



**OPEN** Industry Standard, Flexible Architecture

**GREEN** Less Heat, Less Power Consumption

**STABLE** Robust Design, Quality Parts

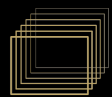
Stable and  
Reliable Solution

**Server/Workstation**  
Motherboard

# 1U4L4E Series

User Manual

English



Version 1.0

Published March 2022

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

**ASRock Rack's Website: [www.ASRockRack.com](http://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 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 motherboard and power supply unit.
- 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.

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# Chapter 1 Introduction

Thank you for purchasing 1U4L4E 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.



*Because the hardware specifications might be updated, the content of this documentation will be subject to change without notice. In case any modifications of this documentation occur, the updated version will be available on ASRock Rack's website without further notice. If you require technical support related to this product, please visit our website for specific information about the model you are using.  
ASRock Rack's Website: [www.ASRockRack.com](http://www.ASRockRack.com)*



*The illustrations shown in this manual are examples only, the actual system may differ slightly.*

## 1.1 Shipping Box Contents

Item 1U4L4E-	Quantity	
	ICX/2T	ROME/2T
IU4L4E Series (1U Barebone)	1	1
System Board (MB)	1	1
Power Supply Unit	2	2
System Fan	6	6
Fan Board (FB)	1	0
HDD Backplane (BPB)	1	1
Front Panel Board (FPB)	1	1
Riser Board (for BPB SLIMLINE connections)	1	0
Riser Board (PCIe x16)	1	1
Accessory Box	1	1
IU Cooler/Heatsink	1	1
Slide Rail	1	1



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



## 1.2 Specifications

1U4L4E Series	
System Physical Status	
Form Factor	1U Rackmount
Dimension (D x W x H)	676.5 x 438 x 43.4 mm
Support MB Size	mATX / ATX
Front Panel	
Buttons	<ul style="list-style-type: none"> <li>• Power On/Standby button</li> <li>• ID button</li> <li>• System reset button</li> </ul>
LEDs	<ul style="list-style-type: none"> <li>• Power LED</li> <li>• Identification LED</li> <li>• System event LED</li> <li>• Hard drive activity LED</li> <li>• 2 x Network activity LED</li> </ul>
Drive Bay	
External	Upper: 4 x 2.5" 7mm NVME / SATA SSD / SATA HDD Lower: 4 x 3.5" SATA HDD (6Gb/s)
Add-on Card	
Riser Card	1U4L4E-ROME/2T: 1 (PCIe x16) 1U4L4E-ICX/2T: 2 (1 for PCIe x16 + 1 for BPB connections)
System Cooling	
Fan	6 x 4056 PWM Easy-Swap Fans
Power Supply	
Type	Redundant PSU 1 + 1
Output Watts	Input 100~240V, 8.8-4.3A, 60~50Hz
Efficiency	Platinum Plus

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

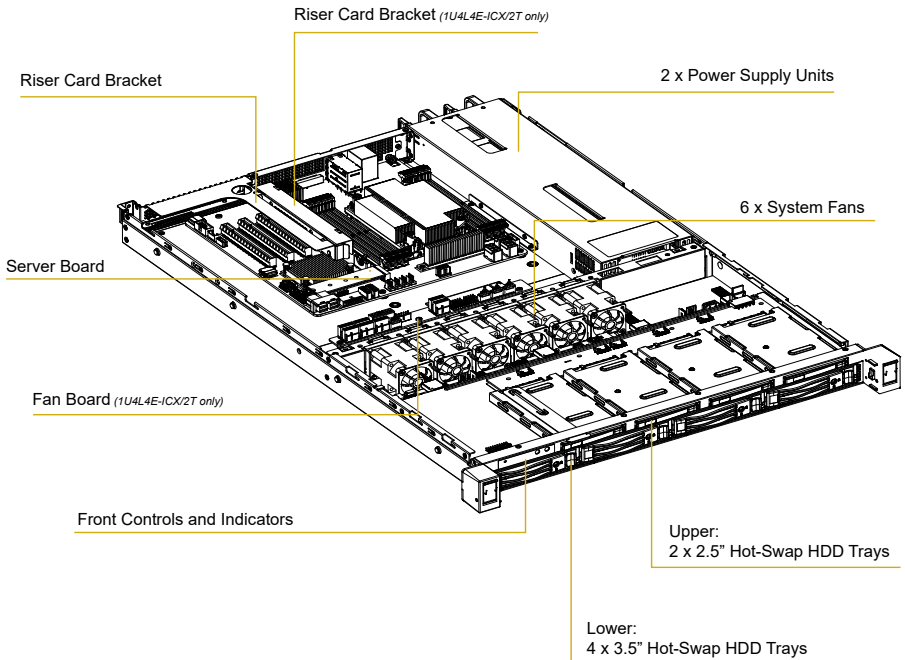


Please refer to the user manual of the motherboard you use for detailed information about motherboard components and features.

# Chapter 2 Server System Overview

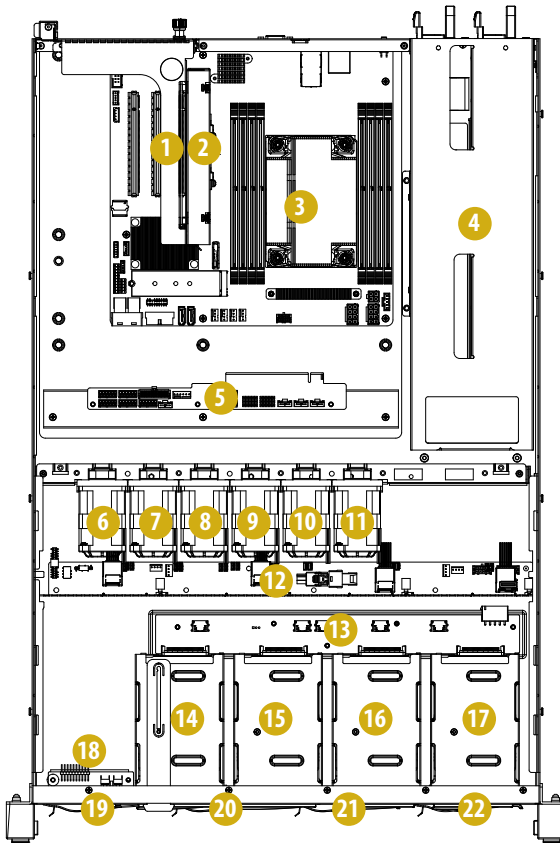
This chapter provides diagrams showing the location of important components of the server system.

## 2.1 System Components



*\*The illustrations in this User Manual are for references only. The actual product may be slightly different by SKU.*

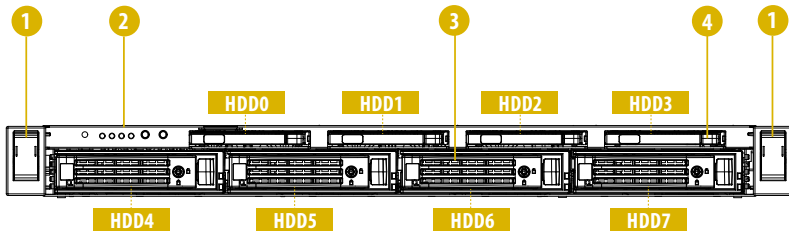
## 2.2 Internal Features



No.	From
1	Riser Card (PCIe x16) (RB1)
	<b>1U4L4E-ICXT/2T:</b>
	Riser Card (for BPB connections) (RB2)
2	
	<b>1U4L4E-ROME/2T:</b>
	N/A
3	Serverboard
4	2 x Power Supply Units (PSU)

