

OPEN Industry Standard, Flexible Architecture

GREEN Less Heat, Less Power Consumption

STABLE Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

4U18N Series

User Manual

English



Version 1.0

Published March 2023

Copyright©2023 ASRock Rack Inc. All rights reserved.

Copyright Notice:

No part of this documentation may be reproduced, transcribed, transmitted, or translated in any language, in any form or by any means, except duplication of documentation by the purchaser for backup purpose, without written consent of ASRock Rack Inc.

Products and corporate names appearing in this documentation may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

Disclaimer:

Specifications and information contained in this documentation are furnished for informational use only and subject to change without notice, and should not be constructed as a commitment by ASRock Rack. ASRock Rack assumes no responsibility for any errors or omissions that may appear in this documentation.

With respect to the contents of this documentation, ASRock Rack does not provide warranty of any kind, either expressed or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose.

In no event shall ASRock Rack, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRock Rack has been advised of the possibility of such damages arising from any defect or error in the documentation or product.



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

“Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate”

ASRock Rack's Website: www.ASRockRack.com

Setting up the Server in a Restricted Access Location

- Access can only be gained by service persons or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- Leave enough clearance (25 inches in the front and 30 inches in the back of the rack) to allow the front door to be opened completely and to allow for sufficient airflow.
- This product is for installation merely in a Restricted Access Location.
- This product is not suitable for use with visual display work place devices according to §2 of the German Ordinance for Work with Visual Display Units.

Replaceable Batteries

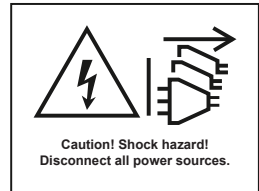
CAUTION

**RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE.
DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS**

Warning

When removal of the chassis lid required for servicing:

- Turn off power and unplug any power cords/cables, and
- Reinstall the chassis lid before restoring power.



Important Safety Instructions

Pay close attention to the following safety instructions before performing any of the operation. Basic safety precautions should be followed to protect yourself from harm and the product from damage:

- Operation of the product should be carried out by suitably trained, qualified, and certified personnel only to avoid risk of injury from electrical shock or energy hazard.
- Disconnect the power cord from the wall outlet when installing or removing main system components, such as the power supply unit and cooling fan.
- Place the system on a stable and flat surface.
- Use extreme caution when working with high-voltage components.
- When handling parts, use a grounded wrist strap designed to prevent static discharge.
- Keep the area around the system clean and clutter-free.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags when not in use.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

Contents

Chapter 1 Introduction	1
1.1 Shipping Box Contents	2
1.2 Specifications	3
Chapter 2 Server System Overview	4
2.1 System Components	4
2.2 Internal Features	5
2.3 Board Arrangement	8
2.4 System Front Panel	9
2.5 System Rear Panel	10
2.6 Control Panel Buttons and LEDs	11
2.7 PSU LED	14
2.8 Fan Failed LED	15
Chapter 3 Hardware Installation and Maintenance	16
3.1 Server Top Cover	17
3.2 Power Supply	19
3.3 System Fan	21
3.4 Node Tray	22
3.5 Node Cover	24
3.6 Hard Drive	26
3.6.2 Removing a Hard Disk Drive	28
3.7 Air Duct	29
Appendix A	30
Installing the CPU (AM4 PGA 1331)	30

Installing the CPU Heatsink	31
Installing the CPU (LGA 1200)	32
Installing the Heatsink	34
Installation of Memory Modules (DIMM)	35
Appendix B	36
Block Diagram (B550D4ID-2T/18N)	36
Block Diagram (B550D4ID/18N)	37
Block Diagram (E3C252D4ID-2T)	38
Block Diagram (E3C252D4ID2)	39

Chapter 1 Introduction

Thank you for purchasing 4U18N Series, a reliable barebone system produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

This guide provides the instructions of insertion and extraction of chassis components, such as chassis covers, system fans, power supplies, hard disk drive trays, and other main components this system supports. If the system is pre-installed a serverboard, please refer to the user's manual of the serverboard for the information of the serverboard components, specifications and BIOS settings.

This guide includes the following system models:

System	ASRock Rack Server Board
4U18N-B550/2T	B550D4ID-2T/18N
4U18N-B550	B550D4ID/18N
4U18N-C252/2T	E3C252D4ID-2T
4U18N-C252	E3C252D4ID2



Because the hardware specifications might be updated, the content of this documentation will be subject to change without notice.



The illustrations shown in this manual are for reference purposes only and may not exactly match the model you purchase.



*If you require technical support related to this system, please visit our website for specific information about the model you are using.
<http://www.asrockrack.com/support/>*

1.1 Shipping Box Contents

Item 4U18N-	Quantity			
	B550/2T	B550	C252/2T	C252
4U18N Series Barebone	1	1	1	1
System Node	18	18	18	18
Power Distribution Board (4U18N_PDB)	2	2	2	2
Front Panel Board (4U18N_FPB)	1	1	1	1
Rear Middle Plane Board (4U18N_MPB_R)	1	1	1	1
Front Middle Plane Board (4U18N_MPB_F)	1	1	1	1
Fan Board (4U18N_FB)	1	1	1	1
Power Supply Unit (PSU)	4	4	4	4
System Fan	5	5	5	5
Server Board (per node)	1	1	1	1
Interposer Board (4U18N_IPB) (per node)	1	1	1	1
Riser Board (RB1U2SL_G4) (per node)	1	1	1	1
AC Power Cord	4	4	4	4
Accessory Box	1	1	1	1
Quick Installation Guide	1	1	1	1
Rail Assembly Kit	1	1	1	1



If any items are missing or appear damaged, contact your authorized dealer.

1.2 Specifications

4U18N Series	
System Physical Status	
System Model	4U18N-B550/2T 4U18N-B550 4U18N-C252/2T 4U18N-C252
Form Factor	4U Rackmount
Dimension (D x W x H)	950 mm x 438 mm x 176 mm (with ear)
Support MB Size	Deep mini-ITX 6.7" x 8.2" (17.0 cm x 20.8 cm)
Front Panel (per node)	
Button	• Power button • System reset button • UID button
LED	• Power LED • UID LED • LAN1/LAN2 LED • System Event LED
I/O Port	2 x USB 3.2 Gen1 ports 1 x DB15
LAN Port	4U18N-B550/2T: 2 (10Gb RJ45) 4U18N-B550: 2 (1Gb RJ45) 4U18N-C252/2T: 2 (10Gb RJ45) 4U18N-C252: 2 (1Gb RJ45)
IPMI LAN Port	1 dedicated IPMI
Drive Bay (per node)	
Internal	2 x Fixed 2.5" NVMe (PCIe4.0 x4) /SATA drive bays (BTO)
System Cooling	
Fan	5 x 8080 Chassis FAN(Hot swap)
Power Supply	
Capacity	4 (3+1), Redundant
Output Watts	1600W
Efficiency	Platinum
AC Input	100-240V, 50/60Hz

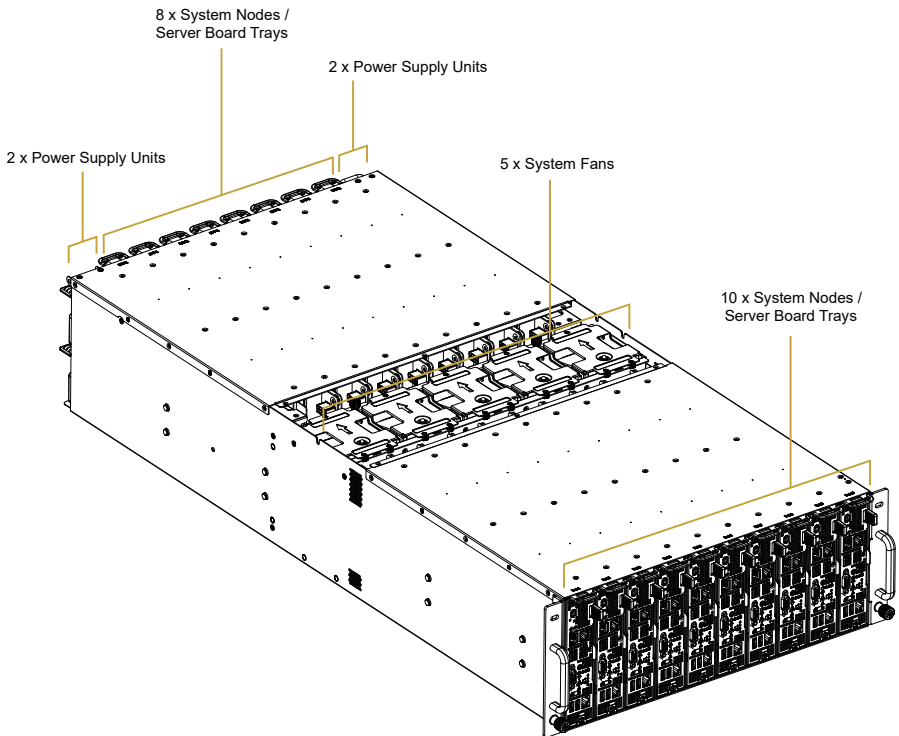


Please refer to the user manual of the motherboard you use for detailed information about motherboard components and features.

