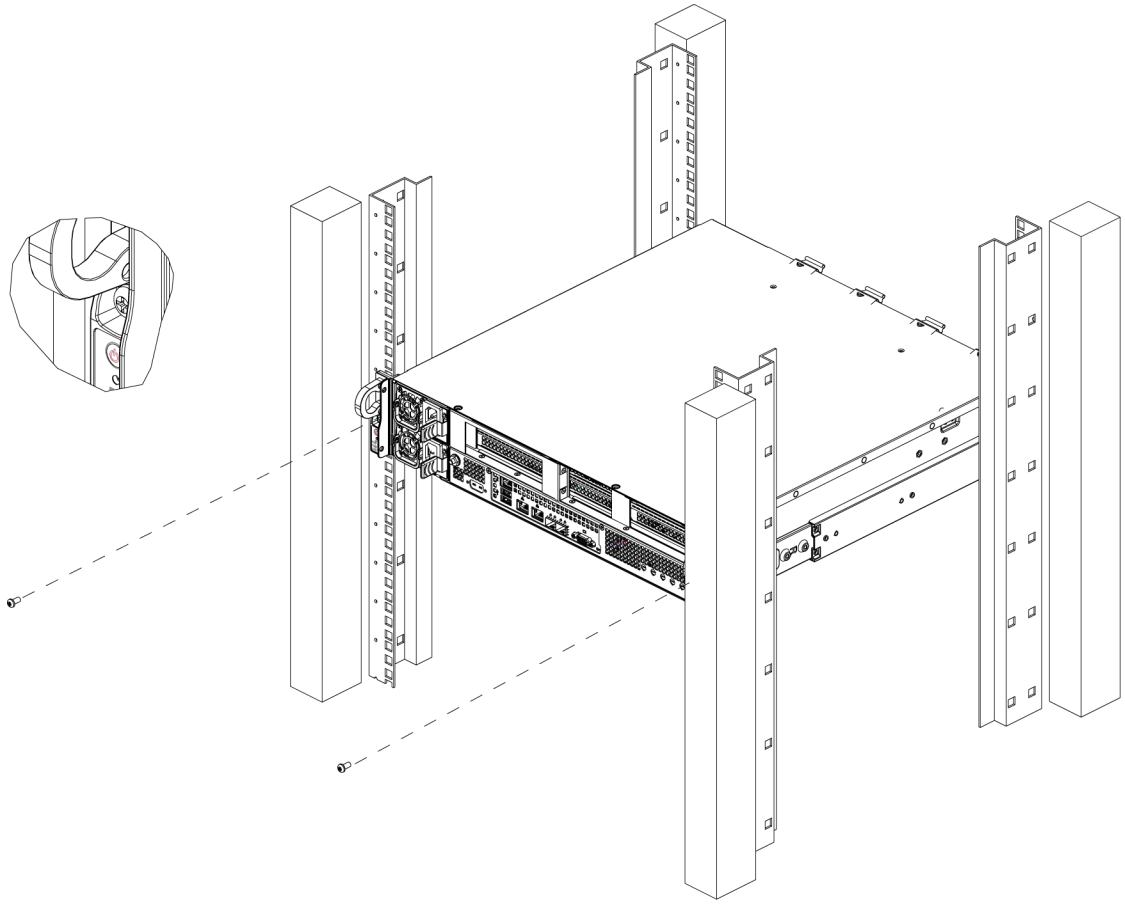

Figure 2-11. Fastening the SYS-212B-FN2T into the Rack

Removing the Chassis from the Rack

Important: Use caution when mounting or removing the system from the rack. For large systems, at least one other person must assist during installation or removal. Follow the safety recommendations printed on the rails. Depending on the size of the system, you might need to use a lift.

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

1. Remove the front screws.
2. Pull the server by the handles until the chassis is stopped by the locking tabs.
3. Press down on the locking tab while holding both side of the server.
4. Pull the server completely out of the rack.

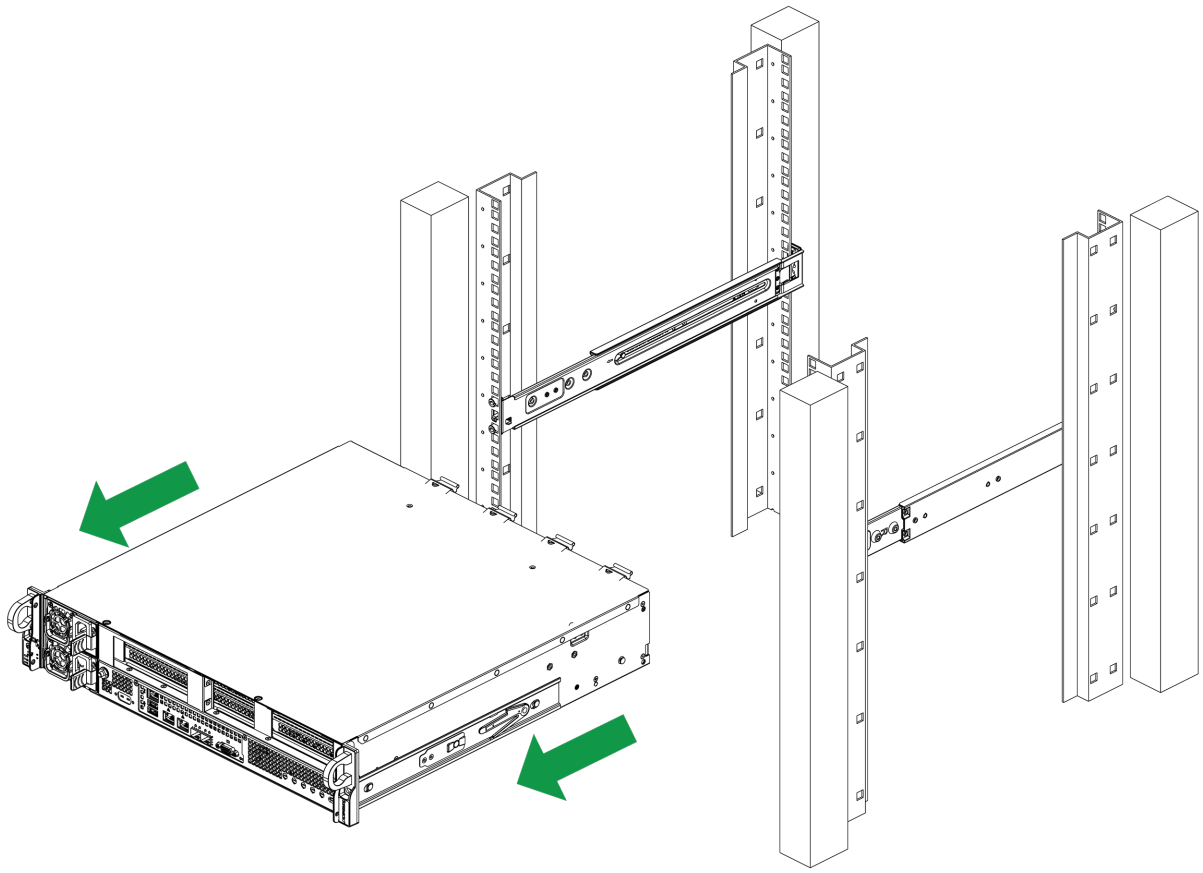

Figure 2-12. Removing the SYS-212B-FN2T from the Rack (CSE-223M-RC shown)

Removing the Outer Rails from the Rack

In the uncommon event that it is necessary to remove the outer rails from the rack, follow these instructions. The SYS-212B-FN2T server must first be out of the rack.

Releasing the Outer Rails

1. On the front of the outer rail, slide the small plastic safety slider up and hold it while pushing the plastic release button just below it.
2. While holding the release button in, pull the outer rail forward to disengage the pins and the front of the rail from the rack.
3. Support the front of the outer and middle rail assembly while releasing the rear.
4. Remove the outer rail from the rear of the rack in the same way as the front. Slide the safety slider up and push and hold the release button, then pull the rear pins out of the rack and remove the rail.

Chapter 3:

Maintenance and Component Installation

This chapter provides instructions on installing and replacing main system components for the SYS-212B-FN2T server. 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. Follow the procedures given in each section.

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3.1 Removing Power

Before performing some setup or maintenance tasks, use the following procedure to ensure that power has been removed from the SYS-212B-FN2T server. This step is necessary when removing or installing non hot-swap components or when replacing a non-redundant power supply.

1. Use the operating system to power down the system.
2. After the system has completely shut-down, disconnect the AC power cord(s) from the power strip or outlet.
3. Disconnect the power cord(s) from the power supply module(s).

3.2 Accessing the System

The SYS-212B-FN2T server features a removable top cover, which allows easy access to the inside of the server.

Removing the Top Cover

Important: 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.

1. Power down the system as described in "Removing Power" on the previous page.
2. Carefully remove the system from the rack or wall, placing the system on a workbench.
3. Remove the four screws holding the cover in place.
4. Lift the top cover up.

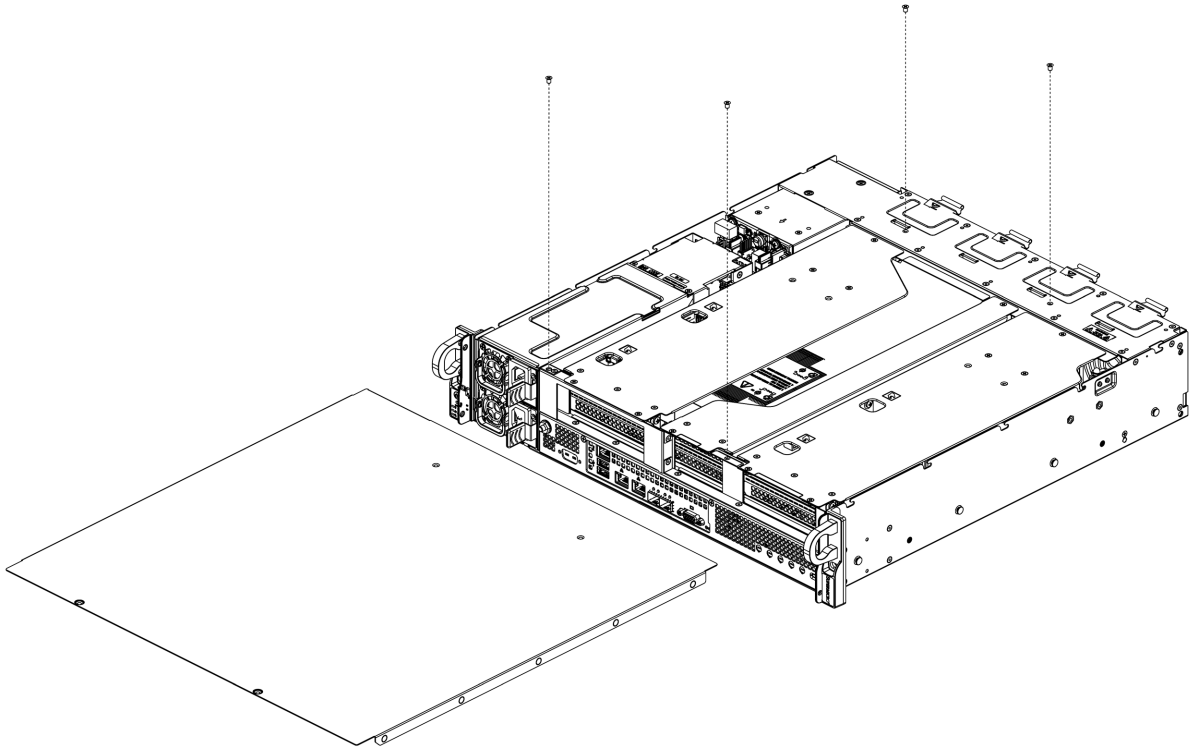


Figure 3-1. Removing the Top Cover

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 your equipment from ESD.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Handle the motherboard only by its edges. Do not touch its components, peripheral chips, memory modules, or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure that your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners, and the motherboard.
- Use only the correct type of onboard CMOS battery. To avoid possible explosion, do not install the onboard battery upside down.

3.4 Processor and Heatsink Installation

This section provides procedures to install the processor(s) and heatsink(s).

Notes:

- Take industry standard precautions to avoid ESD damage. For details, see "Static-Sensitive Devices" on the previous page.
- Before starting, make sure that the plastic socket cap is in place and none of the socket pins are bent. If any damage is noted, contact your retailer.
- Do not connect the system power cord before the processor and heatsink installation is complete.
- 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 processor socket.
- When buying a processor separately, use only a Supermicro certified heatsink.
- Refer to the Supermicro website for the most recent processor support.
- When installing the heatsink, ensure a torque driver set to the correct force is used for each screw.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.

LGA 4710 Socket E2 Processors

Processor Top View

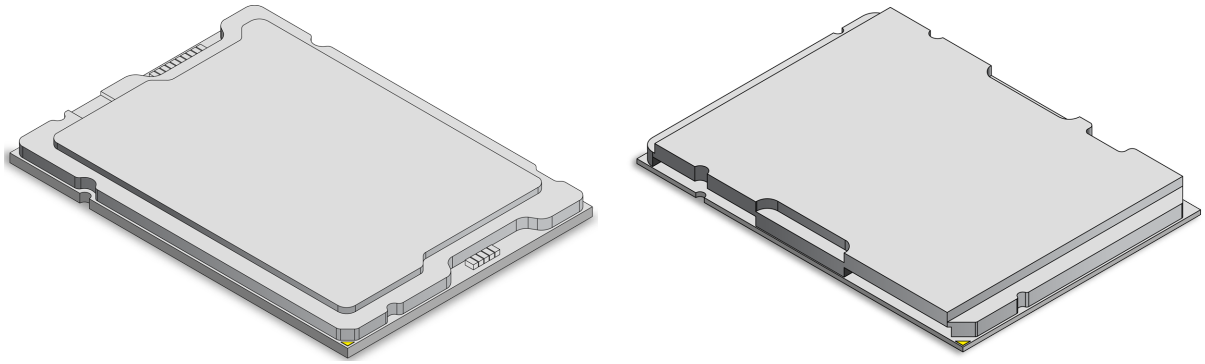


Figure 3-2. Processor (SP XCC left, SP HCC/LCC right)

Note: The motherboard supports three processor SKUs: SP XCC, SP HCC, and SP LCC. Each SKU supports a specific carrier; the SP XCC processor supports Carrier E2A while SP HCC and SP LCC support Carrier E2B. Make sure the processors of the same SKU are on the motherboard.

Overview of the Processor Carrier

The motherboard supports two types of processors and their associated processor carrier.

Processor Carriers

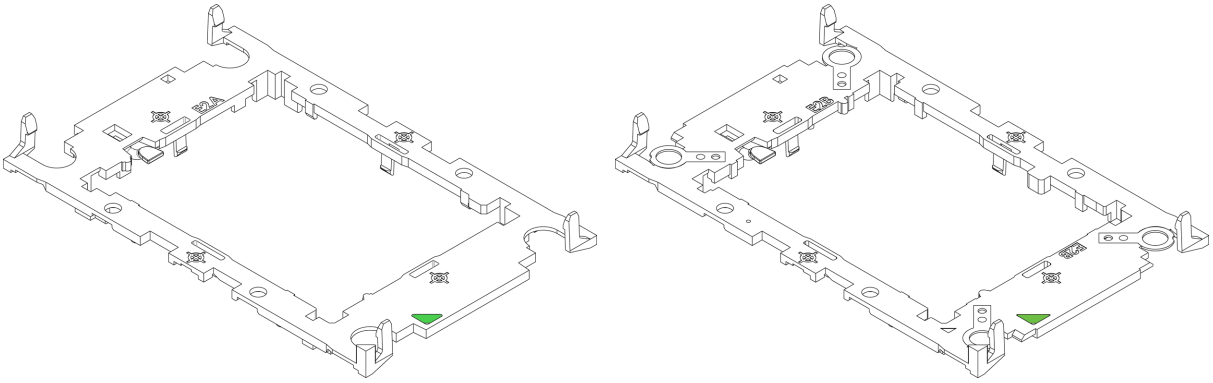


Figure 3-3. Carrier (SP XCC E2A left, SP HCC/LCC E2B right)

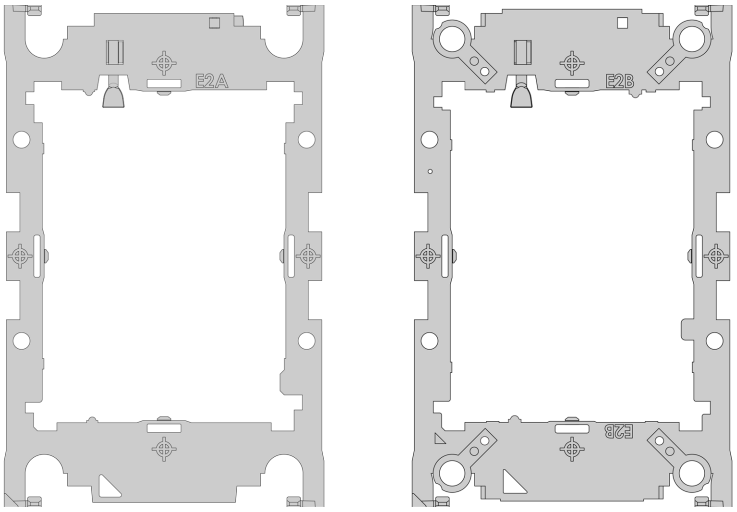


Figure 3-4. Carrier Top View (SP XCC E2A left, SP HCC/LCC E2B right)

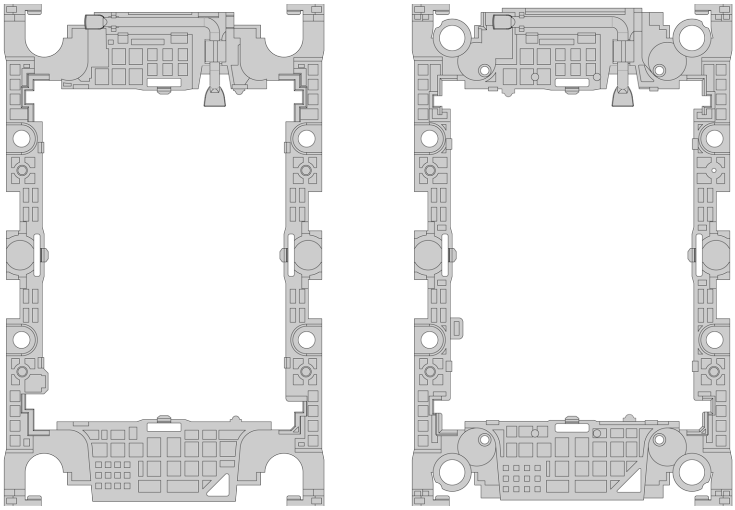


Figure 3-5. Carrier Bottom View (SP XCC E2A left, SP HCC/LCC E2B right)

Overview of the Processor Socket

The processor socket is protected by a plastic protective cover.

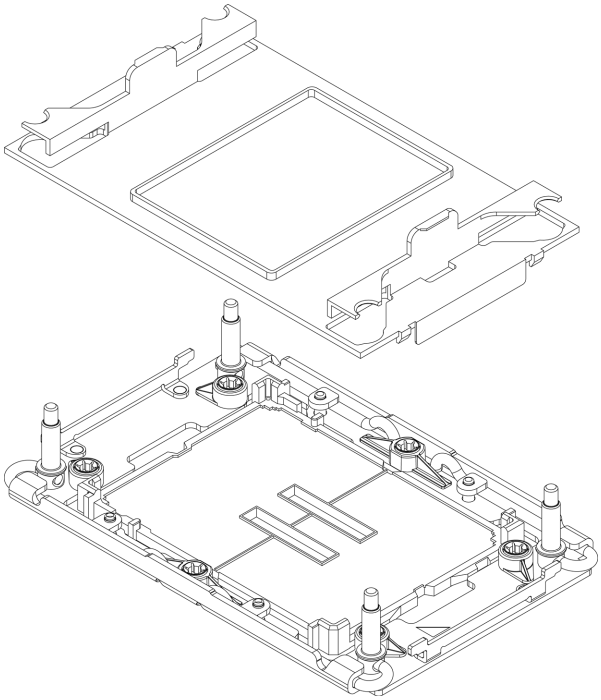


Figure 3-6. Plastic Protective Cover and Processor Socket

Overview of the Processor Heatsink Module

The Processor Heatsink Module (PHM) contains a heatsink, a processor carrier, and the processor.

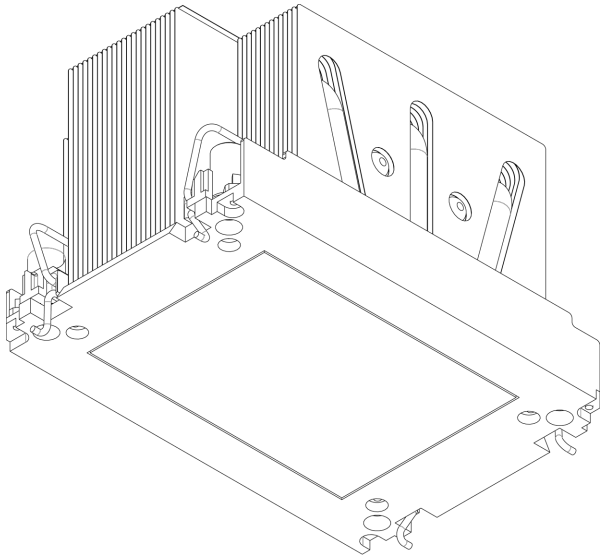


Figure 3-7. Heatsink (2U)

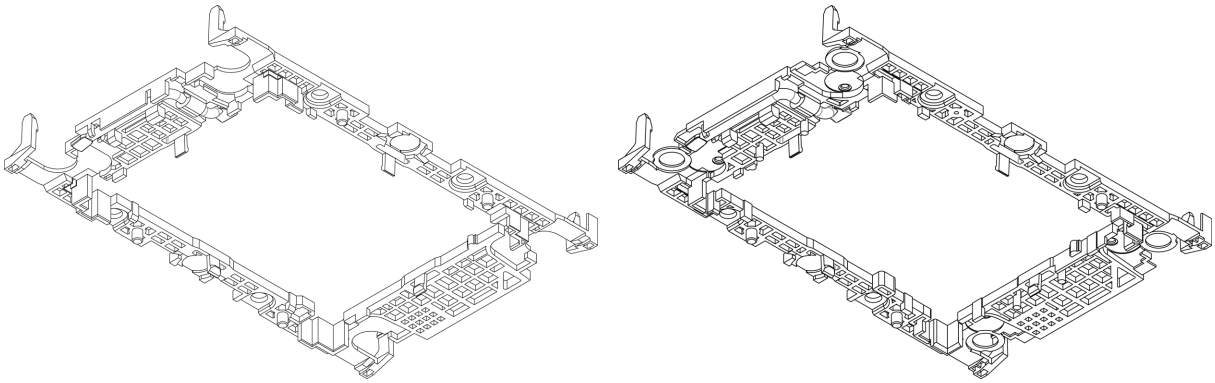


Figure 3-8. Carrier (SP XCC E2A left, SP HCC/LCC E2B right)

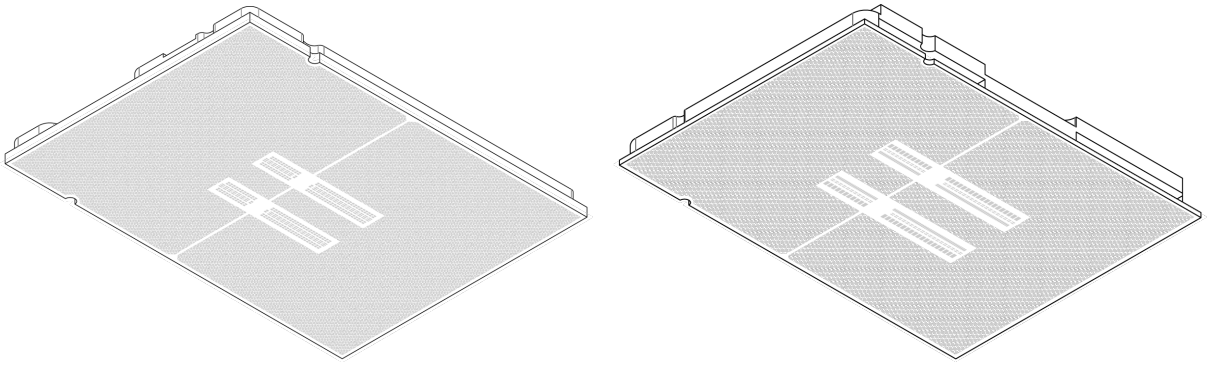


Figure 3-9. Processor (SP XCC E2A left, SP HCC/LCC E2B right)

Installing the Processor

To install the processor, follow the steps below:

1. Before installation, make sure the lever on the processor carrier is pressed down as shown below.

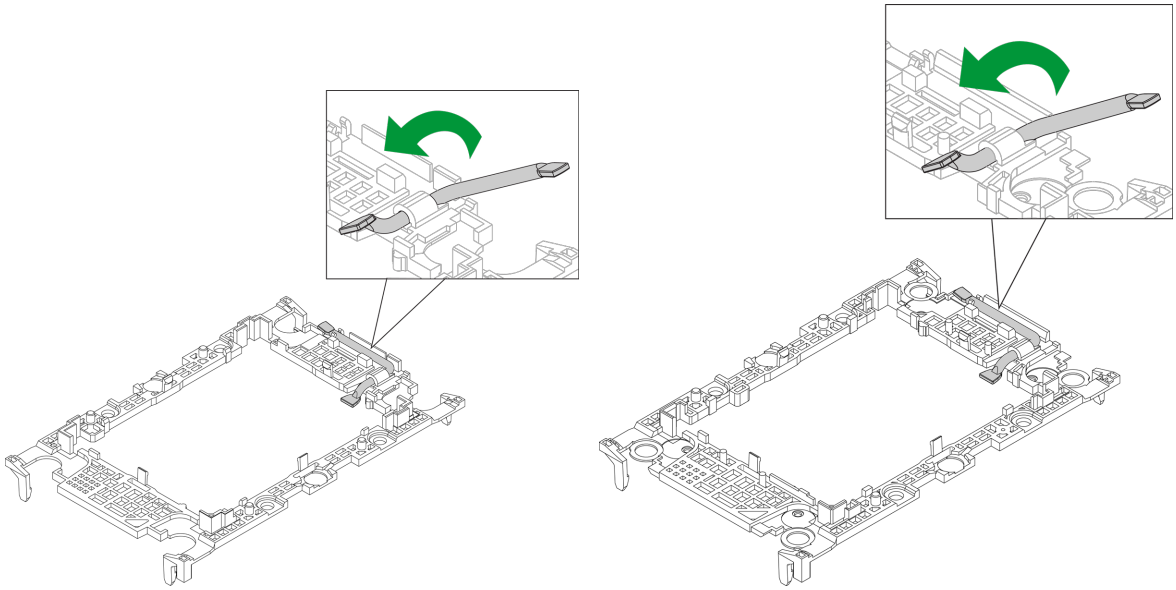


Figure 3-10. Carrier Lever (SP XCC left, SP HCC/LCC right)

2. Hold the processor with the LGA lands (gold contacts) facing up. Locate the small, gold triangle in the corner of the processor and the corresponding hollowed triangle on the processor carrier. These triangles indicate pin 1.

