# SuperServer®
# SYS-421GE-TNHR2-LCC

USER'S MANUAL

Revision 1.0a

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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 this server. Installation and maintenance should be performed by certified service technicians only.

Please refer to the SYS-421GE-TNHR2-LCC server specifications page on our website for updates on supported memory, processors and operating systems (www.supermicro.com).

## Notes

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

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

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

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

## Secure Data Deletion

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

## Warnings

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

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

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

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# Contacting Supermicro


**Headquarters**

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

**Europe**

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

**Asia-Pacific**

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

# Chapter 1

# Introduction

## 1.1 Overview

This chapter provides an outline of the functions and features of the SuperServer SYS-421GE-TNHR2-LCC. The following provides an overview of the specifications and capabilities.

| System Overview | |
|---|---|
| **Motherboard** | X13DEG-M |
| **Chassis** | CSE-GP401 |
| **Processors** | Supports dual 5th/4th Gen. Intel Xeon Scalable/ Xeon Max Series processors (in Socket E LGA 4677) with four UPIs (20/16 GT/s max.) with up to 64/60 CPU cores and a thermal design power (TDP) of up to 385 W<br>**Note:** SP XCC, SP MCC, and Max Series (HBM) SKUs are supported. |
| **Chipset** | Intel PCH C741 |
| **Memory** | Supports up to 8 TB 3DS RDIMM/RDIMM DDR5 (288-pin) ECC memory with speeds up to 5600 MT/s (1PDC) or 4400 MT/s (2DPC) in 32 DIMM slots<br>**Note:** Memory speed and capacity support depends on the processors used in the system. |
| **GPUs** | NVIDIA HGX H100 8-GPU |
| **Storage** | Eight 2.5" hot-swap NVMe/SATA3 drive bays<br>Eight 2.5” NVMe U.2 Via PCIe switches or eight 2.5” SATA<br>Two M.2 NVMe slots |
| **Expansion Slots** | Twelve PCIe 5.0 slots:<br>Eight PCIe 5.0 x16 LP, two PCIe 5.0 x16 FHHL, two PCIe 5.0 x16 FHHL (optional) |
| **I/O Bay** | One VGA port<br>Two USB 3.0 ports<br>One dedicated BMC LAN port |
| **System Cooling** | Liquid cooling<br>Four heavy duty mid-fans with optimal fan speed control |
| **Power** | Four 5250 W (2+2) power supplies |
| **Form Factor** | 4U rackmount; 17.2 x 7 x 29 in. / 437 x 178 x 737 mm (WxHxD) |

**Notes:** A Quick Reference Guide can be found on the product page of the Supermicro website. The following safety models associated with the SYS-421GE-TNHR2-LCC have been certified as compliant with UL and CSA: GP401LC-Q52X13 and GP401LC-52.

## 1.2 System Features

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

### Front View

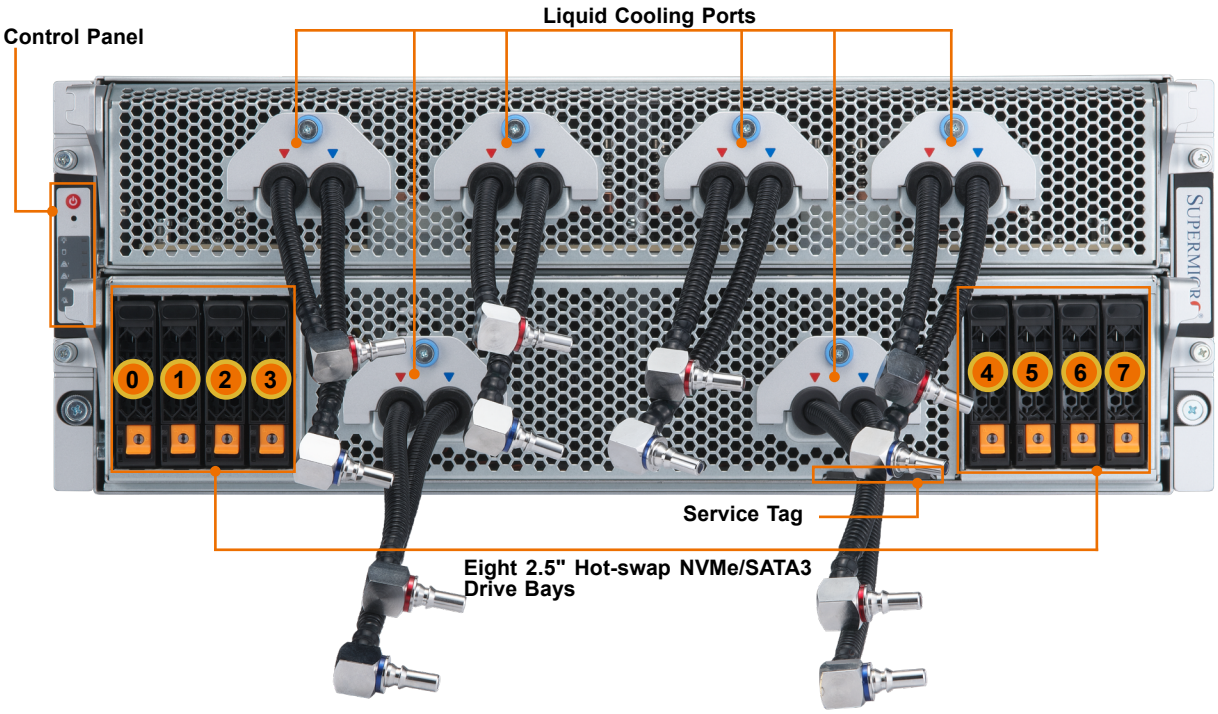



**Figure 1-1. Front View**

| Front Features | |
|---|---|
| **Feature** | **Description** |
| Liquid Cooling Ports | These are ports used to attach hoses to circulate liquid coolant through the chassis and out to an external Coolant Distribution Unit (CDU) and back. |
| Control Panel | One control panel with power switch and LED indicators |
| Hard Drives | Eight storage drives support Hybrid PCIe 5.0 NVMe U.2/SATA 2.5” drives |
| Service Tag | Pull-out service tag to track unit history |

| Logical Storage Drive Numbers | |
|---|---|
| **Item** | **Description** |
| 0 to 7 | Eight 2.5" hot-swap NVMe/SATA3 drive bays<br>See NVMe SSD Drive Indicators for details. |

### *Control Panel*

The switches and LEDs located on the control panel are described below.

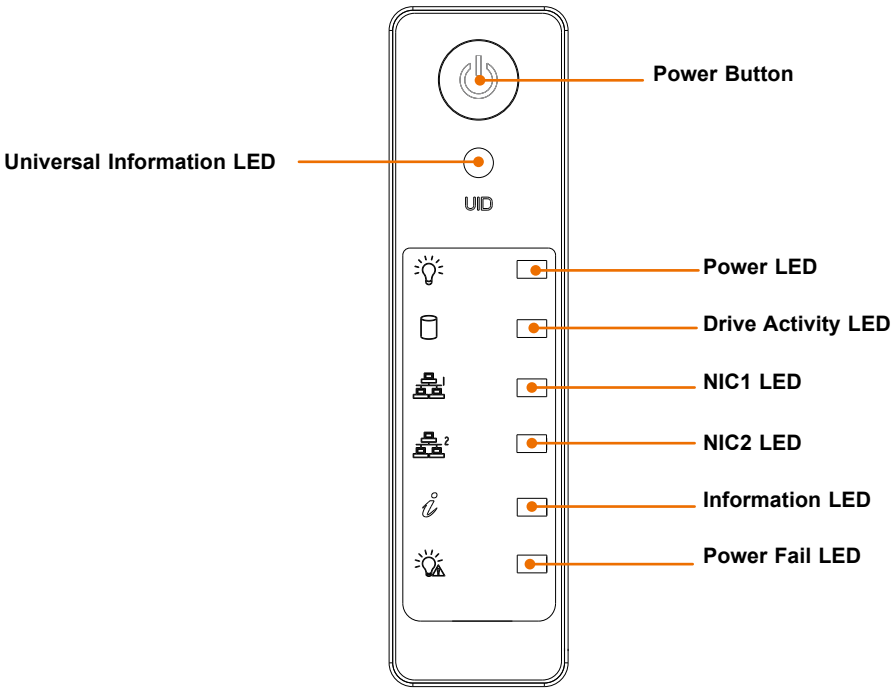



**Figure 1-2. Control Panel**

| Control Panel Features | |
|---|---|
| **Features** | **Description** |
| Power Button | The main power button is used to apply or remove power from the power supply to the server. Turning off system power with this button removes the main power but maintains standby power. To perform many maintenance tasks, you must also unplug system before servicing |
| Power LED | Indicates power is being supplied to the system power supply. This LED should normally be illuminated when the system is operating. |
| Drive Activity LED | Indicates activity on the storage drives when flashing. |
| NIC1 LED | Indicates network activity on LAN port 1 when flashing |
| NIC2 LED | Indicates network activity on LAN port 2 when flashing |
| Information LED | See table on the next page for details |
| Power Fail LED | Indicates a power supply module has failed. |
| Universal Information LED | The UID is a unit identifier button for easy system location in large stack configurations. When the UID button is pressed, the blue LED on both the front and rear of the chassis will be illuminated. |

| Information LED | |
|---|---|
| **Color, Status** | **Description** |
| Continuously on and red | An overheat condition has occurred.<br>(This may be caused by cable congestion.) |
| Blinking red (1 Hz) | Fan failure, check for an inoperative fan. |
| Solid blue | UID has been activated locally to locate the server in a rack environment. |
| Blinking blue (300 msec) | UID has been activated remotely using IPMI to locate the server in a rack environment. |

### *NVMe SSD Drive Indicators*

Each drive carrier has 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.

| NVMe SSD Drive LED Indicators | | | |
|---|---|---|---|
| | **Color** | **Blinking Pattern** | **Behavior for Device** |
| **Activity LED** | Blue | Solid on | Idle SAS/NVMe drive installed |
| | Blue | Blinking | I/O activity |
| | Off | | Idle SATA drive installed |
| **Status LED** | Red | Solid On | Failure of drive with RSTe support |
| | Red | Blinking at 1 Hz | Rebuild drive with RSTe support |
| | | Blinking with two blinks and on 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 on | Safe to remove NVMe drive |
| | Amber | Blinking at 1 Hz | Do not remove NVMe drive |

## Rear View

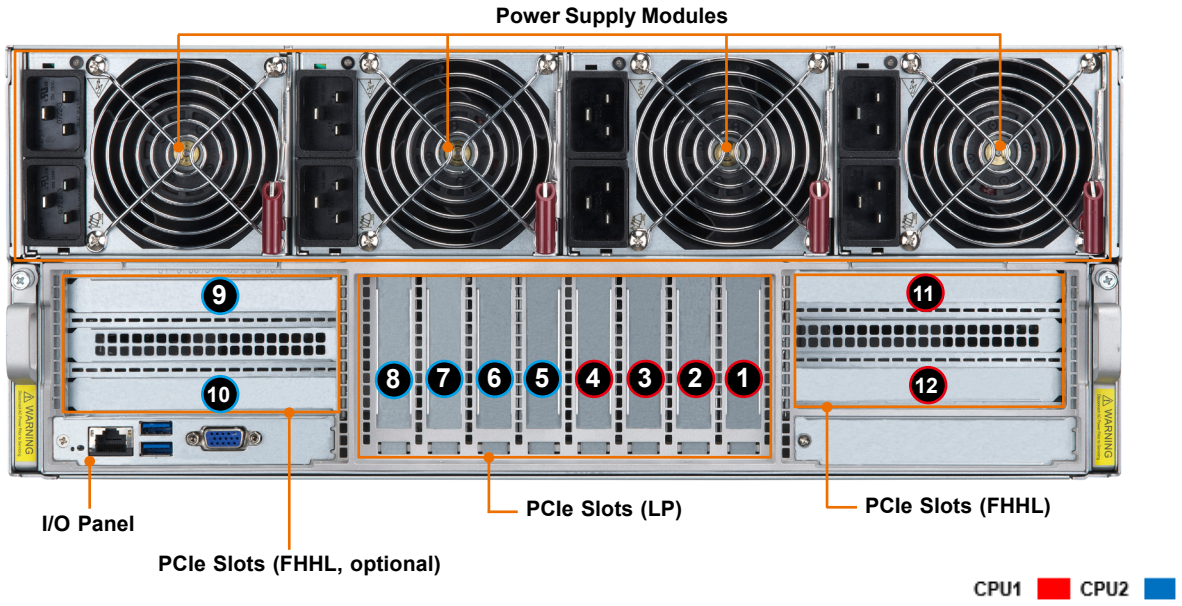



**Figure 1-3. System: Rear View**

| System Features: Rear | |
|---|---|
| **Feature** | **Description** |
| Power Supply Modules | Four 5250 W (2+2) power supplies |
| PCIe Slots (FHHL) | Two FHHL (full-height, half-length) PCIe 5.0 x16 slots |
| PCIe Slots (HHLP) | Eight HH (half-height or "low profile") PCIe 5.0 x16 slots |
| PCIe Slots (FHHL, optional) | Two FHHL (full-height, half-length) PCIe 5.0 x16 slots |
| I/O Panel | See table on the next page for details. |

| PCIe Slots Logical Numbers | | | |
|---|---|---|---|
| **Slot** | **Description** | **Slot** | **Description** |
| 1 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs | 7 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs |
| 2 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs | 8 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs |
| 3 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs | 9 | PCIe 5.0 x16 (FHHL) from PLX switch linked to GPUs (optional) |
| 4 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs | 10 | PCIe 5.0 x16 (FHHL) from PLX switch linked to GPUs (optional) |
| 5 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs | 11 | PCIe 5.0 x16 (FHHL) from PLX switch linked to GPUs |
| 6 | PCIe 5.0 x16 (LP) from PLX switch linked to GPUs | 12 | PCIe 5.0 x16 (FHHL) from PLX switch linked to GPUs |

### *Power Supply Indicator*

| Power Supply Status Indicator | |
|---|---|
| **LED Color and State** | **Power Supply Condition** |
| Solid Green | Indicates that the power supply is on and working |
| Blinking Green | Indicates the system is off |
| Solid Amber | Indicates failure or needs attention |
| Off | No AC power to module |

### *Input/Output Panel*

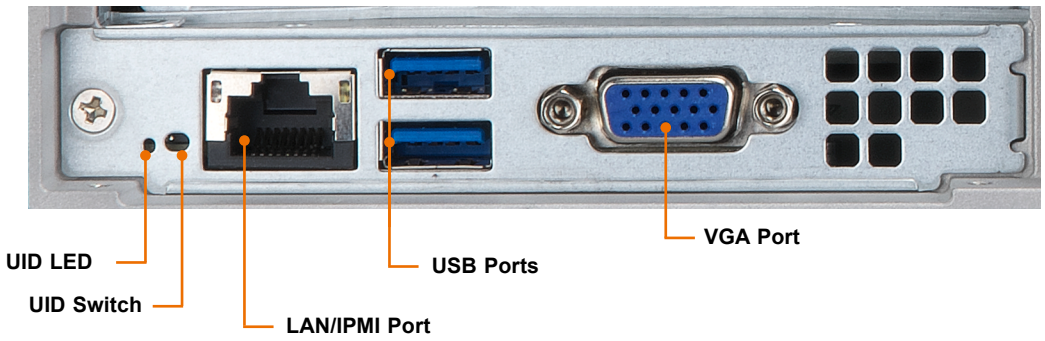



**Figure 1-4. System: Input/Output Panel**

| Input/Output Panel | |
|---|---|
| **Feature** | **Description** |
| LAN/IPMI Port | Dedicated LAN/IPMI RJ45 connector for networking and remote management |
| USB Ports | Two USB 3.0 ports |
| VGA Port | One legacy VGA port for video output |
| Unit Identifier Switch /UID LED Indicator | When you press the Unit Identifier (UID) switch, both front and rear UID LED indicators are toggled on or off. This can help identify a system in a rack. The UID can also be triggered using the BMC. |

## Top View, Motherboard Tray and Switch Modules

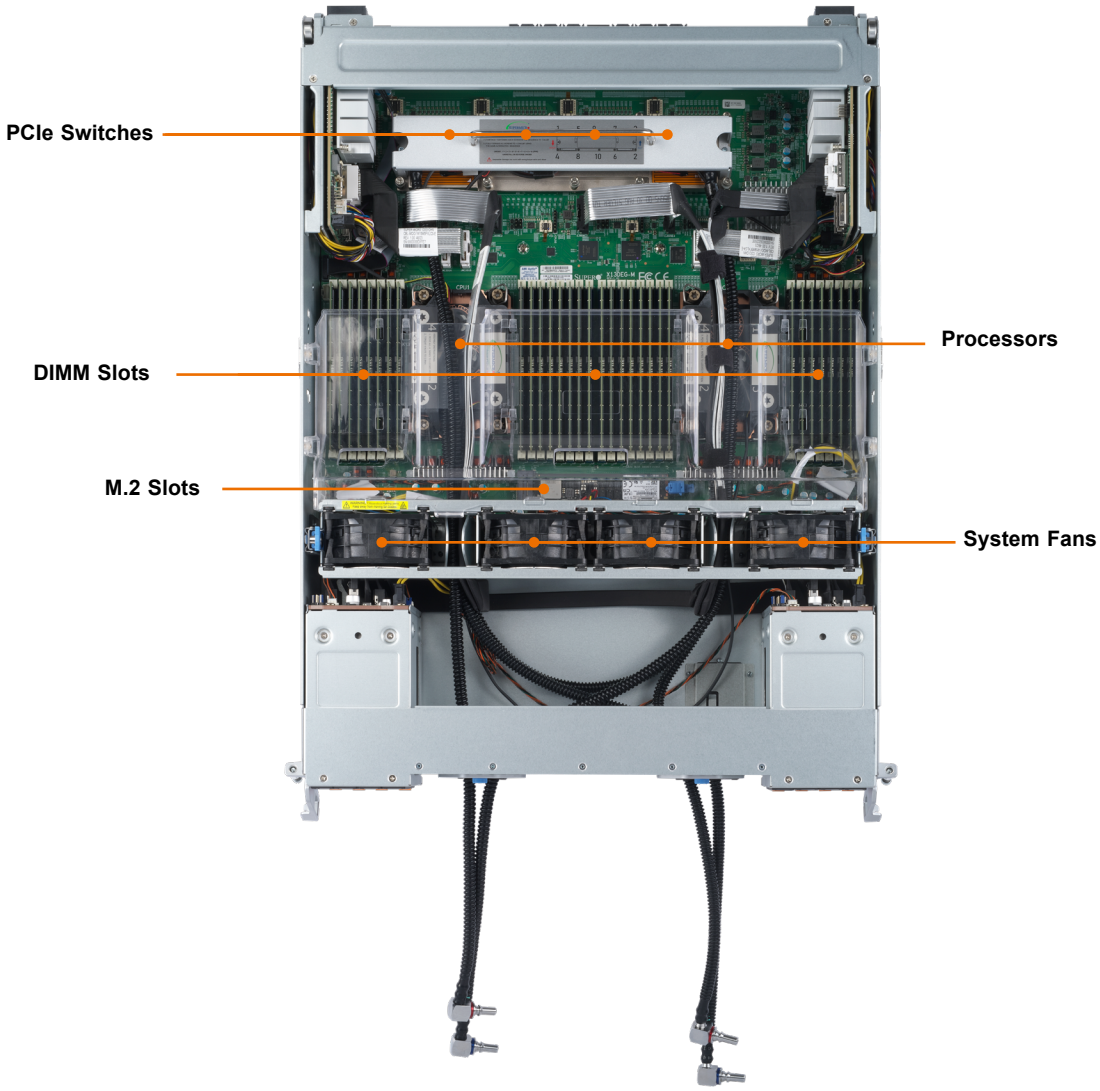



**Figure 1-5. Motherboard Tray: Top View**

| System Features: Top | |
|---|---|
| **Feature** | **Description** |
| PCIe Switches | Four PCIe switches |
| M.2 Slots | Two slots for PCIe 3.0 x2 M.2 NVMe (from PCH) |
| DIMM Slots | 32 DIMM ECC DDR5 designed for up to 4800 MT/s (1DPC) / 4400MT/s (2DPC) |
| Processors | Dual 4th and 5th Gen Intel® Xeon® Scalable Processors up to 385 W TDP |
| System Fans | Four 8-cm heavy duty fans with optimal fan speed control |