Chapter 2 Server System Overview

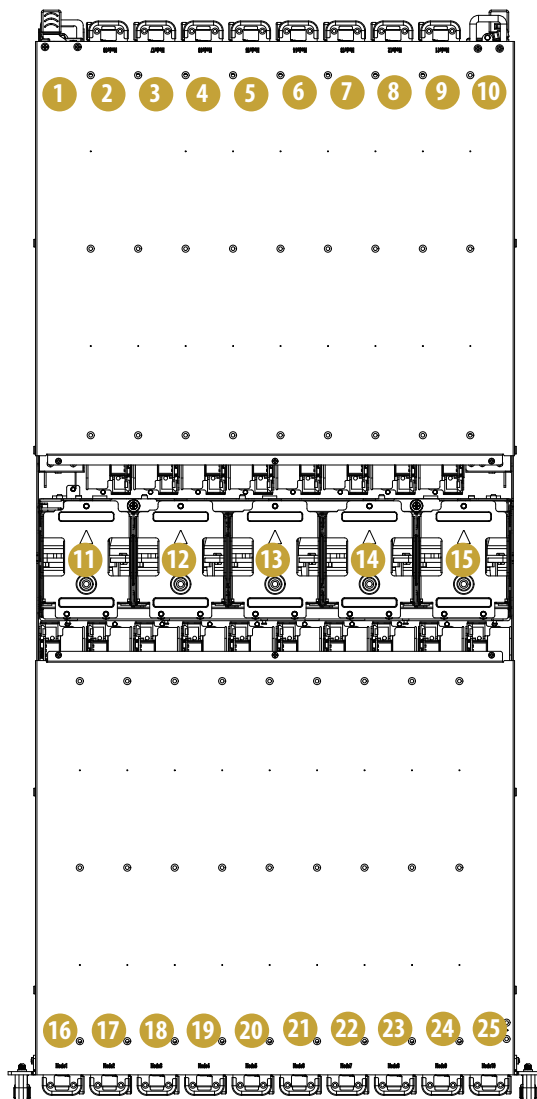
This chapter provides diagrams showing the location of important components of the server system.

2.1 System Components



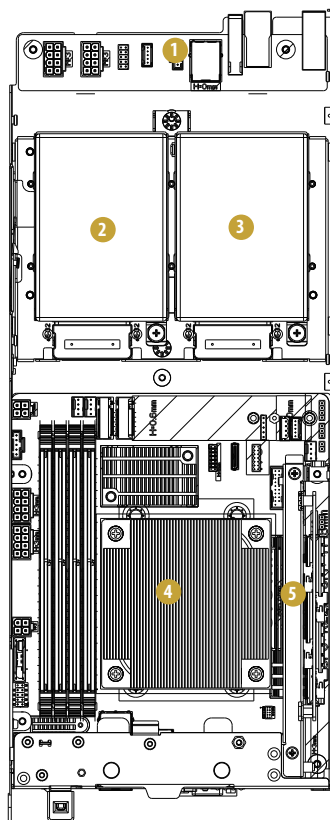
2.2 Internal Features

System Top View



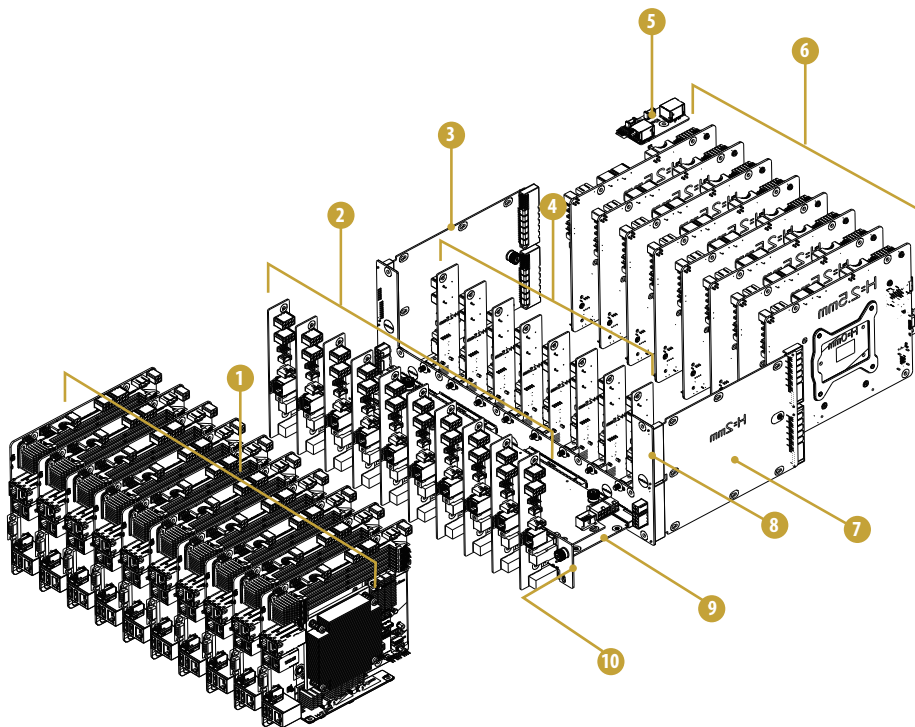
No.	From
1	2 x Power Supply Units (Top: PSU1 / Bottom: PSU2)
2	System Node / Server Board Tray (Node18)
3	System Node / Server Board Tray (Node17)
4	System Node / Server Board Tray (Node16)
5	System Node / Server Board Tray (Node15)
6	System Node / Server Board Tray (Node14)
7	System Node / Server Board Tray (Node13)
8	System Node / Server Board Tray (Node12)
9	System Node / Server Board Tray (Node11)
10	2 x Power Supply Units (Top: PSU3 / Bottom: PSU4)
11	System Fan (FAN5)
12	System Fan (FAN4)
13	System Fan (FAN3)
14	System Fan (FAN2)
15	System Fan (FAN1)
16	System Node / Server Board Tray (Node1)
17	System Node / Server Board Tray (Node2)
18	System Node / Server Board Tray (Node3)
19	System Node / Server Board Tray (Node4)
20	System Node / Server Board Tray (Node5)
21	System Node / Server Board Tray (Node6)
22	System Node / Server Board Tray (Node7)
23	System Node / Server Board Tray (Node8)
24	System Node / Server Board Tray (Node9)
25	System Node / Server Board Tray (Node10)

Node Top View



No.	From
1	Interposer Board (4U18N_IPB)
2	2.5" U.2 NVME SSD (HDD2)
3	2.5" U.2 NVME SSD (HDD1)
4	Server Board (MB)
5	Riser Board (PCIE to 2*Slimline) (RB1U2SL_G4)

2.3 Board Arrangement

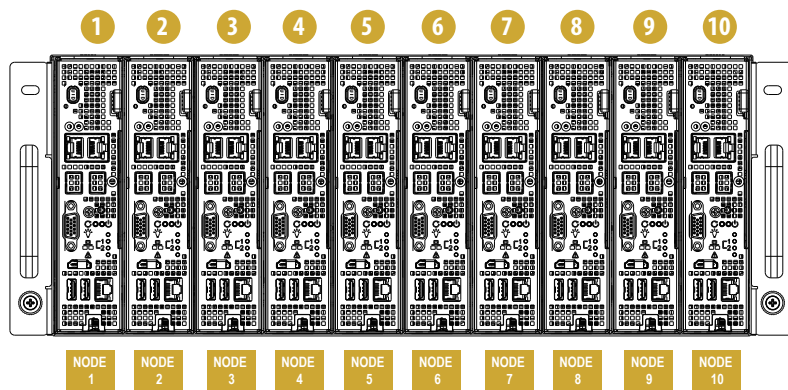


No.	Item
1	10 x Server Boards (MB) (system front side)
2	10 x Interposer Board (4U18N_IPB)
3	Power Distribution Board (4U18N_PDB) (Left side)
4	8 x Interposer Board (4U18N_IPB)
5	Front Panel Board (4U18N_FPB)
6	8 x Server Boards (MB) (system rear side)
7	Power Distribution Board (4U18N_PDB) (Right side)
8	Rear Middle Plane Board (4U18N_MPB_R)
9	Fan Board (4U18N_FB)
10	Front Middle Plane Board (4U18N_MPB_F)

