



# SuperServer<sup>®</sup> SYS-521AD-LN2



## USER'S MANUAL

Revision 1.0

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Manual Revision 1.0

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# Preface

## About this Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SYS-521AD-LN2 server. Installation and maintenance should be performed by certified service technicians only.

Please refer to the SYS-521AD-LN2 server specifications page on our website for updates on supported memory, processors, and operating systems (<http://www.supermicro.com>).

## Notes

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

- Supermicro product manuals: <http://www.supermicro.com/support/manuals/>
- Product drivers and utilities: <https://www.supermicro.com/wdl>
- Product safety info: [http://www.supermicro.com/about/policies/safety\\_information.cfm](http://www.supermicro.com/about/policies/safety_information.cfm)

If you have any questions, please contact our support team at:  
[support@supermicro.com](mailto: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/Log9\\_Secure\\_Data\\_Deletion\\_Utility/](https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Log9_Secure_Data_Deletion_Utility/)

## Warnings

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



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



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

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# Chapter 1

## Introduction

### 1.1 Overview

This chapter provides a brief outline of the functions and features of the SuperServer SYS-521AD-LN2. The following provides an overview of the specifications and capabilities of the system.

| System Overview        |                                                                                                                                                                                                                                                |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Motherboard</b>     | X13SAV-D5LVDS                                                                                                                                                                                                                                  |
| <b>Chassis</b>         | CSE-GS2B-000NBP2                                                                                                                                                                                                                               |
| <b>Processor</b>       | Single Intel 12th/13th/14th Generation Core i Series and Core processors (Series 2) with a Thermal Design Power (TDP) of up to 65 W in an LGA 1700 socket                                                                                      |
| <b>Memory</b>          | Up to 64 GB of DDR5 Non-ECC SODIMM memory with speeds of up to 5600 MT/s in two memory slots                                                                                                                                                   |
| <b>GPU</b>             | One double-width or one single-width GPU                                                                                                                                                                                                       |
| <b>Storage</b>         | Internal drive bays: one 3.5" SATA drive bay and one 2.5" SATA drive bay<br>One M.2 PCIe 4.0 x4 NVMe slot (M-key 2280)                                                                                                                         |
| <b>Expansion Slots</b> | One PCIe 5.0 x16 half-height, half-length (HHHL) double-width slot                                                                                                                                                                             |
| <b>I/O Ports</b>       | One RJ45 1GbE LAN port<br>One RJ45 2.5GbE LAN port<br>Two USB 3.2 Gen 1 Type-A ports (front)<br>Four USB 3.2 Gen 2 Type-A ports (rear)<br>One HDMI 2.0b port<br>One HDMI 1.4 port<br>Two displayPort ports<br>One audio line out<br>One mic in |
| <b>System Cooling</b>  | One active CPU heatsink fan<br>One system fan                                                                                                                                                                                                  |
| <b>Power</b>           | One 300 W Gold Level (90%) power supply                                                                                                                                                                                                        |
| <b>Form Factor</b>     | Slim form factor: 13.43" x 3.62" x 11.42" (341 x 92 x 290 mm) (H x W x D)                                                                                                                                                                      |

**Note:** A Quick Reference Guide can be found on the product page of the Supermicro website. The following safety models associated with the SYS-521AD-LN2 have been certified as compliant with UL and CSA: GS2B-S3X13 and GS2B-S3.

## 1.2 System Features

The following features views of the system display the main features. Refer to [Appendix B](#) for additional specifications.

### Front View

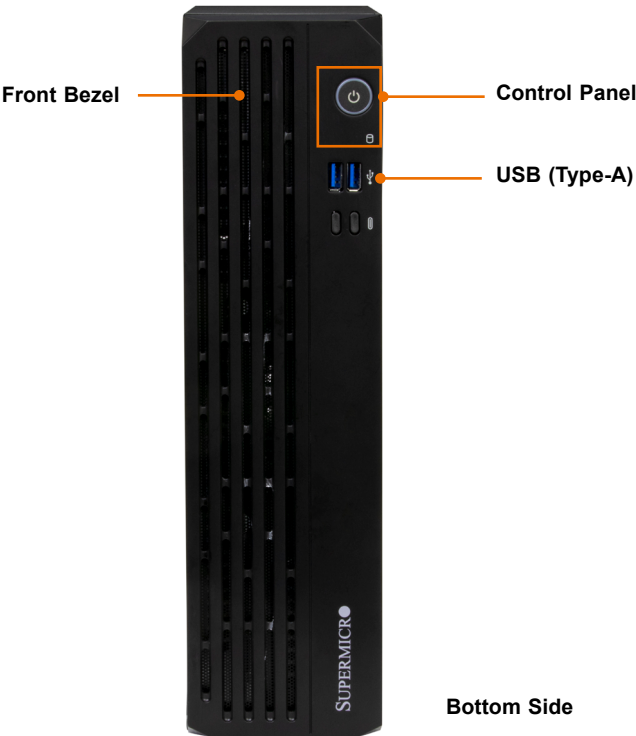


Figure 1-1. Front View

| System Features: Front |                                                            |
|------------------------|------------------------------------------------------------|
| Feature                | Description                                                |
| Front Bezel            | One front bezel                                            |
| Control Panel          | See " <a href="#">Control Panel</a> " for more information |
| USB (Type-A)           | Two USB 3.2 Gen 1 Type-A port                              |

Control Panel

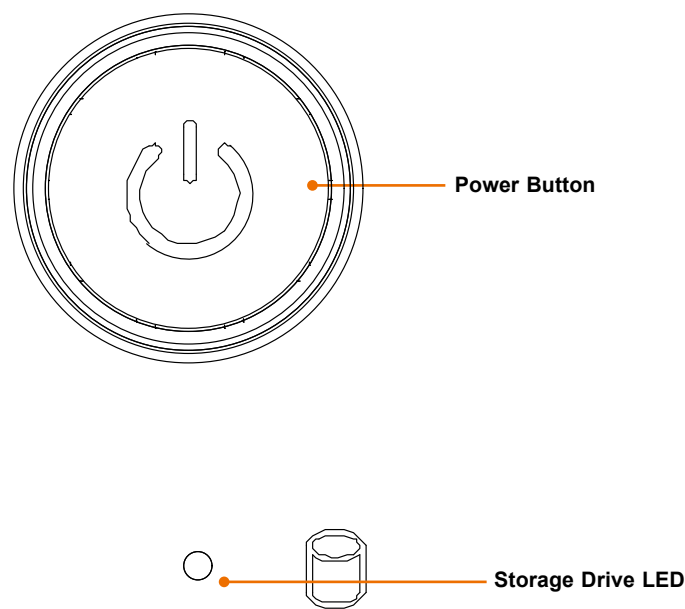


Figure 1-2. Control Panel

| Control Panel Features |                                                                                                                          |
|------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Features               | Description                                                                                                              |
| Storage Drive LED      | LED indicating activity on M.2 storage devices; E1.S storage device activity is indicated by the LEDs on the E1.S drives |
| Power Button           | Button applying/removing main power<br>Standby power maintained when LED is off                                          |

Rear View

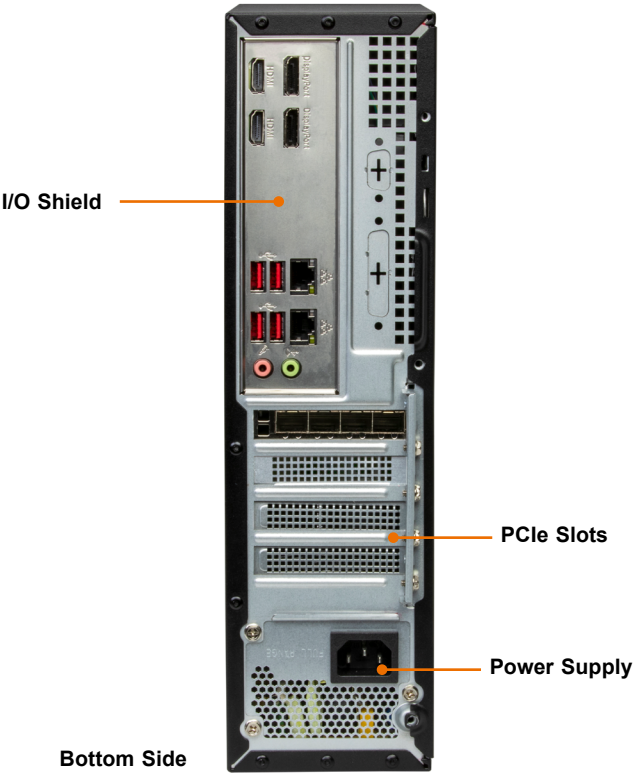


Figure 1-3. Rear View

| System Features: Rear |                                                                         |
|-----------------------|-------------------------------------------------------------------------|
| Feature               | Description                                                             |
| I/O Shield            | One I/O shield (see " <a href="#">I/O Ports</a> " for more information) |
| PCIe Slots            | One PCIe 5.0 x16 HHHL double-width slot                                 |
| Power Supply          | One 300 W power supply                                                  |

## Top View

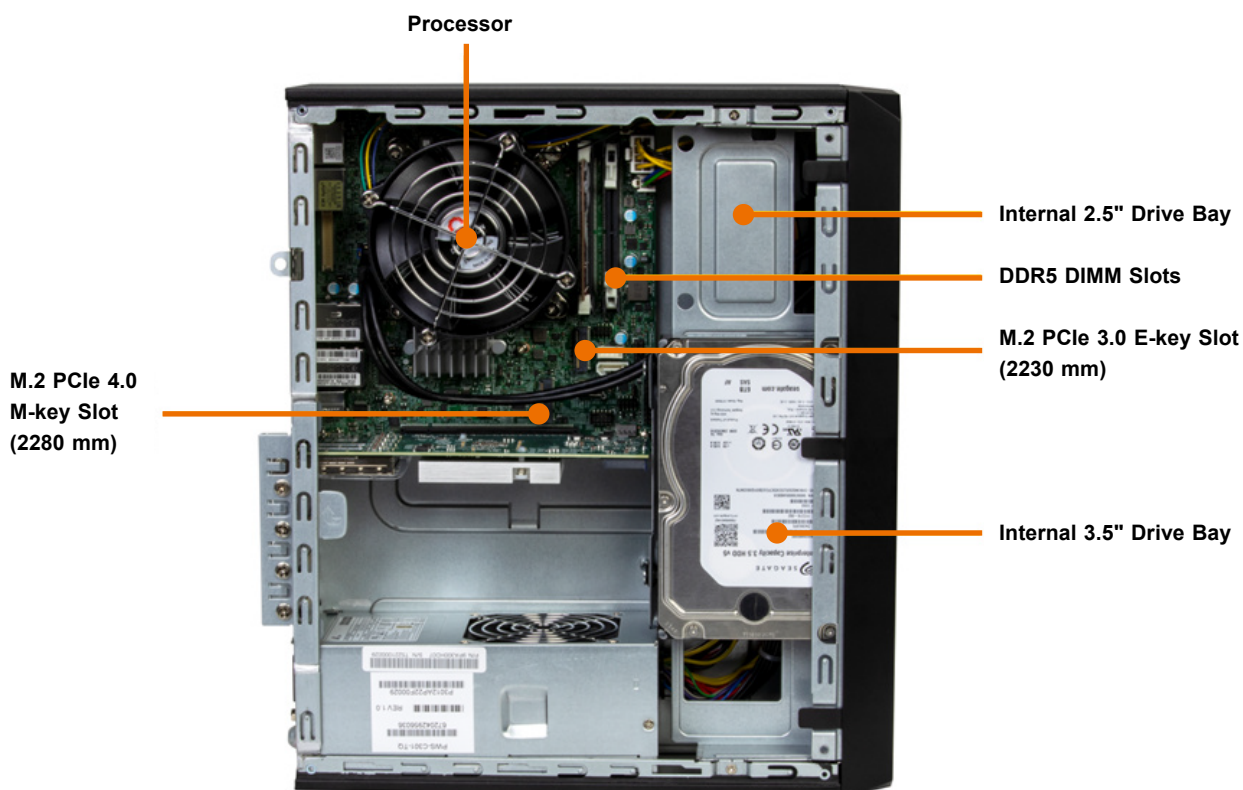


Figure 1-4. Top View

| System Features: Top |                                                                                                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feature              | Description                                                                                                                                               |
| Power Supply         | One 300 W PS2 multi-output power module (80Plus Gold)                                                                                                     |
| Processor            | Single Intel 12th/13th/14th Generation Core i Series and Core processors (Series 2) with a Thermal Design Power (TDP) of up to 65 W in an LGA 1700 socket |
| DIMM Slots           | Two DDR5 DIMM slots                                                                                                                                       |
| Storage Drives       | One 3.5" fixed drive bays and one 2.5" fixed drive bay                                                                                                    |
| NVMe Drives          | One M.2 M-Key PCIe 4.0 x4 (2280 form factor)                                                                                                              |

## 1.3 Motherboard Layout

Below is a layout of the **X13SAV-D5LVDS** motherboard. See the table on the following page for descriptions.

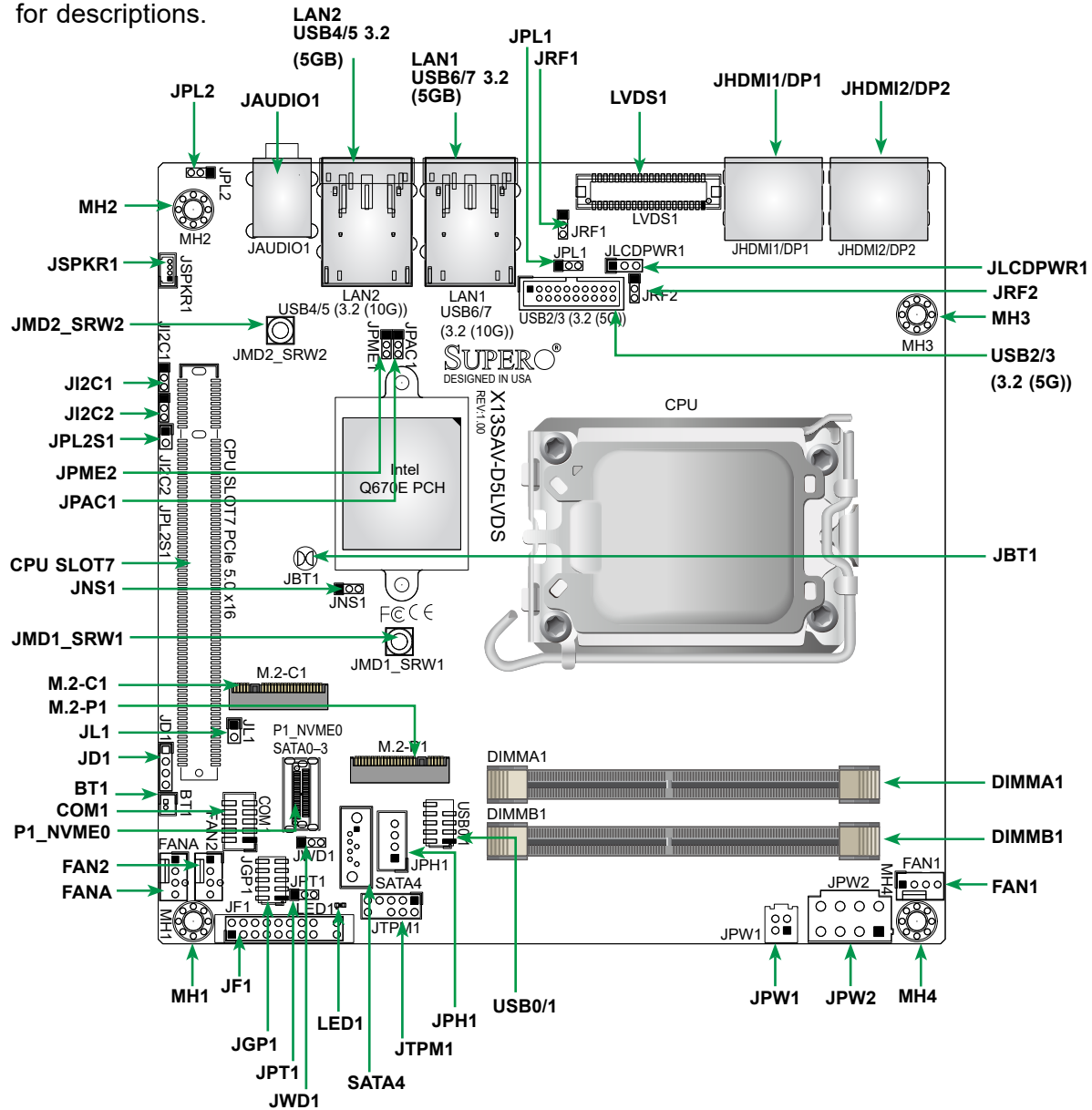


Figure 1-5. Motherboard Layout

### Notes:

- See [Chapter 4](#) for detailed information on jumpers, I/O ports, and JF1 front panel connections.
- "■" 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. Do not install the onboard battery upside down to avoid possible explosion.

## Quick Reference Table

| Jumper                                 | Description                                                                                                                    | Default Setting (*)                                |                              |                     |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------|---------------------|
| JBT1                                   | CMOS Clear                                                                                                                     | Open (Normal)                                      |                              |                     |
| J1 <sup>2</sup> C1, J1 <sup>2</sup> C2 | SMB to PCIe Slots Enable/Disable                                                                                               | Pins 2–3 (Disabled)                                |                              |                     |
| JLCDPWR1                               | LVDS Panel VCC Power +3.3 V/+5 V                                                                                               | Pins 1–2 (+3.3 V)                                  |                              |                     |
| JPAC1                                  | Audio Enable                                                                                                                   | Pins 1–2 (Enabled)                                 |                              |                     |
| JPL1, JPL2                             | LAN1/LAN2 Enable/Disable                                                                                                       | Pins 1–2 (Enabled)                                 |                              |                     |
| JPL2S1                                 | CPU PL2 Limit                                                                                                                  | Pins 1–2 (PL2)                                     |                              |                     |
| JPME2                                  | ME Manufacturing Mode                                                                                                          | Pins 1–2 (Normal)                                  |                              |                     |
| JPT1                                   | Onboard TPM Module Enable/Disable                                                                                              | Pins 1–2 (Enabled)                                 |                              |                     |
| JRF1, JRF2                             | Slot7 PCIe Bifurcation                                                                                                         | JRF1<br>Pins 1–2<br>Pins 2–3                       | JRF2<br>Pins 1–2<br>Pins 1–2 | PEG<br>x16*<br>x8x8 |
| JWD1                                   | Watch Dog Timer                                                                                                                | Pins 1–2 (Reset)                                   |                              |                     |
| LED                                    | Description                                                                                                                    | Status                                             |                              |                     |
| LED1                                   | Power LED                                                                                                                      | Solid Green: Power On<br>Blinking Green: S3 Status |                              |                     |
| Connector                              | Description                                                                                                                    |                                                    |                              |                     |
| BT1                                    | CMOS Battery Header                                                                                                            |                                                    |                              |                     |
| COM1                                   | COM Header (supports RS-232)                                                                                                   |                                                    |                              |                     |
| CPU SLOT7                              | PCIe 5.0 x16 Slot                                                                                                              |                                                    |                              |                     |
| FAN1–FAN2, FANA                        | Fan Headers                                                                                                                    |                                                    |                              |                     |
| JAUDIO1                                | Back panel Audio Ports (Line Out/Mic In)                                                                                       |                                                    |                              |                     |
| JD1                                    | Speaker Header (Pins 1–4: Speaker, Pins 3–4: Buzzer)                                                                           |                                                    |                              |                     |
| JF1                                    | Front Control Panel Header                                                                                                     |                                                    |                              |                     |
| JHDMI1/DP1                             | High Definition Multimedia Interface 1.4 and DisplayPort                                                                       |                                                    |                              |                     |
| JHDMI2/DP2                             | High Definition Multimedia Interface 2.0 and DisplayPort                                                                       |                                                    |                              |                     |
| JGP1                                   | General Purpose I/O Header                                                                                                     |                                                    |                              |                     |
| JL1                                    | Chassis Intrusion Header                                                                                                       |                                                    |                              |                     |
| JMD1_SRW1<br>JMD2_SRW2                 | M.2 Holding Screws                                                                                                             |                                                    |                              |                     |
| JPH1                                   | 4-pin HDD Power Connector                                                                                                      |                                                    |                              |                     |
| JPW1                                   | Header for ATX Power Signal 5 VSTBY/Power ON/Power GOOD/Ground                                                                 |                                                    |                              |                     |
| JPW2                                   | 8-pin +12 VDC Power Connector for CPU (Required) or alternative single power input for when the 24-pin ATX power is not in use |                                                    |                              |                     |
| JSPKR1                                 | Speaker Header (supporting up to 2 W)                                                                                          |                                                    |                              |                     |
| JTPM1                                  | Trusted Platform Module/Port 80 Connector                                                                                      |                                                    |                              |                     |
| LAN1, LAN2                             | LAN Ports                                                                                                                      |                                                    |                              |                     |

