



# SuperServer<sup>®</sup> SYS-210P-FRDN6T



USER'S MANUAL

Revision 1.0d

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# Preface

## About this Manual

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

Please refer to the SYS-210P-FRDN6T 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/Lot9\\_Secure\\_Data\\_Deletion\\_Utility/](https://www.supermicro.com/about/policies/disclaimer.cfm?url=/wdl/utility/Lot9_Secure_Data_Deletion_Utility/)

## Warnings

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



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



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

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***Appendix B System Specifications***

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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-210P-FRDN6T. This system is based on the X12SPM-LN6TF motherboard and the CSE-211M-R000NDP chassis.

The following provides an overview of the specifications and capabilities.

System Overview	
<b>Motherboard</b>	X12SPM-LN6TF
<b>Chassis</b>	CSE-211M-R000NDP
<b>Processor Support</b>	Single 3rd Generation Intel® Xeon® Scalable processor
<b>Memory</b>	8 DIMM slots for up to 2TB of ECC RDIMM/LRDIMM/LRDIMM 3DS with speeds of up to 3200MHz
<b>Drive Support</b>	Two SATA3 2.5" drives One M.2 (22110/2280) internal slot (SATA/NVMe PCIe 3.0 x4) (See Section 3.8)
<b>Expansion Slots</b>	Six configurable slots for PCIe 4.0 x8 or x16 low-profile or FHHL expansion cards (See Section 3.8)
<b>I/O Ports</b>	Four GbE RJ45 ports Two 10G RJ45 ports Two USB 2.0 ports Two USB 3.0 ports One VGA port One COM port One dedicated IPMI port
<b>System Cooling</b>	Four 8-cm heavy duty fans One air shroud
<b>Power</b>	SYS-210P-FRDN6T: Two redundant power supply modules 600 W (DC -48V)
<b>Form Factor</b>	2U 17.2 x 3.5 x 11.8in. / 437 x 89 x 299mm (WxHxD)

A Quick Reference Guide can be found on the product page of the Supermicro website. The following safety models associated with SYS-210P-FRDN6T have been certified as compliant with UL or CSA: 211M-R6DX12 and 211M-6D.

## 1.2 System Features

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

### Front View

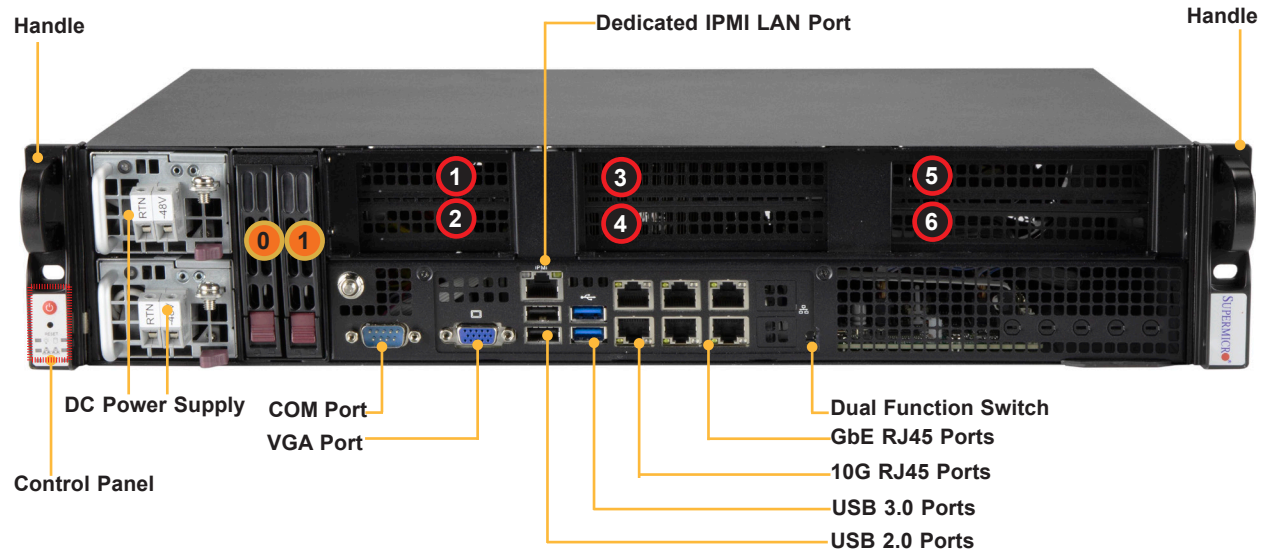



Figure 1-1. Front View DC System

System Features: Rear	
Feature	Description
Control Panels	Control panel with power button, UID LED, BMC reset, and LEDs.
Power Supplies	SYS-210P-FRDN6T: Two 600 W redundant DC power supplies
COM Port	One COM port
VGA Port	One video port
USB Ports	Two USB 2.0 ports and two USB 3.0 ports
LAN Ports	One dedicated BMC LAN port, four GbE RJ45 ports, two 10G RJ45 ports
Dual Function Switch	A switch that can function as either a UID LED switch or a BMC reset switch. See Chapter 4 for a description of the dual function switch.
Server Handles	Two handles supporting server removal

Logical Storage Drive Numbers	
Item	Description
	2.5" SATA3 storage drive bays (logical drive numbers shown)

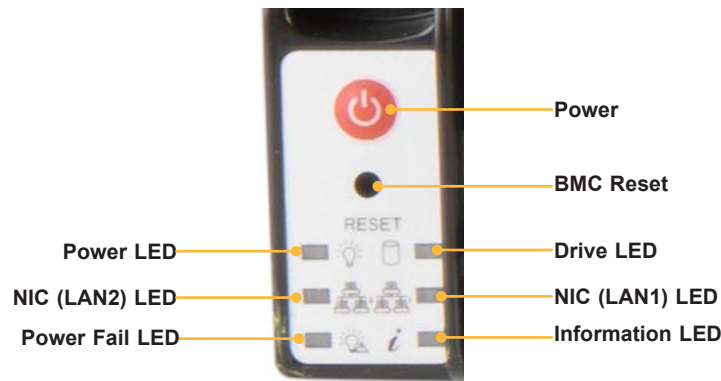
Expansion Slot Locations		
Item	Description (all PCIe 4.0)	Riser Card
1	x8 low-profile, configurable to x16 if merged with slot 2	RSC-H2-68G4
2	x8 low-profile or disabled when merged with slot 1	RSC-H2-68G4
3	x8 FHHL (with 1U heatsink and CPU TDP less than 165W and air shroud)	RSC-S2R-68G4
4	N/A	RSC-S2R-68G4
5	x16 FHHL	CBL-SAST-1270A-85 (cables: CBL-SAST-1207LP-85 and CBL-SAST-1206LP-85)
6	x16 FHHL	

**Note:** Expansion slot capabilities also depends on the selected heatsink, CPU, air shrouds, and the shared JNVME connectors. See Section 3.8.

Expansion Slot BIOS Settings		
Expansion Slot	Motherboard Slot	BIOS Advanced Settings
1, 2	slimSAS (0/1)	IOU 4
3	7	IOU 0
4	N/A	N/A
5	6	IOU 1
6	4	IOU 3



## Control Panel



**Figure 1-2. Control Panel**

Control Panel Features	
Feature	Description
Power button	The main power switch applies or removes primary power from the power supply to the server but maintains standby power.
BMC button	This button can also be used to reset the BMC. See <a href="#">Chapter 3</a> .
Power LED	Indicates power is being supplied to the system power supply units. This LED is illuminated when the system is operating normally.
Drive LED	Indicates activity on the storage drives when flashing.
NIC (LAN1) LED	Indicates network activity on LAN1 when flashing.
NIC (LAN2) LED	Indicates network activity on LAN2 when flashing.
Power Fail LED	Indicates a power supply module has failed.
Information LED	Alerts operator to several states, as noted in the table below.

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

### Rear View

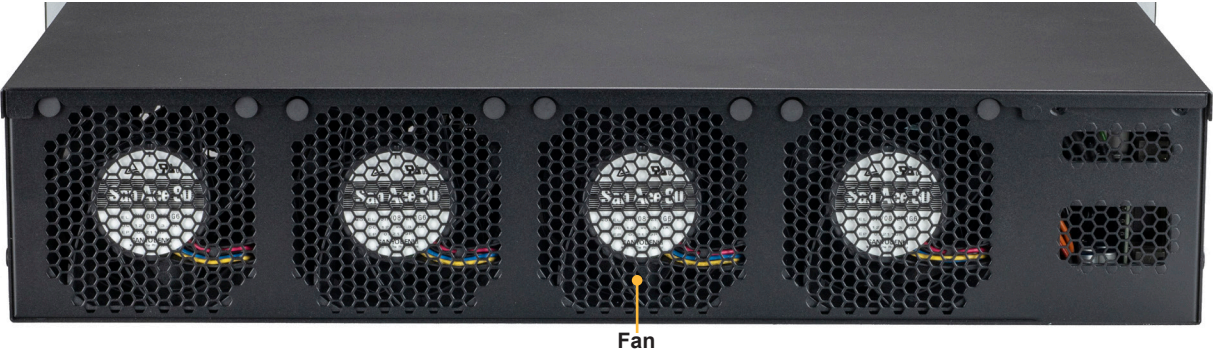


Figure 1-3. System: Rear View

System Features: Rear	
Feature	Description
Fans	Four internal fans

## 1.3 System Architecture

This section covers the printed circuit board (PCB) locations.

### PCB Locations

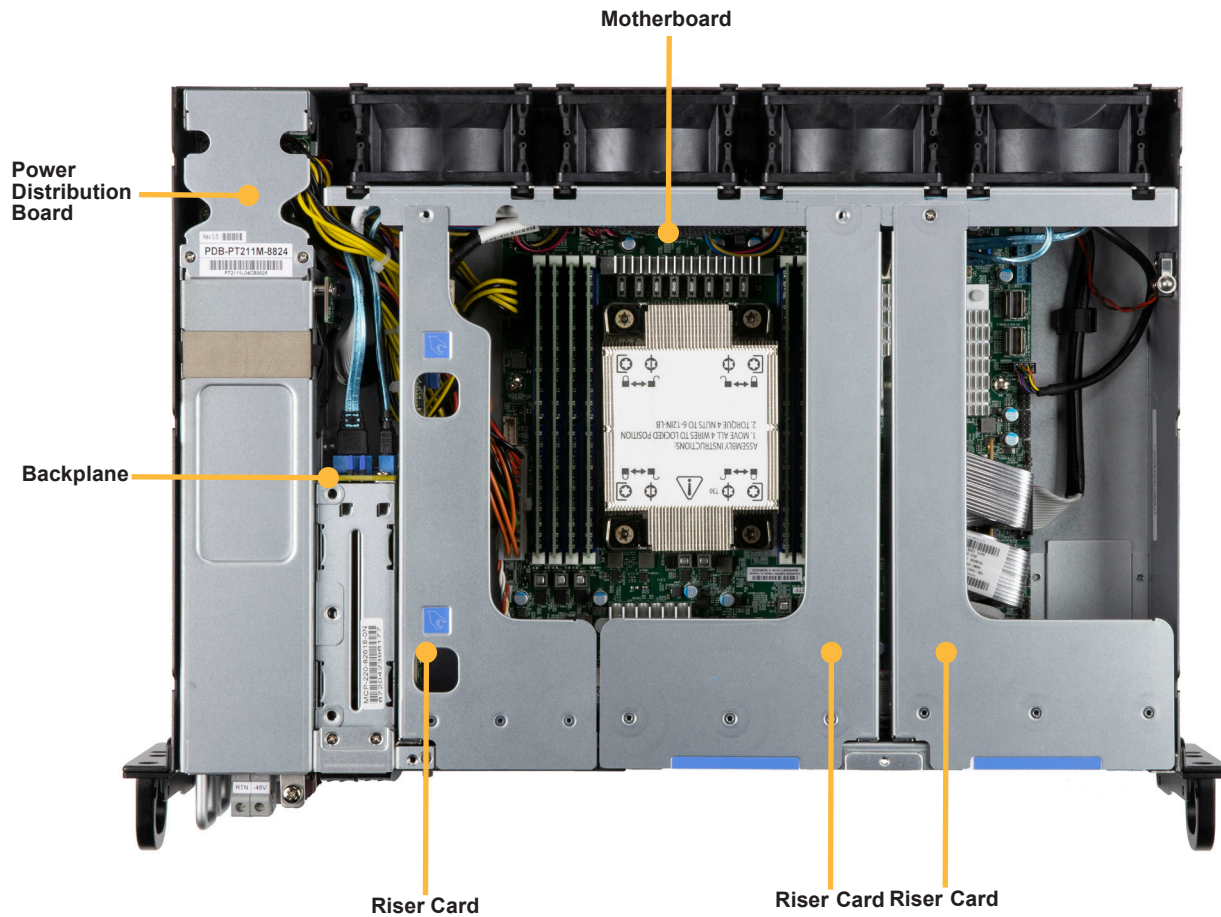


Figure 1-4. PCB Locations

## 1.4 Motherboard Layout

Below is a layout of the X12SPM-LN6TF motherboard with jumper, connector and LED locations shown. See the table on the following page for descriptions. For detailed descriptions, pinout information and jumper settings, refer to [Chapter 4](#) or the [Motherboard Manual](#).

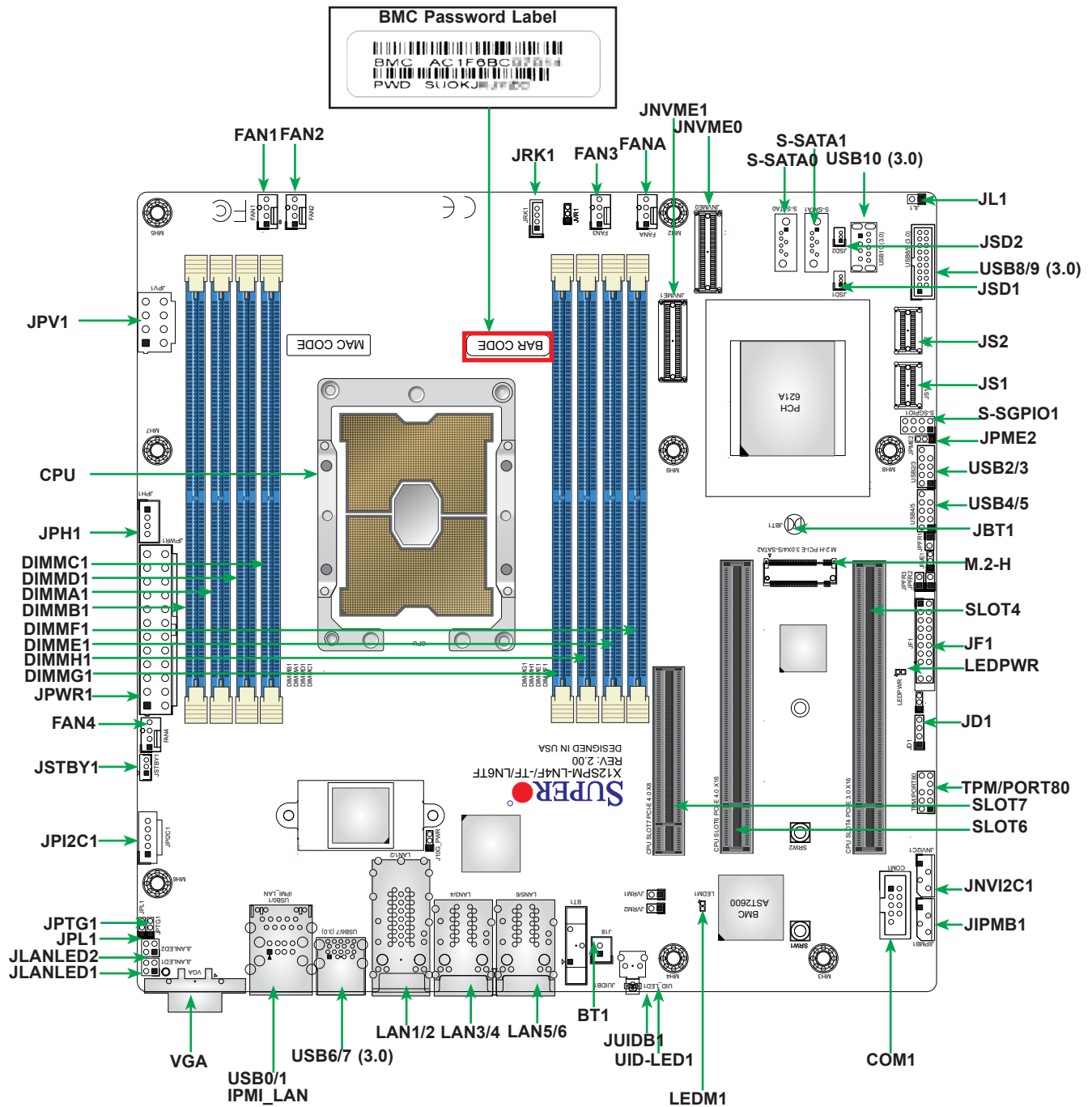


Figure 1-5. Motherboard Layout

## Quick Reference Table

Jumper	Description	Default Setting
JBT1	CMOS Clear	Open (Normal)
JPL1	LAN3/4/5/6 Enable/Disable	Pins 1-2 (Enabled)
JPME2	ME Recovery	Pins 1-2 (Normal)
JPTG1	LAN1/2 (10G Base-T) Enable/Disable	Pins 1-2 (Enabled)

LED	Description	Status
LEDM1	BMC Heartbeat LED	Blinking Green: BMC Normal
LEDPWR	Power on LED	Solid Green: On
UID-LED1	Unit Identifier (UID) LED	Solid Blue: Unit Identified

Connector	Description
BT1	Onboard CMOS Battery
COM1	COM Header
FAN1 ~ FAN4, FANA	CPU/System Fan Headers
IPMI_LAN	Dedicated IPMI LAN Port
JD1	Speaker (Pins 1-4: Speaker)
JF1	Front Control Panel Header
JIPMB1	4-pin External I <sup>2</sup> C Header
JL1	Chassis Intrusion Header
JLANLED1	LAN LED Activity Connector for the Front Panel (for LN4F/LN6TF only)
JLANLED2	LAN LED Activity Connector for the Front Panel (for LN6TF only)
JNVI <sup>2</sup> C1	NVMe I <sup>2</sup> C Header
JNVME0/1	PCIe 4.0 x8 Slimline SAS Connectors
JPH1	4-pin Power Output for HDD use (To provide power from the motherboard to onboard HDD devices)
JPI <sup>2</sup> C1	Power System Management Bus (SMB) I <sup>2</sup> C Header
JPV1	8-pin 12V CPU Power Connector; Or 12V DC Input Power Connector (without JPWR1 plugged)
JPWR1	24-pin ATX Power Connector
JRK1	Intel RAID Key Header
JS1	Intel PCH SATA 3.0 Ports (I-SATA0-3 with RAID 0, 1, 5, 10)
JS2	Intel PCH SATA 3.0 Ports (I-SATA4-7 with RAID 0, 1, 5, 10)
JSD1, JSD2	SATA DOM Power Connectors
JSTBY1	Standby Power Header
JUIDB1	Unit Identifier (UID) Switch
LAN1/2	10GbE LAN (RJ45) Ports (LAN1/LAN2 for X12SPM-TF/-LN6TF Only)
LAN3~6	1GbE LAN (RJ45) Ports (LAN3~6 for -LN4F/-LN6TF Only)

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<b>Connector</b>	<b>Description</b>
M.2-H	M.2 M-Key 2280/22110 Slot (supports PCIe 3.0 x4/SATA3)
SLOT4	CPU PCIe 4.0 x16
SLOT6	CPU PCIe 4.0 x16
SLOT7	CPU PCIe 4.0 x8
S-SATA0, S-SATA1	SATA 3.0 Ports with SATA DOM Power
S-SGPIO1	Serial Link General Purpose I/O Connection Header
TPM1/PORT80	Trusted Platform Module (TPM)/Port 80 Connector
USB0/1	Back Panel Universal Serial Bus (USB) 2.0 Ports
USB2/3, USB4/5	Front Accessible USB 2.0 Headers
USB6/7	Back Panel USB 3.2 Gen 1 Ports
USB8/9	Front Accessible USB 3.2 Gen 1 Header
USB10	USB 3.2 Gen 1 Type-A Header
VGA	VGA Port

## Motherboard Block Diagram

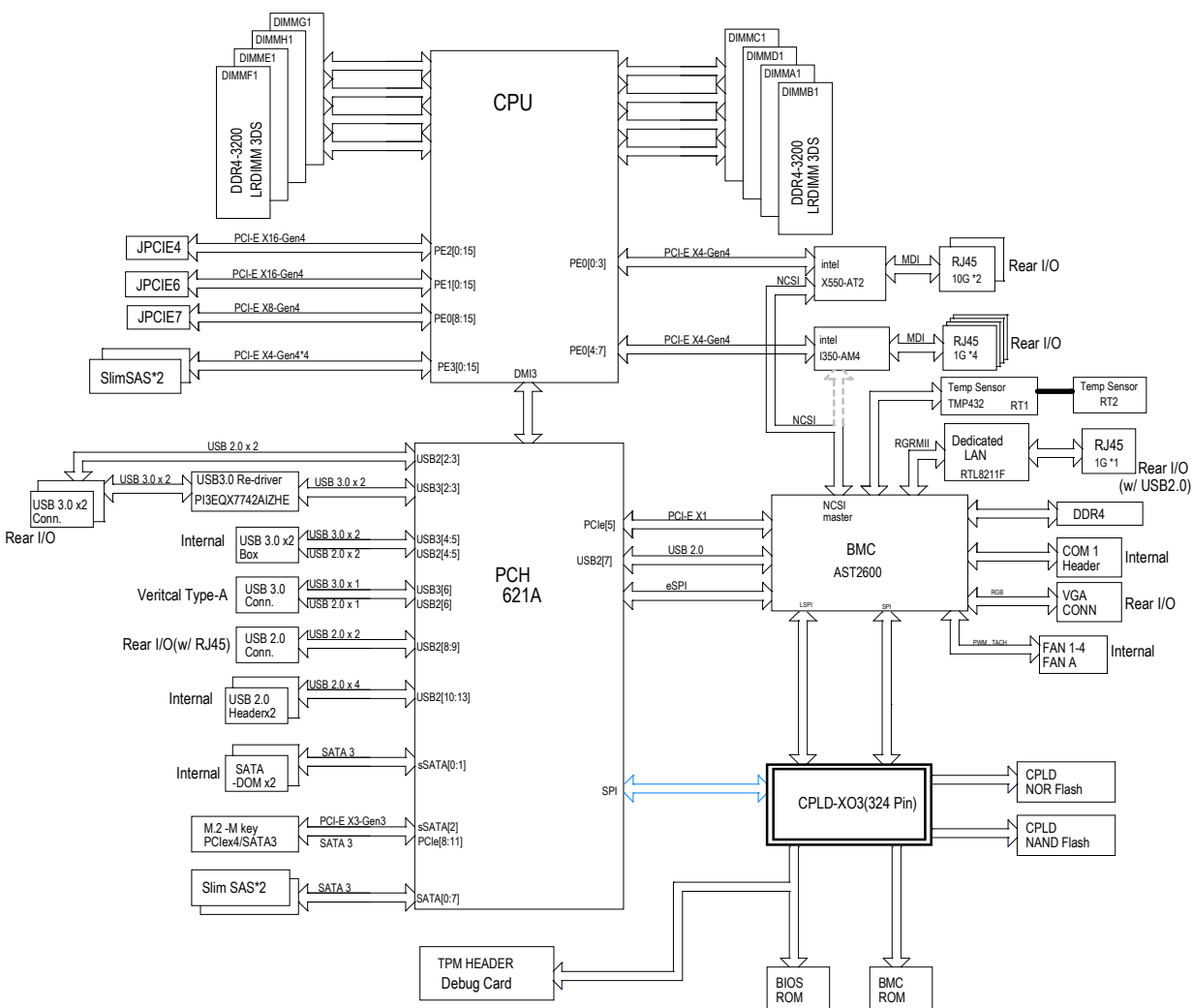


Figure 1-6. Motherboard Block Diagram



# Chapter 2

## Server Installation

### 2.1 Overview

This chapter provides advice and instructions for mounting your system in a server rack. If your system is not already fully integrated with system memory etc., refer to [Chapter 3](#) for details on installing those specific components.