2.4 System Front Panel

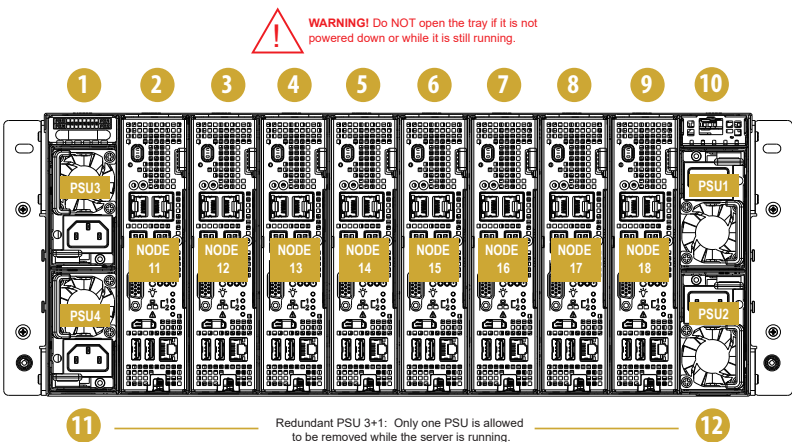


WARNING! Do NOT open the tray if it is not powered down or while it is still running.



No.	Description
1	System Node / Server Board Tray (Node1)
2	System Node / Server Board Tray (Node2)
3	System Node / Server Board Tray (Node3)
4	System Node / Server Board Tray (Node4)
5	System Node / Server Board Tray (Node5)
6	System Node / Server Board Tray (Node6)
7	System Node / Server Board Tray (Node7)
8	System Node / Server Board Tray (Node8)
9	System Node / Server Board Tray (Node9)
10	System Node / Server Board Tray (Node10)

2.5 System Rear Panel

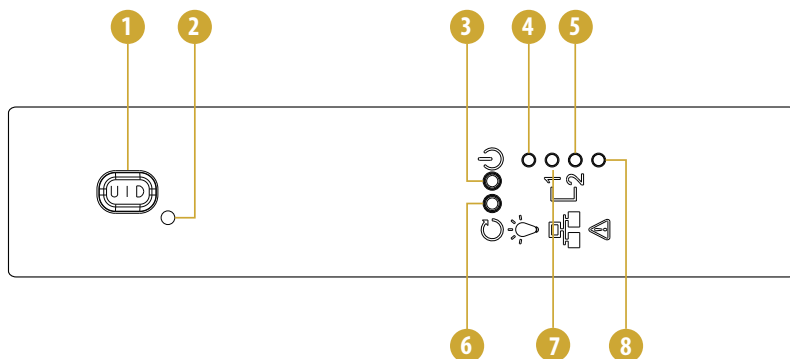


No.	Description
1	Power Supply Unit 3 (PSU3) (Redundant PSU 3+1) <i>*Server requires 3 working PSUs, with 1 redundant PSU. You must have at least three active supplies, installed, functioning and connected to AC. Only one of the PSUs is allowed to be removed while the server is running..</i>
2	System Node / Server Board Tray (Node11)
3	System Node / Server Board Tray (Node12)
4	System Node / Server Board Tray (Node13)
5	System Node / Server Board Tray (Node14)
6	System Node / Server Board Tray (Node15)
7	System Node / Server Board Tray (Node16)
8	System Node / Server Board Tray (Node17)
9	System Node / Server Board Tray (Node18)
10	Power Supply Unit 1 (PSU1) (Redundant PSU 3+1) <i>*Server requires 3 working PSUs, with 1 redundant PSU. You must have at least three active supplies, installed, functioning and connected to AC. Only one of the PSUs is allowed to be removed while the server is running..</i>
11	Power Supply Unit 4 (PSU4) (Redundant PSU 3+1) <i>*Server requires 3 working PSUs, with 1 redundant PSU. You must have at least three active supplies, installed, functioning and connected to AC. Only one of the PSUs is allowed to be removed while the server is running..</i>
12	Power Supply Unit 2 (PSU2) (Redundant PSU 3+1) <i>*Server requires 3 working PSUs, with 1 redundant PSU. You must have at least three active supplies, installed, functioning and connected to AC. Only one of the PSUs is allowed to be removed while the server is running..</i>

2.6 Control Panel Buttons and LEDs

Front Control Panel

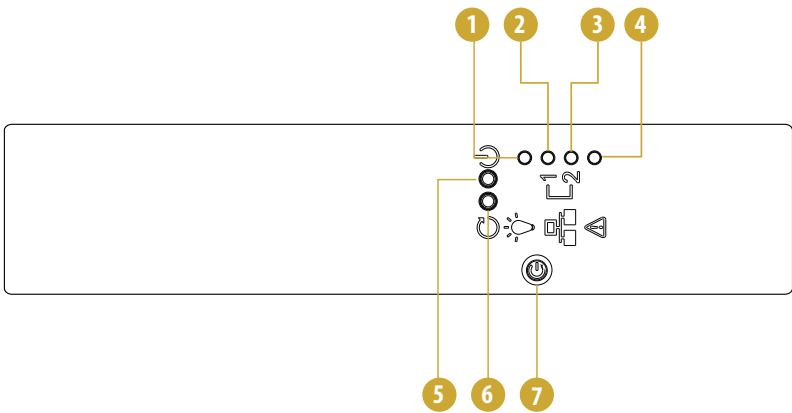
4U18N-B550/2T / 4U18N-B550:



No.	Description
1	UID Button
2	UID LED
3	Power Button
4	Power LED
5	LAN2 LED
6	System Reset Button
7	LAN1 LED
8	System Event LED

**Please be noted that certain functions are supported depending on the type of the server board.*

4U18N-C252/2T / 4U18N-C252:



No.	Description
1	Power LED
2	LAN1 LED
3	LAN2 LED
4	System Event LED
5	Power Button
6	System Reset Button
7	UID Button & LED

**Please be noted that certain functions are supported depending on the type of the server board.*

Power Button

Press the power button to power on or power off the system.

UID Button

Press the ID button to toggle the front panel UID LED and the baseboard UID LED on and off. You are able to locate the server you're working on from behind a rack of servers.

System Reset Button

When the system is completely unresponsive, press the system reset button to reboot the server without shutting it off and initialize the system.

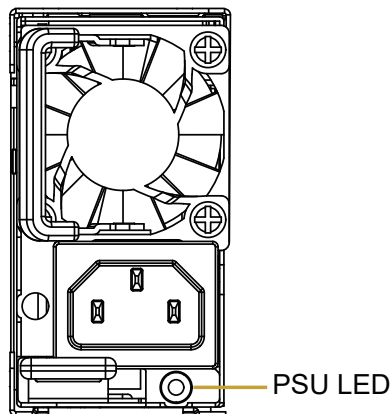
Status LED Definitions

Power LED	
Status	Description
Green	Power on
Off	Power off

LAN LED	
Status	Description
Green	Network connected
Off	Network disconnected

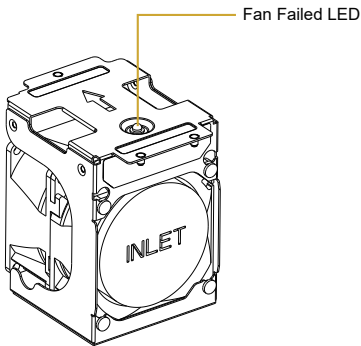
System Event LED	
Status	Description
Off	Running or normal operation
Orange	At least one sensor has critical alert

2.7 PSU LED



PSU Status LED	
Status	Description
Green	Normal work; output ON and OK
Amber	Module fault/protection in operating mode (failure, OCP, OVP, Fan Fail, OTP, UVP) AC cord unplugged
Amber blinking at 0.5Hz	Warning (high temp, high power, high current, slow fan)
Green blinking at 0.5Hz	AC Present Only 12VSB on (PS off) or PS in Smart Redundant state

2.8 Fan Failed LED



Fan LED	
Status	Description
Solid Red	Fan failed
Off	Normal

Chapter 3 Hardware Installation and Maintenance

This chapter helps you assemble the chassis and install components.

Before You Begin

Before working with the server, pay close attention to the “Important Safety Instructions” at the beginning of this manual.



Ensure the motherboard battery is installed before unplugging the power cord or installing/removing the motherboard. Failure to follow this precaution may result in physical injury or damage to motherboard components.