**Note:** Table is continued on the next page.

| Connector                 | Description                                         |
|---------------------------|-----------------------------------------------------|
| LVDS1                     | Low Voltage Differential Signaling (LVDS) Connector |
| M.2-C1                    | M.2 M-Key PCIe 4.0 x4 (2280 form factor)            |
| M.2-P1                    | M.2 E-Key PCIe 3.0 x1/USB2.0 (2230 form factor)     |
| MH1–MH4                   | Motherboard Mounting Holes                          |
| P1_NVME0/SATA0–3          | I-SATA0/1/2/3 Ports (via OCuLink Connector)         |
| SATA4                     | SATA 3.0 Port                                       |
| USB0/1                    | Front Accessible USB 2.0 Header                     |
| USB2/3 (3.2 (5 GB))       | Front Accessible USB 3.2 Gen 2 x1 (5G) Header       |
| USB4/5, 6/7 (3.2 (10 GB)) | Back Panel USB 3.2 Gen 2 x1 (10G) Ports             |

## Motherboard Block Diagram

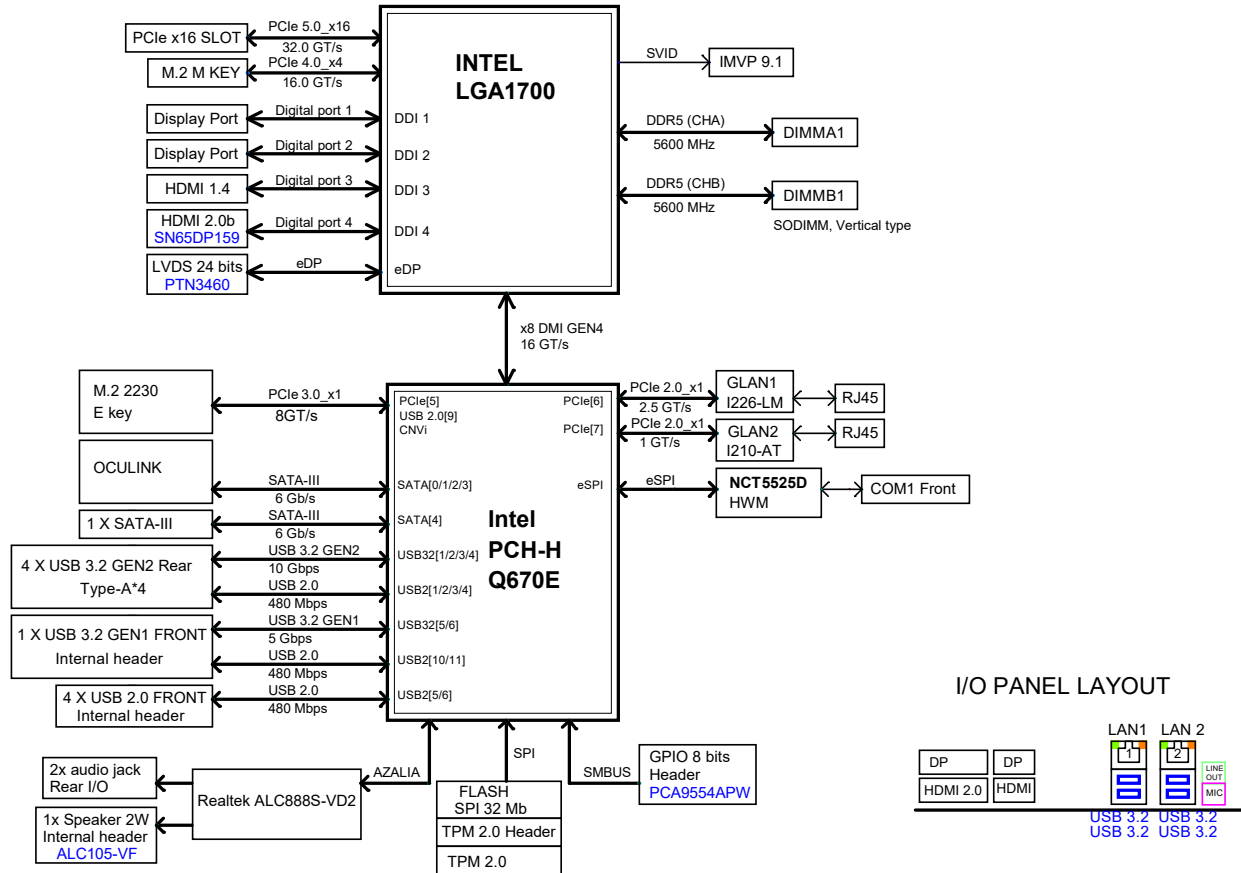


Figure 1-6. Motherboard Block Diagram

**Note:** This is a general 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

# Chassis Installation

### 2.1 Overview

This chapter provides advice and instructions for inspecting, handling, and selecting an appropriate environment for installing your server system. If your server is not already fully integrated with processors, system memory, etc., refer to [Chapter 3](#) for details on installing those specific components.

### 2.2 Unpacking the System

Inspect the box the SYS-521AD-LN2 server was shipped in and note if it was damaged in any way. If any equipment appears damaged, file a damage claim with the carrier who delivered it. Decide on a suitable location for the rack unit that will hold the server. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. It will also require a grounded AC power outlet nearby. Be sure to read the precautions and considerations noted in [Appendix B](#).

## Chapter 3

# Maintenance and Component Installation

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

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

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

### 3.1 Removing Power

Before performing some setup or maintenance tasks, use the following procedure to ensure that power has been removed from the SYS-521AD-LN2 server.

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

## 3.2 Accessing the System

The SYS-521AD-LN2 server features a removable top cover, which allows easy access to the inside of the server.

### Removing the Chassis Cover

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

**Important:** The system must be placed safely on a workbench before servicing or replacing any components.

#### *Removing the Chassis Cover*

1. Power down the system as described in "[Removing Power](#)".
2. Remove the three screws located towards the rear of the chassis cover.
3. Slide the cover to the rear as illustrated.
4. Lift the cover up and off the chassis.

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

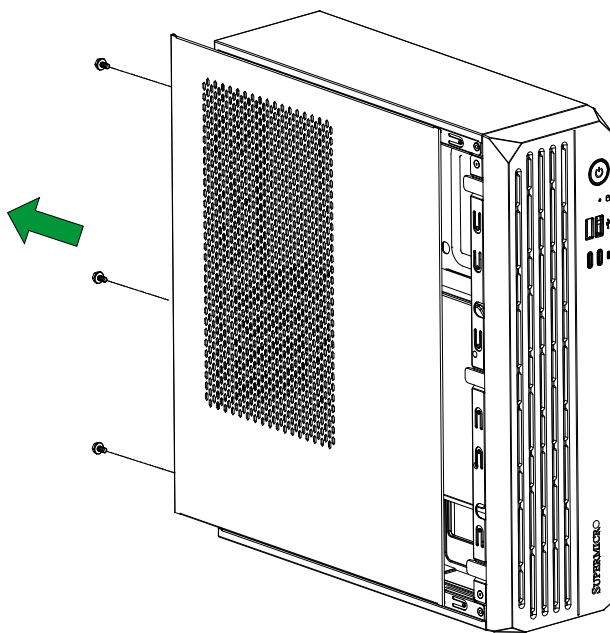


Figure 3-1. Removing the Chassis Cover

## Removing the Front Bezel

**Important:** The system must be placed safely on a workbench before servicing or replacing any components.

### *Removing the Front Bezel*

1. Pull the three latches upward to unlock the front bezel.
2. Rotate the front bezel outward and pull it down.

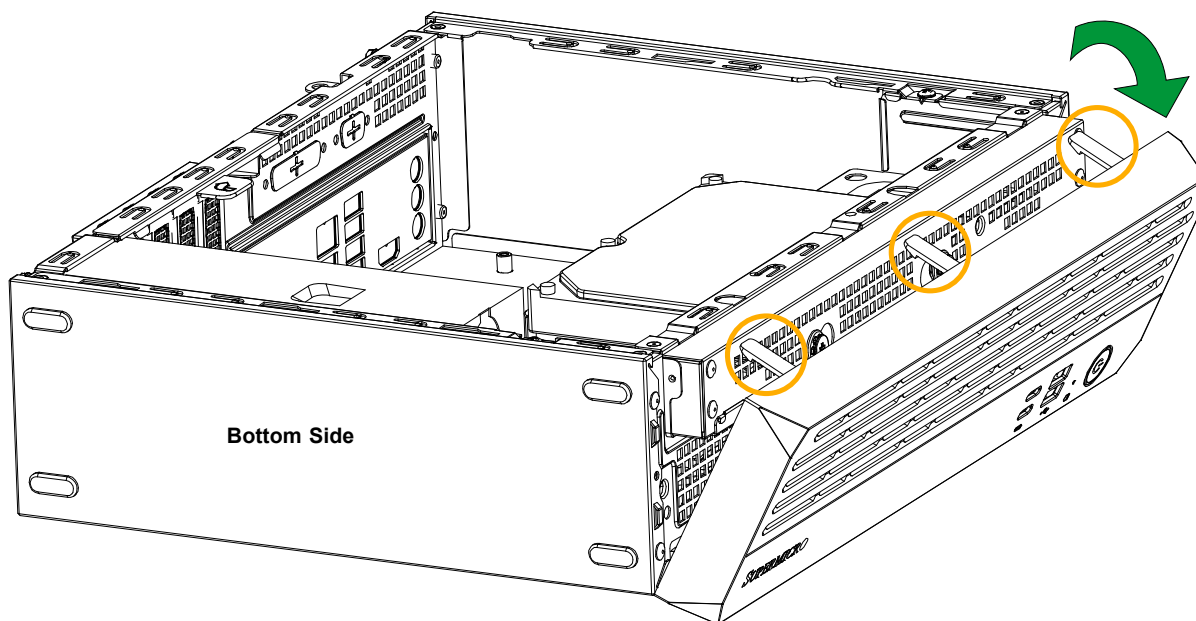


**Figure 3-2. Removing the Front Bezel**

### 3.3 Static-Sensitive Devices

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

#### Precautions

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

#### Unpacking

The motherboard is shipped in antistatic packaging to avoid static damage. When unpacking the motherboard, make sure that the person handling it is static protected.

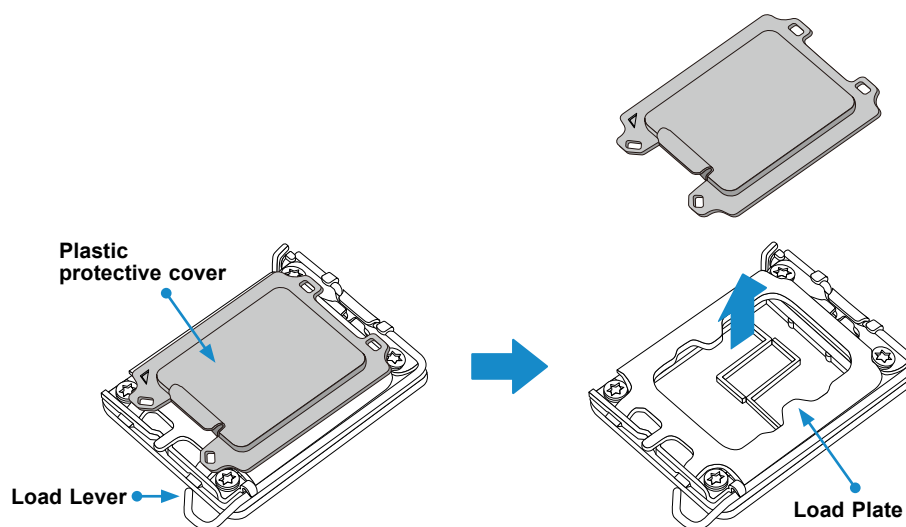
## 3.4 Processor and Heatsink Installation

### Important:

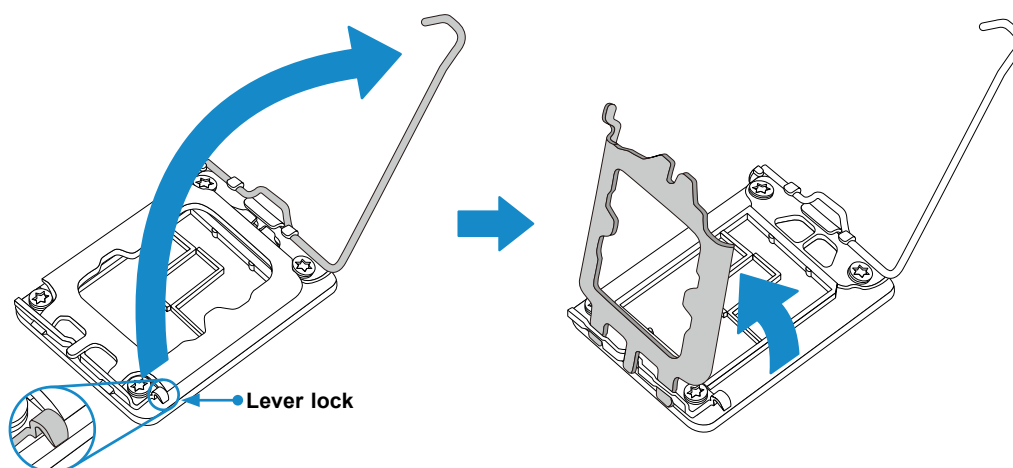
- When handling the processor package, avoid placing direct pressure on the label area of the fan.
- Use ESD protection.
- Unplug the AC power cord from all power supplies after shutting down the system.
- Check that the plastic protective cover is on the CPU socket and none of the socket pins are bent. If they are, contact your retailer.
- When handling the processor, avoid touching or placing direct pressure on the LGA lands (gold contacts). Improper installation or socket misalignment can cause serious damage to the processor or CPU socket, which may require manufacturer repairs.
- Thermal grease is pre-applied on a new heatsink. No additional thermal grease is needed.
- Refer to the Supermicro website for updates on processor support.
- All graphics in this manual are for illustrations only. Your components may look different.

### *Installing the LGA1700 Processor*

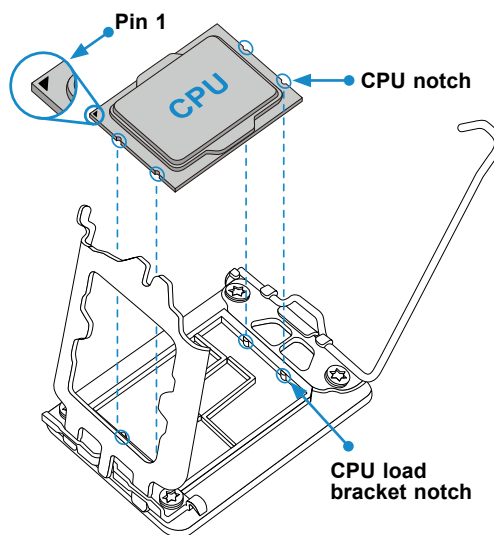
1. Remove the plastic protective cover from the load plate.



2. Gently push down the load lever to release and lift it, then lift the load plate to open it completely.

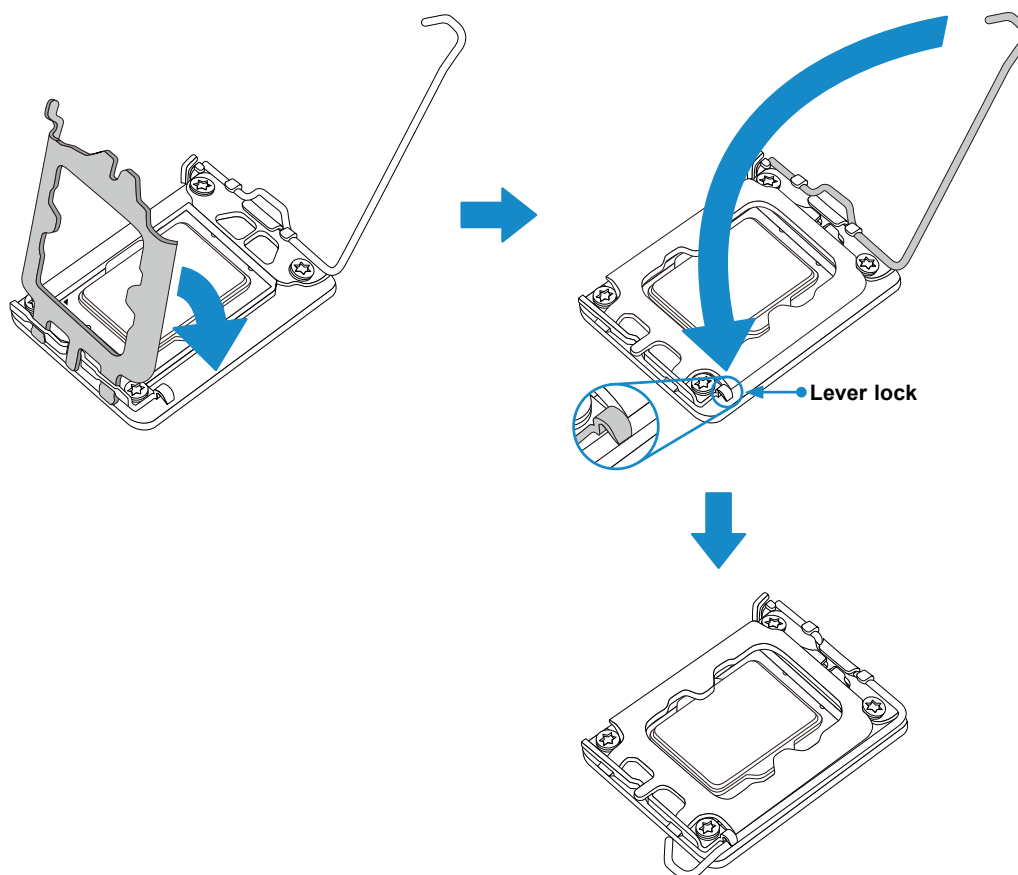


3. Use your thumb and your index finger to hold the CPU. Align the small triangle marker and notches on the CPU to the corresponding triangle marker and notches on the CPU load bracket. Once aligned, carefully lower the CPU straight down into the socket. (Do not drop the CPU on the socket, or move it horizontally or vertically.)



4. Do not rub the CPU against the surface or against any pins of the socket to avoid damaging the CPU or the socket.
5. With the CPU inside the socket, inspect the four corners of the CPU to make sure that the CPU is properly installed.

6. Close the load plate with the CPU inside the socket. Gently push the load lever down to the lever locks.



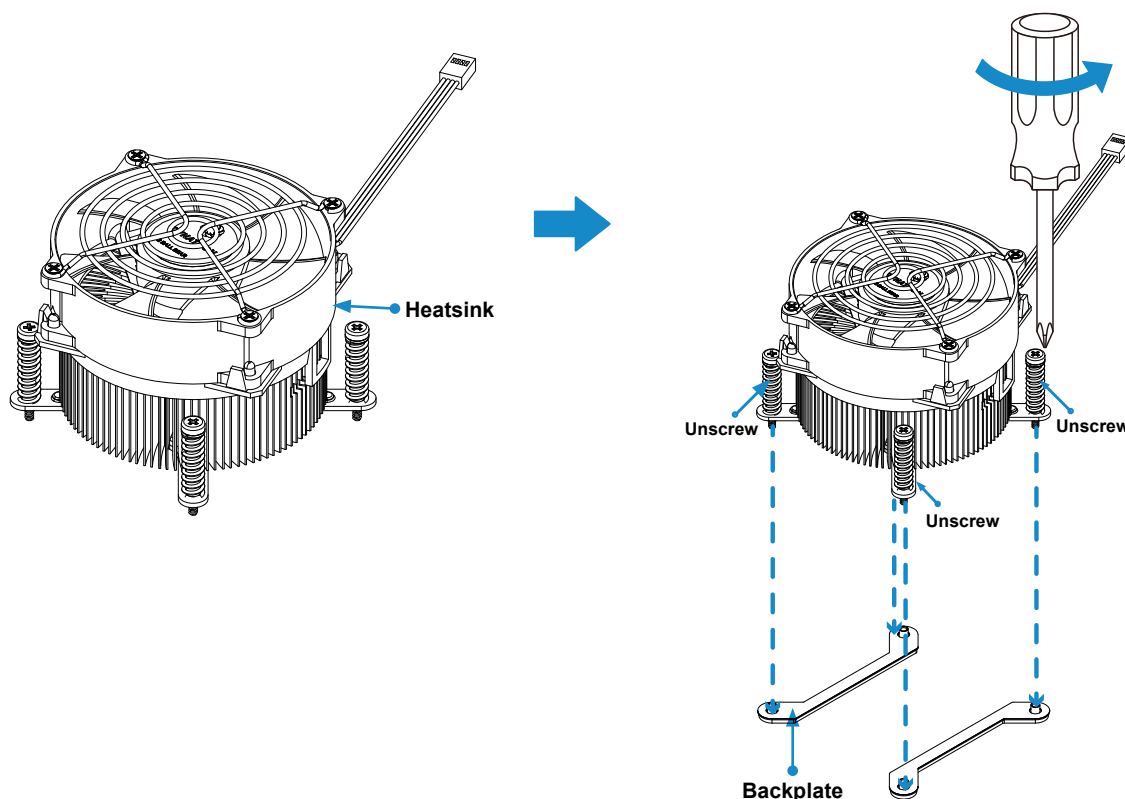
**Attention!** You can only install the CPU inside the socket in one direction. Make sure that it is properly inserted into the CPU socket before closing the load plate. If it doesn't close properly, do not force it as it may damage your CPU. Instead, open the load plate again and double-check that the CPU is aligned properly.