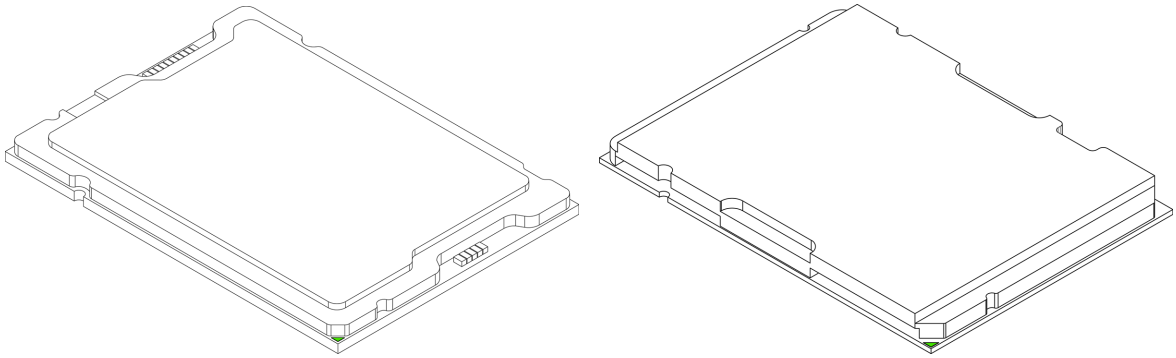


Figure 3-11. Processor (SP XCC E2A left, SP HCC/LCC E2B right)

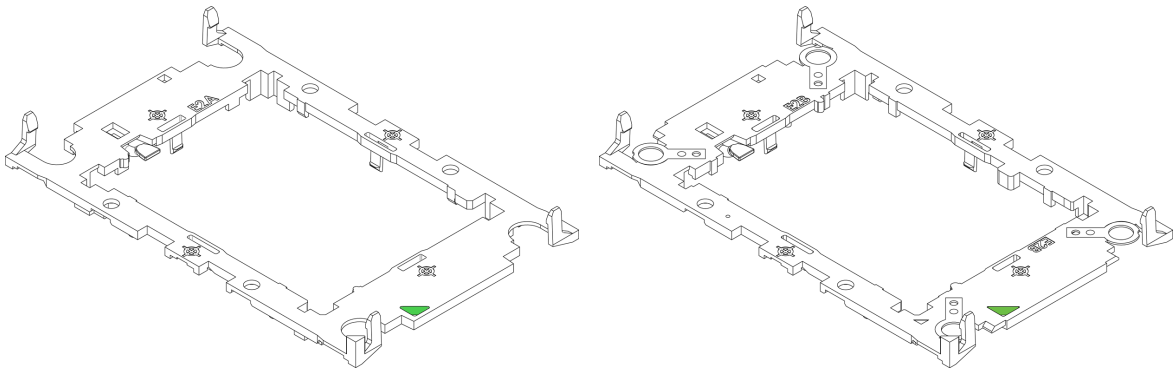


Figure 3-12. Carrier (SP XCC E2A left, SP HCC/LCC E2B right)

3. Use the triangles as a guide to carefully align and place one end of the processor into the latch marked A, and place the other end of the processor into the latch marked B as shown below.

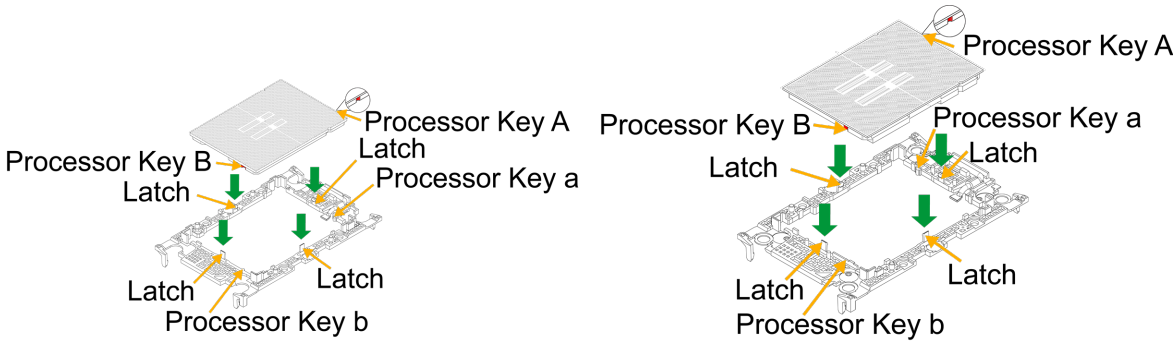


Figure 3-13. Keys and Latches Locations (SP XCC E2A left, SP HCC/LCC E2B right)

4. Examine all corners to ensure that the processor is firmly attached to the carrier.

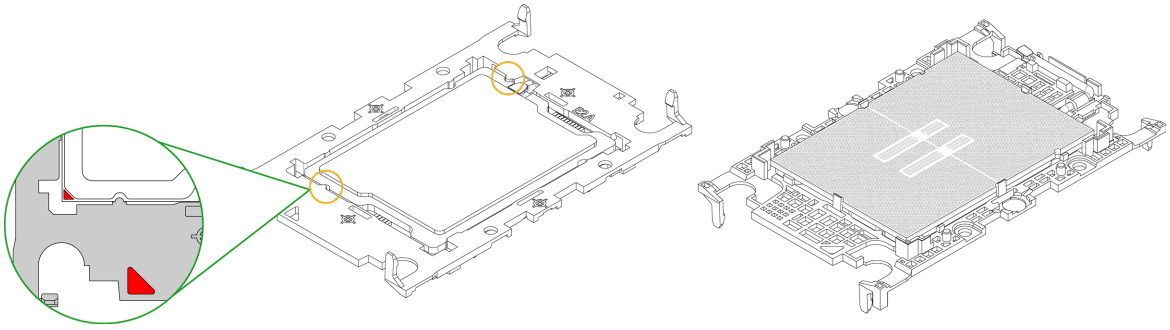


Figure 3-14. SP XCC E2A Keys and Latches

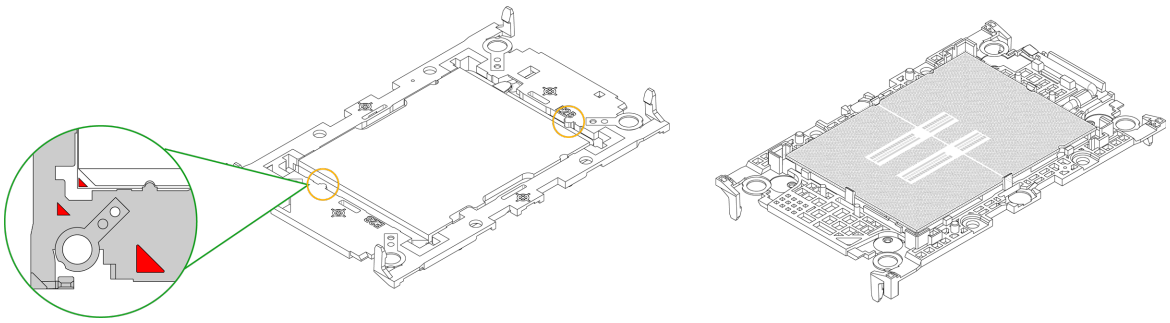


Figure 3-15. SP HCC/LCC E2B Keys and Latches Together

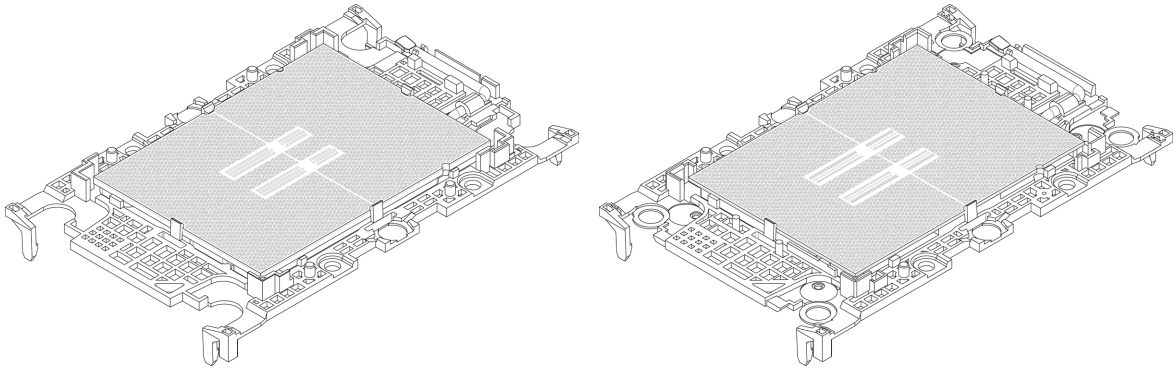


Figure 3-16. Carrier Assembly Completed (SP XCC E2A left, SP HCC/LCC E2B right)

Assembling the Processor Heatsink Module

After installing the processor into the carrier, mount it onto the heatsink to create the processor heatsink module (PHM):

1. Note the label on top of the heatsink, which marks the airflow direction. Turn the heatsink over and orient the heatsink so the airflow arrow is pointing towards the triangle on the processor.
2. If this is a new heatsink, the thermal grease has been pre-applied. Otherwise, apply the proper amount of thermal grease.
3. Hold the processor carrier so the processor's gold contacts are facing up, then align the holes of the processor carrier with the holes on the heatsink. Press the processor carrier down until it snaps into place. The plastic clips of the processor carrier will lock at the four corners.

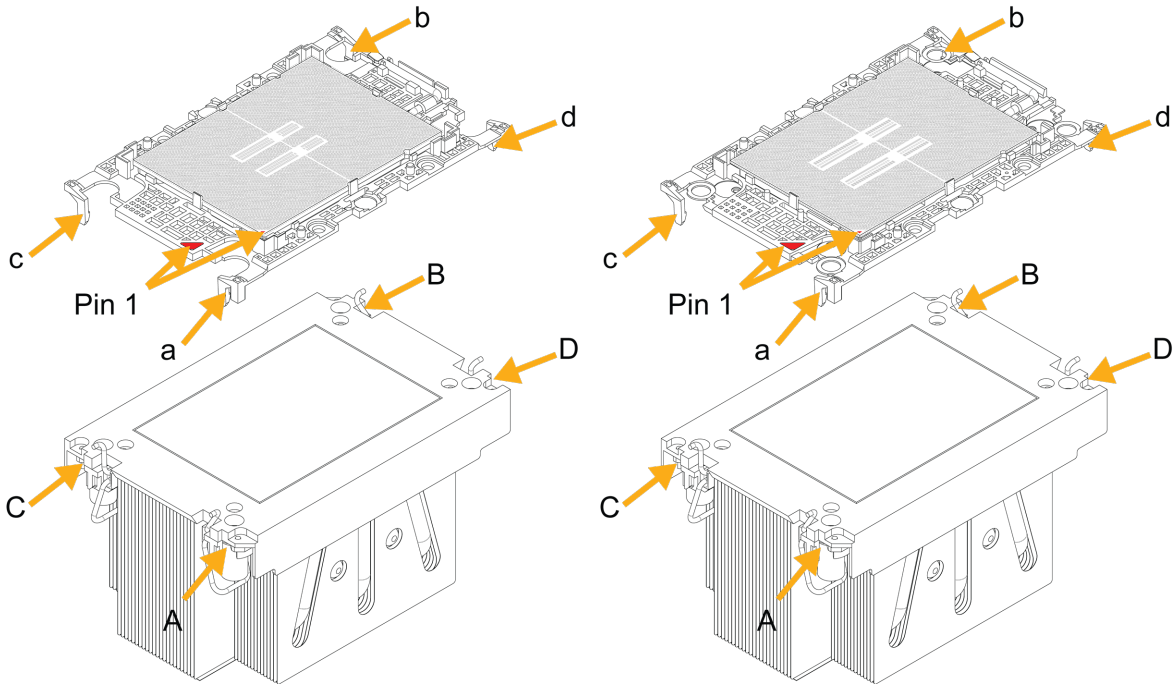


Figure 3-17. Carrier with 2U Heatsink (SP XCC left, SP HCC/LCC right)

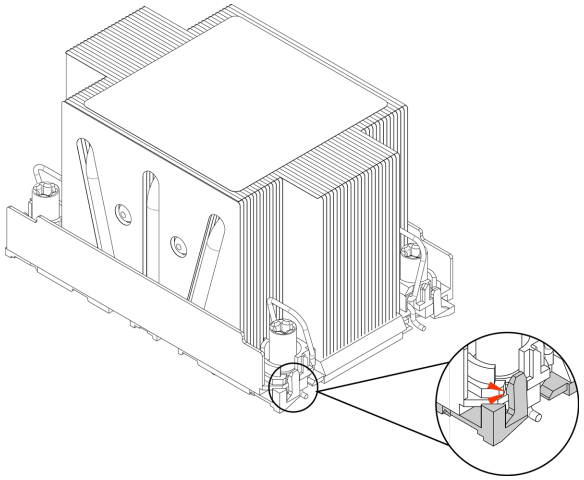


Figure 3-18. PHM Plastic Clips Locked (2U)

4. Examine all corners to ensure that the plastic clips on the processor carrier are firmly attached to the heatsink.

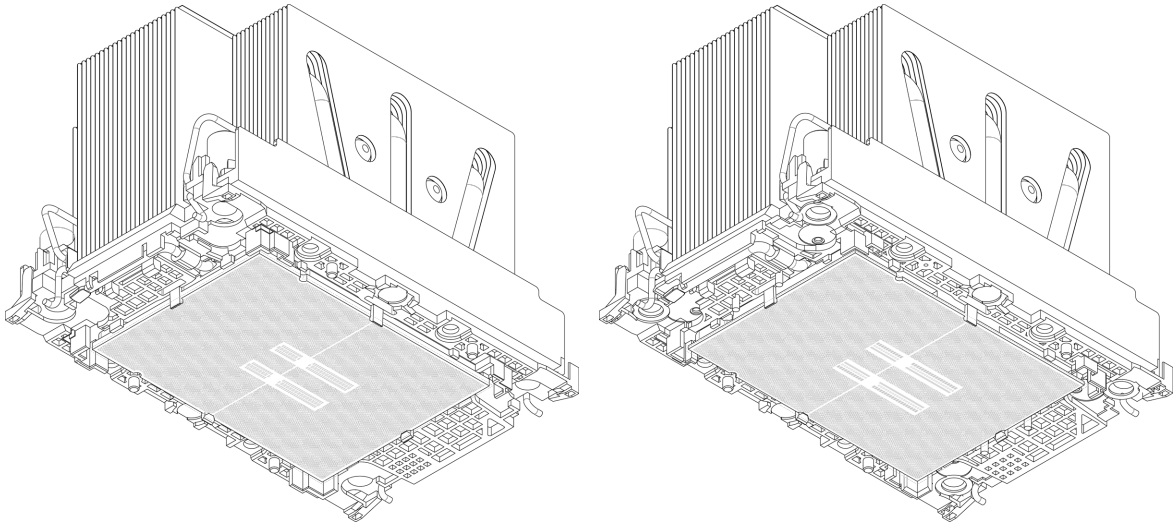


Figure 3-19. 2U PHM Completed (SP XCC left, SP HCC/LCC right)

Preparing the Processor Socket for Installation

This motherboard comes with a plastic protective cover installed on the processor socket. Remove it from the socket to install the Processor Heatsink Module (PHM). Gently pull up one corner of the plastic protective cover to remove it.

1. Press the tabs inward.

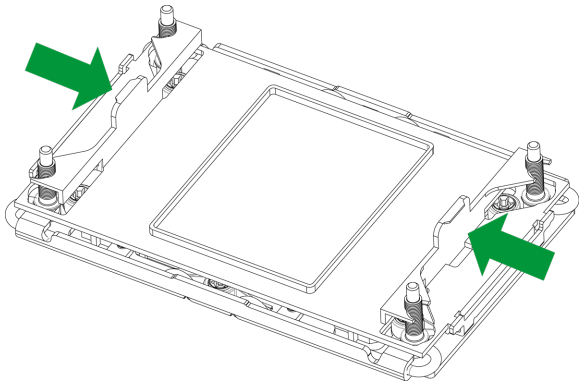


Figure 3-20. Processor Socket with Plastic Protective Cover

2. Pull up the protective cover from the socket.

Note: Do not touch or bend the socket pins.

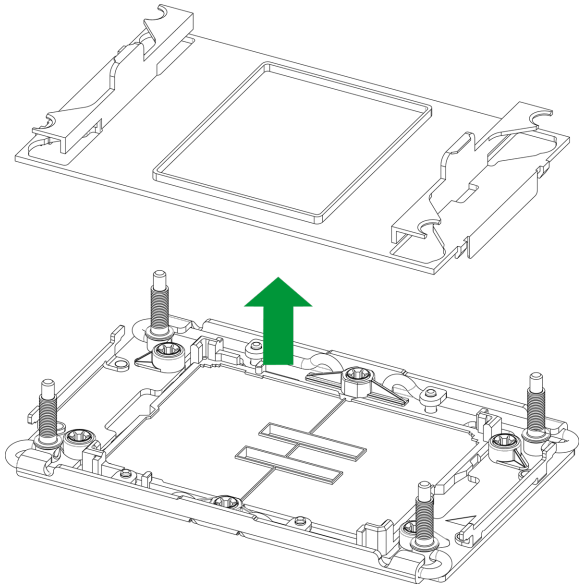
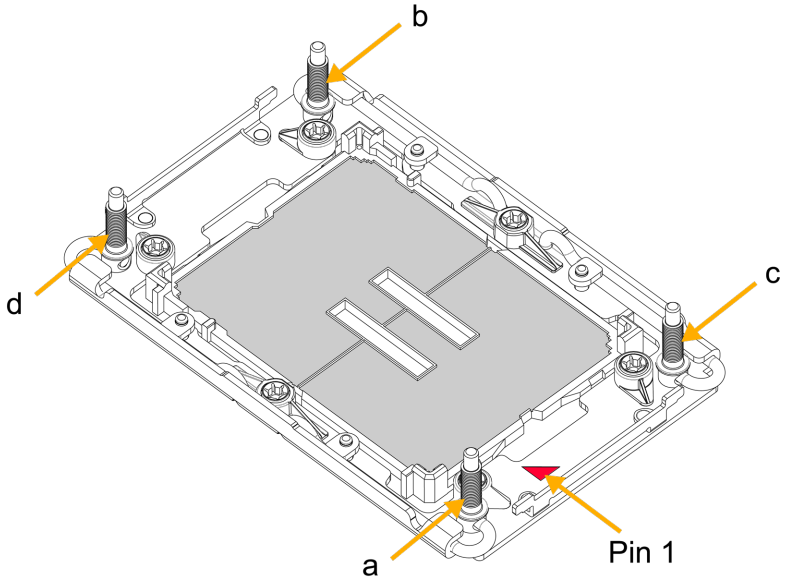


Figure 3-21. Plastic Protective Cover Removed

Preparing to Install the PHM into the Processor Socket

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

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



a, b, c, d: Threaded Fasteners

Figure 3-22. Threaded Fasteners

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

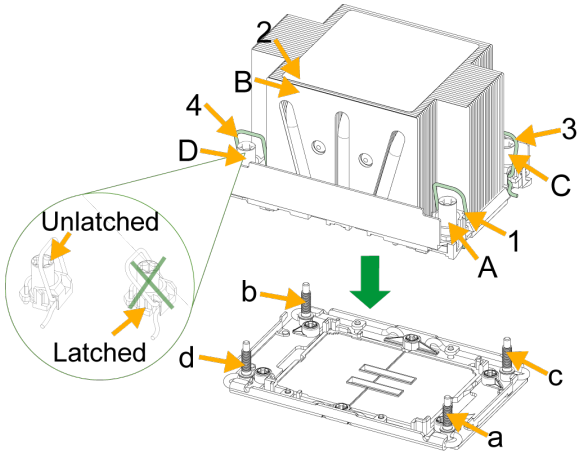


Figure 3-23. PEEK Nuts and Rotating Wires (2U)

3. Check the rotating wires (marked 1, 2, 3, and 4) to make sure that they are at unlatched positions before installing the PHM into the processor socket.

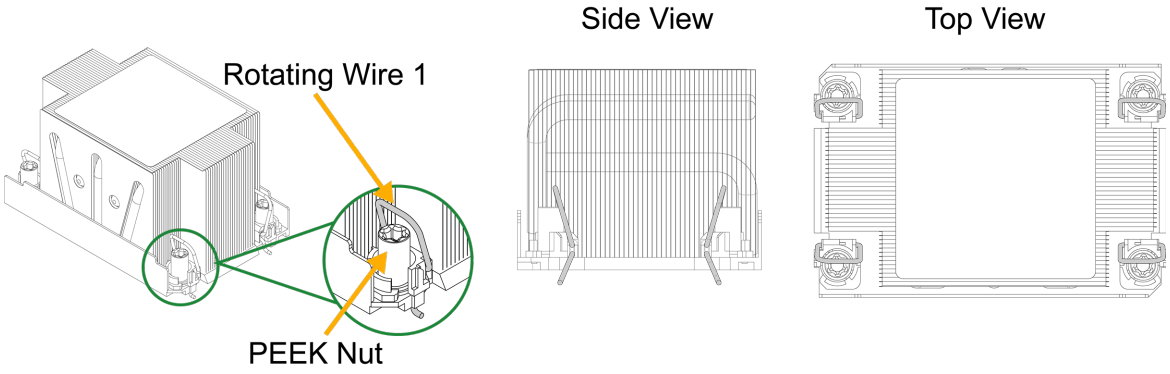


Figure 3-24. 2U Unlatched Positions

Installing the Processor Heatsink Module

1. Align pin 1 of the PHM with the printed triangle on the processor socket.
2. Make sure all four PEEK nuts of the heatsink (marked A, B, C, and D) are aligned with the threaded fasteners (marked a, b, c, and d), then gently place the heatsink on top of the processor socket.