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

### 2.2 Preparing for Setup

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

#### Choosing a Setup Location

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



The ports of this equipment are suitable for connection to intra-building or unexposed wiring or cabling only. The intra-building port(s) of the equipment or subassembly must not be metallically connected to interfaces that connect to the outside plant wiring. These interfaces are designed for use as intra-building interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, issue 6) and require isolation from the exposed outside plan cabling. The addition of primary protectors is not sufficient protection in order to connect these interfaces metallically to outside plant wiring.





**Warning:** The intra-building port(s) (10Gb DAC SFP and 100Gb DAC QSFP ports) of the equipment or subassembly must use shielded intra-building cabling/wiring that is grounded at both ends.

## Rack Precautions

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

## Server Precautions

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

## Rack Mounting Considerations

### *Ambient Operating Temperature*

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

### ***Airflow***

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

### ***Mechanical Loading***

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

### ***Circuit Overloading***

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

### ***Reliable Ground***

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



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

- This unit should be mounted at the bottom of the rack if it is the only unit in the rack.
- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
- Slide rail mounted equipment is not to be used as a shelf or a work space.



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



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

## 2.3 Identifying the Rack Rails

The chassis package includes outer and inner rack rail assemblies in the rack mounting kit.

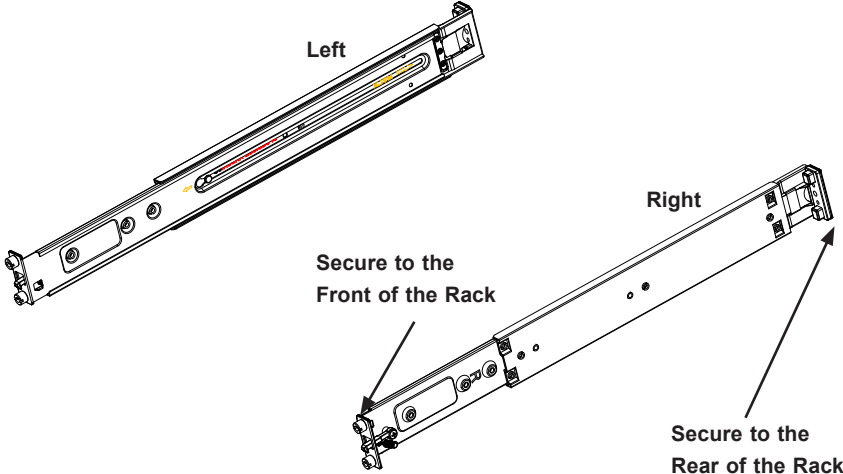


Figure 2-1. Outer Rails

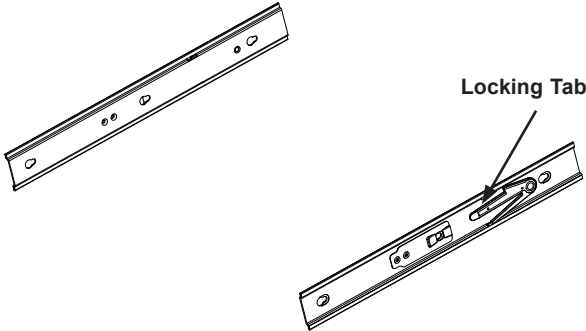


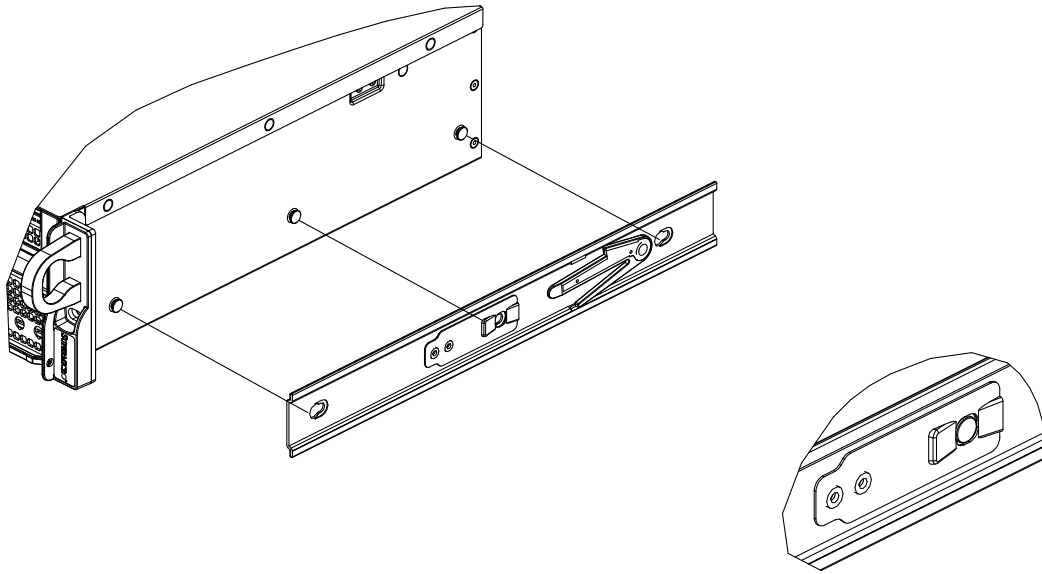
Figure 2-2. Inner Rails

### Locking Tabs

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

## 2.4 Installing the Inner Rails

The inner rails can be installed onto the chassis without any tools.



**Figure 2-3. Installing the Inner Rails**

### *Installing the Inner Rails*

1. Place the inner rail on the side of the chassis aligning the hooks of the chassis with the inner rail holes.
2. Slide the rail toward the front of the chassis.
3. Repeat steps 1-2 for the other inner rail.

## 2.5 Installing the Outer Rails to the Rack

Outer rails attach to the rack and hold the server in place. The outer rails for the chassis extend between 18 inches and 24 inches.

### *Installing the Outer Rails to the Rack*

1. Identify the left and right outer rail.
2. Hang the hooks on the front of the outer rail onto the square holes on the front of the rack. If desired, use screws to secure the outer rails to the rack.
3. Pull out the rear of the outer rail, adjusting the length until it just fits within the posts of the rack.
4. Hang the hooks of the rear section of the outer rail onto the square holes on the rear of the rack. Take care that the proper holes are used so the rails are level. If desired, use screws to secure the rear of the outer rail to the rear of the rack.
5. Install a screw at the center of the rail.
6. Repeat for the other outer rail.

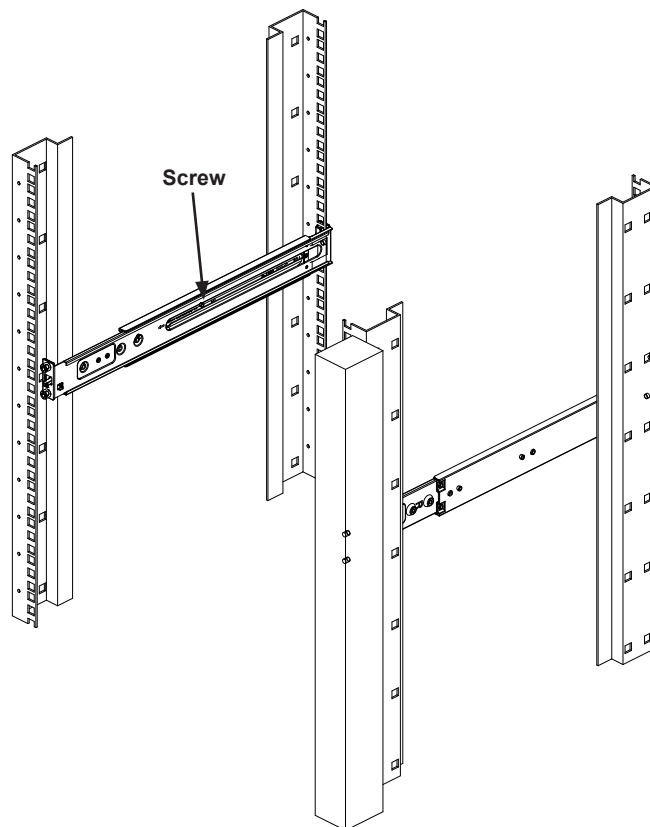


Figure 2-4. Installing the Outer Rails

## 2.6 Installing the Chassis into the Rack

The chassis is secured to the rack with the locking tabs on the inner rails and two front screws.

### *Installing the Chassis into the Rack*

1. Confirm that the chassis includes the inner rails and rail extensions. Also, confirm that the outer rails are installed on the rack.
2. Align the chassis rails with the front of the rack rails.
3. Slide the chassis rails into the rack rails, keeping the pressure even on both sides. (It may be necessary to depress the locking tabs when inserting). When the server has been pushed completely into the rack, the locking tabs will "click" into the locked position.
4. Insert and tighten the screws that hold the front of the server to the rack.

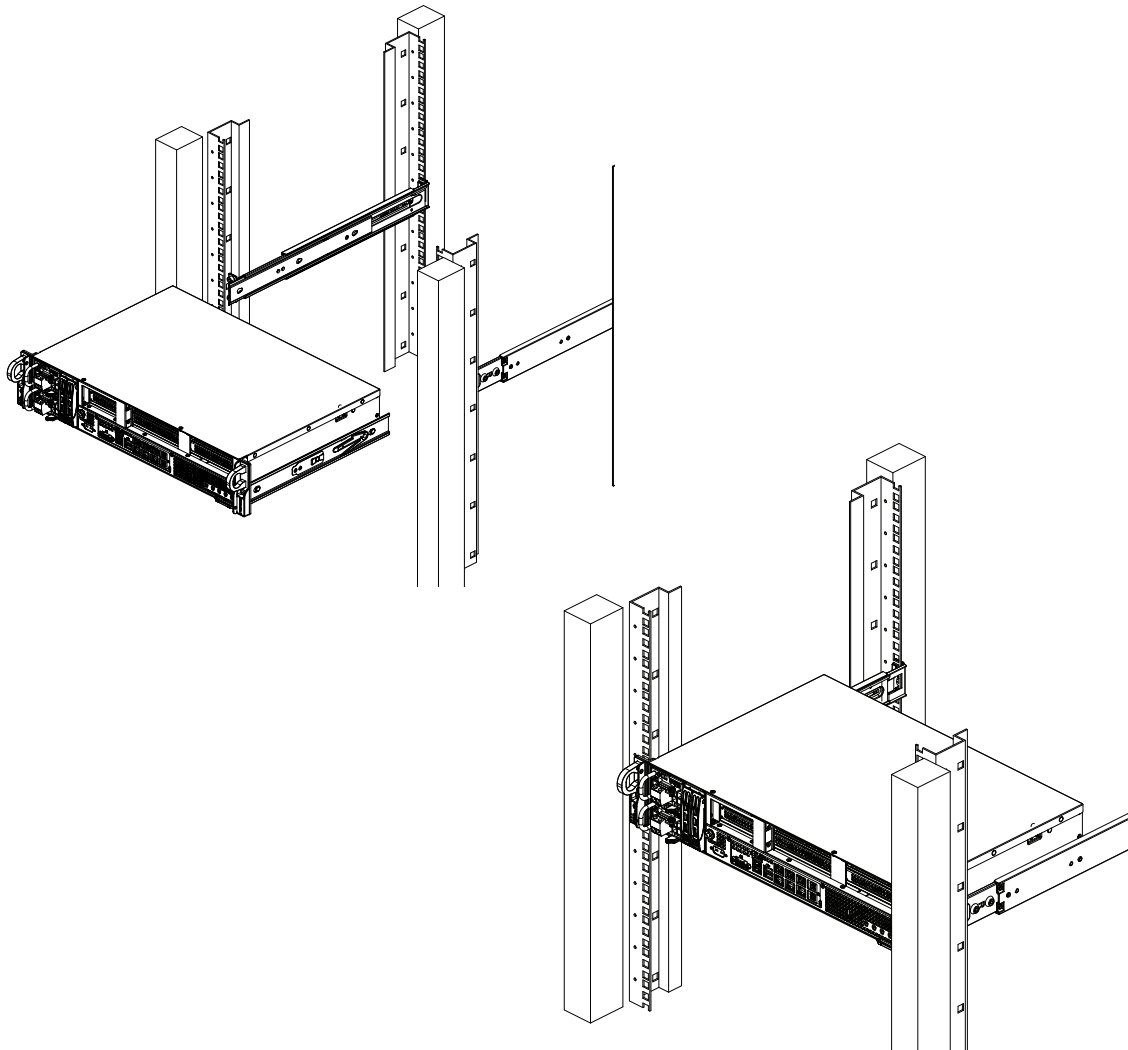
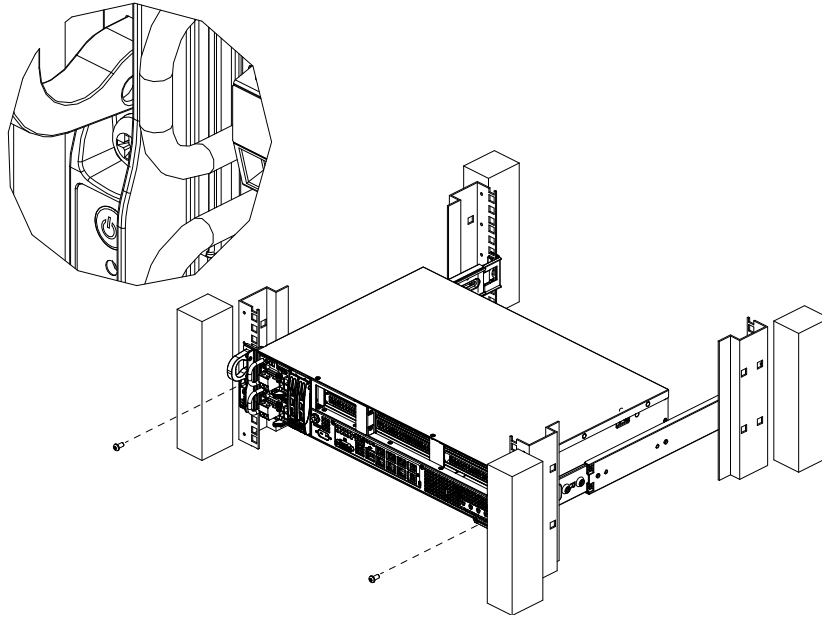


Figure 2-5. Installing the Server into a Rack



**Figure 2-6. Installing Front Screws onto the Rack**

**Note:** Figures are for illustrative purposes only. Always install servers to the bottom of a rack first.

## 2.7 Removing the Chassis from the Rack

To remove the chassis from the rack, perform the installation steps in reverse.

### ***Removing the Chassis***

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

## 2.8 Connecting Power and Ground in a NEBS environment

### DC Power Source, Power Connection, and Grounding

**Note:** This product should be installed only in a Restricted Access Location, that is, a dedicated equipment room, service closet, etc. A Restricted Access Location is an area intended for qualified and trained personnel only and is access controlled.



A reliable ground to the DC power supply must be maintained at all times. The server must be grounded with the chassis ground studs, which ensures the equipment is not energized through cable connections when both Power Suppliers are removed. Simultaneous connections to both the chassis ground stud and the DC Power Supply ground is permissible.



The DC power source shall be in the same building as the server, to minimize the possibility of transient energy to the main inputs of the server.



**Figure 2-7. DC Input Power Cable Connector**

The DC Power Supply has three connections/conductors:

- -48 Vdc, negative terminal (Battery).
- Safety Ground, indicated by “Earth GND Symbol”. (Optional because Chassis GND stud is connected)
- +Return, positive terminal (Battery Return, BR).

Supermicro provides a cable for connection to the DC power supply. You should use the provided cable or an equivalent cable with the following specifications:

- Positronic CBD connector.
- Conductor Wire size: 8WG.
- Safety Ground insulation color: Green/Yellow.
- Use copper conductors only.

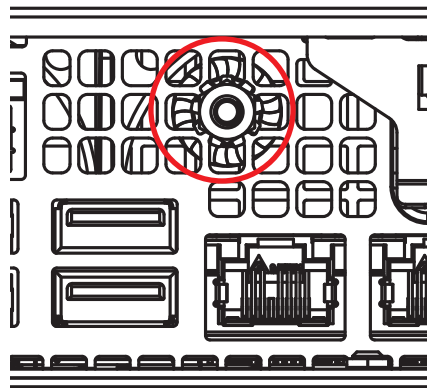
**Note:** If using the Supermicro provided DC power cables, the connector and contacts do not need to be treated with anti-oxidants prior to connection to the Power Supply in the server. Otherwise, the cable wires should be prepared to a bright finish, and coated with an appropriate anti-oxidant prior to crimping or connections to the battery, battery return, and Earth Ground per GR1089 R9-19 [84].



**Note:** The SYS-210P-FRDN6T is DC-I and can be grounded in both CBN and IBN networks. It is suitable for installation in Network Telecommunication Facilities and in locations where the NEC applies. Connection of the +Return (BR) supports both North America, Isolated GP (single point connection to CBN) and Europe, Integrated GP (Multiple point connection to CBN) configurations. DC power source must meet TNV-2 requirements as defined by UL 60950-1 and IEC 60950-1.

## Chassis Ground Stud connections for DC systems

DC server products will include a chassis ground terminal as part of the chassis. This terminal is identified with the IEC 60417 #5019 Protective Earth Symbol. This equipment is designed to connect to the Common Bonding Network (CBN) of the facility in which it is installed.



**Figure 2-8. Chassis Ground Studs (Earth Ground)**

The Chassis ground connection should use a single 8AWG conductor with a cable insulation color of Green/Yellow. Multiple conductors are not allowed per attachment point. A standard ring terminal is recommended for the connection to the GND stud.

The connection to the Chassis Ground stud must establish metal to metal contact. Paint and other non-conductive coatings shall be removed on the surfaces between the mounting hardware. The surfaces shall be cleaned and an anti-oxidant shall be applied before being joined.

Prior to making crimp connections, coat all bare conductors with an appropriate anti-oxidant compound. Bring the ground terminal and connecting hardware to a bright finish and coat with an anti-oxidant before making a connection.



Do not mix copper and aluminum conductors (or other dissimilar metals) in the same terminal. Use lugs rated for copper if using copper conductors, and aluminum rated lugs if using aluminum conductors

## Chapter 3

# Maintenance and Component Installation

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

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

### 3.1 Removing Power

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

1. Use the operating system to power down the system.
2. After the system has completely shut-down, disconnect the power cords from the power strip or outlet.
3. Disconnect the power cords from the power supply modules.

## 3.2 Accessing the Chassis

The top cover is removable to access the chassis components.

### *Removing the Top Cover*

1. Remove two screws and slide the cover back and off.

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

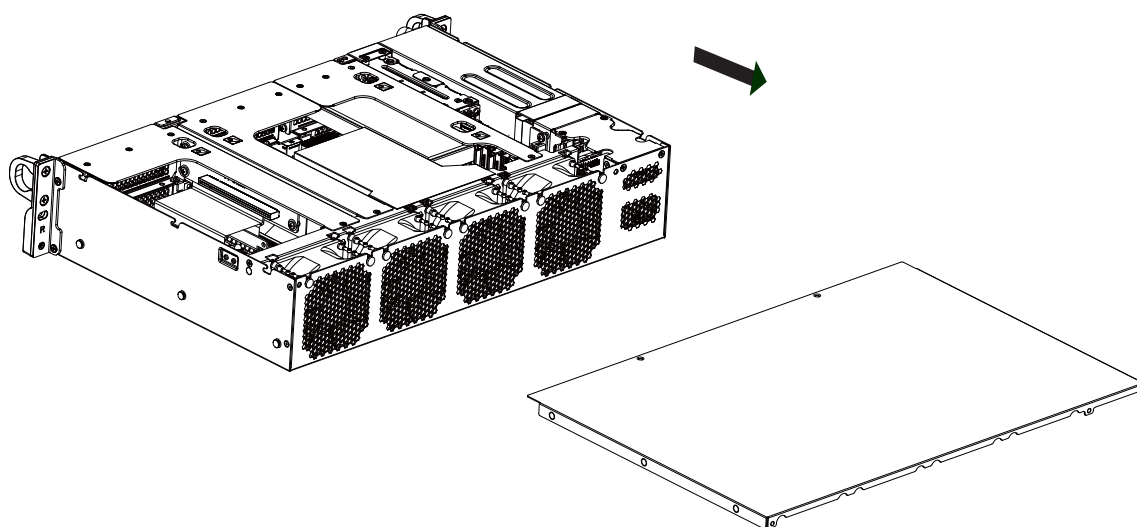


Figure 3-1. Removing the Chassis Cover

### 3.3 Static-Sensitive Devices

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

#### Precautions

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

## 3.4 Processor and Heatsink

Prepare the system for processor and heatsink installation or removal. Follow the static-sensitive device precautions when working with the processor and heatsink.