## Installing a CPU Heatsink

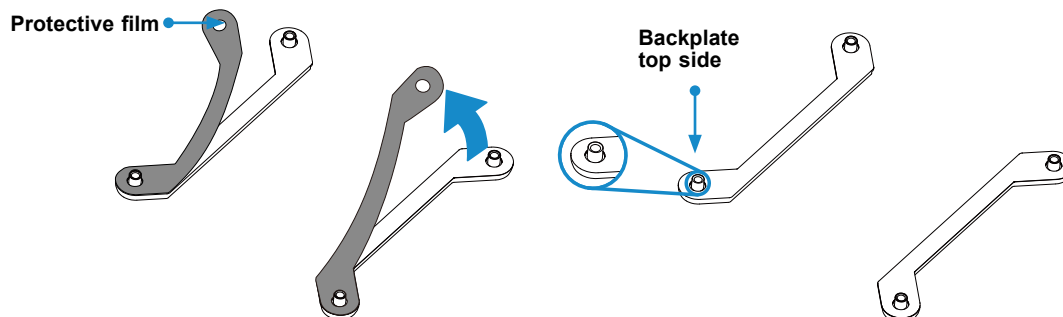
**Note 1:** The installation described in this section is for reference only. The actual installation steps may vary depending on the CPU heatsink model. Refer to the heatsink instruction for more details.

**Note 2:** Graphic drawings included in this manual are for reference only. They might look different from the components installed in your system.

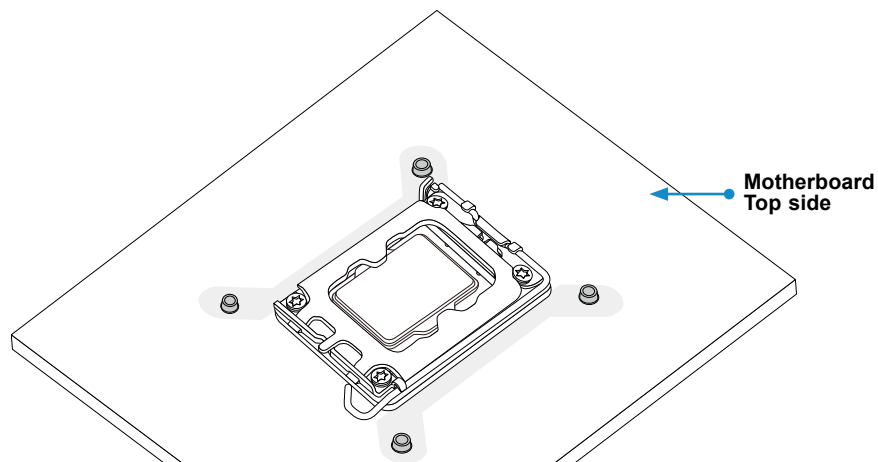
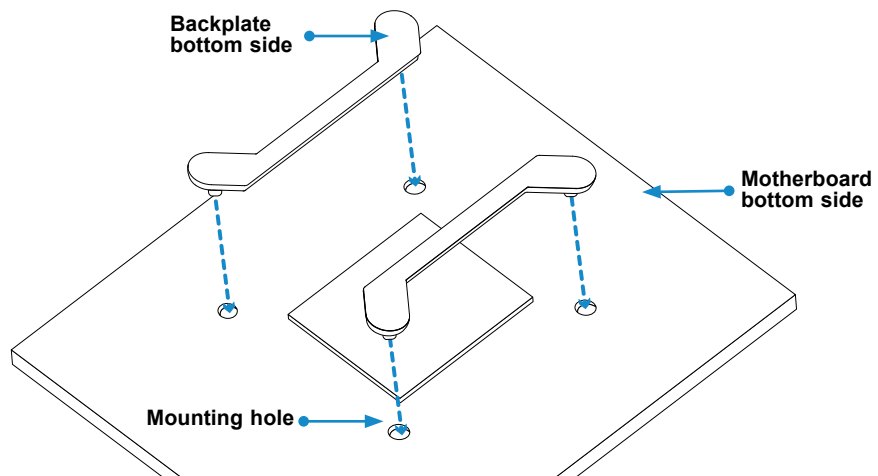
1. Loosen four screws to release the backplate. Note that one screw is not shown in the illustration below.



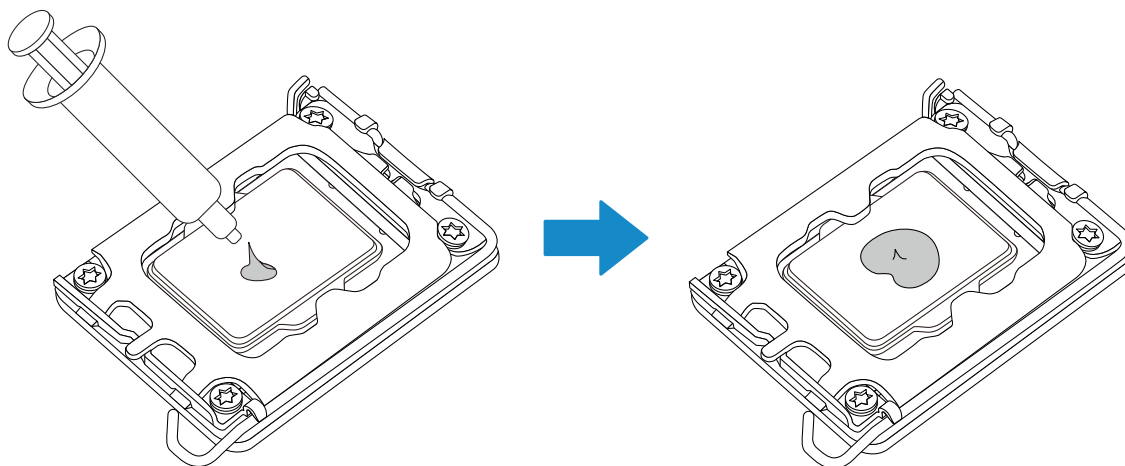
2. If there is a thin layer of protective film on the backplate, remove it.



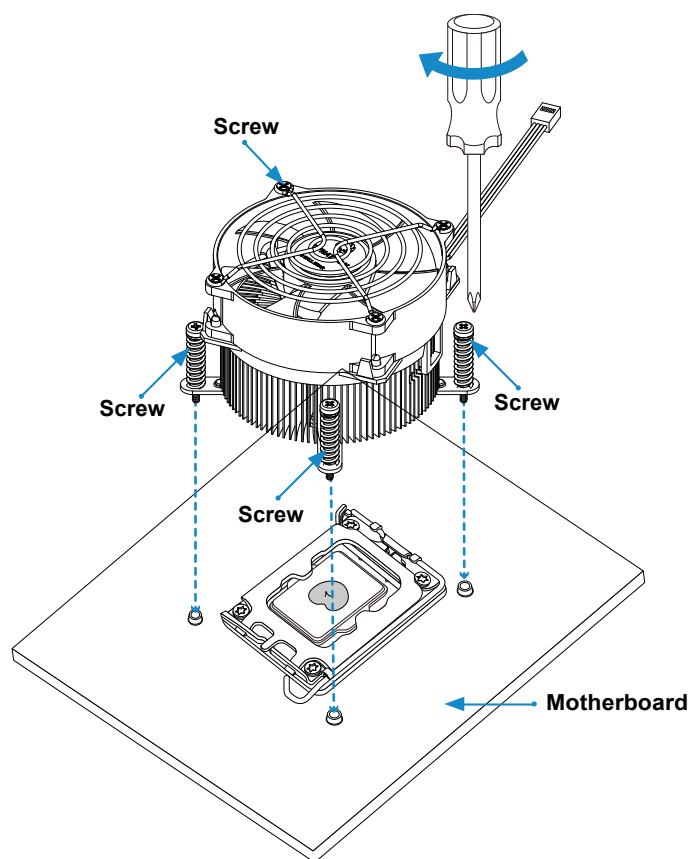
3. Attach the backplate into the mounting holes around the CPU socket on the bottom side of the motherboard.



4. Apply the proper amount of thermal grease on the CPU.



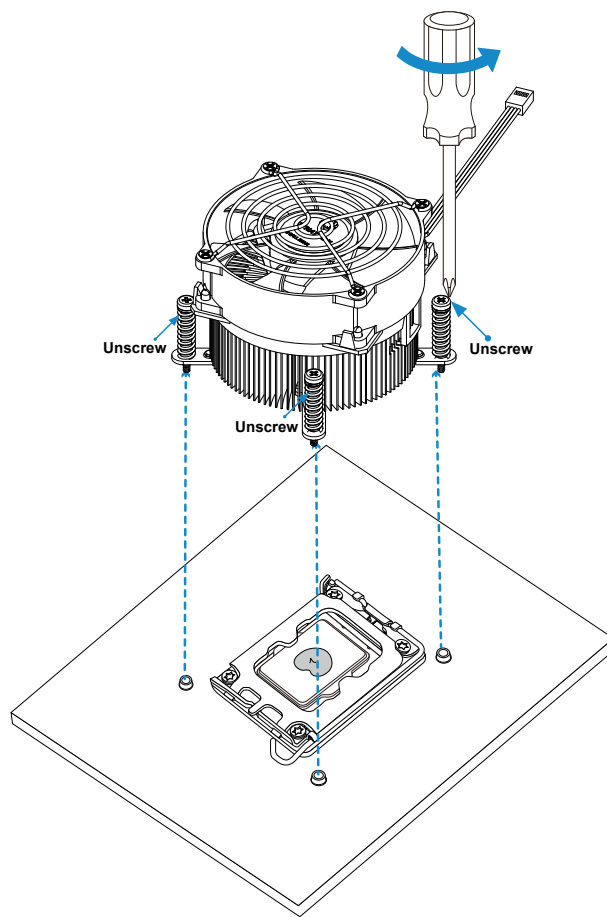
5. Place the heatsink on top of the CPU so that the four mounting holes on the heatsink are aligned with those on the retention mechanism.
6. Tighten the screws.



## Removing the Heatsink

**Important:** We do not recommend that the CPU or heatsink be removed. However, if you do need to remove the heatsink, follow the instruction below to uninstall it to avoid damaging the CPU or other components.

1. Unplug the power cord from the power supply and power connector of the cooler from the fan header on the motherboard.
2. Loosen the screws as shown below.
3. Gently wiggle the heatsink to loosen it. Do not use excessive force when wiggling the heatsink.



4. Once the heatsink is loosened, remove it from the motherboard.

## 3.5 Memory Support and Installation

**Note:** Check the Supermicro website for recommended memory modules.

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

### Memory Support

The X13SAV-D5LVDS supports up to 64 GB of DDR5 Non-ECC SODIMM memory with speeds of up to 5600 MT/s in two memory slots. Refer to the table below for the recommended DIMM population order and additional memory information.

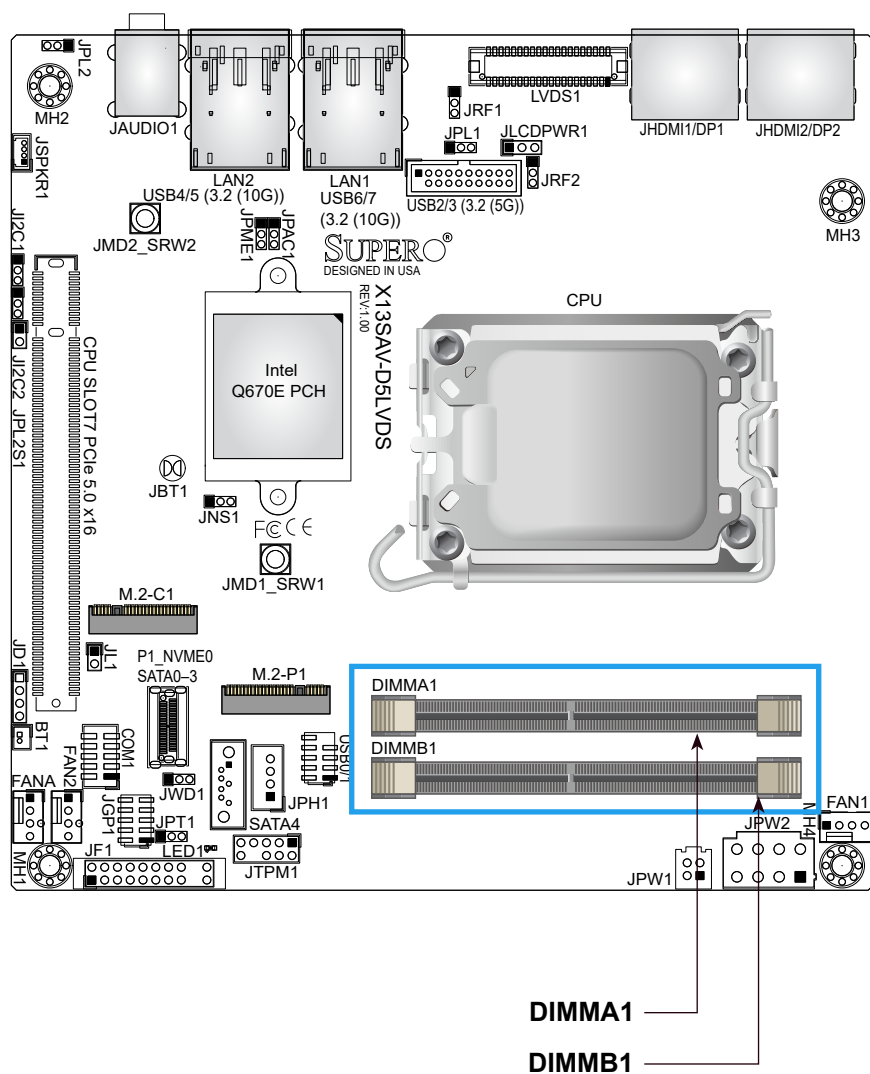
### DIMM Module Population Configuration

For optimal memory performance, follow the table below when populating memory.

| Recommended Population (Balanced) |        |                     |
|-----------------------------------|--------|---------------------|
| DIMMA1                            | DIMMB1 | Total System Memory |
| 4 GB                              | 4 GB   | 8 GB                |
| 8 GB                              |        | 8 GB                |
| 8 GB                              | 8 GB   | 16 GB               |
| 16 GB                             |        | 16 GB               |
| 16 GB                             | 16 GB  | 32 GB               |
| 32 GB                             |        | 32 GB               |
| 32 GB                             | 32 GB  | 64 GB               |

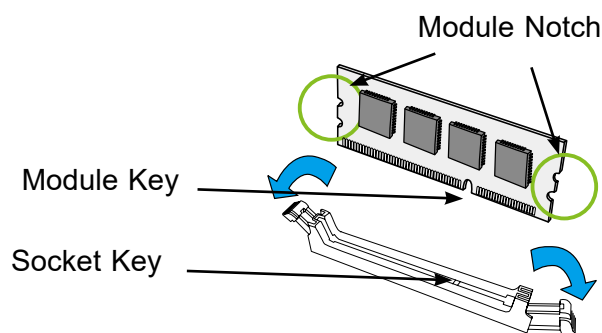
## General Guidelines for Optimizing Memory Performance

- DIMM slots must be populated in the following order: DIMMA1, DIMMB1.
- It's recommended to use DDR5 memory of the same type, size, and speed.
- Mixed DIMM speeds can be installed. However, all DIMMs will run at the speed of the slowest DIMM.
- The motherboard will support odd-numbered modules. However, to achieve the best memory performance, a balanced memory population is recommended.

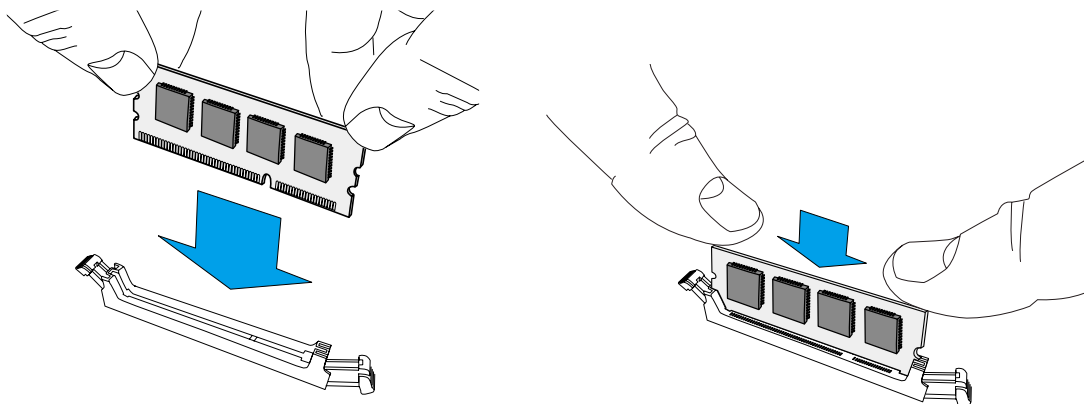


## DIMM Installation

1. Install the desired number of SODIMMs into the memory slots, starting with DIMMA1 and then DIMMB1.
2. Align the key on the bottom of the SODIMM module against the receptive point on the memory slot. Take note of the notches on the side of the DIMM module and of the locking clips on the socket to avoid causing damage.



3. Press the SODIMM module straight down into the socket with both hands until it is securely seated in the socket. The side clips will automatically lock the module into place.



## DIMM Removal

Push the side clips away from the module to release it from the socket.

## 3.6 Motherboard Battery Removal and Installation

### Battery Removal

To remove the onboard battery, follow the steps below:

1. Power off your system and unplug your power cable.
2. Remove the battery cable at the BT1 connector on the board.
3. Remove the battery.

### Proper Battery Disposal

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

### Battery Installation

1. Unplug the power cord.
2. Connect the battery cable into the battery connector (BT1) and push it down until you hear a click to ensure that the cable is securely locked.
3. The battery is temporarily placed on the heatsink during shipping. Use the foam tape on the back side of the battery to secure the battery to a flat surface on the bottom of the motherboard or a proper location in the system. DO NOT place the battery on the heatsink during operation.

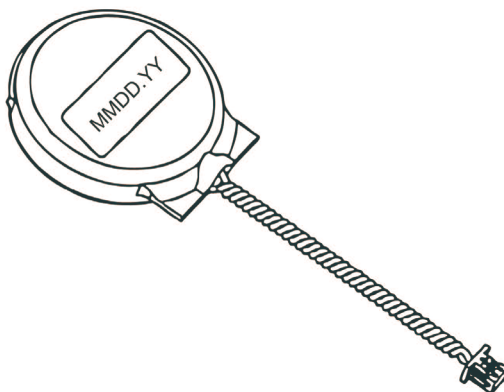


**Figure 3-3. Installing a Battery**

## 3.7 Storage Drives

**Important:** The system must be placed safely on a workbench before servicing or replacing any components.

The SYS-521AD-LN2 supports one fixed 2.5" storage drive and one 3.5" storage drive. The drives are mounted respectively on the top and bottom sides of the drive bracket.

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

### *Removing Drives from the Chassis*

1. Make sure to power down the system as described in [Section 3.1](#).
2. Remove the front bezel as described in [Section 3.2](#).
3. Remove the two screws securing the storage drive bracket.
4. Rotate the storage drive bracket outward from the chassis, then lift it up to remove it.