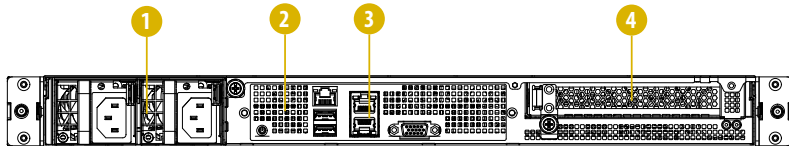
No.	From
5	<b>IU4L4E-ICXT/2T:</b> Fan Board
	<b>IU4L4E-ROME/2T:</b> N/A
6	System Fan 1
7	System Fan 2
8	System Fan 3
9	System Fan 1
10	System Fan 2
11	System Fan 3
12	3.5" HDD Backplane Board (BPB1)
13	2.5" HDD Backplane Board (BPB2)
14	2.5" HDD Tray (HDD0) (Hot-swappable)
15	2.5" HDD Tray (HDD1) (Hot-swappable)
16	2.5" HDD Tray (HDD2) (Hot-swappable)
17	2.5" HDD Tray (HDD3) (Hot-swappable)
18	Front Panel Board (FPB)
19	3.5" HDD Tray (HDD4) (Hot-swappable)
20	3.5" HDD Tray (HDD4) (Hot-swappable)
21	3.5" HDD Tray (HDD4) (Hot-swappable)
22	3.5" HDD Tray (HDD4) (Hot-swappable)

## 2.3 System Front Panel



No.	Description
1	Thumbscrew Covers
2	Control Panel Buttons and LEDs
3	4 x 3.5" Hot-Swap HDD Trays (3.5" SATA HDD)
4	4 x 2.5" Hot-Swap HDD Trays (2.5" 7mm NVME/SATA SSD / SATA HDD)

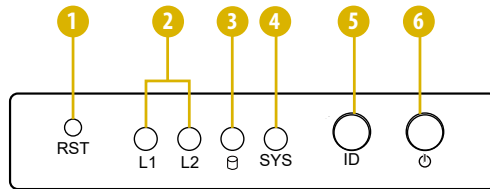
## 2.4 System Rear Panel



No.	Description
1	2 x Power Supply Units (PSU)
2	Rear Vent
3	I/O Shield (depends on the specification of the server board)
4	PCI Express Slot (for the riser card)

## 2.5 Front Control Panel Buttons and LEDs

### Front Control Panel



No.	Description
1	Power Button and LED
2	ID Button and LED
3	HDD Status LED
4	LAN1 and LAN2 Activity LED
5	System Reset Button

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

### Power Button

Press the power switch button to toggle the system power on and standby/sleep modes.

To remove all power from the system completely, disconnect the power cord from the server.

### ID Button

Press the ID button to toggle the front panel ID LED and the baseboard ID 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
Blue	Power on
Blinking Blue	Standby(Sleep) mode
Off	Power off

ID LED	
Status	Description
Blue	System identification is active.
Off	System identification is disabled.

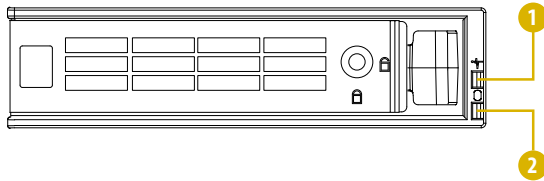
System Status LED	
Status	Description
Off	Running or normal operation
Yellow	At least one sensor has critical alert

HDD Status LED	
Status	Description
Blinking Green	HDD access
Off	HDD idle

LAN LED	
Status	Description
Blinking Green	Network access
Solid Green	LAN is present.
Off	No LAN is present.

## 2.6 Drive Tray LEDs

### 3.5" HDD Tray



No.	Description
1	HDD Power LED
2	HDD Activity LED

### Status LED Definitions

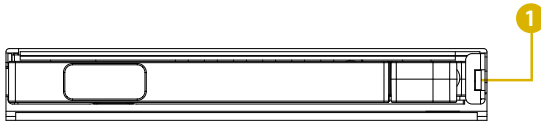
HDD Power LED	
Status	Description
Blue	HDD powered-on
Off	No power to HDD

HDD Activity LED	
Status	Description
Solid Green	HDD active
Blinking Green	HDD accessing or reading
Red	HDD failed
Off	HDD powered-off



## 2.5" HDD Tray



No.	Description
1	HDD Power LED
2	HDD Activity LED

## Status LED Definitions

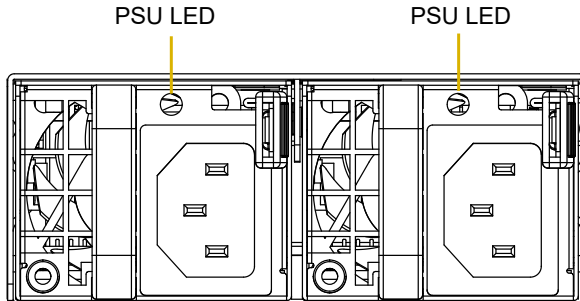
## HDD Power LED

Status	Description
Blue	HDD powered-on
Off	No power to HDD

## HDD Activity LED

Status	Description
Solid Green	HDD active
Blinking Green	HDD accessing or reading
Red	HDD failed
Off	HDD powered-off

## 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

# Chapter 3 Hardware Installation and Maintenance

This chapter helps you assemble the chassis and install components.

## Before You Begin

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

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.

- 3.5" or 2.5" HDD(s)
- Power Supply Unit(s) (Pre-installed)
- System Fans (Pre-installed)
- Server Board (Pre-installed)
- Fan Board (Pre-installed, if supported)
- HDD Backplane (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.

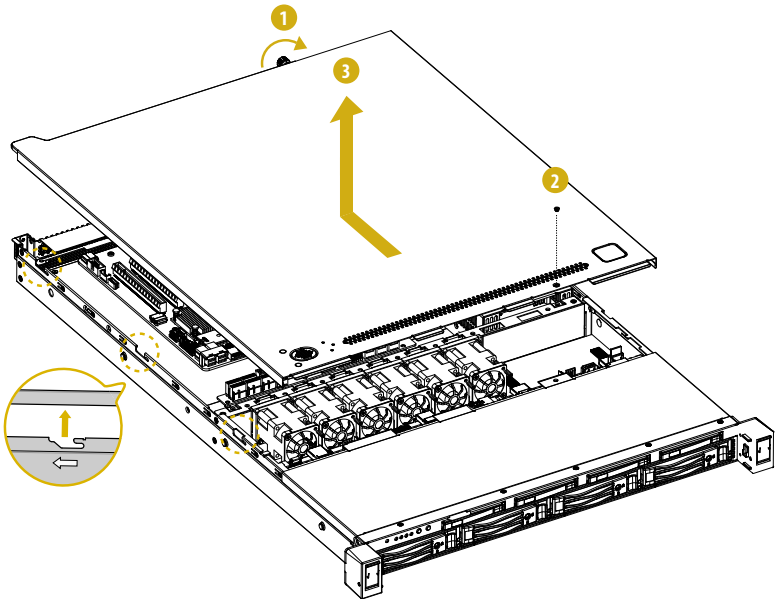
## 3.1 Server Top Covers

### Removing the Server Top Covers

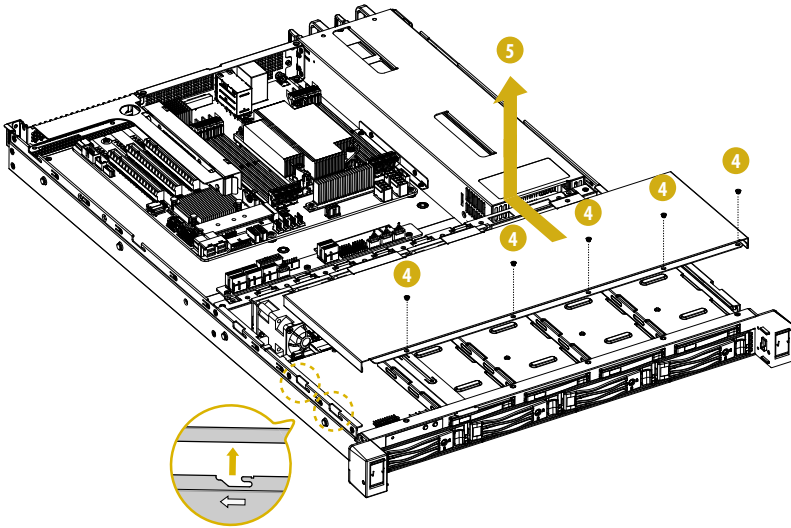


1. Before removing the top covers, power off the server and unplug the power cord.
2. The system must be operated with all the chassis top covers installed to ensure proper cooling.