1. Make sure the server is powered off.

Power down the server if it is still running.

- (1) Press the Power button to power off the server from full-power mode to standby-power (sleep) mode. The Power LED at the front turns from solid green to blinking green.
- (2) Disconnect the power cord first from the AC outlet and then from the server.
The power LED turns off.



The server is not completely powered down when you press the Power button on the front panel. The Power button lets the server toggle between Power On and Standby (Sleep) modes. Some internal circuitry remain active in the Standby mode. To remove all power from the system completely, be sure to disconnect the power cord from the server.

2. Ensure you have a clean and stable working environment. Avoid dust and dirt because contaminants may cause malfunctions.
3. Ground yourself properly before touching any system component. A discharge of static electricity may damage components. Wear a grounded wrist strap if available.

Installing Procedures

The followings are prerequisite to be installed.

- 2.5" NVME SSDs
- Power Supply Units (Pre-installed)
- System Fans (Pre-installed)
- Server Board (Pre-installed)



1. Some components are already pre-installed. Simply properly connect the relevant cables before or after installation. See the Quick Installation Guide for more details.
2. Refer to the user manual of the server board you use for instructions on how to install server board components.

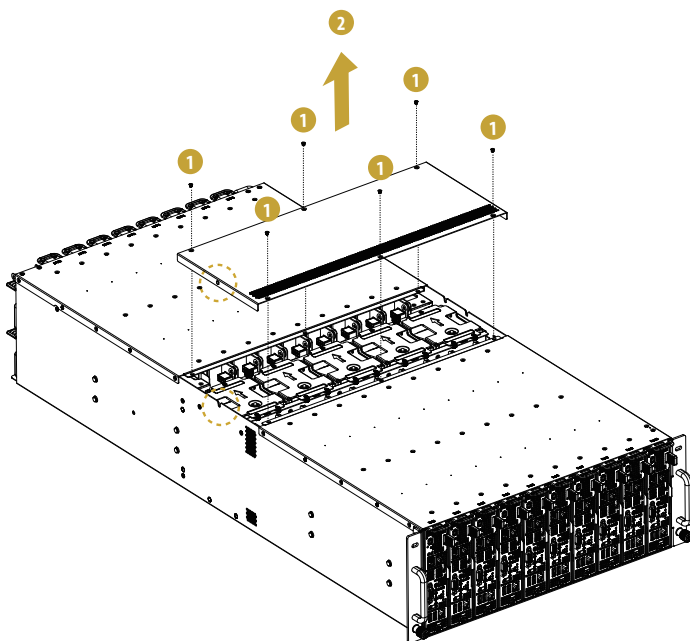
3.1 Server Top Cover

Removing the Server Top Cover



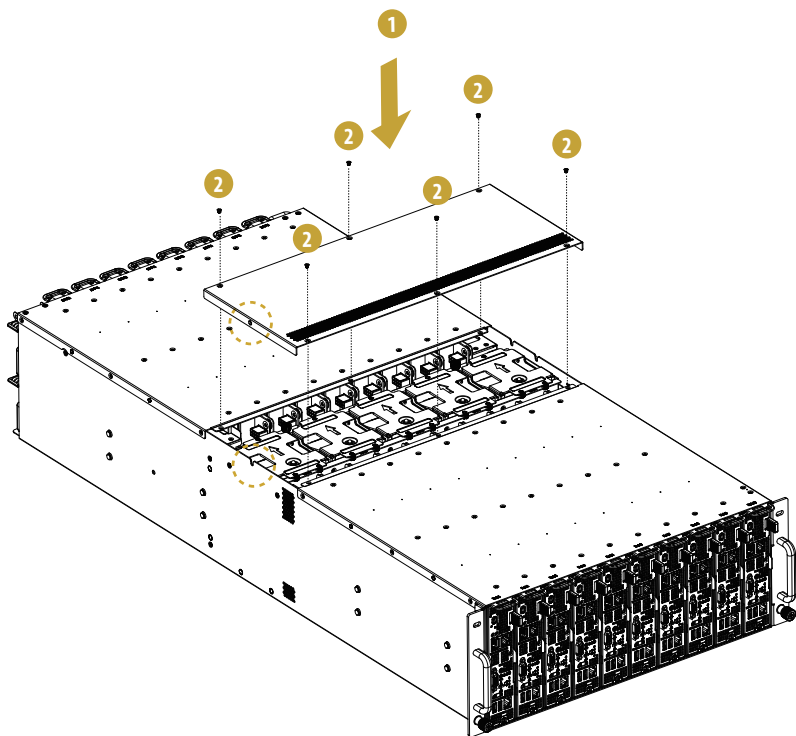
1. Before removing the top cover, power off the server and unplug the power cord.
2. The system must be operated with all the chassis top covers installed to ensure proper cooling.

1. Remove the screws that secure the cover to the chassis.
2. Lift up and remove the cover.



Installing the Server Top Cover

1. Lower the cover on the chassis, making sure the side latches align with the cutouts.
2. Secure the the cover to the chassis with screws.



3.2 Power Supply

The system can accommodate four AC or two DC power supplies in the bay at the rear of the chassis. Three power supplies are required for full load operation, with the fourth power supply purely as a redundant, load-sharing backup. It can be removed without affecting system operation.

Installing and Removing the Power Supply

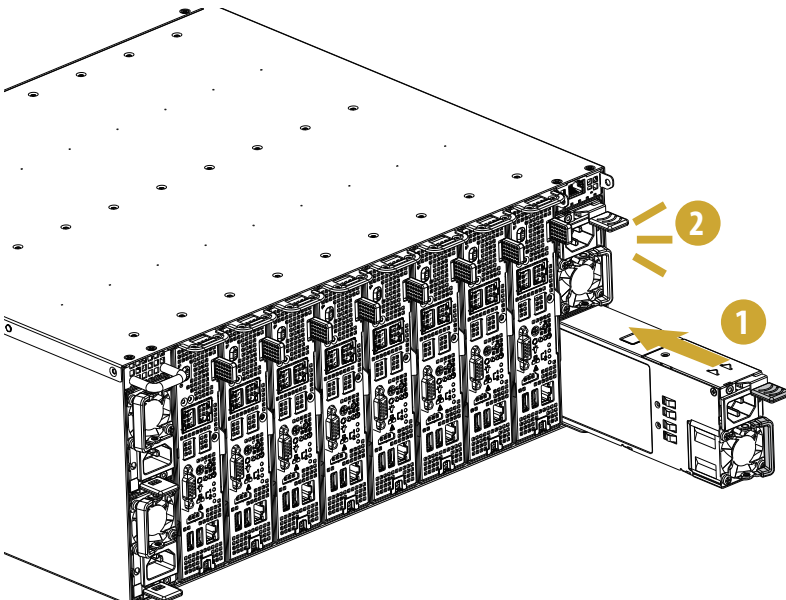


Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.

Installing the Power Supply Unit

Align the power supply unit with the power supply slot. Ensure that the LED appears on the lower right when you are installing the power supply unit.

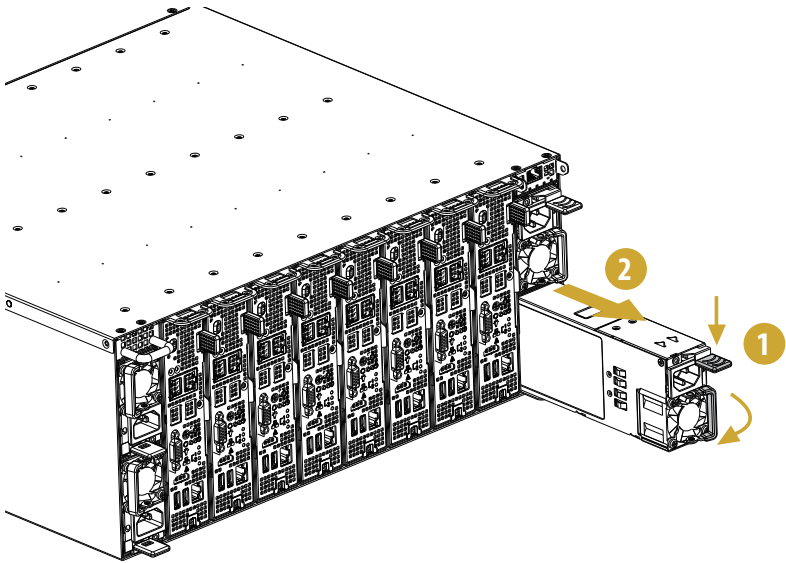
1. Carefully slide the PSU all the way into the power supply bay.
2. Make sure the power supply clicks into place and is well installed.