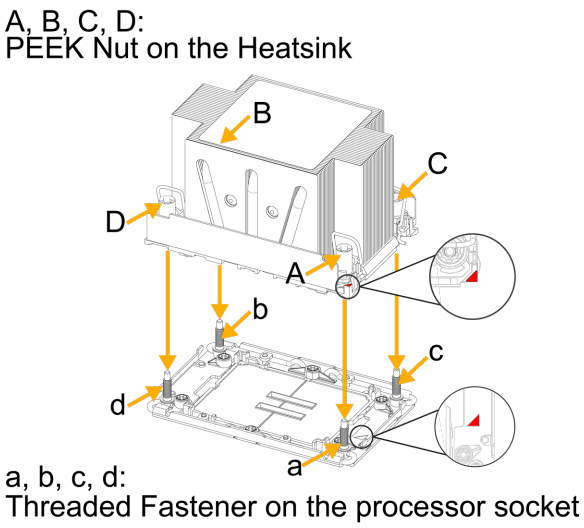


Figure 3-25. Aligning the Heatsink with the Socket (2U)

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

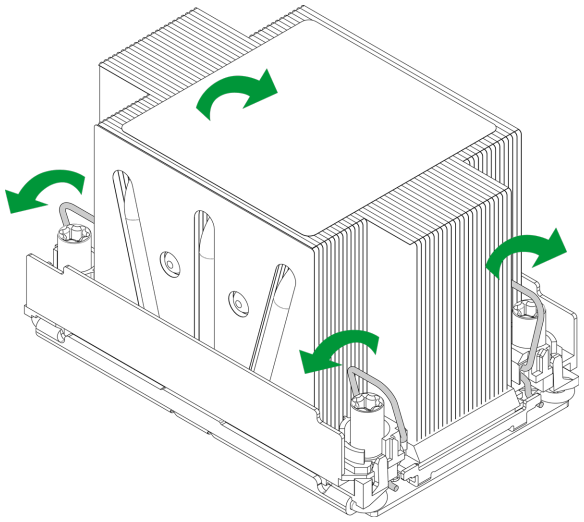


Figure 3-26. Latching the PHM (2U)

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

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

5. Examine all corners to ensure that the PHM is firmly attached to the socket.

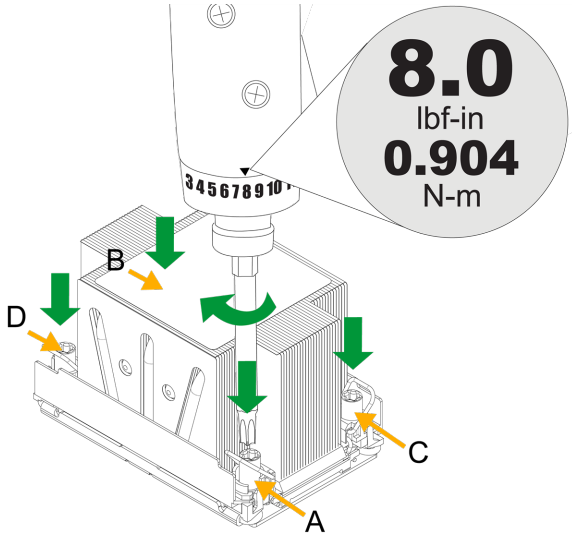


Figure 3-27. Installing the PHM with a Torque Driver (2U)

Removing the Processor Heatsink Module

Before removing the processor heatsink module (PHM) from the motherboard, shut down the system and then unplug the AC power cord from all power supplies.

Then follow the steps below:

1. Use a screwdriver to loosen the four screws. You can start with any screw, but make sure to loosen the screws in a diagonal pattern.

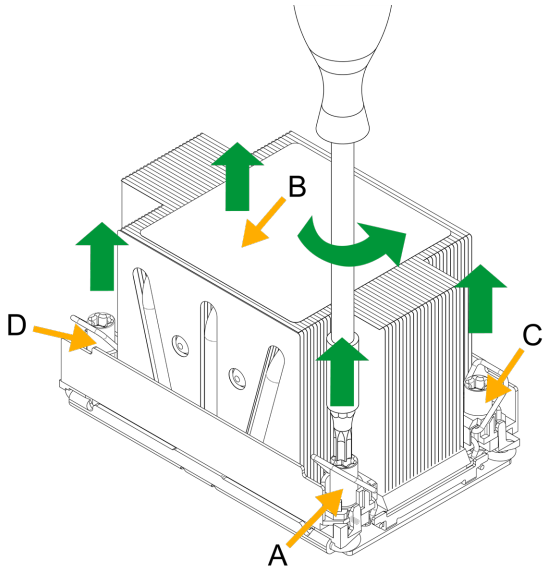


Figure 3-28. Loosening the Screws (2U)

2. Press the four rotating wires inwards to unlatch the PHM from the socket.

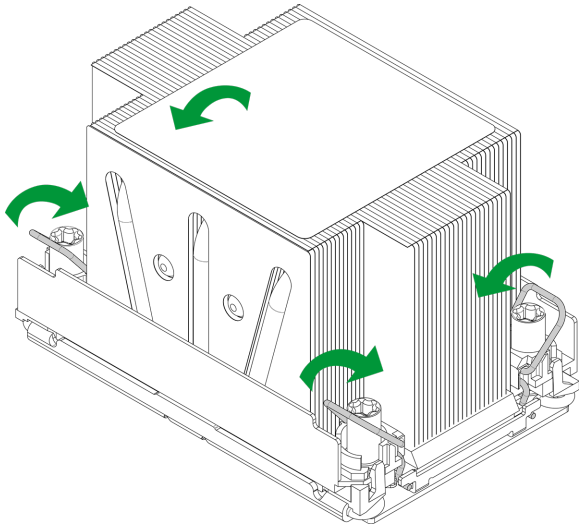


Figure 3-29. Unlatching the PHM (2U)

3. Gently lift the PHM upwards to remove it from the socket.

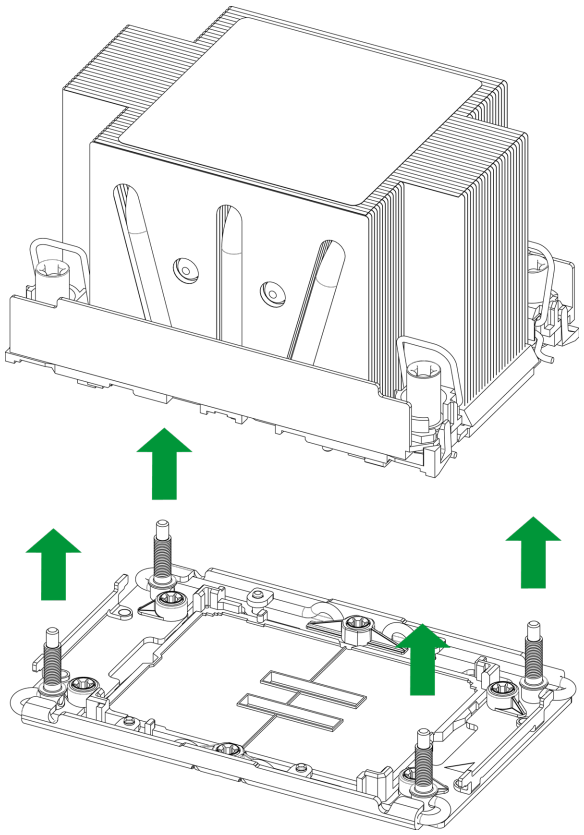


Figure 3-30. Removing the PHM from the Socket (2U)

4. To remove the processor from the heatsink, gently lift the lever from the processor carrier.

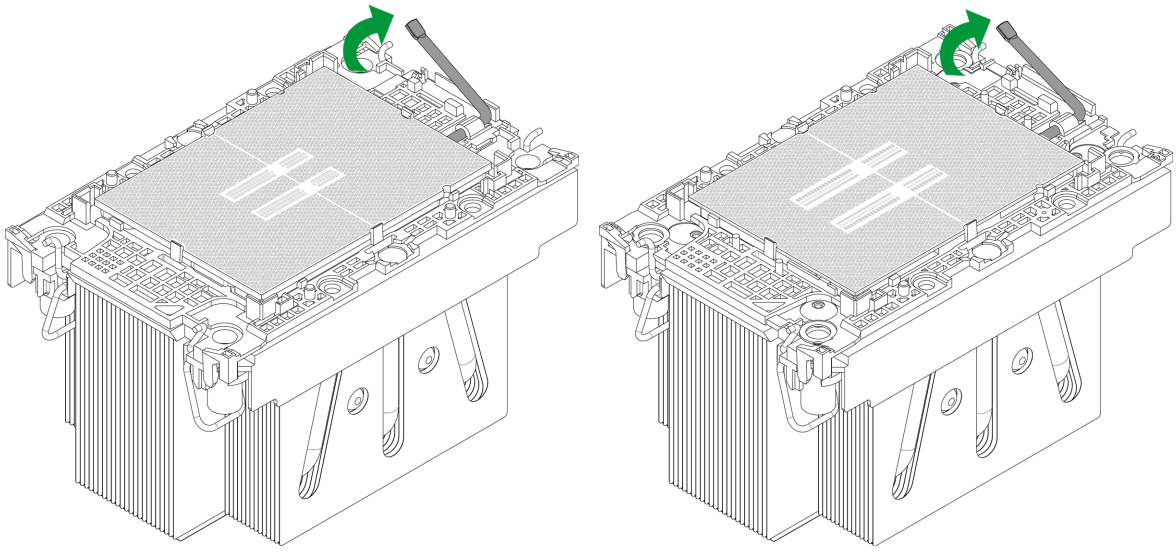


Figure 3-31. Carrier with 2U Heatsink (SP XCC left, SP HCC/LCC right)

5. To remove the processor, move the lever to its unlocked position and gently remove the processor.

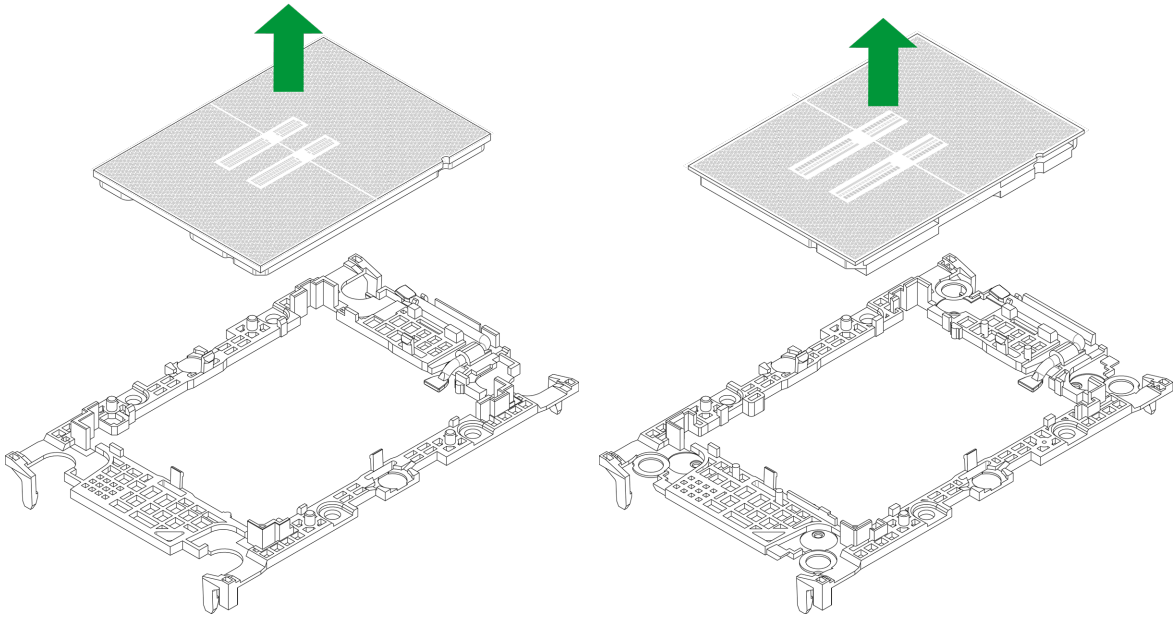


Figure 3-32. Removing the Processor (SP XCC left, SP HCC/LCC right)

3.5 Memory Support and Installation

Important: To prevent any damage, exercise extreme care when installing or removing memory modules.

Note: Check the Supermicro website for recommended memory modules.

Memory Support

The X14SBM-TF supports up to 2 TB of 3DS RDIMM/MRDIMM DDR5 ECC memory with speeds of up to 8000 MT/s in eight DIMM slots.

Note: is required to support MRDIMM.

DDR5-6400 Memory Support for Intel® Xeon® 6700/6500-Series Processors with P-Cores					
Type	**Ranks Per DIMM, Data Width (Stack)**	**DIMM Capacity (GB)**			**Speed (MT/s); Voltage (V); Slots per Channel (SPC) and DIMMs per Channel (DPC)**
		DRAM Density			
		16 Gb	**24 Gb**	**32 Gb**	**1DPC/2SPC**
		1DPC	**1DPC**	**1DPC**	**+1.1 V**
RDIMM	1Rx8	16 GB	24 GB	-	6400, 6000, 5600, 5200, 4800 (DDR5-6400 rated RDIMMs only)
	1Rx4	32 GB	48 GB	-	
	2Rx8	32 GB	48 GB	-	
	2Rx4	64 GB	96 GB	128 GB*	
3DS RDIMM	4Rx4	-	-	-	
	8Rx4	-	-	256 GB*^	
MRDIMM	2Rx8	32 GB	-	-	8000, 7200 (MRDIMM-8800 only)
	2Rx4	64 GB	-	-	

Notes:

- The items marked with an asterisk (*) are supported in 1S/2S/4S systems. The items with circumflex (^) are supported in 8S systems. All others support 1S/2S only.

CXL Memory Configuration Support for Intel® Xeon® 6700/6500-Series Processors with P-Cores									
Native DDR5 Memory Per Socket				CXL Memory Per Socket					
Slot 0 DIMM Ranks	Slot 0 DIMM Capacity (GB)	DIMM Type	DRAM Density (Gb)	CXL Memory Channels	CXL Memory Type	CXL Capacity Per Device/ Module	CXL Inter leave	CXL Mode	4S and 8S support
2Rx4	96	10x4	24	2+2	DDR5 x8	96 GB	1x4*, 2x2, 4x1	1LM+Vol	Yes
2Rx4	128	10x4	32	2+2	DDR4 x8, DDR x8	128 GB	1x4*, 2x2, 4x1	1LM+Vol	Yes
2Rx4	128	10x4	32	2+2	DDR5 x8	128 GB	hetero x12	Hetero	Yes
2Rx4	64	10x4	16	2+2+2	DDR5 x8	128 GB	1x6*, 2x3, 3x2	1LM+Vol	No
2Rx4	64	10x4	16	2	DDR5 x8	128 GB	1x2*	1LM+Vol	No
2Rx4	64	10x4	16	1+1	DDR5 x16	2ch 128 GB	1x2*	Intel Flat Memory Mode	Yes

Notes:

- The items with an asterisk (*) are the default settings in the BIOS.
- The Intel® Xeon® 6700/6500-series processors with P-cores CXL memory configurations are 1DPC ('Slot 0') only for native DDR5.
- CXL Memory Channel: number of devices per root port, with root ports separated by "+". e.g. 2+2+2+2 = four root ports populated with two devices per root port.
- CXL Interleave: sets x ways, e.g. 2x4 = one set of two modules, interleaved four-way
- CXL Modes:
  - 1LM+Vol= Native DDR5 ('1LM') and (volatile) CXL memory visible to SW as separate tiers, separately interleaved.
  - Hetero x12 = DDR5 and (volatile) CXL memory interleaved together in one 12-way set.
  - Flat Memory Mode = HW manages data movement between DDR5 and CXL memory, total capacity visible to SW

Intel® Xeon® 6700/6500-Series Processors with P-Cores DDR5 Memory Population Table **(1 Processor and 8 DIMMs Installed, 1DPC)**	
DIMM Counts	***Memory Population Sequence (1DPC)***
1 DIMM (Recommended)	DIMMA1
4 DIMMs (Recommended)	DIMMA1/DIMMC1/DIMME1/DIMMG1 DIMMB1/DIMMD1/DIMMF1/DIMMH1
8 DIMMs (Recommended)	DIMMA1/DIMMB1/DIMMC1/DIMMD1/DIMME1/DIMMF1/DIMMG1/DIMMH1

DDR5-6400 Memory Support for Intel® Xeon® 6700-Series Processors with E-Cores (Only DDR5-6400 Related RDIMMs Supported)					
Type	Ranks Per DIMM, Data Width (Stack)	DIMM Capacity (GB)			Speed (MT/s); Voltage (V); Slots per Channel (SPC) and DIMMs per Channel (DPC)
		DRAM Density			
		16 Gb	24 Gb	32 Gb	1DPC/2SPC
		1DPC	1DPC	1DPC	+1.1 V
RDIMM	1Rx4	32 GB	-	-	6400, 6000, 5600, 5200, 4800 (DDR5-6400 rated RDIMMs only)
	2Rx8	32 GB	-	-	
	2Rx4	64 GB	96 GB	-	
	2Rx4	-	-	128 GB	
3DS RDIMM	4Rx4	-	-	256 GB	

CXL Memory Configuration Support for Intel® Xeon® 6700-Series Processors with E-Cores								
Native DDR5 Memory Per Socket				CXL Memory Per Socket				
Slot 0 DIMM Ranks	Slot 0 DIMM Capacity (GB)	DIMM Type	DRAM Density (Gb)	CXL Memory Channels	CXL Memory Type	CXL Capacity Per Device/ Module	CXL Interleave	CXL Mode
2Rx4	64	10x4	16	2+2	DDR5 x8	64 GB	1x4*, 2x2, 4x1	1LM+Vol
2Rx4	64	10x4	16	1+1	DDR5 x16	128 GB	1x2*, 2x1	1LM+Vol
1Rx4	32	10x4	16	2	DDR5 x8	128 GB	1x2*	Intel Flat Memory Mode

Notes:

- The items with an asterisk (*) are the default settings in the BIOS.
- The Intel® Xeon® 6700-series processors with E-cores CXL memory configurations are 1DPC ('Slot 0') only for native DDR5.
- CXL Memory Channel: number of devices per root port, with root ports separated by "+," e.g. 2+2+2+2 = four root ports populated with two devices per root port.
- CXL Interleave: sets x ways, e.g. 2x4 = one set of two modules, interleaved four-way.
- CXL Modes:
  - 1LM + Vol = DDR5 ('1LM') and (volatile) CXL memory visible to SW as separate tiers, separately interleaved.
  - Flat Memory Mode = HW manages data movement between DDR5 and CXL memory, total capacity visible to SW.

Intel® Xeon® 6700-Series Processors with E-Cores DDR5 Memory Population Table (1 Processor and 8 DIMMs Installed, 1DPC)	
DIMM Counts	***Memory Population Sequence (1DPC)***
1 DIMM (Recommended)	DIMMA1
4 DIMMs	DIMMA1/DIMMC1/DIMME1/DIMMG1 DIMMB1/DIMMD1/DIMMH1/DIMMF1
8 DIMMs (Recommended)	DIMMA1/DIMMB1/DIMMC1/DIMMD1/DIMME1/DIMMF1/DIMMG1/DIMMH1

General Guidelines for Optimizing Memory Performance

- Using DDR5 memories with the same type, size, speed, ranking, and density is a mandatory requirement.
- First, confirm whether the installed CPU supports P-cores or E-cores, then refer to the corresponding memory population table and install the memory correctly.
- The motherboard will support an odd number of memory modules. However, to achieve the best memory performance, a balanced memory population is recommended.

DIMM Installation

Important: To avoid causing any damage to the memory module or the DIMM socket, do not use excessive force when pressing the release tabs on the ends of the DIMM socket. Handle memory modules with care. To avoid ESD-related damage to your memory modules or components, carefully follow all the instructions given in "Static-Sensitive Devices" on page 47.

1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population table earlier in this section.
2. Push the release tabs outwards on both ends of the DIMM slot to unlock it.

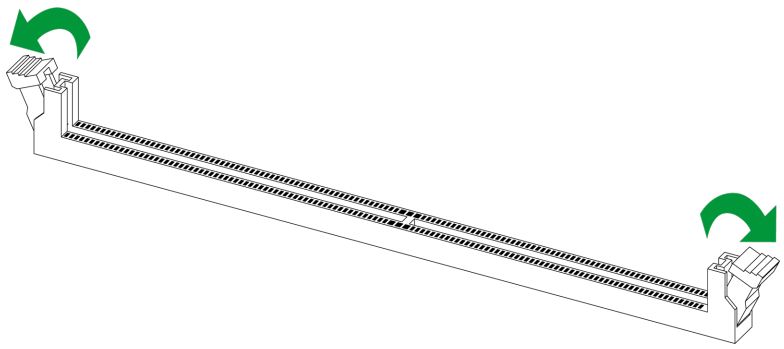


Figure 3-33. Unlocking the DIMM Slot

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

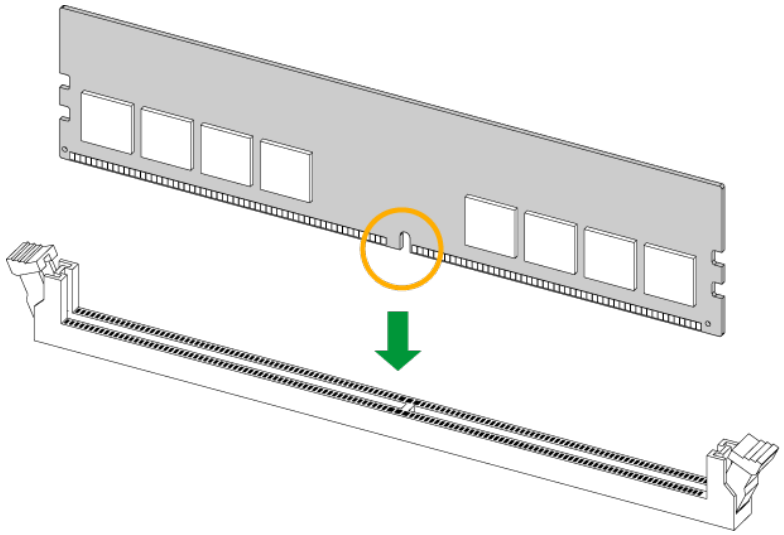


Figure 3-34. Aligning the DIMM Slot with the Receptive Point

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

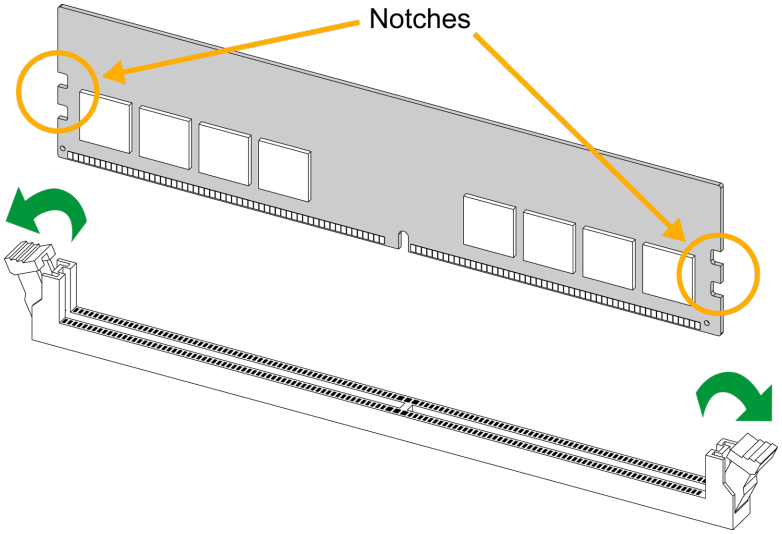


Figure 3-35. Aligning the Notches

5. Press 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 into the slot.

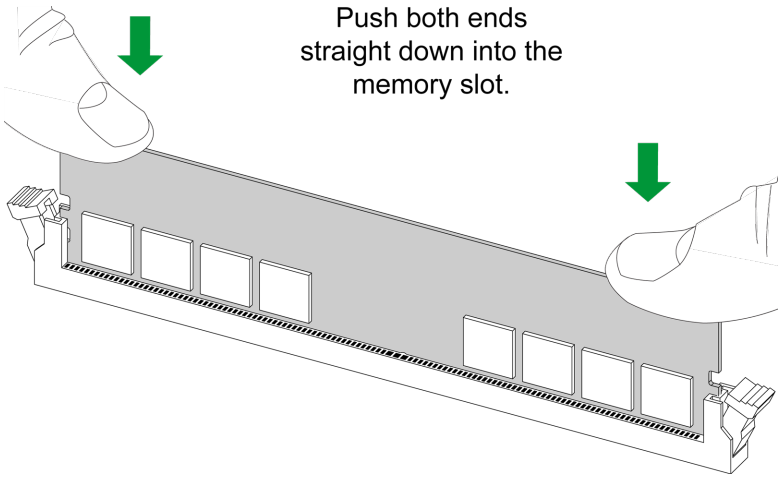


Figure 3-36. Securing the DIMM

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

DIMM Removal

Important: To avoid causing any damage to the memory module or the DIMM socket, do not use excessive force when pressing the release tabs on the ends of the DIMM socket. Handle memory modules with care. To avoid ESD-related damage to your memory modules or components, carefully follow all the instructions given in "Static-Sensitive Devices" on page 47.