1. Hand-release the thumbscrew on the rear side of the chassis.
2. Remove the screw that secures the top rear cover to the chassis.
3. Push the top rear cover toward the REAR of the chassis to remove the cover from the locked position. Lift up and remove the top rear cover.

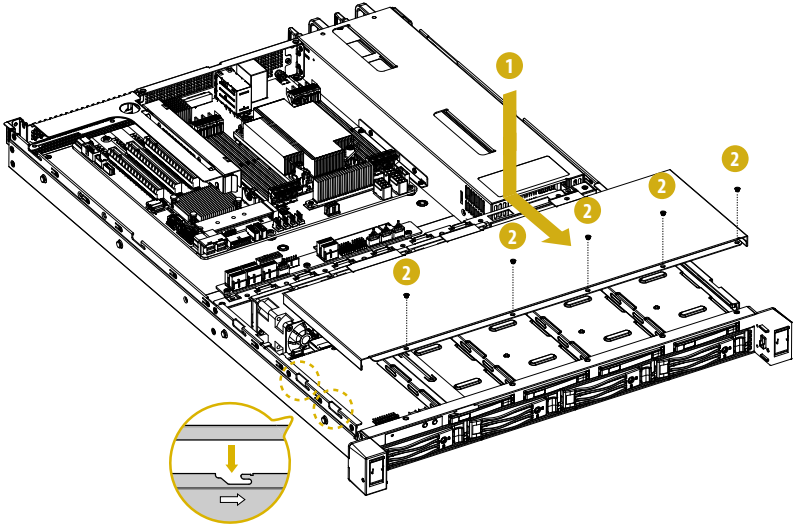


4. Remove all screws that secure the top front cover to the chassis.
5. Push the top front cover toward the REAR of the chassis to remove the cover from the locked position. Lift up and remove the top front cover.

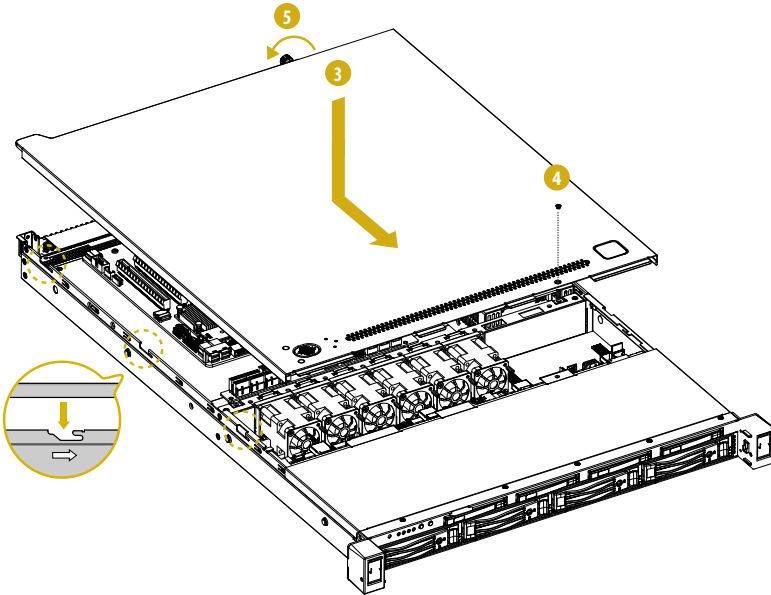


## Installing the Server Top Covers

1. Lower the top front cover on the chassis, making sure the side latches align with the cutouts. Slide the top front cover toward the FRONT of the chassis.
2. Secure the front cover to the chassis with screws.



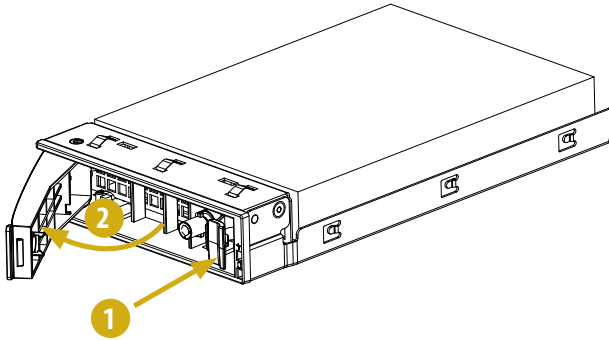
3. Then lower the top rear cover on the chassis, making sure the side latches align with the cutouts. Slide the top rear cover toward the FRONT of the chassis.
4. Secure the top rear cover in place with a screw.
5. Hand-tighten the thumbscrew on the rear side of the chassis.



## 3.2 Hard Drive

### Removing 2.5” and 3.5” Hard Drive Trays from the Chassis

1. Press the locking lever latch on the drive tray to unlock the retention lever.
2. Rotate the lever out and away from the module bay and pull the hard drive out of the HDD tray.

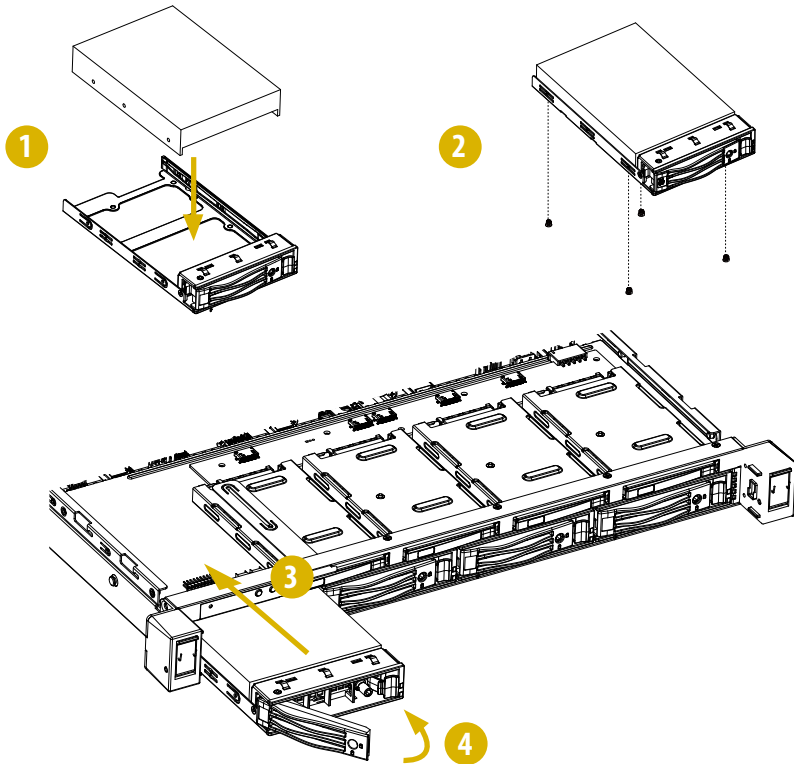


*The illustrations shown in this manual are examples only, the actual system may differ slightly.*



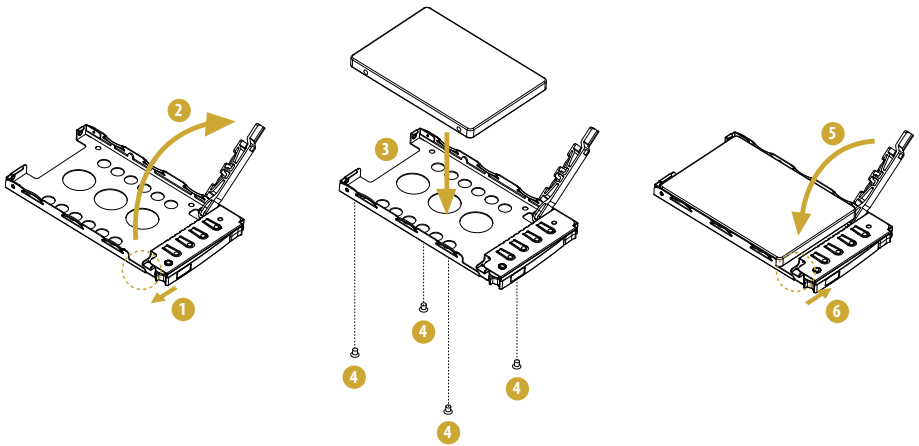
## Installing a 3.5" Hard Drive to the Hard Drive Tray

1. Place the 3.5" HDD into the tray with the printed circuit board side facing down. Carefully align the mounting holes in the hard drive and the tray.
2. Secure the hard drive using the screws.
3. Slide the drive tray into the HDD bay until the drive is fully seated.
4. Push in the locking lever to lock the HDD tray into place.