Removing the Power Supply Unit

To remove a failed power supply, identify the failed power supply by checking the power supply LED on the power supply.

1. Hold onto the power supply handle while pressing the locking lever towards the power supply handle.
2. Pull to remove the power supply from the chassis.



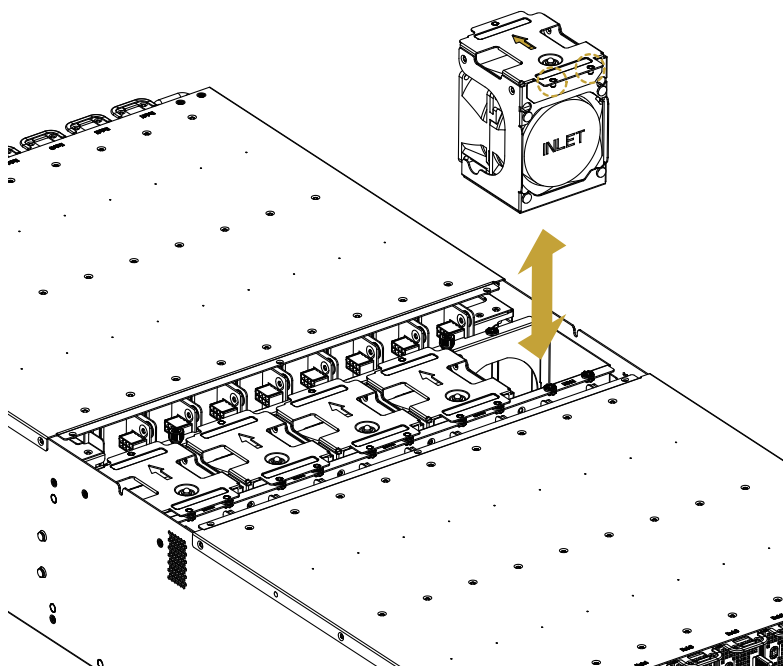
1. Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.
2. In a redundant system, you do not need to power down the server.

3.3 System Fan

The system supports hot-swappable system fans.

Replacing the System Fan

1. Lift to remove the failed fan.
2. Align the mounting holes on the replacement fan with the fan mounts on the fan bar.
3. Make sure the arrow on the fan pointed to the REAR of the chassis.
4. Gently place the fan onto the mounts.
5. Make sure the fan is well seated.



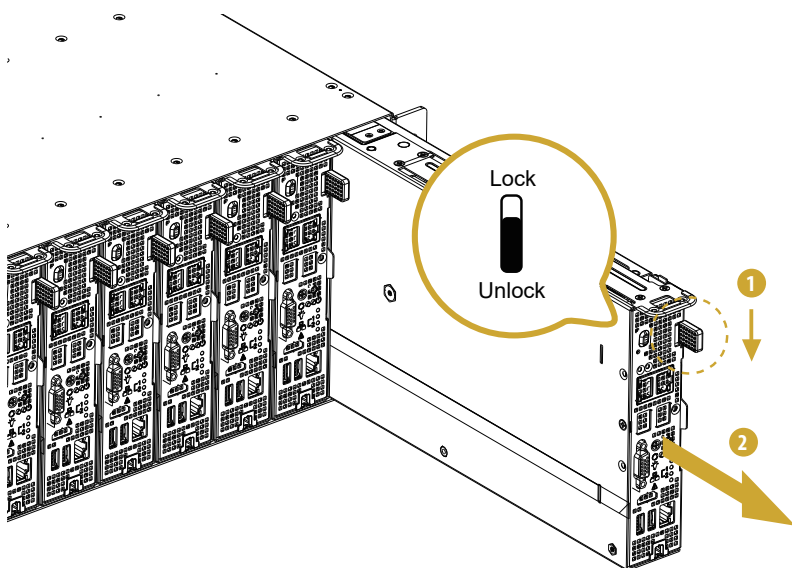
3.4 Node Tray

Removing a Node Tray from the Chassis



Before removing any specific node, please power off that node in advance.

1. Press down the retention latch to unlock the node tray from the chassis.
2. Hold onto the tray handle and gently pull out the node tray from the chassis.

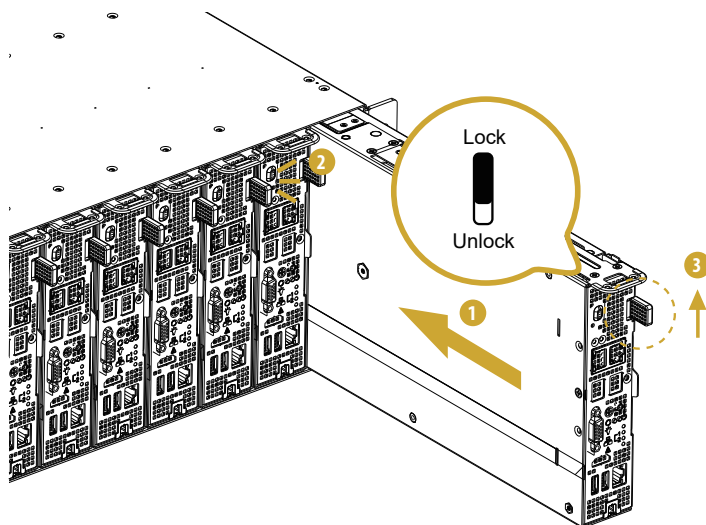


Installing a Node Tray into the Chassis



Please have the node cover on before installing the node tray (See the section entitled "Node Cover" for more instructions).

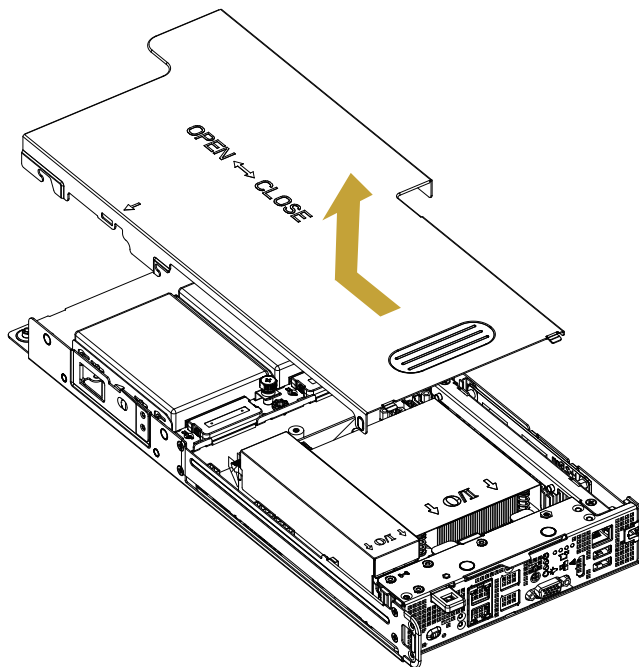
1. Align and carefully slide the node tray into the chassis.
2. Push the node tray along the rail until it clicks into place.
3. Pull up the retention latch to lock and secure the node tray to the chassis.



3.5 Node Cover

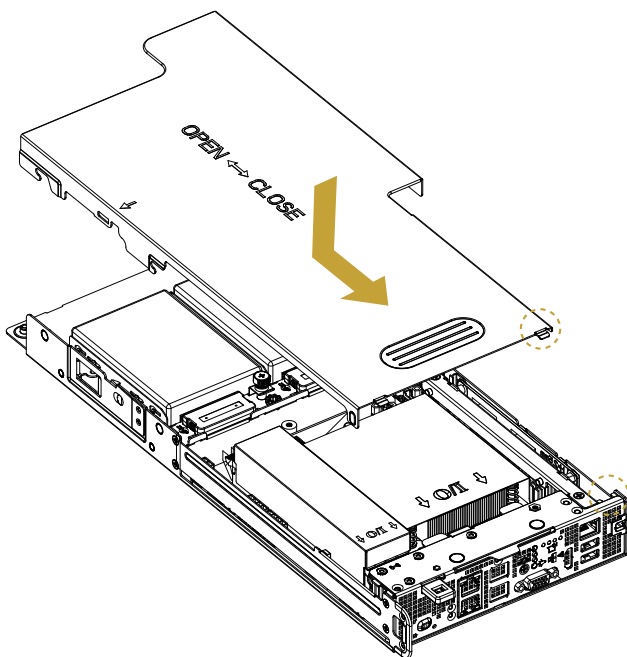
Removing the Node Cover

1. Press the tab and push straight back to remove the node cover from the locked position. Then lift up and remove the cover.



Installing the Node Cover

1. Place the node cover on the node tray and slide it toward the front until the recessed front edge fits smoothly under the tray edge.