## Top View: GPU Tray

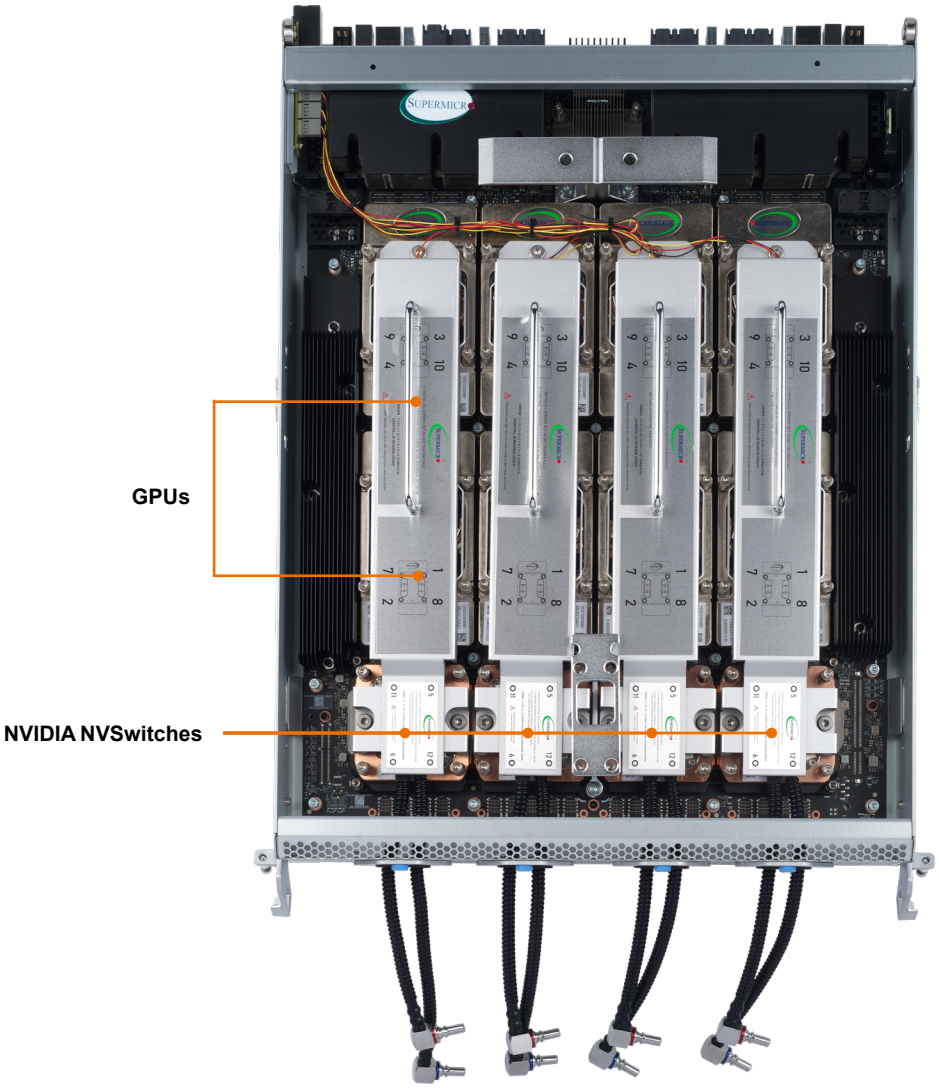



**Figure 1-6. Motherboard Tray: Top View**

| System Features: Top | |
|---|---|
| **Feature** | **Description** |
| NVIDIA NVSwitches | Four NVIDIA NVSwitches |
| GPUs | Eight NVIDIA HGX H100 GPUs |

## 1.3 System Block Diagram

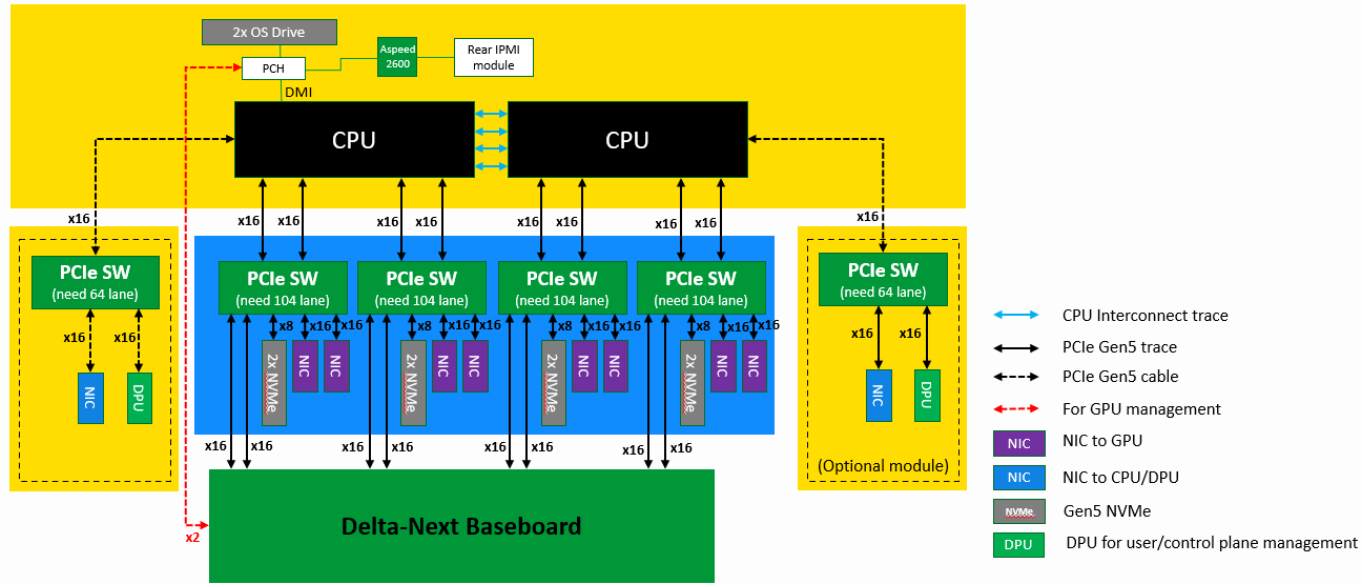
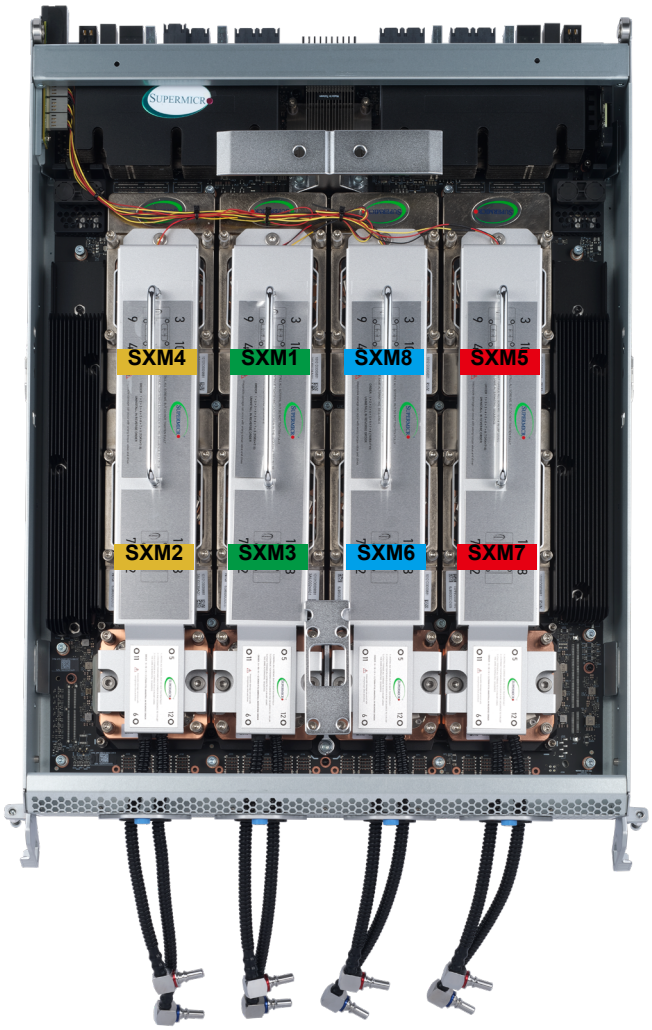



**Figure 1-7. System Block Diagram**

**Note:** The GPU numbering is based on BMC interface numbering. See the below GPU mapping table for more information.

| GPU Mapping Table | | |
|---|---|---|
| **GPU Socket Numbering** | **BMC Interface Numbering** | **Linux OS Numbering** |
| SXM1 | GPU 1 | GPU 2 |
| SXM2 | GPU 2 | GPU 0 |
| SXM3 | GPU 3 | GPU 3 |
| SXM4 | GPU 4 | GPU 1 |
| SXM5 | GPU 5 | GPU 6 |
| SXM6 | GPU 6 | GPU 4 |
| SXM7 | GPU 7 | GPU 7 |
| SXM8 | GPU 8 | GPU 5 |



## 1.4 Motherboard Layout

Below is a layout of the X13DEG-M motherboard with jumper, connector and LED locations shown. See the table on the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to Chapter 4 or the Motherboard Manual.

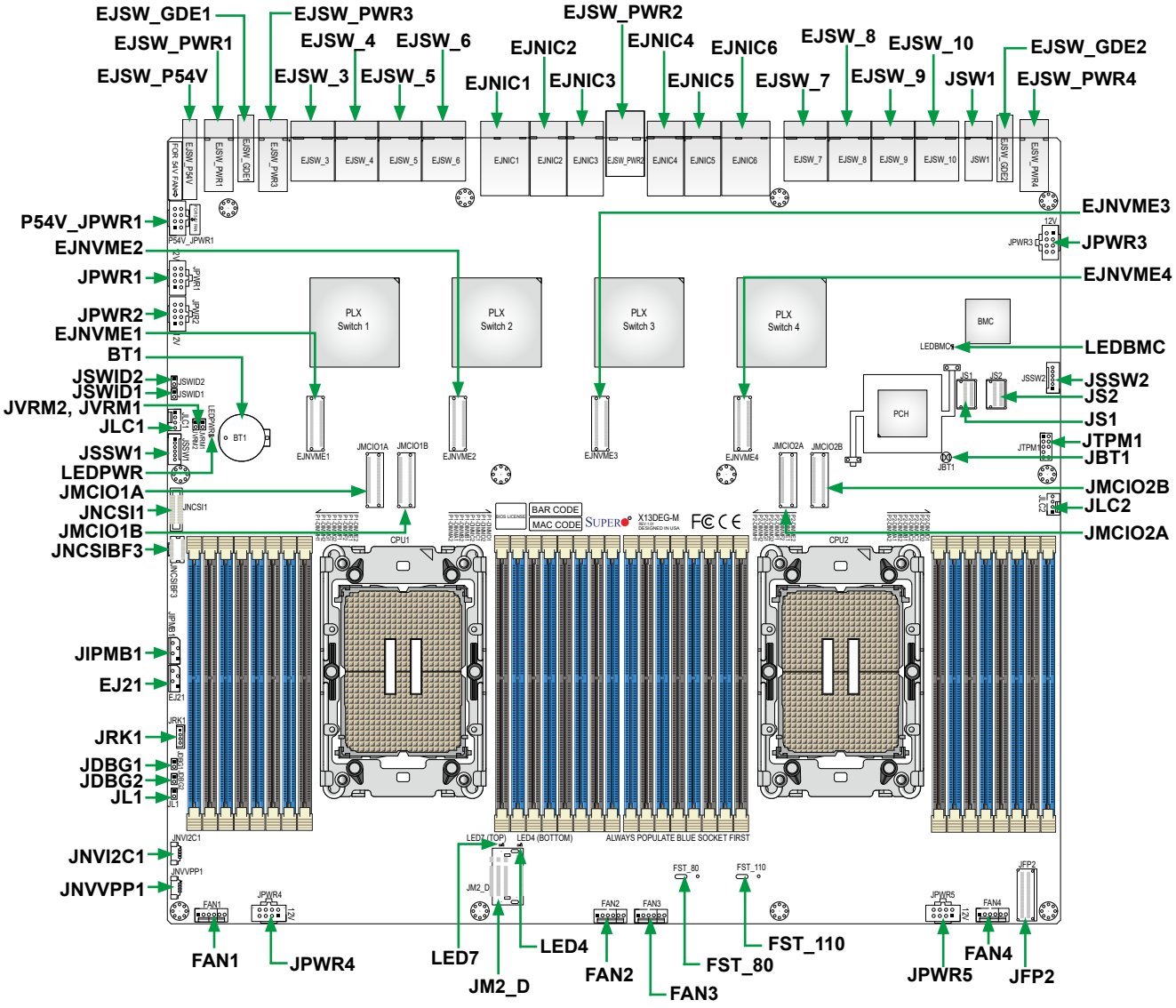



**Figure 1-8. Motherboard Layout**

**Notes:**

- "▄" indicates the location of Pin 1.
- Jumpers/LED indicators not indicated are used for testing only.
- Use only the correct type of onboard CMOS battery as specified by the manufacturer. To avoid a possible explosion, do not install the onboard battery upside down.

## Quick Reference Table

| Jumper | Description | Default Setting |
|---|---|---|
| JBT1 | CMOS Clear | Open (Normal) |
| JDBG1, JDBG2 | For manufacturing use only | Open (Normal) |
| JSWID1, JSWID2 | PSUs and redundant PSUs support (For manufacturing use only) | JSWID1 and JSWID2: Pins 1-2 (Closed) Two PSUs and two redundant PSUs |
| JVRM1, JVRM2 | For manufacturing use only | Pins 1-2 (Closed) |

**Note:** JSWID1 and JSWID2 settings depend on the system configurations.

| LED | Description | Status |
|---|---|---|
| LED4, LED7 | M.2 Activity LED for JM2_D bottom/top M.2 | Blinking Green: Device Working |
| LEDBMC | BMC Heartbeat LED | Blinking Green: BMC Normal (Active), Solid Green: During BMC Reset or during a Cold Reboot |
| LEDPWR | Power LED | LED On: Onboard Power On |

| Connector | Description |
|---|---|
| BT1 | Onboard Battery |
| EJ21 | $I^2C$ Header for Fan Board |
| EJNIC1 - 6 | ExaMAX PCIe 5.0 Connecters for NIC card carrier board supporting eight PCIe 5.0 x 16 connections |
| EJNVME1 - 4 | MCIO x8 Connectors supported by PLX switch, each supporting two PCIe 5.0 x4 NVMe connections |
| EJSW_3 - 10 | ExaMAX Connectors for midplane to GPU system connection |
| EJSW_GDE1, EJSW_GDE2 | Midplane Guide Pins |
| EJSW_P54V | 54 V Power Input Connector from midplane |
| EJSW_PWR1, EJSW_PWR3, EJSW_PWR4 | 12 V PowerMAX Connector from midplane |
| EJSW_PWR2 | 12 V PowerMAX Connector for NIC card carrier board |
| FAN1 - 4 | 6-pin Cooling Fan Headers |
| FST_80, FST_110 | Mounting holes for M.2 SSDs |
| JFP2 | Connector for front I/O module (with support of USB, VGA and BMC dedicated LAN) (mutually exclusive with JSW1) |
| JIPMB1 | 4-pin BMC External $I^2C$ Header (for Inlet Temperature Sensor) |
| JLC1, JLC2 | Liquid Cooling Leak Detection Connectors |
| JM2_D | M.2 Socket with two PCIe 3.0 x2 NVMe M.2 Slots supported by Intel PCH (with support of M-Key 2280 and 22110 form factors) |
| JMCIO1A, JMCIO1B | Two MCIO x8 Connectors supported by CPU1 for side switch board |
| JMCIO2A, JMCIO2B | Two MCIO x8 Connectors supported by CPU2 for side switch board |
| JNCSI1 | NC-SI (Network Controller Sideband Interface) Connector |
| JNVI2C1 | NVMe $I^2C$ Header for storage backplane |
| JNVVPP1 | VPP $I^2C$ Header for storage backplane |

| Connector | Description |
|---|---|
| JPWR1 - 5 | 12 V Power Connectors |
| JRK1 | Intel VROC Key Header for NVMe RAID support |
| JS1 (I-SATA 0 - 3),<br>JS2 (I-SATA 4 - 7) | SlimSAS x4 Connectors supported by Intel PCH for eight SATA 3.0 connections (RAID 0, 1, 5, and 10 supported) |
| JSSW1, JSSW2 | $I^2C$ Headers for side switch boards |
| JSW1 | ExaMAX Connector for midplane to rear I/O module connection (with support of USB, VGA and BMC dedicated LAN) (mutually exclusive with JFP2) |
| JTPM1 | Trusted Platform Module/Port 80 Connector |
| P54V_JPWR1 | 54 V Power Output Connector |