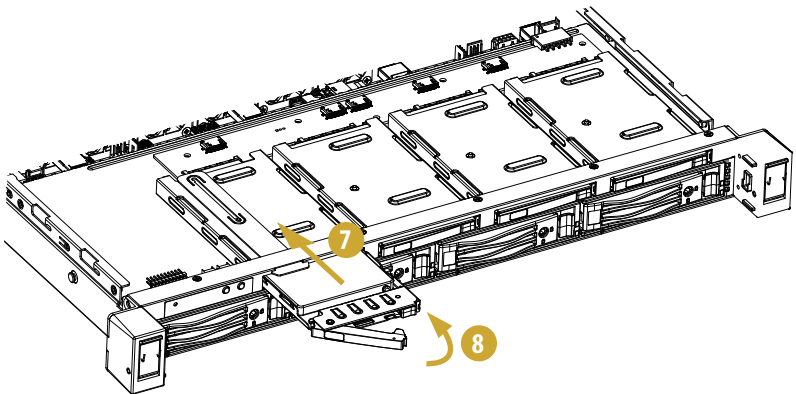


## Installing a 2.5" Hard Drive to the Hard Drive Tray

1. Pull the lever a little bit toward the left side to remove it from the locked position.
2. Open the lever.
3. Place the 2.5" HDD into the tray with the printed circuit board side facing down.  
Carefully align the mounting holes in the hard drive and the tray.
4. Secure the hard drive using the screws.
5. Close the lever.
6. Push the lever a little bit toward the right side and make sure it's locked.



7. Slide the drive tray into the HDD bay until the drive is fully seated.
8. Push in the locking lever to lock the HDD tray into place.



## 3.3 Power Supply

### Installing and Removing the Power Supply



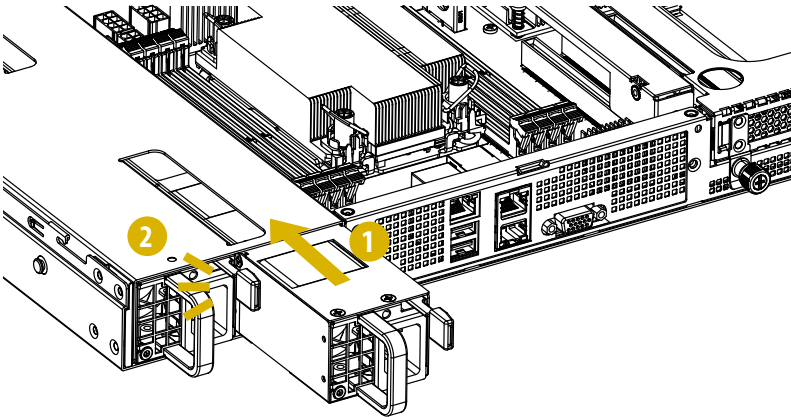
*Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.*

The 1U4L4E Series system supports single PSU only.

The 1U4L4E Series system can accommodate two AC or two DC power supplies in the bay at the rear of the chassis. Each unit provides up to 750 Watts of power. One power supply is required for full load operation, with the other power supply purely as a redundant, load-sharing backup. It can be removed without affecting system operation.

#### Installing the Power Supply Unit

1. 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.
2. Carefully slide the PSU all the way into the power supply bay until it clicks into place.



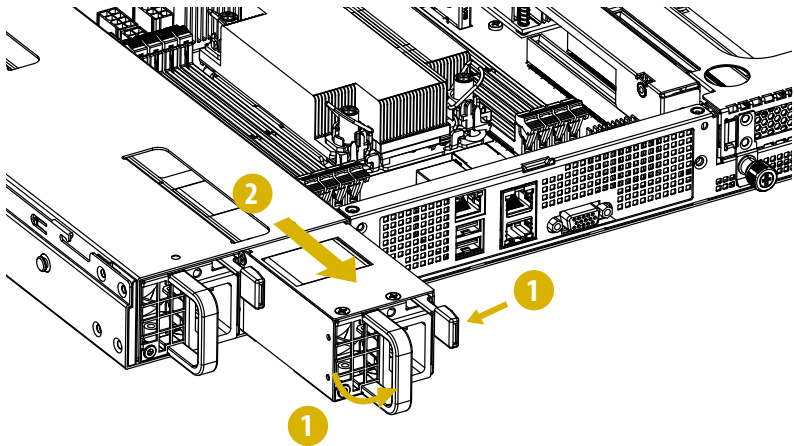
## Removing the Power Supply Unit

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

1. Hold onto the power supply handle while pressing the locking lever towards the power supply handle.\*

*\*The illustration is for references only. The actual PSU type may be slightly different by models.*

2. Pull to remove the power supply from the chassis.

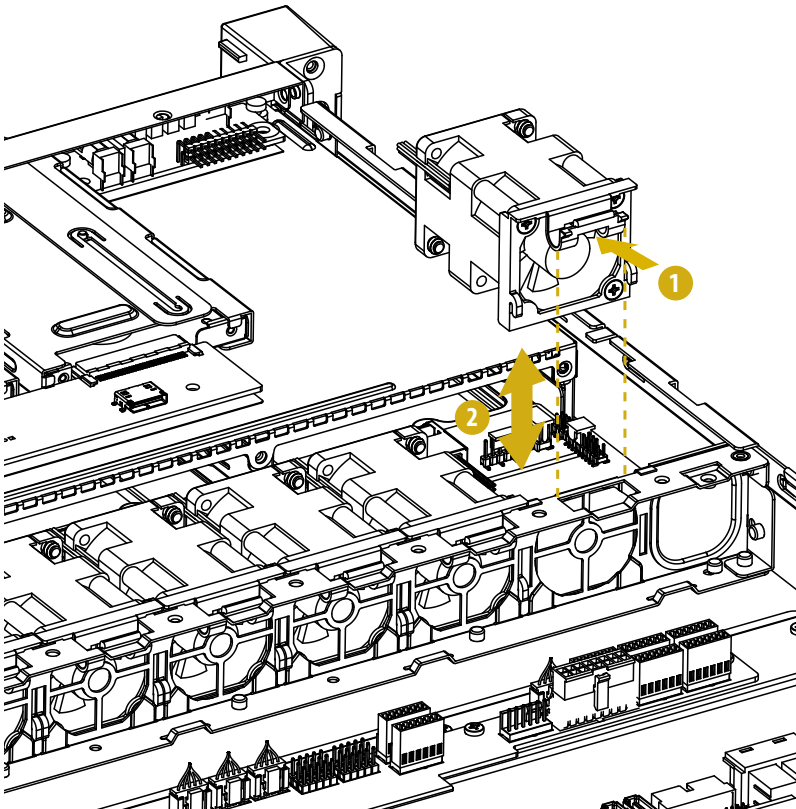


1. Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.
2. In a redundant system, you do not need to power down the server.

## 3.4 System Fan

### Replacing the System Fan

1. Press and hold the clip on the fan.  
Align the mounting holes on the fan bar with the fan mount on the replacement fan.  
Please be aware of the mount location of each fan.
2. Gently place the fan on the fan bar. Make sure the fan is well seated.  
Connect the end of the fan cable to the fan connector.