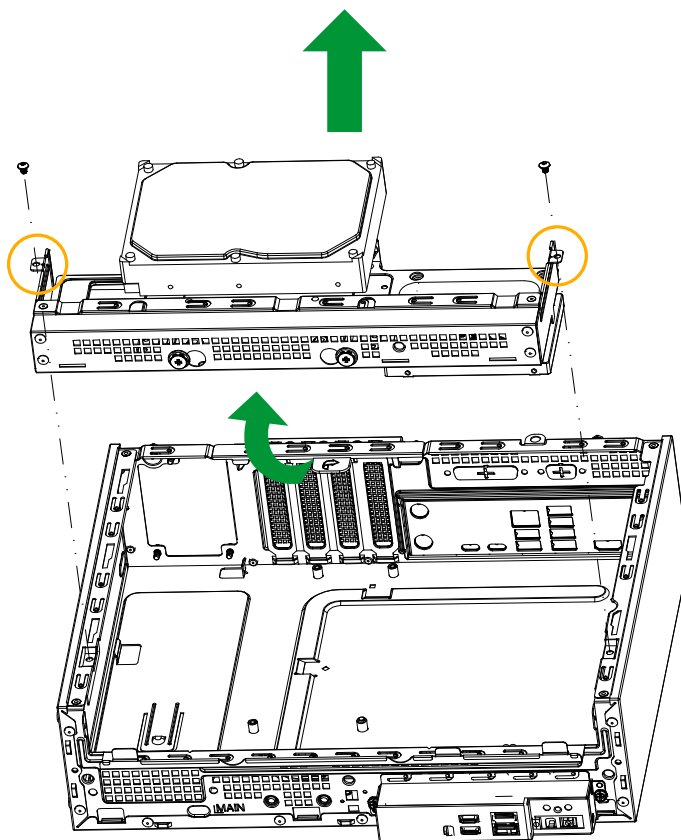


**Figure 3-4. Removing the Drive Bracket**

5. Remove the two screws securing the 3.5" and 2.5" storage drives on the left and right sides of the bracket.
6. Remove the drives.

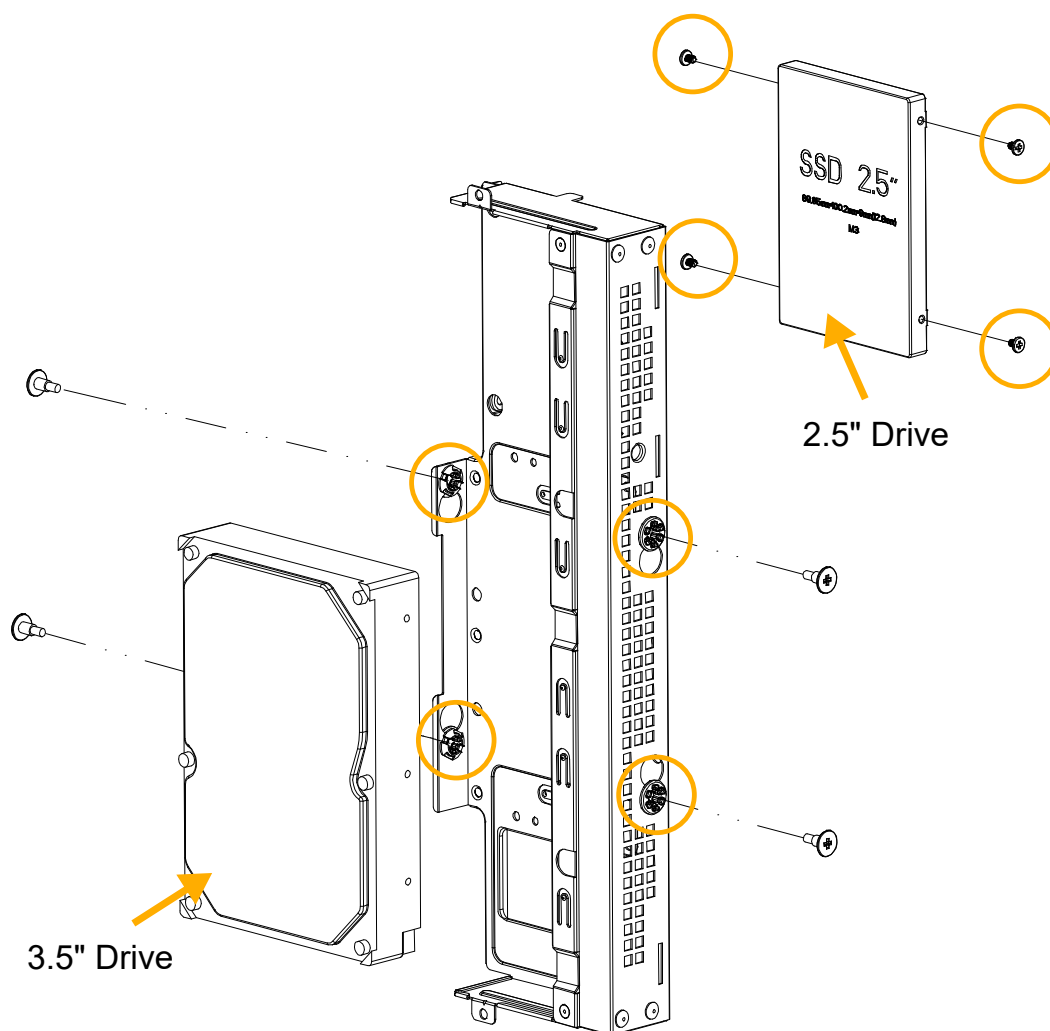


**Figure 3-5. Removing the Storage Drives**

## 3.8 Expansion Cards

**Important:** The system must be placed safely on a workbench before servicing or replacing any components.

The SYS-521AD-LN2 provides one PCIe double-width slot for 5.0 x16 HHHL expansion cards.

### ***Removing an Expansion Card***

1. Power down the system as described in [Section 3.1](#).
2. Remove the chassis cover as described in [Section 3.2](#).
3. At the rear of the chassis, remove the four screws securing the PCIe bracket at the top.
4. Pull the bracket outward to release it.
5. Slide the expansion card upward to remove it.

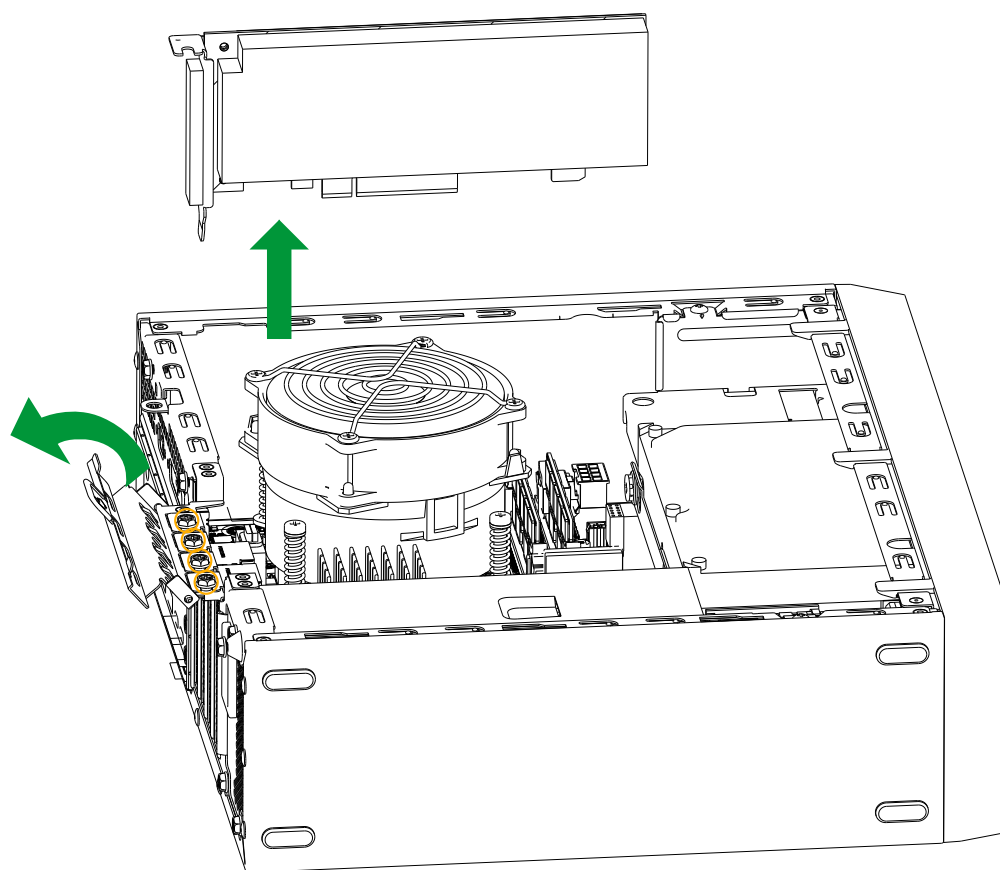


**Figure 3-6. Removing the PCIe Bays**

## 3.9 Power Supply

**Important:** The system must be placed safely on a workbench before servicing or replacing any components.

The SYS-521AD-LN2 includes one 300 W power supply module. The power supply will automatically sense and operate at an input voltage between 100–240 V. Note that different input voltages will result in different maximum power output levels. Replacement modules can be ordered directly from Supermicro.

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

### ***Removing a Power Supply***

1. Power down the system as described in "[Removing Power](#)".
2. Remove the three screws securing the power supply to the rear of the chassis.
3. Grasp the power supply and pull it straight out from the chassis to remove it.

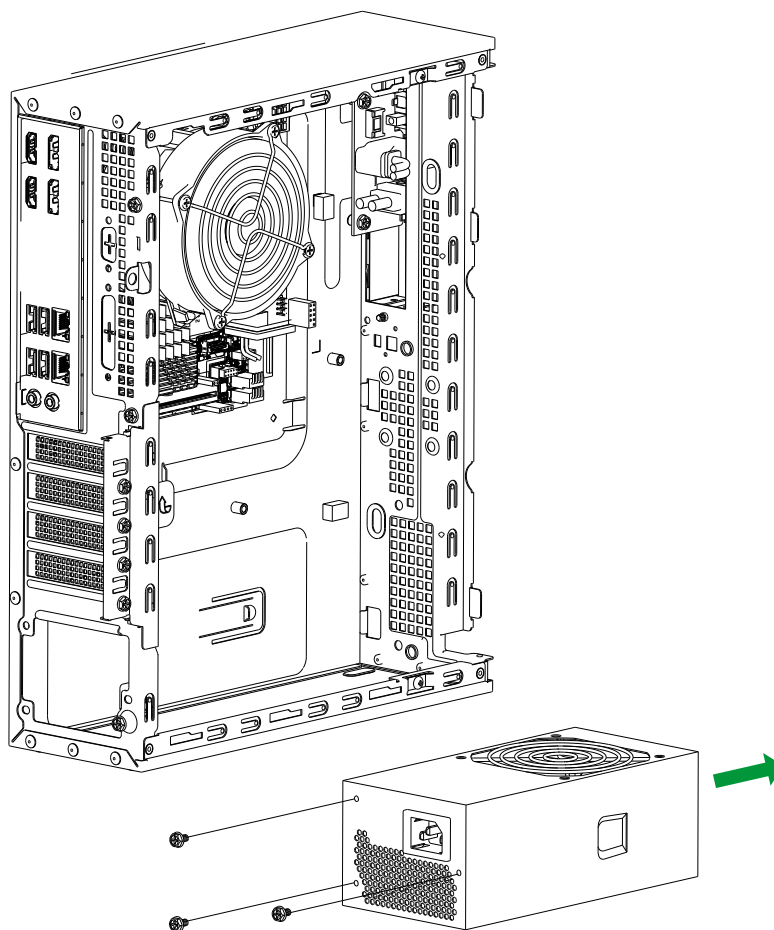


**Figure 3-7. Removing the Power Supply Module**

## Chapter 4

# Motherboard Connections

This section describes the connections on the motherboard and provides pinout definitions. Note that depending on how the system is configured, not all connections are required. The LEDs on the motherboard are also described here. A motherboard layout indicating component locations may be found in [Chapter 1](#). More detail can be found in the [Motherboard Manual](#). Please review the Safety Precautions in [Appendix B](#) before installing or removing components.

## 4.1 Power Connections

### Main ATX Power Supply Connector

JPV1 is the 12 V DC power connector, a required input for either ATX or +12 V DC power source. In addition, when using ATX power, JPWR1 is a necessary connection to the 24-pin ATX power header from the PSU via PN: CBL-PWEX-1063/1066.

| 8-pin +12 V Power (JPV1)<br>Pin Definitions |            |
|---------------------------------------------|------------|
| Pins                                        | Definition |
| 1–4                                         | Ground     |
| 5–8                                         | +12 V      |

| 4-pin to ATX Power Signal (JPWR1)<br>Pin Definitions |            |
|------------------------------------------------------|------------|
| Pin#                                                 | Definition |
| 1                                                    | PWR_OK     |
| 2                                                    | GND        |
| 3                                                    | 5 VSB      |
| 4                                                    | PS_ON      |

### 4-pin HDD Power Connector

JPH1 is a 4-pin power connector that provides power to onboard HDD devices. Refer to the table below for pin definitions.

| 4-pin HDD Power<br>Pin Definitions |            |
|------------------------------------|------------|
| Pin#                               | Definition |
| 1                                  | +12 V      |
| 2                                  | GND        |
| 3                                  | GND        |
| 4                                  | +5 V       |

## 4.2 Headers and Connectors

### Fan Headers

There are three 4-pin fan headers on the motherboard. Although pins 1–3 of the fan headers are backward compatible with the traditional 3-pin fans, we recommend you use 4-pin fans to take advantage of the fan speed control via Pulse Width Modulation through the thermal management. This allows the fan speeds to be automatically adjusted based on the motherboard temperature.

| Fan Header<br>Pin Definitions |                   |
|-------------------------------|-------------------|
| Pin#                          | Definition        |
| 1                             | Ground (Black)    |
| 2                             | 2.5 A/+12 V (Red) |
| 3                             | Tachometer        |
| 4                             | PWM_Control       |

### Chassis Intrusion

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

| Chassis Intrusion<br>Pin Definitions |                 |
|--------------------------------------|-----------------|
| Pin#                                 | Definition      |
| 1                                    | Intrusion Input |
| 2                                    | Ground          |

### General Purpose I/O Header

The JGP1 header is a general purpose I/O expander on a pin header via the SMBus. Each pin can be configured to be an input pin or output pin in 2.54 mm pitch. Refer to the table below for pin definitions.

| JGP1 Header<br>Pin Definitions |            |
|--------------------------------|------------|
| Pin#                           | Definition |
| 1                              | +3.3 V     |
| 2                              | Ground     |
| 3                              | GP0        |
| 4                              | GP1        |
| 5                              | GP2        |
| 6                              | GP3        |
| 7                              | GP4        |
| 8                              | GP5        |
| 9                              | GP6        |
| 10                             | GP7        |

## CMOS Battery

BT1 is a 2-pin connector for an external CMOS battery. This connector is also used to clear the CMOS. To clear the CMOS, remove the battery, short pins 1–2 for more than 10 seconds and then install the battery.

## TPM/Port 80 Header

A Trusted Platform Module (TPM)/Port 80 header is located at JTPM1 to provide TPM support and Port 80 connection. Use this header to enhance system performance and data security. Refer to the table below for pin definitions. Go to the following link for more information on the TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

| Trusted Platform Module Header<br>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 Stdbby | 10   | SPI_IRQ#   |

## Speaker Header

On the JD1 header, pins 1–4 are for the speaker and pins 3–4 are for the buzzer. Connect a cable to this header to use it as a speaker or buzzer.

| Speaker/Buzzer<br>Pin Definitions |            |
|-----------------------------------|------------|
| Pin #                             | Definition |
| 1–4                               | Speaker    |
| 3–4                               | Buzzer     |

## LVDS Connector

LVDS1 is the LVDS connector. Low-voltage differential signaling (LVDS) is a high-speed digital interface that operates at low power. It is a type of connection that is mostly used with monitors.

| LVDS Connector<br>Pin Definitions |            |      |            |
|-----------------------------------|------------|------|------------|
| Pin#                              | Definition | Pin# | Definition |
| 39                                | GND        | 40   | GND        |
| 37                                | LVDSB D3N  | 38   | LVDSB D3P  |
| 35                                | LVDSB CLKN | 36   | LVDSB CLKP |
| 33                                | LVDSB D2N  | 34   | LVDSB D2P  |
| 31                                | LVDSB D1N  | 32   | LVDSB D1P  |
| 29                                | LVDSB D0N  | 30   | LVDSB D0P  |
| 27                                | GND        | 28   | GND        |
| 25                                | LVDSA D3N  | 26   | LVDSA D3P  |
| 23                                | LVDSA CLKN | 24   | LVDSA CLKP |
| 21                                | LVDSA D2N  | 22   | LVDSA D2P  |
| 19                                | LVDSA D1N  | 20   | LVDSA D1P  |
| 17                                | LVDSA DON  | 18   | LVDSA DOP  |
| 15                                | BKLTEN     | 16   | GND        |
| 13                                | BKLTCTL    | 14   | PVCCEN     |
| 11                                | DDC CLK    | 12   | DDC DATA-  |
| 9                                 | LCDVCC     | 10   | LCDVCC     |
| 7                                 | 3.3/5 V    | 8    | GND        |
| 5                                 | 12 V       | 6    | GND        |
| 3                                 | 12 V       | 4    | 12 V       |
| 1                                 | 12 V       | 2    | 12 V       |

## SATA Ports

The motherboard has one SATA 3.0 port supported by the Intel® Q670E chipset. SATA ports provide serial-link signal connections, which are faster than the connections of Parallel ATA.

**Note:** For more information on the SATA HostRAID configuration, refer to the Intel SATA HostRAID user's guide posted on our website at <https://www.supermicro.com/support/manuals/>.

## M.2 Slot

The motherboard has two M.2 slots (M.2-P1 and M.2-C1). M.2 was formerly known as Next Generation Form Factor (NGFF) and serves to replace mini PCIe. M.2 allows for a variety of card sizes, increased functionality, and spatial efficiency. M.2-P1 supports an E-Key PCIe 3.0 x1/USB2.0 device in the 2230 form factor, and M.2-C1 supports an M-Key PCIe 4.0 x4 device in the 2280 form factor.

## Internal Speaker

The Internal Speaker (JSPKR1) is used to provide audible indications for various beep codes. Refer to the table below for pin definitions.

| Internal Speaker<br>Pin Definitions |                |
|-------------------------------------|----------------|
| Pin#                                | Definition     |
| 1                                   | SPEAKER_LN_OUT |
| 2                                   | SPEAKER_LP_OUT |
| 3                                   | SPEAKER_RN_OUT |
| 4                                   | SPEAKER_RP_OUT |

## OCuLink Connector

The X13SAV-D5LVDS features one internal OCUlink connector at P1-NVMe0 offering four SATA ports via break-out cable for additional storage interface.

## COM Header

The motherboard has one COM header that provides one serial connection (COM1) and supports RS-232 function.

| COM Port<br>Pin Definitions |            |      |            |
|-----------------------------|------------|------|------------|
| Pin#                        | Definition | Pin# | Definition |
| 1                           | DCD        | 6    | DSR        |
| 2                           | RXD        | 7    | RTS        |
| 3                           | TXD        | 8    | CTS        |
| 4                           | DTR        | 9    | RI         |
| 5                           | Ground     | 10   | N/A        |

## 4.3 Front Control Panel

JF1 contains header pins for various buttons and indicators that are normally located on a control panel at the front of the chassis. These connectors are designed specifically for use with Supermicro chassis. See the figure below for the descriptions of the front control panel buttons and LED indicators.