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

# Motherboard Block Diagram

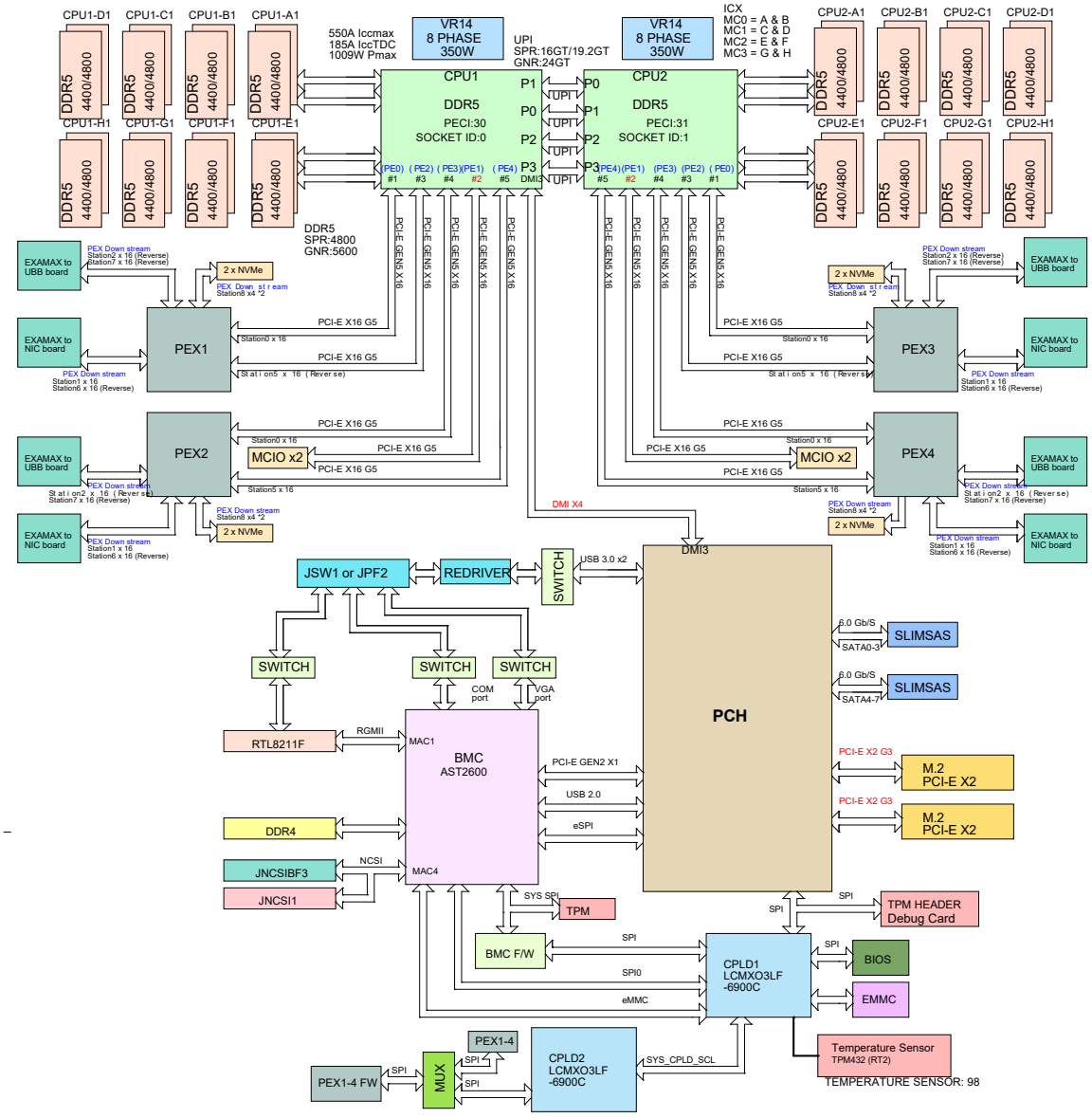



**Figure 1-9. Motherboard Block Diagram**

**Note:** This is a generic block diagram and may not exactly represent the features on your motherboard. See the previous pages for the actual specifications of your motherboard.

# Chapter 2

# Server Installation

## 2.1 Overview

This chapter provides advice and instructions for mounting your system in a server rack. If your system is not already fully integrated with processors, system memory etc., refer to Chapter 4 for details on installing those specific components.

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

## 2.2 Preparing for Setup

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

### Choosing a Setup Location

- The chassis should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated.
- Leave enough clearance in front of the rack so that you can open the front door completely (approximately 25 inches) and approximately 30 inches of clearance in the back of the rack to allow sufficient space for airflow and access when servicing.
- This product should be installed only in a Restricted Access Location (dedicated equipment rooms, service closets, etc.).
- This product is not suitable for use with visual display workplace devices according to §2 of the German Ordinance for Work with Visual Display Units.

## Rack Precautions

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

## Server Precautions

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

## Rack Mounting Considerations

### *Ambient Operating Temperature*

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

### *Airflow*

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

### *Mechanical Loading*

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

### *Circuit Overloading*

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

### *Reliable Ground*

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

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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

## Installing the Mounting Rails on the Rack

### *Installing the Mounting Rails*

1. Confirm that the left and right outer rails have been correctly identified.
2. Install the rails using the screws that come with kit as shown in the illustration below.
3. The rails are actually made of two telescoping pieces that slide to lengthen. Adjust the rails so that the front and back ends of the rails extend all the way to the selected mounting holes on the front and back of the rack.
4. Adjust the length of the rail until the square pin assembly passes, then fits against the back of the rear post. Make sure you keep the rail level.
5. Secure the rail with the mounting screws making sure that the rails are level, front to back and both rails are of the height.
6. Repeat for the other outer rail.

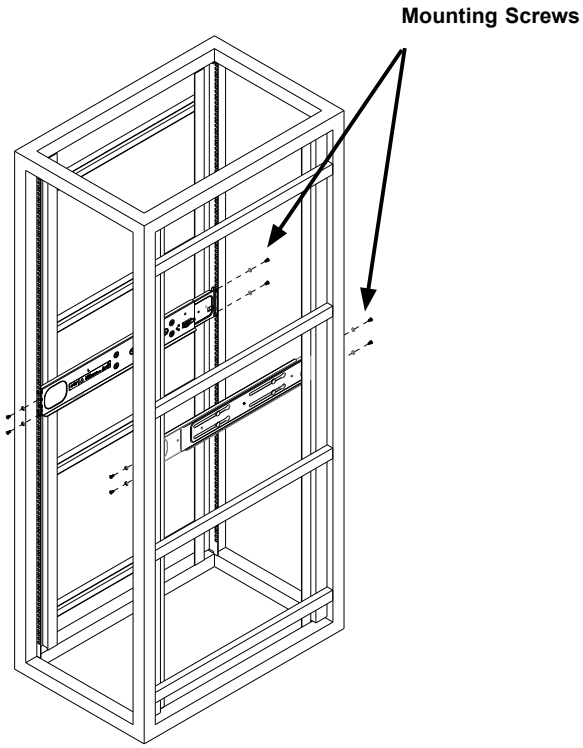



**Figure 2-1. Installing the Outer Rails**

**Note:** Figures are for illustrative purposes only. Your actual chassis may differ. Always install servers into racks from the bottom up.

## Rack-Mounting the Chassis

After the rails are installed on the rack, the chassis can now be mounted. Note that it is heavy and requires two to three people to lift.

***Installing the Chassis into a Rack***

1. This is a simple procedure of inserting the chassis into the rack and just making sure that the chassis sits level on the rack.
2. With the help of 2-3 strong individuals, set the chassis on a sturdy work table, lift together and slide the chassis directly onto the rails, letting it sit on the lips of the rail on each side.
3. Slide the chassis all the way in. Secure that chassis with screws on each side, if needed.

The chassis is now mounted in the rack.

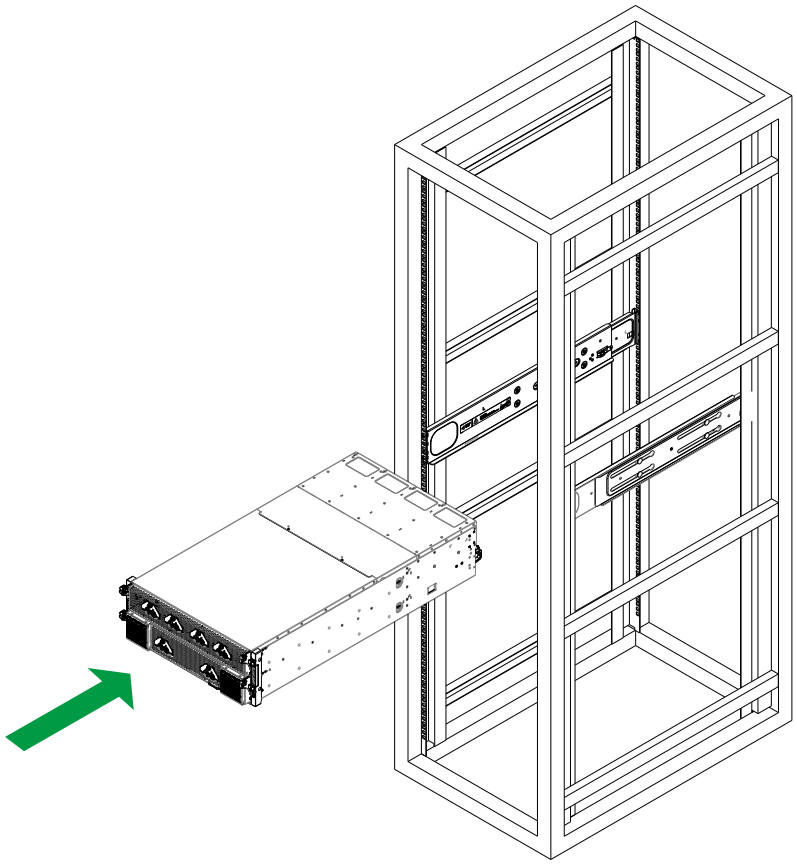


**Figure 2-2. Installing the Chassis into the Rack**

**Note:** Figures are for illustrative purposes only. Your actual chassis may differ. Always install servers into racks from the bottom up.

## Unmounting the Chassis from the Rack

**Caution:** The chassis is heavy and requires two to three people to lift it out.

***Removing the Chassis***

1. Remove all screws that are securing the chassis from its sides.
2. With the help of 2 to 3 strong individuals, evenly hold the chassis front and back, lift the chassis out and set on a sturdy work bench.

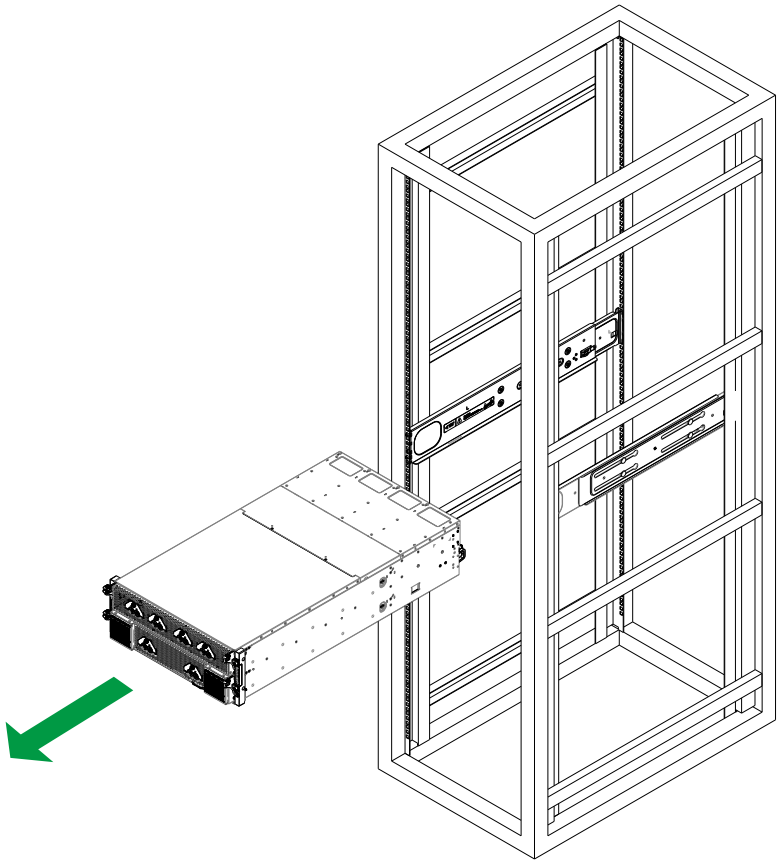


**Figure 2-3. Removing the Chassis from the Rack**

**Note:** Figures are for illustrative purposes only. Your actual chassis may differ. Always install servers into racks from the bottom up.

## Connecting to a Coolant Distribution Unit (CDU)

**Caution:** The chassis is heavy and requires two to three people to lift it out.

The CSE-GP401 chassis uses a liquid-cooling solution to maintain operational temperature. The coolant from the chassis is circulated out to an external Coolant Distribution Unit (CDU) using specialized pipes and tubes, where it is cooled through a cooling tower or cooling unit, and circulated back to the CDU and back to the chassis.

A brief layout of the relationship between the devices explains the basic functions of each.

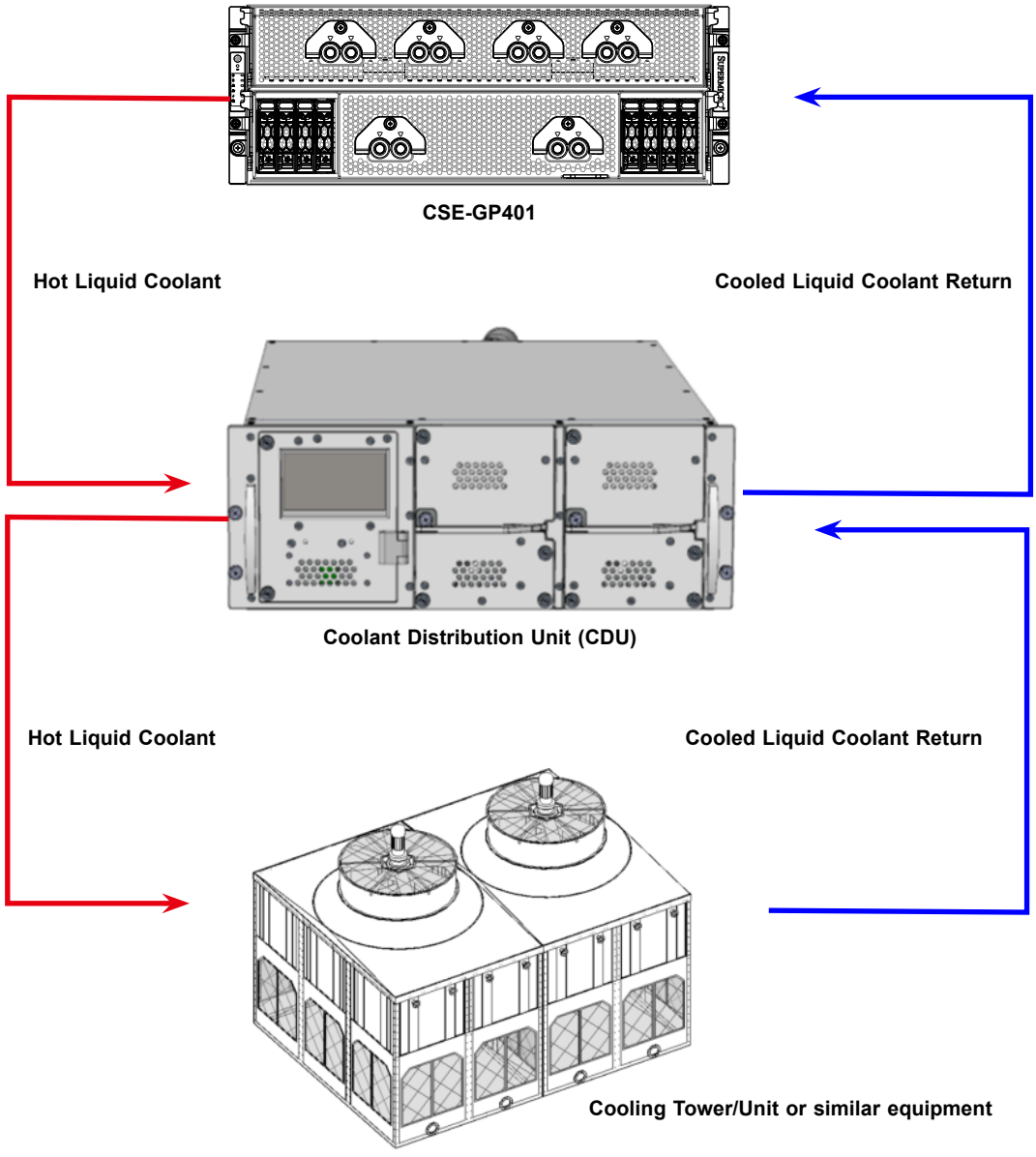



**Figure 2-4. Liquid Cooling Layout**

# Chapter 3

# Maintenance and Component Installation

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

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

## 3.1 Removing Power

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

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

## 3.2 Accessing the System

The CSE-GP401 chassis features a removable top cover for access to the internal components. When performing service on components inside the system, remove the system from the rack and place it on a work bench or desk. Do not service with the system extended from the rack..

### Removing the Top Cover

#### *Mid-chassis Cover*

The mid-chassis cover can be removed to access while the server continues to operate.

***Removing the Mid-chassis Cover***

Remove the two screws securing each side of the cover (if used), then lift the cover.