### 3.5 Add-on Card (Riser Card for BPB connections)

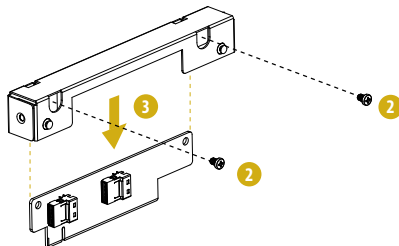
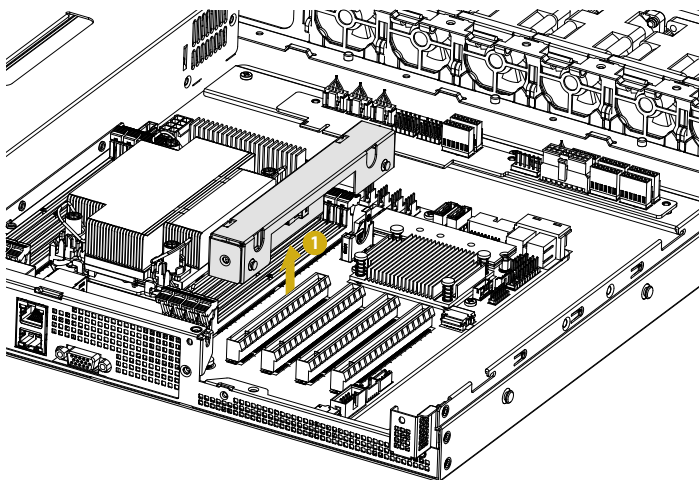


1. You can install an add-on card to the chassis only when you have a riser card installed on the server board.
2. Before installing the add-on card, power off the server and unplug the power cord.

#### Removing the Riser-Card Bracket from the Chassis

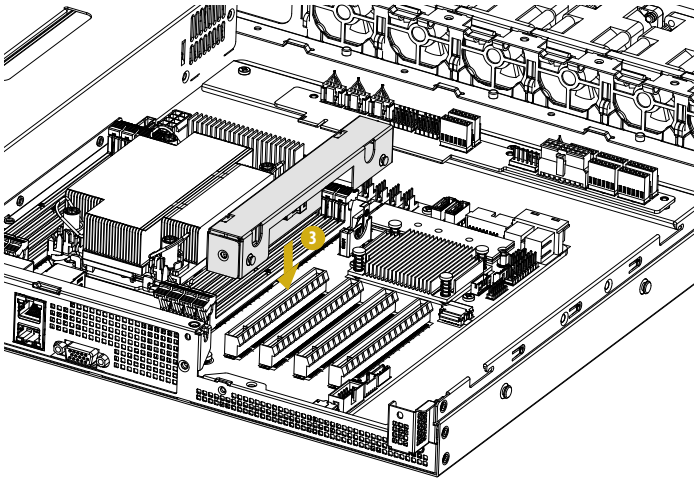
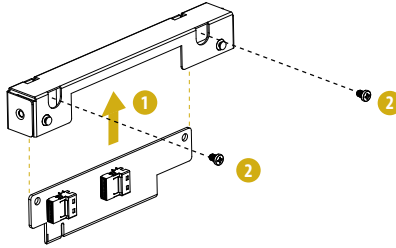
This riser card bracket can only be installed in the chassis with the riser card. To remove the bracket, simply lift up the riser card assembly.

1. Lift up the riser card assembly.
2. Release the screws.
3. Remove the riser card.



## Installing the Riser-Card

1. Hand-release the thumbscrew that secures the riser-card bracket on the chassis.
2. Lift up the riser-card bracket.
3. Remove the screw securing the blanking plate on the bracket.
4. Slide the blanking plate out sideways.



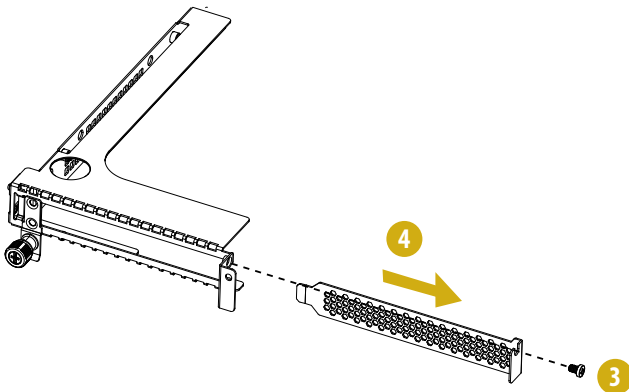
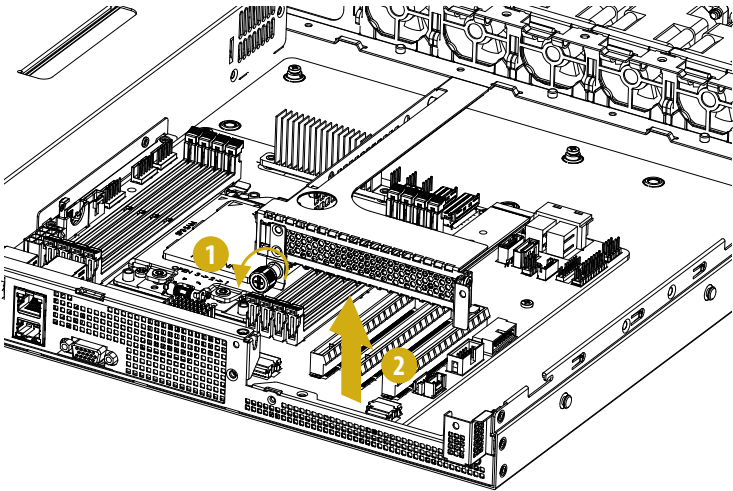
### 3.6 Add-on Card (Riser Card PCIe x16)



1. You can install an add-on card to the chassis only when you have a riser card installed on the server board.
2. Before installing the add-on card, power off the server and unplug the power cord.

#### Removing the Riser-Card Bracket from the Chassis

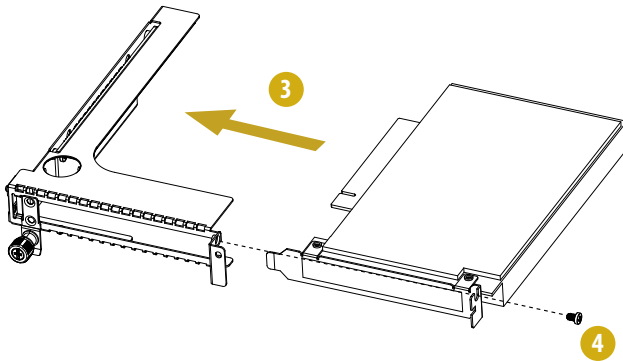
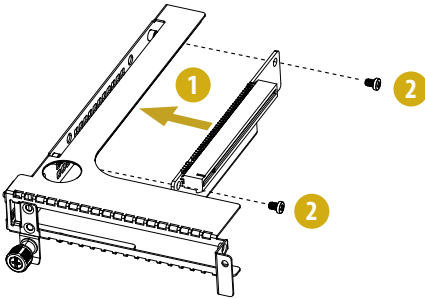
1. Hand-release the thumbscrew that secures the riser-card bracket on the chassis.
2. Lift up the riser-card bracket.
3. Remove the screw securing the blanking plate on the bracket.
4. Slide the blanking plate out sideways.



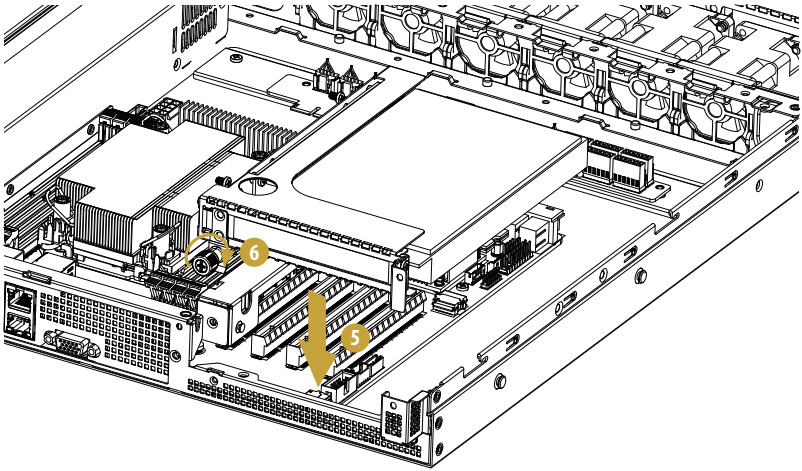


## Installing the Add-on Card

1. Install the riser card to the riser-card bracket.
2. Secure the riser card to the bracket with screws.
3. Install the add-on card to the riser-card bracket assembly.
4. Secure the add-on card to the assembly with a screw.