### Prepare the System

1. Remove power from the system.
2. Remove the chassis cover and any components that are obstructing the CPU socket.
3. Check that the plastic protective cover is on the CPU socket and that none of the socket pins are bent. If they are, contact your retailer.
4. Refer to the Supermicro website for updates on processor and memory support.

**Note:** All graphics in this manual are for illustration only. Your components may look different.

### ESD Precautions

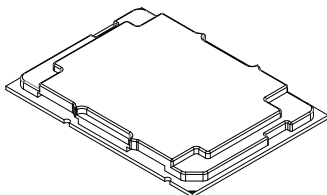
Electrostatic Discharge (ESD) can damage electronic components. Handle the motherboard carefully. The following measures are generally sufficient to protect your equipment from ESD.

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing the motherboard from the antistatic bag.
- Handle the motherboard by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- 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 the socket, and may require manufacturer repairs.
- 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. Do not install the onboard battery upside down to avoid possible explosion.

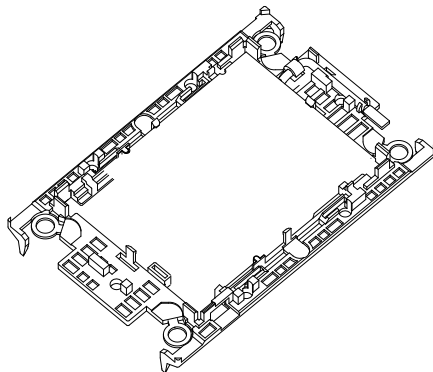
## Overview of the Processor Carrier Assembly

The processor carrier assembly contains the Intel Xeon Scalable Family 3rd Gen/4th Gen Series and a processor carrier.

### 1. Processor



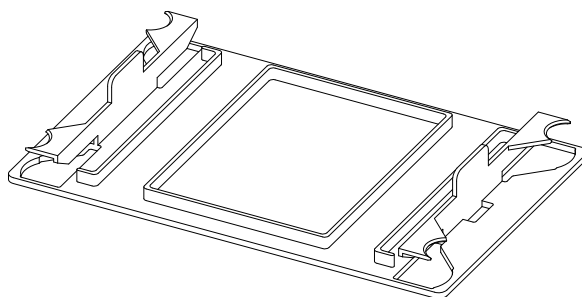
### 2. Processor Carrier



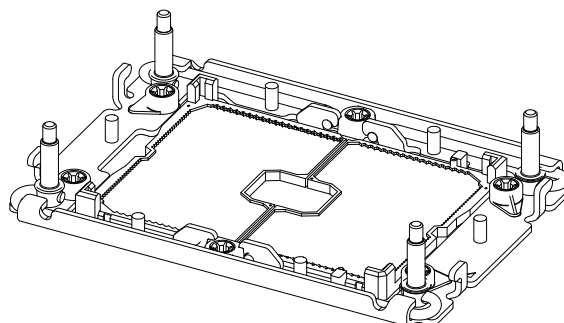
## Overview of the CPU Socket

The CPU socket is protected by a plastic protective cover.

### 1. Plastic Protective Cover



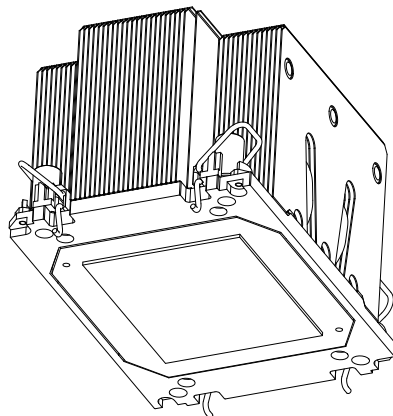
### 2. CPU Socket



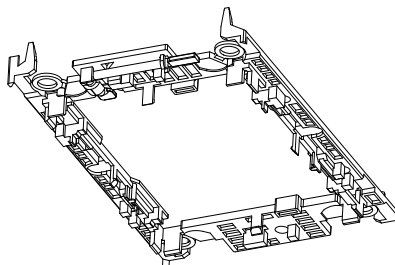
## Overview of the Processor Heatsink Module

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

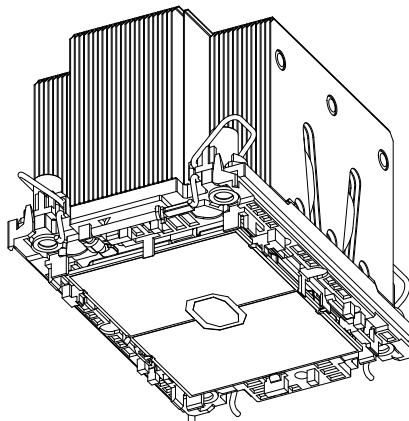
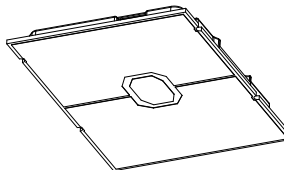
### 1. Heatsink with Thermal Grease



### 2. Processor Carrier



### 3. Processor



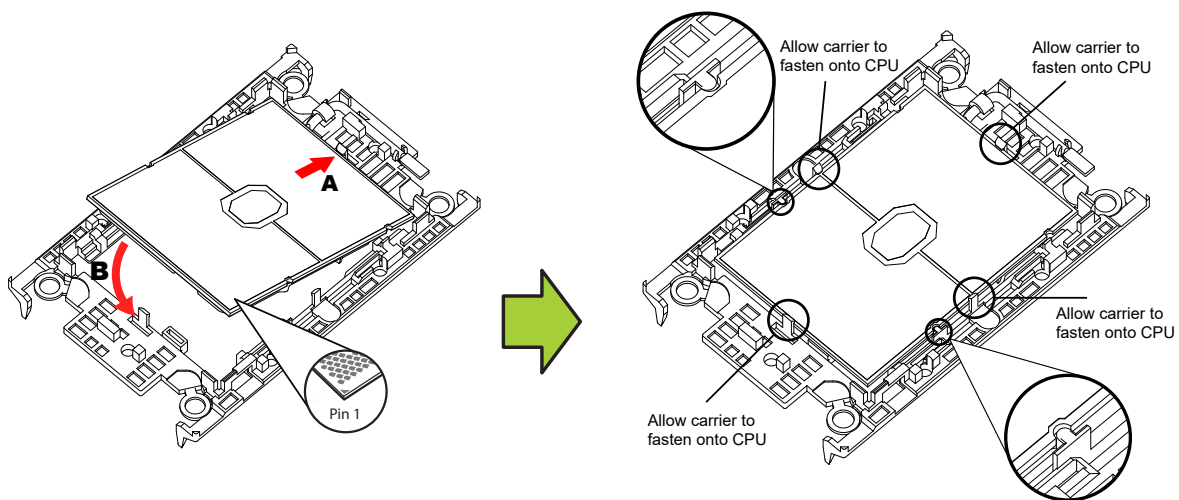
## Creating the 3rd Generation Intel® Xeon® Scalable processors Carrier Assembly

To install the model processor into the processor carrier, follow the steps below:

1. Hold the processor with the LGA lands (gold contacts) facing up. Locate the small, gold triangle in the corner of the processor and the corresponding hollowed triangle on the processor carrier. These triangles indicate pin 1. The triangles can be found on the top and bottom of the processor. See the images below.
2. Using the triangles as a guide, carefully align and place Point A of the processor into the carrier. Then gently snap-in the other side of the carrier for the processor to fasten into Point B.

**Note:** The processor carrier contains four metal rings on each corner.

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



Processor Carrier Assembly

**Note:** The following CPU carriers have been successfully tested in our labs and are available from Supermicro. Please order the CPU carriers with the CPU heatsink.

Intel 3rd Generation Xeon Scalable Processors	SKT-1205L-P4IC-FXC
	SKT-1205L-P4IC-TYC

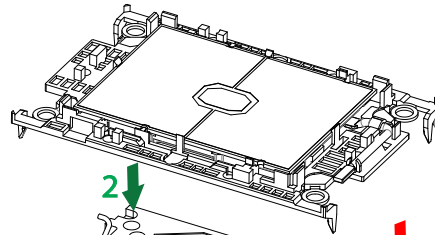


## Assembling the Processor Heatsink Module

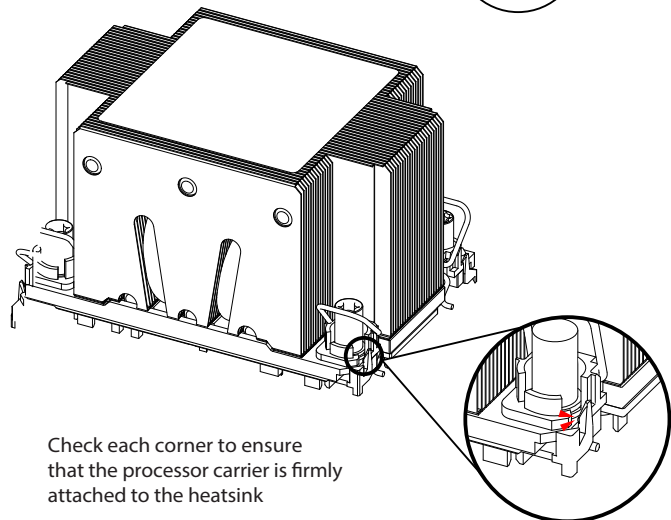
After creating the processor carrier assembly for the processor, mount it onto the heatsink to create the processor heatsink module (PHM):

1. Note the label on top of the heatsink, which marks the heatsink mounting holes as 1, 2, 3, and 4. If this is a new heatsink, the thermal grease has been pre-applied on the underside. Otherwise, apply the proper amount of thermal grease.
2. Turn the heatsink over with the thermal grease facing up. Hold the processor carrier assembly so the processor's gold contacts are facing up, then align the triangle on the assembly with hole 1 of the heatsink. Press the processor carrier assembly down. The plastic clips of the assembly will lock outside of holes 1 and 2, while the remaining clips will snap into their corresponding holes.
3. Examine all corners to ensure that the plastic clips on the processor carrier assembly are firmly attached to the heatsink.

Processor Carrier Assembly  
(Upside Down)

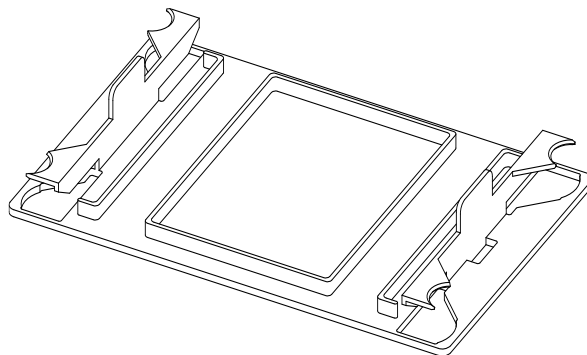


Heatsink  
(Upside Down)

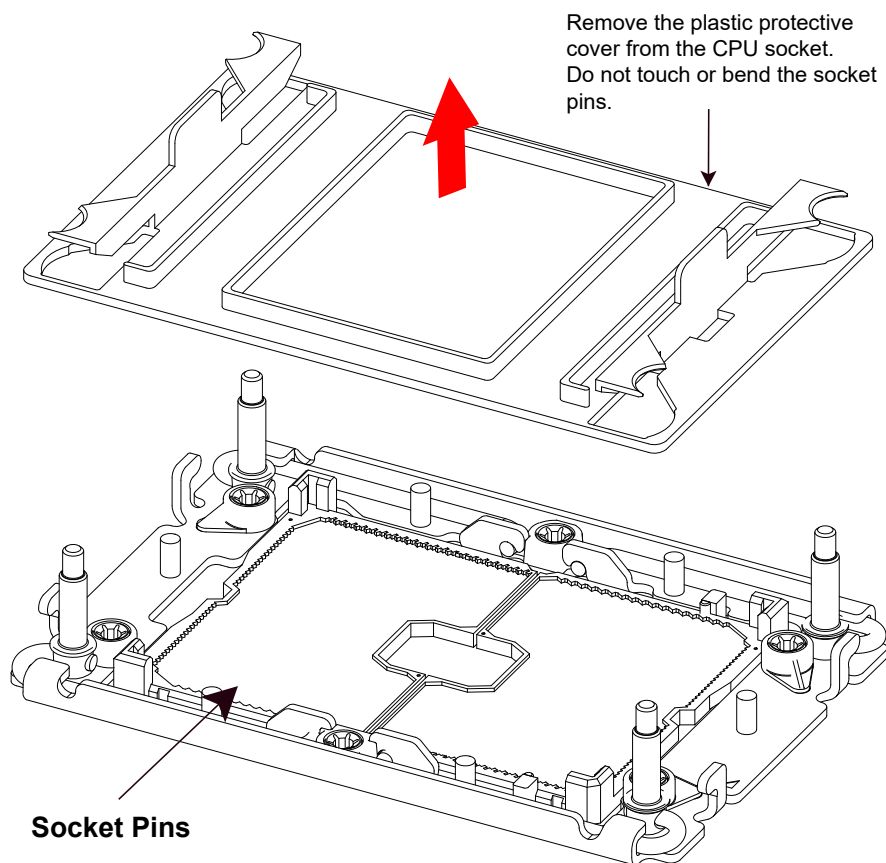


## Preparing the CPU Socket for Installation

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



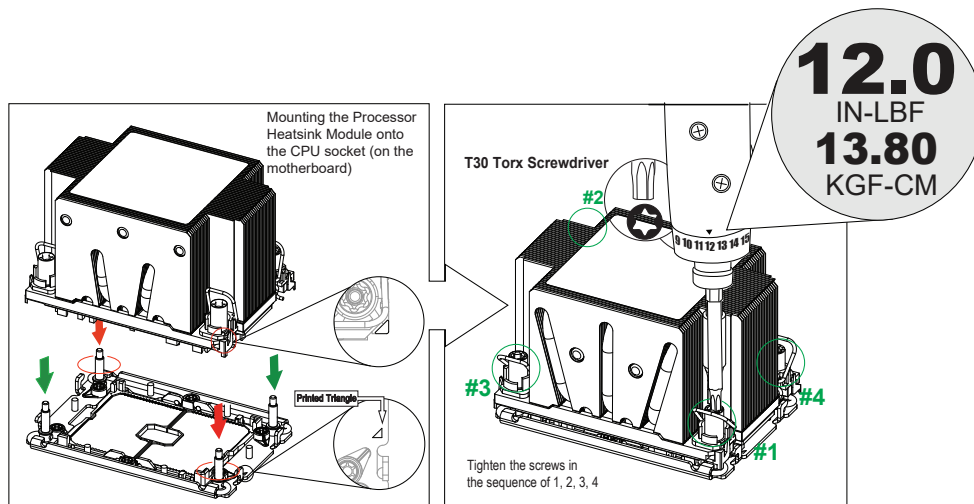
**CPU Socket with Plastic Protective Cover**



## Installing the Processor Heatsink Module

After assembling the Processor Heatsink Module (PHM), install it onto the CPU socket:

1. Align hole 1 of the heatsink with the printed triangle on the CPU socket. See the left image below.
2. Make sure all four holes of the heatsink are aligned with the socket before gently placing the heatsink on top.
3. With a T30 Torx-bit screwdriver, gradually tighten screws #1 - #4 to ensure even pressure. The order of the screws is shown on the label on top of the heatsink. To avoid damaging the processor or socket, do not use a force greater than 12 lbf-in when tightening the screws.
4. Examine all corners to ensure that the PHM is firmly attached to the socket.

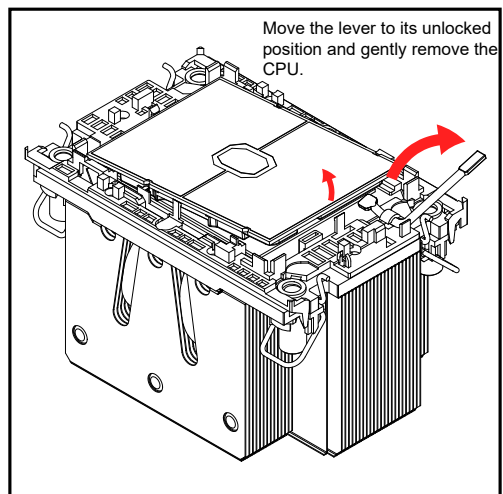
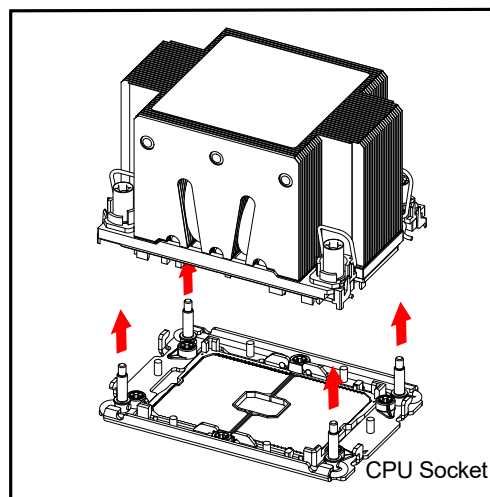
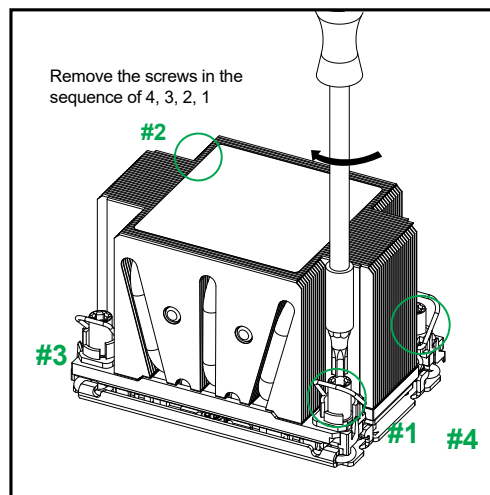


## Removing the Processor Heatsink Module

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

Then follow the steps below:

1. Use a T30 Torx-bit screwdriver to loosen the four screws in a backwards sequence of #4, #3, #2, and #1.
2. Gently lift the PHM upwards to remove it from the socket.
3. Move the lever to its unlocked position and gently remove the CPU.



## 3.5 Memory

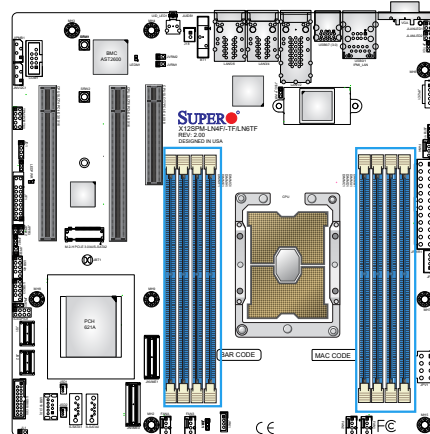
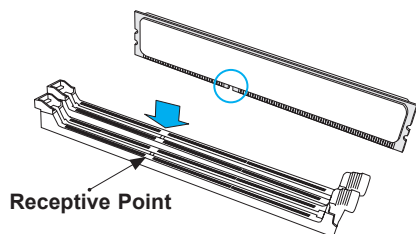
The X12SPM-LN6TF supports up to 2048 GB of ECC RDIMM/LRDIMM/LRDIMM 3DS with speeds of up to 3200 MHz in eight slots. Refer to the tables below for the recommended DIMM population order and additional memory information.

1 CPU, 8-DIMM Slots	
Number of DIMMs	Memory Population Sequence
1	DIMMA1
2	DIMMA1 / DIMME1
4	DIMMA1 / DIMME1 / DIMMC1 / DIMMG1
6	DIMMA1 / DIMME1 / DIMMC1 / DIMMG1 / DIMMB1 / DIMMF1
8	DIMMA1 / DIMME1 / DIMMC1 / DIMMG1 / DIMMB1 / DIMMF1 / DIMMD1 / DIMMH1

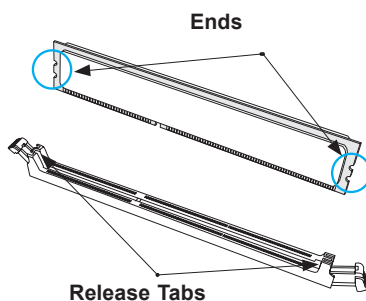
Type	Ranks Per DIMM and Data Width	Dimm Capacity (GB)		Speed (MT/s); Voltage (V); Slot Per Channel (SPC) and DIMM Per Channel (DPC) *Data below assumes 2 SPC unless otherwise noted.
		8 Gb	16 Gb	1DPC
				1.2 V
RDIMM	SRx8	8 GB	16 GB	3200
	SRx4	16 GB	32 GB	
	DRx8	16 GB	32 GB	
	DRx4	32GB	64 GB	
RDIMM-3DS	(4R/8R) x4	2H-64F GB 4H-128 GB	2H-128 GB 4H-256 GB	3200
LRDIMM	QRx4	64 GB	128 GB	3200
LRDIMM-3DS	(4R/8R) x4	4H-128 GB	2H-128 GB 4H-256 GB	3200

## DIMM Installation

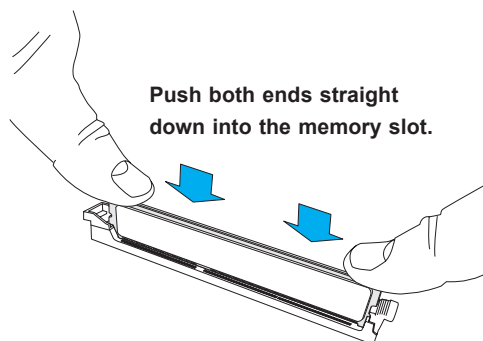
1. Insert the desired number of DIMM modules based on the recommended DIMM population table on the previous page.
2. Align the DIMM module key with the receptive point on the single-latch DIMM slot.