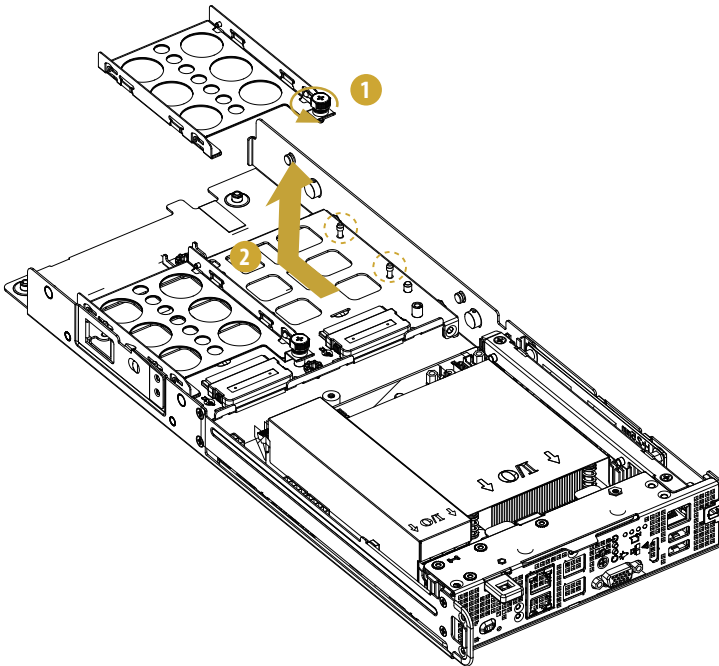
3.6 Hard Drive

3.6.1 Installing a Hard Disk Drive

Each node in the system supports two 2.5" NVME SSD drives. The hard drive brackets are located in the node tray.

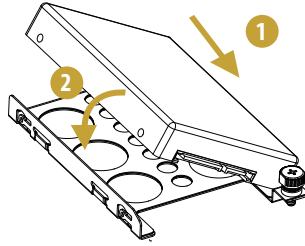
Removing the Hard Drive Bracket from the node

1. Release the thumbscrew on the HDD bracket.
2. Push the HDD bracket toward the rear side of the node to remove the bracket from the locked position. Lift up and remove the HDD bracket.

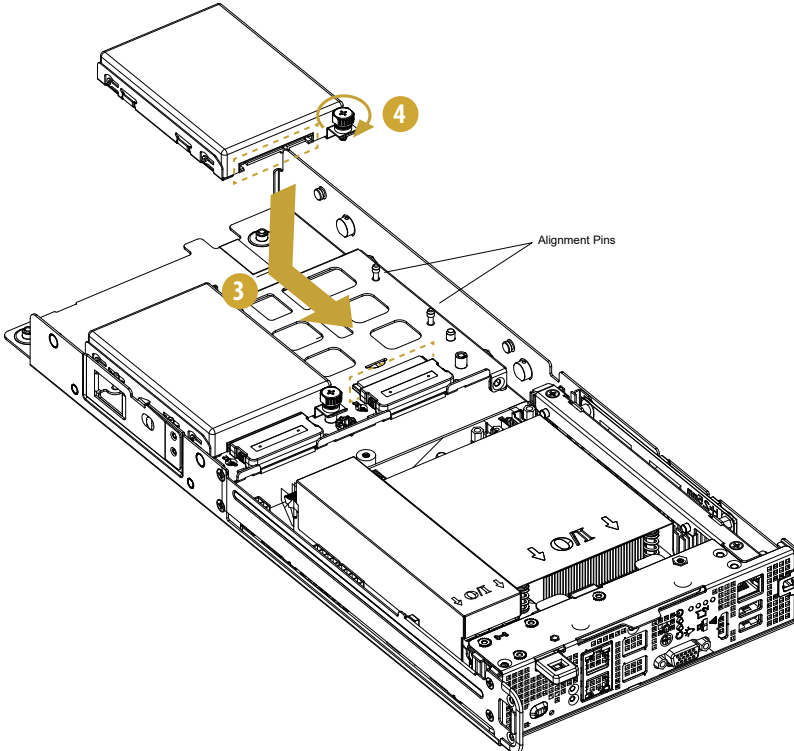


Installing a Hard Drive to the Hard Drive Bracket

1. Engage the two embossed pins into the side dimples on the bracket.
2. Carefully push down the other side of the hard drive until the other two embossed pins and side dimples lock into place.

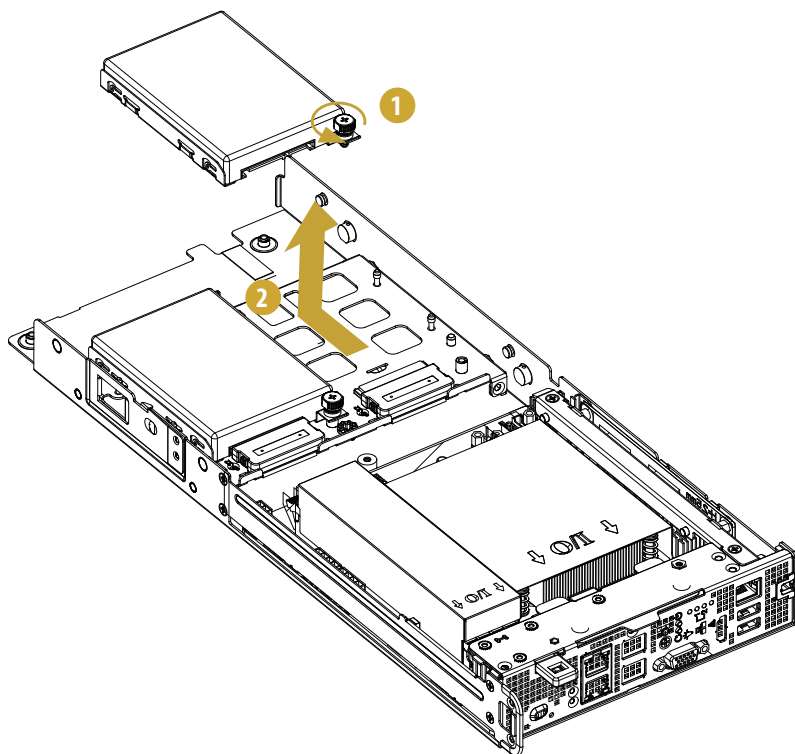


3. Position the hard drive assembly into the chassis, making sure the holes on the assembly are aligned with the alignment pins. Slide it toward the FRONT, making sure the hard drive is fully seated into the connector.
4. Tighten the thumbscrew to secure it into place.



3.6.2 Removing a Hard Disk Drive

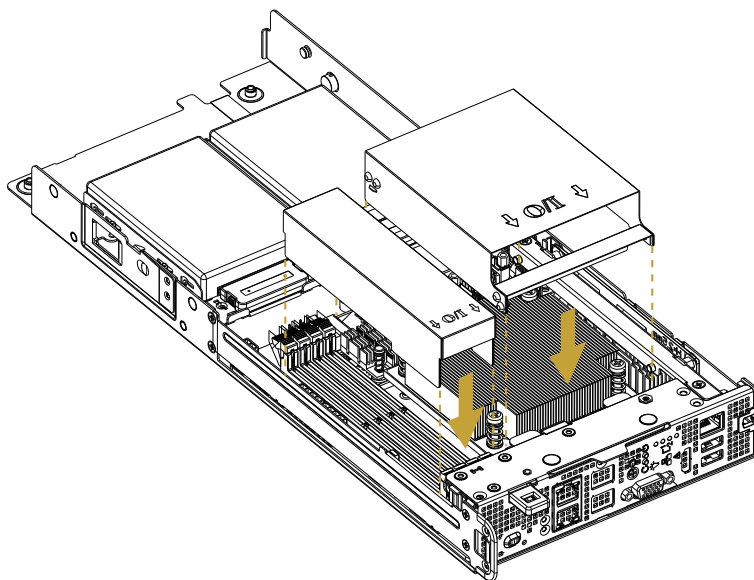
1. Release the thumbscrew.
2. Slide the drive assembly toward to rear to remove it from the hard drive socket in the chassis. Then lift up and remove the hard drive assembly.



3.7 Air Duct

Installing the Air Duct

Two types of air ducts are provided with the system. The larger one is for the CPU heatsink and the smaller one is for the memory modules. Place the air ducts onto the heatsink and DIMM slots in the node for better air flow.