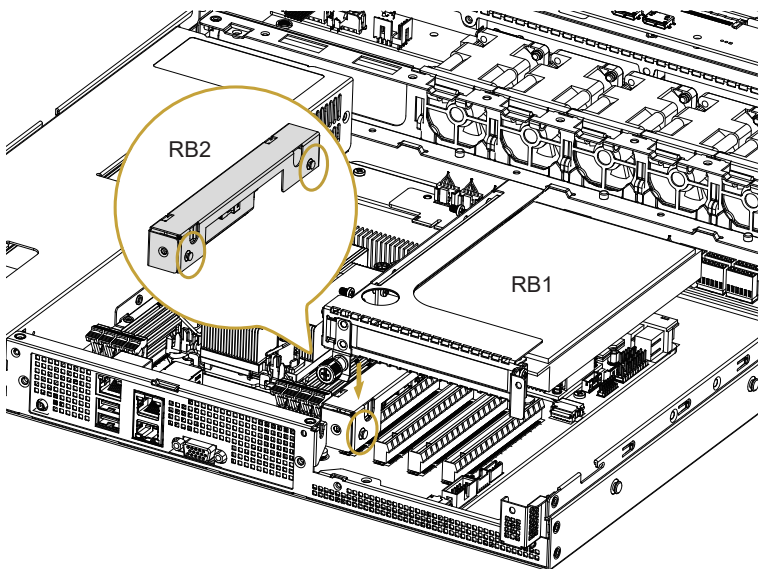


5. Align the riser-card assembly with the openings of the chassis.
6. Hand-tighten the thumbscrew to secure the assembly to the chassis.



### Notice *(1U4L4E-ICX/2T only)*

For 1U4L4E-ICX/2T system, if you want to install both the riser card for the BPB connections (RB2) and the riser card for PCIe x16 card (RB1), you need to install RB2 first and then RB1. Meanwhile, please make sure RB1 is well hanged and mounted on the RB2.

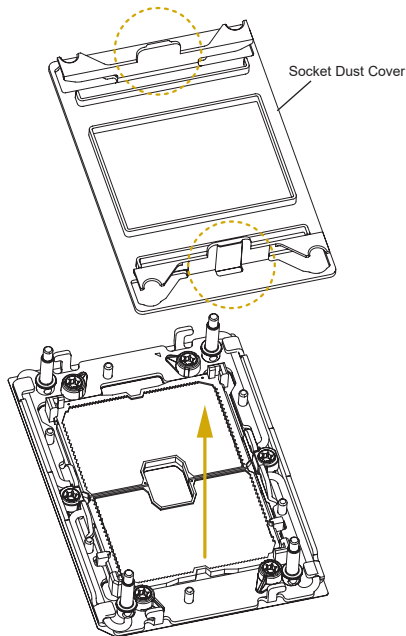


## Appendix A

### Installing the CPU (LGA 4189 Socket)



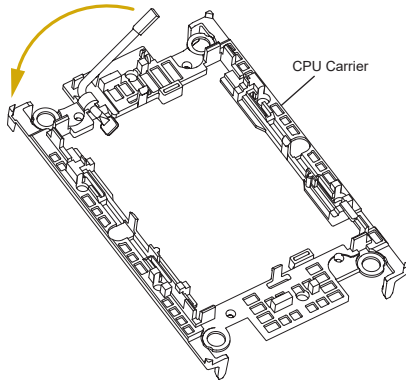
1. Before you insert the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.
2. Unplug all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

**1**

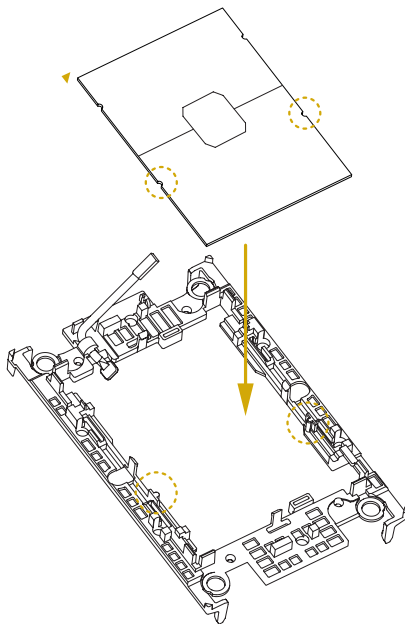


1. Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation.
2. Illustration in this documentation are examples only. Heatsink or fan cooler type may differ.