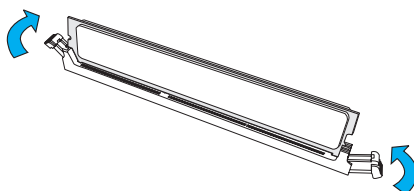
3. Push the release tab outwards to unlock the slot.



4. Press both ends of the module straight down into the slot until the module snaps into place.



5. Push the release tab to the lock position to secure the module into the slot.



## DIMM Removal

Reverse the steps above to remove the DIMM modules from the motherboard.

## 3.6 Motherboard Battery

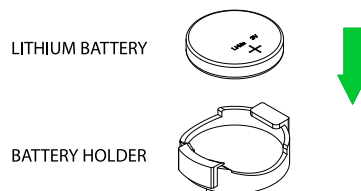
The motherboard uses non-volatile memory to retain system information when system power is removed. This memory is powered by a lithium battery residing on the motherboard.

### *Replacing the Battery*

Begin by removing the top cover from the system.

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

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



**Figure 3-2. Installing the Onboard Battery**

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

## 3.7 Storage Drives

The CSE-211M-R000NDP chassis supports up to two 2.5" storage drives in drive carriers to simplify their removal from the chassis. These carriers also help promote proper airflow.

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

### Drive Carrier Indicators

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

Drive Carrier LED Indicator			
	Color	Blinking Pattern	Behavior for Device
<b>Activity LED</b>	Blue	Solid On	SAS/NVMe drive installed
	Blue	Blinking	I/O activity
<b>Status LED</b>	Red	Solid On	Failure of drive with RSTe support
	Red	Blinking at 1 Hz	Rebuild drive with RSTe support
	Red	Blinking with two blinks and one stop at 1 Hz	Hot spare for drive with RSTe support (not supported in VMD mode)
	Red	On for five seconds, then off	Power on for drive with RSTe support
	Red	Blinking at 4 Hz	Identify drive with RSTe support
	Green	Solid On	Safe to remove NVMe device (not supported in VMD mode)
	Amber	Blinking at 1 Hz	Attention state---do not remove NVMe device (not supported in VMD mode)



## Installing Drives

### *Removing Drive Carriers from the Chassis*

1. Push the release button on the drive carrier. This releases and extends the drive carrier handle.
2. Swing the handle fully out.
3. Grasp the handle and use it to pull the drive carrier out of its bay.

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

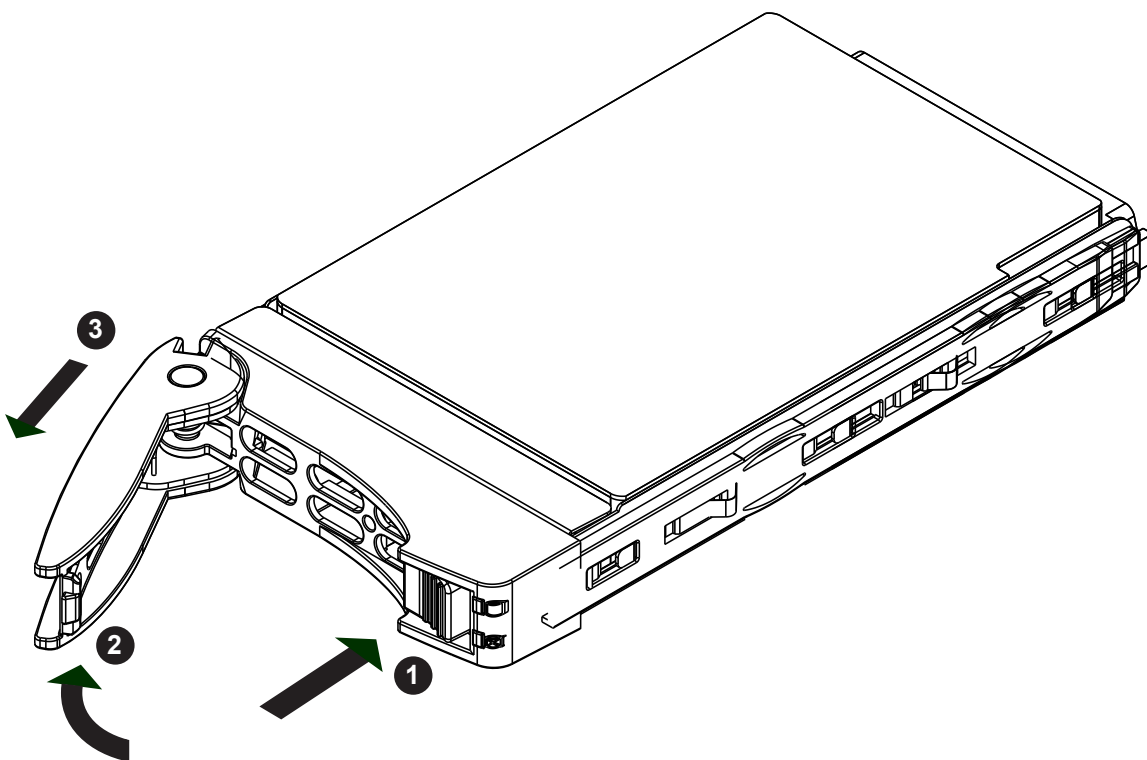
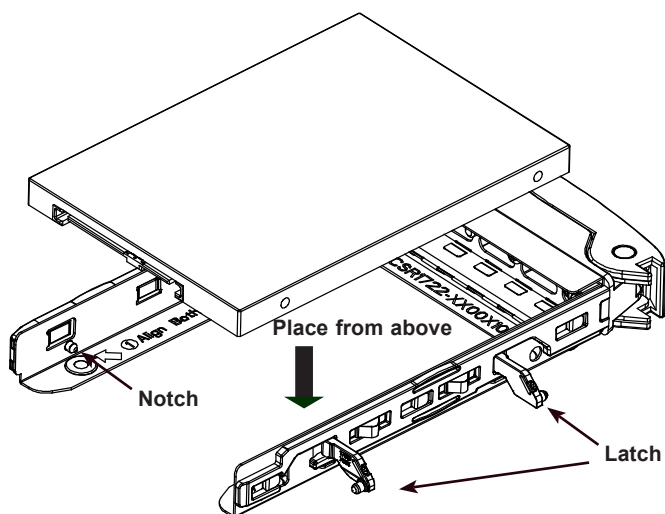


Figure 3-3. Removing a Drive Carrier

### ***Installing a 2.5" Drive***

1. Place the drive carrier on a flat surface.
2. The physical size of the drive does not permit using the stubs to hold the right side of the drive. Instead, install the drive directly into the tray and secure with four screws underneath.
3. Use the open handle of the drive carrier to insert the drive carrier into the open drive bay. Secure the drive carrier into the drive bay by closing the drive carrier handle.



**Figure 3-4. Installing a 2.5" Drive**

## 3.8 Expansion Cards

The system includes slots for PCI expansion cards. Riser cards position the expansion cards at a 90 degree angle, allowing them to fit inside the 2U chassis. The left bracket supports Slots 1 and 2 and is the default. The center bracket supports Slot 3 and 4 and is optional. The right bracket supports Slots 5 and 6.

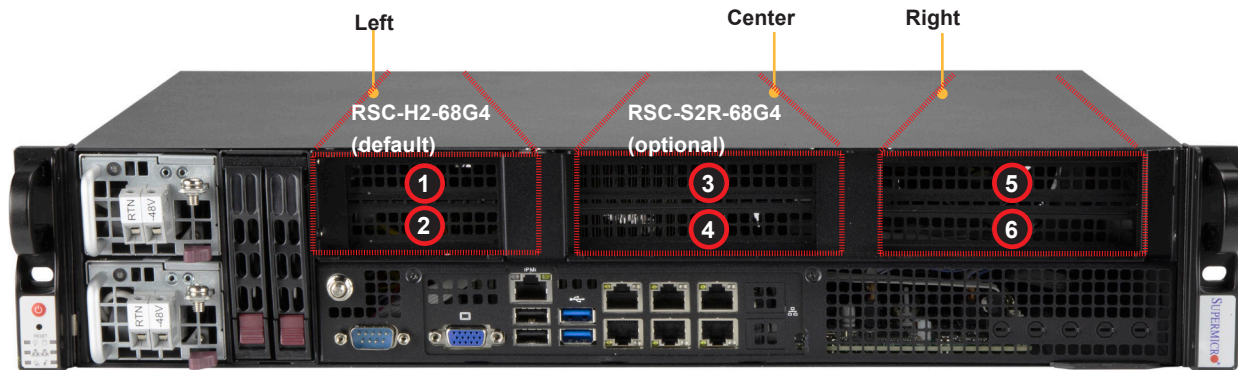


Figure 3-5. Expansion Card Locations

### Slot Population Guidelines

The expansion slots can be configured as x8 or x16. Populate the slots according to the guidelines below.

#### Default Configuration

The left riser card is included in the "barebone" system. The center riser card is not included.

##### Left Riser Card

- Slot 1 can be configured as a PCIe 4.0 x16 slot with two x8 slimSAS cables connected to JNVME 0/1 on the motherboard. In this case, Slot 2 is disabled.
- Slot 1 and Slot 2 each can be configured as PCIe 4.0 x8 slots with two x8 slimSAS cables connecting to JNVME 0/1 on the motherboard.

##### Center Riser Card (not included)

- Slot 3 is not supported.
- Slot 4 is not supported.

##### Right Riser Card

- Slot 5 and Slot 6 can be configured as PCIe 4.0 x16.

### Optional Configuration

If populating Slot 3 or 4, use a 1U heatsink, CPU TDP less than 165 W, and air shrouds. See Figure 3-6. The left riser card is not included. The center riser card is included.

#### Left Riser Card

- Slot 1 is not supported.
- Slot 2 is not supported.

#### Center Riser Card

- Slot 3 can be configured as a PCIe 4.0 x8 slot. The riser card is connected to SLOT7 on the motherboard.
- Slot 4 can be configured as a PCIe 4.0 x16 slot and connects to JNVME 0/1 on the motherboard by two slimSAS cables.

#### Right Riser Card

- Slot 5 and Slot 6 can be configured as PCIe 4.0 x16.

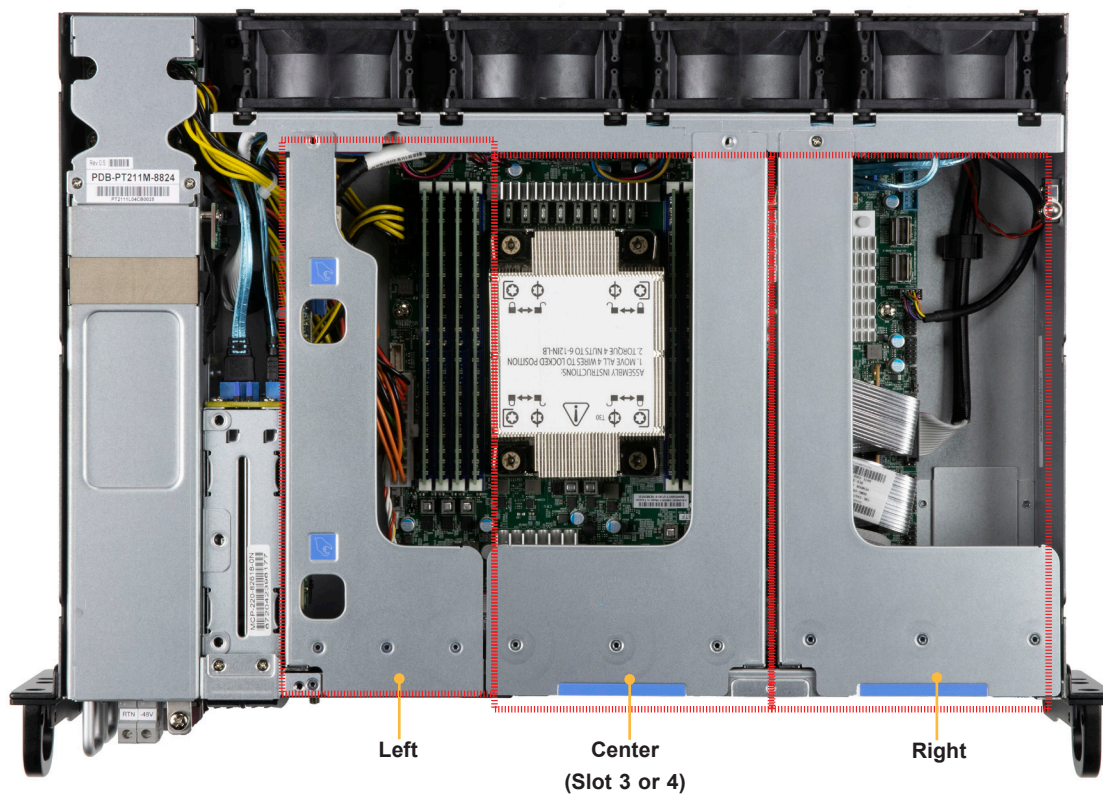


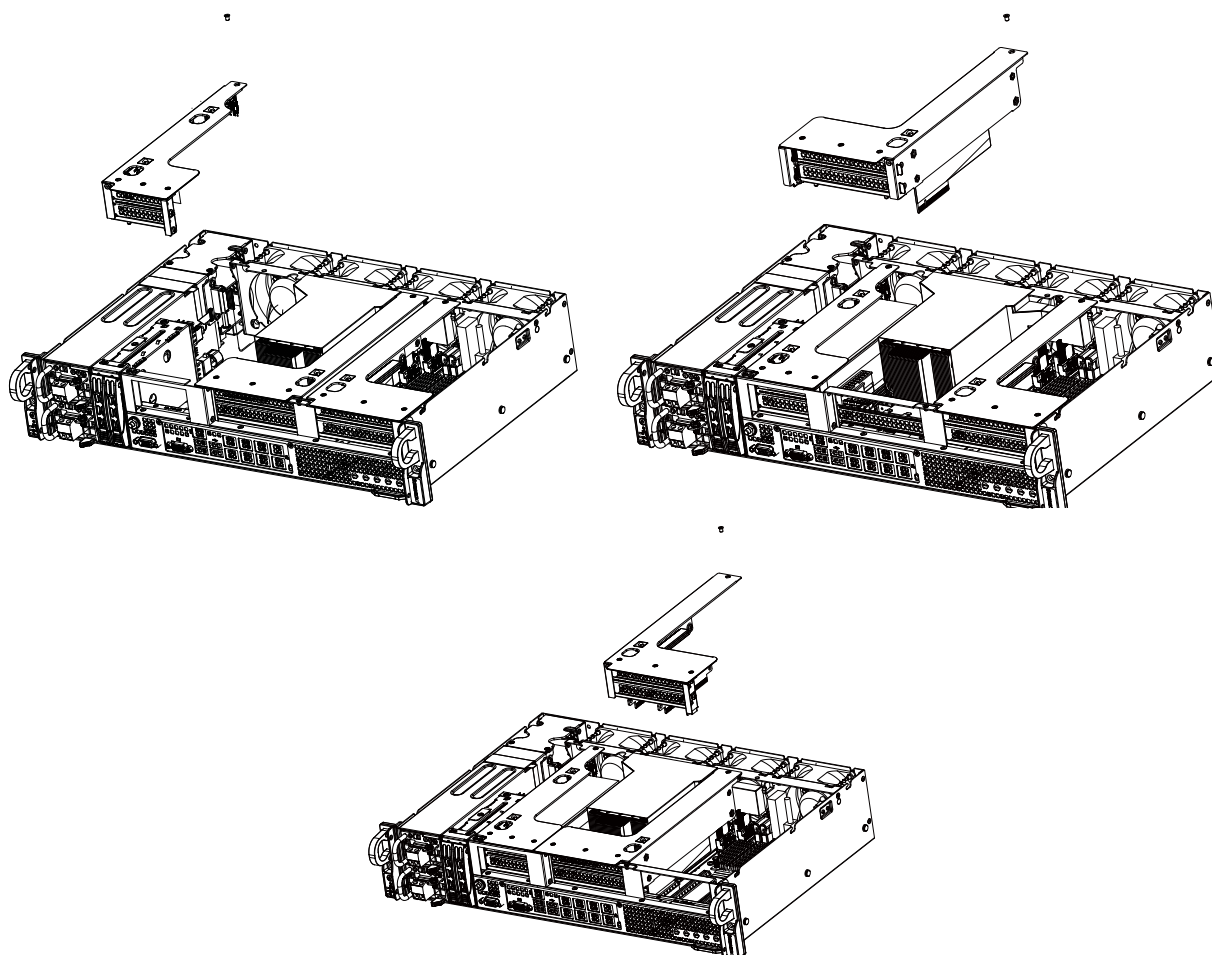
Figure 3-6. Heatsink and Slot 3 or 4 Location

## Installing Expansion Cards

Follow the steps below to install expansion cards into brackets.

### *Installing a PCI Expansion Card*

1. Power down the system and remove the cover.
2. For each bracket, remove the screw as shown below.
3. Remove the bracket from the chassis.
4. Install the PCIe expansion cards into the riser card.
5. Install the assembly into the chassis and connect any additional wires (see the tables on the next page).



**Figure 3-7. Removing Riser Brackets**

**Note:** Figures are for illustrative purposes only.



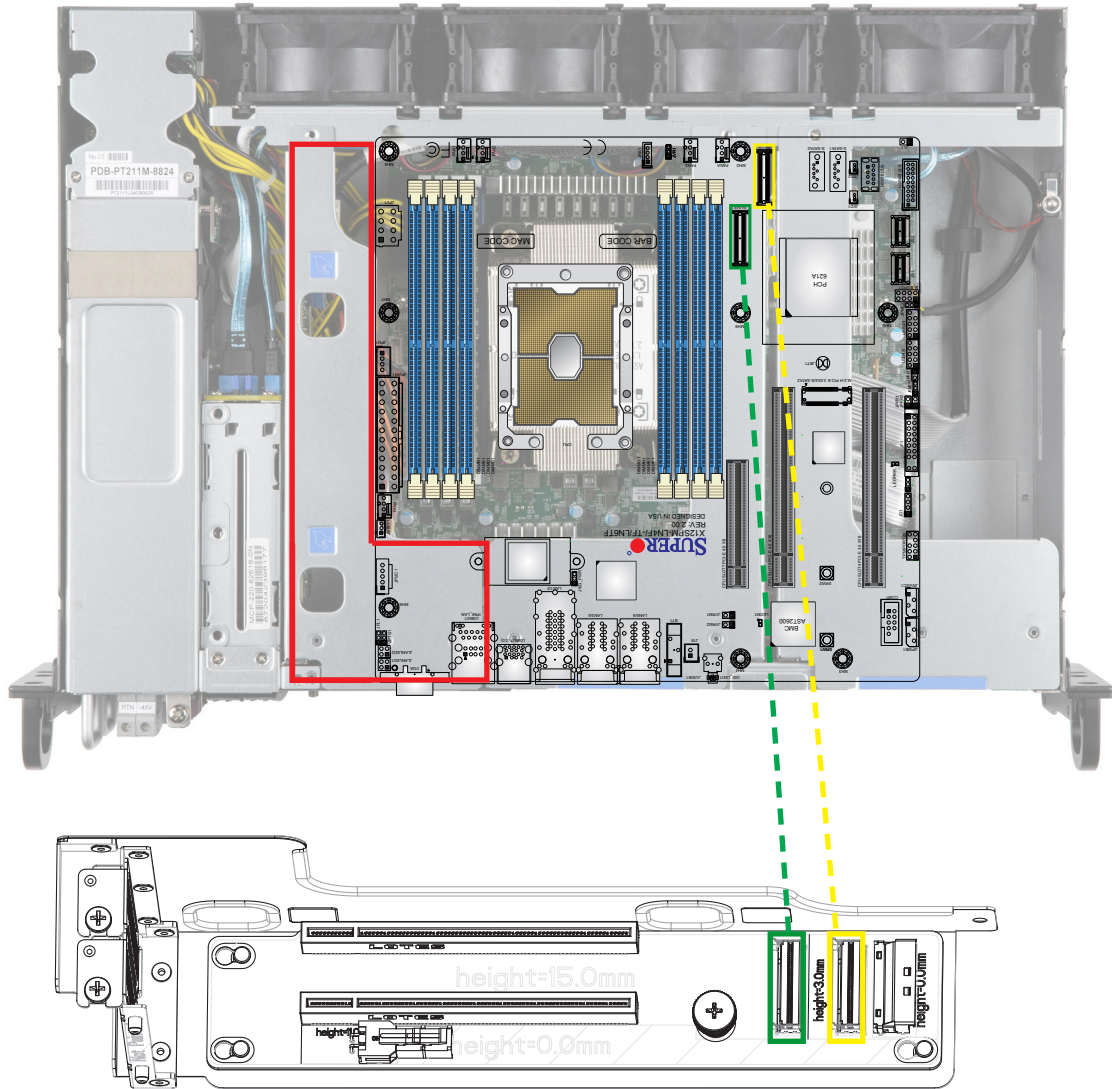


Figure 3-8. PCIe Slots and Cable Connectors

Left Bracket Slots and Cable Connections				
Configurations	Left Bracket Slot	MB Connector	SlimSAS Cable	Riser Card Connector
Configuration 1	PCIe Slot 1: PCIe 4.0 x16	JNVME0	CBL-SAST-1207LP-85	JPCIE1A1
	PCIe Slot 2: N/A	JNVME1	CBL-SAST-1206LP-85	JPCIE1B1
Configuration 2	PCIe Slot 1: PCIe 4.0 x8	JNVME0	CBL-SAST-1207LP-85	JPCIE1A1
	PCIe Slot 2: PCIe 4.0 x8	JNVME1	CBL-SAST-1206LP-85	JPCIE2A1