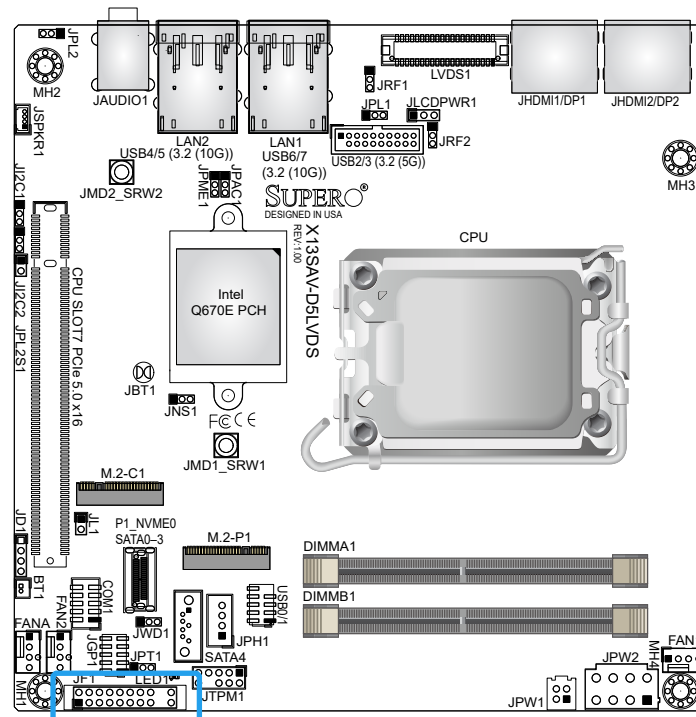


Figure 4-1. JF1 Header Pins

|       |                | 1  | 2  |                 |
|-------|----------------|----|----|-----------------|
| PWR   | Power Button   | ○  | ○  | Ground          |
| Reset | Reset Button   | ○  | ○  | Ground          |
|       | +3.3 V         | ○  | ○  | X               |
|       | +3.3 V         | ○  | ○  | OH/Fan Fail LED |
|       | P3V3_DUAL_LAN2 | ○  | ○  | NIC2 Link LED   |
|       | P3V3_DUAL_LAN1 | ○  | ○  | NIC1 Link LED   |
|       | +3.3 V         | ○  | ○  | HDD LED         |
|       | +3.3 V Stby    | ○  | ○  | PWR LED         |
|       | X              | ○  | ○  | X               |
|       | NMI            | ○  | ○  | Ground          |
|       |                | 19 | 20 |                 |

## Power Button

The Power Button connection is located on pins 1 and 2 of JF1. Momentarily contacting both pins will power on/off the system. This button can also be configured to function as a suspend button (see Chapter 4 of the [Motherboard User Manual](#) for BIOS settings). To turn off the power when the system is in suspend mode, press the button for 4 seconds or longer. Refer to the table below for pin definitions.

| Power Button<br>Pin Definitions (JF1) |            |
|---------------------------------------|------------|
| Pin#                                  | Definition |
| 1                                     | Signal     |
| 2                                     | Ground     |

## Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1. Attach it to a hardware reset switch on the computer case to reset the system. Refer to the table below for pin definitions.

| Reset Button<br>Pin Definitions (JF1) |            |
|---------------------------------------|------------|
| Pin#                                  | Definition |
| 3                                     | Reset      |
| 4                                     | Ground     |

## Overheat (OH)/Fan Fail

Connect an LED cable to pins 7 and 8 of the Front Control Panel to use the Overheat/Fan Fail LED connections. The LED on pin 8 provides warnings of overheating or fan failure. Refer to the tables below for pin definitions.

| OH/Fan Fail Indicator<br>Status |            |
|---------------------------------|------------|
| State                           | Definition |
| Off                             | Normal     |
| On                              | Overheat   |
| Flashing                        | Fan Fail   |

| OH/Fan Fail LED<br>Pin Definitions (JF1) |                 |
|------------------------------------------|-----------------|
| Pin#                                     | Definition      |
| 7                                        | +3.3 V          |
| 8                                        | OH/Fan Fail LED |

### NIC1/NIC2 (LAN1/LAN2)

The Network Interface Controller (NIC) LED connection for LAN port 1 is located on pins 11 and 12 of JF1, and LAN port 2 is on pins 9 and 10. Attach the NIC LED cables here to display network activity. Refer to the table below for pin definitions.

| NIC1/NIC2 LED<br>Pin Definitions (JF1) |                |
|----------------------------------------|----------------|
| Pin#                                   | Definition     |
| 9                                      | +3.3 V Stby    |
| 10                                     | NIC 2 Link LED |
| 11                                     | +3.3 V Stby    |
| 12                                     | NIC 1 Link LED |

### HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach a cable to pin 14 to show hard drive activity status. Refer to the table below for pin definitions.

| HDD LED<br>Pin Definitions (JF1) |            |
|----------------------------------|------------|
| Pins                             | Definition |
| 13                               | +3.3 V     |
| 14                               | HDD Active |

### Power LED

The Power LED connection is located on pins 15 and 16 of JF1. Refer to the table below for pin definitions.

| Power LED<br>Pin Definitions (JF1) |            |
|------------------------------------|------------|
| Pins                               | Definition |
| 15                                 | +3.3 Stby  |
| 16                                 | PWR LED    |

### NMI Button

The non-maskable interrupt (NMI) button header is located on pins 19 and 20 of JF1. Refer to the table below for pin definitions.

| NMI Button<br>Pin Definitions (JF1) |            |
|-------------------------------------|------------|
| Pins                                | Definition |
| 19                                  | Control    |
| 20                                  | Ground     |

## 4.4 I/O Ports

See Figure 4-2 below for the locations and descriptions of the various I/O ports on the motherboard.

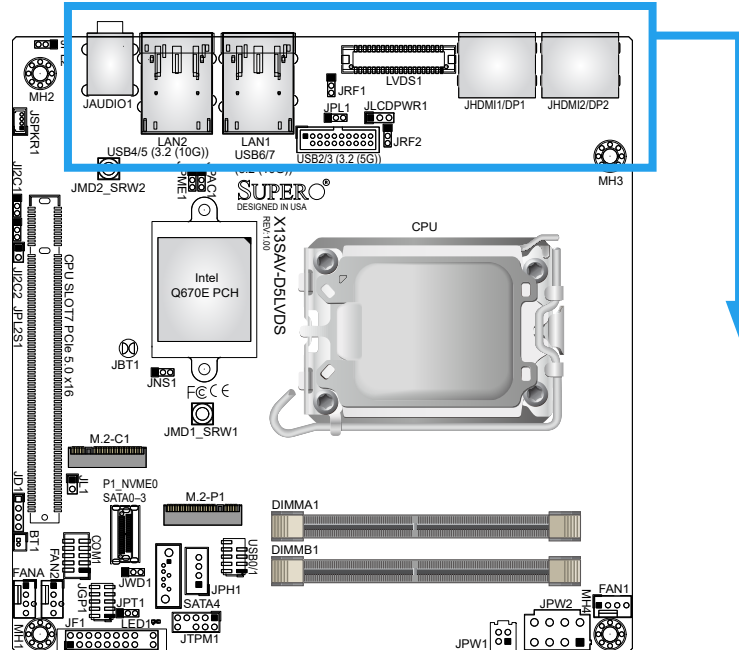
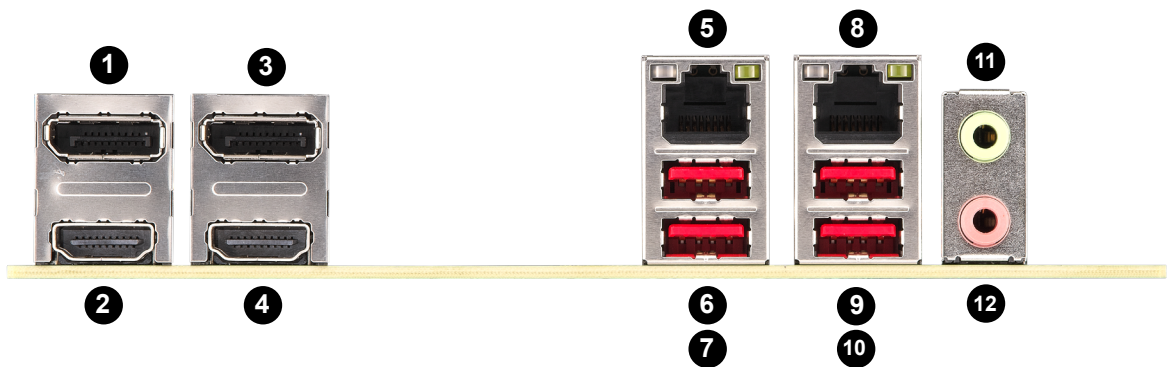


Figure 4-2. I/O Port Locations and Definitions



| I/O Ports |             |   |             |    |             |
|-----------|-------------|---|-------------|----|-------------|
| #         | Description | # | Description | #  | Description |
| 1         | DP          | 5 | LAN1        | 9  | USB4 (3.2)  |
| 2         | HDMI 2.0b   | 6 | USB2 (3.2)  | 10 | USB3 (3.2)  |
| 3         | DP          | 7 | USB1 (3.2)  | 11 | LINE OUT    |
| 4         | HDMI 1.4    | 8 | LAN2        | 12 | MIC IN      |

## HDMI and DP Port

Two High Definition Multimedia Interface (HDMI) ports are on the I/O back panel. This connector is used to display both high definition video and digital sound through an HDMI-capable display. HDMI 2.0 allows faster frame rates and is backward compatible with previous HDMI versions. This port provides Intel HD Graphics digital output with resolution up to 4096x2160 at a 60 Hz refresh rate with HDR. There are also two DisplayPorts (DP) on the I/O back panel. DisplayPort, developed by the VESA consortium, delivers digital display and fast refresh rate. It can connect to virtually any display device using a DisplayPort adapter for devices such as VGA, DVI, or HDMI.

## LAN Ports

One 2.5 Gigabit (LAN1) and one 1 Gigabit (LAN2) Ethernet ports are located on the I/O back panel. These ports accept RJ45 cables. Refer to the table below for pin definitions.

| LAN Port<br>Pin Definition |            |      |            |
|----------------------------|------------|------|------------|
| Pin#                       | Definition | Pin# | Definition |
| 1                          | TX_D1+     | 5    | TX_D3+     |
| 2                          | TX_D1-     | 6    | TX_D3-     |
| 3                          | TX_D2+     | 7    | TX_D4+     |
| 4                          | TX_D2-     | 8    | TX_D4-     |

## Audio Ports

The green jack on the I/O back panel audio port is the Line Out connection and the pink jack is the Mic In connection.

| HD Audio<br>Pin Definitions |            |
|-----------------------------|------------|
| Color                       | Definition |
| Green                       | Line Out   |
| Pink                        | Mic In     |



## Universal Serial Bus (USB) Ports

There are four USB 3.2 Gen 2 x1 ports (USB4/5, 6/7). The motherboard also has one front access USB 2.0 headers (USB0/1) and one front access USB 3.2 Gen 1 x1 header (USB2/3). The onboard headers can be used to provide front side USB access with a cable (not included).

| Back Panel USB 3.2 Gen 2 x1 Ports<br>(USB4/5, 6/7)<br>Pin Definitions |            |      |            |
|-----------------------------------------------------------------------|------------|------|------------|
| Pin#                                                                  | Definition | Pin# | Definition |
| 1                                                                     | GND        | 11   | GND        |
| 2                                                                     | TX1+       | 12   | TX2-       |
| 3                                                                     | TX1-       | 13   | TX2+       |
| 4                                                                     | GND        | 14   | GND        |
| 5                                                                     | RX1+       | 15   | RX2-       |
| 6                                                                     | RX1-       | 16   | RX2+       |
| 7                                                                     | GND        | 17   | GND        |
| 8                                                                     | D1+        | 18   | D2+        |
| 9                                                                     | D1-        | 19   | D2-        |
| 10                                                                    | VBUS1      | 20   | VBUS2      |

| Front Panel USB 3.2 Gen 1 x1 Header<br>(USB2/3)<br>Pin Definitions |               |      |               |
|--------------------------------------------------------------------|---------------|------|---------------|
| Pin#                                                               | Definition    | Pin# | Definition    |
| 1                                                                  | VBUS          | 11   | IntA_P2_D+    |
| 2                                                                  | IntA_P1_SSRX- | 12   | IntA_P2_D-    |
| 3                                                                  | IntA_P1_SSRX+ | 13   | GND           |
| 4                                                                  | GND           | 14   | IntA_P2_SSTX+ |
| 5                                                                  | IntA_P1_SSTX- | 15   | IntA_P2_SSTX- |
| 6                                                                  | IntA_P1_SSTX+ | 16   | GND           |
| 7                                                                  | GND           | 17   | IntA_P2_SSRX+ |
| 8                                                                  | IntA_P1_D-    | 18   | IntA_P2_SSRX- |
| 9                                                                  | IntA_P1_D+    | 19   | VBUS          |
| 10                                                                 | ID            |      |               |

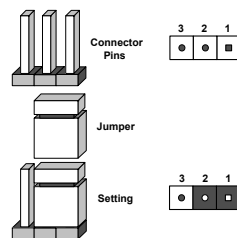
| Front Panel USB 2.0 Header<br>(USB0/1)<br>Pin Definitions |            |      |            |
|-----------------------------------------------------------|------------|------|------------|
| Pin#                                                      | Definition | Pin# | Definition |
| 1                                                         | +5 V       | 2    | +5 V       |
| 3                                                         | USB_PN2    | 4    | USB_PN3    |
| 5                                                         | USB_PP2    | 6    | USB_PP3    |
| 7                                                         | Ground     | 8    | Ground     |
| 9                                                         | Key        | 10   | Ground     |

## 4.5 Jumper Settings

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



### CMOS Clear

JBT1 on the X13SAV-D5LVDS motherboard is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

For a detailed diagram of the X13SAV-D5LVDS motherboard, see the layout under [Quick Reference](#).



1. Power down the system.
2. Unplug the power cord(s).
3. Remove the cover of the chassis to access the motherboard.
4. Remove the onboard battery from the motherboard.
5. Short the CMOS pads, JBT1, with a metal object such as a small screwdriver for at least four seconds.

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

6. Remove the screwdriver or shorting device.
7. Reinsert the battery.
8. Replace the cover.
9. Reconnect the power cord(s).
10. Power on the system.

### Watch Dog Timer

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

| Watch Dog Jumper Settings |            |
|---------------------------|------------|
| Jumper Setting            | Definition |
| Pins 1–2                  | Reset      |
| Pins 2–3                  | NMI        |
| Open                      | Disabled   |

### TPM Enable

Use JPT1 to enable or disable the onboard TPM 2.0. Refer to the table below for jumper settings.

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

### LAN1/LAN2 Enable/Disable

Use jumper JPL1 to enable or disable LAN port 1 and JPL2 to disable or enable LAN port 2. Refer to the table below for jumper settings.

| LAN1/2 Enable/Disable Jumper Settings |                   |
|---------------------------------------|-------------------|
| Jumper Setting                        | Definition        |
| Pins 1–2                              | Enabled (Default) |
| Pins 2–3                              | Disabled          |

### Audio Enable/Disable

JPAC1 allows you to enable or disable the onboard audio support. The default position is on pins 1 and 2 to enable onboard audio connections. Refer to the table below for jumper settings.

| Audio Enable/Disable Jumper Settings |                   |
|--------------------------------------|-------------------|
| Jumper Setting                       | Definition        |
| Pins 1–2                             | Enabled (Default) |
| Pins 2–3                             | Disabled          |

### LVDS Power Voltage

Use the JLCDPWR1 jumper to select the power voltage for the LVDS panel. Make sure that the specifications of the cable is compatible with the panel to prevent damage.

| LVDS Voltage Selection Jumper Settings |                  |
|----------------------------------------|------------------|
| Jumper Setting                         | Definition       |
| Pins 1–2                               | +3.3 V (Default) |
| Pins 2–3                               | +5 V             |

### ME Manufacturing Mode

Close pins 2–3 of jumper JPME2 to bypass SPI flash security and force the system to operate in the manufacturing mode, which allows you to flash the system firmware from a host server for system setting modifications. Refer to the table below for jumper settings.

| ME Manufacturing Mode Jumper Settings |                    |
|---------------------------------------|--------------------|
| Jumper Setting                        | Definition         |
| Pins 1–2                              | Normal (Default)   |
| Pins 2–3                              | Manufacturing Mode |

### Slot7 PCIe Bifurcation

Use JRF1 and JRF2 to adjust the PCIe lane options on Slot 7 expansion slot. The options are x16 or x8x8.

| PCIe Bifurcation Jumper Settings |          |               |
|----------------------------------|----------|---------------|
| JRF1                             | JRF2     | PEG           |
| Pins 1–2                         | Pins 1–2 | x16 (Default) |
| Pins 2–3                         | Pins 1–2 | x8x8          |

### SMBus to PCIe Slots

Use jumpers JI<sup>2</sup>C1 and JI<sup>2</sup>C2 to enable PCIe System Management Bus (SMB) support to improve system management for the onboard PCIe slot.

| SMBus to PCIe Slots Jumper Settings |                    |
|-------------------------------------|--------------------|
| Jumper Setting                      | Definition         |
| Pins 1–2                            | Enabled            |
| Pins 2–3                            | Disabled (Default) |

## 4.6 LED Indicators

### LAN LEDs

Two LAN ports (LAN 1/2) are located on the I/O back panel of the motherboard. Each Ethernet LAN port has two LEDs. The green LED indicates activity, while the other Link LED may be green, amber, or off to indicate the speed of the connection. Refer to the tables below for more information.

| LAN Activity LED (Right)<br>LED State |          |            |
|---------------------------------------|----------|------------|
| Color                                 | Status   | Definition |
| Green                                 | Flashing | Active     |

| LAN1 Link LED (Left)<br>LED State |             |
|-----------------------------------|-------------|
| LED Color                         | Definition  |
| Off                               | 100/10 Mbps |
| Orange                            | 1 Gbps      |
| Green                             | 2.5 Gbps    |

| LAN2 Link LED (Left)<br>LED State |            |
|-----------------------------------|------------|
| LED Color                         | Definition |
| Off                               | 10 Mbps    |
| Green                             | 100 Mbps   |
| Orange                            | 1 Gbps     |

### Power LED

LED1 is the Power LED. When this LED is lit, it means power is present on the motherboard. In suspend mode, this LED will blink on and off. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

| Power LED Indicator |            |
|---------------------|------------|
| LED Color           | Definition |
| Blinking            | S3 Status  |
| Green               | Power On   |

### UID LED (UID\_LED1)

The UID LED is located next to two buttons at one of the corners of the motherboard. One of the buttons is the UIDBTN1 button. Press this button and the LED will blink blue to show that the UID is active. Press the UIDBTN1 button for one second and the LED will turn solid blue. Use this UID LED to 'mark' the system, so the motherboard can be easily identified. Refer to the table below for more information.

| UID LED States |               |                                |
|----------------|---------------|--------------------------------|
| Color          | State         | Definition                     |
| None           | Off           | UID Off                        |
| Blue           | Solid On      | Unit Identified by Local Site  |
| Blue           | Slow Blinking | Unit Identified by Remote Site |
| Blue           | Slow Blinking | System Recovery                |

### CPLD Initialization LED (HB\_LED1)

The CPLD Initialization LED is located next to two buttons at one of the corners of the motherboard. When the the LED is blinking green it indicates that the CPLD has been initialized. Refer to the table below for more information.

| CPLD Initialization LED States |          |                        |
|--------------------------------|----------|------------------------|
| Color                          | State    | Definition             |
| None                           | Off      | CPLD Uninitialized     |
| Green                          | Blinking | CPLD Initialization OK |

### Motherboard Power LED (PWR\_LED1)

A motherboard power LED is located next to two buttons at one of the corners of the motherboard. Press the PWRBTN1 and the LED will be solid green. Refer to the table below for more information.

| Motherboard Power LED State |               |                   |
|-----------------------------|---------------|-------------------|
| Color                       | State         | Definition        |
| Green                       | Solid On      | BMC is not ready  |
| Green                       | Blinking      | BMC Normal        |
| Green                       | Fast Blinking | BMC: Initializing |

## M.2 Activity LEDs

ACT\_LED1 and ACT\_LED2 are onboard M.2 LEDs. When these LEDs are blinking green, the M.2 SSD is active.

| M.2 Activity LEDs |              |
|-------------------|--------------|
| State             | Definition   |
| Off               | M.2 Inactive |
| Blinking          | M.2 Active   |

## EROT Detected LEDs (LED1 and LED2)

The EROT Detected OK LED (LED1) and the EROT Detected Fail LED (LED2) shows the status of the Root-of-Trust (RoT). LED1 is solid yellow if the RoT is in a good state. LED2 is solid red if there is an error. See the tables below for more information.

| Root-of-Trust LED1 State |          |                     |
|--------------------------|----------|---------------------|
| Color                    | State    | Definition          |
| Yellow                   | Solid On | Root-of-Trust is OK |

| Root-of-Trust LED2 State |          |                |
|--------------------------|----------|----------------|
| Color                    | State    | Definition     |
| Red                      | Solid On | Error detected |

## Normal Power Detected LED (LED3)

The Normal Power Detected LED indicates the motherboard is on normal power. Before pressing PWRBTN1, the LED blinks green. After pressing PWRBTN1, the LED turns solid green.

| Normal Power Detected LED State |                           |
|---------------------------------|---------------------------|
| State                           | Definition                |
| Blinking                        | Normal Power not detected |
| Solid                           | Normal Power detected     |

## Standby Power Detected LED (LED4)

The Standby Power Detected LED indicates the motherboard is on standby power. Before pressing PWRBTN1, the LED is solid orange. After pressing PWRBTN1, the LED turns off.

| Standby Power Detected LED State |                            |
|----------------------------------|----------------------------|
| State                            | Definition                 |
| Solid                            | Standby Power detected     |
| Off                              | Standby Power not detected |

## 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 <https://www.supermicro.com/support/manuals>.

##### *Installing the OS*

1. Create a method to access the MS Windows installation ISO file. That might be a media drive, perhaps using an external USB/SATA drive, a USB flash drive, or the BMC KVM console.
2. Retrieve the proper RST/RSTe driver. Go to the Supermicro webpage 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.