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

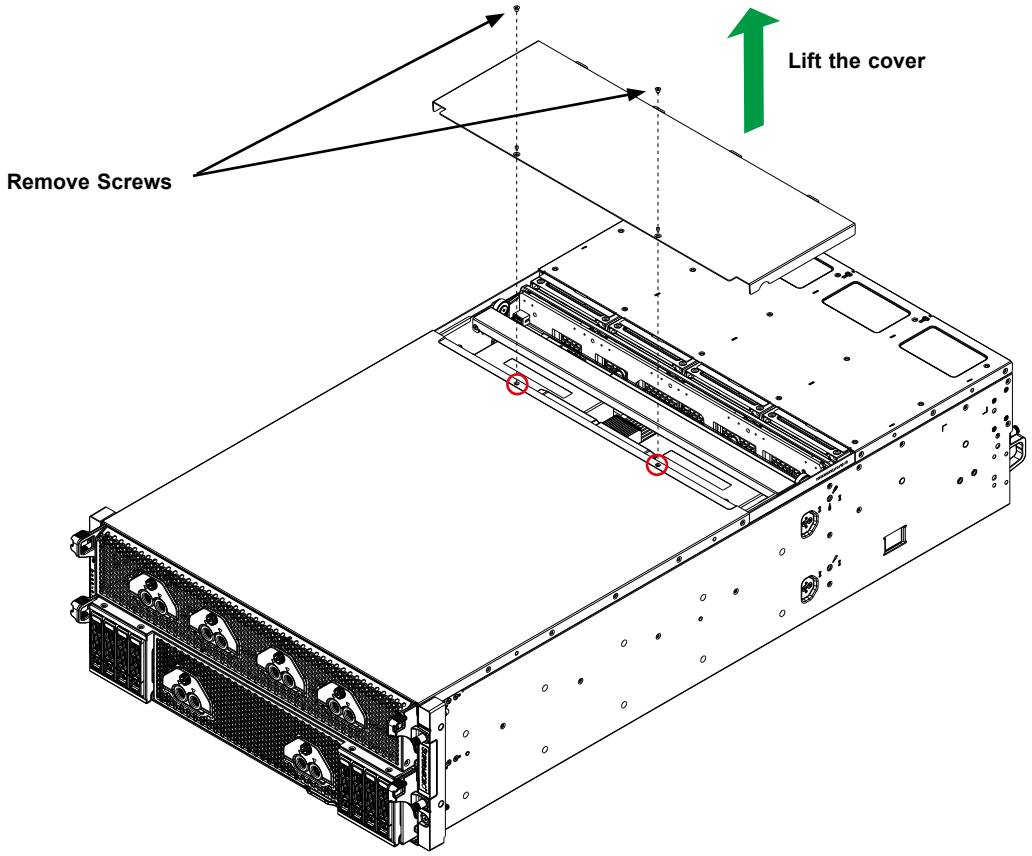



**Figure 3-1. Removing the Chassis Cover**

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

# 3.3 Memory Support and Installation

**Note:** Check the Supermicro website for recommended memory modules and updates on possible memory support.

**Important:** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

## Memory Support

This motherboard supports up to 8 TB 3DS RDIMM/RDIMM DDR5 (288-pin) ECC memory with speeds up to 5600 MT/s (1DPC) or 4400 MT/s (2DPC) in 32 DIMM configuration (Note below).

**Note:** Memory speed and capacity support depends on the processors used in the system. The 5th Gen. Xeon Scalable processors support DDR5 memory with speeds up to 5600MT/s (or up to 4400 MT/s in 32 DIMM configuration). The 4th Gen. Xeon Scalable processors support DDR5 memory with speeds up to 4800 MT/s (or up to 4400 MT/s in 32 DIMM configuration).

### *DDR5 Memory Support for 5th/4th Gen. Intel Xeon Scalable Processors*

| Key Parameters for DIMM Configurations | |
|---|---|
| **Parameters** | **Possible Values** |
| **Number of Channels per Socket** | 1, 2, 4, 6, 8 |
| **Number of DIMMs per Channel** | 1DPC (1 DIMM Per Channel) or 2DPC (2 DIMMs Per Channel) |
| **DIMM Type** | RDIMM and 3DS RDIMM |
| **DIMM Construction** | non-3DS RDIMM Raw Cards: A (2Rx4), C (1Rx4), D (1Rx8), E (2Rx8)<br>3DS RDIMM Raw Cards: A (4Rx4, 8Rx4)<br>9x4 RDIMM Raw Cards: B (2Rx4), F (1Rx4) |

| DDR5 Memory Support for the 5th Gen. Intel Xeon Scalable Processors | | | | | |
|---|---|---|---|---|---|
| Type | Ranks Per DIMM & Data Width (Stack) | DIMM Density and DIMM Capacity | | Speed (MT/s); Voltage (V); DIMM Per Channel (DPC) | |
| | | | | 1DPC (Note) | 2DPC |
| | | 16 Gb | 24 Gb | 1.1 V | |
| RDIMM | SRx8 (RC D) | 16 GB | 24 GB | 5600 | 4400 |
| | SRx4 (RC C) | 32 GB | 48 GB | | |
| | SRx4 (RC F) 9x4 | N/A | N/A | | |
| | DRx8 (RC E) | 32 GB | 48 GB | | |
| | DRx4 (RC A) | 64 GB | 96 GB | | |
| | DRx4 (RC B) 9x4 | N/A | N/A | | |
| RDIMM 3DS | (4R/8R) x4 (RC A) | 2H-128 GB<br>4H-256 GB | N/A | 5600 | |
| LRDIMM/LRDIMM-3DS | N/A | N/A | N/A | Not Supported | Not Supported |

**Note 1:** 1DPC (1 DIMM Per Channel) applies to 1SPC (Sockets Per Channel) or 2SPC implementation.

**Note 2:** 24 Gb, 24 GB, and 48 GB DRAM capacity is not supported in 2DPC.

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

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

**Note 5:** Mixing DRAM densities (16 Gb/24 Gb) and/or frequencies is not allowed.

| DDR5 Memory Support for the 4th Gen. Intel Xeon Scalable Processors | | | | | |
|---|---|---|---|---|---|
| Type | Ranks Per DIMM & Data Width (Stack) | DIMM Density and DIMM Capacity | | Speed (MT/s); Voltage (V); DIMM Per Channel (DPC) | |
| | | | | 1DPC (Note) | 2DPC |
| | | 16 Gb | 24 Gb | 1.1 V | |
| RDIMM | SRx8 (RC D) | 16 GB | 24 GB | 4800 | 4400 |
| | SRx4 (RC C) | 32 GB | 48 GB | | |
| | SRx4 (RC F) 9x4 | 32 GB | N/A | | |
| | DRx8 (RC E) | 32 GB | 48 GB | | |
| | DRx4 (RC A) | 64 GB | 96 GB | | |
| | DRx4 (RC B) 9x4 | 64 GB | N/A | | |
| RDIMM 3DS | (4R/8R) x4 (RC A) | 2H-128 GB<br>4H-256 GB | N/A | | |
| LRDIMM/LRDIMM-3DS | N/A | N/A | N/A | Not Supported | Not Supported |

**Note 1:** 1DPC (1 DIMM Per Channel) applies to 1SPC (Sockets Per Channel) or 2SPC implementation.

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

**Note 3:** Memory speed will be 4800 MT/s 1DPC or 4400 MT/s 2DPC.

**Note 4:** Mixing DRAM densities (16 Gb/24 Gb) and/or frequencies is not allowed.

## *Memory Population for the X13DEG-M Motherboard (with 32 DIMM Slots)*

| DDR5 Memory Population Table for the X13DEG-M Motherboard (with 32 DIMM Slots) | |
|---|---|
| ***1 CPU:*** | ***Memory Population Sequence*** |
| **1 CPU & 1 DIMM** | **CPU1:** P1-DIMMA1 or P1-DIMME1 or P1-DIMMB1 or P1-DIMMF1 |
| **1 CPU & 2 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMG1 or P1-DIMMC1 / P1-DIMME1 |
| **1 CPU & 4 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1 |
| **1 CPU & 6 DIMM** | **CPU1:** P1-DIMMA1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1<br>or **CPU1:** P1-DIMMA1 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1 / P1-DIMMH1<br>or **CPU1:** P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMH1<br>or **CPU1:** P1-DIMMA1 / P1-DIMMB1 / P1-DIMMD1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1 |
| **1 CPU & 8 DIMMs** | P1-DIMMA1 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1 |
| **1 CPU & 12 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMA2 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMMC2 / P1-DIMMD1 / P1-DIMME1 / P1-DIMME2 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMG2 / P1-DIMMH1<br>or<br>**CPU1:** P1-DIMMA1 / P1-DIMMB1 / P1-DIMMB2 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMMD2 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMF2 / P1-DIMMG1 / P1-DIMMH1 / P1-DIMMH2 |
| **1 CPU & 16 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMA2 / P1-DIMMB1 / P1-DIMMB2 / P1-DIMMC1 / P1-DIMMC2 / P1-DIMMD1 / P1-DIMMD2 / P1-DIMME1 / P1-DIMME2 / P1-DIMMF1 / P1-DIMMF2 / P1-DIMMG1 / P1-DIMMG2 / P1-DIMMH1 / P1-DIMMH2 |
| ***2 CPUs: (Recommended)*** | ***Memory Population Sequence*** |
| **2 CPUs & 2 DIMMs** | **CPU1:** P1-DIMMA1, **CPU2:** P2-DIMMA1<br>or **CPU1:** P1-DIMME1, **CPU2:** P2-DIMME1<br>or **CPU1**: P1-DIMMB1, **CPU2:** P2-DIMMB1<br>or **CPU1:** P1-DIMMF1, **CPU2:** P2-DIMMF1 |
| **2 CPUs & 4 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMG1, **CPU2:** P2-DIMMA1 / P2-DIMMG1<br>or **CPU1:** P1-DIMMC1 / P1-DIMME1, **CPU2:** P2-DIMMC1 / P2-DIMME1 |
| **2 CPUs & 8 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1<br>**CPU2:** P2-DIMMA1 / P2-DIMMC1 / P2-DIMME1 / P2-DIMMG1 |
| **2 CPUs & 10 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1<br>**CPU2:** P2-DIMMA1 / P2-DIMMC1 / P2-DIMME1 / P2-DIMMG1 |
| **2 CPUs & 12 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1<br>**CPU2:** P2-DIMMA1 / P2-DIMMC1 / P2-DIMMD1 / P2-DIMME1 / P2-DIMMF1 / P2-DIMMG1<br>or<br>**CPU1:** P1-DIMMA1 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1 / P1-DIMMH1<br>**CPU2:** P2-DIMMA1 / P2-DIMMB1 / P2-DIMMC1 / P2-DIMME1 / P2-DIMMG1 / P2-DIMMH1<br>or<br>**CPU1:** P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMH1<br>**CPU2:** P2-DIMMB1 / P2-DIMMC1 / P2-DIMMD1 / P2-DIMME1 / P2-DIMMF1 / P2-DIMMH1<br>or<br>**CPU1:** P1-DIMMA1 / P1-DIMMB1 / P1-DIMMD1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1<br>**CPU2:** P2-DIMMA1 / P2-DIMMB1 / P2-DIMMD1 / P2-DIMMF1 / P2-DIMMG1 / P2-DIMMH1 |
| **2 CPUs & 16 DIMMs** | **CPU1**: P1-DIMMA1 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1<br>**CPU2**: P2-DIMMA1 / P2-DIMMB1 / P2-DIMMC1 / P2-DIMMD1 / P2-DIMME1 / P2-DIMMF1 / P2-DIMMG1 / P2-DIMMH1 |
| **2 CPUs & 22 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMA2 / P1-DIMMB1 / P1-DIMMB2 / P1-DIMMC1 / P1-DIMMC2 / P1-DIMMD1 / P1-DIMMD2 / P1-DIMME1 / P1-DIMME2 / P1-DIMMF1 / P1-DIMMF2 / P1-DIMMG1 / P1-DIMMG2 / P1-DIMMH1 / P1-DIMMH2<br>**CPU2:** P2-DIMMA1 / P2-DIMMC1 / P2-DIMMD1 / P2-DIMME1 / P2-DIMMF1 / P2-DIMMG1 |
| **2 CPUs & 24 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMA2 / P1-DIMMB1 / P1-DIMMB2 / P1-DIMMC1 / P1-DIMMC2 / P1-DIMMD1 / P1-DIMMD2 / P1-DIMME1 / P1-DIMME2 / P1-DIMMF1 / P1-DIMMF2 / P1-DIMMG1 / P1-DIMMG2 / P1-DIMMH1 / P1-DIMMH2<br>**CPU2**: P2-DIMMA1 / P2-DIMMB1 / P2-DIMMC1 / P2-DIMMD1 / P2-DIMME1 / P2-DIMMF1 / P2-DIMMG1 / P2-DIMMH1 |
| **2 CPUs & 32 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMA2 / P1-DIMMB1 / P1-DIMMB2 / P1-DIMMC1 / P1-DIMMC2 / P1-DIMMD1 / P1-DIMMD2 / P1-DIMME1 / P1-DIMME2 / P1-DIMMF1 / P1-DIMMF2 / P1-DIMMG1 / P1-DIMMG2 / P1-DIMMH1 / P1-DIMMH2<br>**CPU2:** P2-DIMMA1 / P2-DIMMA2 / P2-DIMMB1 / P2-DIMMB2 / P2-DIMMC1 / P2-DIMMC2 / P2-DIMMD1 / P2-DIMMD2 / P2-DIMME1 / P2-DIMME2 / P2-DIMMF1 / P2-DIMMF2 / P2-DIMMG1 / P2-DIMMG2 / P2-DIMMH1 / P2-DIMMH2 |

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

| DDR5 Memory Population Table for HMB CPU 32-DIMM Motherboards | |
|---|---|
| ***1 CPU:*** | ***Memory Population Sequence*** |
| **1 CPU & 1 DIMM** | P1-DIMMA1 or P1-DIMME1 |
| **1 CPU & 2 DIMMs** | P1-DIMMA1 / P1-DIMMG1<br>or P1-DIMMC1 / P1-DIMME1 |
| **1 CPU & 4 DIMMs** | P1-DIMMA1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1 |
| **1 CPU & 8 DIMMs** | P1-DIMMA1/P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1 |
| **1 CPU & 16 DIMMs** | P1-DIMMA1 / P1-DIMMA2 / P1-DIMMB1 / P1-DIMMB2 / P1-DIMMC1 / P1-DIMMC2 / P1-DIMMD1 / P1-DIMMD2 /<br>P1-DIMME1 / P1-DIMME2 / P1-DIMMF1 / P1-DIMMF2 / P1-DIMMG1 / P1-DIMMG2 / P1-DIMMH1 / P1-DIMMH2 |
| ***2 CPUs:<br>(Recommended)*** | ***Memory Population Sequence*** |
| **2 CPUs & 2 DIMMs** | **CPU1:** P1-DIMMA1, **CPU2:** P2-DIMMA1<br>or **CPU1:** P1-DIMME1, **CPU2:** P2-DIMME1 |
| **2 CPUs & 4 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMG1, **CPU2:** P2-DIMMA1 / P2-DIMMG1<br>or **CPU1:** P1-DIMMC1 / P1-DIMME1, **CPU2:** P2-DIMMC1 / P2-DIMME1 |
| **2 CPUs & 8 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMC1 / P1-DIMME1 / P1-DIMMG1<br>or **CPU2:** P2-DIMMA1 / P2-DIMMC1 / P2-DIMME1 / P2-DIMMG1 |
| **2 CPUs & 16 DIMMs** | **CPU1**: P1-DIMMA1 / P1-DIMMB1 / P1-DIMMC1 / P1-DIMMD1 / P1-DIMME1 / P1-DIMMF1 / P1-DIMMG1 / P1-DIMMH1<br>or **CPU2**: P2-DIMMA1 / P2-DIMMB1 / P2-DIMMC1 / P2-DIMMD1 / P2-DIMME1 / P2-DIMMF1 / P2-DIMMG1 / P2-DIMMH1 |
| **2 CPUs & 32 DIMMs** | **CPU1:** P1-DIMMA1 / P1-DIMMA2 / P1-DIMMB1 / P1-DIMMB2 / P1-DIMMC1 / P1-DIMMC2 / P1-DIMMD1 / P1-DIMMD2 /<br>P1-DIMME1 / P1-DIMME2 / P1-DIMMF1 / P1-DIMMF2 / P1-DIMMG1 / P1-DIMMG2 / P1-DIMMH1 / P1-DIMMH2<br>**CPU2:** P2-DIMMA1 / P2-DIMMA2 / P2-DIMMB1 / P2-DIMMB2 / P2-DIMMC1 / P2-DIMMC2 / P2-DIMMD1 / P2-DIMMD2 /<br>P2-DIMME1 / P2-DIMME2 / P2-DIMMF1 / P2-DIMMF2 / P2-DIMMG1 / P2-DIMMG2 / P2-DIMMH1 / P2-DIMMH2 |

**Notes:**

1. Max Series (HBM) processors support 1DPC (4800 MT/s) / 2DPC (4400 MT/s) to optimize the memory bandwidth. Max Series (HBM) processors support 1, 2, 4, 8, or 16 DIMMs in Flat Mode and Cache Mode, and 0 DIMMs in HBM-Only mode. HBM-Only mode runs exclusively using HBM memory.
2. For the best memory performance in Flat mode and Cache mode, please use 4, 8, or 16 DIMM configurations. (At least one DIMM per memory controller for balanced configuration)
   - 4 DIMMs -> populate 1 DIMM/iMC
   - 8 DIMMs -> populate 1 DIMM/Channel, 2 DIMM/iMC
   - 16 DIMMs -> populate 2 DIMM/Channel, 4 DIMM/iMC
3. All other configurations not listed above are not supported.
4. For a dual-socket design, each socket has to be populated identically.