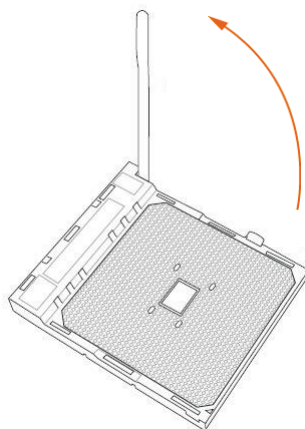
Appendix A

Installing the CPU (AM4 PGA 1331)

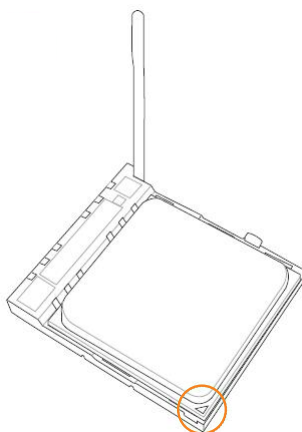


Unplug all power cables before installing the CPU.

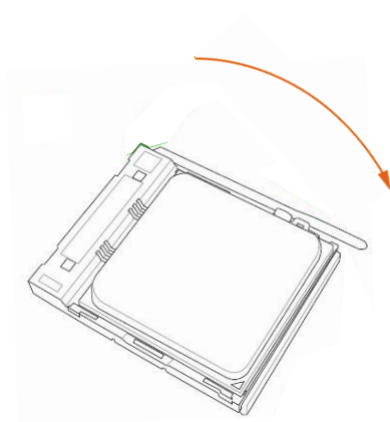
1



2



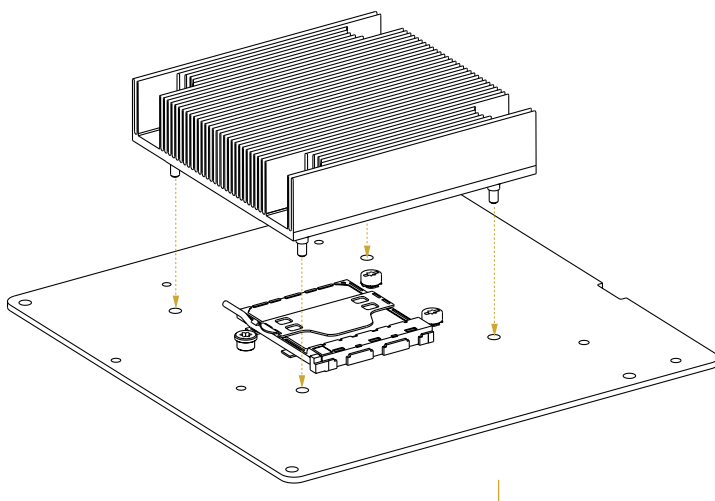
3



Installing the CPU Heatsink



Please be aware that this motherboard only supports LGA115x CPU heatsink



Installing the CPU (LGA 1200)

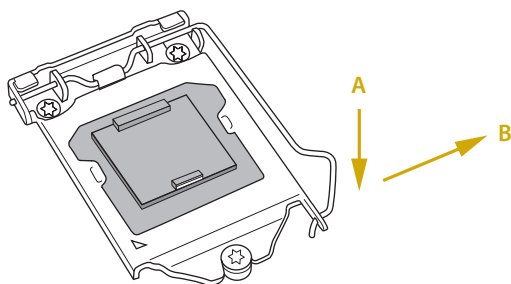


1. Before you insert the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.
2. Unplug all power cables before installing the CPU.

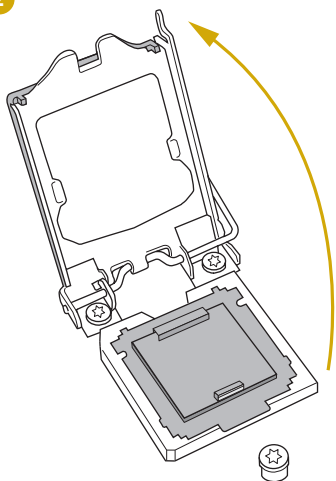


Illustrations in this User Manual are provided for reference only and may slightly differ from actual product appearances.

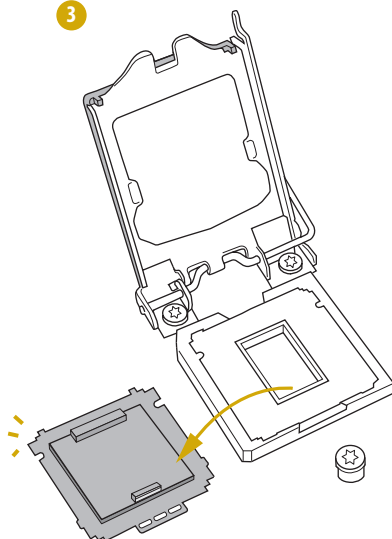
1



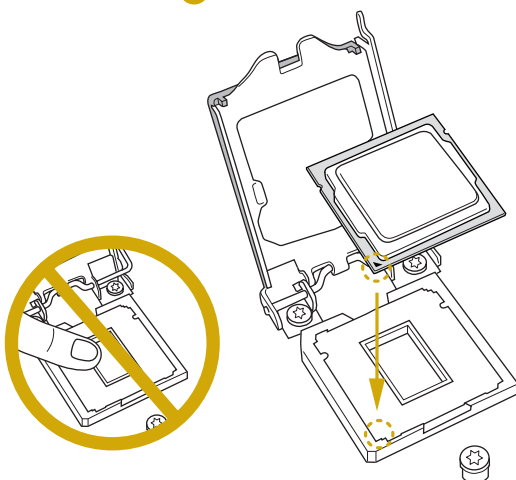
2



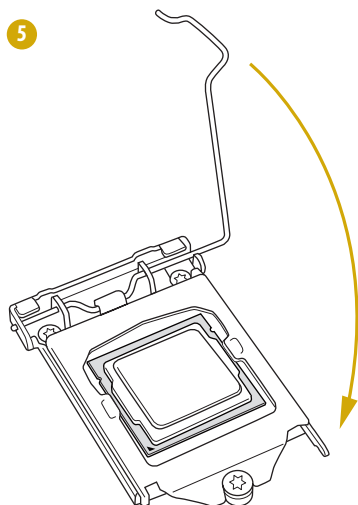
3



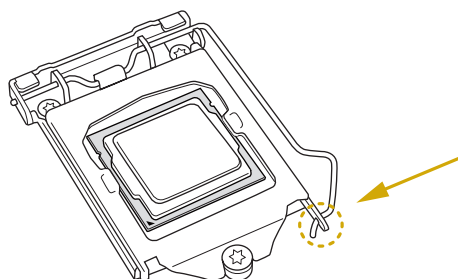
4



5



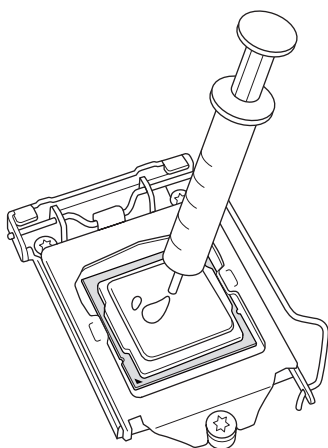
6



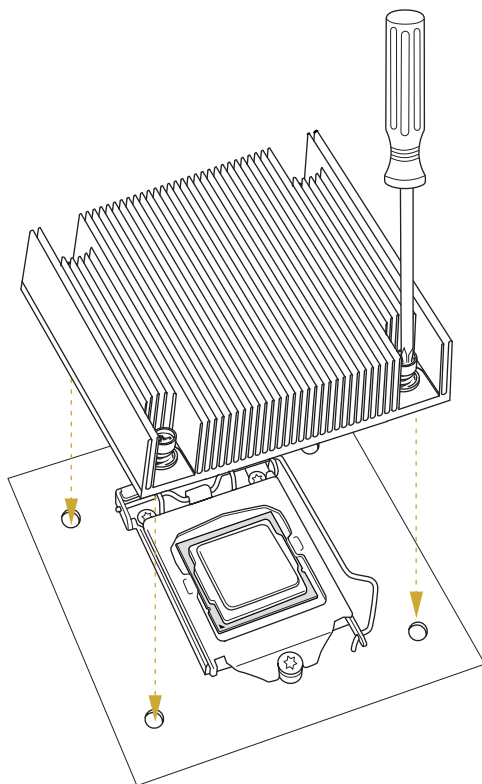
Please save and replace the cover if the processor is removed. The cover must be placed if you wish to return the motherboard for after service.