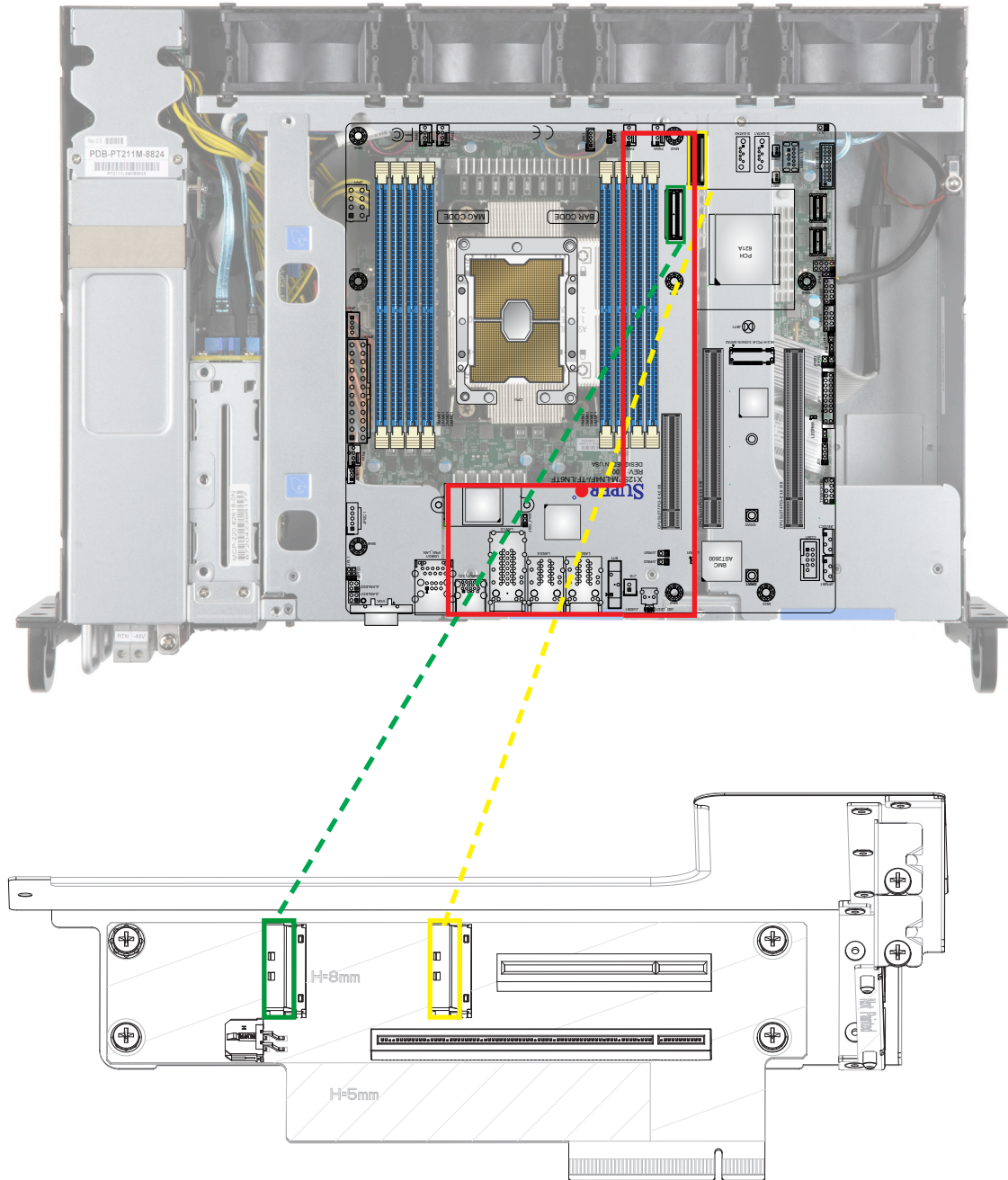


Figure 3-9. PCIe Slots and Cable Connectors

Center Bracket Slots and Cable Connections			
Center Bracket Slot	MB Slot or Connector	SlimSAS Cable	Riser Card Connector
PCIe Slot 3: PCIe 4.0 x8	CPU SLOT7 PCIe 4.0 x8	N/A	N/A
PCIe Slot 4: PCIe 4.0 x16	JNVME 0/1	Two CBL-SAST-1207LP-85 cables	JPCIE1A1

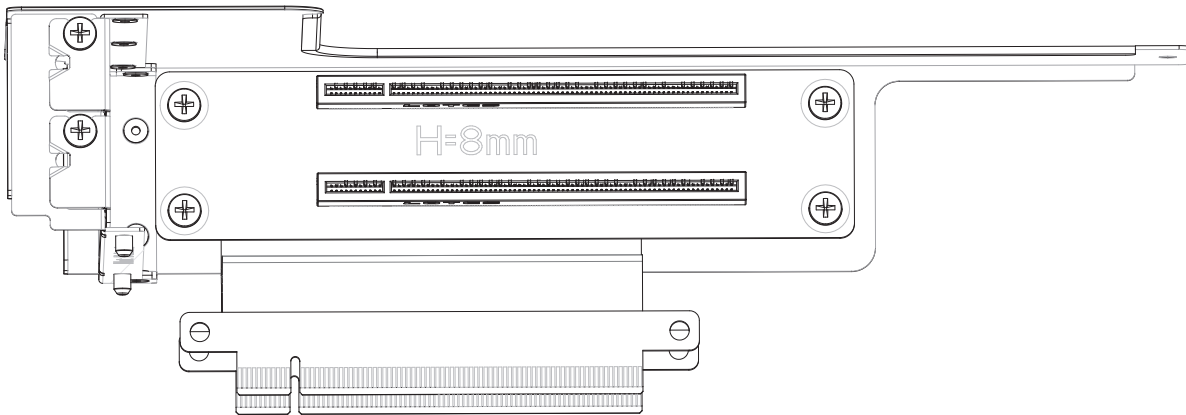
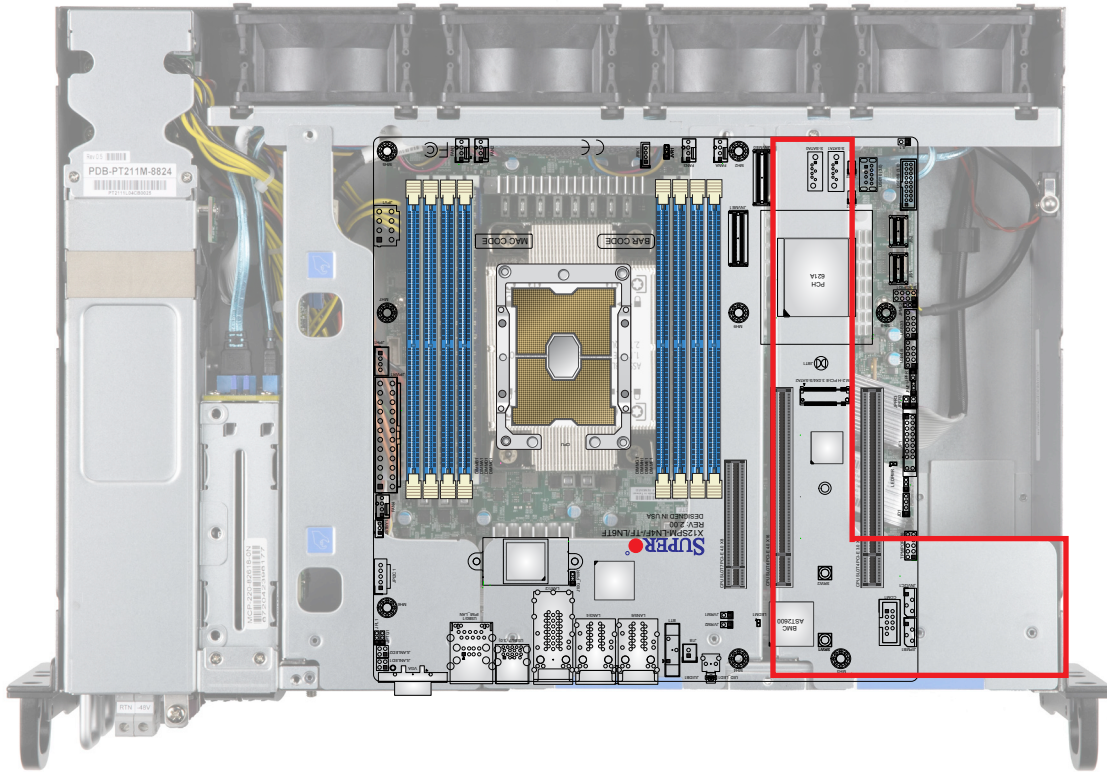


Figure 3-10. PCIe Slots

Right Bracket and MB Slots	
Right Bracket Slot	Motherboard Slots
PCIe Slot 5: PCIe 4.0 x16	CPU SLOT6 PCIe 4.0 x16
PCIe Slot 6: PCIe 4.0 x16	CPU SLOT4 PCIe 4.0 x16

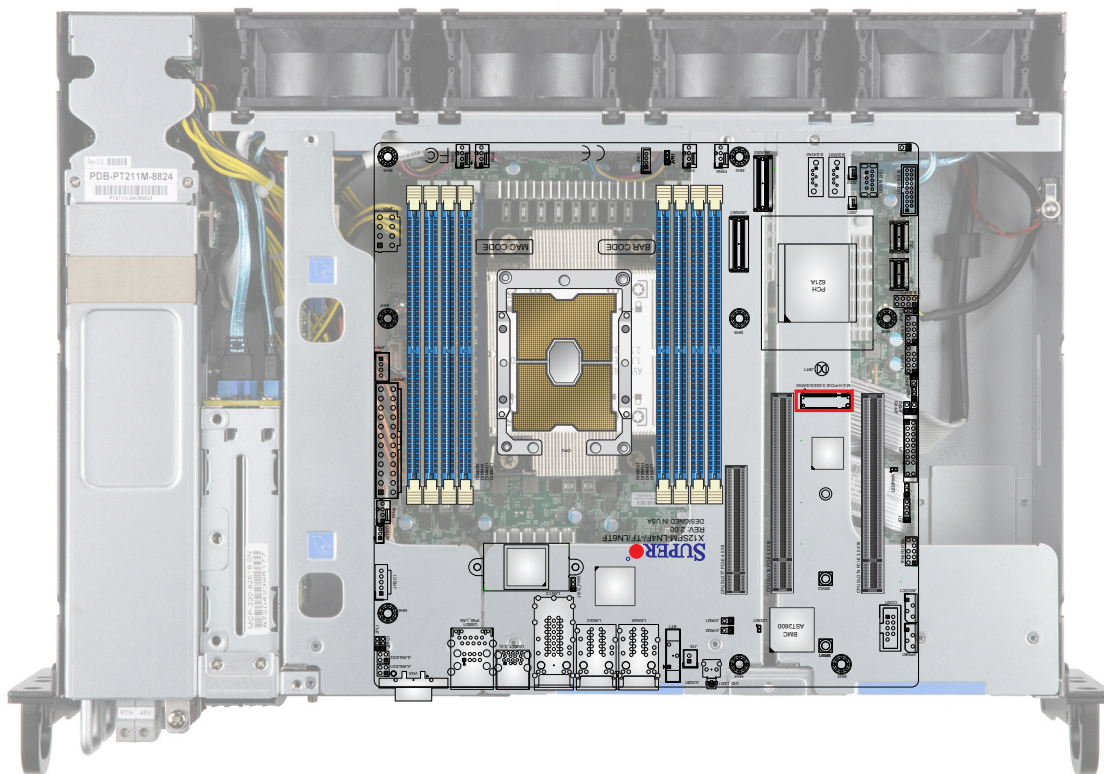


## Installing M.2 Solid State Drives

The X12SPM-LN6TF supports PCIe 3.0 x4 NVMe/SATA M.2 SSDs. The M.2 slot supports the 2280 and 22110 form factors.

### Installing M.2 Drives

1. Remove power from the system and then remove the top cover as described in Sections 3.1 and 3.2.
2. Remove any components obstructing the M.2 slot.
3. If necessary, use a tweezer to remove the plastic pin from its current location (SRW1 or SRW2). Next, insert the plastic pin into the desired plastic pin holder location, SRW2 for the 2280 form factor and SRW1 for the 22110 form factor.
4. Insert the M.2 SSD sideways into the connector so that it lays flat, then secure it to the motherboard with the plastic pin.
5. Finish by replacing the cover and restoring power to the system.



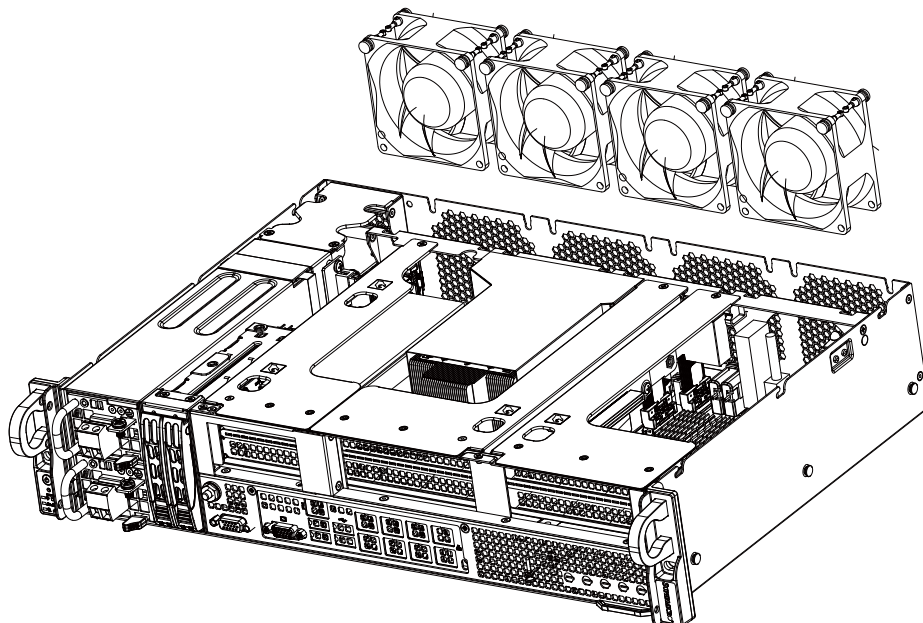
## 3.9 System Cooling

### Fans

Four internal fans provide cooling to the system.

#### *Changing a System Fan*

1. Determine which fan is failing. If possible, use BMC. If not, remove the chassis cover while the power is on, and examine the fans to determine which one has failed.
2. Remove power from the system.
3. Remove the AIOM and expansion card brackets to access the failed fan's power cable.
4. Remove the failed fan's power cable from the motherboard.
5. Lift the fan housing up and out of the chassis.
6. Push the fan up from the bottom and out of the top of the housing.
7. Place the replacement fan into the vacant space in the housing while making sure the arrows on the top of the fan (indicating air direction) point in the same direction as the arrows on the other fans.
8. Put the fan housing back into the chassis and reconnect the cable.
9. Re-install the AIOM and expansion card brackets.
10. Replace the drawer and confirm that the fan is working properly before replacing the chassis cover.



**Figure 3-11. Fan Replacement**

## **Air Shroud**

The air shroud distributes cooling air from the fan throughout the system. The "barebone" system does not include an air shroud. If populating the center riser slots, configure the system with a 1U heatsink, air shroud, and CPU TDP below 165 W.

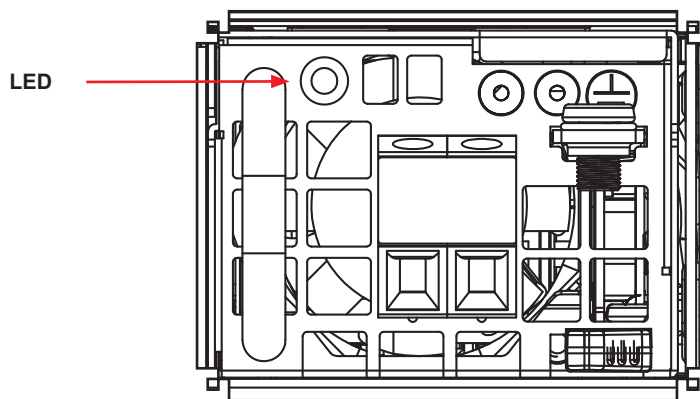
## 3.10 Power Supply

The CSE-211M-R000NDP chassis has two 600 W DC hot-swappable redundant power supplies. The power supplies are auto-switching capable. The 600 W DC power supplies can operate at a -44 Vdc to -65 Vdc input range. If replacing a power supply, the system does not need to be powered down. New units can be ordered directly from Supermicro or authorized distributors.

### ***Replacing a Power Supply (SYS-210P-FRDN6T)***

1. Use the system's remote management to find the failed power supply.
2. Check the power supply's LED.

Power Supply LED States	
LED Color	Definition
Off	No power input
Amber	Power supply is off or failed
Green	Power supply is on and operating



**Figure 3-12. Power Supply Rear View**

3. Disconnect the power supply from the external power source.
4. Push the release button towards the handle.
5. Using the handle, pull the power supply out of the chassis.
6. Slide the new power supply into the chassis until it clicks into place.
7. Reconnect the power supply to the external power source.
8. Check the power supply's LED.
9. Use remote management to check the power supply status.

## 3.11 BMC Reset

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

- Reset – Press and hold the button. After six seconds, the LED blinks at 2 Hz. The BMC resets and the reset duration is approximately 250 ms. Then the BMC starts to boot.
- Restore factory default configuration – Hold the button for twelve seconds. The LED blinks at 4 Hz while defaults are configured. **Note:** All BMC settings including username and password will be removed except the FRU and network settings.
- Firmware update – When the BMC firmware is being updated, the UID LED blinks at 10 Hz.

BMC Reset Options		
Event	UID LED	BMC Heartbeat LED
Reset	Blue, Blinks at 2 Hz	Green, solid
Restore Defaults	Blue, Blinks at 4 Hz	Green, solid
Update	Blue, Blinks at 10 Hz	

# Chapter 4

## Motherboard Connections

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

Please review the Safety Precautions in [Appendix A](#) before installing or removing components.

### 4.1 Power Connections

#### ATX Power Supply Connector

JPWR1 is a 24-pin power supply connector. You must also connect the 8-pin (JPV1) power connector to the power supply.

ATX Power 24-pin Connector Pin Definitions			
Pin#	Definition	Pin#	Definition
13	+3.3V	1	+3.3V
14	Res (NC)	2	+3.3V
15	Ground	3	Ground
16	PS_ON	4	+5V
17	Ground	5	Ground
18	Ground	6	+5V
19	Ground	7	Ground
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	Ground	12	+3.3V

Required Connection

### 8-Pin Power Connector

JPV1 is an 8-pin 12V DC power input for the CPU that must be connected to the power supply. Refer to the table below for pin definitions.

8-pin Power Pin Definitions	
Pin#	Definition
1 - 4	Ground
5 - 8	P12V (12 V Power)

#### Required Connection

### 4-Pin Power Output

The 4-pin drive power connector located at JPH1 provides power to onboard drives. Refer to the table below for pin definitions.

4-pin Drive Power Pin Definitions	
Pin#	Definition
1	12 V
2-3	Ground
4	5 V

## 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.

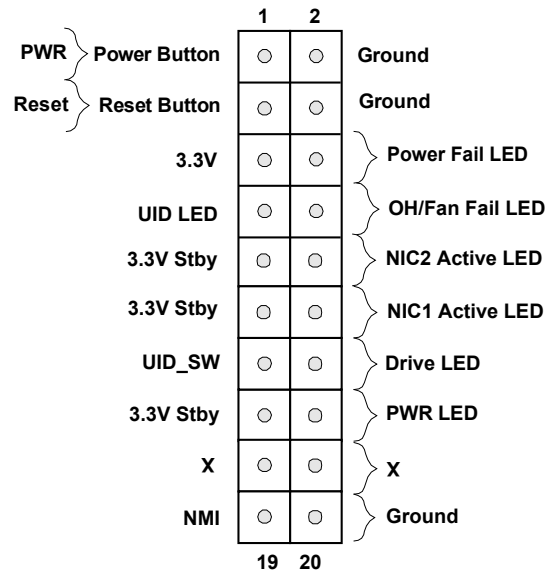


Figure 4-1. JF1 Control Panel Pins

### 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. 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 Pin Definitions (JF1)	
Pins	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 Pin Definitions (JF1)	
Pins	Definition
3	Reset
4	Ground



### Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table below for pin definitions.

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

### 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 Status	
State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

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

### NIC1/NIC2 (LAN1/LAN2)

The NIC (Network Interface Controller) 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.

LAN1/LAN2 LED Pin Definitions (JF1)	
Pin#	Definition
9	3.3 V Stby
10	NIC 2 Activity LED
11	3.3 V Stby
12	NIC 1 Activity LED

### Drive LED/UID Switch

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

Drive LED Pin Definitions (JF1)	
Pins	Definition
13	UID_SW
14	Drive Active

**Power LED**

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

<b>Power LED Pin Definitions (JF1)</b>	
<b>Pins</b>	<b>Definition</b>
15	3.3 V 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.

<b>NMI Button Pin Definitions (JF1)</b>	
<b>Pins</b>	<b>Definition</b>
19	Control
20	Ground

## 4.2 Headers and Connectors

### Fan Headers

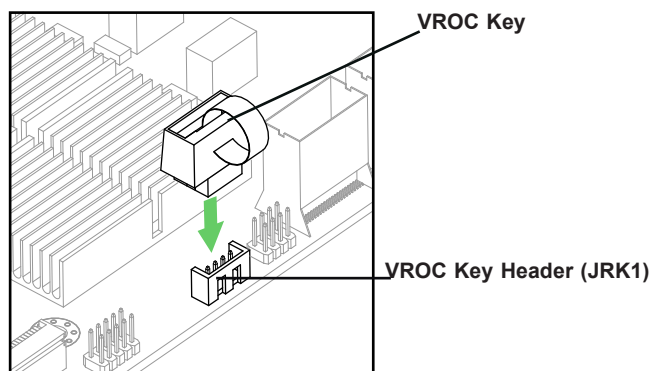
There are four 4-pin fan headers on the motherboard: two (FAN3~FAN4) on the front plane (see locations below), and two (FAN1~FAN2) on the drive backplane. All these 4-pin fan headers are backwards compatible with the traditional 3-pin fans. However, fan speed control is available for 4-pin fans only by Thermal Management via the BMC interface. Refer to the table below for pin definitions.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground
2	2.5 A/+12 V
3	Tachometer
4	PWM_Control

### VROC RAID Key Header

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

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



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

### TPM/Port 80 Header

The JTPM1 header is used to connect a Trusted Platform Module (TPM)/Port 80, which is available from Supermicro (optional). A TPM/Port 80 connector is a security device that supports encryption and authentication in hard drives. It allows the motherboard to deny access if the TPM associated with the hard drive is not installed in the system. See the layout below for the location of the TPM header. Please go to the following link for more information on the TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

Trusted Platform Module Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+3.3 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#

### I-SATA 3.0 and S-SATA 3.0 Ports

The X12SPM-LN6TF has eight I-SATA 3.0 ports (I-SATA0~7) and six S-SATA ports (S-SATA0-1, S-SATA2~5). These SATA ports, supported by the C621A chipset, provide serial-link signal connections.