### *Memory Slots*

This motherboard supports up to 8 TB of DDR5 memory in 32 slots. Please refer to the layout drawing below for the locations of the DIMM slots:

| DIMM Slots Supported by CPU1 | DIMM Slots Supported by CPU2 |
|---|---|
| P1-DIMMA1 | P2-DIMMA1 |
| P1-DIMMA2 | P2-DIMMA2 |
| P1-DIMMB1 | P2-DIMMB1 |
| P1-DIMMB2 | P2-DIMMB2 |
| P1-DIMMC1 | P2-DIMMC1 |
| P1-DIMMC2 | P2-DIMMC2 |
| P1-DIMMD1 | P2-DIMMD1 |
| P1-DIMMD2 | P2-DIMMD2 |
| P1-DIMME1 | P2-DIMME1 |
| P1-DIMME2 | P2-DIMME2 |
| P1-DIMMF1 | P2-DIMMF1 |
| P1-DIMMF2 | P2-DIMMF2 |
| P1-DIMMG1 | P2-DIMMG1 |
| P1-DIMMG2 | P2-DIMMG2 |
| P1-DIMMH1 | P2-DIMMH1 |
| P1-DIMMH2 | P2-DIMMH2 |

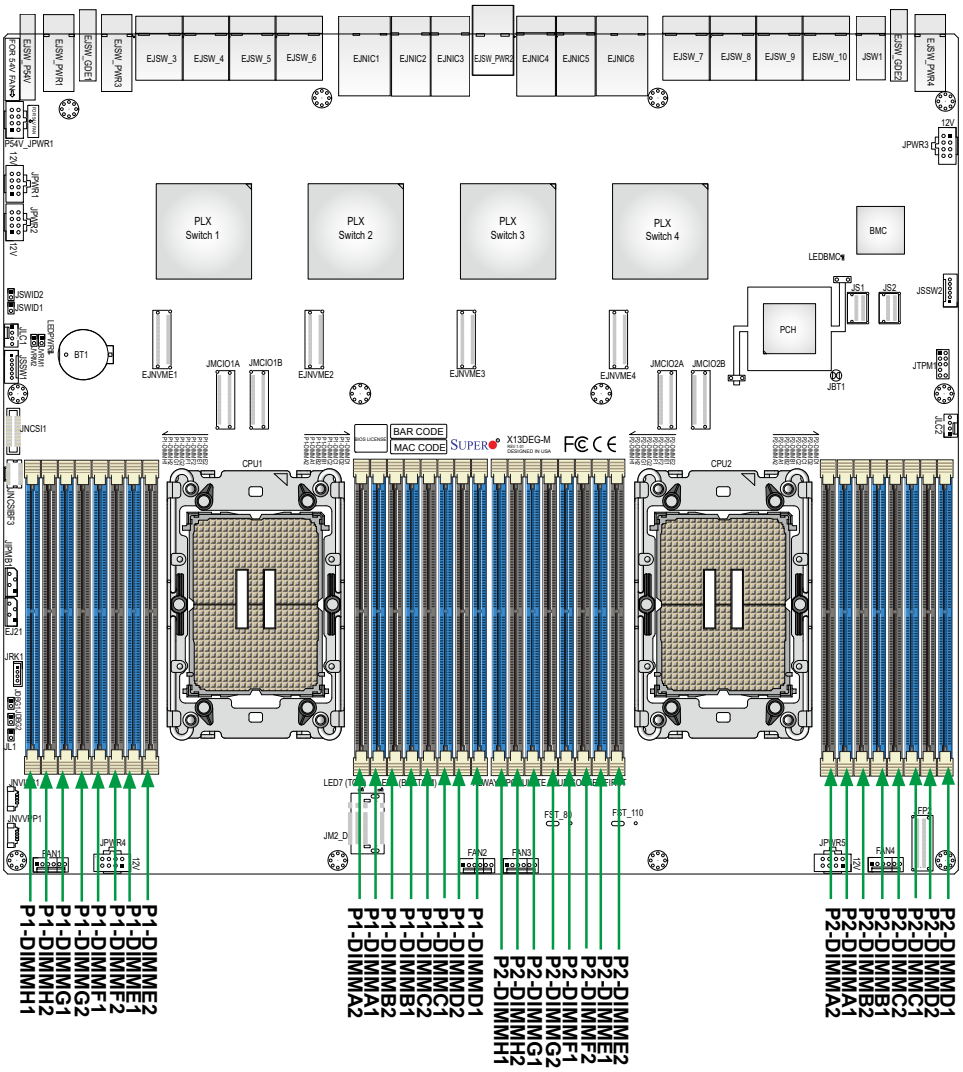
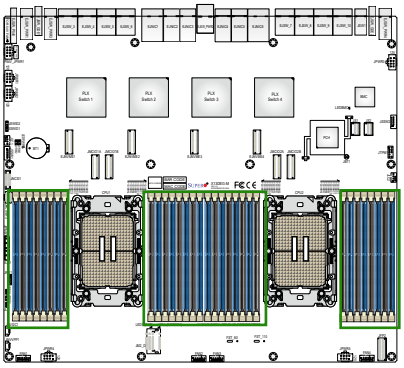


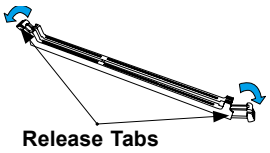

**Figure 3-2. DIMM Numbering**

## DIMM Installation

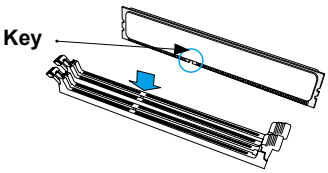
**Note:** The DDR5 DIMM module is **NOT** hot-swap and be sure to disconnect power for a minimum of 20 seconds before inserting or removing it.



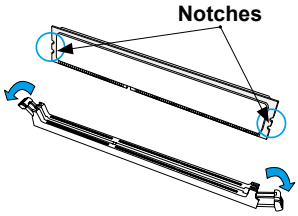
1. Insert the desired number of DIMMs into the memory slots based on the recommended DIMM population tables in the previous section. Locate DIMM memory slots on the motherboard as shown on the right.




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



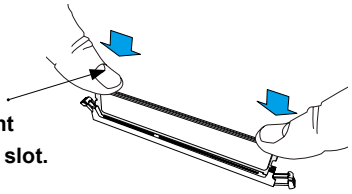

3. Align the key of the memory module with the DIMM socket key on the memory slot.




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

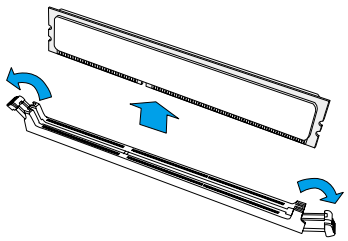
5. Push both ends of the module straight down into the slot until the module snaps into place.

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



## DIMM Removal

Press both release tabs on the ends of the memory module to unlock it. Once the memory module has been loosened, remove it from the memory slot.



**Note:** Removing a DDR5 DIMM module at a slant angle will cause module damages. It is strongly recommended that you lift the module straight up out of the slot.

**Warning!** Please do not use excessive force when pressing the release tabs on the ends of the DIMM socket to avoid causing any damage to the memory module or the DIMM socket. Please handle memory modules with care. Carefully follow all the instructions given on page 24 to avoid ESD-related damages done to your memory modules or components.

## Motherboard Battery

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

***Replacing the Battery***

Begin by removing power from the system as described in Section 3.1.

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

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

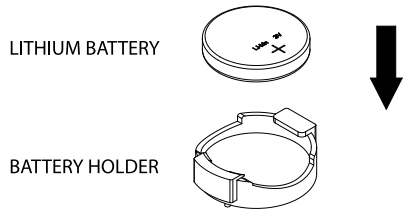



**Figure 3-3. Installing the Onboard Battery**

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

# 3.4 Motherboard Tray Components

## SSD Storage Modules

The CSE-GP401 chassis supports up to eight 2.5" SSD drives using mounting trays or carriers.

**Note:** Enterprise-level storage modules are recommended for use in Supermicro servers. For information on recommended drives, visit the Supermicro website.

### *Tray/Carrier*

The storage modules are mounted in trays/carriers to simplify their installation and removal from the chassis. Individual storage modules may be removed and installed without removing this carrier, much like a regular hard disk drive. The tray/carrier also helps promote proper airflow through the drive bays. Each storage module has two LED indicators.

In the event that the carrier needs to be removed from the chassis, please follow the instructions below.

***Removing Storage Module Trays/Carriers from the Chassis***

1. Slide the tray/carrier release button located on the front of the carrier (see illustration). The tray/carrier handle with pop out.
2. Pull the tray/carrier out from the chassis.

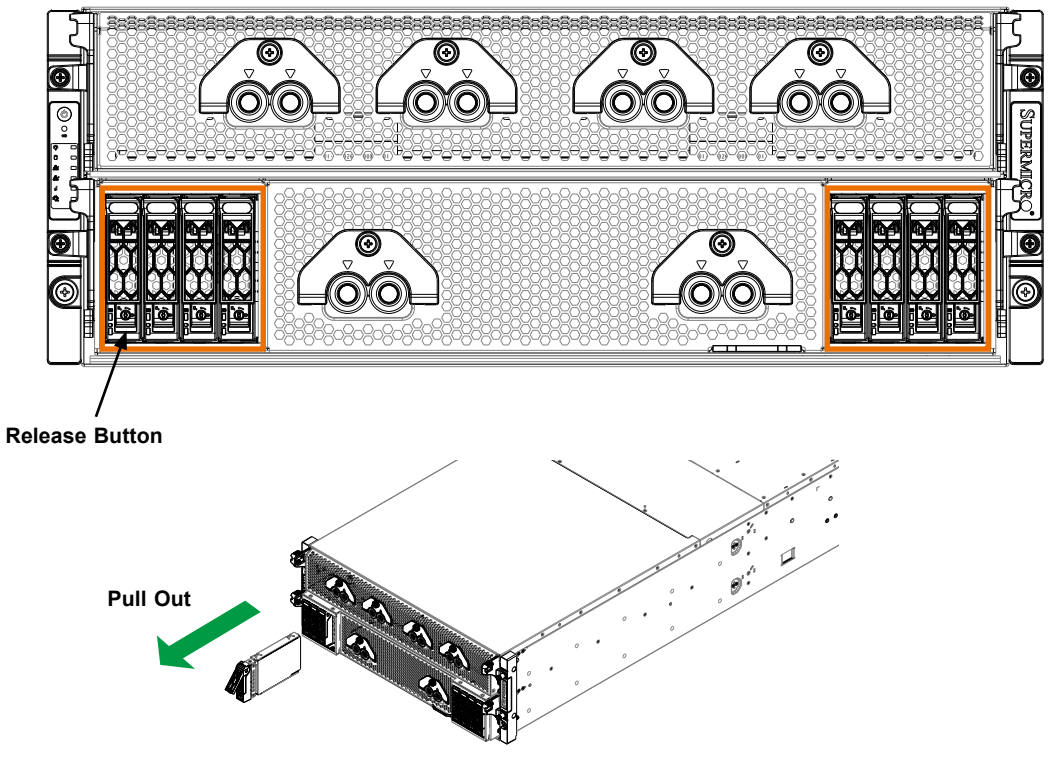


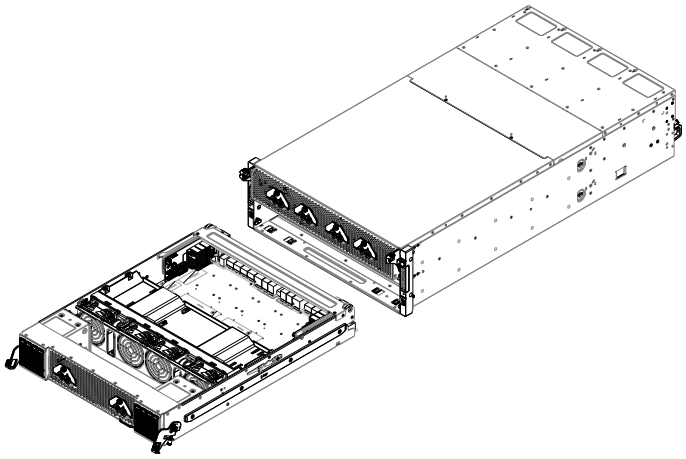

**Figure 3-4. Removing the Storage Module Tray/Carrier**

## Modular Components

The CSE-GP401 chassis has three system trays that can be removed for service or maintenance. These are the motherboard tray, GPU tray, and the I/O tray. These are subsystems that are designed to be pulled out from the chassis easily. All of the components in these trays have been pre-installed at the factory and there is no need to perform hardware setup on any the components. This section is provided to explain what components are in these trays and how to access them in case servicing is needed in the future.

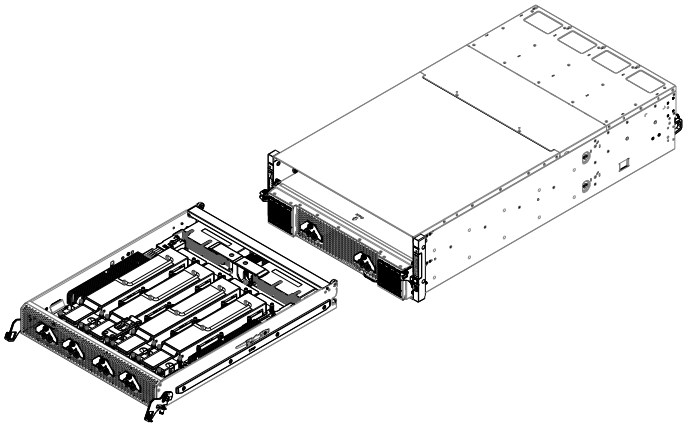
### *Motherboard Tray*

The motherboard tray is located at the front bottom of the chassis. It houses the system's CPUs, memory, storage modules, motherboard, and cooling fans. The motherboard tray is accessible from the front of the unit by sliding the bottom tray out after disengaging two levers on the left and right side of the chassis.



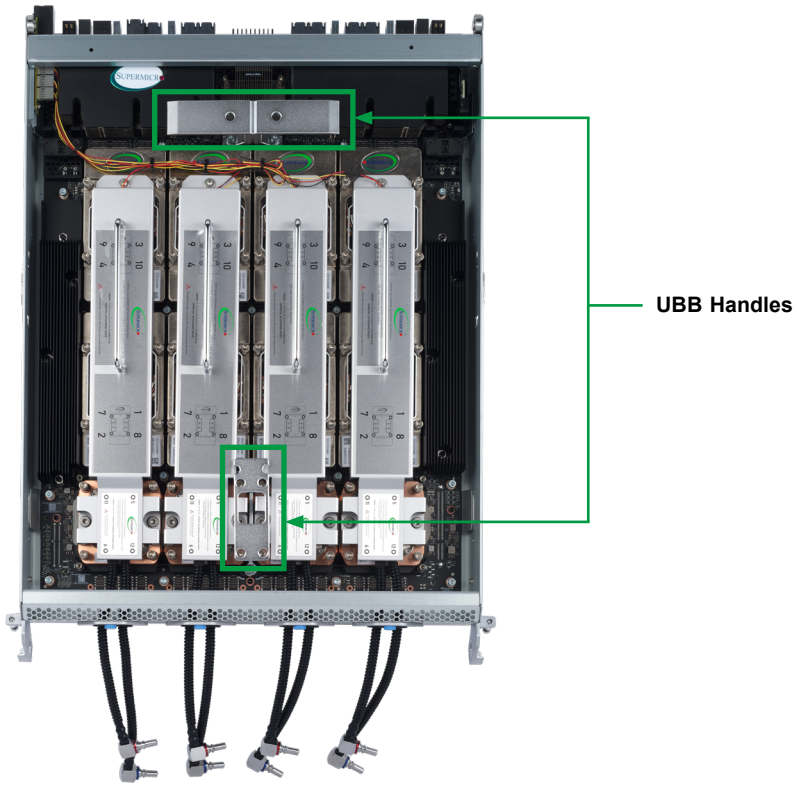
### *GPU Tray*

The GPU tray is located at the top of the chassis. It houses the system's GPUs, cooling components, and other supporting devices. The GPU tray is accessible from the front of the unit by sliding the upper tray out after disengaging a lever on the left and right side of the chassis.

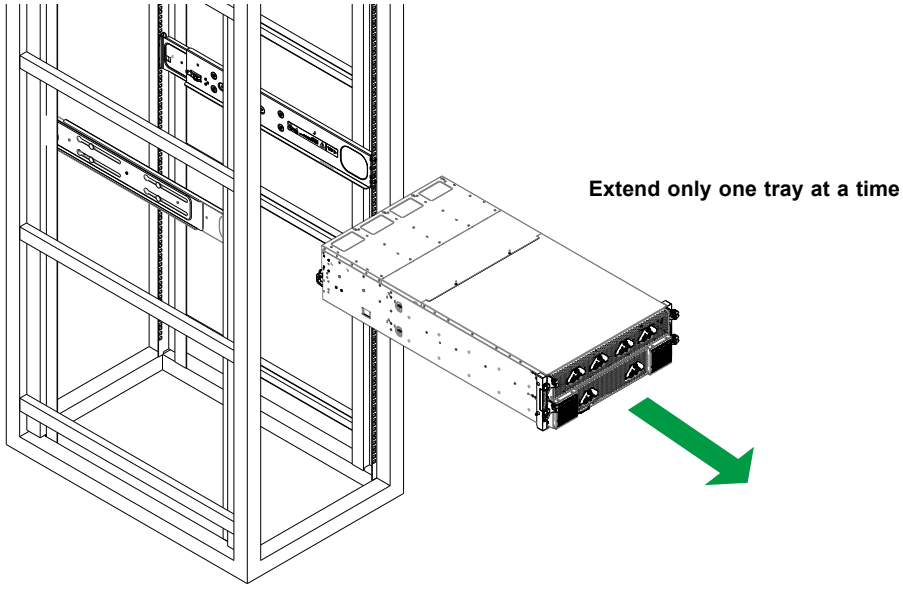


**Notes:**

1. Lift the heavy universal baseboard (UBB) plate by using two UBB handles.



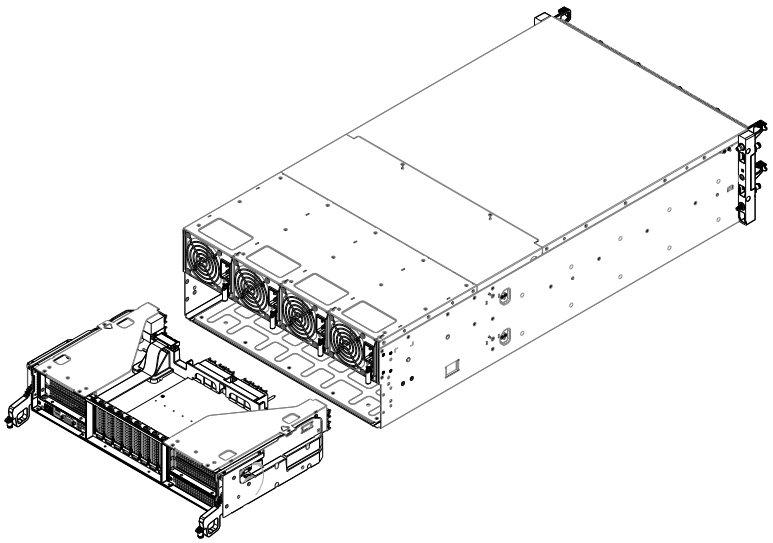

2. You should extend only one tray in a rack at a time - extending two trays simultaneously may cause the server to become unstable. Failure to stabilize the server can cause the server to tip over.




**Warning!** Tip over hazard when not in a rack!

### *I/O Tray*

The I/O tray is located at the bottom back of the chassis. It houses the system's I/O ports, PCIe expansion slots, and other supporting devices. The I/O tray is accessible from the back of the unit by sliding the bottom I/O tray out after disengaging a lever on the left and right side of the chassis.



## Installing GPU/PCIe Cards

The CSE-GP401 chassis provides two removable GPU/PCIe expansion bays located in the I/O tray. Each bay has a pull-out module where up to three full-height, half-length (FHHL) GPU/PCIe cards may be installed. Removal of the pull-out module is shown below. There is also a non-removable bay located in the middle of the I/O tray, this supports up to eight half-height, low-profile PCIe slots.

***Installing GPU/PCIe Expansion Cards***

1. Power down the system and remove the I/O tray by disengaging the lever on each side of the tray.
2. Uninstall the desired GPU/PCIe expansion bay by removing four screws that are holding it (location shown below). Pull out the GPU/PCIe expansion bay.
3. Secure the GPU/PCIe card and bracket into the GPU/PCIe expansion bay's desired PCIe slot.
4. Secure the GPU/PCIe expansion bay back into the I/O tray, and insert the I/O tray back into the chassis.
5. Power up the system.