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

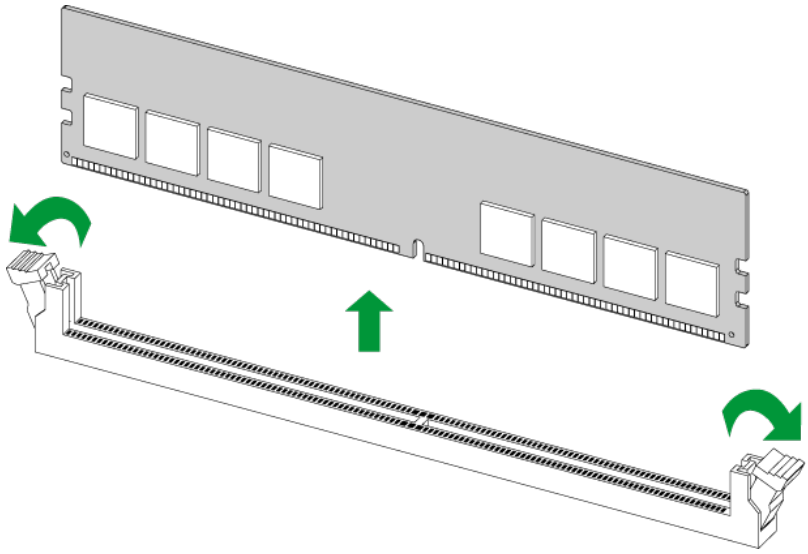


Figure 3-37. Unlocking the DIMM Slot

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

3.6 Motherboard Battery Removal and Installation

Battery Removal

To remove the onboard battery, follow the steps below:

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

Proper Battery Disposal

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

Battery Installation

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

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

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

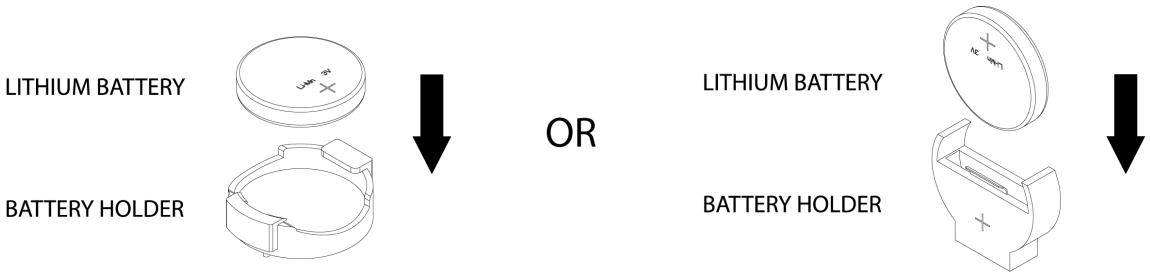


Figure 3-38. Installing a Battery

3.7 Storage Drives

The SYS-212B-FN2T has four rear hot-swappable 2.5" NVMe drive bays. Storage drives can be easily installed and removed using tool-less drive carriers from the server, which also enhances proper airflow.

Note: Enterprise-level storage modules are recommended for use in Supermicro servers.

Figure 3-39. SYS-212B-FN2T Storage Drives

Removing Hard Drive Carriers from the Chassis

1. Remove the system from the rack or wall and place on a workbench.
2. Press the release button on the drive carrier, which will extend the driver carrier handle, then use the drive carrier handle to pull the drive out of the server.
3. Use the handle to pull the drive carrier out of the server.
4. Return the system to the rack or wall.

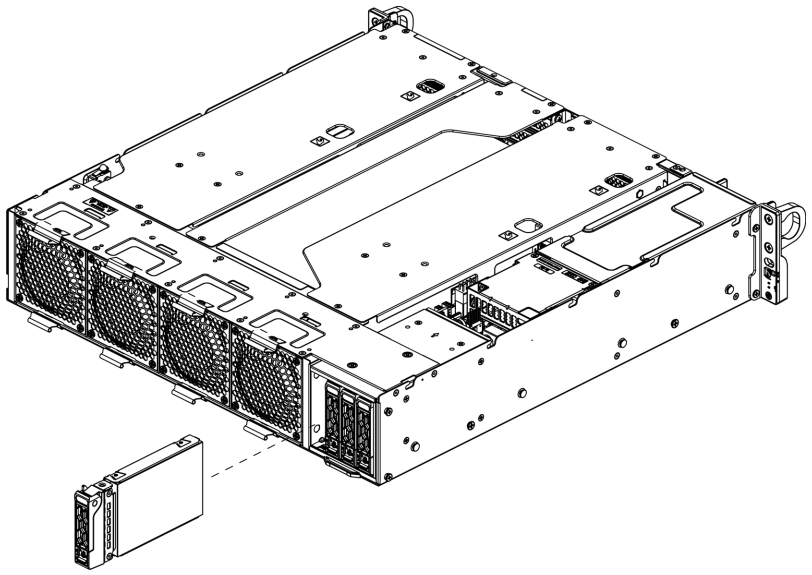


Figure 3-40. Removing a Drive Carrier

Installing a Storage Drive into a Drive Carrier

1. Remove the system from the rack or wall and place on a workbench.
2. Remove the dummy drive, which comes pre-installed in the drive carrier, by pushing it out of the drive carrier.
3. Insert a drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.
4. Insert the drive carrier into its bay, keeping the carrier oriented so that the release button is on the bottom side. When the carrier reaches the rear of the bay, the release handle will retract.
5. Push the handle in until it clicks into its locked position.
6. Return the system to the rack or wall.

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.

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.

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

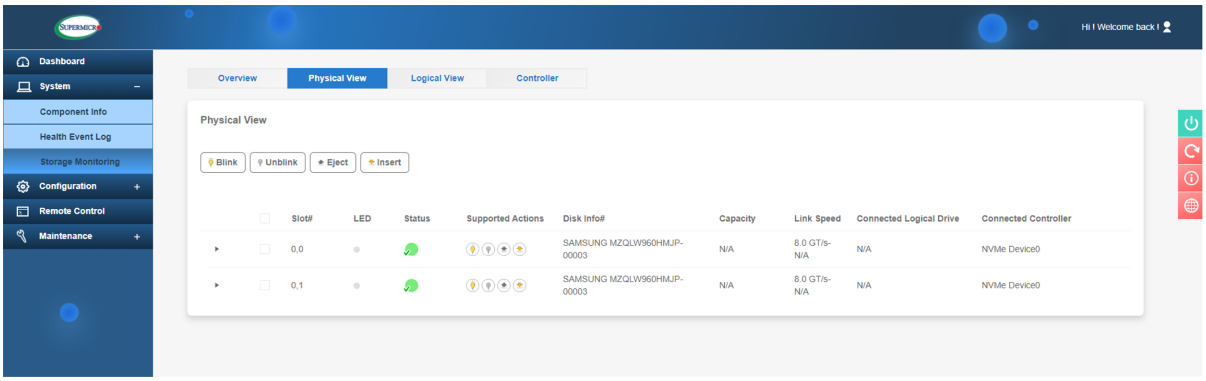


Figure 3-41. BMC Screenshot

Replacing a 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.

3.8 System Cooling

Refer to the following sections for information about the cooling capabilities of the SYS-212B-FN2T server.

Fans

The SYS-212B-FN2T server supports four fans with fan cages.

Changing a Fan

1. Determine which fan is failing.
2. Remove power from the system.
3. Remove the system from the rack or wall and place on a workbench.
4. Remove the fan cable from the midplane for the failed fan.
5. Lift the fan housing up and out of the server.
6. Push the fan up from the bottom.
7. Put the new fan back into the server and reconnect the cable.
8. Power on the system to confirm that the fan is working properly before replacing the server cover.
9. Return the system to the rack or wall.

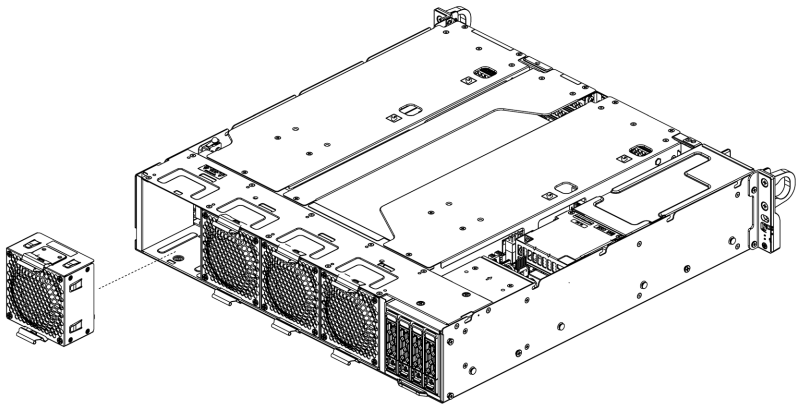


Figure 3-42. Changing a Fan

Air Shrouds

Air shrouds concentrate airflow to maximize fan efficiency.

Installing an Air Shroud

1. Power down the system as described in "Removing Power" on page 45.
2. Carefully remove the system from the rack or wall and place it on a workbench as described in "Accessing the System" on page 46 before removing the cover.
3. Remove the top cover from the system.
4. Ensure the CPU, CPU heatsinks, and configured DIMMs are installed.
5. Remove all riser card brackets first and position the air shroud as shown below.
6. Replace the top cover on the system before returning it to the rack or wall.
7. Gently push the air shroud into place.

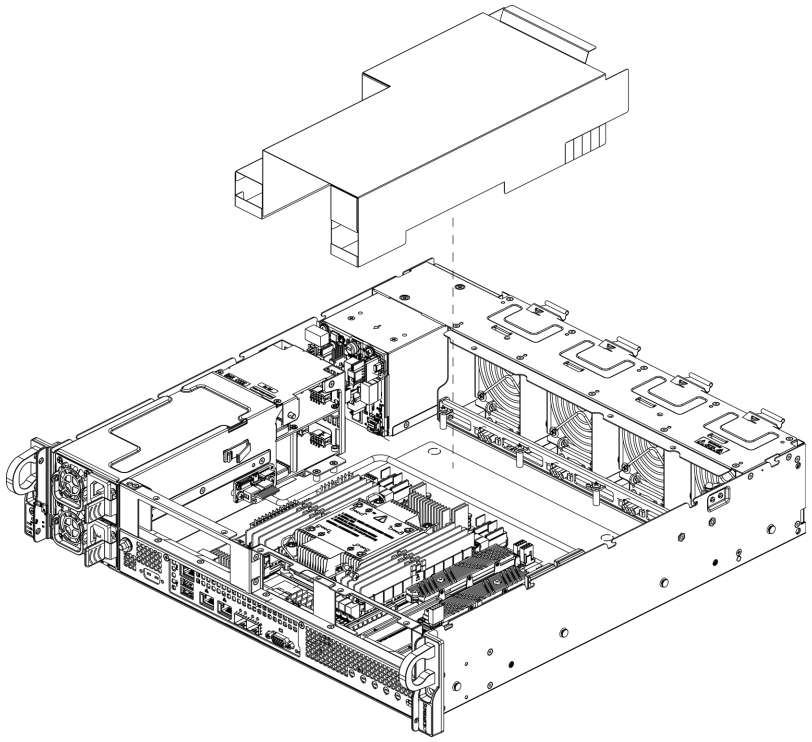


Figure 3-43. Installing an Air Shroud

3.9 Expansion Cards

Refer to the following sections for information on the expansion cards supported by the SYS-212B-FN2T server.

Riser Cards

The SYS-212B-FN2T server supports three bracketsone bracket for installing expansion cards. Riser cards position the expansion cards at a 90 degree angle, allowing them to fit inside the 2U server.

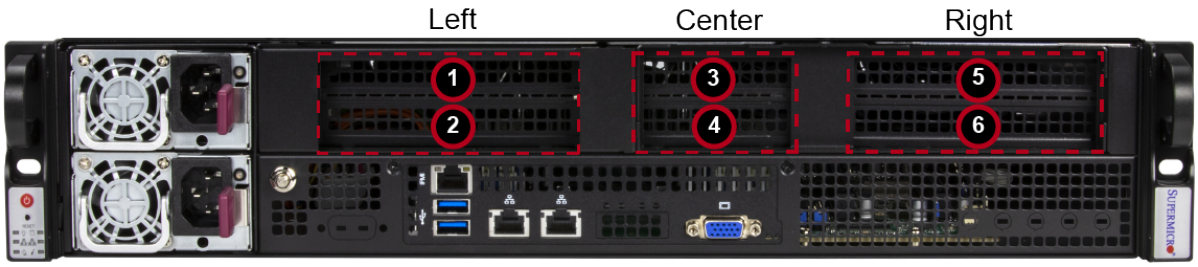


Figure 3-44. Expansion Bracket Locations

Brackets and Riser Card Part Number	
Bracket	**Riser Card Part Number**
Left	RSC-S-68G5 (optional)
Center	RSC-S2R-68G5 (optional)
Right	CBL-PCBA-G5T16-0809

Installing Expansion Cards into Brackets

Repeat the installation process below for all brackets.

1. Power down the system as described in Removing Power.
2. Carefully remove the system from the rack or wall and place it on a workbench as described in Accessing the System before removing the cover.
3. Remove the screws as shown below.
4. Remove the bracket from the server using the two square holes located at the top of the bracket, if present.
5. Install the PCIe expansion cards into the riser card.
6. Install the assembly into the server and connect any additional wires.
7. Return the system to the rack or wall.

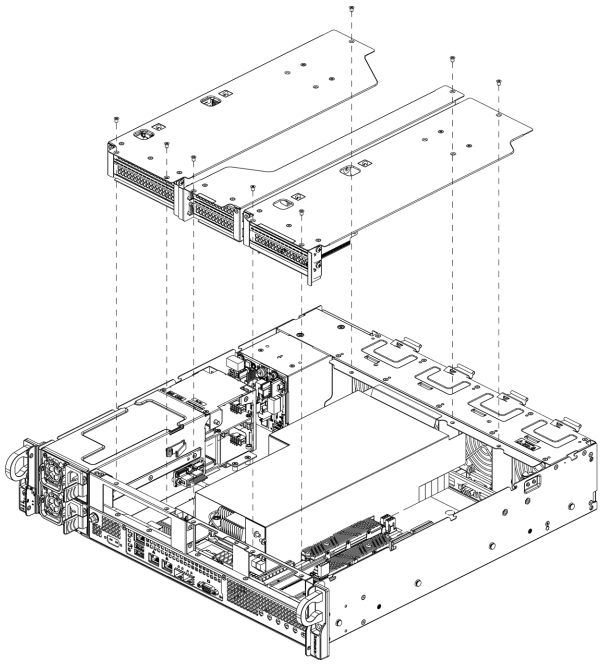


Figure 3-45. Removing the Riser Card Brackets

3.10 Cable Routing Diagrams

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

Cable Routing Diagram

Figure 3-46. Cable Routing Diagram

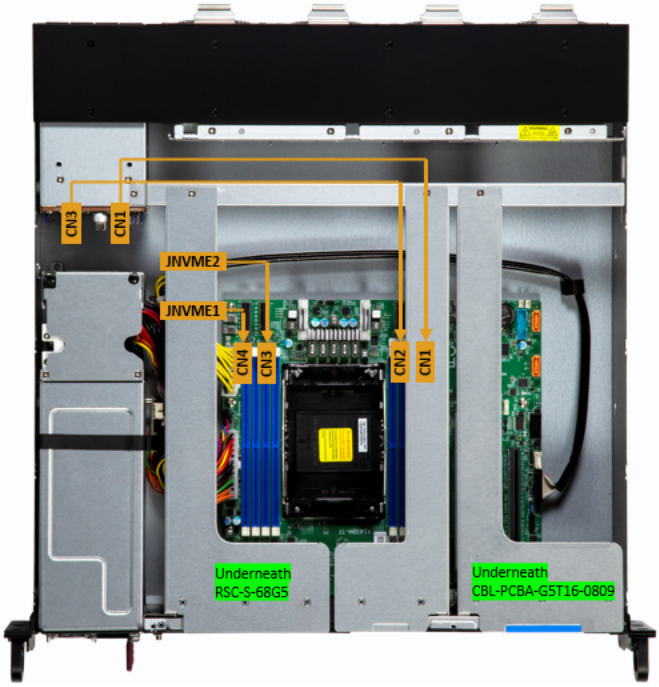


Figure 3-47. Cable Routing Diagram

3.11 Power Supply

The system includes one hot-plug power supply module. The power supply will automatically sense and operate at an input voltage between 100–240 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.

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 an inoperative 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 via 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.

Replacing the Power Supply

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

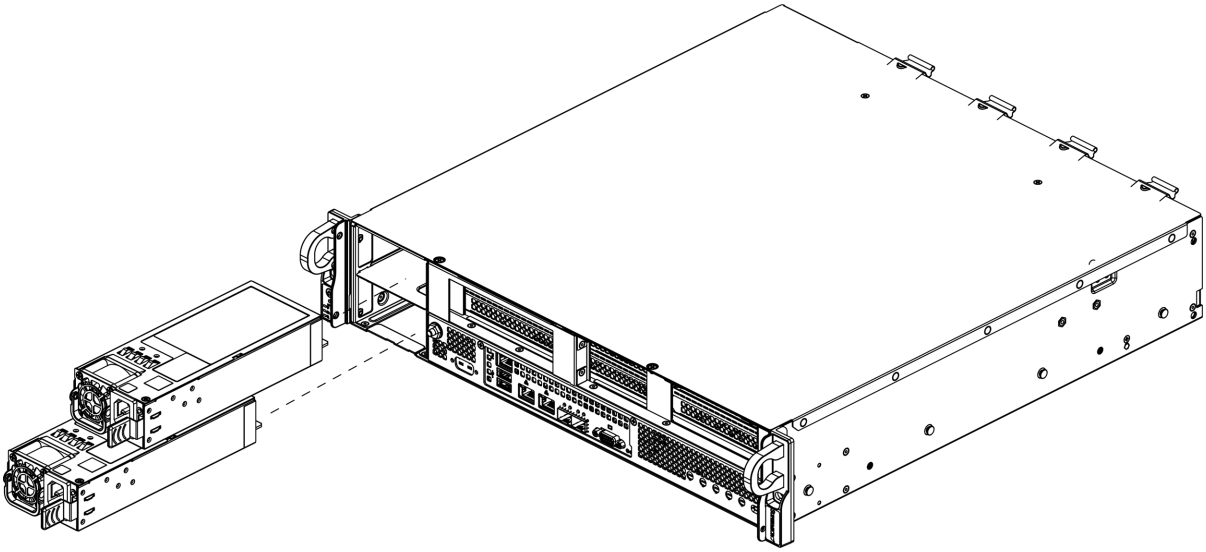


Figure 3-48. Replacing the Power Supply

Chapter 4:

Motherboard Connections, Jumpers, and LEDs

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 the "Introduction" on page 13. More detail can be found in the X14SBM-TF motherboard manual.

Review the "Standardized Warning Statements for AC Systems" on page 155 before installing or removing components.

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4.1 Power Supply and Power Connections

For information about the power supply and power connections of the SYS-212B-FN2T server, refer to the following content.

ATX Power Supply Connection

The primary 24-pin power supply connection (JPWR1 on the X14SBM-TF motherboard) meets the ATX SSI EPS 12 V specification. JPWR2 and JPWR3 are 8-pin 12 V DC power inputs for the processor that must be connected to the power supply.

Important: To provide adequate power supply to the motherboard, be sure to connect the 24-pin ATX PWR and the 8-pin PWR connections to the power supply. Failure to do so may void the manufacturer warranty on your power supply and motherboard.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

8-pin CPU Power Pin Definitions: Eight Total	
Pin#	**Definition**
1–4	GND
5–8	+12 V (12 V Power)

ATX Power 24-pin Connection Pin Definitions: 24 Total			
Pin#	**Definition**	**Pin#**	**Definition**
13	+3.3 V	1	+3.3 V
14	No Connection	2	+3.3 V
15	GND	3	GND
16	PS_ON	4	+5 V
17	GND	5	GND
18	GND	6	+5 V
19	GND	7	GND
20	Res (No Connection)	8	PWR_OK
21	+5 V	9	+5 VSB
22	+5 V	10	+12 V
23	+5 V	11	+12 V
24	GND	12	+3.3 V

4.2 Headers and Connections

For information about the headers on the X14SBM-TF motherboard, refer to the following content.

Chassis Intrusion

A Chassis Intrusion header is located at JL1 on the X14SBM-TF motherboard. Attach the appropriate cable from the chassis to inform you when the chassis is opened.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Chassis Intrusion Pin Definitions: Two Total	
Pin#	**Definition**
1	Intrusion Input
2	GND

COM Header

There is one COM header at JCOM1 on the X14SBM-TF motherboard. Use a cable with the COM header to access the COM1 COM port. COM ports provide serial communication support.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

COM Header Pin Definitions: Nine Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	SP_DCD0	6	SP_DSR0
2	SP_RXD0	7	SP_RTS0
3	SP_TXD0	8	SP_CTS0
4	SP_DTR0	9	SP_RI0
5	GND		

Expansion Slots

There are two PCIe 5.0 x16 slots and one PCIe 5.0 x8 slot on the X14SBM-TF motherboard. CPU SLOT4 PCIe 5.0 x16 and CPU SLOT6 PCIe 5.0 x16 support PCIe 5.0 x16 PCIe devices, and CPU SLOT7 PCIe 5.0 x8 supports a PCIe 5.0 x8 device.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Fan Headers

There are five 4-pin fan headers (FAN1–FAN4, FANA) on the X14SBM-TF motherboard. The 4-pin fan headers are backwards compatible with traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by thermal management via the IPMI 2.0 interface.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

4-pin Fan Header Pin Definitions: Four Total	
Pin#	**Definition**
1	GND (Black)
2	+12 V (Red)
3	Tachometer
4	PWM Control

Inlet Sensor Header

An inlet sensor header is located at JSEN1 on the X14SBM-TF motherboard. The inlet temperature sensor represents the ambient air temperature entering the system. The equivalent temperature sensor retrievable by the onboard BMC is RT0.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Inlet Sensor Header Pin Definitions: Four Total	
Pin#	**Definition**
1	Data
2	GND

Inlet Sensor Header Pin Definitions: Four Total	
Pin#	**Definition**
3	Clock
4	+3.3 V Standby

Internal Speaker Header

An internal speaker header is loaded at JD1 on the X14SBM-TF motherboard.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Internal Speaker Pin Definitions: Four Total	
Pin#	**Definition**
1	+5 V
2	No Connection
3	No Connection
4	R_SPKRIN

M.2 M-Key PCIe 5.0 x2 Slots

Two M.2 M-key slots are located at J1 M.2-C, J3 M.2-C on the X14SBM-TF motherboard. The M.2 M-key slots on the motherboard support PCIe 5.0 x2 devices in a 2280/22110 form factor.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

MCIO PCIe 5.0 x8 Connectors

Mini Cool Edge IO (MCIO) PCIe 5.0 x8 connectors are located at CN1–CN4 on the X14SBM-TF motherboard.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

NC-SI Connection

The Network Controller Sideband Interface (NC-SI) connection is located at JNCSI1 on the X14SBM-TF motherboard. This connection is used to connect a Network Interface Card (NIC) to the motherboard to allow the onboard Baseboard Management Controller (BMC) to communicate with a network.

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

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Overheat LED Header

An Overheat LED header is located at JOH1 on the X14SBM-TF motherboard. Connect an LED indicator to this header to receive warnings for chassis overheat.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Overheat LED Pin Definitions: Two Total	
Pin#	**Definition**
1	+ 5 VDC
2	OH Active

Power SMB (I²C) Header

The Power System Management Bus (I²C) connector (JPI²C1 on the X14SBM- TF motherboard) monitors the power supply, fan, and system temperatures.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Power SMBus Header Pin Definitions: Five Total	
Pin#	**Definition**
1	Clock

Power SMBus Header Pin Definitions: Five Total	
Pin#	**Definition**
2	Data
3	PMBUS_Alert
4	GND
5	+3.3 V

SATA 3.0 Ports

The X14SBM-TF motherboard features SATA 3.0 ports at I-SATA1 and I-SATA2. These ports can be used with Supermicro's SuperDOM SATA DOM connectors.