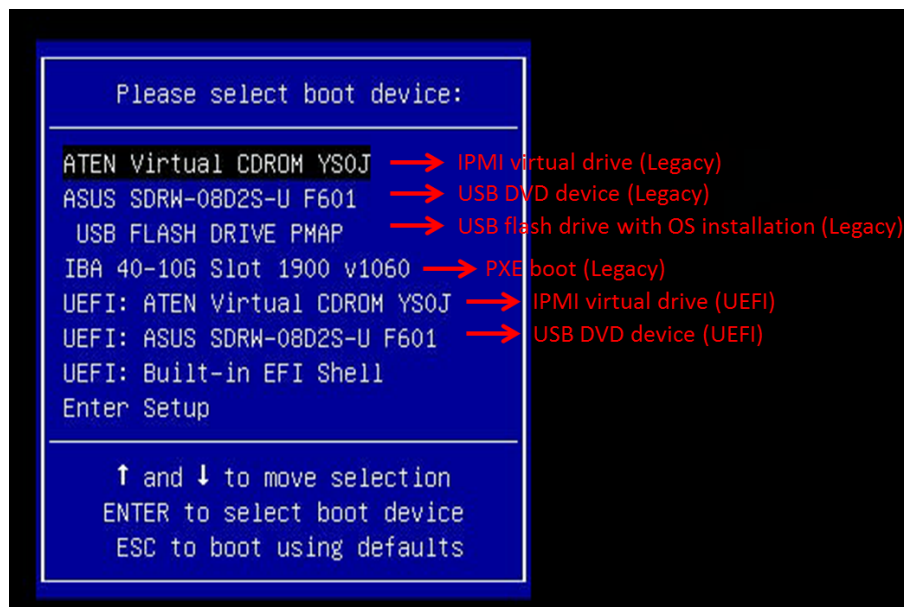


**Figure 5-1. Motherboard Drivers and Tools Menu**

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

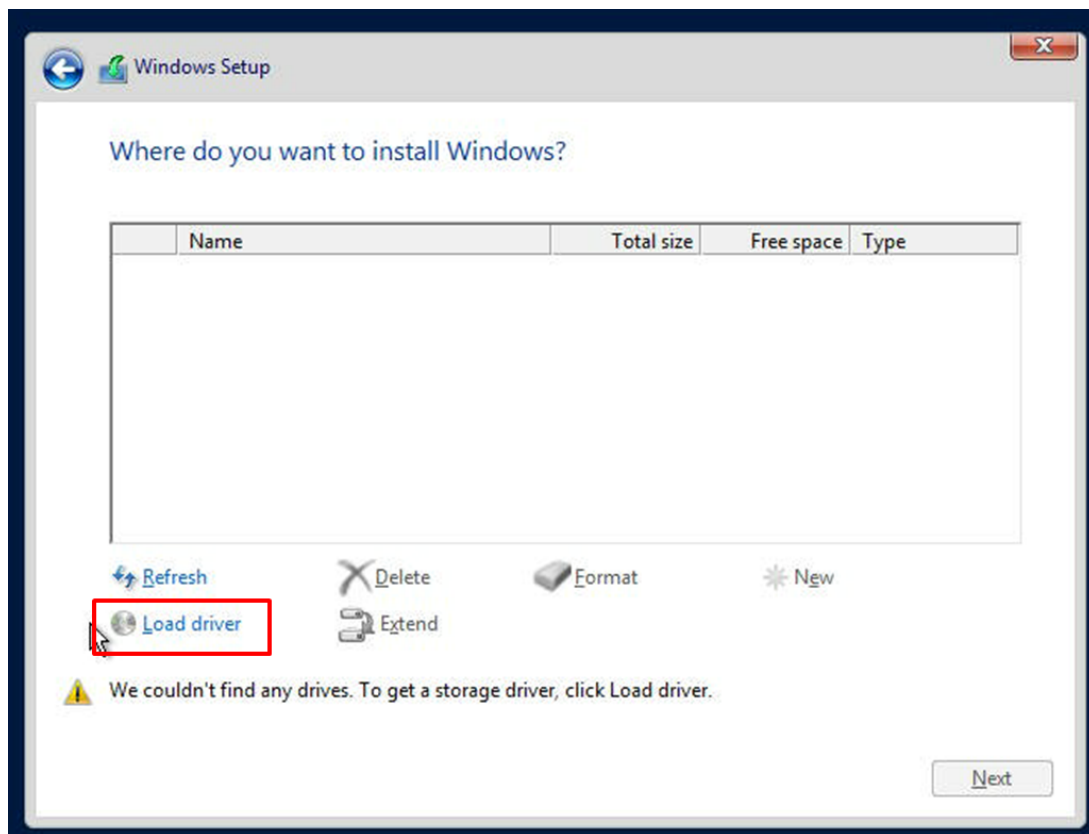


**Figure 5-2. Windows Setup**

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

- For RAID, choose the SATA/sSATA RAID driver indicated then choose the storage drive on which you want to install it.
  - For non-RAID, choose the SATA/sSATA AHCI driver indicated then choose the storage drive on which you want to install it.
5. Once all devices are specified, continue with the installation.
  6. After the Windows OS installation has completed, the system will automatically reboot multiple times.

## 5.2 Driver Installation

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

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

Another option is to go to the Supermicro website at <http://www.supermicro.com/products/>. Find the product page for your motherboard, and "Download the Latest Drivers and Utilities". Insert the flash drive or media drive and the screenshot shown below should appear.



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

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



## Chapter 6

# Troubleshooting and Support

## 6.1 Information Resources

### Website

A great deal of information is available on the Supermicro [website](#).

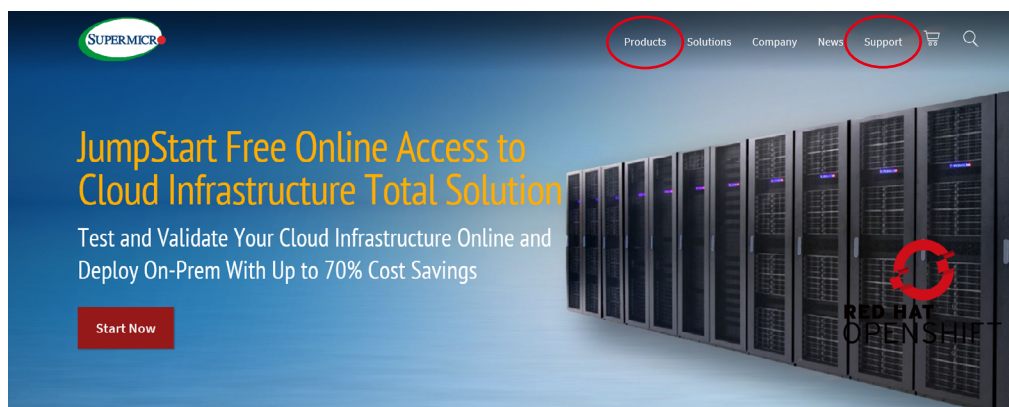


**Figure 6-1. Supermicro Website**

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

### *Direct Links for the SYS-521AD-LN2 System*

[SYS-521AD-LN2](#) specifications page

[X13SAV-D5LVDS](#) motherboard page for links to the Quick Reference Guide, User Manual, validated storage drives, etc.

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

[Frequently Asked Questions](#)

[Add-on Card Descriptions](#)

[TPM User Guide](#)

[BMC User Guide](#)

[SuperDoctor5 Large Deployment Guide](#)

For validated memory, use our [Product Resources](#) page.

***Direct Links (continued)***

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

[Security Center](#) for recent security notices

[Supermicro Phone and Addresses](#)

## 6.2 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' and/or 'Returning Merchandise for Service' section(s) 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 the 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 12 V DC power connection to JPW2 is secured and if using ATX power the connection to JPW1 is proper.
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. Use the speaker to determine if any beep codes are present. Refer to Appendix A for details on beep codes.
3. 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 POST (Power-On-Self-Test) or does not respond after the power is turned on, check the following:

1. Check for any error beep from the motherboard speaker.
  - If there is no error beep, try to turn on the system without DIMM modules installed. If there is still no error beep, replace the motherboard.
  - If there are error beeps, clear the CMOS settings by unplugging the power cord and contacting both pads on the CMOS clear jumper (JBT1). Refer to [Section 4.5](#).
2. Remove all components from the motherboard, especially the DIMM modules. Make sure that system power is on and that memory error beeps are activated.
3. 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

When a no-memory beep code is issued by the system, check the following:

1. Make sure that the memory modules are compatible with the system and are properly installed. See Chapter 2 for installation instructions. (For memory compatibility, refer to the "Tested Memory List" link on the motherboard's product page to see a list of supported memory.)
2. Check if different speeds of DIMMs have been installed. It is strongly recommended that you use the same RAM type and speed for all DIMMs in the system.
3. Make sure that you are using the correct type of Non-ECC SODIMM 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's Setup Configuration

1. Make sure that you are using a high-quality power supply. A poor-quality power supply may cause the system to lose the CMOS setup information. Refer to [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.
3. If the above steps do not fix the setup configuration problem, contact your vendor for repairs.

## If 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 Drive support: Make sure that all storage drives work properly. Replace the failed storage drives with good ones.
4. System cooling: Check the system cooling to make sure that all heatsink fans and 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. Please refer to our website for more information on 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 CD/Media drive.
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 a CPU and a memory module installed) to identify the trouble areas. Refer to the steps listed in [Section 6.2](#) above for proper troubleshooting procedures.
4. Identifying bad components by isolating them. If necessary, remove a component in question from the chassis, and test it in isolation to make sure that it works properly. Replace a bad component with a good one.
5. Check and change one component at a time instead of changing several items at the same time. This will help isolate and identify the problem.
6. To find out if a component is good, swap this component with a new one to see if the system will work properly. If so, then the old component is bad. You can also install the component in question in another system. If the new system works, the component is good and the old system has problems.

## 6.3 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 (<http://www.supermicro.com/FAQ/index.php>) before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website ([http://www.supermicro.com/ResourceApps/BIOS\\_BMC\\_Intel.html](http://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 <http://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](mailto:support@supermicro.com).

## 6.4 Frequently Asked Questions

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

**Answer:** The motherboard supports 64 GB of DDR5 Non-ECC SODIMM memory with speeds of up to 5600 MT/s in two memory slots. To enhance memory performance, do not mix memory modules of different speeds and sizes. Follow all memory installation instructions given on [Section 3.5](#).

**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 [http://www.supermicro.com/ResourceApps/BIOS\\_IPMI\\_Intel.html](http://www.supermicro.com/ResourceApps/BIOS_IPMI_Intel.html). 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. Unzip the BIOS file onto a bootable USB device. Run the batch file using the format FLASH.BAT filename.rom from your bootable USB device to flash the BIOS. Then, your system will automatically reboot.

**Warning:** Do not shut down or reset the system while updating the BIOS to prevent possible system boot failure!

**Note:** The SPI BIOS chip used on this motherboard cannot be removed. Send your motherboard back to our RMA Department at Supermicro for repair. For BIOS Recovery instructions, refer to the AMI BIOS Recovery Instructions posted at <http://www.supermicro.com/support/manuals/>.

## 6.5 Battery Removal and Installation

### Battery Removal

To remove the battery, follow the steps below:

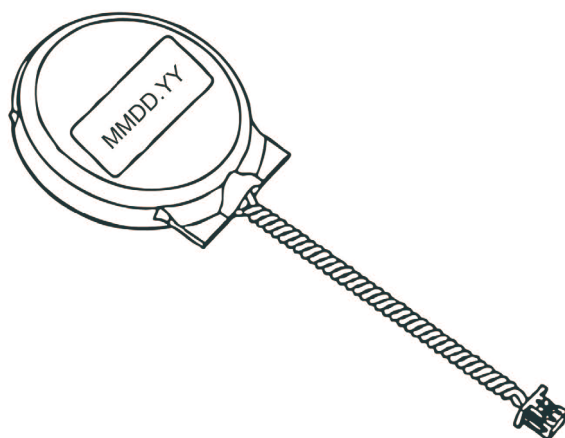
1. Power off your system and unplug your power cable.
2. Remove the battery cable at the BT1 connector on the board.
3. Remove the battery.

### Proper Battery Disposal

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

### Battery Installation

1. Unplug the power cord.
2. Connect the battery cable into the battery connector (BT1) and push it down until you hear a click to ensure that the cable is securely locked.
3. The battery is temporarily placed on the heatsink during shipping. Use the foam tape on the back side of the battery to secure the battery to a flat surface on the bottom of the motherboard or a proper location in the system. **DO NOT** place the battery on the heatsink during operation.



## 6.6 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 alternation, misuse, abuse or improper maintenance of products.

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

## Appendix A

### BIOS Codes

#### A.1 BIOS Error POST (Beep) Codes

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

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

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

These fatal errors are usually communicated through a series of audible beeps. The table shown below lists some common errors and their corresponding beep codes encountered by users.

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

#### A.2 Additional BIOS POST Codes

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

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

## Appendix B

# 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 section in its entirety before installing or configuring components in the Supermicro PRODUCT-NAME-SHORT HARDWARE-TYPE.

These warnings may also be found on our website at [https://www.supermicro.com/about/policies/safety\\_information.cfm](https://www.supermicro.com/about/policies/safety_information.cfm).

## Standard 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 familiar with standard practices for preventing accidents.

تحذير! هذا الرمز التحذيري يعني خطر. إنك في موقف قد يتسبب في إصابة جسدية. قبل العمل على أي أجهزة يجب أن تكون على دراية بالممارسات القياسية للحيلولة دون وقوع حوادث.

警告！此警告符号代表危险，表示正处于可能遭受严重身体伤害的工作环境。在使用任何设备开始工作之前，务必熟悉防止事故发生的标准工作规范。

警告！此警告符號代表危險。您正處於可能身體可能會受損傷的工作環境中。操作任何設備之前，請熟悉標準做法以預防事故發生。

Advarsel! Dette advarselssymbol betyder fare. Du er i en situation, der kan føre til personskader. Før du arbejder på noget udstyr, skal du være bekendt med standardpraksis for at forebygge ulykker.

Waarschuwing! Dit waarschuwingssymbool betekent gevaar. U bevindt zich in een situatie die lichamelijke letsels zou kunnen veroorzaken. Voordat u aan enige apparatuur gaat werken, moet u vertrouwd zijn met standaard praktijken voor het voorkomen van ongevallen.

Varoitus! Tämä varoitussymboli tarkoittaa vaaraa. Olet tilanteessa, joka voi aiheuttaa ruumiinvammoja. Ennen kuin ryhdyt työskentelemään laitteiden parissa, tutustu onnettomuuksien ehkäisemisen vakiintuneisiin käytäntöihin.

Attention! 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, familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.

Warnung! Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu Körperverletzungen führen kann. Bevor Sie an Geräten arbeiten, machen Sie sich mit den üblichen Verfahren zur Unfallverhütung vertraut.

אזהרה! סמל אזהרה זה מסמן סכנה. אתה נמצא במצב שעלול לגרום לפגיעה גופנית. לפני שתתחיל לעבוד על כל ציוד, הכר את הנהלים הסטנדרטיים למניעת תאונות.

चेतावनी! यह चेतावनी चहिन खतरे का प्रतीक है। आप ऐसी स्थिति में हैं जिससे शारीरिक चोट लग सकती है। किसी भी उपकरण पर काम करने से पहले, दुर्घटनाओं को रोकने के लिए मानक प्रथाओं से परिचित हो लें।

警告!この警告記号は危険を意味します。人身事故につながる可能性のある状況にあります。機器で作業を行う前に、標準的な事故防止策に精通してください。

경고! 이 경고 기호는 위험이 있음을 알려 줍니다. 신체 상해를 초래할 수 있는 상황입니다. 장비에서 작업하기 전에 사고 예방을 위한 표준 수칙을 숙지하십시오.

Advarsel! Dette advarselsymbolet betyr fare. Du er i en situasjon som kan forårsake kroppsskade. Før du arbeider på noe utstyr, må du gjøre deg kjent med standardrutiner for å forhindre ulykker.

¡Advertencia! Este símbolo de advertencia significa peligro. Se encuentra en una situación que podría provocar lesiones corporales. Antes de trabajar con cualquier equipo, familiarícese con las prácticas estándar para prevenir accidentes.

Varning! Denna varningssymbol betyder fara. Du befinner dig i en situation som kan orsaka personskada. Innan du arbetar på någon utrustning måste du bekanta dig med standardrutiner för att förhindra olyckor.

## Electrical Warning Definition



**Warning!** This warning symbol indicates high voltage may be encountered when performing a procedure. Before you work on any equipment, be aware of the hazards involved with electrical circuitry.

تحذير! يشير رمز التحذير هذا إلى احتمالية مواجهة جهد كهربائي عالٍ عند إجراء عملية ما. قبل البدء في العمل على أي أجهزة كن على دراية بالمخاطر المرتبطة بالدوائر الكهربائية.

警告！此警告符号表示作业过程中可能会遇到高电压。操作任何设备之前，请务必了解电路的危险。

警告！此警告符號表示執行程序時可能會遇到高電壓。操作任何設備之前，請瞭解與電路相關的危害。

Advarsel! Dette advarselssymbol indikerer, at der kan opstå høj spænding under udførelsen af en procedure. Før du arbejder på noget udstyr, skal du være opmærksom på de farer, der er forbundet med elektriske kredsløb.

Waarschuwing! Dit waarschuwingssymbool geeft aan dat men hoge spanning tegen kan komen bij het uitvoeren van een procedure. Voordat u aan enige apparatuur gaat werken, moet u zich bewust zijn van de gevaren van elektrische schakelsystemen.

Varoitus! Tämä varoitussymboli osoittaa, että toimenpiteen suorittamisen aikana voi esiintyä korkeaa jännitettä. Ennen kuin ryhdyt työskentelemään laitteiden parissa, ota huomioon sähköpiireihin liittyvät vaarat.

Attention! Ce symbole d'avertissement indique un risque d'exposition à une tension élevée lors de l'exécution d'une procédure. Avant de travailler sur un équipement, prenez connaissance des dangers liés aux circuits électriques.

Warnung! Dieses Warnsymbol weist darauf hin, dass bei der Durchführung eines Vorgangs Hochspannung auftreten kann. Bevor Sie an Geräten arbeiten, machen Sie sich mit den Gefahren elektrischer Schaltungen vertraut.

אזהרה! סמל אזהרה זה מציינ כי ייתכן שתיתקל במתח גבוה בעת ביצוע הליך. לפני עבודה על ציוד כלשהו, עליך להיות מודע לסכנות הכרוכות במעגלים חשמליים.

चेतावनी! यह चेतावनी चहिन इंगति करता है कि प्रक्रिया को नष्टपादति करते समय उच्च वोल्टेज का सामना करना पड़ सकता है। किसी भी उपकरण पर काम करने से पहले, वदियुत सर्कटिरी से जुड़े खतरो के प्रतसिचेत रहे।

警告!この警告記号は、手順を実行する際に高電圧が発生する可能性があることを示しています。機器で作業を行う前に、電気回路に関連する危険に注意してください。

경고! 이 경고 기호는 절차 수행 중 고전압에 노출될 수 있음을 알려 줍니다. 장비에서 작업하기 전에 전기 회로와 관련된 위험 요소를 충분히 인지하십시오.

Advarsel! Dette varselsymbolet indikerer at det kan oppstå høy spenning når en prosedyre utføres. Før du arbeider på utstyr, må du være oppmerksom på farene forbundet med elektriske kretser.

¡Advertencia! Este símbolo de advertencia indica que puede haber alto voltaje al realizar un procedimiento. Antes de trabajar con cualquier equipo, tenga en cuenta los peligros que conllevan los circuitos eléctricos.