Installing the Heatsink

1

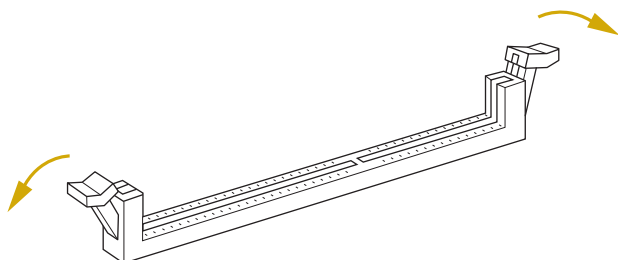


2

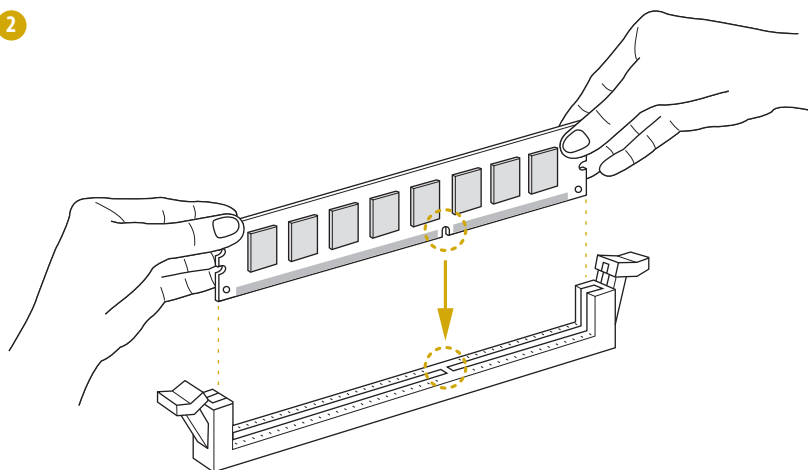


Installation of Memory Modules (DIMM)

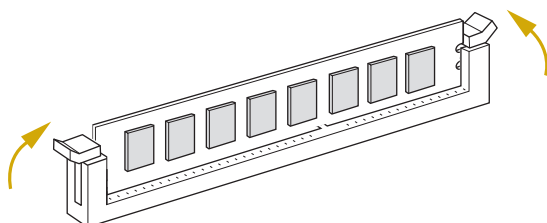
1



2

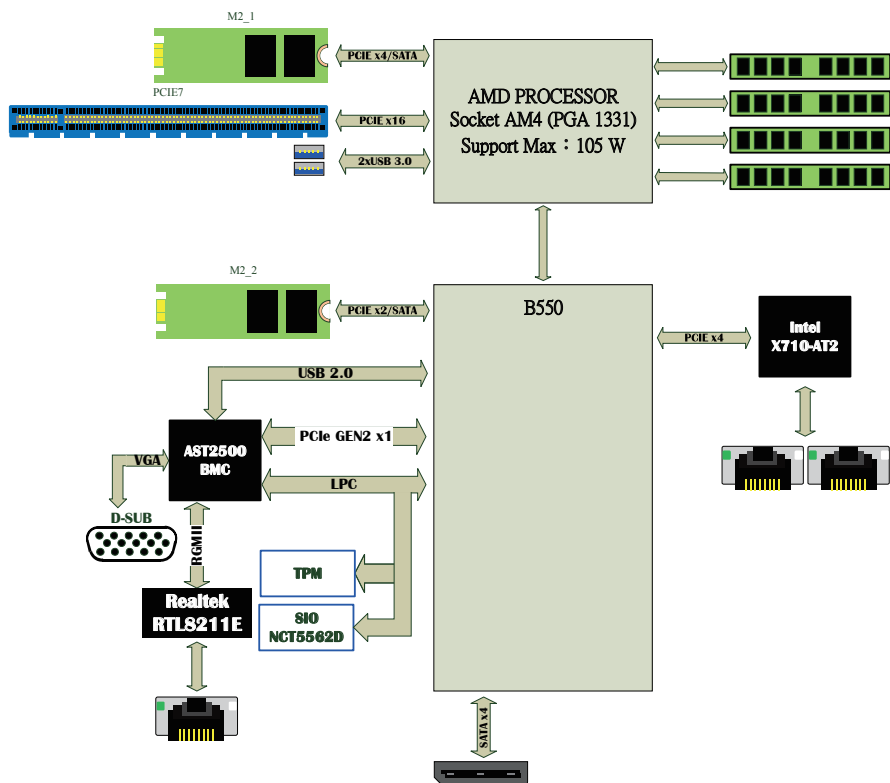


3

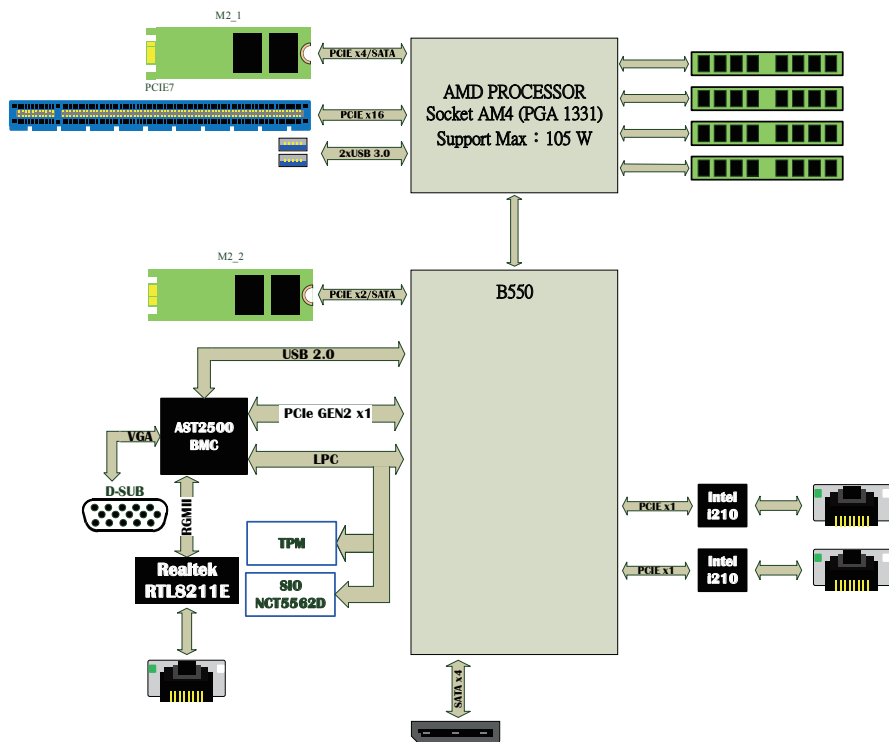


Appendix B

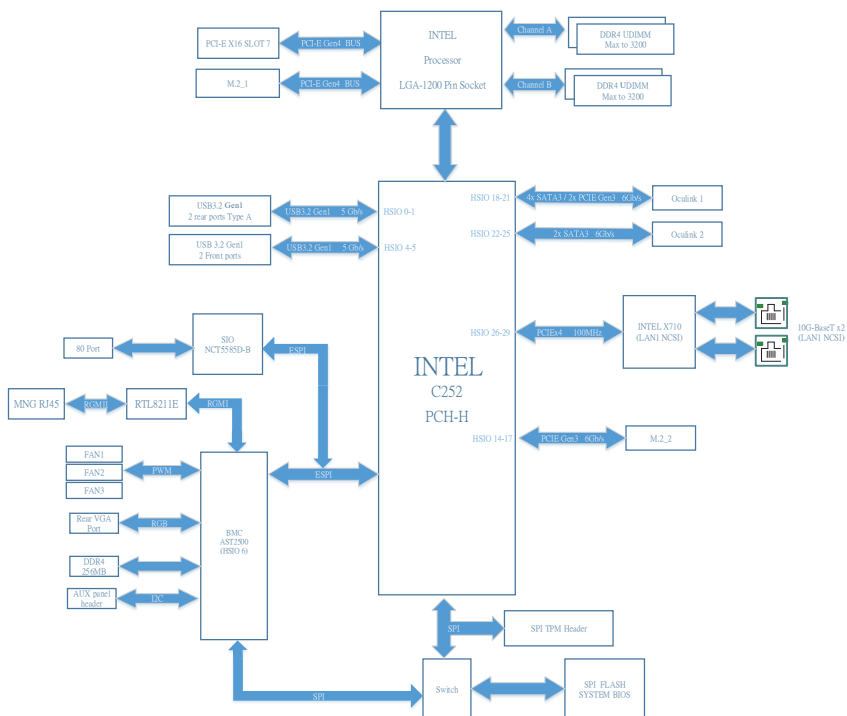
Block Diagram (B550D4ID-2T/18N)



Block Diagram (B550D4ID/18N)



Block Diagram (E3C252D4ID-2T)



Block Diagram (E3C252D4ID2)