Note: Supermicro SuperDOMs are yellow SATADOM connectors with power pins built in and do not require separate external power cables. These connectors are backwards compatible with non-Supermicro SATADOMS that require an external power supply.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

TPM/Port 80 Header

The JTPM1 header on the X14SBM-TF motherboard 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 storage drives. It allows the motherboard to deny access if the TPM associated with the storage drive is not installed in the system. Information on the TPM is available at the following page:

https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H__X12_H12.pdf

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

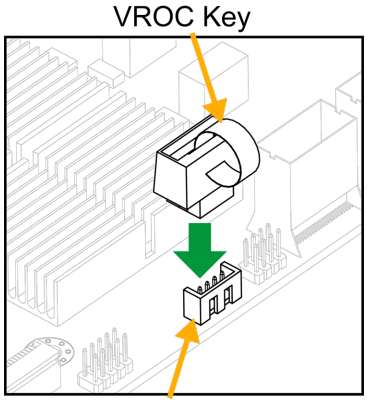
Trusted Platform Module Header Pin Definitions: 10 Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	+3.3 V	2	SPI_CS#
3	RESET#	4	SPI_MISO
5	SPI_CLK	6	Ground

Trusted Platform Module Header Pin Definitions: 10 Total			
Pin#	**Definition**	**Pin#**	**Definition**
7	SPI_MOSI	8	No Connection
9	+1.8 V Standby	10	SPI_IRQ#

VROC RAID Key Header

A VROC RAID Key header is located at JRK1 on the X14SBM-TF motherboard. Install a VROC RAID key on JRK1 for NVMe RAID support as shown in the illustration below.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.



VROC Key Header (JRK1)

Intel VROC Key Pin Definitions: Four Total	
Pin#	**Definition**
1	GND
2	+3.3 V Standby
3	GND
4	CPU RAID Key

Note: Images displayed are for illustrative purposes only. The components installed in your system may or may not look exactly the same as the graphics shown in the manual.

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

4.3 Control Panel

Refer to the following content for information about the front control panel header on the X14SBM-TF motherboard.

Power Button

The Power Button connection is located on pins 1 and 2 of JF1 on the X14SBM-TF motherboard. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (with a setting in the BIOS). To turn off the power when the system is in suspend mode, press the button for four seconds or longer.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Power Button

Pin Definitions (JF1)

Pin#	Definition
1	Signal
2	GND

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1 on the X14SBM-TF motherboard. Attach it to a hardware reset switch on the computer case to reset the system.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Reset Button

Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	GND

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1 on the X14SBM-TF motherboard.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Power Fail LED Pin Definitions (JF1)	
Pin#	**Definition**
5	+3.3 V
6	PWR Supply Fail

Overheat/Fan Fail and UID LED

Connect an LED cable to pins 7 and 8 of the front control panel to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheat or fan failure.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

OH/Fan Fail Indicator Status Pin Definitions (JF1)	
State	**Definition**
Off	Normal
On	Overheat
Flashing	Fan Fail

OH/Fan Fail/UID LED Pin Definitions (JF1)	
Pin#	**Definition**
7	UID LED (Blue)
8	OH/FAN Fail LED

NIC1/NIC2 (LAN1/LAN2)

The Network Interface Controller (NIC) LED connection for LAN port 1 is located on pins 11 and 12 of JF1 on the X14SBM-TF motherboard, and LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	**Definition**
9	VCC
10	NIC2 Link/Active LED

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	**Definition**
11	VCC
12	NIC1 Link/Active LED

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1 on the X14SBM-TF motherboard. Attach a cable to pin 14 to show storage drive activity status.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

HDD LED Pin Definitions (JF1)	
Pin#	**Definition**
13	+3.3 V Standby
14	HDD Activity

Power LED

The Power LED connection is located on pins 15 and 16 of JF1 on the X14SBM-TF motherboard.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Power LED Pin Definitions (JF1)	
Pin#	**Definition**
15	+3.3 V
16	PWR LED

NMI Button

The non-maskable interrupt (NMI) button header is located on pins 19 and 20 of JF1 on the X14SBM-TF motherboard.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

NMI Button Pin Definitions (JF1)	
Pin#	**Definition**
19	Control
20	GND

4.4 I/O Ports

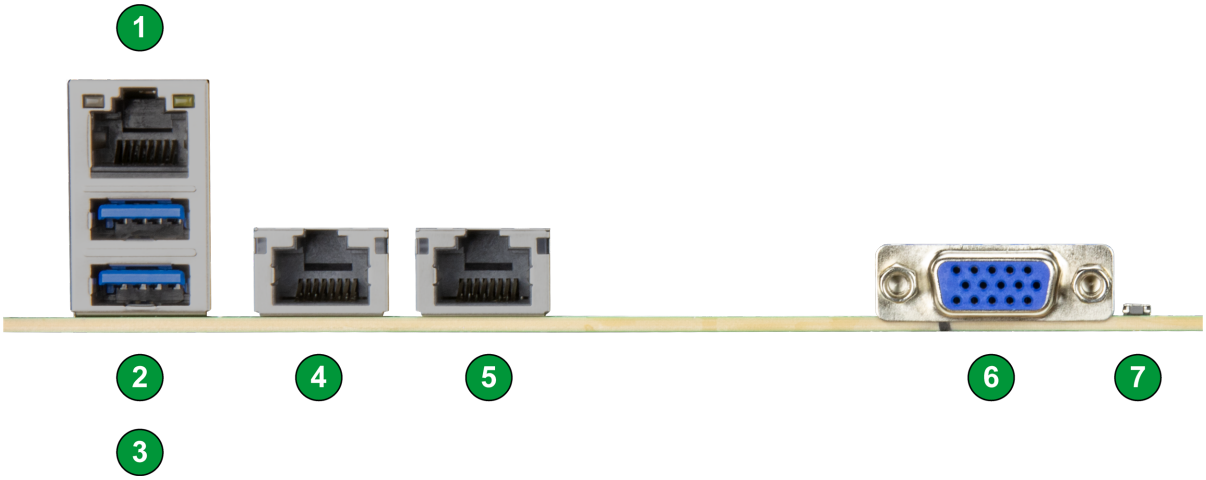


Figure 4-1. X14SBM-TF I/O Ports

I/O Ports for X14SBM-TF			
#	Description	#	Description
1	BMC LAN	5	LAN2
2	USB0	6	VGA Port
3	USB1	7	UID Button
4	LAN1		

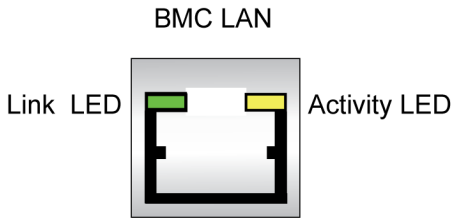
For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

BMC LAN LEDs

The dedicated BMC LAN connection on the X14SBM-TF motherboard features two LEDs. The LED on the right indicates activity, and the LED on the left indicates the speed of the connection.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

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



LAN Ports

There is one RJ45 BMC LAN port and two 10 GbE RJ45 LAN ports on the I/O ports of the X14SBM-TF motherboard. The BMC LAN port is available above the USB 3.2 Type-A ports on the I/O ports. The 10 GbE RJ45 LAN ports are available next to the USB 3.2 Type-A ports and provide access to LAN1 and LAN2.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

USB Ports

There are two USB 3.2 Gen 1 ports (USB0/1) on the I/O ports under the RJ45 BMC LAN port at JUSBRJ1 on the X14SBM-TF motherboard. There are also two USB 3.2 Gen 1 ports available from the on-board header (USB2/3) at USB1 on the X14SBM-TF motherboard. Connect a cable to USB1 to access the USB2/3 ports.

Onboard USB1 (USB2/3) (USB 3.2 Gen 1) Header Pin Definitions: 20 Total			
Pin#	**Definitions**	**Pin#**	**Definitions**
1	VBUS	11	IntA_P2_D+
2	IntA_P1_ SSRX-	12	IntA_P2_D-
3	IntA_P1_ SSRX+	13	GND
4	GND	14	IntA_P2_ SSTX+
5	IntA_P1_ SSTX-	15	IntA_P2_ SSTX-
6	IntA_P1_ SSTX+	16	GND
7	GND	17	IntA_P2_ SSRX+
8	IntA_P1_D-	18	IntA_P2_ SSRX-
9	IntA_P1_D+	19	VBUS
10	GND	20	No Connection

I/O Ports USB0, USB1 Pin Definitions: Nine Total			
Pin#	**Definition**	**Pin#**	**Definition**
1	+5 V	5	SSRX-
2	USB_N	6	SSRX+
3	USB_P	7	GND
4	GND	8	SSTX-
		9	SSTX+

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

SFP+ LAN Activity LEDs

Two SFP+ LAN Activity LED indicators are located on the motherboard. The LEDs flash green to indicate LAN activity.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

SFP+ LAN Activity LED Indicator	
LED Color	**Definition**
Flashing Green	Activity

SFP+ LAN Speed LEDs

Two SFP+ LAN Speed LED indicators are located on the motherboard. The LEDs may be green, yellow, or off to indicate the speed of the connection.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

SFP+ LAN Speed LED Indicator	
LED Color	**Definition**
Green	10G Link
Yellow	1G Link
Off	No Link

VGA Port

A video (VGA) port is located on the I/O ports of the motherboard. The VGA port provides analog interface support between the computer and the video displays.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Unit Identifier Button

A Unit Identifier (UID) button and two LED indicators are located on the motherboard. The UID button is located near the I/O ports of the X14SBM-TF motherboard.

Note: After pushing and holding the UID button for 12 seconds, all BMC settings including username and password will revert back to the factory default. Only the network settings and FRU are retained.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Function	User Input	Behavior	LED Activity
UID LED Indicator	Push once Push again	Turns on the UID LED Turns off the UID LED	UID LED turns solid blue UID LED turns off
BMC Reset	Push and hold for 6 seconds Push and hold for 12 seconds	BMC will do a cold boot BMC will reset to factory default	BMC Heartbeat LED turns solid green BMC Heartbeat LED turns solid green

UID Button Pin Definitions: Four Total	
Pin#	**Definition**
1	Button In
2	GND
G1	GND
G2	GND

UID LED Pin Definitions: Four Total	
Color	**Status**
1	Button In
2	GND
G1	GND
G2	GND

4.5 Jumper Settings

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

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

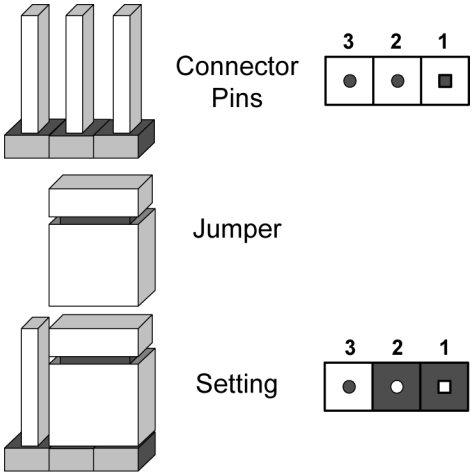


Figure 4-2. Jumping Connector Pins

CMOS Clear

JBT1 on the X14SBM-TF motherboard 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.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

1. First power down the system and unplug the power cord(s).
2. Remove the cover of the chassis to access the motherboard.
3. Remove the onboard battery from the motherboard.

4. Short the CMOS pads, JBT1, with a metal object such as a small screwdriver for at least four seconds.

   Note: Clearing CMOS will also clear all passwords.

5. Remove the screwdriver (or shorting device).
6. Replace the cover, reconnect the power cord(s), and power on the system.

LAN Enable/Disable

Use JPTG1 to enable or disable LAN on the X14SBM-TF motherboard. The default setting is Enabled.

LAN Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Enabled (Default)
Pins 2–3	Disabled

Onboard TPM Enable/Disable

Use JTP1 to enable or disable the onboard TPM.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

TPM Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Enabled (Default)
Pins 2–3	Disabled

VGA Enable/Disable

Jumper JPG1 allows you to enable the onboard VGA connector on the X14SBM-TF motherboard. The default setting is pins 1–2 to enable the connection.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

VGA Enable/Disable Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Enabled (Default)
Pins 2–3	Disabled

Watchdog Timer

Watchdog (JWD1) is a system monitor that can reboot the system when a software application hangs. Close pins 1–2 to reset the system if an application hangs. Close pins 2–3 to generate a non-maskable interrupt (NMI) signal for the application that hangs. The watchdog must also be enabled in the BIOS.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Watchdog Timer Jumper Settings	
Jumper Setting	**Definition**
Pins 1–2	Reset (Default)
Pins 2–3	NMI
Open	Disabled

4.6 LED Indicators

For information about the LED indicators on the SYS-212B-FN2T server, refer to the following content.

BMC Heartbeat LED

A BMC Heartbeat LED is locatedat LED2 on the X14SBM-TF motherboard. When this LED is blinking, the BMC is functioning normally.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

BMC Heartbeat LED Indicator	
LED Color	**Definition**
Green: Blinking	BMC Normal

Disk Activity LED

One Disk Activity LED indicator is located on the X14SBM-TF motherboard at LED6. When the motherboard detects disk activity, this LED will flash green.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

Disk Activity LED Indicator	
LED Color	**Definition**
Flashing Green	Disk Activity

Onboard Power LED

The Onboard Power LED is located at LE1 on the X14SBM-TF motherboard. When this LED is on, the system is on. Be sure to turn off the system and unplug the power cord before removing or installing components.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

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

Unit ID (UID) LED

The UID LED indicator is located at LED1 on the X14SBM-TF motherboard. This UID indicator provides easy identification of a system that may need to be serviced.

For a detailed diagram of the X14SBM-TF motherboard, see the layout under "Motherboard Quick Reference" on page 23.

UID LED LED Indicator	
LED Color	**Definitions**
Blue: On	System Identified

Chapter 5:

Software

After the SYS-212B-FN2T server has been installed, you can install the Operating System (OS), configure RAID settings, and install the drivers.

5.1 Microsoft Windows OS Installation **107**

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5.2 Driver Installation **109**

5.3 BMC **110**

BMC ADMIN User Password 110

Logging into the BMC **110**

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 https://www.supermicro.com/support/manuals.

Installing the OS

1. Create a method to access the Microsoft Windows installation ISO file. That can be a USB flash or media drive, or the BMC KVM console.
2. Retrieve the proper drivers. 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 bootup.

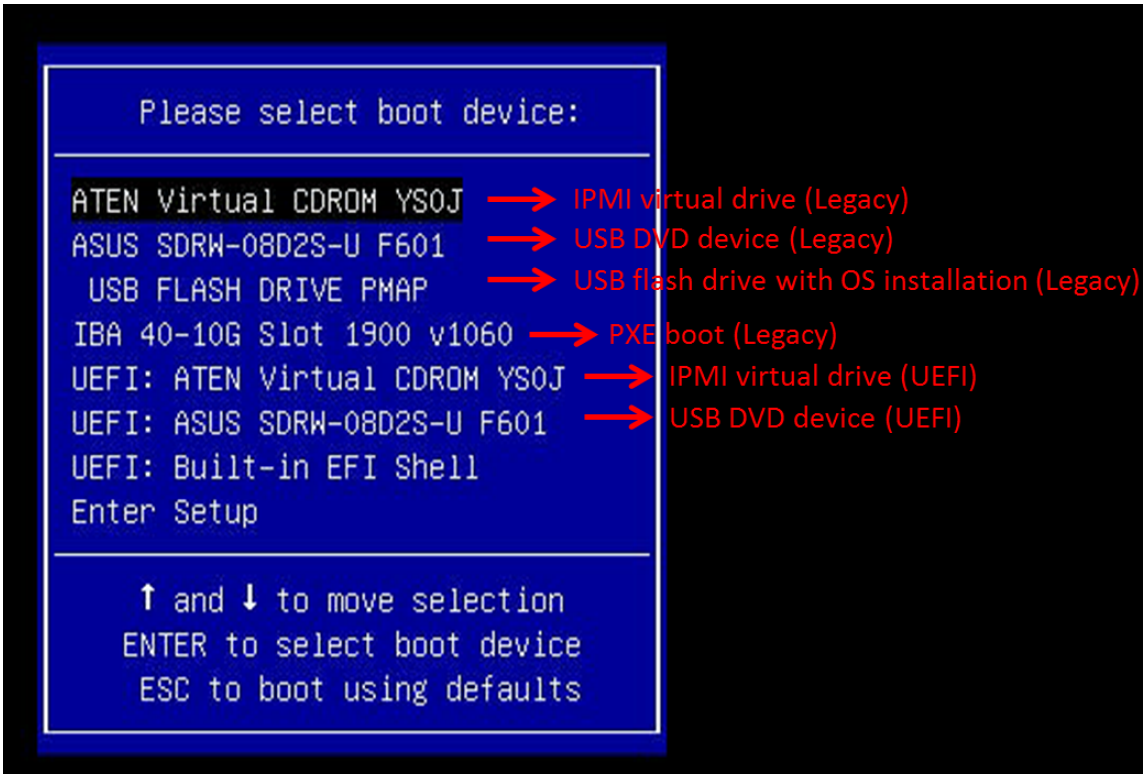

Figure 5-1. Selecting the Boot Device

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

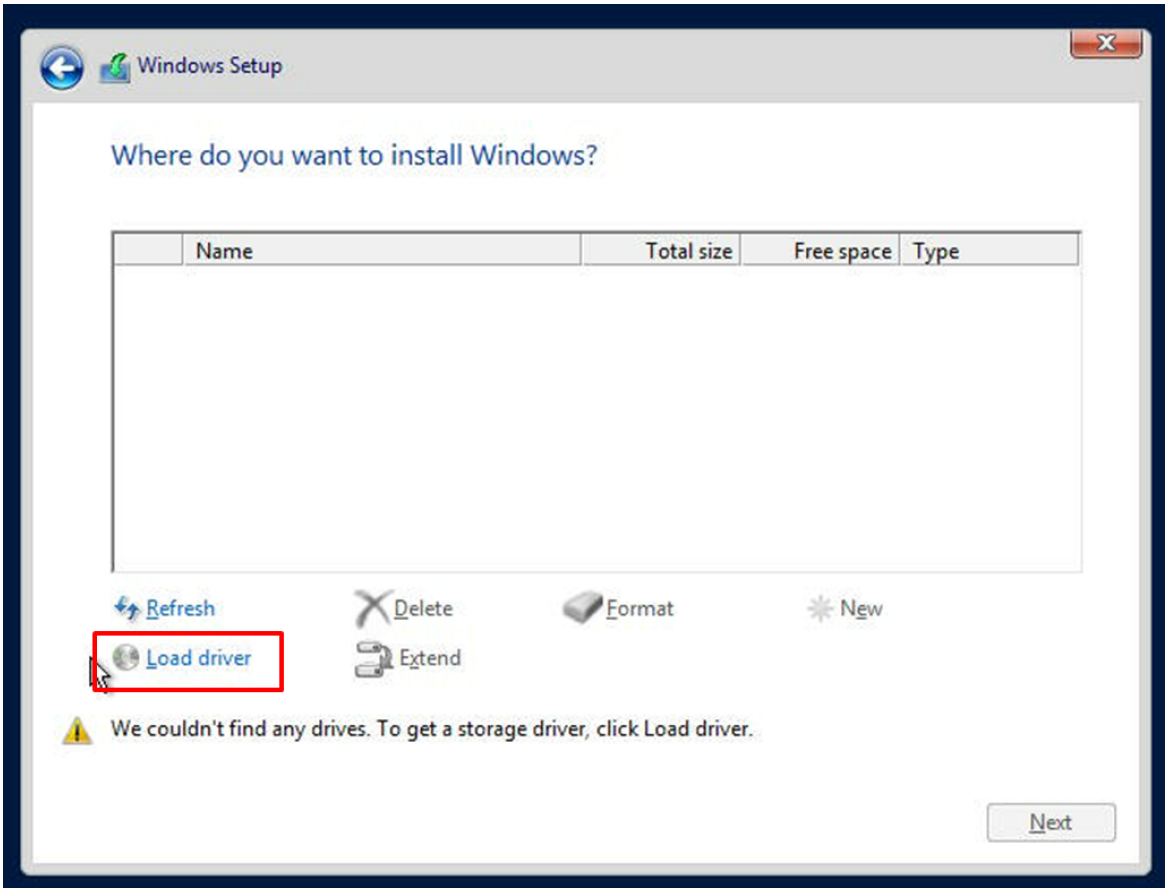

Figure 5-2. Loading the Driver Link

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

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 for system updates.

5.2 Driver Installation

The Supermicro website contains drivers and utilities for your system at the following page:

https://www.supermicro.com/wdl.

Some of these drivers and utilities 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 https://www.supermicro.com. Find the product page for your motherboard and download the latest drivers and utilities. Insert the flash drive or disk, and the screenshot shown below should appear.

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 bottom) one at a time. *After installing each item, you must reboot 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.

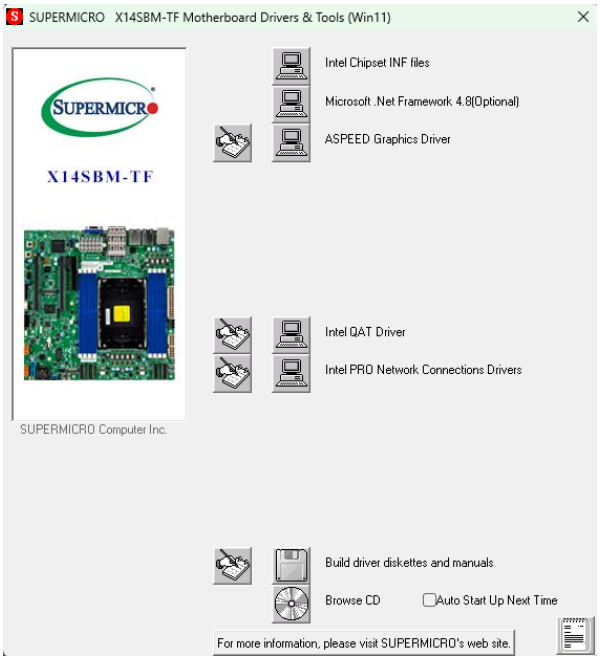

Figure 5-3. Driver & Tools Installation Screen

5.3 BMC

The X14SBM-TF motherboard provides remote access, monitoring, and management through the baseboard management controller (BMC) and other management controllers distributed among different system modules. There are several BIOS settings that are related to BMC. For general documentation and information on BMC, visit our website at the following page:

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

BMC ADMIN User Password

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

Figure 5-4. BMC Password Label

Logging into the BMC

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, 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, visit our website at https://www.supermicro.com/en/support/BMC_Unique_Password.

Chapter 6:

Optional Components

This chapter describes alternate configurations and optional system components for the SYS-212B-FN2T server. Since these components are not hot-swappable, ensure the system is powered down before installing them.

6.1 TPM Security Module **112**
6.2 HBA Card **113**
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6.4 Cable Management Arm **115**
Installing the Cable Management Arm 116
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6.5 Intel Virtual RAID on CPU (VROC) **118**
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Hardware Key 119
Configuring Intel VMD 119
Creating NVMe RAID Configurations 123

6.1 TPM Security Module

This is an SPI-capable TPM 2.0 with Infineon 9672 controller.

The JTPM1 header is used to connect a Trusted Platform Module (TPM). A TPM is a security device that supports encryption and authentication in storage drives. It enables the X14SBM-TF motherboard to deny access if the TPM associated with the storage drive is not installed in the SYS-212B-FN2T server.

For details and installation procedures, refer to the following page:

https://www.supermicro.com/en/products/accessories/addon/AOM-TPM-9672V.php

- AOM-TPM-9672V (TCG 2.0)

6.2 HBA Card

This is a 12 Gb/s, multi-port SAS PCIe Gen 4.0 internal Host Bus Adapter (HBA) card.

The Supermicro HBA AOC-S3816L-L16iT features 16 internal SAS connectors, while the AOC-S3808L-L8iT features eight internal SAS connectors. Both are designed for high-performance storage connectivity.

These cards use Broadcom's 3816 and 3808 I/O processors for optimum performance with PCI Express Gen 4.0 host interface for increased bandwidth.

Each Add-On-Card supports up to 122 devices as HBA in IT mode via the expander backplane.

6.3 RAID Cards

These are Super Micro Computer, Inc. 12 Gb/s, multi-port PCIe Gen 4.0 RAID adapter cards.

The low-profile AOC-S3908L-H8iR RAID card features eight internal SAS connectors and the AOC-S3916L-H16iR features 16 internal SAS connectors. Both offer high-performance storage connectivity. These RAID cards are built on the Broadcom SAS IC technology and MegaRAID technology to address the growing demand for increased data throughput and scalability requirements across the enterprise-class server platforms.

With high-performance RAID architecture, including hardware RAID 5 and 6, these RAID controller cards support high capacity storage applications. They deliver cost-effective storage solutions using SATA drives and maximum performance and reliability with SAS drives. Using expander backplanes, they support up to 16, 32, and 240 drives (depending on SKU) with RAID 0, 1, 5, 6, 10, 50, and 60.

6.4 Cable Management Arm

The SYS-212B-FN2T server supports a cable management arm (CMA), which keeps the rear cables organized and clear of the rail mechanisms when the system is extended out the front of the rack for maintenance.