### JLAN LED Connectors

There are two LAN LED activity signal connectors for the front panel. Refer to the tables below for pin definitions.

JLANLED1 (LN4F/LN6TF only) Pin Definitions	
Pin	Definition
1	3.3V Stby
2	NIC5 LED for LN4F; NIC3 Active LED for LN6TF
3	3.3V Stby
4	NIC6 Active LED for LN4F; NIC4 Active LED for LN6TF

JLANLED2 (LN4F/LN6TF only) Pin Definitions	
Pin	Definition
1	3.3V Stby
2	NIC5 Active LED for LN6TF
3	3.3V Stby
4	NIC6 Active LED for LN6TF

## SGPIO Headers

There is one Serial Link General Purpose Input/Output (S-SGPIO1) header located on the motherboard. S-SGPIO is for sSATA use. Refer to the tables below for pin definitions.

SGPIO Header Pin Definitions			
Pin#	Definition	Pin#	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	Clock	8	NC

NC = No Connection

## Disk-On-Module Power Connector

The Disk-On-Module (DOM) power connectors at JSD1 and JSD2 provide 5V power to a solid state DOM storage device connected to one of the SATA ports. Refer to the table below for pin definitions.

DOM Power Pin Definitions	
Pin#	Definition
1	5 V
2	Ground
3	Ground

## 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. Please go to the following link for more information on the TPM: <http://www.supermicro.com/manuals/other/TPM.pdf>.

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

### Standby Power

The Standby Power header is located at JSTBY1 on the motherboard. You must have a card with a Standby Power connector and a cable to use this feature. Refer to the table below for pin definitions.

Standby Power Pin Definitions	
Pin#	Definition
1	+5 V Standby
2	Ground
3	No Connection

### Power SMB (I<sup>2</sup>C) Header

The Power System Management Bus (I<sup>2</sup>C) connector (JPI<sup>2</sup>C1) monitors the power supply, fan, and system temperatures. Refer to the table below for pin definitions.

Power SMB Header Pin Definitions	
Pin#	Definition
1	Clock
2	Data
3	PMBUS_Alert
4	Ground
5	+3.3 V

### NVMe I<sup>2</sup>C Header

Connector JNVI<sup>2</sup>C1 is a management header for the Supermicro AOC NVMe PCIe peripheral cards. Please connect the I<sup>2</sup>C cable to this connector.

NVMe I2C Header Pin Definitions	
Pin#	Definition
1	Data
2	GND
3	Clock
4	+3.3 V

### 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 Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground

### External (I<sup>2</sup>C) Header

The system management bus header is located at JIPMB1. Connect the appropriate cable here to use the IPMB I2C connection on your system. Refer to the table below for pin definitions.

SMBus Header Pin Definitions	
Pin#	Definition
1	Data
2	GND
3	Clock
4	NC

### Speaker

The speaker is located at JD1. Please note that the speaker connector pins (1-4) are used with an external speaker. Refer to the tables below for pin definitions.

Speaker Connector Pin Definitions	
Pin#	Signal
1	P5V
4	R_SPKPIN

### Intel RAID Key Header

The JRK1 header allows the user to enable RAID functions for NVMe connections. Refer to the table below for pin definitions.

Intel RAID Key Header Pin Definitions	
Pin#	Defintion
1	GND
2	3.3V Stdby
3	GND
4	PCH RAID KEY

### M.2 Slot

The X12SPM-LN6TF motherboard has one M.2 slot. 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 spacial efficiency. The M.2 socket on the motherboard supports PCIe 3.0 x4 32Gb/s NVMe/SATA SSD cards in the 2280 and 22110 form factors.

## SATA Ports

Eight SATA 3.0 ports are located on the X12SPM-LN6TF motherboard supported by the C621A chipset via two slimSAS connectors. These SATA ports support RAID 0, 1, 5, and 10. In addition, there are also two S-SATA ports (S-SATA0, S-SATA1) that include SATA DOM power. Refer to the table below for pin definitions.

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

SATA 3.0 Ports Pin Definitions	
Pin#	Definition
1	Ground
2	SATA_TXP
3	SATA_TXN
4	Ground
5	SATA_RXN
6	SATA_RXP
7	NC

## NVM Express Connections

There are two Slimline SAS connectors located on the motherboard to support two PCIe 4.0 x4 NVMe connections. This connector provides high-speed and low-latency connections directly from the CPU to NVMe Solid State (SSD) drives. This greatly increases SSD data-throughput performance and significantly reduces PCIe latency by simplifying driver/software requirements resulting from direct PCIe interface from the CPU to the NVMe SSD drives.

NVME0/1 Connector Pin Definitions							
Pin#	Definition	Pin#	Definition	Pin#	Definition	Pin#	Definition
1	GND	11	SBA+	21	RX4N	31	GND
2	RX0P	12	SBA-	22	GND	32	RX6P
3	RX0N	13	GND	23	RX5P	33	RX6N
4	GND	14	R2XP	24	RX5N	34	GND
5	RX1P	15	RX2N	25	GND	35	RX7P
6	RX1N	16	GND	26	SB7B	36	RX7N
7	GND	17	RX3P	27	SB4B	37	GND
8	SB7A	18	RX3N	28	GND		
9	SB4A	19	GND	29	SBB+		
10	GND	20	RX4P	30	SBB-		



## 4.3 Input/Output Ports

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

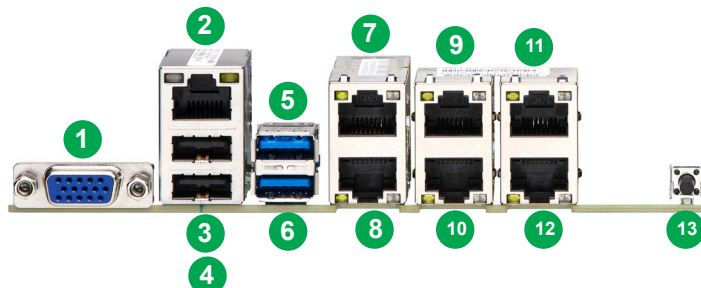


Figure 4-2. I/O Port Locations and Definitions

Rear I/O Ports			
#	Description	#	Description
1	VGA Port	8	LAN1 (10G on -LN6TF)
2	Dedicated IPMI LAN	9	LAN4
3	USB1	10	LAN3
4	USB0	11	LAN6
5	USB7 (3.2 Gen 1)	12	LAN5
6	USB6 (3.2 Gen 1)	13	UID Switch
7	LAN2 (10G on -LN6TF)		

### VGA Port

A video (VGA) port is located next to IPMI\_LAN on the I/O back panel. Refer to the board layout below for the location.

### COM Ports

There is one COM connection on this motherboard. COM1 is located next to PCIe Slot 1.

### LAN Ports

Up to six LAN ports (LAN1-6) 1/10 Gigabit Ethernet ports are located on the I/O back panel. In addition to the LAN ports, a dedicated IPMI LAN is located above the USB0/1 ports on the back panel. Please refer to the LED Indicator section for LAN LED information.

## Universal Serial Bus (USB) Ports

There are two USB 2.0 ports (USB0/1) and two USB 3.2 Gen 1 ports (USB6/7) located on the I/O back panel. The motherboard also has two front access USB 2.0 headers (USB2/3 and USB4/5) and one front access USB 3.2 Gen 1 header (USB8/9). The USB10 header is USB 3.2 Gen 1 Type-A. The onboard headers can be used to provide front side USB access with a cable (not included).

Back Panel USB 0/1 (2.0) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	5	+5V
2	USB_N	6	USB_N
3	USB_P	7	USB_P
4	Ground	8	Ground

Front Panel USB 2/3, 4/5 (2.0) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	+5V	2	+5V
3	USB_N	4	USB_N
5	USB_P	6	USB_P
7	Ground	8	Ground
9	Key	10	NC

Back Panel USB 6/7 (3.2 Gen 1) Pin Definitions			
Pin#	Definition	Pin#	Definition
A1	VBUS	B1	VBUS
A2	USB_N	B2	USB_N
A3	USB_P	B3	USB_P
A4	GND	B4	GND
A5	Stda_SSRX-	B5	Stda_SSRX-
A6	Stda_SSRX+	B6	Stda_SSRX+
A7	GND	B7	GND
A8	Stda_SSTX-	B8	Stda_SSTX-
A9	Stda_SSTX+	B9	Stda_SSTX+

Front Panel USB 8/9 (3.2 Gen 1) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	19	VBUS
2	Stda_SSRX-	18	Stda_SSRX-
3	Stda_SSRX+	17	Stda_SSRX+
4	GND	16	GND
5	Stda_SSTX-	15	Stda_SSTX-
6	Stda_SSTX+	14	Stda_SSTX+
7	GND	13	GND
8	USB_N	12	USB_N
9	USB_P	11	USB_P
10	NC		

Type A USB 10 (3.2 Gen 1) Pin Definitions			
Pin#	Definition	Pin#	Definition
1	VBUS	5	SSRX-
2	USB_N	6	SSRX+
3	USB_P	7	GND
4	Ground	8	SSTX-
		9	SSTX+

**Unit Identifier Switch (UID-SW): One button with two functions**

A Unit Identifier (UID) switch and two LED Indicators are located on the motherboard. The UID switch, UID-SW, is located next to the VGA port on the back panel.

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

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

UID Switch Pin Definitions	
Pin#	Definition
1	Button In
2	Ground
G1	Ground
G2	Ground

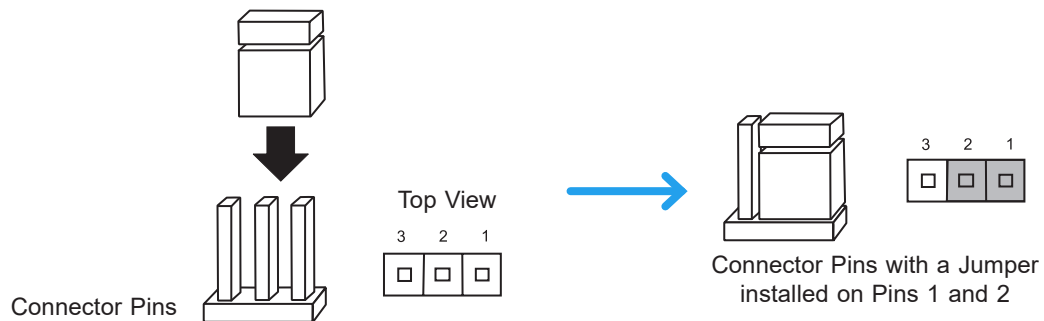
UID LED Pin Definitions	
Color	Status
Blue: On	Unit Identified

## 4.4 Jumpers

### How Jumpers Work

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


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



### CMOS Clear

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

#### To Clear CMOS

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

**Note 1:** Clearing CMOS will also clear all passwords.

**Note 2:** Do not use the PW\_ON connector to clear CMOS.

### 1 GbE LAN Enable/Disable

JPL1 allows you to enable or disable the 1 GbE LAN for the X12SPM-LN6TF motherboard. The default setting is Enabled.

1 GbE LAN Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enable
Pins 2-3	Disable

### 10 GbE LAN Enable/Disable

JTPG1 allows you to enable or disable the 10 GbE LAN ports on the X12SPM-LN6TF motherboard.

10 GbE LAN Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enable
Pins 2-3	Disable

### ME Manufacturing

ME Recovery (JPME2) is used to enable or disable the ME Recovery feature of the motherboard. The jumper will reset Intel ME values back to their default settings.

Manufacturing Mode Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Normal
Pins 2-3	Manufacturing Mode

## 4.5 LED Indicators

### LAN LEDs

Six LAN ports (LAN1~6) are located on the back I/O panel of the motherboard. Each Ethernet LAN port has two LEDs. The yellow 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 for 1 GbE (Left) LED State		
Color	Status	Definition
Yellow	Flashing	Active

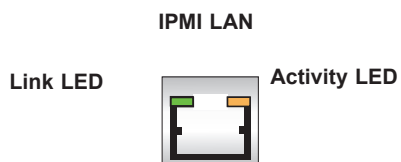
LAN Link LED for 1GbE (Right) LED State	
LED Color	Definition
Off	No Connection/10Mbps
Amber	1 Gbps
Green	100 Mbps

LAN Activity LED for 10GbE (Left) LED State		
Color	Status	Definition
Yellow	Flashing	Active

LAN Link LED for 10GbE (Right) LED State	
LED Color	Definition
Off	No Connection
Amber	1 Gbps
Green	10 Gbps

### IPMI LAN LEDs

In addition to LAN ports, an IPMI LAN is also located on the I/O back panel. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. Refer to the table below for more information.



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

### BMC Heartbeat LED

A BMC Heartbeat LED is located at LEDM1 on the motherboard. When LEDBMC is blinking, the BMC is functioning normally. Refer to the table below for more information.

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

### Onboard Power LED

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

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

### Unit ID LED

A rear UID LED indicator (UID-LED1) is located near the UID switch on the I/O back panel. This UID indicator provides easy identification of a system unit that may need service.

UID LED LED Indicator	
LED Color	Definition
Blue: On	Unit Identified

# Chapter 5

## Software

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

### 5.1 Microsoft Windows OS Installation

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

#### *Installing the OS*

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

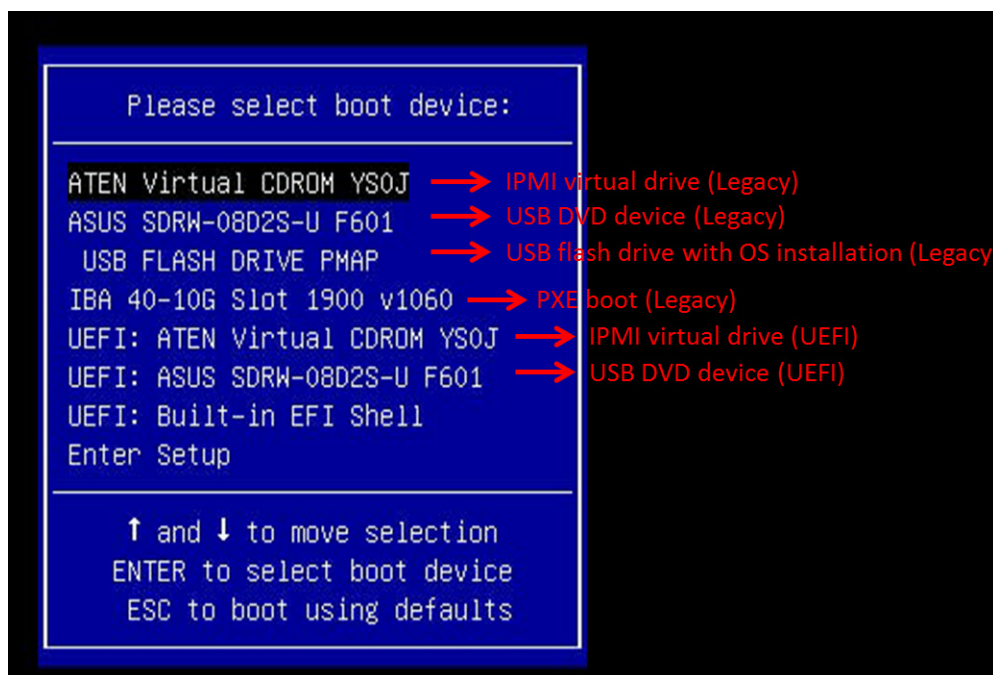
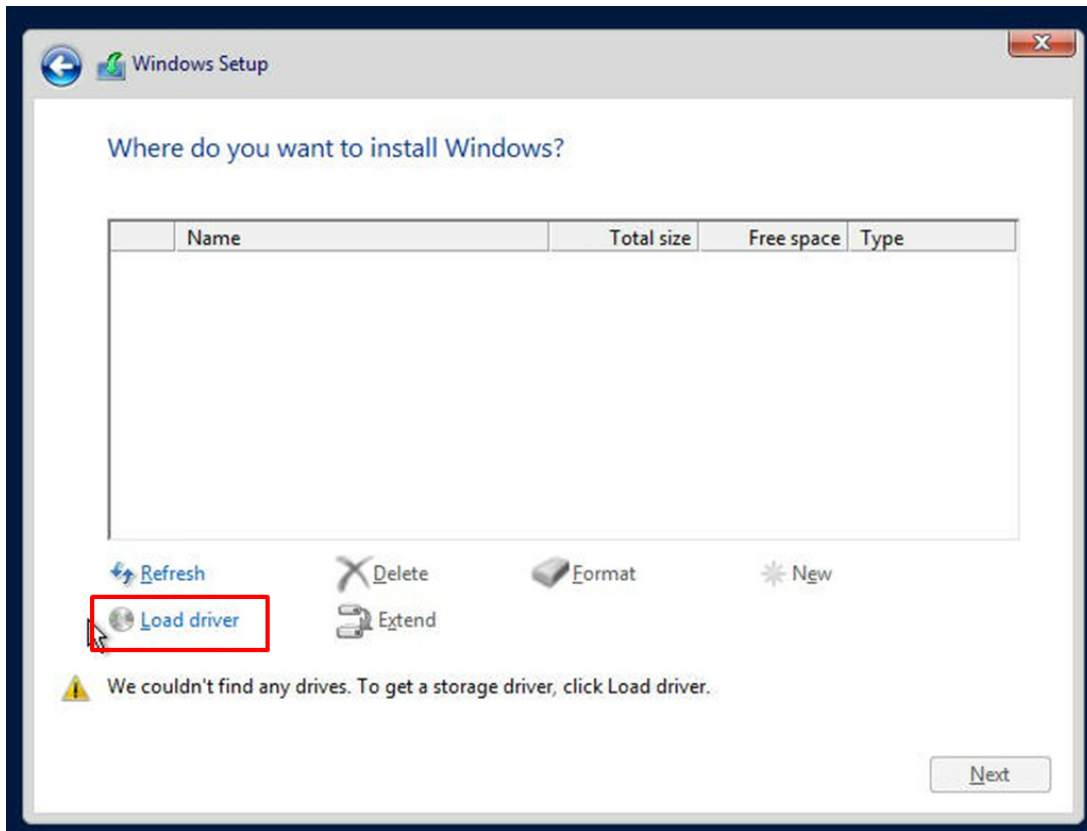


Figure 5-1. Select Boot Device



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



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

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

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

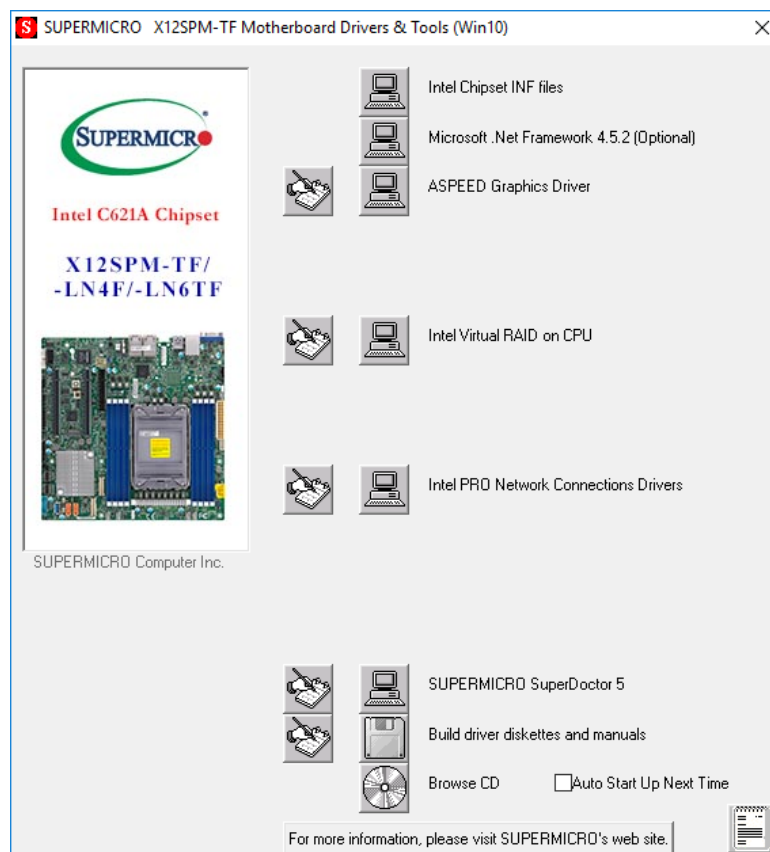
## 5.2 Driver Installation

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

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

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

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



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

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

## 5.3 SuperDoctor® 5

The Supermicro SuperDoctor 5 is a program that functions in a command-line or web-based interface for Windows and Linux operating systems. The program monitors such system health information as CPU temperature, system voltages, system power consumption, fan speed, and provides alerts via email or Simple Network Management Protocol (SNMP).

SuperDoctor 5 comes in local and remote management versions and can be used with Nagios to maximize your system monitoring needs. With SuperDoctor 5 Management Server (SSM Server), you can remotely control power on/off and reset chassis intrusion for multiple systems with SuperDoctor 5 or BMC. SuperDoctor 5 Management Server monitors HTTP, FTP, and SMTP services to optimize the efficiency of your operation.