Varning! Denna varningssymbol indikerar att hög spänning kan förekomma när en procedur utförs. Innan du arbetar med någon utrustning ska du vara medveten om de faror som är förknippade med elektriska kretsar.

## Installation Instructions



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

تحذير! اقرأ تعليمات التثبيت قبل توصيل النظام بمصدر الطاقة.

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。

Advarsel! Læs monteringsvejledningen, før systemet sluttes til strømforsyningen.

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

Varoitus! Lue asennusohjeet ennen järjestelmän liittämistä virtalähteeseen.

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

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

אזהרה! יש לקרוא את הוראות ההתקנה לפני חיבור המערכת למקור המתח.

चेतावनी! सस्टिम को बजिली के स्रोत से जोड़ने से पहले स्थापना नर्दिश पढ़ें।

警告!システムを電源に接続する前に、設置手順書をお読み下さい。

경고! 시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

Advarsel! Les installasjonsinstruksjonene før du kobler systemet til strømkilden.

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

Varning! Läs installationsanvisningarna innan du ansluter systemet till strömkällan.

## 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 VAC, 20 A.

تحذير! يعتمد هذا المنتج على التركيبات الكهربائية في المبنى للحماية من حدوث قصر دائرة (تيار زائد). تأكد من أن تصنيف جهاز الحماية لا يتجاوز: 250 فولت تيار متردد، 20 أمبير.

警告！此产品由建筑物的供电系统提供短路（过载）保护，并确保额定电压/电流不大于 250 VAC/20 A。

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

Advarsel! Dette produkt forudsætter, at bygningens elinstallation sørger for kortslutningsbeskyttelse (overstrøm). Sørg for, at beskyttelsesanordningen ikke er klassificeret til mere end: 250 VAC, 20 A.

Waarschuwing! Dit product vertrouwt op de installatie van het gebouw voor kortsluitbeveiliging (overstroombeveiliging). Zorg ervoor dat de beveiligingsvoorziening is gespecificeerd voor niet meer dan: 250 VAC, 20 A.

Varoitus! Tämä tuote on riippuvainen rakennuksen asennuksesta oikosulku- (ylivirta-) suojauksen osalta. Varmista, että suojalaitteen nimellisärvot eivät ylitä seuraavia arvoja: 250 VAC, 20 A.

Attention! Ce produit dépend de l'installation du bâtiment pour la protection contre les courts-circuits (surintensité). Assurez-vous que le dispositif de protection n'est pas supérieur à : 250 VAC, 20 A.

Warnung! Dieses Produkt ist auf den Kurzschluss- bzw. Überstromschutz der Gebäudeinstallation angewiesen. Stellen Sie sicher, dass die Schutzvorrichtung für maximal 250 VAC, 20 A ausgelegt ist.

אזהרה! מוצר זה מסתמך על תשתית החשמל של המבנה להגנה מפני קצר חשמלי (זרם יתר).  
ודא שדירוג התקן ההגנה אינו עולה על: 250 VAC, 20 A.

चेतावनी! यह उत्पाद शॉर्ट-सर्किट (ओवरकरंट) सुरक्षा के लिए भवन की स्थापना पर निर्भर करता है। सुनिश्चिती करें कि सुरक्षात्मक उपकरण की रेटिंग नमिनलखिति से अधिक न हो: 250 VAC, 20 A.

警告!この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。保護装置の定格が次の値以下であることを確認ください:250 VAC、20 A。

경고! 이 제품은 단락(과전류) 방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호 장치의 정격이 다음 값을 초과하지 않도록 하십시오: 250 VAC(볼트), 20 A(암페어).

Advarsel! Dette produktet er avhengig av bygningens installasjon for kortslutningsbeskyttelse (overstrømsbeskyttelse). Sørg for at beskyttelsesanordningen ikke er klassifisert som høyere enn: 250 V vekselstrøm, 20 A.

¡Advertencia! Este producto depende de la instalación del edificio para protección contra cortocircuitos (sobrecorriente). Asegúrese de que el dispositivo de protección tenga una clasificación no mayor a: 250 VAC, 20 A.

Varning! Denna produkt är beroende av byggnadens installation för kortslutningsskydd (överströmsskydd). Se till att skyddsanordningen inte är märkt för mer än: 250 VAC, 20 A.

## Power Disconnection Warning



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

تحذير! يجب فصل النظام عن جميع مصادر الطاقة، وإزالة سلك الطاقة من وحدة/وحدات إمداد الطاقة قبل الدخول إلى الجزء الداخلي من الهيكل لتثبيت أو فك مكونات النظام (باستثناء المكونات القابلة للاستبدال السريع).

警告！在打开机箱并安装或移除内部器件（热插拔器件除外）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（熱插拔元件除外）前，必須將系統完全斷電，並移除電源線。

Advarsel! Systemet skal afbrydes fra alle strømkilder, og strømkablet skal fjernes fra strømforsyningsmodulerne, før der gives adgang til kabinettet for at montere eller fjerne systemkomponenter (undtagen hot-swap-komponenter).

Waarschuwing! Het systeem moet worden losgekoppeld van alle voedingen en het stroomsnoer moet uit de voedingsmodule(s) worden gehaald voorafgaand aan toegang tot de binnenkant van het chassis voor installeren of verwijderen van systeemcomponenten (behalve hot-swap componenten).

Varoitus! Järjestelmä on irrotettava kaikista virtälähteistä ja virtajohto on irrotettava virtälähdemoduulista (moduuleista) ennen kotelon sisälle pääsyä järjestelmän komponenttien asentamista tai poistamista varten (lukuun ottamatta hot-swap-komponentteja).

Attention! Le système doit être déconnecté de toutes les sources d'alimentation et le cordon d'alimentation doit être débranché du/des modules d'alimentation avant d'accéder à l'intérieur du châssis pour installer ou retirer des composants du système (à l'exception des composants remplaçables à chaud).

Warnung! Das System muss von allen Stromquellen getrennt und das Netzkabel von den Netzteilmodulen entfernt werden, bevor auf den Innenraum des Chassis zugegriffen wird, um Systemkomponenten zu installieren oder zu entfernen (ausgenommen Hot-Swap-Komponenten).

אזהרה! יש לנתק את המערכת מכל מקורות הכוח ולהסיר את כבל החשמל ממודול/י אספקת החשמל לפני הגישה לחלק הפנימי של המארז לצורך התקנה או הסרה של רכיבי המערכת (למעט רכיבים הניתנים להחלפה חמה).

चेतावनी! ससिस्टम के घटकों को इंस्टॉल करने या नकालने (हॉट-स्वैप घटकों को छोड़कर) के लिए चेसिस के आंतरिक भाग तक पहुँचने से पहले, ससिस्टम को बजिली के सभी स्रोतों से डिसिक्नेक्ट किया जाना चाहिए और बजिली की आपूर्ति मॉड्यूल से पावर कॉर्ड को नकाल दिया जाना चाहिए।

警告! システムコンポーネント (ホットスワップコンポーネントを除く) の取り付けまたは取り外しを行うために、シャーシ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。

경고! (핫스왑 구성품을 제외하고) 시스템에 부품들을 장착하거나 제거하기 위해서는 새시 내부에 접근하기 전에 반드시 전원 공급장치로부터 연결되어있는 모든 전원과 전기코드를 분리해주어야 합니다.

Advarsel! Systemet må kobles fra alle strømkilder, og strømledningen må fjernes fra strømforsyningsmodulen(e) før man går inn i kabinettet for å installere eller fjerne systemkomponenter (unntatt komponenter som kan byttes ut under drift).

¡Advertencia! El sistema debe estar desconectado de todas las fuentes de energía y el cable de alimentación debe retirarse de los módulos de fuente de alimentación antes de acceder al interior del chasis para instalar o quitar componentes del sistema (excepto los componentes reemplazables en caliente).

Varning! Systemet måste vara fränkopplat från alla strömkällor och strömsladden måste vara borttagen från strömförsörjningsmodulerna innan du öppnar chassit för att installera eller ta bort systemkomponenter (med undantag för hot-swap-komponenter).

## Equipment Installation



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

تحذير! لا يُسمح إلا للعاملين المعتمدين وفنيي الخدمة المؤهلين بتركيب هذا الجهاز أو استبداله أو صيانته.

警告！仅限经过授权培训且拥有相关资质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。

Advarsel! Dette udstyr må kun installeres, udskiftes eller serviceres af autoriseret personale og kvalificerede servicemedarbejdere.

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

Varoitus! Vain valtuutetut henkilöt ja pätevät huoltoteknikot saavat asentaa, vaihtaa tai huoltaa tätä laitetta.

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

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

אזהרה! רק אנשי צוות מורשים ואנשי שירות מוסמכים רשאים להתקין, להחליף או לטפל בציוד זה.

चेतावनी! केवल अधिकृत कर्मियों और योग्य सेवा व्यक्तियों को ही इस उपकरण को स्थापति करने, बदलने या सेवा देने की अनुमति दी जानी चाहिए।

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

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

Advarsel! Kun autorisert personell og kvalifiserte servicefolk skal ha tillatelse til å installere, bytte ut eller utføre service på dette utstyret.

¡Advertencia! Sólo el personal autorizado y el personal de servicio calificado pueden instalar, reemplazar o dar servicio a este equipo.

Varning! Endast auktoriserad personal och kvalificerade servicetekniker får installera, byta ut eller utföra service på denna utrustning.

## Rack Stability Hazard



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

تحذير! خطر عدم الاستقرار. قد ينقلب الحامل، مما قد يتسبب في إصابات شخصية خطيرة. قبل تمديد الحامل إلى موضع التركيب اقرأ إرشادات التركيب. لا تضع أي حمولة على الأجهزة المركبة على حوامل منزلقة في وضع التركيب. لا تترك الأجهزة المركبة على حوامل منزلقة في وضع التركيب.

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

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

Advarsel! Stabilitetsfare. Udstyrsskabet kan vælte, hvilket kan føre til alvorlige personskader. Læs monteringsvejledningen, før udstyrsskabet trækkes ud til monteringsstedet. Anbring ikke nogen belastning på udstyr monteret på skinner, når det er på monteringsstedet. Efterlad ikke udstyr monteret på skinner på monteringsstedet.

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

Varoitus! Vakausvaara. Teline voi kaatua ja aiheuttaa vakavia henkilövahinkoja. Ennen telineen asettamista asennusasentoon, lue asennusohjeet. Älä aseta mitään kuormitusta liukukiskoon asennettuihin laitteisiin asennusasennossa. Älä jätä liukukiskoon asennettuja laitteita asennusasentoon.

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

Warnung! Gefahr der Instabilität. Das Rack kann umkippen und schwere Verletzungen verursachen. Lesen Sie vor dem Ausziehen des Racks in die Installationsposition die Installationsanweisungen. Belasten Sie in der Installationsposition keine auf Gleitschienen montierten Geräte. Lassen Sie auf Gleitschienen montierte Geräte nicht unbeaufsichtigt in der Installationsposition.

אזהרה! סכנת יציבות. הארון עלול להתהפך ולגרום לפציעה גופנית חמורה. לפני הארכת הארון למצב התקנה, יש לקרוא את הוראות ההתקנה. אין להניח עומס כלשהו על הציוד המותקן על מסילות ההחלקה. לקה כשהוא במצב התקנה. אין להשאיר את הציוד המותקן על מסילות ההחלקה במצב התקנה.

चेतावनी! स्थिरता का खतरा। रैक पलट सकता है जिससे गंभीर व्यक्तिगत चोट लग सकती है। रैक को इंस्टालेशन स्थिति तक बढ़ाने से पहले, स्थापना निर्देश पढ़ें। स्थापना स्थिति में स्लाइड-रेल पर लगे उपकरणों पर कोई भार न डालें। स्लाइड-रेल पर लगे उपकरणों को स्थापना स्थिति में न छोड़ें।

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

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

Advarsel! Stabilitetsfare. Stativet kan velte og forårsake alvorlig personskade. Les installasjonsanvisningen før du forlenger stativet til installasjonsposisjonen. Ikke belast utstyret som er montert på glideskinnen i installasjonsposisjon. Ikke la utstyret som er montert på glideskinnen stå i installasjonsposisjon.

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

Varning! Stabilitetsrisk. Racket kan välta och orsaka allvarliga personskador. Läs monteringsanvisningarna innan du skjuter ut racket till monteringspositionen. Belasta ej utrustning som är monterad på glidskena i installationsläget. Lämna ej utrustning som är monterad på glidskena i monteringsläget.

## Rack-Mounted Equipment Warning



**Warning!** Rack-mounted equipment should not be used as a shelf or work space.

تحذير! لا ينبغي استخدام المعدات المثبتة على حوامل كرف أو مساحة عمل.

警告！机架式设备不应用作货架或工作空间。

警告！不得將機架式設備當作置物架或工作空間使用。

Advarsel! Udstyr, der er monteret i udstyrsskabe, må ikke bruges som hylder eller arbejdsflader.

Waarschuwing! In rack gemonteerde apparatuur moet niet worden gebruikt als plank of werkruimte.

Varoitus! Telineasennettavia laitteita ei saa käyttää hyllyinä tai työtasoina.

Attention! Un équipement installé en rack ne doit pas être utilisé comme une étagère ou un espace de travail.

Warnung! In Racks montierte Geräte dürfen nicht als Ablagefläche oder Arbeitsfläche verwendet werden.

אזהרה! אין להשתמש בצידוד המותקן במסד (Rack) כמדף או כמשטח עבודה.

चेतावनी! रैक-माउंटेड उपकरण का उपयोग शेल्फ या कार्यक्षेत्र के रूप में नहीं किया जाना चाहिए।

警告!ラックマウント機器を棚や作業スペースとして使用しないでください。

경고! 랙 장착 장비를 선반 또는 작업대처럼 사용하지 마십시오.

Advarsel! Rackmontert utstyr skal ikke brukes som hylle eller arbeidsområde.

¡Advertencia! Los equipos montados en rack no deben utilizarse como estante o espacio de trabajo.

Varning! Rackmonterad utrustning ska inte användas som hylla eller arbetsyta.

## Restricted Access Location



**Warning!** This unit is intended for installation in restricted access areas. A restricted access area can be accessed only by an instructed person or a skilled person.

تحذير! هذه الوحدة مخصصة للتركيب في المناطق الممنوع الدخول إليها. يقتصر الدخول إلى منطقة منع الدخول على الأشخاص المدربين أو المهرة فقط.

警告！此装置应安装在限制进出的场所，此类场所仅限经过相关训练或技术熟练的人员进出。

警告！此部件應安裝在限制進出區域。只有受過指導的人員或專業人員才可進出限制進出區域。

Advarsel! Denne enhed er beregnet til montering i områder med begrænset adgang. Et område med begrænset adgang må kun tilgås af en instrueret person eller en fagkyndig person.

Waarschuwing! Deze eenheid is bedoeld voor installatie in gebieden met beperkte toegang. Er kan alleen toegang worden verkregen tot een gebied met beperkte toegang door een geïnstrueerde persoon of een ervaren persoon.

Varoitus! Tämä laite on tarkoitettu asennettavaksi rajoitetun pääsyn alueille. Rajoitetun pääsyn alueelle pääsee vain koulutettu tai ammattitaitoinen henkilö.

Attention! Cet appareil est destiné à être installé dans des zones à accès restreint. Une zone à accès restreint n'est accessible qu'à une personne formée ou qualifiée.

Warnung! Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Ein Bereich mit beschränktem Zutritt darf nur von unterwiesenen oder fachkundigen Personen betreten werden.

אזהרה! יחידה זו מיועדת להתקנה באזורים עם גישה מוגבלת. ניתן לגשת לאזור עם גישה מוגבלת רק על ידי אדם שהוכשר לכך או אדם מיומן.

चेतावनी! यह इकाई प्रतिबंधित पहुँच वाले क्षेत्रों में स्थापना के लिए ही है। प्रतिबंधित पहुँच वाले क्षेत्र में केवल एक निर्देशित व्यक्ति या कुशल व्यक्ति द्वारा ही पहुँचा जा सकता है।

警告!このユニットはアクセス制限区域に設置することを想定しています。アクセス制限区域は、トレーニングを受けた人または熟練者だけが出入り可能です。

경고! 본 장치는 접근이 제한된 구역에 설치하도록 되어있습니다. 교육을 받은 사람 또는 숙련된 사람만 접근 제한 구역에 들어갈 수 있습니다.

Advarsel! Denne enheten er beregnet for installasjon i områder med begrenset tilgang. Et område med begrenset tilgang kan kun nås av en person som har fått instruksjoner eller en fagperson.

¡Advertencia! Esta unidad está diseñada para su instalación en áreas de acceso restringido. A un área de acceso restringido solo puede acceder una persona instruida o una persona capacitada.

Varning! Denna enhet är avsedd för installation i områden med begränsad åtkomst. Ett område med begränsad åtkomst får endast beträdas av en instruerad eller kvalificerad person.

## Battery Handling



**Warning!** 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.

تحذير! يوجد خطر حدوث انفجار إذا تم استبدال البطارية بنوع غير صحيح. استبدل البطارية بنفس النوع أو نوع مكافئ موصى به من قبل الشركة المصنعة فقط. يجب التخلص من البطاريات المستخدمة وفقاً لإرشادات الجهة المصنعة.

警告！如果更换的电池类型不正确，有爆炸危险。更换电池时，请使用制造商推荐的相同或同等型号的电池。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，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。

Advarsel! Der er risiko for eksplosion, hvis batteriet skiftes med et batteri af den forkerte type. Batteriet må kun skiftes med et batteri af samme eller tilsvarende type, der anbefales af producenten. Opbrugte batterier skal bortskaffes i henhold til vejledningerne fra producenten.

Waarschuwing! Er bestaat een explosiegevaar als de batterij wordt vervangen door een onjuist type. Vervang de batterij alleen door hetzelfde type of een soortgelijk type aanbevolen door de fabrikant. Verwijder gebruikte batterijen overeenkomstig de instructies van de fabrikant.

Varoitus! Väärän tyyppisen akun käyttö voi aiheuttaa räjähdysvaaran. Vaihda akku vain valmistajan suosittelemaan samaan tai vastaavaan tyyppiseen akkuun. Hävitä käytetyt paristot valmistajan ohjeiden mukaisesti.

Attention! Il y a un risque d'explosion si la batterie est remplacée par une d'un type incorrect. Remplacez la batterie uniquement par une d'un type identique ou équivalent recommandé par le fabricant. Éliminez les batteries usagées conformément aux instructions du fabricant.

Warnung! Es besteht Explosionsgefahr, wenn die Batterie durch einen falschen Typ ersetzt wird. Ersetzen Sie die Batterie ausschließlich durch denselben oder einen vom Hersteller empfohlenen gleichwertigen Typ. Entsorgen Sie gebrauchte Batterien gemäß den Anweisungen des Herstellers.

אזהרה! קיימת סכנת פיצוץ אם הסוללה תוחלף בסוללה מסוג שגוי. החלף את הסוללה רק בסוללה מאותו סוג או בסוללה מקבילה המומלצת על ידי היצרן. השלך סוללות משומשות בהתאם להוראות היצרן.

चेतावनी! यदि बैटरी को गलत प्रकार से बदला जाता है तो वस्फोट का जोखिम है। बैटरी को केवल निर्माता द्वारा अनुशंसित समान या समकक्ष प्रकार से ही बदलें। इस्तेमाल की गई बैटरियों का नपिटान निर्माता के निर्देशों के अनुसार करें।

警告!電池を間違ったタイプに交換すると爆発する危険があります。交換する電池はメーカーが推奨するタイプ、または同等のものを使用してください。使用済み電池は、メーカーの指示に従って廃棄してください。

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.

Advarsel! Det er fare for eksplosjon hvis batteriet byttes ut med et av feil type. Batterier skal kun byttes ut med et av lik eller tilsvarende type, som anbefalt av produsenten. Kast brukte batterier i henhold til produsentens instruksjoner.

¡Advertencia! Existe riesgo de explosión si se sustituye la batería por una de tipo incorrecto. Reemplace la batería únicamente con el mismo tipo o uno equivalente recomendado por el fabricante. Deseche las baterías usadas de acuerdo con las instrucciones del fabricante.

Varning! Det finns risk för explosion om batteriet byts ut mot en felaktig typ. Byt endast ut batteriet mot ett batteri av samma eller likvärdig typ som rekommenderas av tillverkaren. Kassera förbrukade batterier i enlighet med tillverkarens anvisningar.

## Redundant Power Supplies



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

تحذير! قد تحتوي هذه الوحدة على أكثر من وصلة لإمداد الطاقة. يجب فصل جميع التوصيلات لفصل الطاقة عن الوحدة.