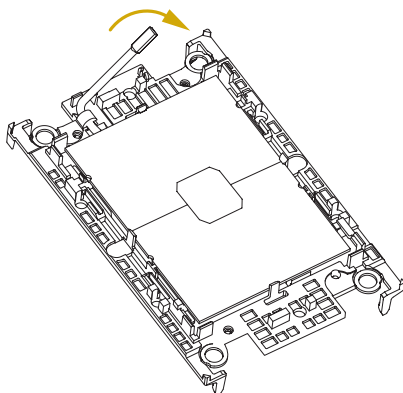
2



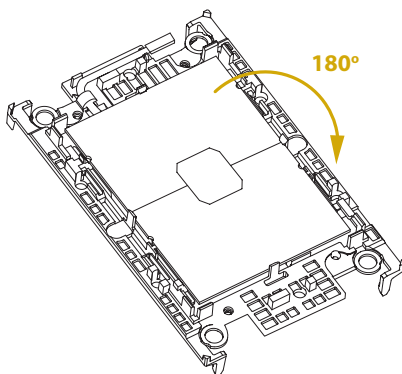
3



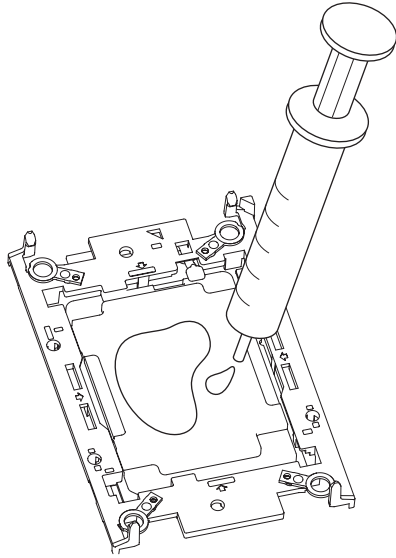
4



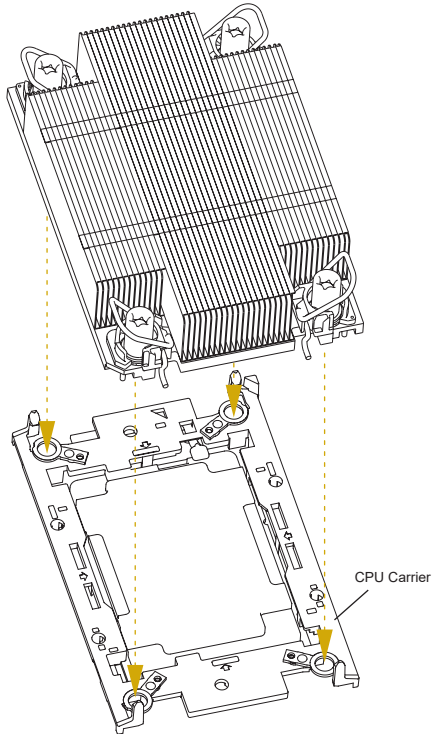
5



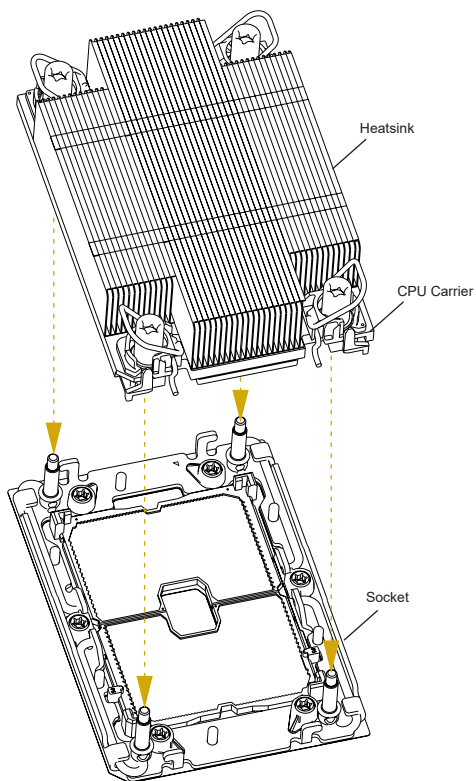
6



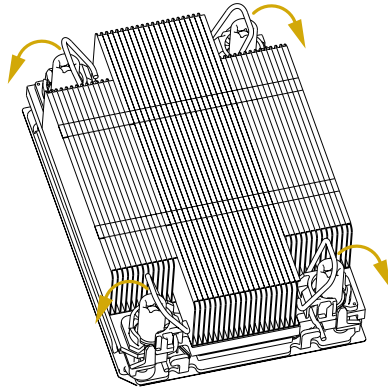
7



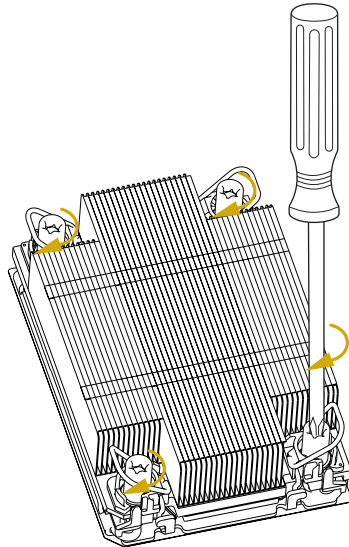
8



9



10



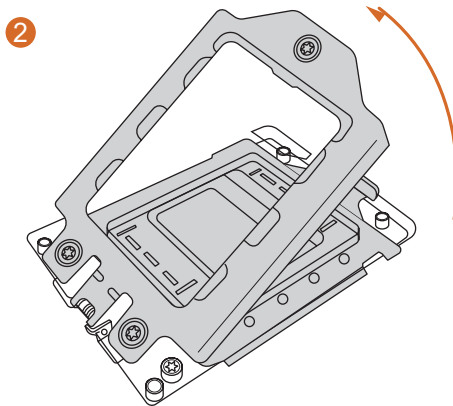
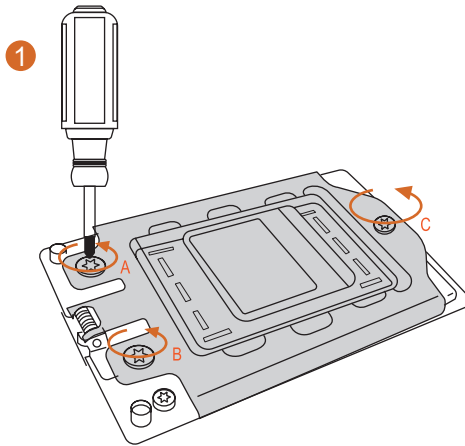
Illustrations in this User Manual are provided for reference only and may slightly differ from actual product appearances.



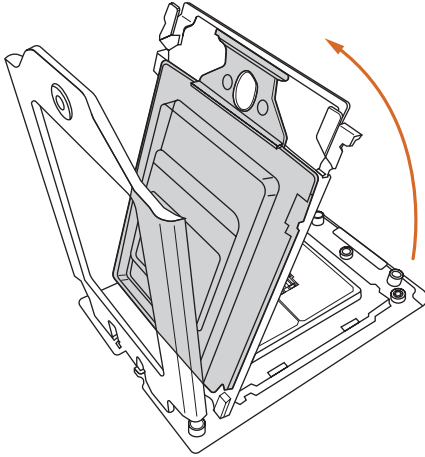
## Installing the CPU (LGA 4094 Socket)



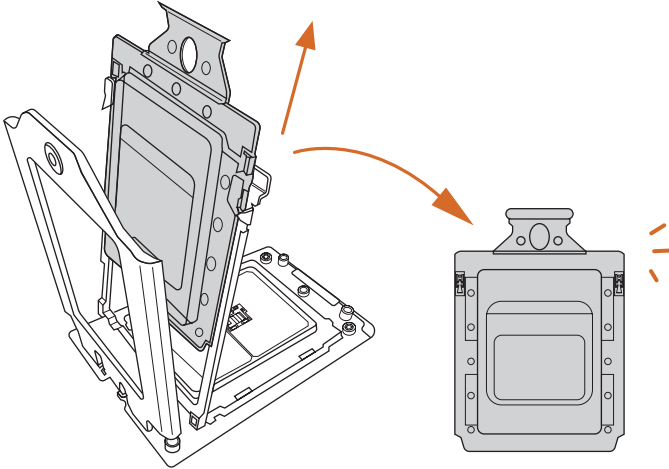
1. Before you insert the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.
2. Unplug all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

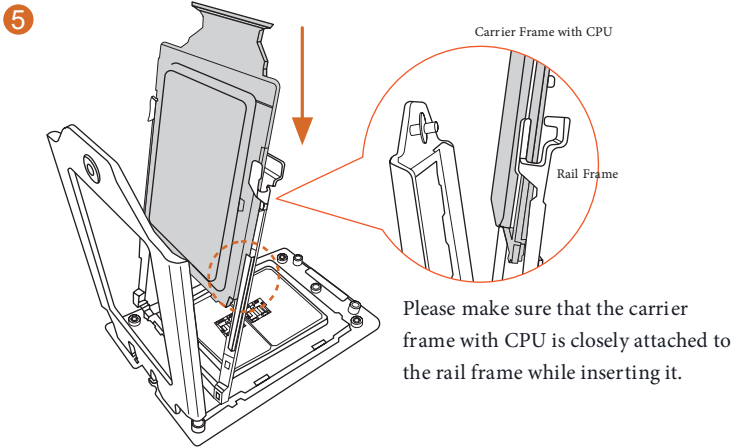


3

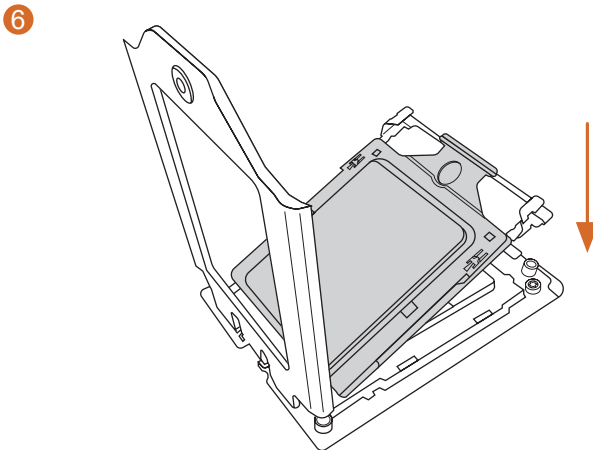


4

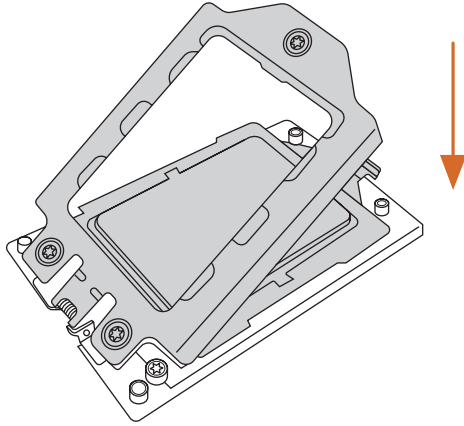




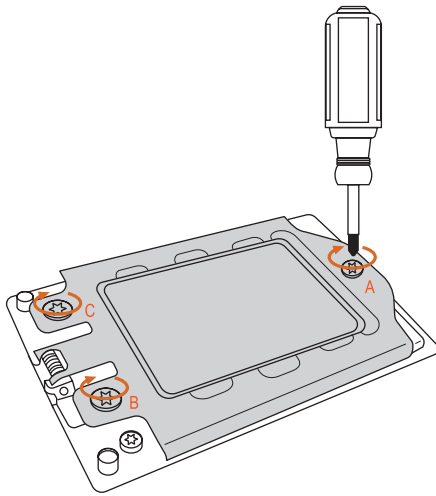
Install the carrier frame with CPU. Don't separate them.