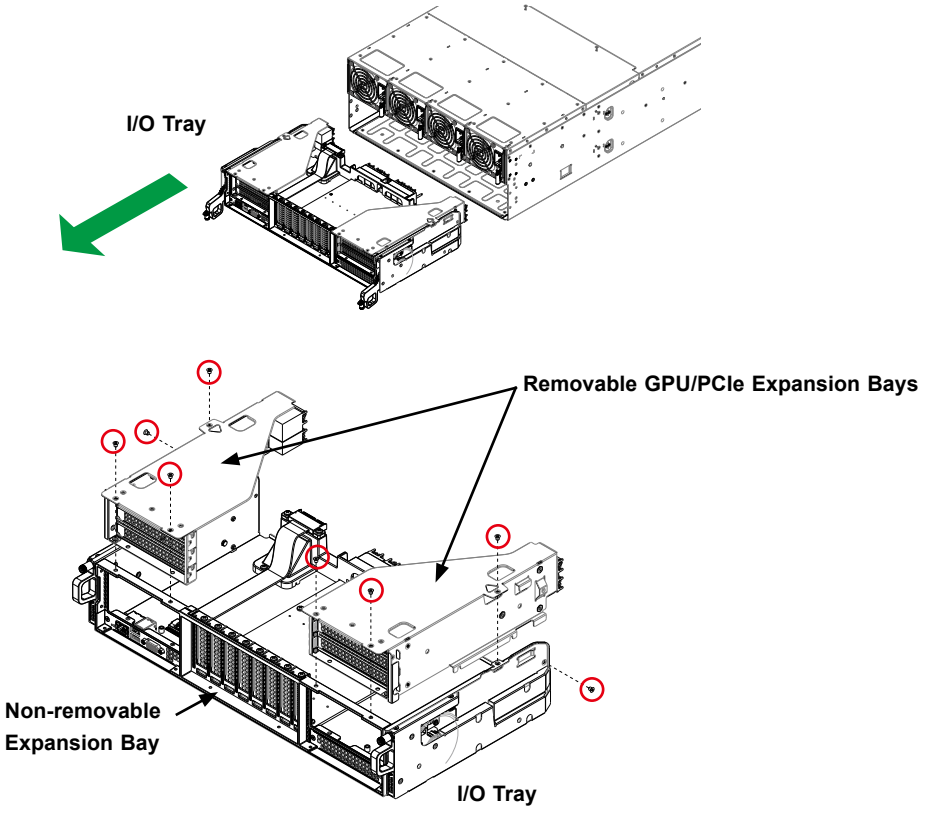



**Figure 3-5. GPU/PCIe Expansion Slots**

## Installing Motherboard Tray System Fans

Up to four heavy-duty fans provide cooling for the system. They can be replaced by first powering down the system and following the instructions below.

***Replacing a System Fan***

1. After powering down the system, slide the motherboard tray out after disengaging the two levers on the left and right side of the motherboard tray.
2. Set the motherboard tray on a work bench (safety area).
3. Remove the fan bracket/air shroud. See instructions on the next page.
4. Place the new fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
5. Tighten the two standoffs on the chassis rear.
6. Replace the motherboard tray into the chassis and power up.
7. The fan will automatically begin running at the correct speed.

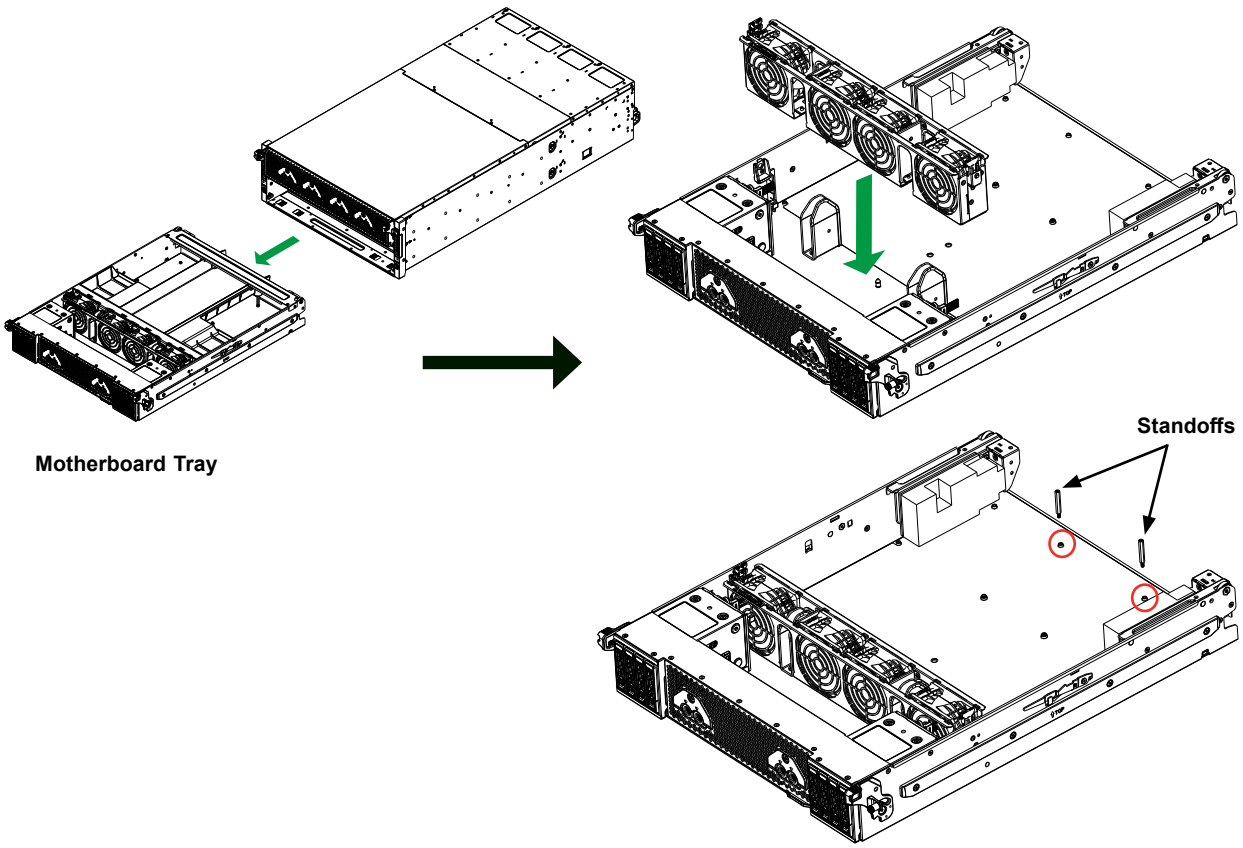
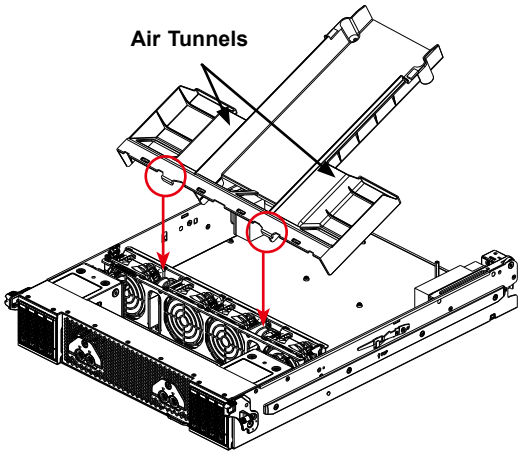


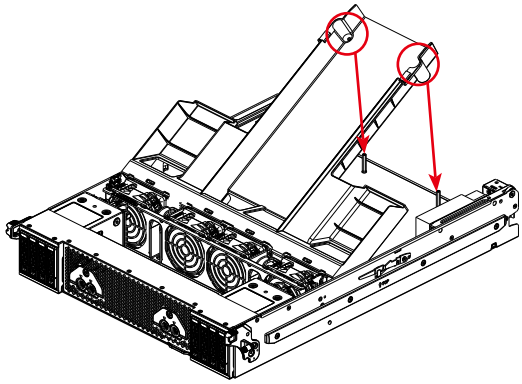

**Figure 3-6. Placing a System Fan**

### *Removing/Replacing the Air Shroud*

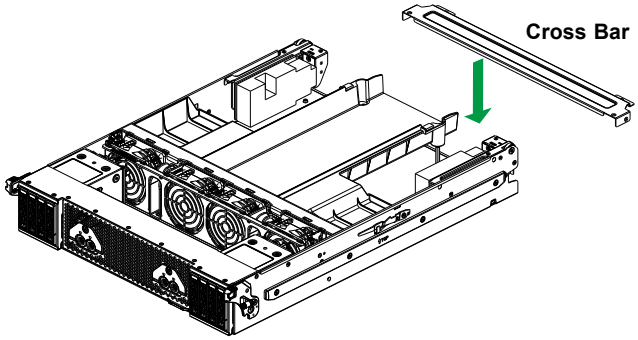
1. Attach the air shroud onto the fan bracket by grasping both of the shroud's air tunnels, setting it downward while letting the front hooks latch onto the fan bracket.



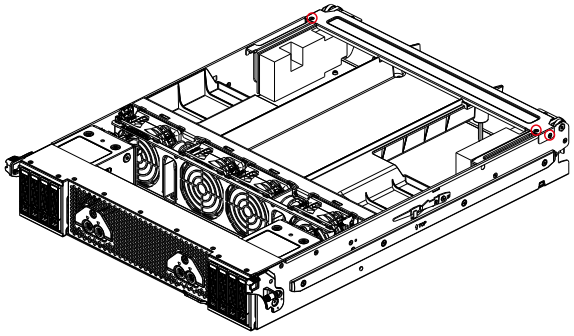

2. Gently place the air shroud into the vacant space in the housing, allowing the two holes in the shroud rear to engage with the two standoffs on the chassis rear.



3. When assembled into position, gently place the cross bar downward.




4. Tighten the two screws on each side.



## Power Supply

The standard CSE-GP401 chassis configuration features four redundant 5250 W power supplies. Each power supply can be changed without powering down the system. New units can be ordered directly from Supermicro or authorized distributors.

These power supplies support 200-240 Vac input. An amber light will be illuminated on the power supply when the power is off. An illuminated green light indicates that the power supply is operating.

***Changing the Power Supply***

1. Unplug the two AC cords from the module to be replaced.
2. Pull the Release Lever on the back of the power supply as illustrated.
3. Pull the power supply out using the handle provided.

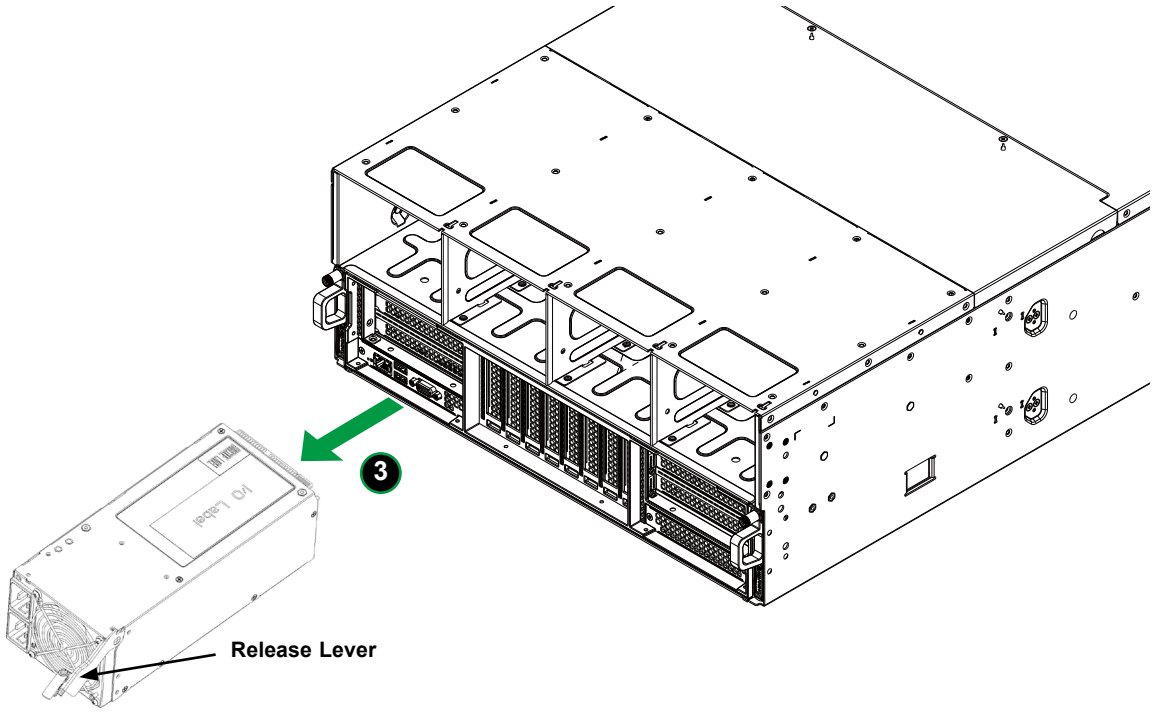



**Figure 3-7. Power Supply Release Lever**

4. Replace the failed power module with the same model.
5. Push the new power supply module into the power bay, push the release lever in until it clicks.
6. Plug the two AC power cords back into the module.

For each power supply, PWS-5K26G-2R, there are two C20 AC inlets on the face of the power supplies. It requires two sets of C19 power cords to energize a single power supply. In order for the power supply to turn on the main output, it requires both AC power cords to be connected and energized with 200-240 Vac voltage. If there is one or both of the AC power cords experiencing AC loss, the power supply main output will be turned off. When the power supply only has one AC power cord energized, the power supply would provide standby power only and the power supply fan would continue to operate to provide system cooling.

For correct connection of four power supplies with three phase PDU, here are two examples for reference. End-user must check the capacity of 3-phase PDU first before connection systems.

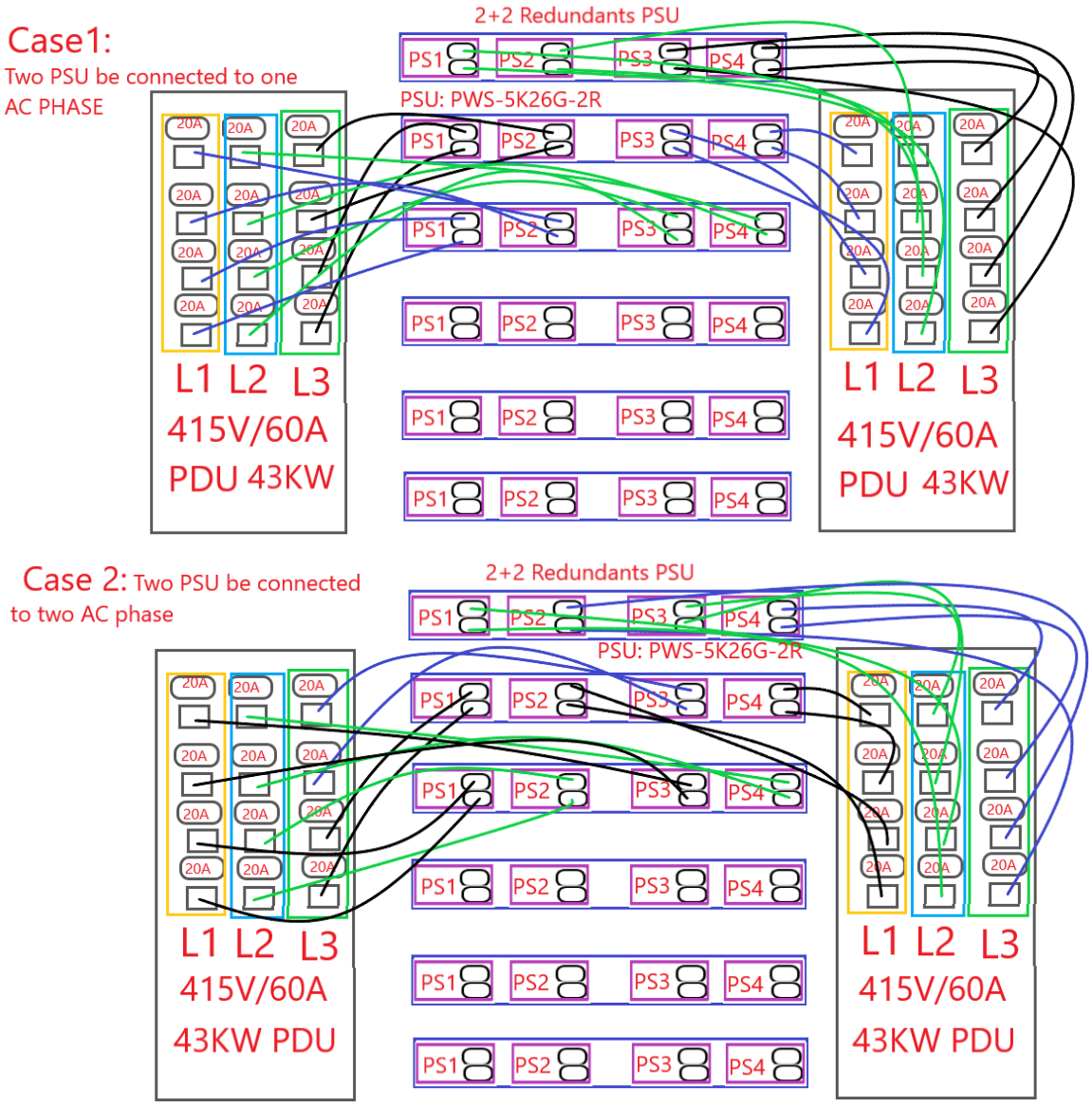



**Figure 3-8. Case Study of 4U LC System with Four PCs of PWS-5K26G-2R**

# Chapter 4

# Motherboard Connections

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

Please review the Safety Precautions in Chapter 3 before installing or removing components.

## 4.1 Power Connections

### Power Supply Connectors

This motherboard has four PowerMAX power input connectors. EJSW_PWR1, EJSW_PWR3, and EJSW_PWR4 are used for 12 V DC power input via the midplane, while EJSW_P54V is used for 54 V DC power input via the midplane.

### Power Connector for NIC Card Carrier Board

EJSW_PWR2 is a PowerMAX connector that provides 12 V DC power. It is designed to deliver power to the NIC card carrier board.

### Power Connector for System Fan Board

P54V_JPWR1 is an 8-pin 54 V DC power output connector. It is designed to deliver 54 V power to the fan board.

**8-pin 54 V Power Pin Definitions**

| Pin# | Definition |
|---|---|
| 1-4 | Ground |
| 5-8 | P54V (54V Power) |

### Power Connectors

There are five 8-pin 12 V DC power connectors (JPWR1 – 5) on the motherboard to provide adequate power to the onboard devices. Refer to the table below for pin definitions.