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

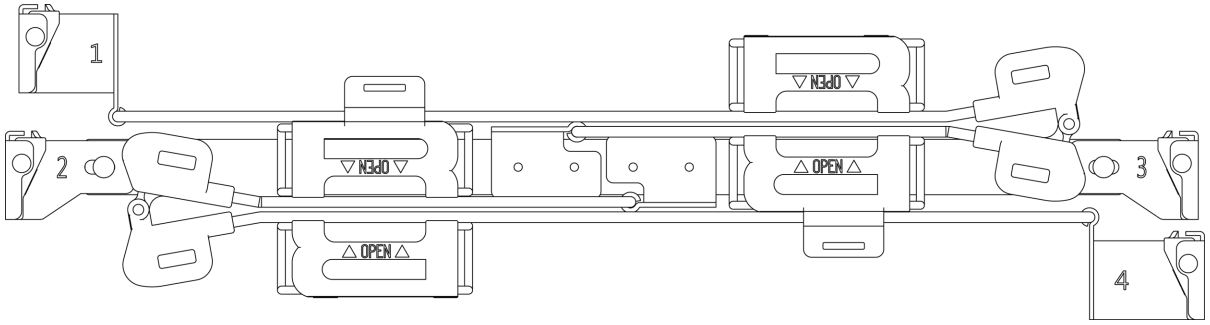

Figure 6-1. Cable Management Arm

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

Installing the Cable Management Arm

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

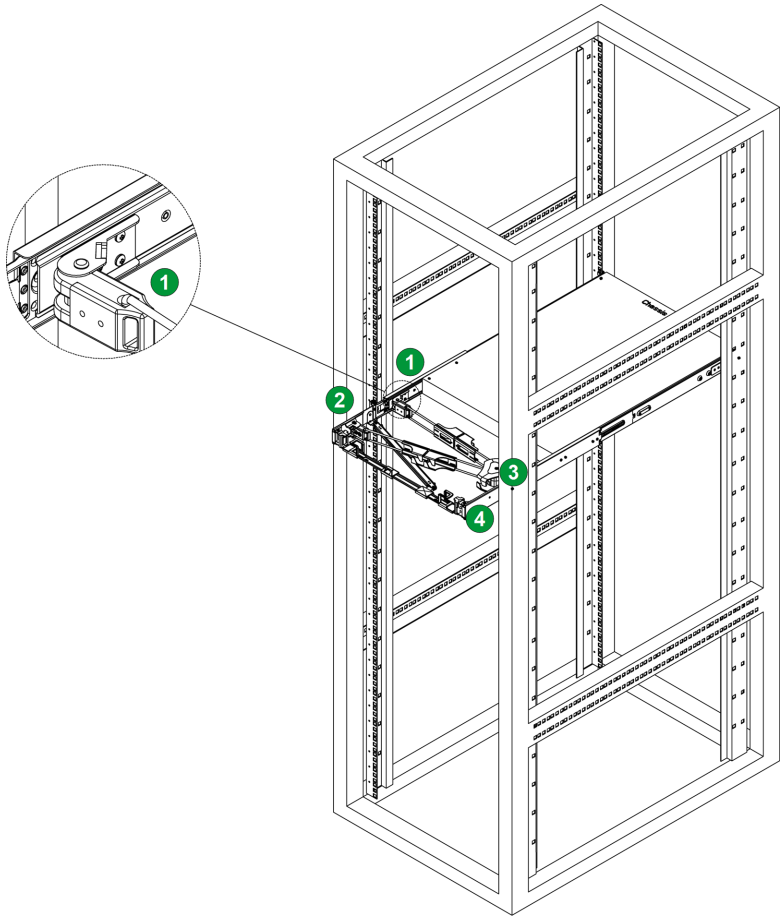

Figure 6-2. Installing the Connectors

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

Removing the Cable Management Arm

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

6.5 Intel Virtual RAID on CPU (VROC)

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

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

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

Requirements and Restrictions

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

Additional Information

- Latest SSD and operating system information: https://www.intel.com/content/www/us/en/support/articles/000030310/memory-and-storage/ssd-software.html

- Additional information for the Supermicro add-on card and linked manuals: https://www.supermicro.com/products/accessories/addon/AOC-VROCxxxMOD.cfm

Hardware Key

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

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

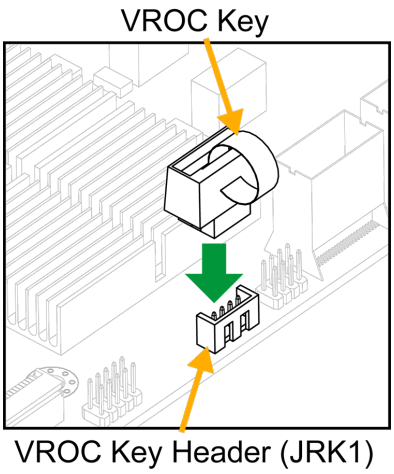

Figure 6-3. Intel VROC RAID Key and Motherboard Connector JRK1

Configuring Intel VMD

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

NVMe Mode Switch:

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

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

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

Configuring VMD Manually

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

Important:

- If there is an existing RAID configuration, delete the RAID volume associated with the VMD controller before disabling the controller. Failure to do so may lead to unexpected behavior.
- The effects of physically changing or swapping a CPU on the VMD controller have not been thoroughly tested or documented.

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

   Note that Socket 0 contains CPU1; Socket 1 contains CPU2.

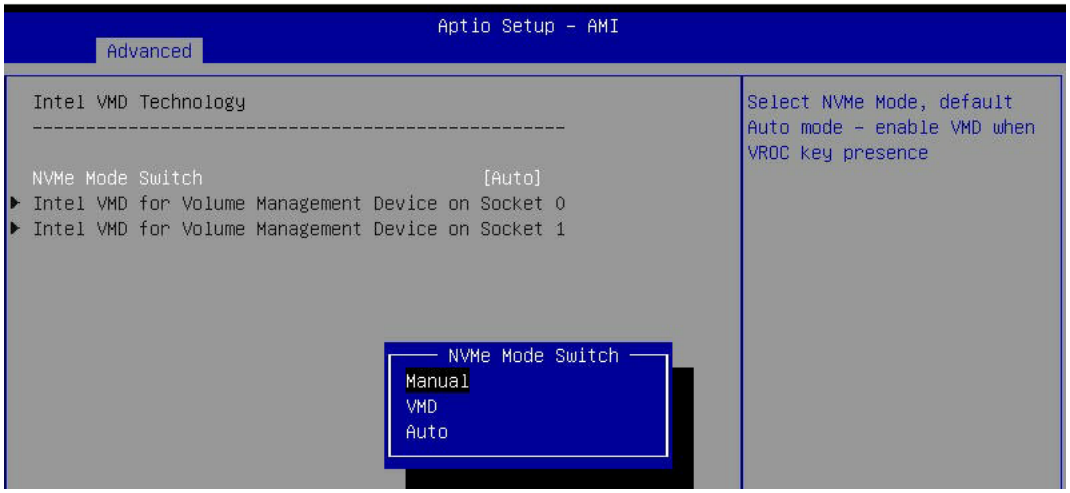

Figure 6-4. BIOS, Selecting VMD Mode

4. VMD must only be enabled on NVMe port resources. If VMD is enabled on other PCIe ports, the functionality of those ports will be impacted. See the table below.

   Select “Intel VMD for Volume Management Device on” on Socket 0 (CPU1) or Socket 1 (CPU2) to enable VMD for devices under the respective CPU.

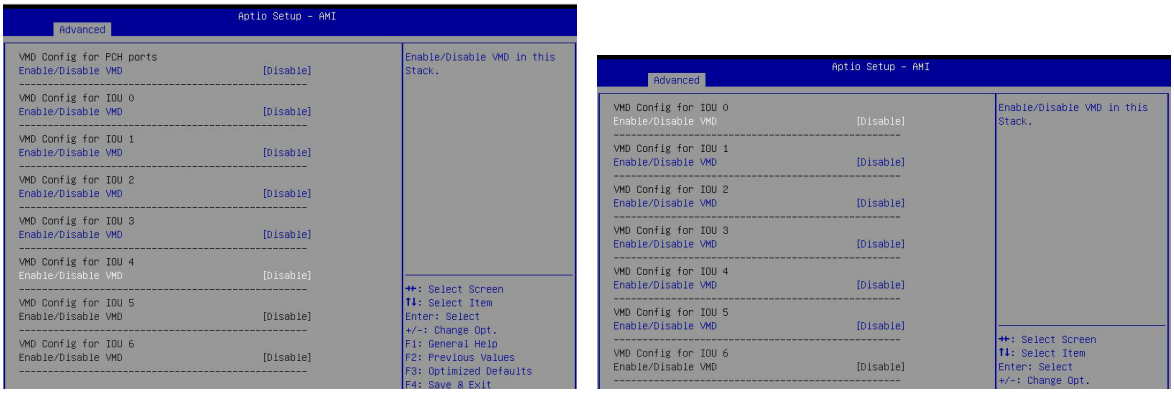

Figure 6-5. Intel VMD for Volume Management Device on Socket 0 and Socket 1

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

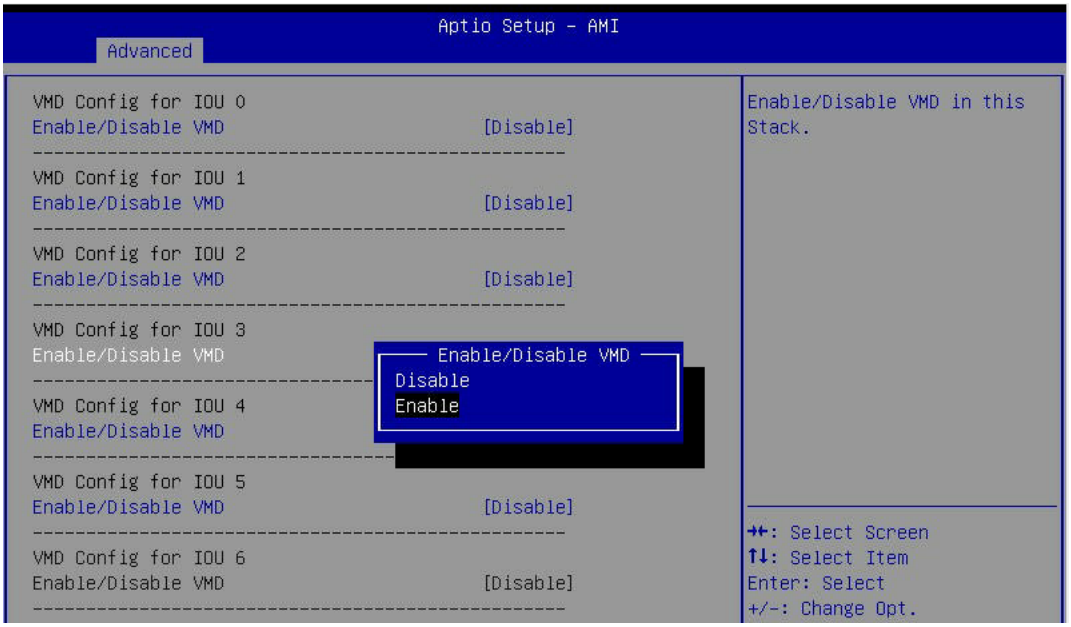

Figure 6-6. BIOS, Enabling VMD on Socket 1 (CPU2) (Example)

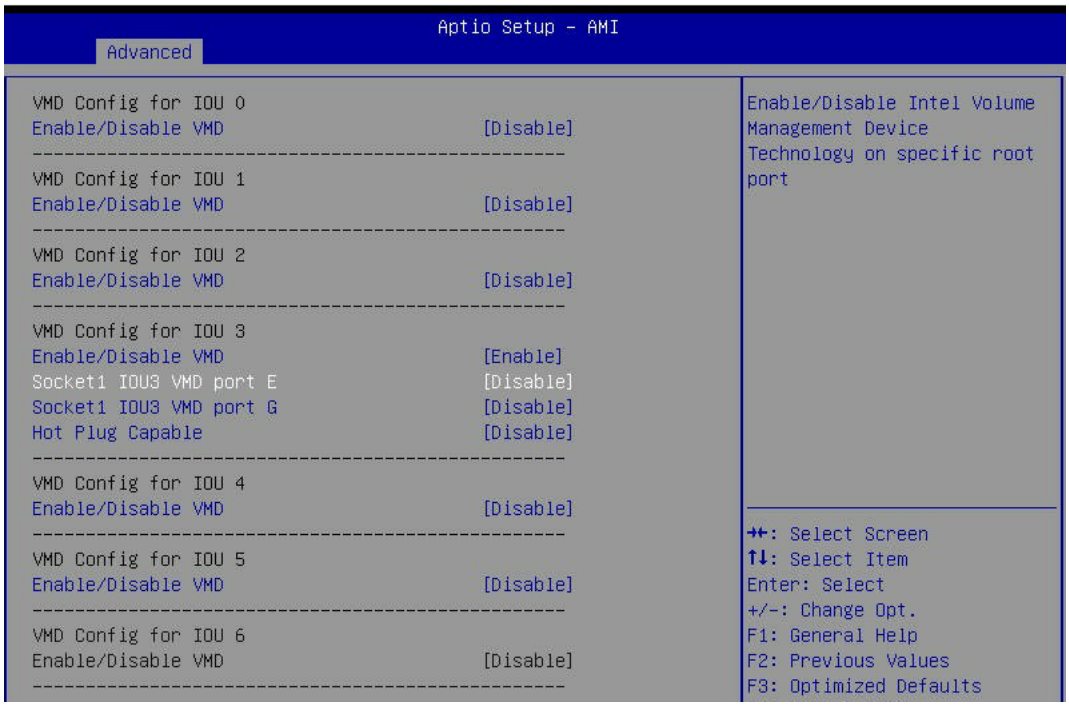

Figure 6-7. BIOS, Enabling VMD on Socket 1 (Example)

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

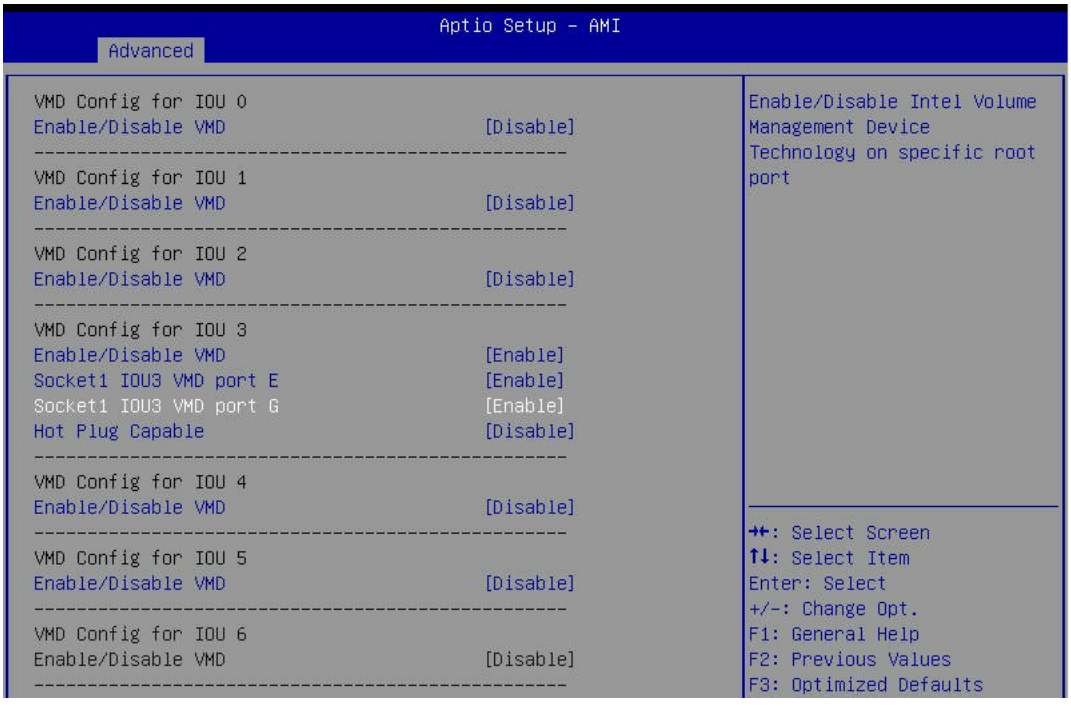

Figure 6-8. BIOS, Enabling Socket 1 (Example)

7. Choose whether to make the NVMe drives in this IOU Hot Plug Capable by selecting Enabled or Disabled.
8. Repeat steps 4 through 7 for each IOU # on each CPU to enable VMD on the desired NVMe ports.

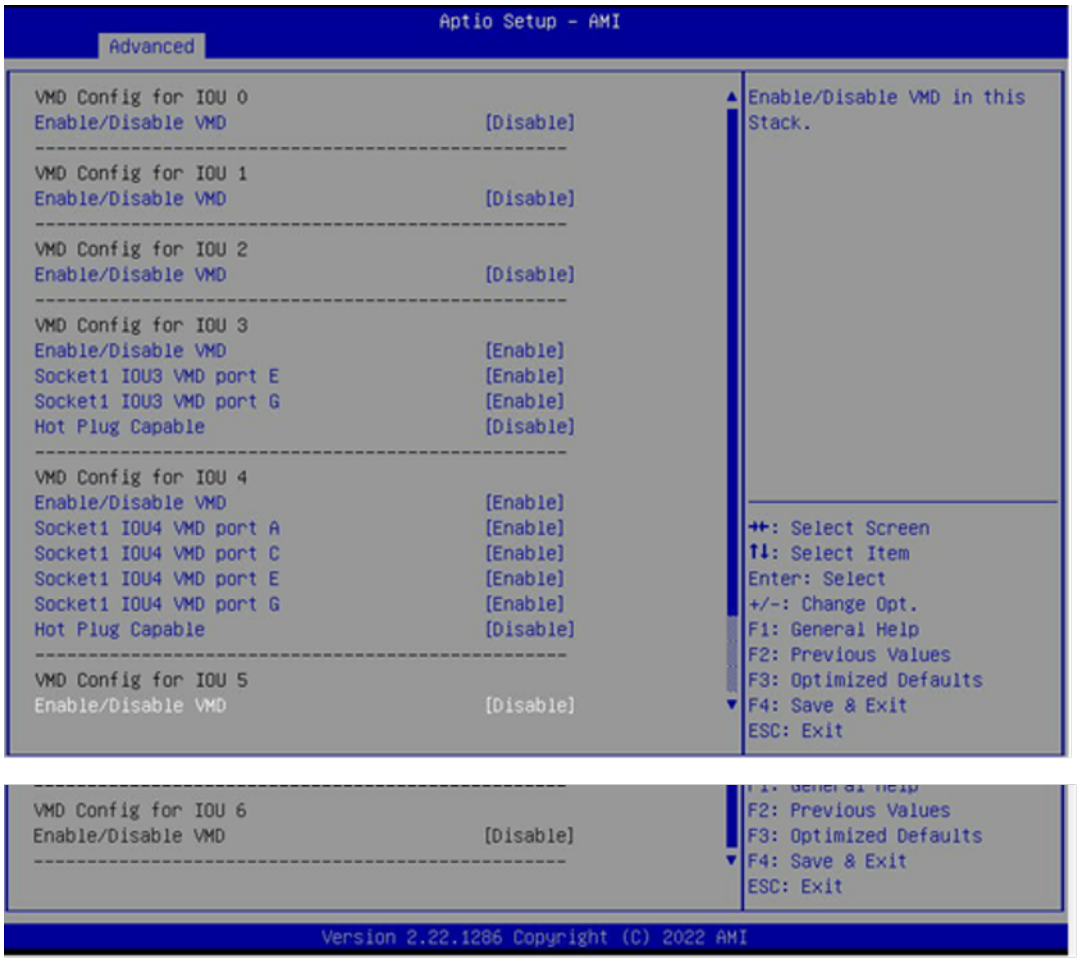

Figure 6-9. BIOS, Enabling Socket 1 Completed (Example)
(This example shows SYS-621H-TN12R with 12 NVMe. Other systems will look different.)

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

Creating NVMe RAID Configurations

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

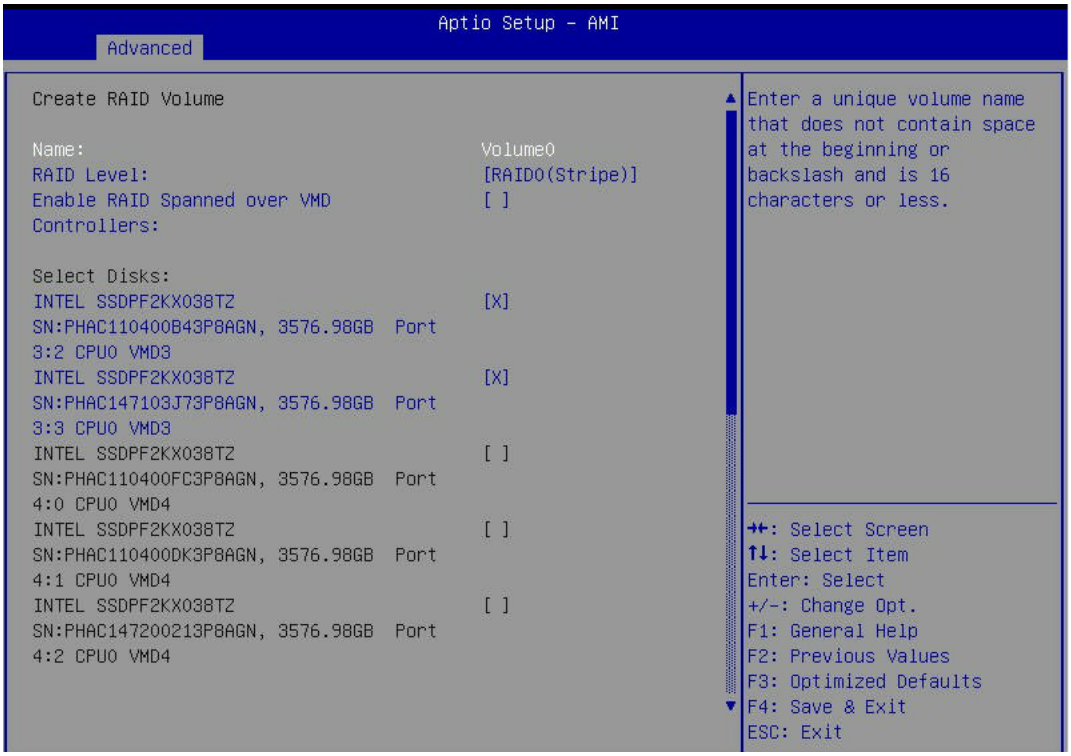

Figure 6-10. Creating Volume Without Enabling RAID Spanned over VMD Controller

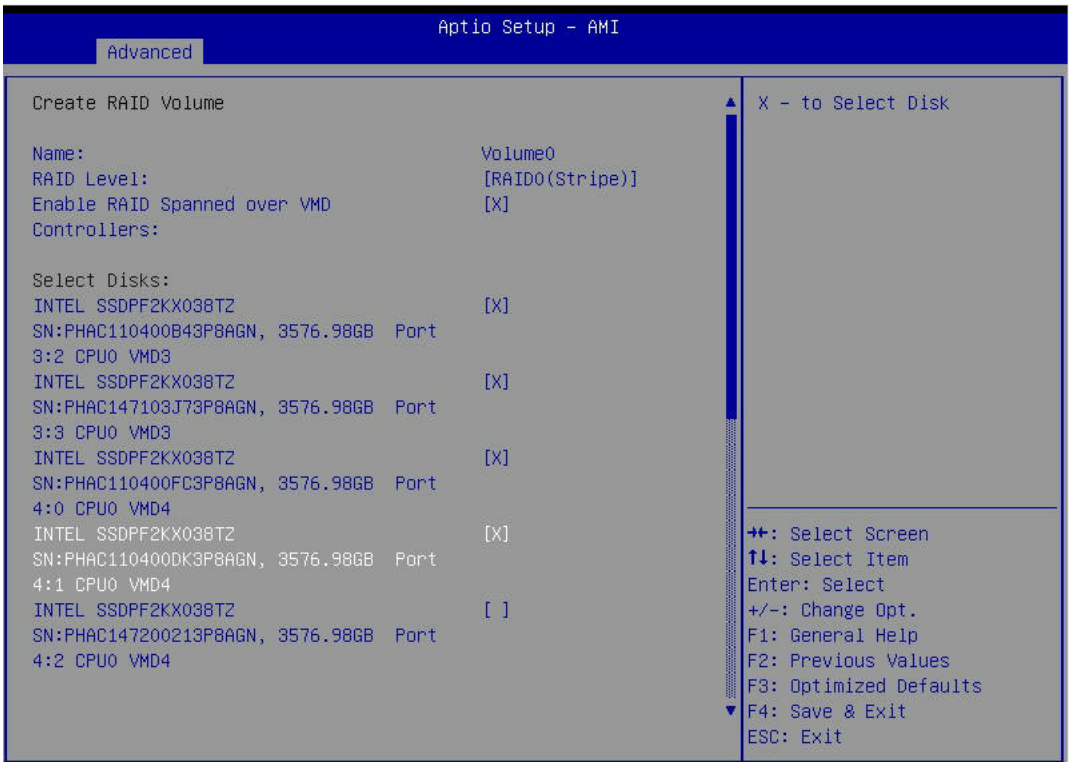

Figure 6-11. Creating Volume With Enabling RAID Spanned over VMD Controller

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

Status Indications

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

Drive Carrier Status LED Indicator	
Status	**State (red)**
Normal function	Off
Locating	4 Hz 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 link [2] below for details.