7



8



## Appendix B

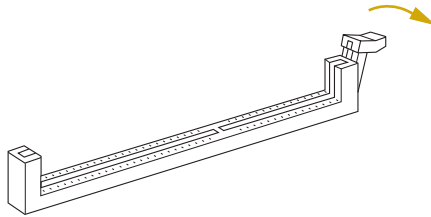
### Installation of Memory Modules (DIMM)



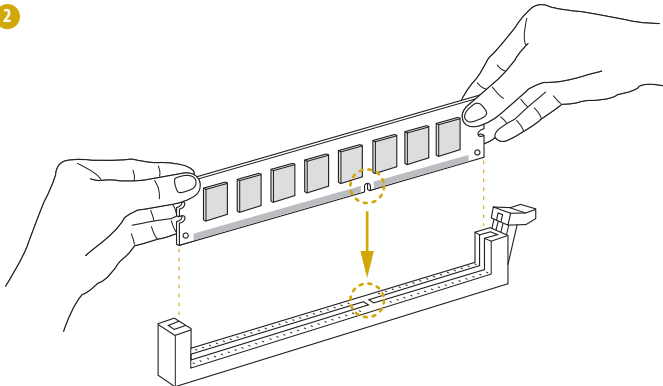
The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation. For more information about DIMM installation, please refer to the User Manual that comes with the serverboard you use.

#### Type A (Single Clip)

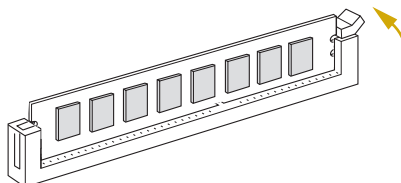
1



2

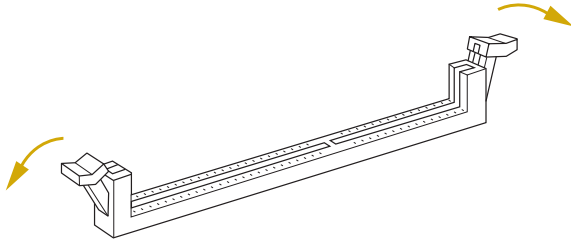


3

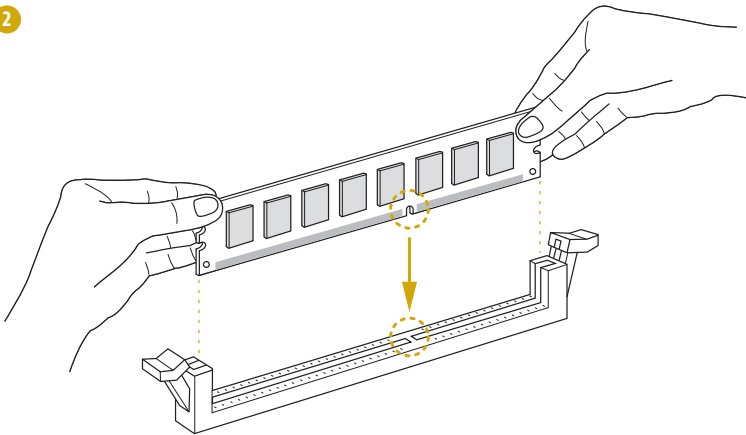


## Type B (Two Clips)

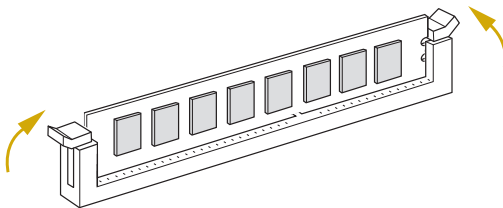
1



2

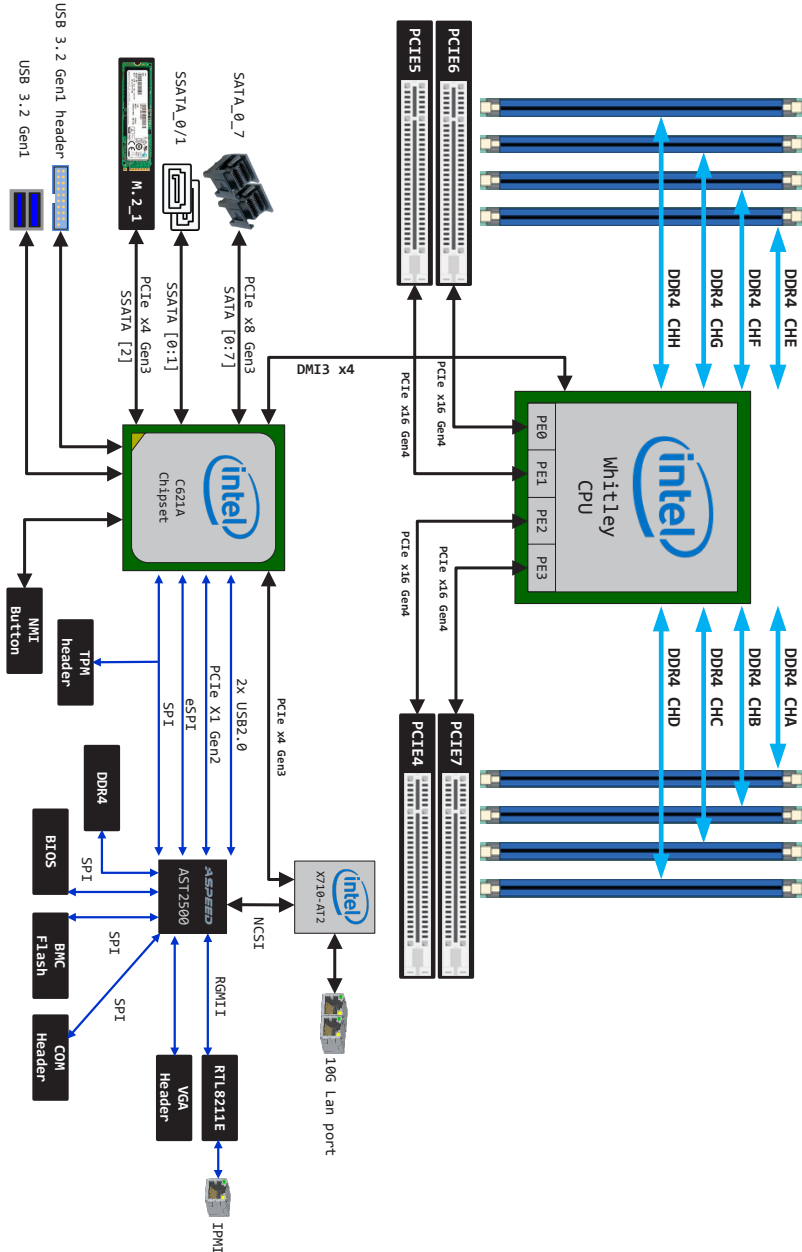


3



# Appendix C

## Block Diagram (SPC621D8U-2T)



# Block Diagram (ROMED8U-2T)