**8-pin 12 V Power Pin Definitions**

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

### Midplane and NIC Card Carrier Board Connectors

There are eight ExaMax connectors (EJSW_3 – EJSW_10) on the motherboard to connect to the midplane for the GPU system. EJSW_GDE1 and EJSW_GDE2 are the guide pins for the midplane.

In addition, there are six PCIe 5.0 ExaMax connectors (EJNIC1 – 6) to connect to the NIC card carrier board, which supports eight PCIe 5.0 x16 connections.

## 4.2 Headers and Connectors

### Fan Headers

There are four 6-pin fan headers (FAN1 – 4) on the motherboard. These fan headers are used for the cooling fans for your system. Fan speed control for these fans is supported by Thermal Management via the BMC 2.0 interface. Refer to the layout below for the locations of the fan headers.

**6-pin Fan Header Pin Definitions**

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

### TPM / Port 80 Connector

The JTPM1 header is used to connect a TPM Module for Trust Platform Module/Port 80 support. The TPM module, which is optional and available from Supermicro, is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system.

See the layout below for the location of the TPM header. Please go to the following link for more information on the TPM: https://www.supermicro.com/manuals/other/AOM-TPM-9670V_9670H.pdf.

**Trusted Platform Module Header Pin Definitions**

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

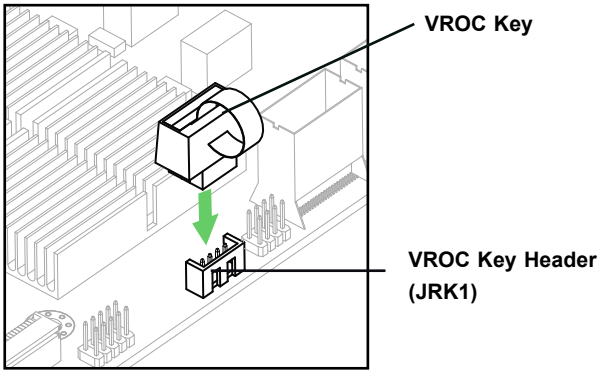
### VROC RAID Key Header

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

**Note:** For detailed instructions on how to configure VROC RAID settings, please refer to the VROC RAID Configuration User's Guide posted on the web page under the link:

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

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




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

### 4-pin BMC External I²C Header

A System Management Bus header for the BMC is located at JIPMB1. Connect the appropriate cable here to use the IPMB I2C connection on your system. Refer to the layout for the location of JIPMB1.

### NC-SI Connector

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

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

### Side Switch Board I²C Headers

Two I²C headers for side switch boards are located at JSSW1 and JSSW2 on the motherboard. Connect the appropriate cables here to use the I²C connections for the side switch boards on your system. See the table below for pin definitions.

| Side Switch Board I²C Header Pin Definitions | |
|---|---|
| **Pin#** | **Definition** |
| 1 | P3V3_STBY |
| 2 | Clock |
| 3 | Data |
| 4 | Ground |
| 5 | Ground |
| 6 | P3V3_STBY |

### Fan Board I²C Header

An I²C fan header for the fan board is located at EJ21. Fan speed control for this fan is supported by Thermal Management via the BMC 2.0 interface. See the table below for pin definitions.

| Side Switch Board I²C Header Pin Definitions | |
|---|---|
| **Pin#** | **Definition** |
| 1 | Data |
| 2 | Ground |
| 3 | Clock |
| 4 | P3V3_STBY |

### VPP I²C Header

A VPP I²C header for storage backplane is located at JNVVPP1 on the motherboard. Connect the appropriate cable here to use the VPP I²C connection on your system. See the table below for pin definitions.

**VPP I²C Header Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Data |
| 2 | Ground |
| 3 | Clock |
| 4 | P3V3 |

### NVMe I²C Header

The NVMe SMBus (I²C) header (JNVI2C1) provides hot-plug support via a dedicated SMBus interface. This feature is only available for a Supermicro complete system with an Supermicro proprietary NVMe add-on card and a proper cable installed. See the table below for pin definitions.

**NVMe I²C Header Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Data |
| 2 | Ground |
| 3 | Clock |
| 4 | P3V3 |

### Liquid Cooling Leak Detection Connector

Two liquid cooling leak detection connectors are located at JLC1 and JLC2 on the motherboard. JLC1 is used for leak detection on the CPU side, while JLC2 is used for leak detection on the GPU side. Attach the appropriate cable from the chassis to inform you when the leak is dectected. Refer to the table below for pin definitions.

**Leak Detection Connector Pin Definitions**

| Pin# | Definition |
|---|---|
| 1 | Ground |
| 2 | P12V |
| 3 | Detection Pin |

### PCIe 3.0 NVMe M.2 Slots

Two PCIe 3.0 x2 NVMe M.2 slots supported by Intel PCH are located at JM2_D on the motherboard. These M.2 slots support M.2 NVMe SSDs in the 2280 and 22110 form factors. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. Refer to the layout below for the locations of the M.2 slots.

### MCIO NVMe Connectors

The motherboard has four MCIO x8 connectors (EJNVME1 – 4) supported by the PLX switches. Each of these connectors supports two PCIe 5.0 x4 NVMe connections.

**Note:** When connecting an NVMe device to the motherboard, please be sure to connect the first NVMe port (EJNVME1) first for your system to work properly.

In addition, there are four MCIO x8 connectors supported by the CPUs. JMCIO1A and JMCIO1B are supported by CPU1 while JMCIO2A and JMCIO2B are supported by CPU2. These MCIO connectors are used to connect to side switch boards for expansions.

### Slim SAS Connectors (for SATA 3.0 Connection)

Two slim SAS x4 connectors are located at JS1 and JS2 on the motherboard. Each slim SAS connector supports four SATA 3.0 connections (JS1 for SATA0 – 4 and JS2 for SATA0 – 7). These silim SAS connectors are supported by the Intel C741 chipset. Connect proper cables to JS1/JS2 to use SATA 3.0 connections.

# 4.3 Input/Output Ports

## I/O Module Connectors

There are two connectors on the motherboard that can be used for I/O modules connections. An ExaMAX connector, located at JSW1, supports the rear I/O module connection via the midplane. Another connector, located at JFP2, provides connection to an I/O module for front access. Both connectors support the following components on the I/O module:

- Two USB 3.0 ports
- One VGA port
- One BMC dedicated LAN port
- One UID switch
- One UID LED indicator

**Note:** JSW1 and JFP2 connectors are mutually exclusive; only one connector can be utilized at a time.

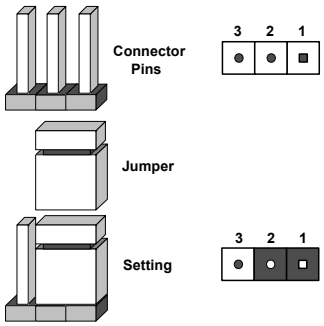
# 4.4 Jumpers

## How Jumpers Work

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

**Note 1:** On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.

**Note 2:** Unplug the power cord from all power supplies before adjusting jumper settings.




### *CMOS Clear*

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

### *To Clear CMOS*

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

**Note :** Clearing CMOS will also clear all passwords.

# 4.5 LED Indicators

### Onboard Power LED

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

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

### BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDBMC on the motherboard. When LEDBMC is blinking green, the BMC is functioning normally. Refer to the layout below for the location of LEDBMC.

| BMC Heartbeat LED State | |
|---|---|
| **LED Color** | **Definition** |
| Green: Blinking | BMC Normal |

### M.2 LED Indicators

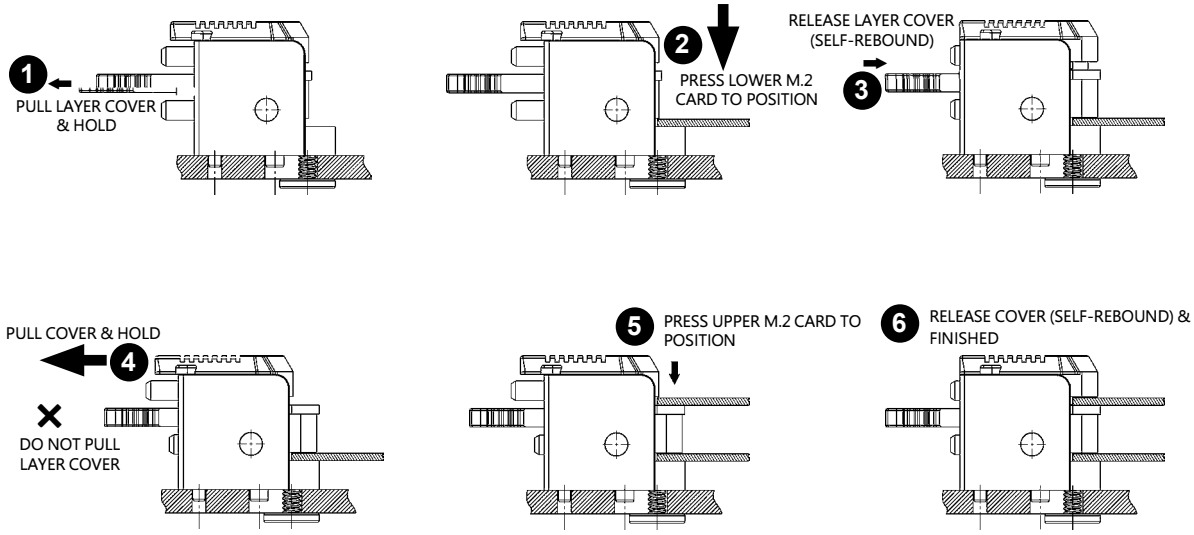
Two M.2 LED indicators are located at LED4 and LED7 on the motherboard. When LED4 is blinking, the bottom M.2 device functions normally. When LED7 is blinking, the top M.2 device functions properly. Refer to the layout below for locations of LED4 and LED7.

| M.2 LED State | |
|---|---|
| **LED Color** | **Definition** |
| Green: Blinking | M.2 device working |

## 4.6 M.2 Solid State Drive Installation

### *Installing Dual M.2 SSDs*

1. Disconnect power from the motherboard or system.
2. Refer to the motherboard layout and locate the M.2 dual slot (J18).
3. Insert lower M.2 sideways into the connector so that it lays flat, then follow the instructions below from ❶ to ❸.
4. Insert upper M.2 sideways into the connector so that it lays flat, then follow the instructions below from ❹ to ❻.




### *Releasing Dual M.2 SSDs*

1. Follow the instructions below from ❶ to ❺ to remove M.2 SSDs.

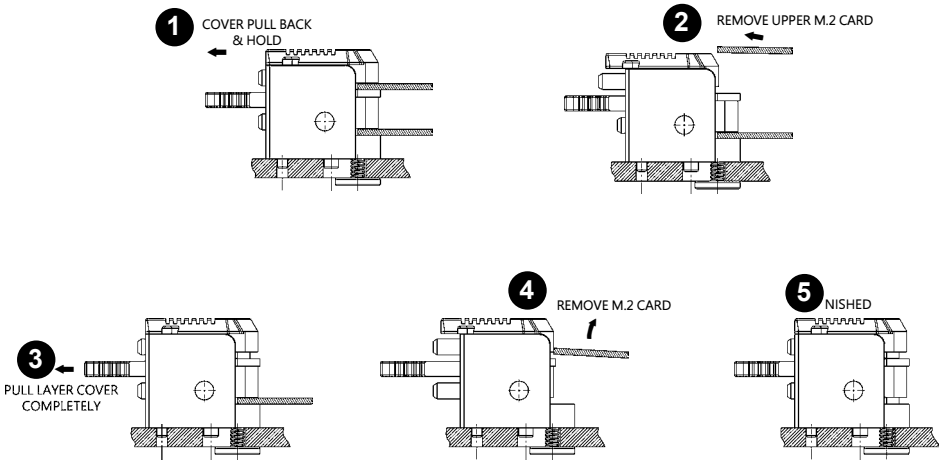



**Figure 4-1. Releasing Dual M.2 SSDs**

# Chapter 5

# Software

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

## 5.1 Microsoft Windows OS Installation

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

***Installing the OS***

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

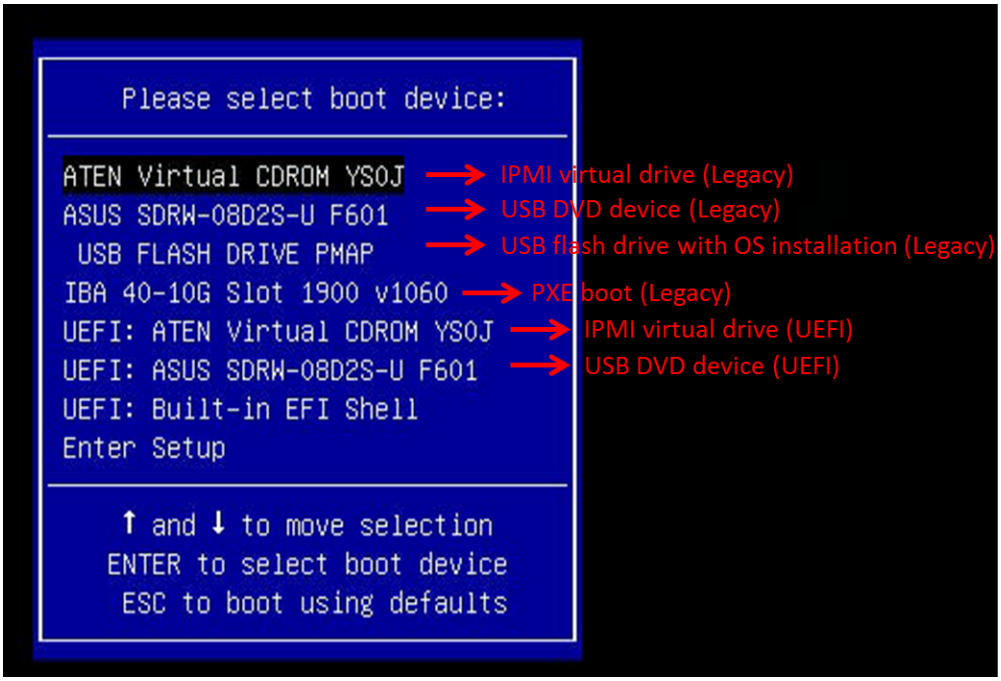



**Figure 5-1. Select Boot Device**

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

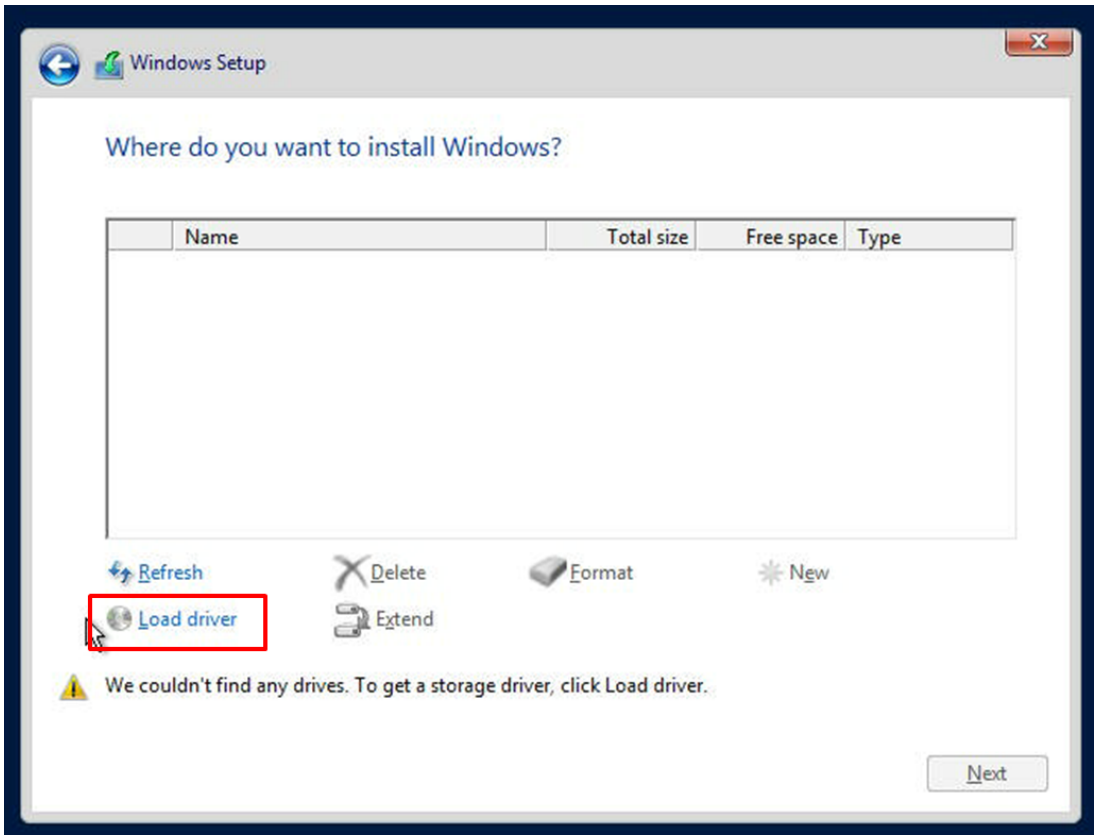



**Figure 5-2. Load Driver Link**

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

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

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

## 5.2 Driver Installation

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

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

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

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

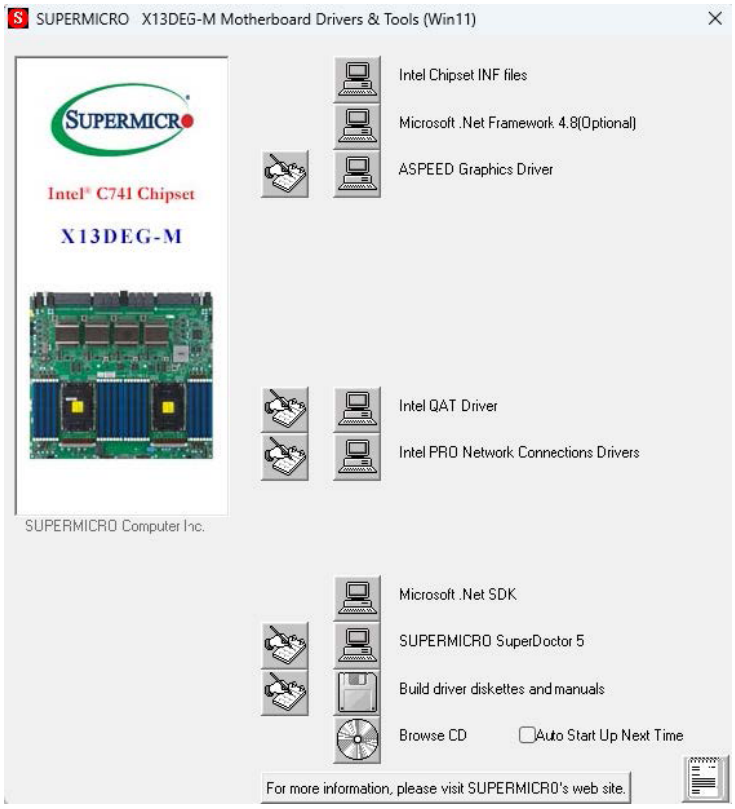



**Figure 5-3. Driver & Tool Installation Screen**

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

## 5.3 BMC

The X13DEG-M 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:

https://www.supermicro.com/products/nfo/BMC.cfm.