3. Detach the device. Check link [3] below for details.
4. Physically remove the device.

Hot-Plug

- Physically install the device.

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

Related Information Links

1. https://kb.vmware.com/s/article/2151404
2. https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.storage.doc/GUID-1B56EF97-F60E-4F21-82A7-8F2A7294604D.html
3. https://docs.vmware.com/en/VMware-vSphere/6.5/com.vmware.vsphere.storage.doc/GUID-F2E75F67-740B-4406-9F0C-A2D99A698F2A.html

Chapter 7:

Troubleshooting and Support

The following content contains information on common issues and how to resolve them.

7.1 Online Resources **128**
7.2 Baseboard Management Controller (BMC) **129**
7.3 Troubleshooting Procedures **130**
Before Power On 130
No Power 130
No Video 130
System Boot Failure 130
Memory Errors 131
Losing the System's Setup Configuration 131
If the System Becomes Unstable 131
7.4 CMOS Clear **133**
7.5 Motherboard Battery **134**
7.6 Where to Get Replacement Components **135**
7.7 Technical Support Procedures **136**
Returning Merchandise for Service 136
7.8 Feedback **138**

7.1 Online Resources

A great deal of information is available on the Supermicro website. From the top menu of the Supermicro home page at https://www.supermicro.com:

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

Direct Links for the SYS-212B-FN2T System

- SYS-212B-FN2T specifications page
- X14SBM-TF 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: https://www.supermicro.com/FAQ/index.php
- TPM User Guide: https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H__X12_H12.pdf
- Product Resources page for validated memory details: https://www.supermicro.com/support/resources/mem.cfm
- Product Matrices page for links to tables summarizing specs for systems, motherboards, power supplies, riser cards, add-on cards, and more: https://www.supermicro.com/en/support/product-matrices
- Security Center for recent security notices: https://www.supermicro.com/en/support/security_center
- Supermicro Phone and Addresses: https://www.supermicro.com/en/about/contact

7.2 Baseboard Management Controller (BMC)

The SYS-212B-FN2T server 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, visit our website at the following page:

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

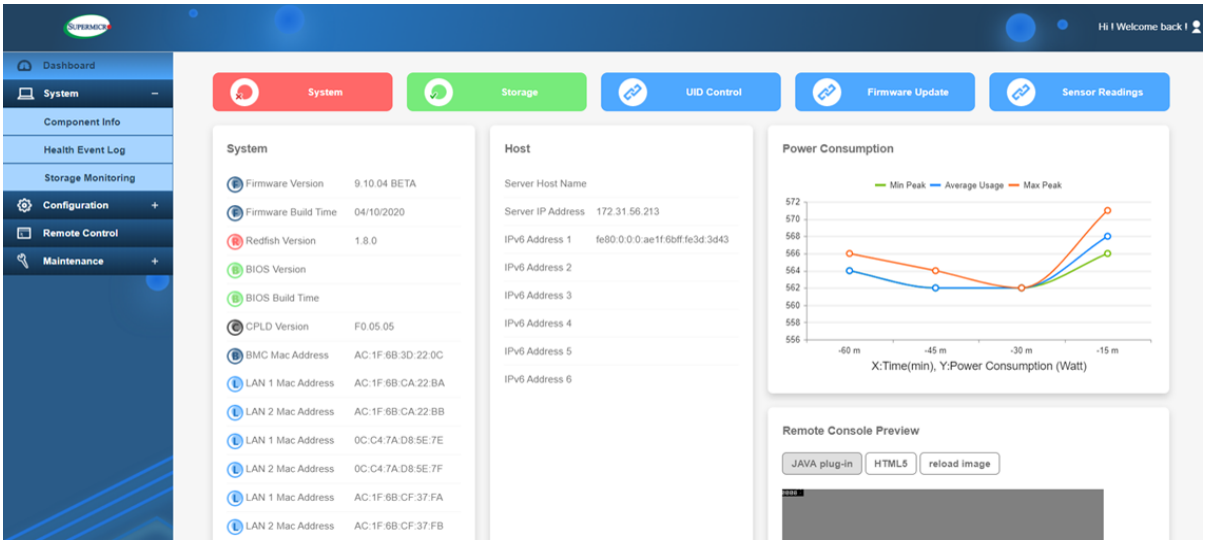

Figure 7-1. BMC Dashboard

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" on page 136 section in this chapter. Always disconnect the AC power cord before adding, changing or installing any non hot-swap hardware components. If the below steps do not fix the setup configuration problem, contact your vendor for repairs.

Before Power On

1. Make sure that there are no short circuits between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install the processor (making sure it is fully seated) and connect the front panel connectors to the motherboard.

No Power

1. Make sure that there are no short circuits between the motherboard and the chassis.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

No Video

1. If the power is on, but you do not have video, remove all add-on cards and cables.
2. Remove all memory modules and turn on the system (if the alarm is on, check the specs of memory modules, reset the memory, or try a different one).

System Boot Failure

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

1. Remove all components from the motherboard, especially the DIMMs. Power on the system and check if the power-on LED and the BMC Heartbeat LED are on, and system fans are spinning.

2. Turn on the system with only one DIMM installed. If the system boots, check for bad DIMMs or slots by following the Memory Errors Troubleshooting procedure in this chapter.

Memory Errors

When suspecting faulty memory is causing the system issue, check the following:

1. Make sure that the memory modules are compatible with the system and are properly installed. See "Maintenance and Component Installation" on page 43 for installation instructions. (For memory compatibility, refer to the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.)
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of DIMMs recommended by the manufacturer.
4. Check for bad DIMMs or slots by swapping a single module among all memory slots and check the results.

Losing the System's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to "Introduction" on page 13 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies approximately 3 VDC. If it does not, replace it with a new one.

If the System Becomes Unstable

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

1. Processor/BIOS support: Make sure that your processor is supported and that you have the latest BIOS installed in your system.
2. Memory support: Make sure that the memory modules are supported. Refer to the product page on our website at https://www.supermicro.com. Test the modules using memtest86 or a similar utility.

   Note: Click on the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.

3. Storage Drive support: Make sure that all storage drives work properly. Replace the failed storage drives with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and processor/system fans, etc., work properly. Check the hardware monitoring settings in the BMC to make sure that the processor and system temperatures are within the normal range. Also, check the front panel Overheat LED and make sure that it is not on.
5. 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 our website for more information on the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

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

1. Source of installation: Make sure that the devices used for installation are working properly, including boot devices such as a CD/Media drive.
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Use the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the processor and a memory module installed) to identify the trouble areas. Refer to the steps listed above in this section for proper troubleshooting procedures.
4. Identify bad components by isolating them: If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

7.4 CMOS Clear

JBT1 on the X14SBM-TF motherboard is used to clear CMOS, which will also clear any passwords. For information on clearing CMOS, refer to "CMOS Clear" on page 101 earlier in this manual.

7.5 Motherboard Battery

For information on removing, disposing of, and replacing the motherboard battery of your system, refer to "Motherboard Battery Removal and Installation" on page 71.

7.6 Where to Get Replacement Components

If you need replacement parts for your SYS-212B-FN2T server, 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 on the Supermicro website:

https://www.supermicro.com

Under the "Buy" menu, click the "Where to Buy" link.

7.7 Technical Support Procedures

Before contacting Technical Support, take the following steps. Also, note that as a motherboard manufacturer, Supermicro also sells motherboards through its channels, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problems with the specific system configuration that was sold to you.

1. Refer to "Troubleshooting Procedures" on page 130 or see the FAQs on our website (https://www.supermicro.com/FAQ/index.php) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website (https://www.supermicro.com/support/resources/bios_ipmi.php).
3. If you still cannot resolve the problem, include the following information when contacting Supermicro for technical support:
   - Motherboard model and PCB revision number
   - BIOS release date/version (This can be seen on the initial display when your system first boots up.)
   - System configuration
4. An example of a Technical Support form is on our website at https://webpr3.supermicro.com/SupportPortal.
5. Distributors: For immediate assistance, have your account number ready when placing a call to our Technical Support department. For Supermicro contact information, refer to "Contacting Supermicro" on page 12.

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 the server to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and the shipping package is 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 can be requested online at the following page:

https://www.supermicro.com/RmaForm

Whenever possible, repack the server in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the server securely, using packaging material to surround the server 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 alternation, misuse, abuse or improper maintenance of products.

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

7.8 Feedback

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

Chapter 8:

UEFI BIOS

The following content contains information on BIOS configuration with the SYS-212B-FN2T server.

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8.2 Main Setup **142**
8.3 Advanced Setup Configurations **144**
8.4 Event Logs **145**
8.5 BMC **147**
8.6 Security **148**
8.7 Boot **150**
8.8 Save & Exit **152**

8.1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the motherboard. The BIOS is stored on a chip and can be easily upgraded using the UEFI script (flash.nsh), the BMC WebUI, or the SuperServer Automation Assistant (SAA) utility.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our website for any changes to BIOS that may not be reflected in this manual.

Updating BIOS

It is recommended that you do not upgrade your BIOS if you are not experiencing any problems with your system. Updated BIOS files are located on our website at the following page:

https://www.supermicro.com/support/resources/bios_ipmi.php

Check our BIOS warning message and the information on how to update your BIOS on our website. Select your motherboard model and download the BIOS file to your computer. Also, check the current BIOS revision to make sure that it is newer than your BIOS before downloading.

Important: Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure! Read the motherboard README file carefully before you perform the BIOS update.

To update the BIOS under the UEFI Shell, unzip the BIOS file onto a bootable USB device and then boot into the built-in UEFI Shell. For motherboards with BMC support, type "flash.nsh <BIOS filename><BMC Username><BMC Password>" to start the BIOS update. The flash.nsh script will invoke the SAA (EFI) tool automatically to perform the BIOS update, beginning with uploading the BIOS image to BMC. After uploading the BIOS image, the system will reboot to continue the process. The BMC will take over and continue the BIOS update in the background. The process will take 3–5 minutes. Refer to the README file for more information.

Starting the Setup Utility

To enter the BIOS Setup utility, press the <Delete> key while the system is booting-up. In most cases, the <Delete> key is used to invoke the BIOS Setup screen. There are a few cases when other hot keys are used, such as <F1>, <F2>, etc. Each main BIOS menu option is described in this manual.

The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. “Grayed-out” options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When a BIOS submenu or item is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in Bold are the default values.

A "►" indicates a submenu. Highlighting such an item and pressing the <Enter> key open the list of settings within that submenu.

The BIOS Setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F2>, <F3>, <F4>, <F5>, <F6>, <Enter>, <ESC>, the arrow keys, etc.) can be used at any time during the setup navigation process.

8.2 Main Setup

The Main setup screen appears when the AMI BIOS Setup utility is first entered. To return to the Main setup screen, select the Main tab at the top of the screen. The Main BIOS setup screen is shown below.

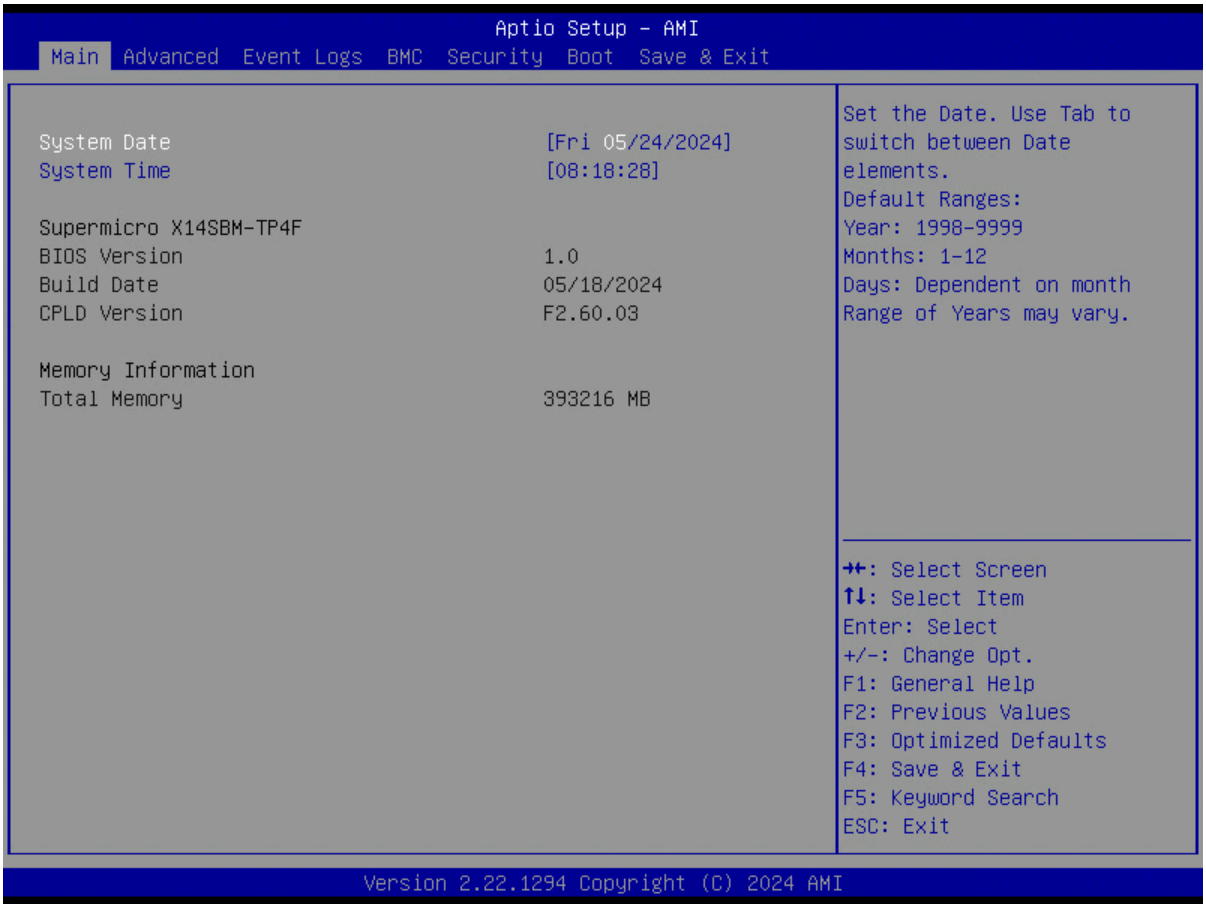

Figure 8-1. Main Setup UEFI BIOS Menu Screenshot

System Date/System Time

Use the two features to change the system date and time. Highlight **System Date** or **System Time** using the arrow keys. Enter new values using the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format.

Note: The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.

Supermicro X14SBM-TF

BIOS Version

This feature displays the version of the BIOS ROM used in the system.

Build Date

This feature displays the date when the version of the BIOS ROM used in the system was built.

CPLD Version

This feature displays the version of the Complex-Programmable Logical Device (CPLD) used in the system.

Memory Information

Total Memory

This feature displays the total size of memory available in the system.

8.3 Advanced Setup Configurations

Use the arrow keys to select the Advanced submenu and press <Enter> to access the submenu items.

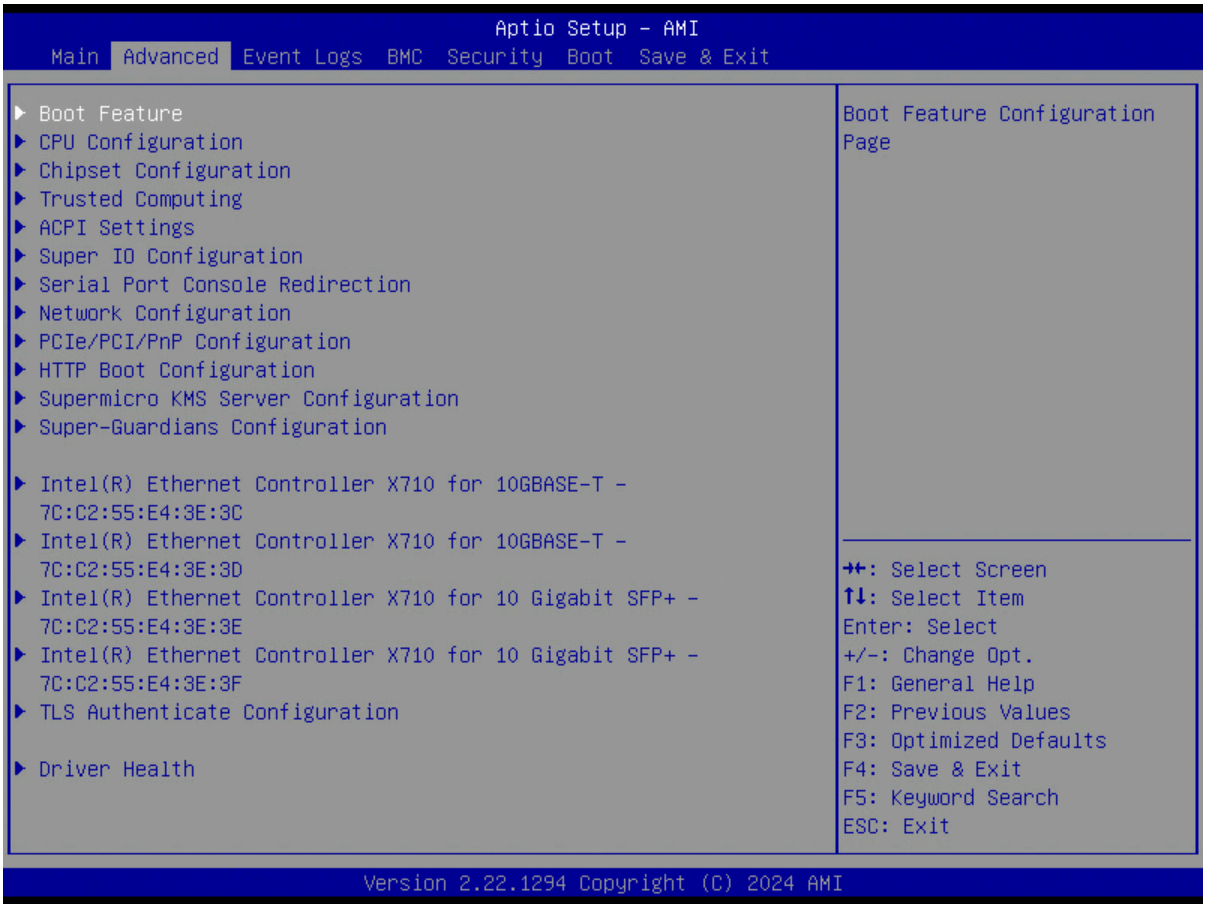

Figure 8-2. Advanced UEFI BIOS Menu Screenshot

Important: Use caution when changing the Advanced settings. An incorrect value, an improper DRAM frequency, or a wrong BIOS timing setting may cause the system to malfunction. When this occurs, revert the settings to the default manufacturing settings.

8.4 Event Logs

Use this menu to configure Event Logs settings.

Note: After making any changes in this section, please be sure to reboot the system for the changes to take effect.

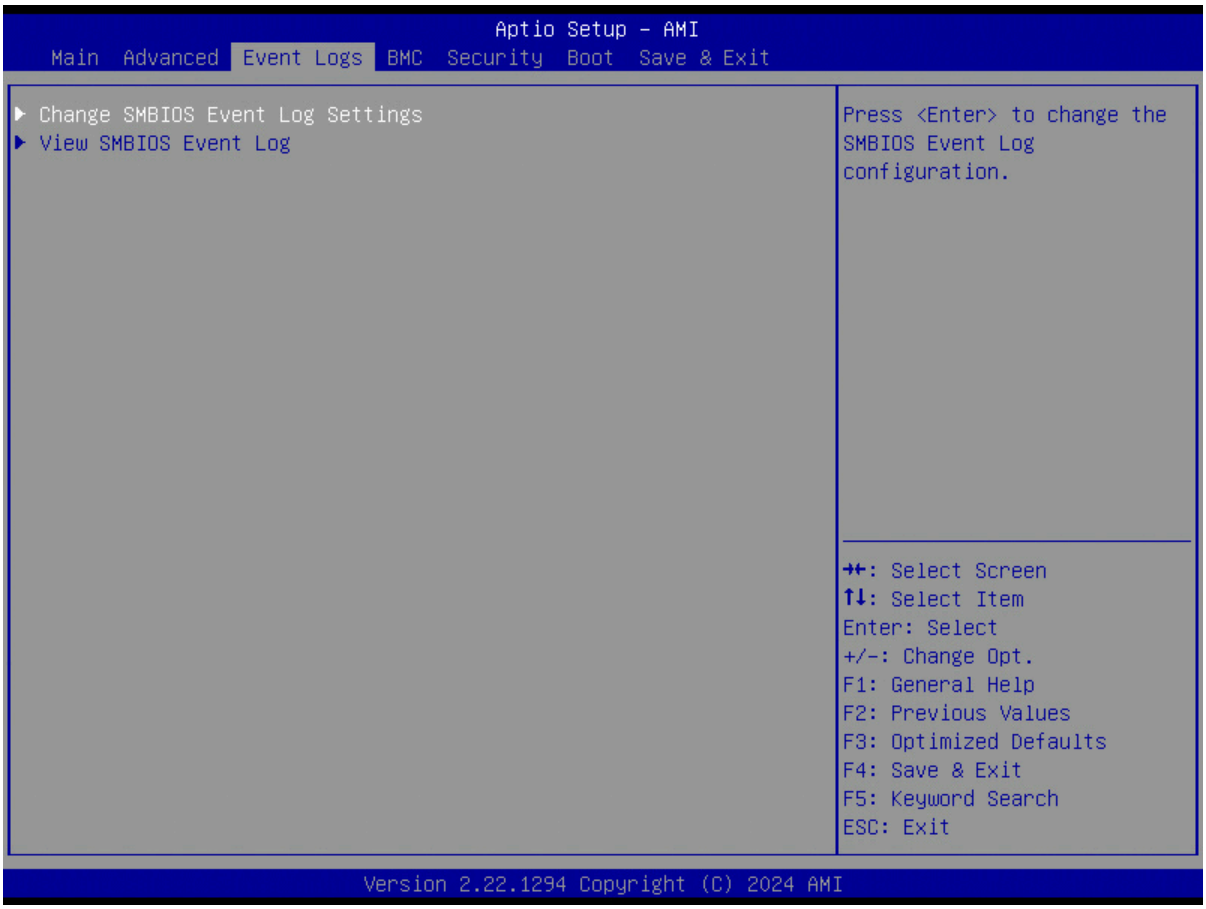

Figure 8-3. Event Logs UEFI BIOS Menu Screenshot

►Change SMBIOS Event Log Settings

Note: Reboot the system for the changes in this section to take effect.

Enabling/Disabling Options

SMBIOS Event Log

Select Enabled to enable System Management BIOS (SMBIOS) Event Logging during system boot. The options are Disabled and **Enabled**.

Erasing Settings

Erase Event Log (Available when "SMBIOS Event Log" is set to Enabled)

Select No to keep the event log without erasing it upon next system bootup. Select (Yes, Next reset) to erase the event log upon next system reboot. The options are **No**, (Yes, Next reset), and (Yes, Every reset).

When Log is Full (Available when "SMBIOS Event Log" is set to Enabled)

Select Erase Immediately to immediately erase all errors in the SMBIOS event log when the event log is full. Select Do Nothing for the system to do nothing when the SMBIOS event log is full. The options are **Do Nothing** and Erase Immediately.

SMBIOS Event Log Standard Settings

Log System Boot Event (Available when "SMBIOS Event Log" is set to Enabled)

Select Enabled to log system boot events. The options are Enabled and **Disabled**.

MECI (Available when "SMBIOS Event Log" is set to Enabled)

Enter the increment value for the multiple event counter. Enter a number between 1 and 255. The default setting is **1**. (MECI is the abbreviation for Multiple Event Count Increment.)

METW (Available when "SMBIOS Event Log" is set to Enabled)

Use this feature to determine how long (in minutes) should the multiple event counter wait before generating a new event log. Enter a number between 0 and 99. The default value is **60**. (METW is the abbreviation for Multiple Event Count Time Window.)