### SuperDoctor® Manual and Resources

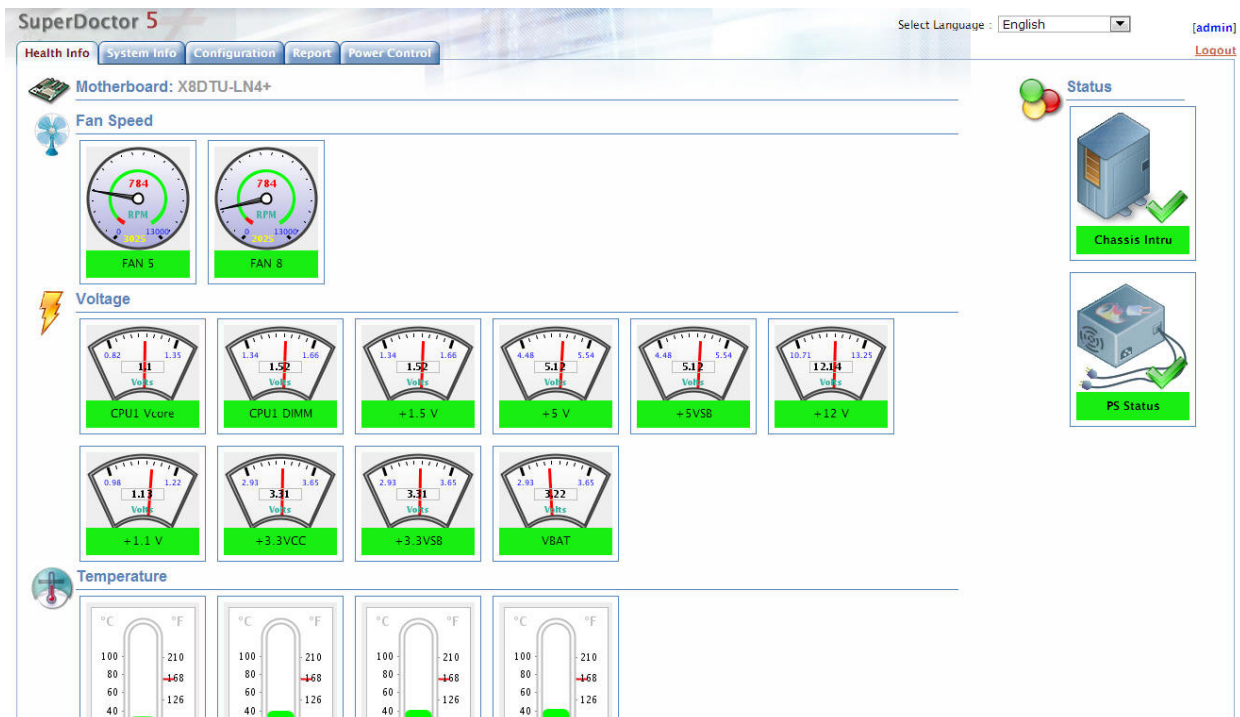


Figure 5-4. SuperDoctor 5 Interface Display Screen (Health Information)

## 5.4 BMC

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

[www.supermicro.com/en/solutions/management-software/bmc-resources](http://www.supermicro.com/en/solutions/management-software/bmc-resources)

### BMC ADMIN User Password

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

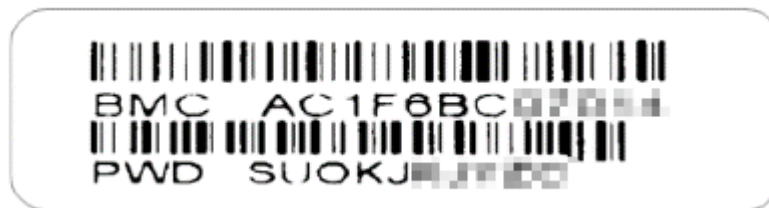


Figure 5-5. BMC Password Label

See [Chapter 1](#) for the label location.

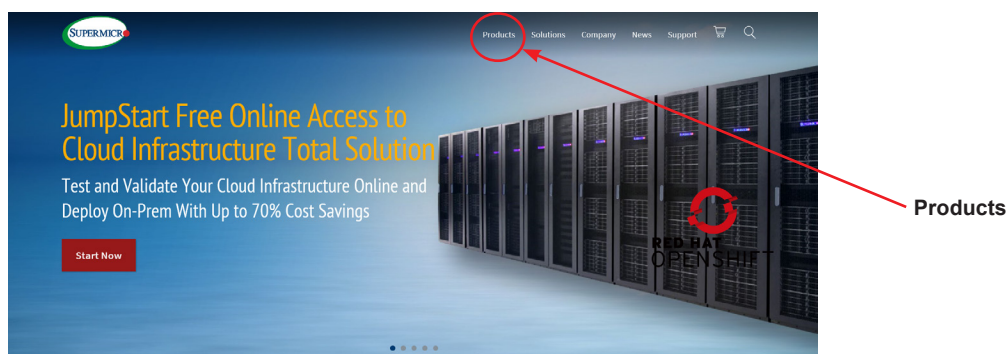
## Chapter 6

# Troubleshooting and Support

## 6.1 Information Resources

### Website

A great deal of information is available on the Supermicro website, [supermicro.com](http://supermicro.com).



**Figure 6-1. Supermicro Website**

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

### *Direct Links for the SYS-210P-FRDN6T System*

[SYS-210P-FRDN6T](#) specifications page

[X12SPM-LN6TF](#) motherboard page for links to the Quick Reference Guide, User Manual, validated storage drives, etc.

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

[Frequently Asked Questions](#)

[Add-on card descriptions](#)

[TPM User Guide](#)

General Memory Configuration Guide: [X12](#)

[BMC User Guide](#)

[SuperDoctor5 Large Deployment Guide](#)

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

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

## Direct Links (continued)

[Security Center](#) for recent security notices

[Supersmicro Phone and Addresses](#)

## 6.2 Baseboard Management Controller (BMC)

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

For general documentation and information on BMC, please visit our website at: [https://www.supersmicro.com/manuals/other/BMC\\_Users\\_Guide\\_X12\\_H12.pdf](https://www.supersmicro.com/manuals/other/BMC_Users_Guide_X12_H12.pdf).

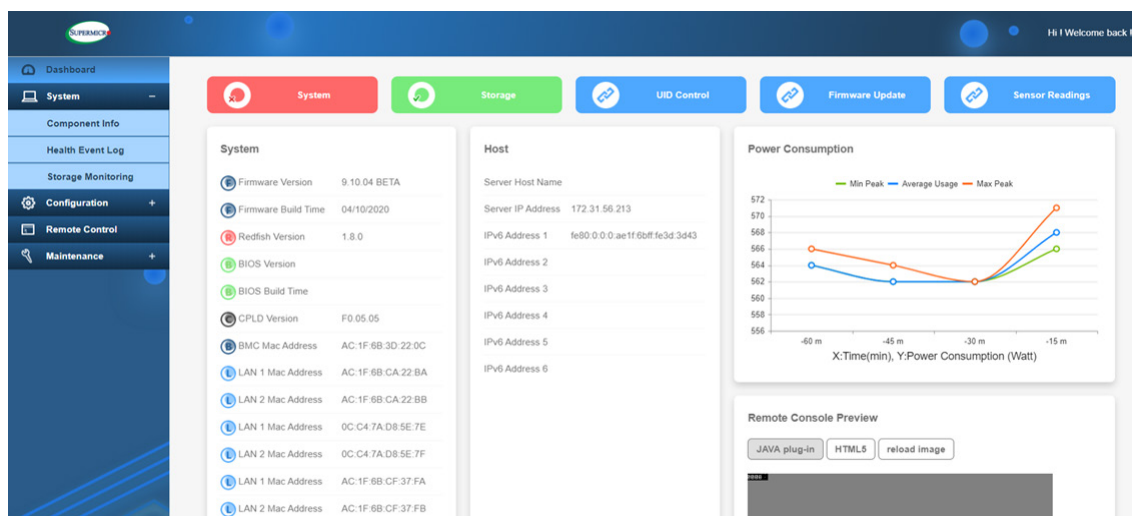


Figure 6-2. BMC Sample

## 6.3 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the [Technical Support Procedures](#) or [Returning Merchandise for Service](#) section(s) in this chapter. [Power down](#) the system before changing any non hot-swap hardware components.

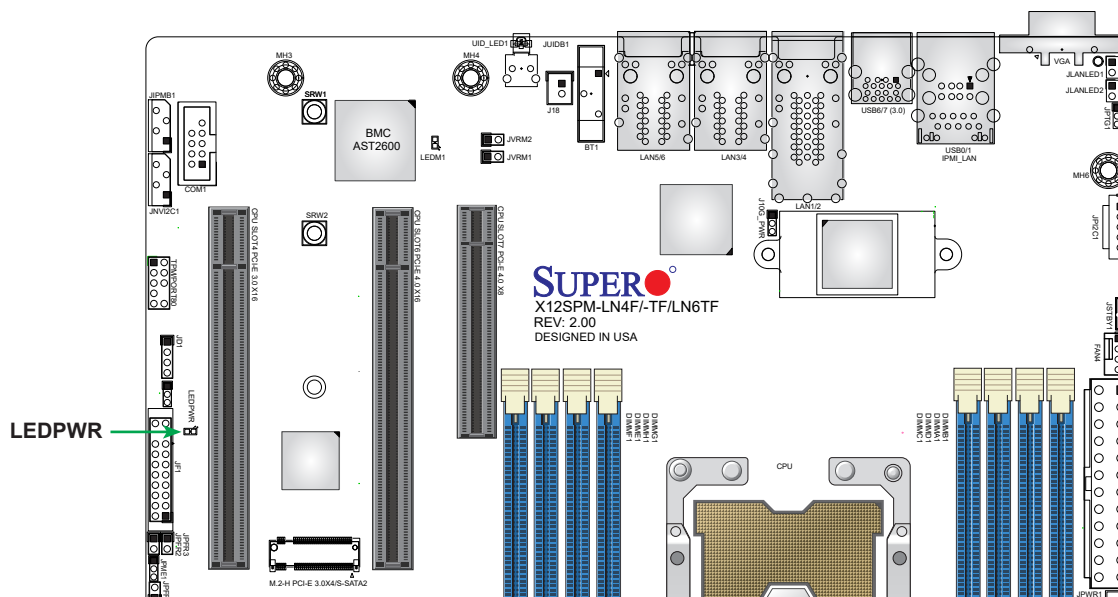
### General Technique

If you experience unstable operation or get no boot response, try:

1. With power off, remove all but one DIMM and other added components, such as add-on cards, from the motherboard. Make sure the motherboard is not shorted to the chassis.
2. Set all jumpers to their default positions.
3. Power up. If the system boots, check for memory errors and add-on card problems.

### No Power

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



**Figure 6-3. Location of the MB Power LED**

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

## No Video

If the power is on but you have no video, remove all add-on cards and cables.

## System Boot Failure

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

- Turn on the system with only one DIMM module installed. If the system boots, check for bad DIMM modules or slots by following the Memory Errors Troubleshooting procedure below.

## Memory Errors

- Make sure that the DIMM modules are properly and fully installed.
- Confirm that you are using the correct memory. Also, it is recommended that you use the same memory type and speed for all DIMMs in the system. See Section 3.5 for memory details.
- Check for bad DIMM modules or slots by swapping modules between slots and noting the results.

## Losing the System Setup Configuration

- Always replace power supplies with the exact same model that came with the system. A poor quality power supply may cause the system to lose the CMOS setup configuration.
- Check that the motherboard battery still supplies approximately 3 VDC. If it does not, replace it.

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

## When the System Becomes Unstable

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

- CPU/BIOS support: Make sure that your CPU is supported and that you have the latest BIOS installed in your system.
- Memory: Make sure that the memory modules are supported. Refer to the product page on our website at [www.supermicro.com](http://www.supermicro.com). Test the modules using **memtest86** or a similar utility.
- Storage drives: Make sure that all drives work properly. Replace if necessary.



- System cooling: Check that all heatsink fans and system fans work properly. Check the hardware monitoring settings in the BMC to make sure that the CPU and system temperatures are within the normal range. Also check the Control panel Overheat LED.
- Adequate power supply: Make sure that the power supply provides adequate power to the system. Make sure that all power connectors are connected. Refer to the Supermicro website for the minimum power requirements.
- Proper software support: Make sure that the correct drivers are used.

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

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

## 6.4 Crash Dump Using BMC

In the event of a processor internal error (IERR) that crashes your system, you may want to provide information to support staff. You can download a crash dump of status information using BMC. The BMC manual is available at <https://www.supermicro.com/en/solutions/management-software/bmc-resources>.

### Check BMC Error Log

1. Access the BMC web interface.

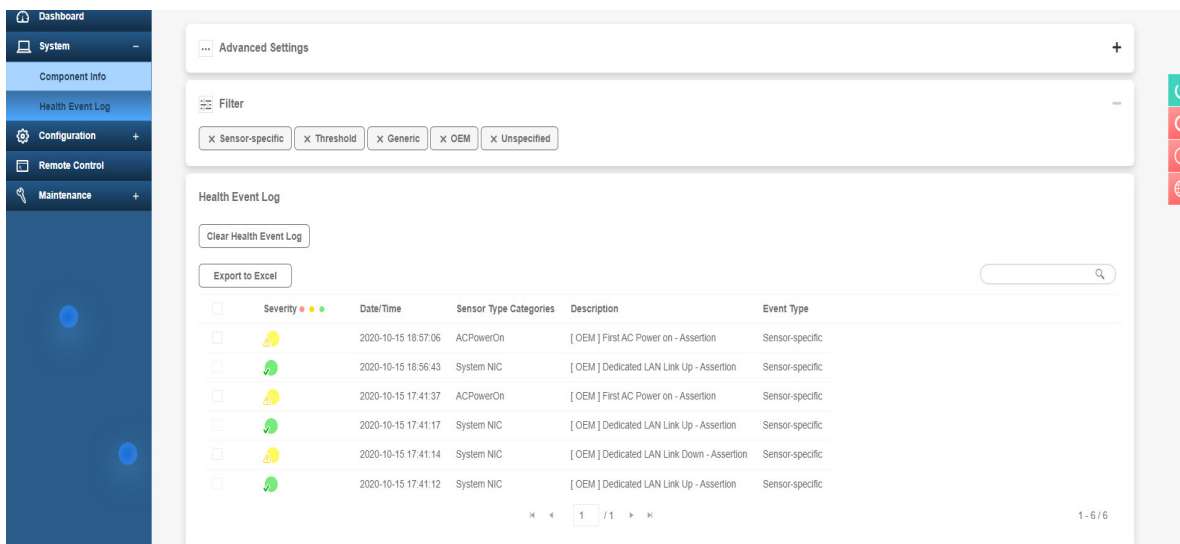


Figure 6-4. BMC Event Log

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

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

## 6.5 UEFI BIOS Recovery

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

### Overview

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

### Recovering the UEFI BIOS Image

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

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

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

### Recovering the Main BIOS Block with a USB Device

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

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

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

1. Using a different machine, copy the "Super.ROM" binary image file into the Root "\\" directory of a USB flash or media drive.

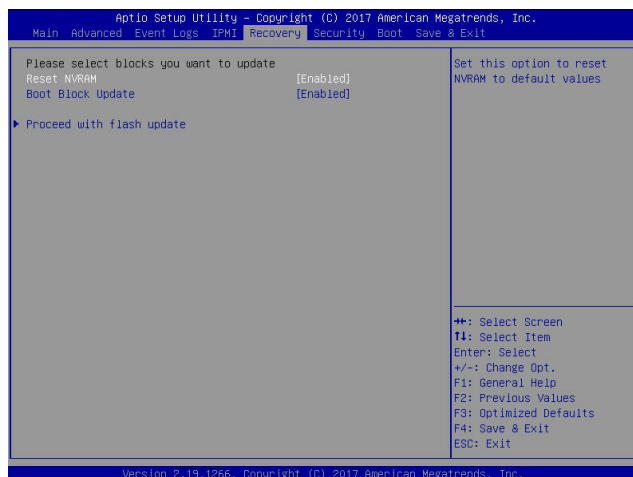
**Note 1:** If you cannot locate the "Super.ROM" file in your drive disk, visit our website at [www.supermicro.com](http://www.supermicro.com) to download the BIOS package. Extract the BIOS binary image into a USB flash device and rename it "Super.ROM" for the BIOS recovery use.

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

2. Insert the USB device that contains the new BIOS image ("Super.ROM") into your USB drive and reset the system when the following screen appears.
3. After locating the healthy BIOS binary image, the system will enter the BIOS Recovery menu as shown below.



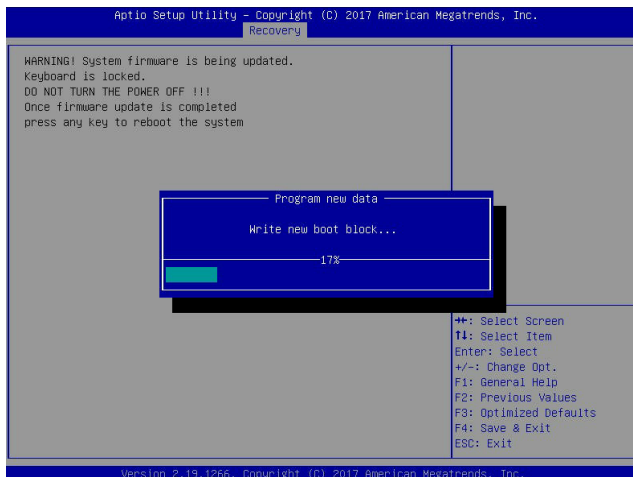
**Note:** At this point, you may decide if you want to start the BIOS recovery. If you decide to proceed with BIOS recovery, follow the procedures below.



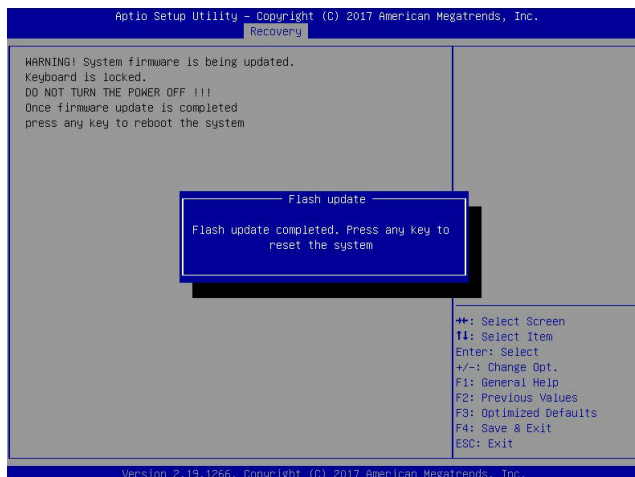
4. When the screen as shown above displays, use the arrow keys to select the item "Proceed with flash update" and press the <Enter> key. You will see the BIOS recovery progress as shown in the screen below.

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

5. After the BIOS recovery process is complete, press any key to reboot the system.
6. Using a different system, extract the BIOS package into a USB flash drive.

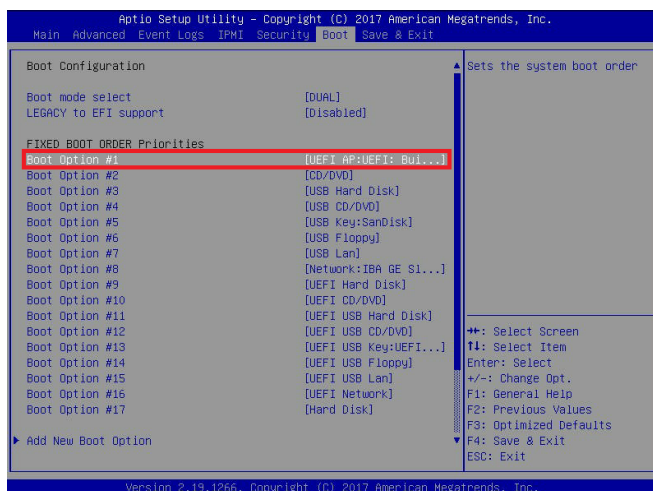


7. Press <Del> continuously during system boot to enter the BIOS Setup utility. From the top of the tool bar, select Boot to enter the submenu. From the submenu list, select Boot



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

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



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

```

UEFI Interactive Shell v2.1
EDK II
UEFI v2.50 (American Megatrends, 0x0005000C)
Mapping table
  FS0: Alias(s):HD0:0B:BLK1:
        PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)/HD(1,MBR,0x37901D72,0x800,0x1
CR9592)
  BLK0: Alias(s):
        PciRoot(0x0)/Pci(0x14,0x0)/USB(0x11,0x0)
Press F8 in 1 seconds to skip startup.nsh or any other key to continue.
Shell: fs0:
FS0:\> cd \AFUDOS
FS0:\AFUDOS> cd SNIJPM2_03162017
FS0:\AFUDOS\SNIJPM2_03162017> flash.nsh X110PU7_314

```

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

```

Done.
[ Access Cmos Port Ex ]
<Read>
Index 0x51: 0x10

Done.
*****
* Program BIOS and ME (including FDT) regions...
*****
| AMT Firmware Update Utility v5.09.01.1917 |
| Copyright (C)2017 American Megatrends Inc. All Rights Reserved. |
-----
CPUID = 50652

Reading flash ..... done
- ME Data Size checking - ok
- FFS checksums ..... ok
- Check RomLayout ..... Ok
Erasing Boot Block ..... done
Updating Boot Block ..... done
Verifying Boot Block ..... done
_Erasing Main Block ..... 0x00132000 (0x)

```

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

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

```

Verifying NDB Block ..... done
- Update success for FDR
- Update success for IE
- Successful Update Recovery Loader to OPRx11
- Successful Update MFSB11
- Successful Update FPR11
- Successful Update MFS, IVB1 and IVB211
- Successful Update FLOG and UTDK11
- ME Entire Image update success !!
WARNING : System must power-off to have the changes take effect!
Moving FS0:\AFUDOS\SNIJPM2_03162017\Fdtv64.efi -> FS0:\AFUDOS\SNIJPM2_03162017\
d1.smc
- [ok]
Moving FS0:\AFUDOS\SNIJPM2_03162017\Fuef1x64.efi -> FS0:\AFUDOS\SNIJPM2_0316201
7\Fuef1.smc
- [ok]
*****
* Please ignore this 'Shell: Cannot read from file - Device Error'
* warning message due to it does not impact flashing process.
*****
Deleting " "
Delete successful.
FS0:\>

```

11. Press <F3> to load the default settings.
12. After loading the default settings, press <F4> to save the settings and exit the BIOS Setup utility.

## 6.6 CMOS Clear

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

### **To Clear CMOS**

1. First [power down](#) the system completely.
2. [Remove](#) the top cover to access the motherboard.
3. [Remove](#) the onboard battery from the motherboard.
4. Short the CMOS pads with a metal object such as a small screwdriver for at least four seconds.
5. Remove the screwdriver or shorting device.
6. Re-install the motherboard battery.
7. Replace the cover, reconnect the power cords and power on the system.