警告！ 本设备可能有多个电源连接。必须切断所有连接，才能使设备断电。

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。

Advarsel! Denne enhed kan have mere end én strømforsyningsforbindelse. Alle forbindelser skal fjernes for at deaktivere spændingen.

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

Varoitus! Laitteessa voi olla useampi kuin yksi virtalähteen liitäntä. Laitteen virta on katkaistava irrottamalla kaikki liitännät.

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.

Warnung! Diese Einheit kann über mehr als eine Stromversorgungsanschluss verfügen. Um sicherzustellen, dass die Einheit spannungsfrei ist, müssen alle Verbindungen entfernt werden.

אזהרה! יחידה זו עשויה לכלול יותר מחיבור אחד לספק כוח. יש לנתק את כל החיבורים כדי להפסיק את הזנת המתח ליחידה.

चेतावनी! इस इकाई में एक से अधिक पावर सप्लाय कनेक्शन हो सकते हैं। इकाई को ऊर्जा-मुक्त (डी-एनर्जाइज) करने के लिए सभी कनेक्शन हटा दिए जाने चाहिए।

警告!このユニットは複数の電源装置が接続されている場合があります。ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

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

Advarsel! Denne enheten kan ha mer enn én strømforsyningstilkobling. Alle tilkoblinger må fjernes for å gjøre enheten strømløs.

¡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.

Varning! Denna enhet kan ha mer än en strömförsörjningsanslutning. Alla anslutningar måste tas bort för att enheten ska bli strömlös.

## Backplane Voltage



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

تحذير! يوجد جهد أو طاقة خطيرة على اللوحة الخلفية أثناء تشغيل النظام. توخ الحذر عند إجراء الصيانة. اقرأ التعليمات قبل إجراء الصيانة.

警告！当系统运行时，背板上存在危险电压或能量，进行维修时务必小心。维修前请阅读使用说明。

警告！系統運作時，背板上存在危險電壓或能量。維修時請小心。維修前請閱讀說明書。

Advarsel! Når systemet er i drift, er farlig spænding eller energi til stede på bagpladen. Vær forsigtig ved servicering. Læs instruktionerne før service.

Waarschuwing! Gevaarlijke spanning of energie is aanwezig op de achterzijde wanneer het systeem in bedrijf is. Wees voorzichtig bij service. Lees de instructies voorafgaand aan service.

Varoitus! Järjestelmän ollessa käynnissä takapaneelissa on vaarallista jännitettä tai energiaa. Ole varovainen huoltotöiden aikana. Lue ohjeet ennen huoltoa.

Attention! Une tension ou de l'énergie dangereuse est présente sur le panneau arrière lorsque le système est en fonctionnement. Soyez prudent lors de l'entretien. Lisez les instructions avant d'effectuer un entretien.

Warnung! Bei eingeschaltetem System liegt an der Backplane gefährliche Spannung oder Energie an. Seien Sie bei Wartungsarbeiten vorsichtig. Lesen Sie vor der Wartung die Anweisungen.

אזהרה! מתח או אנרגיה מסוכנים קיימים בלוח האחורי כאשר המערכת פועלת. יש לנקוט בזהירות בעת ביצוע תחזוקה. קרא את ההוראות לפני ביצוע תחזוקה.

चेतावनी! जब सिस्टम चालू होता है, तो बैकप्लेन पर खतरनाक वोल्टेज या ऊर्जा मौजूद होती है। सर्वसिगि करते समय सावधानी बरतें। सर्वसिगि से पहले निर्देश पढ़ें।

警告!システムの稼働中は、危険な電圧または電流がバックプレーン上にかかっています。修理を行う際には注意してください。修理を行う前に取扱説明書をお読みください。

경고! 시스템이 동작 중일 때 후면판(Backplane)에는 위험한 전압이나 에너지가 발생합니다. 서비스 작업 시 주의하십시오. 서비스 작업 전에 지침을 읽으십시오.

Advarsel! Det er farlig spenning eller energi på bakplaten når systemet er i drift. Vær forsiktig ved service. Les instruksjonene før service.

¡Advertencia! Hay voltaje o energía peligrosos presentes en la placa posterior cuando el sistema está en funcionamiento. Tenga cuidado al realizar el mantenimiento. Lea las instrucciones antes de realizar el mantenimiento.

Varning! Farlig spänning eller energi finns på backplane när systemet är i drift. Var försiktig vid service. Läs instruktionerna före service.

## Comply with Local and National Electrical Codes



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

تحذير! يجب أن يتوافق تركيب الأجهزة مع لوائح الكهرباء المحلية والوطنية.

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。

Advarsel! Alle lokale og nationale el-regler skal overholdes under montering af udstyret.

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

Varoitus! Laitteiden asennus on suoritettava paikallisten ja kansallisten sähkömääräysten mukaisesti.

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

Warnung! Die Installation des Geräts muss den lokalen und nationalen elektrotechnischen Vorschriften entsprechen.

אזהרה! התקנת הציוד חייבת להתבצע בהתאם לתקני החשמל המקומיים והארציים.

चेतावनी! उपकरण की इंस्टालेशन स्थानीय और राष्ट्रीय वदियुत कोड के अनुरूप होनी चाहिए।

警告!機器の取り付けはその地域および国の電気規定に準拠する必要があります。

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

Advarsel! Installasjon av utstyret må være i samsvar med lokale og nasjonale elektriske forskrifter.

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

Varning! Installation av utrustningen måste följa lokala och nationella elektriska föreskrifter.

## 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.



تحذير! تجنب خطر الأجزاء المتحركة. ابتعد عن شفرات المروحة المتحركة. قد تستمر المراوح في الدوران بعد فك مجموعة المراوح من الهيكل. أبقِ أصابعك ومفكات البراغي والأغراض الأخرى بعيدة عن الفتحات الموجودة في مبيت مروحة التبريد.

警告！危险的活动零部件。请务必与转动的风扇叶片保持距离。从机箱移除风扇装置时，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外壳开口。

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。

Advarsel! Farlige bevægelige dele. Hold dig væk fra ventilatorblade i bevægelse. Ventilatorerne kan stadig køre, når du tager ventilatorsamlingen af kabinettet. Hold fingre, skruetrækkere og andre genstande væk fra åbningerne i ventilatorkabinettet.

Waarschuwing! Gevaarlijke 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.

Varoitus! Vaaralliset liikkuvat osat. Pysy kaukana liikkuvista tuulettimen siivistä. Tuulettimet saattavat edelleen pyöriä, kun irrotat tuulettimen kokoonpanon kotelosta. Pidä sormet, ruuvimeisselit ja muut esineet poissa tuulettimen kotelon aukkojen läheltä.

Attention! Pièces mobiles dangereuses. Se tenir à l'écart 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.

Warnung! Gefährliche bewegliche Teile. Halten Sie Abstand von rotierenden Lüfterblättern. Die Lüfter können sich noch drehen, wenn Sie die Lüfterbaugruppe aus dem Chassis entfernen. Halten Sie Finger, Schraubendreher und andere Gegenstände von den Öffnungen des Lüftergehäuses fern.

אזהרה! חלקים נעים מסוכנים. יש להתרחק מלהבי מאוורר נעים. המאווררים עשויים להמשיך להסתובב בעת הסרת מכלול המאוורר מהמארז. יש להרחיק אצבעות, מברגים וחפצים אחרים מהפתחים שבבית מכלול המאוורר.

चेतावनी! खतरनाक चलते हुए भाग। चलते हुए पंखे के ब्लेड से दूर रहें। जब आप चैसिस से पंखे की असेंबली निकालते हैं, तब भी पंखे घूम रहे हो सकते हैं। उंगलियों, स्कूड्राइवर और अन्य वस्तुओं को पंखे की असेंबली के हाउसिंग के छद्मों से दूर रखें।

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。シャーシからファンアセンブリを取り外す際、ファンがまだ回転している可能性があります。ファンアセンブリの開口部に、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。

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

Advarsel! Farlige bevegelige deler. Hold deg unna vifteblader i fart. Viftene kan fortsatt gå rundt når du fjerner vifteenheten fra kabinettet. Hold fingre, skrutrekkere og andre gjenstander unna åpningene i viftehuset.

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

Varning! Farliga rörliga delar. Håll dig borta från rörliga fläktblad. Fläktarna kan fortfarande snurra när du tar bort fläktenheten från chassit. Håll fingrar, skruvmejslar och andra föremål borta från öppningarna i fläktenhetens hölje.

## Connection to Earth



**Warning!** Equipment shall be connected to an Earth mains socket-outlet.

تحذير! يجب توصيل الأجهزة بمقبس كهربائي أرضي.

警告！设备应连接到接地电源插座。

警告！應將設備連接至接地電源插座。

Advarsel! Dette udstyr skal sluttet til en jordforbundet stikkontakt.

Waarschuwing! De apparatuur moet worden aangesloten op een geaard netstopcontact.

Varoitus! Laitteet on kytkettävä maadoitettuun pistorasiaan.

Attention! L'équipement doit être connecté à une prise de courant avec mise à la terre.

Warnung! Das Gerät muss an eine geerdete Netzsteckdose angeschlossen werden.

אזהרה! יש לחבר את הציוד לשקע חשמל עם הארקה.

चेतावनी! उपकरण को एक अर्थ मेन्स सॉकेट-आउटलेट से जोड़ा जाना चाहिए।

警告!機器は、接地主電源コンセントに接続するものとします。

경고! 장비는 접지된 전원 콘센트에 연결해야 합니다.

Advarsel! Utstyret skal kobles til en jordet stikkontakt.

¡Advertencia! El equipo deberá conectarse a una toma de corriente con conexión a tierra.

Varning! Utrustningen ska vara ansluten till ett jordat eluttag.

## Power Cable and AC Adapter



**Warning!** When installing the product, use the provided or designated connection cables, power cables and AC adapters. Using any other cables and adapters 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.

تحذير! عند تركيب المنتج استخدم كابلات التوصيل والطاقة ومحولات التيار المتردد المرفقة أو المخصصة. قد يؤدي استخدام أي كابلات ومحولات أخرى إلى حدوث عطل أو نشوب حريق. يحظر قانون سلامة الأجهزة والمواد الكهربائية استخدام كابلات UL أو المعتمدة من CSA (التي عليها علامة UL/CSA) لأي أجهزة كهربائية أخرى غير المنتجات التي تحددها شركة Supermicro فقط.

警告！安装时，请使用设备本身提供或指定的连接线、电源线和交流适配器。使用任何其他电缆线材或适配器都可能导致故障或火灾。除美超微（Supermicro）指定的产品外，《电气用品和材料安全法》禁止将UL或CSA认证的电缆（线材上标有UL/CSA）用于任何其他电气设备。

警告！安裝此產品時，請使用本身隨附或指定的連接線、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。除了美超微（Supermicro）所指定的產品，《電氣用品及材料安全法》規定禁止使用未經UL或CSA認證的線材。（線材上標有UL/CSA符號）。

Advarsel! Når du monterer produktet, skal du bruge de medfølgende eller udpegede forbindelseskabler, strømkabler og vekselstrømsadapters (AC). Brug af andre kabler og adapters kan føre til fejl eller brand. Loven om sikkerhed for elektriske apparater og materialer forbyder brugen af UL- eller CSA-certificerede kabler (med UL/CSA angivet på ledningen) til andre elektriske apparater end dem, der udelukkende er godkendt af Supermicro.

Waarschuwing! Bij het installeren van het product moet u de geleverde of aangewezen aansluitkabels, voedingskabels en AC-adapters gebruiken. Het gebruik van enige andere kabels en 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 enige andere elektrische apparaten dan producten die uitsluitend door Supermicro zijn aangewezen.

Varoitus! Käytä tuotteen asennuksessa mukana toimitettuja tai tarkoitukseen sopivia liitäntäkaapeleita, virtajohtoja ja verkkolaitteita. Muiden kaapeleiden ja sovittimien käyttö voi aiheuttaa toimintahäiriön tai tulipalon. Sähkölaitteiden ja materiaalien turvallisuutta koskeva laki kieltää UL- tai CSA-sertifioitujen kaapeleiden (joissa on merkintä UL/CSA) käytön muissa sähkölaitteissa kuin Supermicron nimeämissä tuotteissa.

Attention! Lors de l'installation du produit, utilisez les câbles de connexion, les câbles d'alimentation et les adaptateurs secteur fournis ou recommandés. L'utilisation d'autres câbles et adaptateurs peut causer un dysfonctionnement ou un incendie. La loi sur la sécurité des appareils et des équipements électriques interdit l'utilisation de câbles certifiés UL ou CSA (avec la mention UL/CSA sur le cordon) pour tout autre appareil électrique que les produits désignés par Supermicro uniquement.

Warnung! Verwenden Sie bei der Installation des Produkts ausschließlich die vorgesehenen oder mitgelieferten Anschlusskabel, Netzkabel und AC-Adapter. Die Verwendung anderer Kabel oder Adapter kann zu Fehlfunktionen oder Brand führen. Das Gesetz zur Sicherheit elektrischer Geräte und Materialien untersagt die Verwendung von UL- oder CSA-zertifizierten Kabeln (mit UL/CSA-Kennzeichnung auf dem Kabel) für andere elektrische Geräte als die von Supermicro ausdrücklich vorgesehenen Produkte.

אזהרה! בעת התקנת המוצר, יש להשתמש בכבלי החיבור, בכבלי החשמל ובמתאמי ה-AC המצורפים או הייעודיים. שימוש בכבלים או במתאמים אחרים עלול לגרום לתקלה או לדליקה. החוק לבטיחות מכשירי חשמל וחומרים אוסר על שימוש בכבלים בעלי אישור UL או CSA (הנושאים סימון CSA/UL על גבי הכבל) עבור מכשירים חשמליים אחרים שאינם מוצרים ייעודיים של סופרמיקרו (Supermicro) בלבד.

चेतावनी! उत्पाद इंस्टॉल करते समय, प्रदान की गई या निर्दिष्ट कनेक्शन केबल, पावर केबल और AC एडॉप्टर का ही उपयोग करें। किसी अन्य केबल और एडॉप्टर का उपयोग करने से खराबी आ सकती है या आग लग सकती है। वदियुत उपकरण और सामग्री सुरक्षा कानून केवल सुपरमाइक्रो (Supermicro) द्वारा निर्दिष्ट उत्पादों के अलावा किसी अन्य वदियुत उपकरणों के लिए UL या CSA-प्रमाणित केबल (जनिके कॉर्ड पर UL/CSA दर्शाया गया हो) के उपयोग को प्रतर्बिधति करता है।

警告!本製品を設置する際は、付属または指定の接続ケーブル、電源コードとACアダプターを使用してください。それ以外のケーブルやアダプターを使用すると、事故や火災の原因になることがあります。電気用品安全法では、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の電気機器に使用することを禁止しています。

경고! 제품을 설치할 때 현지 코드 및 적절한 굵기의 코드와 플러그를 포함한 안전 요구 사항을 준수하여 제공되거나 지정된 연결 혹은 구매 케이블, 전원 케이블 및 AC 어댑터를 사용하십시오. 다른 케이블이나 어댑터를 사용하면 오작동이나 화재가 발생할 수 있습니다. 전기 용품 안전법은 UL 또는 CSA 인증 케이블 (코드에 UL / CSA가 표시된 케이블) 을 Supermicro가 지정한 제품 이외의 전기 장치에 사용하는 것을 금지합니다.

Advarsel! Når du installerer produktet, bruker du de medfølgende eller angitte tilkoblingskablene, strømkablene og strømadapterne. Bruk av andre kabler og adaptere kan forårsake funksjonsfeil eller brann. Lov om elektriske apparater og materialsikkerhet forbyr bruk av UL- eller CSA-sertifiserte kabler (der UL/CSA står på ledningen) til andre elektriske apparater enn produkter som kun er angitt av Supermicro.

¡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.

Varning! När du installerar produkten ska du använda de medföljande eller avsedda anslutningskablarna, strömkablarna och nätadaptarna. Om du använder andra kablar och adaptrar kan det orsaka funktionsfel eller brand. Lagen om säkerhet för elektriska apparater och material förbjuder användning av UL- eller CSA-certifierade kablar (som har UL/CSA angivet på sladden) för andra elektriska apparater än produkter som endast betecknas av Supermicro.

## Product Disposal



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

تحذير! يجب التخلص النهائي من هذا المنتج وفقاً لجميع القوانين واللوائح الوطنية.

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。

Advarsel! Dette produkt skal bortskaffes i henhold til alle nationale love og regler.

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

Varoitus! Tämän tuotteen lopullinen hävittäminen on suoritettava kaikkien kansallisten lakien ja määräysten mukaisesti.

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.

Warnung! Die endgültige Entsorgung dieses Produkts muss gemäß allen nationalen Gesetzen und Vorschriften erfolgen.

אזהרה! סילוק סופי של מוצר זה חייב להתבצע בהתאם לכל החוקים והתקנות הלאומיים.

चेतावनी! इस उत्पाद का अंतिम निपटान सभी राष्ट्रीय कानूनों और नयिमों के अनुसार किया जाना चाहिए।

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

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

Advarsel! Når produktet til slutt skal kasseres, må det håndteres i henhold til alle nasjonale lover og forskrifter.

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

Varning! Slutgiltigt bortskaffande av denna produkt ska ske i enlighet med alla nationella lagar och förordningar.

# Appendix C

## System Specifications

### Processor

Single Intel 12th/13th/14th Generation Core i Series and Core processors (Series 2) with a Thermal Design Power (TDP) of up to 65 W in an LGA 1700 socket

### GPUs

One double-width or one single-width GPU

### BIOS

AMI 32 MB SPI Flash

### Memory

Up to 64 GB of DDR5 Non-ECC SODIMM memory with speeds of up to 5600 MT/s in two memory slots

### Storage Drives

Internal drive bays: one 3.5" SATA drive bay and one 2.5" SATA drive bay

One M.2 PCIe 4.0 x4 NVMe slot (M-key 2280)

### PCI Expansion Slots

One PCIe 5.0 x16 HHHL double-width slot

### Input/Output

One RJ45 1GbE LAN port

One RJ45 2.5GbE LAN port

Two USB 3.2 Gen 1 Type-A ports (front)

Four USB 3.2 Gen 2 Type-A ports (rear)

One HDMI 2.0b port

One HDMI 1.4 port

Two displayPort ports

One audio line out

One mic in

### Motherboard

X13SAV-D5LVDS; 6.7" x 6.7" (17.02 x 17.02 cm)

### Chassis

CSE-GS2B-000NBP2, 13.43" x 3.62" x 11.42" (341 x 92 x 290 mm) (H x W x D)

### System Cooling

One active CPU heatsink fan

One system fan

### Power Supply

Model: PWS-C301-TQ, one 300 W Gold Level (90%) power supply

Input: 100–240 VAC, 50–60 Hz, 4–2 A

### Operating Environment

Operating Temperature: 0°C to 35°C (32°F to 95°F)

Non-operating Temperature: -40°C to 70°C (-40°F to 158°F)

Operating Relative Humidity: 8% to 90% (non-condensing)

Non-operating Relative Humidity: 5% to 95% (non-condensing)

### Regulatory Compliance

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

**Certified Safety Models**

Certified as compliant UL or CSA: GS2B-S3X13 and GS2B-S3

**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](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)".

**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/EN 55032

BS/EN 55035

CISPR 32

CISPR 24/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

Environment:

Delegated Directive (EU) 2015/863

Directive 2011/65/EU (RoHS)

REACH Regulation EC 1907/2006

WEEE Directive 2012/19/EU

California Proposition 65

**Warning!** This product can expose you to chemicals including lead, known to the State of California to cause cancer and birth defects or other reproductive harm. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

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 — A**

## Appendix D

# General Data Center Environmental Specifications

### Particulate Contamination Specifications

Air filtration: Data centers must be kept clean to Class 8 of ISO 14644-1 (ISO 2015). The air entering the data center should be filtered with a MERV 11 filter or better. The air within the data center should be continuously filtered with a MERV 8 filter or better.

Conductive dust: Air should be free of conductive dust, zinc whiskers, or other conductive particles.

Corrosive dust: Air should be free of corrosive dust.

### Gaseous Contamination Specifications

Copper coupon corrosion rate: <300 Å/month per class G1 as defined by ANSI/ISA71.04-2013, reference by ASHRAE TC 9.9

Silver coupon corrosion rate: <200 Å/month per class G1 as defined by ANSI/ISA71.04-2013, reference by ASHRAE TC 9.9

**Note:** If testing with silver or copper coupons results in values less than 200 Å/month or 300 Å/month, respectively, then operating up to 70% relative humidity (RH) is acceptable. If the testing shows corrosion levels exceed these limits, then catalyst type pollutants are probably present and RH should be driven to 50% or lower.