►View SMBIOS Event Log

Use this feature to view the events in the system event log. Select this feature and press <Enter> to view the status of an event in the log. The following information is displayed: DATE / TIME / ERROR CODE / SEVERITY.

8.5 BMC

Use this menu to configure Baseboard Management Console (BMC) settings.

Figure 8-4. BMC UEFI BIOS Menu Screenshot

BMC Firmware Revision

This feature indicates the BMC firmware revision used in this system.

BMC STATUS

This feature indicates the status of the BMC firmware installed in this system.

8.6 Security

Use this menu to configure the following security settings for the system.

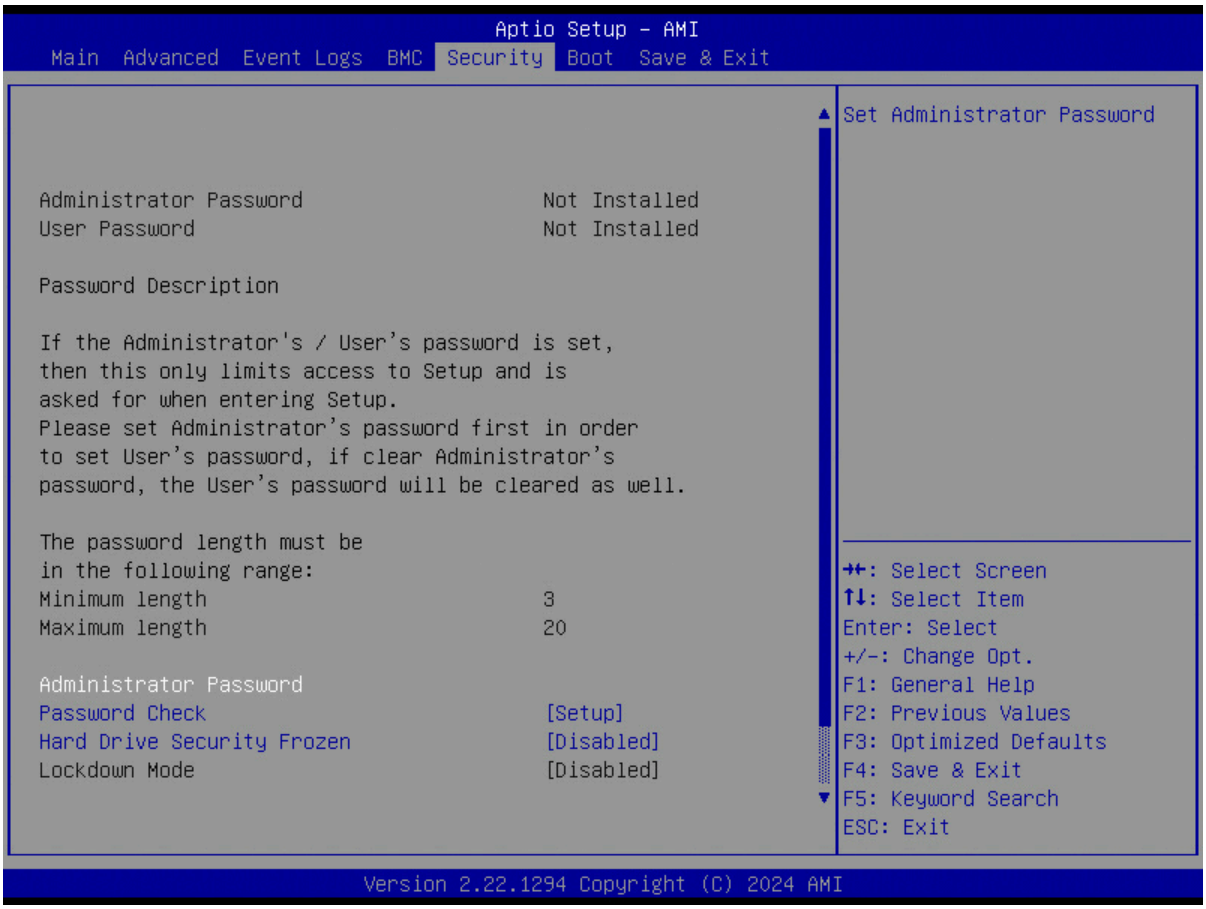

Figure 8-5. Security UEFI BIOS Menu Screenshot

Disable Block Sid and Freeze Lock (Available when your storage devices support TCG)

Select Enabled to allow SID authentication to be performed in TCG storage devices. The options are **Disabled** and Enabled.

The following information is displayed:

- Administrator Password
- User Password
- Password Description

Administrator Password

This feature indicates if an administrator password has been installed. Use this feature to set the administrator password, which is required to enter the BIOS Setup utility. The length of the password can be between three and 20 characters long.

User Password (Available when "Administrator Password" has been set)

This feature indicates if a user password has been installed. Use this feature to set the user password which is required to enter the BIOS Setup utility. The length of the password can be between three and 20 characters long.

Password Check

Select Setup for the system to check for a password upon entering the BIOS Setup utility. Select Always for the system to check for the passwords needed at bootup and upon entering the BIOS Setup utility. The options are **Setup** and Always.

Hard Drive Security Frozen

Select Enabled to freeze the Lock Security feature for HDD to protect key data in hard drives from being altered. The options are **Disabled** and Enabled.

Lockdown Mode (Available when the DCMS key is activated)

Select Enabled to support the Lockdown Mode, which prevents the existing data or keys stored in the system from being altered or changed in an effort to preserve system integrity and security. The options are **Disabled** and Enabled.

8.7 Boot

Use this menu to configure Boot settings.

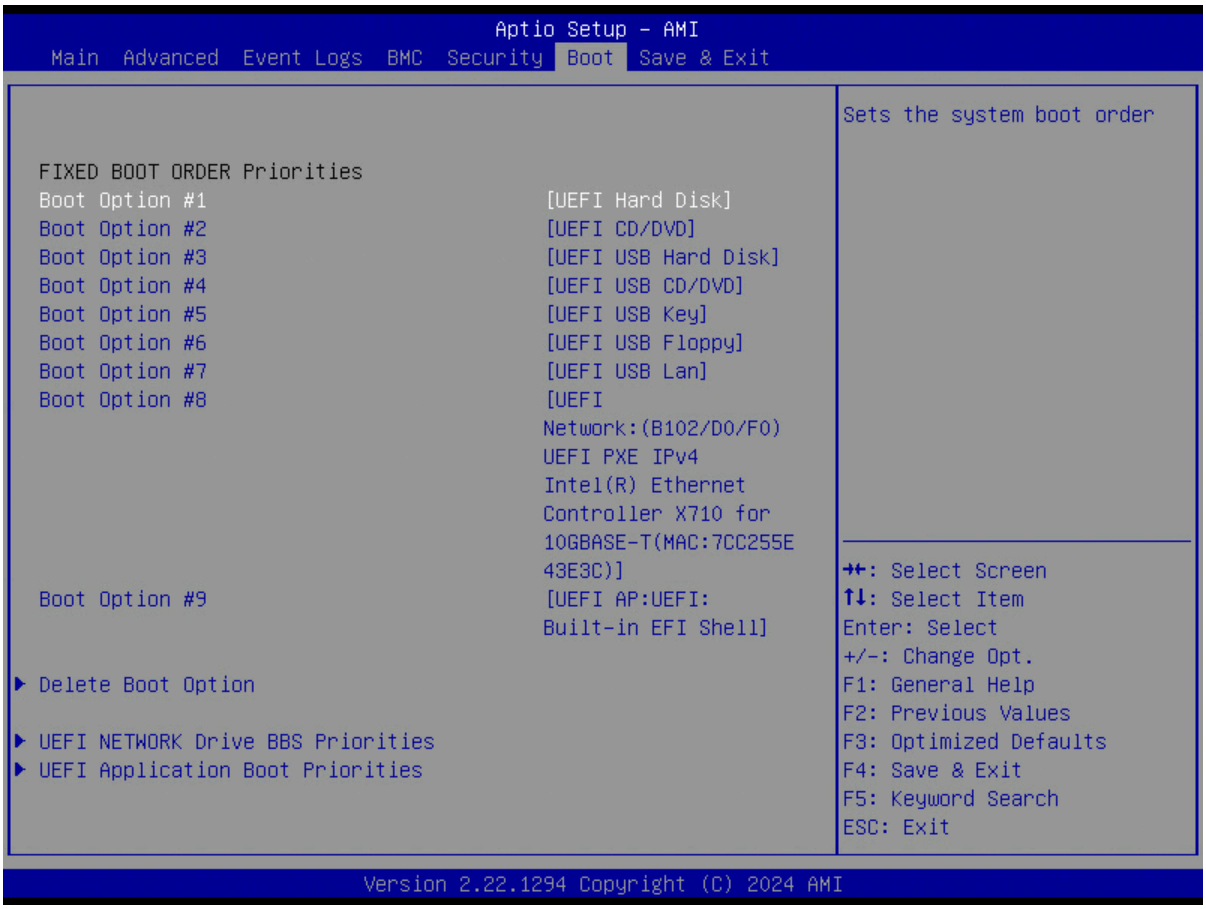

Figure 8-6. Boot UEFI BIOS Menu Screenshot

FIXED BOOT ORDER Priorities

Use this feature to prioritize the order of a bootable device from which the system will boot. Press <Enter> on each item sequentially to select the device.

- Boot Option #1 – Boot Option #9

►Add New Boot Option

Use this feature to add a new boot option to the boot priority features for system boot.

Note: This submenu is available when any storage device is detected by the BIOS.

Add boot option

Use this feature to specify the name for the new boot option.

Path for boot option

Use this feature to enter the path for the new boot option in the format fsx:\path\filename.efi.

Boot option File Path

Use this feature to specify the file path for the new boot option.

Create

After setting the name and the file path for the boot option, press <Enter> to create the new boot option in the boot priority list.

►Delete Boot Option

Use this feature to select a boot device to delete from the boot priority list.

Delete Boot Option

Use this feature to remove an EFI boot option from the boot priority list.

►UEFI NETWORK Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

►UEFI Application Boot Priorities

Use this feature to set the system boot order of detected devices.

►UEFI USB Key Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

►UEFI Hard Disk Drive BBS Priorities

Use this feature to set the system boot order of detected devices.

8.8 Save & Exit

Select Save & Exit from the BIOS Setup screen to configure the settings below.

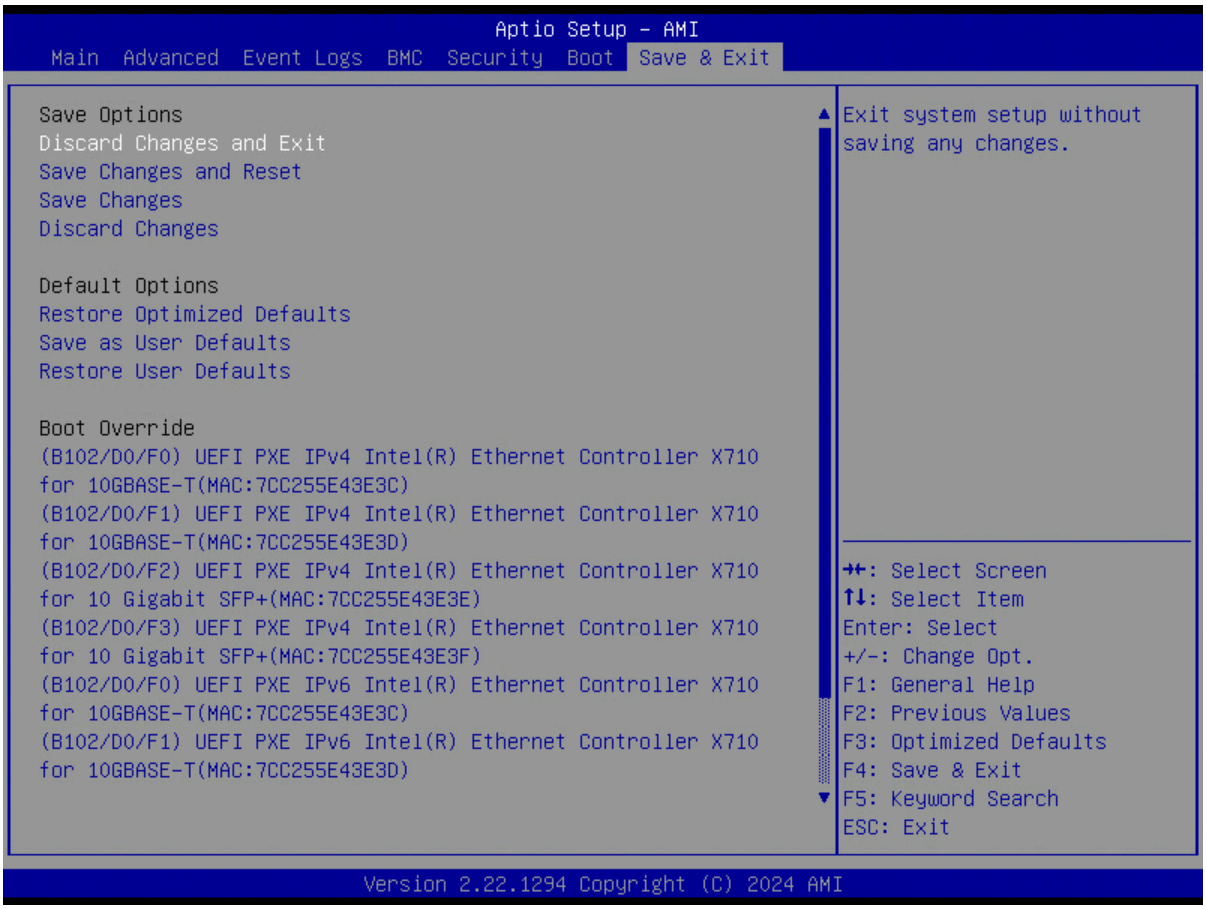

Figure 8-7. Save & Exit UEFI BIOS Menu Screenshot

Save Options

Discard Changes and Exit

Use this feature to exit from the BIOS Setup utility without making any permanent changes to the system configuration and reboot the computer.

Save Changes and Reset

On completing the system configuration changes, use this feature to exit the BIOS Setup utility and reboot the computer for the new system configuration parameters to take effect.

Save Changes

On completing the system configuration changes, use this feature to save all changes made. This will not reset (reboot) the system.

Discard Changes

Select this feature and press <Enter> to discard all changes made and return to the BIOS Setup utility.

Default Options

Restore Optimized Defaults

Select this feature and press <Enter> to load manufacturer optimized default settings, which are intended for maximum system performance but not for maximum stability.

Note: Reboot the system for the changes to take effect to ensure that the system has the optimized default settings.

Save as User Defaults

Select this feature and press <Enter> to save all changes as the default values specified to the BIOS Setup utility for future use.

Restore User Defaults

Select this feature and press <Enter> to retrieve user-defined default settings that have been saved previously.

Boot Override

Note: Use this section to override the Boot priorities sequence in the Boot menu, and immediately boot the system with a device specified here instead of the one specified in the boot list. This is a one-time boot override.

Appendix A:

BIOS Codes

For information about BIOS codes for the SYS-212B-FN2T server, refer to the following content.

BIOS Error POST (Beep) Codes

During the Power-On Self-Test (POST) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot up process. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps that can be heard on an external buzzer connected to JD1. The table shown below lists some common errors and their corresponding beep codes encountered by users.

BIOS Beep (POST) Codes		
Beep Code	**Error Message**	**Description**
1 beep	Refresh	Circuits have been reset (Ready to power up)
5 short, 1 long	Memory error	No memory detected in system
5 short, 2 long	Display memory read/write error	Video adapter missing or with faulty memory
1 long continuous	System OH	System overheat condition

Additional BIOS POST Codes

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

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

Appendix B:

Standardized Warning Statements for AC Systems

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 section in its entirety before installing or configuring components in the Supermicro SYS-212B-FN2T server.

These warnings may also be found on our website at the following page:

https://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.

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

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 الز هز عٌ خطز !تحذ زٌ.

قبل أى تعول على أي هعذات،كي على علن بالوخاطز ال اجٌوة عي الذوائز

الكهزبائ ةٍ

وكي على درا ةٌ بالووارسات النقائ ةٍ لو عٌ وقنع أي حادث

استخذم رقن الب إى الو صٌنص ف هًا ةٌ كل تحذ زٌ للعثر تزجوتها

안전을 위한 주의사항

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

Installation Instructions

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

警告!

システムを電源に接続する前に、設置手順書をお読み下さい。

警告!

将此系统连接电源前、请先阅读安装说明。

警告!

將系統與電源連接前、請先閱讀安裝說明。

Warnung!

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

¡Advertencia!

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

Attention!

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

אַזהָרָה!

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

تحذير!

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

경고!

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing!

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

Circuit Breaker

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

警告!

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告!

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

警告!

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

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

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

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

تحذير!

هذا المنتج يعتمد على معداث الحمايت مه الدوائر القصيرة التي تم تثبيتها في

المبنى

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

경고!

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

Waarschuwing!

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

Power Disconnection Warning

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

警告!

システムコンポーネントの取り付けまたは取り外しのために、シャーシー内部にアクセスするには、

システムの電源はすべてのソースから切断され、電源コードは電源モジュールから取り外す必要があります。

警告!

在你打开机箱并安装或移除内部器件前、必须将系统完全断电、并移除电源线。

警告!

在您打開機殼安裝或移除內部元件前、必須將系統完全斷電、並移除電源線。

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

יש לנתק את המערכת מכל מקורות החשמל ויש להסיר את כבל החשמלי מהספק

לפני גישה לחלק הפנימי של המארז לצורך התקנת או הסרת רכיבים.

تحذير!

يجب فصم انتظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد

انطاقت قبم

انصسل إنى انمناطق انداخهيت نههيكم نتثبيج أو إزانت مكنناث الجهاز

경고!

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

Waarschuwing!

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

Equipment Installation

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

警告!

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

警告!

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告!

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

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

تحذير!

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

경고!

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

Waarschuwing!

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

Restricted Area

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

警告!

このユニットは、アクセス制限区域に設置されることを想定しています。

アクセス制限区域は、特別なツール、鍵と錠前、その他のセキュリティの手段を用いてのみ出入りが可能です。

警告!

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

警告!

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

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

יש להתקין את היחידה באזורים שיש בהם הגבלת גישה. הגישה ניתנת בעזרת

'כלי אבטחה בלבד (מפתח, מנעול וכד.)

تحذير!

اتخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .

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

أو أ وس هُت أخري نلالأمما قفم ومفتاح

경고!

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

Waarschuwing!

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

Battery Handling

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

警告!

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

警告!

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

警告!

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

WARNUNG!

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

¡ADVERTENCIA!

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

ATTENTION!

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

אזהרה!

קיימת סכנת פיצוץ אם הסוללה תוחלף בסוג שגוי. יש להחליף

את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

تحذير!

هناك خطر الانفجار إذا تم استبدال البطارية بنوع غير صحيح.

اسحبذال البطارية

فقط بنفس النمع أو ما يعادلها مما أوصث به الشرمة المصنعة

جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

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

WAARSCHUWING!

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

Redundant Power Supplies

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

警告!

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告!

此部件连接的电源可能不止一个、必须将所有电源断开才能停止给该部件供电。

警告!

此裝置連接的電源可能不只一個、必須切斷所有電源才能停止對該裝置的供電。

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

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

את היחידה.

تحذير!

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

경고!

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

Waarschuwing!

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

Backplane Voltage

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

警告!

システムの稼働中は危険な電圧または電力が、バックプレーン上にかかっています。

修理する際には注意ください。

警告!

当系统正在进行时、背板上有很危险的电压或能量、进行维修时务必小心。

警告!

當系統正在進行時、背板上有危險的電壓或能量、進行維修時務必小心。

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

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

העבודה.

تحذير!

هناك خطر مه التيار الكهزبائي أوالطاقة المىجىدة على اللىحة

عندما يكىن 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.

警告!

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告!

设备安装必须符合本地与本国电气法规。

警告!

設備安裝必須符合本地與本國電氣法規。

Warnung!

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention!

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

אזהרה!

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تحذير!

تركيب المعدات الكهربائية يجب أن يمتثل للقناويه المحلية والبطبية المتعلقة

بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing!

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

Product Disposal

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

警告!

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

警告!

本产品的废弃处理应根据所有国家的法律和规章进行。

警告!

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

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

تحذير!

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

경고!

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

Waarschuwing!

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

Fan Warning

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

警告!

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 והמאווררים עדיין עובדים. יש להרחיק למרחק בטוח את

האצבעות וכלי עבודה שונים מהפתחים בתוך המאוורר

تحذير!

تحذير! أجزاء متحركة خطرة. ابتعد عن شفرات المروحة المتحركة.من الممكن أن

المراوح لا تزال تدور عند إزالة كتلة المروحة من الهيكل يجب إبقاء الأصابع

ومفكات البراغي وغيرها من الأشياء بعيدا عن الفتحات في كتلة المروحة.

경고!

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

Waarschuwing!

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

Power Cable and AC Adapter

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

警告!

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

警告!

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

警告!

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

Warnung!

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

¡Advertencia!

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

Attention!

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

אזהרה!

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

تحذير!

تالباكلا ءارشب مق وأ ةددحملا وأ ةرفوتملا تاليصوتلا مادختساب مق ،جتنملا بيكرت دنع

كلذ يف امب ةيلحملا ةمالسلا تابلطتمو نيناوقب مازتلالا عم ددرتملا رايتلا تالوحمو ةيئابر هكلا

قيرح وأ لطع يف ببستي دق برخأ تالوحمو تالباك يأ مادختسا .ميلسلا سباقلاو لصوملا مجح.

CSA وأ UL لبق نم ةدمتعملا تالباكلا مادختسا تادعملاو ةيئابر هكلا تز هجألل ةمالسلا نوناق رظحي

Supermicro لبق نم ةددحملاو ةينعملا تاجتنملا ريغ برخأ تادعم يأ عم (UL/CSA) ةمالع لمحت يتلاو.

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.

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 C:

System Specifications

Processor
Intel® Xeon® 6700/6500-series processors with P-cores or Intel® Xeon® 6700- series processor with E-cores, and a thermal design power (TDP) of up to 350 W in socket E2 LGA 4710
Chipset
System on Chip
BIOS
AMI 256 MB SPI Flash
Memory
Eight DIMM slots Max Memory (1DPC): Up to 2 TB 6400 MT/s ECC DDR5 RDIMM Max Memory (1DPC): Up to 512 GB 8000 MT/s ECC DDR5 MRDIMM (P-core only)
Storage Drives
Four rear hot-swap 2.5" NVMe drive bays NVMe support may require additional storage controller and/or cables.
PCI Expansion Slots
Default: Two PCIe 5.0 x16 (in x16) FHFL slots Option A: Two PCIe 5.0 x16 (in x16) FHFL slots One PCIe 5.0 x16 (in x16) FHFL double-width slot One PCIe 5.0 x16 (in x16) HHHL slot One PCIe 5.0 x8 (in x8) HHHL slot Option B: Two PCIe 5.0 x16 (in x16) FHFL slots One PCIe 5.0 x16 (in x16) HHHL slot Options A and B require additional parts, please see the Optional Parts list for details.
Input/Output
One RJ45 1 GbE Dedicated BMC LAN port Two RJ45 10 GbE LAN ports Two USB 3.2 Gen1 Type-A ports One VGA port
Motherboard
X14SBM-TF

Chassis
CSE-223M-R000RCNDP
System Cooling
Four 4-pin pwm 8-cm fans
One air shroud
Power Supply
One redundant Titanium Level (96%) power supply
Operating Environment
Operating Temperature: 5º to 40ºC (41º to 104º)
Non-operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5% to 95% (non-condensing)
Regulatory Compliance
FCC, ICES, CE, VCCI, RCM, UKCA, NRTL, CB
Certified Safety Models
Compliant with UL or CSA: 223M-R20X14 , 223M-20.

Applied Directives, Standards

EMC/EMI: 2014/30/EU (EMC Directive)

Electromagnetic Compatibility Regulations 2016

FCC Part 15

ICES-003

VCCI-CISPR 32

AS/NZS CISPR 32

BS/EN55032

BS/EN55035

CISPR 32

CISPR 35

BS/EN 61000-3-2

BS/EN 61000-3-3

BS/EN 61000-4-2

BS/EN 61000-4-3

BS/EN 61000-4-4

BS/EN 61000-4-5

BS/EN 61000-4-6

BS/EN 61000-4-8

BS/EN 61000-4-11

Environment:

2011/65/EU (RoHS Directive)

EC 1907/2006 (REACH)

2012/19/EU (WEEE Directive)

California Proposition 65

Product Safety: 2014/35/EU (LVD Directive)

UL/CSA 62368-1 (USA and Canada)

Electrical Equipment (Safety) Regulations 2016

IEC/BS/EN 62368-1

Perchlorate Warning

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