## 5.4 Logging into the BMC (Baseboard Management Controller)

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

When logging in to the BMC for the first time, please use the unique password provided by Supermicro to log in. After logging in, you can change the administrator password to protect your security. When logging in as an administrator, you can also create a user account and set the password of your choice for subsequent logins.

*For more information regarding BMC passwords, please visit our website at*

https://www.supermicro.com/bmcpassword*.*

# Chapter 6

# Optional Components

This chapter describes alternate configurations and optional system components.

| Optional Parts |
| --- |
| Storage Protocols |
| PCIe Options |
| Power Options |
| TPM security module |

## 6.1 Storage Protocols Supported

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

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

**NVMe –** The SYS-421GE-TNHR2-LCC system supports up to eight NVMe drives.

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

## 6.2 Power Supply Configurations

| Power Supply Module Options | | |
|---|---|---|
| **Watts** | **Part Number** | **80Plus Level** |
| 5250 | PWS-5K26G-2R | Titanium |

## 6.3 TPM Security Module

SPI capable TPM 2.0 (or 1.2) with Infineon 9670 controller, horizontal form factor

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

Details and installation procedures are at:

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

- AOM-TPM-9670V
- AOM-TPM-9671V

# Chapter 7

# Troubleshooting and Support

## 7.1 Information Resources

### Website

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

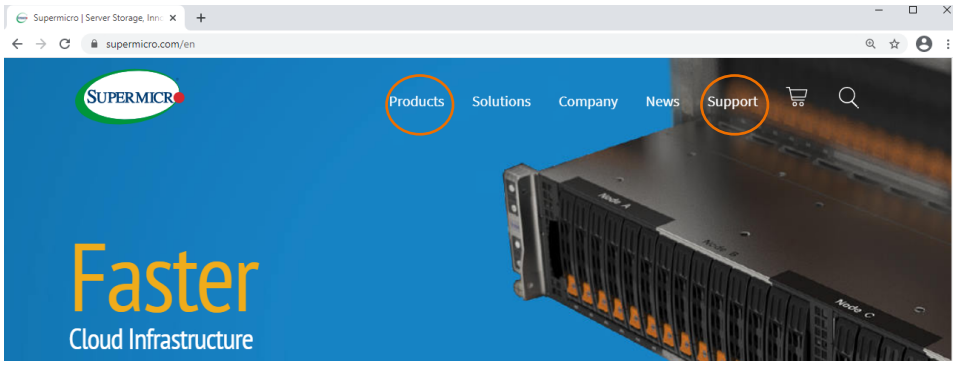



**Figure 7-1. Supermicro Website**

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

#### *Direct Links for the SYS-421GE-TNHR2-LCC System*

Web SYS-421GE-TNHR2-LCC specifications page

X13DEG-M motherboard page for links to the Quick Reference Guide, User Manual, validated storage drives, etc.

#### *Direct Links for General Support and Information*

Frequently Asked Questions

TPM User Guide

BMC User Guide

For validated memory, use our Product Resources page

***Direct Links (continued)***

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

Security Center for recent security notices

Supermicro Phone and Addresses

## 7.2 BMC Interface

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

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

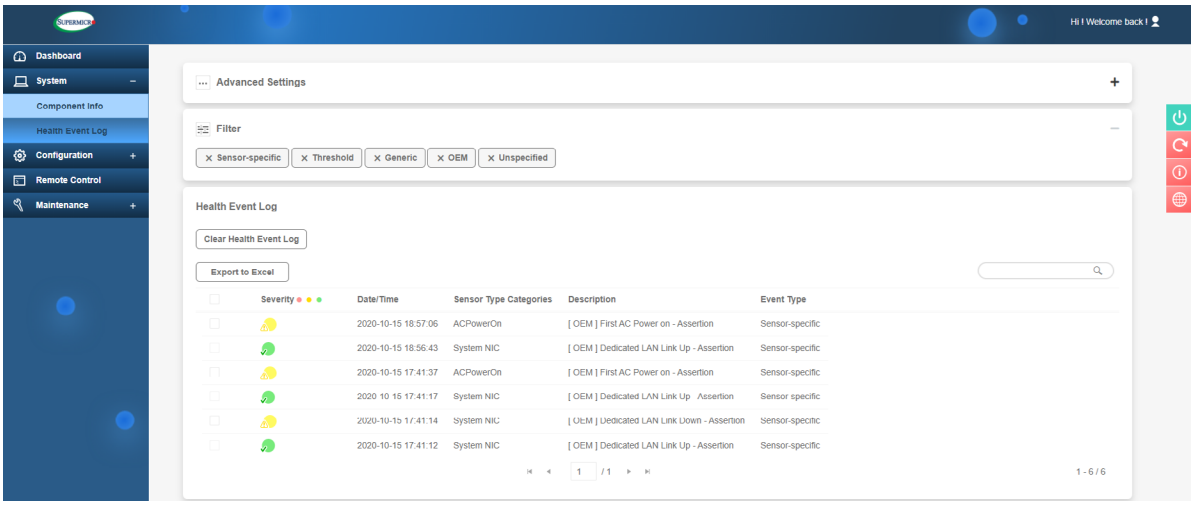



**Figure 7-2. BMC Dashboard Sample**

## 7.3 Troubleshooting Procedures

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

### 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 CPU (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. Make sure that the power supply connectors are properly connected.
3. Check that the 115 V/230 V switch, if available, on the power supply is properly set.
4. Turn the power switch on and off to test the system, if applicable.
5. 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, try the following:

1. Remove all components from the motherboard, especially the DIMM modules. Power on the system and check if the power-on LED (LEDPWR) and the BMC Heartbeat LED (LEDBMC) are on, and system fans are spinning.
2. Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure in this chapter.

## Memory Errors

1. Make sure that the memory modules are compatible with the system and are properly installed. See Chapter 3 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 DIMM modules in the system.
3. Make sure that you are using the correct type of ECC DDR5 modules recommended by the manufacturer.
4. Check for bad DIMM modules or slots by swapping a single module among all memory slots and check the results.

## Losing the System 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 Chapter 1 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.

## When the System Becomes Unstable

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

1. CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.
2. Memory support: Make sure that the memory modules are supported by testing 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 drives support: Make sure that all drives work properly. Replace if necessary.
4. System cooling: Check the system cooling to make sure that all heatsink fans and CPU/system fans, etc., work properly. Check the hardware monitoring settings in the BMC to make sure that the CPU and system temperatures are within the normal range. Also check the 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 the Supermicro website for the minimum power requirements.
6. Proper software support: Make sure that the correct drivers are used.

***B. 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 USB flash or media drives
2. Cable connection: Check to make sure that all cables are connected and working properly.
3. Using the minimum configuration for troubleshooting: Remove all unnecessary components (starting with add-on cards first), and use the minimum configuration (but with the CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in Section A above 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 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.

## Issues with NVMe Storage Devices

***The numbering of NVMe storage devices are not shown as sequential in the operating system.***

This only happens after an M.2 NVMe device is installed. In the example of a twelve-bay system, NVMe4 (from CPU1) is occupied and NVMe9 (from CPU2) is occupied, causing the numbering of the NVMe storage devices in the operating system to be different from that of the physical presence of drives.

Before two M.2 device two installed:

| | | | |
|---|---|---|---|
| NVMe2 | NVMe5 | NVMe8 | NVMe11 |
| NVMe1 | NVMe4 | NVMe7 | NVMe10 |
| NVMe0 | NVMe3 | NVMe6 | NVMe9 |

After two M.2 devices are installed:

| | | | |
|---|---|---|---|
| NVMe2 | NVMe6 | NVMe10 | NVMe13 |
| NVMe1 | NVMe5 | NVMe8 | NVMe12 |
| NVMe0 | NVMe3 | NVMe7 | NVMe11 |

Note that NVMe4 and NVMe9 are gone. Once an M.2 NVMe device is installed, the operation system recognizes the storage devices based on the PCIe training sequences. (The numbering sequence begins with CPU1-connected devices and then CPU2-connected devices.)

***An NVMe drive is successfully ejected via the BMC Web GUI, but it displays "Exception" in the log.***

This is perfectly fine at this stage and will not affect your normal use of the drives and the BMC Web GUI.

## 7.4 BIOS POST Codes

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

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

## 7.5 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, please 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. Please go through the Troubleshooting Procedures and Frequently Asked Questions (FAQ) sections in this chapter 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/ResourceApps/BIOS_BMC_Intel.html).
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://www.supermicro.com/RmaForm/.
5. Distributors: For immediate assistance, please have your account number ready when placing a call to our Technical Support department. We can be reached by email at support@supermicro.com.

## 7.6 Frequently Asked Questions

**Question: What type of memory does my motherboard support?**

**Answer:** This motherboard supports up to 8 TB 3DS RDIMM/RDIMM DDR5 (288-pin) ECC memory with speeds up to 4800 MT/s (1PDC) or 4400 MT/s (2DPC) in 32 DIMM slots. To enhance memory performance, do not mix memory modules of different speeds and sizes. Please follow all memory installation instructions given on Section 3-4 in Chapter 3.

**Question: How do I update my BIOS?**

**Answer:** 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 https://www.supermicro.com/ResourceApps/BIOS_BMC_Intel.html. Please 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.

**Note 1:** The SPI BIOS chip used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair.

**Note 2:** For BIOS Update and Recovery instructions, please refer to the Firmware Update and Recovery Instructions for Supermicro's X13 Motherboards User's Guide posted at https://www.supermicro.com/support/manuals/.

# 7.7 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. Locate the onboard battery as shown below.
3. Using a tool such as a pen or a small screwdriver, push the battery lock outwards to unlock it. Once unlocked, the battery will pop out from the holder.
4. Remove the battery.

## Proper Battery Disposal

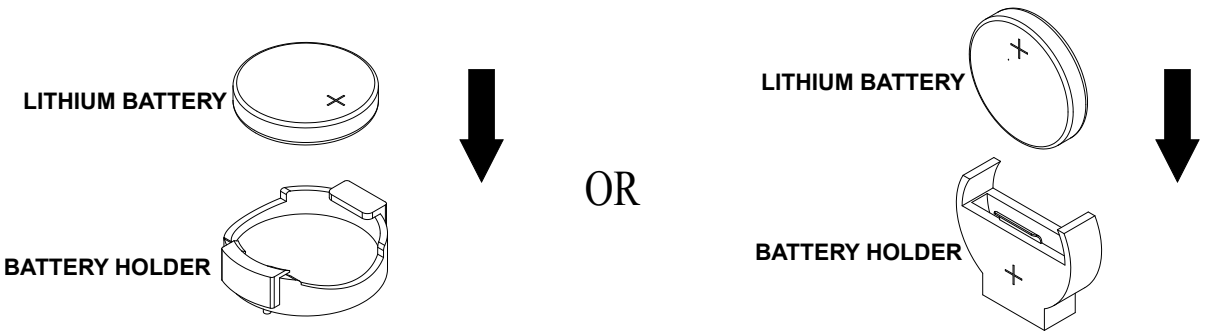
**Warning:** Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste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

## Battery Installation

***To install an onboard battery, follow the steps below:***

1. Power off your system and unplug your power cable.
2. Locate the onboard battery as shown below
3. Identify the battery's polarity. The positive (+) side should be facing up.
4. Insert the battery into the battery holder and push it down until you hear a click to ensure that the battery is securely locked.

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



## 7.8 Where to Get Replacement Components

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

## 7.9 Reporting an Issue

### Returning Merchandise for Service

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

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

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

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

## 7.10 Feedback

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

## 7.11 Contacting Supermicro

**Headquarters**


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


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


**Asia-Pacific**


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

# Appendix A

# Standardized Warning Statements for AC Systems

## About Standardized Warning Statements

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

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

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

## Warning Definition

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

警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、

電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危险。

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

此警告符號代表危險。

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

Warnung

WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הצהרות אזהרה

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

יש לקרוא את הנספח במלואו לפני התקנת או הגדרת הרכיבים במארזי סופרמיקרו.

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

안전을 위한 주의사항

경고!

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

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

BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

## Installation Instructions

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

設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

警告

将此系统连接电源前,请先阅读安装说明。

警告

將系統與電源連接前，請先閱讀安裝說明。

Warnung

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

¡Advertencia!

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

Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Waarschuwing

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

## Circuit Breaker

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

サーキット・ブレーカー

この製品は、短絡（過電流）保護装置がある建物での設置を前提としています。

保護装置の定格が250 V、20 Aを超えないことを確認下さい。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

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

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

경고!

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

Waarschuwing

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

## Power Disconnection Warning

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

電源切断の警告

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

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

警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה מפני ניתוק חשמלי

!אזהרה

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

يجب فصم اننظاو من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد انطاقت قبم

انصل إنى اىمناطق انداخهيت نههيكم نتثبيج أو إزانت مكناث الجهاز

경고!

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

Waarschuwing

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

## Equipment Installation

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

機器の設置

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

警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

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

경고!

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

Waarschuwing

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

## Restricted Area

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

アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזור עם גישה מוגבלת

אזהרה!

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

تخصيص هذه انحذة نترك بُها ف مناطق محظورة تم .
،مَكن انصبل إن منطقت محظورة فقط من خلال استخذاو أداة خاصت
أو أ وس هُت أخري نلالأمما ققم 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

電池の取り扱い

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

警告

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

警告

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

WARNUNG

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

ATTENTION

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

ADVERTENCIA

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

!אזהרה

קיימת סכנת פיצוץ אם הסוללה תוחלף בסוג שגוי. יש להחליף

את הסוללה בסוג התואם מחברת יצרן מומלצת.

סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر الانفجار إذا تم استبدال البطارية بنوع غير صحيح.
اسحبذال البطارية
فقط بنفس النع أو ما يعادلها مما أوصث به الشرمة المصنعة
جخلص من البطاريات المسحعملة وفقا لحعليمات الشرمة الصانعة

경고!

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

WAARSCHUWING

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

## Redundant Power Supplies

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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告
此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告
此裝置連接的電源可能不只一個，必須切斷所有電源才能停止對該裝置的供電。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד

אזהרה!

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

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .

يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

경고!

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

Waarschuwing

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

## Backplane Voltage

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

バックプレーンの電圧

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

修理する際には注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上有危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

אזהרה!

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

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

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

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

## Comply with Local and National Electrical Codes

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

地方および国の電気規格に準拠
機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告
设备安装必须符合本地与本国电气法规。

警告
設備安裝必須符合本地與本國電氣法規。

Warnung
Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

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

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

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

تركيب المعدات الكهربائية يجب أن يمتثل للقاويه المحلية والبطية المتعلقة
بالكهرباء

경고!
현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

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

## Product Disposal

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

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

警告
本产品的废弃处理应根据所有国家的法律和规章进行。

警告
本產品的廢棄處理應根據所有國家的法律和規章進行。

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

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

Attention

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

סילוק המוצר

אזהרה!

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

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

경고!

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

Waarschuwing

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

## Fan Warning

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

ファンの警告

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

警告!

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

אזהרה!

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

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

경고!

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

Waarschuwing

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

## Power Cable and AC 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.

電源コードとACアダプター

製品を設置する場合、提供または指定および購入された接続ケーブル、電源コードとACアダプターを 該当する地域の条例や安全基準に適合するコードサイズやプラグと共に使用下さい。他のケーブルやアダプタを使用すると故障や火災の原因になることがあります。

電気用品安全法は、ULまたはCSA認定のケーブル(UL/CSAマークがコードに表記)を Supermicroが指定する製品以外に使用することを禁止しています。

警告

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

警告

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

Warnung

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

¡Advertencia!

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

Attention

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

AC ימאתמו סיילמשח סילבכ

!הרהזא

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

تحذير

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

전원 케이블 및 AC 어댑터

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

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

Stroomkabel en AC-Adapter

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

# Appendix B

# System Specifications

**Processor**

Supports dual 5th/4th Gen. Intel Xeon Scalable/ Xeon Max Series processors (in Socket E LGA 4677) with four UPIs (20/16 GT/s max.) with up to 64/60 CPU cores and a thermal design power (TDP) of up to 350 W
**Note:** SP XCC, SP MCC, and Max Series (HBM) SKUs are supported.

**Chipset**

Intel PCH C741

**BIOS**

AMI SPI BIOS
EFI GUI, SPI dual/quad speed control, riser card auto detection support, RTC (Real Time Clock) wakeup, IPMIView, SMCIPMITOOL, IPMI CFG, Redundant power supply unit detection, SPM, SUM-OOB/InBand

**Memory**

Supports up to 8 TB 3DS RDIMM/RDIMM DDR5 (288-pin) ECC memory with speeds up to 5600 MT/s (1PDC) or 4400 MT/s (2DPC) in 32 DIMM slots
**Note:** Memory speed and capacity support depends on the processors used in the system.

**Storage Drives**

Eight 2.5" drives

**PCI Expansion Slots**

Eight PCIe 5.0 x16 LP
Two PCIe 5.0 x16 FHHL
Optional two PCIe 5.0 x16 FHHL

**Motherboard**

X13DEG-M; 14.95" (W) X 17.00" (L) (379.73 mm x 431.8 mm)

**Chassis**

CSE-GP401; 4U Rackmount, 7.2 x 7 x 29 in. (437 x 178 x 737 mm) (W x H x D)

**System Cooling**

Four heavy duty mid-fans with optimal fan speed control

**Power Supply**

Model: PWS-5K26G-2R, Four 5250 W (2+2) Titanium Level efficiency power supplies (80 Plus)
AC Input:
  2880 W: 200-207 Vac,16-15.7 A, 50-60 Hz
  3000 W: 207.1-240 Vac, 16-14.5 A, 50-60 Hz
  3000 W: 240 Vdc, 15 A
DC Output:
  +54 V, 45 A
  +12 V, 91.66 A
  +12 Vsb, 3 A
+12 V:
  Max: 91.66 A / Min: 0 A (200-240 Vdc)
12 VSB:
  Max: 3 A / Min: 0 A

**Operating Environment**

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

**Regulatory Compliance**

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

**Applied Directives, Standards**

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

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

Delegated Directive (EU) 2015/863
Directive 2011/65/EU (RoHS)
REACH Regulation EC 1907/2006
WEEE Directive 2012/19/EU
California Proposition 65

**Perchlorate Warning**

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

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

**VCCI ー A**