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

*Do not use the PW\_ON connector to clear CMOS.*



JBT1 contact pads



## 6.7 Where to Get Replacement Components

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

## 6.8 Reporting an Issue

### Technical Support Procedures

Before contacting Technical Support, please take the following steps. If your system was purchased through a distributor or reseller, please contact them for troubleshooting services. They have the best knowledge of your specific system configuration.

1. Please review the [Troubleshooting Procedures](#) in this manual and [Frequently Asked Questions](#) on our website before contacting Technical Support.
2. BIOS upgrades can be downloaded from our website. **Note:** Not all BIOS can be flashed depending on the modifications to the boot block code.
3. If you still cannot resolve the problem, include the following information when contacting us for technical support:
  - System, motherboard, and chassis model numbers and PCB revision number
  - BIOS release date/version (this can be seen on the initial display when your system first boots up)
  - System configuration

An example of a Technical Support form is posted on our [website](#). Distributors: For immediate assistance, please have your account number ready when contacting our technical support department by email.

### Returning Merchandise for Service

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

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

Whenever possible, repack the chassis in the original Supermicro carton, using the original packaging material. If these are no longer available, be sure to pack the chassis securely, using packaging material to surround the chassis so that it does not shift within the carton and become damaged during shipping.

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

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

## Vendor Support Filing System

For issues related to Intel, use the Intel IPS filing system:

<https://www.intel.com/content/www/us/en/design/support/ips/training/welcome.html>

For issues related to Red Hat Enterprise Linux, since it is a subscription based OS, contact your account representative.

## 6.9 Feedback

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

## Appendix A

# Standardized Warning Statements for DC Systems

## About Standardized Warning Statements

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

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

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

## Warning Definition



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

### 警告の定義

この警告サインは危険を意味します。

人身事故につながる可能性がありますので、いずれの機器でも動作させる前に、電気回路に含まれる危険性に注意して、標準的な事故防止策に精通して下さい。

此警告符号代表危險。

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

此警告符號代表危險。

您目前所處的工作環境可能讓您受傷。在您使用任何設備之前，請注意觸電的危險，並且要熟悉預防事故發生的標準工作程序。請依照每一注意事項後的號碼找到相關的翻譯說明內容。

## Warnung

### WICHTIGE SICHERHEITSHINWEISE

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

BEWAHREN SIE DIESE HINWEISE GUT AUF.

### INSTRUCCIONES IMPORTANTES DE SEGURIDAD

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

GUARDE ESTAS INSTRUCCIONES.

### IMPORTANTES INFORMATIONS DE SÉCURITÉ

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

CONSERVEZ CES INFORMATIONS.

תקנון הזהרות אזהרה

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

ا ك ف حالة وكي أي تتسبب ف اصابة جسد ه هذا الزهز ع خطز !تحذ ز .  
 قبل أي تعول على أي هعدات،كي على علن بالوظاظر ال أجوة عي الذوائر  
 الكهزبائ ة  
 وكي على درا ه بالووارسات النقاى ة لو ع وقع أي حادث  
 استخدم رقن الب اى الو صص ف ها ه كل تحذ ز للعشر تزجوتها

안전을 위한 주의사항

경고!

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

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

## BELANGRIJKE VEILIGHEIDSINSTRUCTIES

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

BEWAAR DEZE INSTRUCTIES

## Installation Instructions



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

### 設置手順書

システムを電源に接続する前に、設置手順書をお読み下さい。

### 警告

将此系统连接电源前,请先阅读安装说明。

### 警告

將系統與電源連接前，請先閱讀安裝說明。

### Warnung

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

### ¡Advertencia!

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

### Attention

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

יש לקרוא את הוראות התקנה לפני חיבור המערכת למקור מתח.

اقر إرشادات التركيب قبل توصيل النظام إلى مصدر للطاقة

시스템을 전원에 연결하기 전에 설치 안내를 읽어주십시오.

### Waarschuwing

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

## Circuit Breaker



**Warning!** This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that the protective device is rated not greater than: 60VDC, 20A.

サーキット・ブレーカー

この製品は、短絡(過電流)保護装置がある建物での設置を前提としています。  
保護装置の定格が60VDC、20Aを超えないことを確認下さい。

警告

此产品的短路(过载电流)保护由建筑物的供电系统提供,确保短路保护设备的额定电流不大于60VDC,20A。

警告

此產品的短路(過載電流)保護由建築物的供電系統提供,確保短路保護設備的額定電流不大於60VDC,20A。

Warnung

Dieses Produkt ist darauf angewiesen, dass im Gebäude ein Kurzschluss- bzw. Überstromschutz installiert ist. Stellen Sie sicher, dass der Nennwert der Schutzvorrichtung nicht mehr als: 60VDC, 20A beträgt.

¡Advertencia!

Este equipo utiliza el sistema de protección contra cortocircuitos (o sobrecorrientes) del edificio. Asegúrese de que el dispositivo de protección no sea superior a: 60VDC, 20A.

Attention

Pour ce qui est de la protection contre les courts-circuits (surtension), ce produit dépend de l'installation électrique du local. Vérifiez que le courant nominal du dispositif de protection n'est pas supérieur à :60VDC, 20A.

מוצר זה מסתמך על הגנה המותקנת במבנים למניעת קצר חשמלי. יש לוודא כי המכשיר המגן מפני הקצר החשמלי הוא לא יותר מ-20A, 60VDC

هذا المنتج يعتمد على معدات الحماية مه الدوائر القصيرة التي تم تثبيتها في المبنى  
تأكد من أن تقييم الجهاز الوقائي ليس أكثر من : 20A, 60VDC

경고!

이 제품은 전원의 단락(과전류)방지에 대해서 전적으로 건물의 관련 설비에 의존합니다. 보호장치의 정격이 반드시 60VDC(볼트), 20A(암페어)를 초과하지 않도록 해야 합니다.

Waarschuwing

Dit product is afhankelijk van de kortsluitbeveiliging (overspanning) van uw elektrische installatie. Controleer of het beveiligde apparaat niet groter gedimensioneerd is dan 60VDC, 20A.



## Power Disconnection Warning



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



### 電源切断の警告

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

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

### 警告

在你打开机箱并安装或移除内部器件前,必须将系统完全断电,并移除电源线。

### 警告

在您打開機殼安裝或移除內部元件前，必須將系統完全斷電，並移除電源線。

### Warnung

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

### ¡Advertencia!

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

#### Attention

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

אזהרה מפני ניתוק חשמלי

אזהרה!

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

يجب فصل انظاؤ من جميع مصادر انطاقت وإزانت سهك انكهرباء من وحدة امداد انطاقت قېم

انصل إني امناطق انداخهيت نههيكم نتشيج أو إزانت مكناث الجهاز

#### 경고!

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

#### Waarschuwing

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

## Equipment Installation



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

### 機器の設置

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

### 警告

只有经过培训且具有资格的人员才能进行此设备的安装、更换和维修。

### 警告

只有經過受訓且具資格人員才可安裝、更換與維修此設備。

### Warnung

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

### ¡Advertencia!

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

### Attention

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

### אזהרה!

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

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

### 경고!

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

### Waarschuwing

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

## Restricted Area



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

### アクセス制限区域

このユニットは、アクセス制限区域に設置されることを想定しています。

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

#### 警告

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

#### 警告

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

### Warnung

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

### ¡Advertencia!

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

### Attention

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

אזור עם גישה מוגבלת

אזהרה!

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

تخصيص هذه النحذة نترك بُها ف مناطق محظورة تم .  
ممكن انصلل إن منطقت محظورة فقط من خلال استخذاو أداة خاصت  
أو أ وس هُت أخري نلأأمما ققم ومفتاح

경고!

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

Waarschuwing

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

## Battery Handling



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

### 電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

### 警告

電池更換不當會有爆炸危險。請只使用同類電池或制造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

### 警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。

### Warnung

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

### Attention

Danger d'explosion si la pile n'est pas remplacée correctement. Ne la remplacer que par une pile de type semblable ou équivalent, recommandée par le fabricant. Jeter les piles usagées conformément aux instructions du fabricant.

### ¡Advertencia!

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

### אזהרה!

קיימת סכנת פיצוץ של הסוללה במידה והוחלפה בדרך לא תקינה. יש להחליף את הסוללה בסוג התואם מחברת יצרן מומלצת. סילוק הסוללות המשומשות יש לבצע לפי הוראות היצרן.

هناك خطر من انفجار في حالة اسبدال البطارية بطريقة غير صحيحة فعلياً  
اسبدال البطارية  
فقط بنفس النوع أو ما يعادلها مما أوصت به الشركة المصنعة  
جخلص من البطاريات المسحومة وفقاً لعمليات الشركة الصانعة

경고!

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

Waarschuwing

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

## Redundant Power Supplies



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

冗長電源装置

このユニットは複数の電源装置が接続されている場合があります。

ユニットの電源を切るためには、すべての接続を取り外さなければなりません。

警告

此部件连接的电源可能不止一个，必须将所有电源断开才能停止给该部件供电。

警告

此装置连接的电源可能不只一个，必须切断所有电源才能停止对该装置的供电。

Warnung

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

¡Advertencia!

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

Attention

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

אם קיים יותר מספק אחד  
אזהרה!

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

قد يكون لهذا الجهاز عدة اتصالات بوحدات امداد الطاقة .  
يجب إزالة كافة الاتصالات لعسل الوحدة عن الكهرباء

경고!

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

Waarschuwing

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



## Backplane Voltage



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

バックプレーンの電圧

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

修理するには注意ください。

警告

当系统正在进行时，背板上有很危险的电压或能量，进行维修时务必小心。

警告

當系統正在進行時，背板上危險的電壓或能量，進行維修時務必小心。

Warnung

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

¡Advertencia!

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

Attention

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

מתח בפנל האחורי

אזהרה!

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

هناك خطر من التيار الكهربائي أو الطاقة المتجددة على اللوحة  
عندما يكون النظام يعمل كه حذرا عند خدمة هذا الجهاز

경고!

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

Waarschuwing

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

## Comply with Local and National Electrical Codes



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

地方および国の電気規格に準拠

機器の取り付けはその地方および国の電気規格に準拠する必要があります。

警告

设备安装必须符合本地与本国电气法规。

警告

設備安裝必須符合本地與本國電氣法規。

Warnung

Die Installation der Geräte muss den Sicherheitsstandards entsprechen.

¡Advertencia!

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

Attention

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

תיאום חוקי החשמל הארצי  
אזהרה!

התקנת הציוד חייבת להיות תואמת לחוקי החשמל המקומיים והארציים.

تركيب المعدات الكهربائية يجب أن يمتثل للقوايه المحلية والبطية المتعلقة  
بالكهرباء

경고!

현 지역 및 국가의 전기 규정에 따라 장비를 설치해야 합니다.

Waarschuwing

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

## Product Disposal



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

製品の廃棄

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

警告

本产品的废弃处理应根据所有国家的法律和规章进行。

警告

本產品的廢棄處理應根據所有國家的法律和規章進行。

Warnung

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

¡Advertencia!

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

## Attention

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

סילוק המוצר

אזהרה!

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

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

## 경고!

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

## Waarschuwing

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

## Fan Warning



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

## ファン・ホットスワップの警告

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

## 警告!

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

## 警告

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**Warnung**

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

**¡Advertencia!**

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

**Attention**

Pieces mobiles dangereuses. Se tenir a 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.

**אזהרה!**

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

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

**경고!**

움직이는 위험한 부품. 회전하는 송풍 날개에 접근하지 마세요. 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.

**Waarschuwing**

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

## DC Power Supply



**Warning!** When stranded wiring is required, use approved wiring terminations, such as closedloop or spade-type with upturned lugs. These terminations should be the appropriate size for the wires and should clamp both the insulation and conductor.

### 警告

より線が必要な場合、承認済みのケーブル終端(上向きの端子を備えたクローズループ型またはU字型の終端など)を使用してください。使用するワイヤーに適したサイズで、絶縁体および導体が両方ともクランプされている終端でなければなりません。

### 警告

需要多股佈線時・請使用經核准的佈線終端・例如閉環或鏟型接線片。這些終端的大小應適合線路・並且可以同時夾住絕緣體和導體。

### 警告

需要使用绞线连接时・请使用经认可的连接端子・如闭环端子或具有接线柱的铲形端子。这些端子的大小应与线缆相吻合・并且可以将绝缘部分和导体夹紧固定。

### Warnung

Wenn Litzenverdrahtung erforderlich ist, sind zugelassene Verdrahtungsabschlüsse, z.B. für einen geschlossenen Regelkreis oder gabelförmig, mit nach oben gerichteten Kabelschuhen zu verwenden. Diese Abschlüsse sollten die angemessene Größe für die Drähte haben und sowohl die Isolierung als auch den Leiter festklemmen.

### ¡Advertencia!

Cuando se necesite hilo trenzado, utilizar terminales para cables homologados, tales como las de tipo "bucle cerrado" o "espada", con las lengüetas de conexión vueltas hacia arriba. Estos terminales deberán ser del tamaño apropiado para los cables que se utilicen, y tendrán que sujetar tanto el aislante como el conductor.

### Attention

Quand des fils torsadés sont nécessaires, utiliser des douilles terminales homologuées telles que celles à circuit fermé ou du type à plage ouverte avec cosses rebroussées. Ces douilles terminales doivent être de la taille qui convient aux fils et doivent être refermées sur la gaine isolante et sur le conducteur.

## תקנון הזהרות אזהרה

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

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

### تحذير

وأقول غم قق ل ح لشم ،اهي ل ع قق فاومل اءاهن! كالسأل امدختساو ،لبسلا مهب تاعطقت ني ذل ا كالسأل ابولطم نوكي امدن ع بجي و كالسأل بس انملا مجحلا نوكي تاءاهن ال ا هذل يغبني و .قبولقم تاورعلا عم عونلا قيق ي قحلا اهي امس أب ايشأل ا لصوصم و لزعل ا نم لك حبك

주의!

끼인 배선이 요구 될 때에는 폐회로나 돌출부가 위로 튀어 나온 Spade 형태의 승인된 배선 터미네이션들을 사용하세요.

이 터미네이션들은 배선들을 위해 적절한 크기여야 하고, 절연체와 도체 모두를 고정시킬 수 있어야 합니다.

Waarschuwing

Wanneer geslagen bedrading vereist is, dient u bedrading te gebruiken die voorzien is van goedgekeurde aansluitingspunten, zoals het gesloten-lus type of het grijperschop type waarbij de aansluitpunten omhoog wijzen. Deze aansluitpunten dienen de juiste maat voor de draden te hebben en dienen zowel de isolatie als de geleider vast te klemmen.

## DC Power Disconnection



**Warning!** Before performing any of the following procedures, ensure that power is removed from the DC circuit.

警告

次の手順を開始する前に、DC回路から電源が切断されていることを確認してください。

**警告**

進行以下任一操作程序前，請確保直流電路已斷電。

**警告**

請在進行以下任一操作程序前，確保直流電路的電源已經斷開。

**Warnung**

Vor Ausführung der folgenden Vorgänge ist sicherzustellen, daß die Gleichstromschaltung keinen Strom erhält.

**¡Advertencia!**

Antes de proceder con los siguientes pasos, comprobar que la alimentación del circuito de corriente continua (CC) esté cortada (OFF).

**Attention**

Avant de pratiquer l'une quelconque des procédures ci-dessous, vérifier que le circuit en courant continu n'est plus sous tension.

**אזהרה!**

לפני ביצוע אחת הפעולות הבאות, ודא כי אספקת החשמל למעגל הזרם הישר DC הינה מנותקת.

**تحذير**

وأقول غم قتل ح لثم، اهيلع ققفاومل اءاهن! كالسأل مادختساو، لبسلا مهب تعطقت نيذلا كالسأل ابولطم نوكي امدنع بجي و كالسأل بسانملا م جحل نوكي تاءاهنإل هذهل يغبنني و. ةبولقم تاورعلا عم عونلا ةيقي قحلا اهئامسأب اءيشألأ لصوصو لزعل نم لك حبك.

**주의!**

다음 절차들을 수행하기 전에, 전원이 DC회로로부터 제거되었는지를 확인해 주십시오.

**Waarschuwing**

Wanneer geslagen bedrading vereist is, dient u bedrading te gebruiken die voorzien is van goedgekeurde aansluitingspunten, zoals het gesloten-lus type of het grijperschop type waarbij de aansluitpunten omhoog wijzen. Deze aansluitpunten dienen de juiste maat voor de draden te hebben en dienen zowel de isolatie als de geleider vast te klemmen.



## Hazardous Voltage or Energy Present on DC Power Terminals



**Warning!** Hazardous voltage or energy may be present on DC power terminals. Always replace cover when terminals are not in service. Be sure uninsulated conductors are not accessible when cover is in place.

### 警告

直接電力端子に危険な電圧やエネルギーが発生している可能性があります。使用していない端子には常にカバーをつけてください。カバーがついているときは非絶縁形コンダクターに接触していないことを確認してください。

### 警告

直流電源終端可能產生危險的電壓或能量。終端不使用時，請務必蓋上機蓋。當蓋上機蓋，確認不絕緣導體無法使用。

### 警告

直流电源终端可能会产生危险的电压或能量。终端不使用时，请务必盖上机盖。机盖盖上后，请确保导体未绝缘部分无法使用。

### Warnung

In mit Gleichstrom betriebenen Terminals kann es zu gefährlicher Spannung kommen. Die Terminals müssen abgedeckt werden, wenn sie nicht in Betrieb sind. Stellen Sie bei Benutzung der Abdeckung sicher, dass alle nicht isolierten, stromführenden Kabel abgedeckt sind.

### ¡Advertencia!

Puede haber energía o voltaje peligrosos en los terminales eléctricos de CC. Reemplace siempre la cubierta cuando no estén utilizándose los terminales. Asegúrese de que no haya acceso a conductores descubiertos cuando la cubierta esté colocada.

### Attention

Le voltage ou l'énergie électrique des terminaux à courant continu peuvent être dangereux. Veillez à toujours replacer le couvercle lors les terminaux ne sont pas en service. Assurez-vous que les conducteurs non isolés ne sont pas accessibles lorsque le couvercle est en place.

**אזהרה !**

מקור מתח מסוכן עלול להיות נוכח על הקטבים של זרם ה-DC. החלף תמיד את המכסה כאשר הקטבים לא בשימוש. ודא כי המוליכים הלא מבודדים אינם נגישים כאשר המכסה נמצא במקומו.

**تحذير**

אمدن ع امئاد عاطغ لادبتسا . ةمصاعلا ةقاطلا تاطحم ىلع ةدوجوم نوكت ةقاطلا وأ ةرطخلا دهجل دق عاطغلا امدن ع اهليل لوصولنا نكمي ال لوزعم ريغ تالصولملا هي ف كئش ال امم . ةمدخلا يف تسيل تاطحمل اهنالك يف .

**주의!**

DC전원 단자들에 위험한 전압이나 에너지가 발생할 수 있습니다.

단말기들을 운영하지 않을 때에는 덮개로 다시 덮어 놓아 주십시오. 덮개가 제자리에 있어야만 절연되지 않은 도체들의 접근을 막을 수 있습니다.

**Waarschuwing**

Op DC-aansluitingspunten kunnen zich gevaarlijke voltages of energieën voordoen. Plaats altijd de afsluiting wanneer de aansluitingspunten niet worden gebruikt. Zorg ervoor dat blootliggende contactpunten niet toegankelijk zijn wanneer de afsluiting is geplaatst.

# Appendix B

## System Specifications

### Processors

Single 3rd Generation Intel® Xeon® Scalable processor (LGA4189)

Note: Refer to the motherboard specifications pages on our website for updates to supported processors.

### Chipset

Intel® C621A

### BIOS

256Mb AMI BIOS® SPI Flash BIOS

ACPI 6.0, Plug and Play (PnP), BIOS rescue hot-key, riser card auto detection support, and SMBIOS 3.0 or later

### Memory (per node)

Supports up to 2048 GB of ECC RDIMM/LRDIMM/LRDIMM 3DS with speeds of up to 3200 MHz in eight slots.

### Storage Drives

Two SATA3 2.5" drives

One M.2 (22110/2280) internal slot (SATA/NVMe PCIe 3.0 x4)

### PCI Expansion Slots

Default:

One PCIe 4.0 x16 (or two PCIe 4.0 x8) low-profile

Two PCIe 4.0 x16 FHHL

Optional:

One PCIe 4.0 x8 FHHL (with 1U CPU heat sink and CPU TDP less than 165 W)

### Input/Output

Four GbE RJ45 ports

Two 10G RJ45 ports

Two USB 2.0 ports

Two USB 3.0 ports

One VGA port

One COM port

One dedicated IPMI port

### Motherboard

X12SPM-LN6TF 9.6" (L) x 9.6" (W) (243.84 x 243.84 mm)

### Chassis

CSE-211M-R000NDP; 2U rackmount; (W x H x D) 17.6 x 3.5 x 28.8 in (447 x 88 x 730 mm)

### System Cooling

Four 8-cm fans and one air shroud

### Power Supply

Model: PWS-601D-1R, 600 W DC Redundant Power Supplies with PMBus

Output Voltage:

600 W: -44 Vdc to -65 Vdc

Input Current:

600 W: -44 Vdc to -65 Vdc, 18-10 A

+5 V standby: 3 A max, 0 A min

+12 V: 50 A max, 0 A min

**Operating Environment**

Operating Temperature: 10° to 35° C (50° to 95° F)

Non-operating Temperature: -40° to 60° C (-40° to 140° F)

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

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

**Regulatory Compliance**

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

**Applied Directives, Standards**

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

Electromagnetic Compatibility Regulations 2016

FCC Part 15 Subpart B

ICE-003

VCCI-CISPR 32

AS/NZS CISPR 32

BS/EN55032

BS/EN55035

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

Green Environment:

2011/65/EU (RoHS Directive)

EC 1907/2006 (REACH)

2012/19/EU (WEEE Directive)

California Proposition 65

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

Electrical Equipment (Safety) Regulations 2016

UL/CSA 60950-1, 62368-1 (USA and Canada)

BS/IEC/EN 60950-1, 62368-1

**Perchlorate Warning**

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

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

VCCI – A