

Industry Standard, Flexible Architecture

OPEN

Less Heat, Less Power Consumption

GREEN

Robust Design, Quality Parts

STABLE

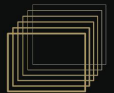
Stable and
Reliable Solution

Server/Workstation
Motherboard

4U4G Series

User Manual

English



Version 1.0

Published May 2023

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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”

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

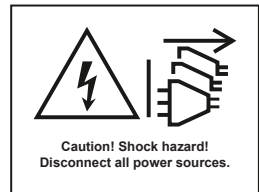
CAUTION

**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 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.
- The power cord must be connected to a socket or outlet with a ground connection.

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Chapter 1 Introduction

Thank you for purchasing 4U4G Series, a reliable barebone system produced under our consistently stringent quality control. It delivers excellent performance with robust design conforming to our 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.

System	ASRock Rack Server Board
4U4G-SPC621D8	SPC621D8
4U4G-WRX80/2T	WRX80D8-2T



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 purchased model.



Please visit the website for specific technical information about the model.
<http://www.asrockrack.com/support/>

1.1 Shipping Box Contents

Item	Quantity	
	4U4G	-SPC621D8 -WRX80/2T
4U4G Series Barebone	1	1
System Board (MB)	1	1
Power Supply Unit (PSU)	2	2
System Fan	4	4
Front Panel Board (FPB)	1	1
2.5" HDD Backplane	1	1
Accessory Box	1	1
Slide Rail Kit (28" Toolless)	1	1
User Manual	1	1
Quick Installation Guide	1	1

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

1.2 Specifications

4U4G Series	
System Physical Status	
Form Factor	4U Rackmount
Dimension (D x W x H)	596.0x 430.4x 174.8 mm
Support MB Size	ATX 12" x 9.6" / CEB 12" x 10.5" / EEB 12" x 13"
Front Panel (per node)	
Buttons	• Power w/ LED button • UID w/LED button • NMI button
LEDs	• LAN Activity LED • HDD Activity LED • System Event LED
I/O Port	2 Type-A (USB 3.2 Gen1)
System Cooling	
System Fan	4 PWM fixed 80x38 mm fans
GPU Card Fan	2 PWM fixed 80x38 mm GPU fans (optional)
External Drive Bay / Storage	
Rear Side	2 Hot-swap 2.5" SATA drive bays
Internal Side	2 M-key (PCIe4.0 x4), supports 22110/2280/2260/2242/2230 form factor [FCH]
Power Supply	
Type	1+1 CRPS
Output Watts	1008W @ 100-127V input / 1600W @ 200-240V input
Efficiency	80-PLUS Platinum
AC Input	Low-line: 100-127V, 47-63Hz ; High-line: 200-240V, 47-63Hz
GPU Card	
GPU Watts	Max 300w /per card
Support GPU	4 x GPU cards

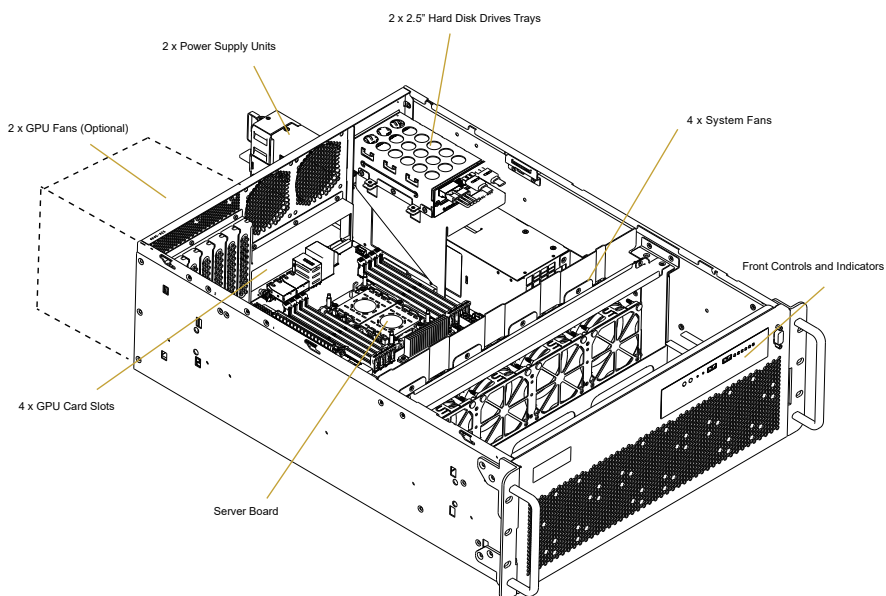


Please refer to the user manual of the motherboard for detailed information about motherboard components and features.

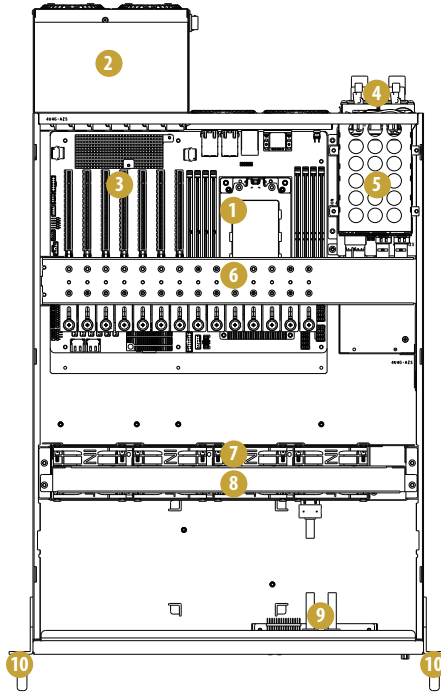
Chapter 2 Server System Overview

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

2.1 System Components

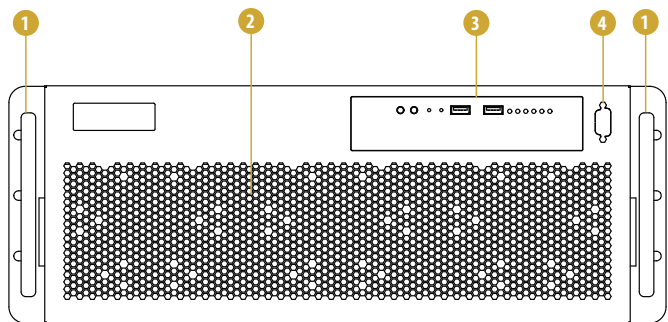


2.2 Internal Features



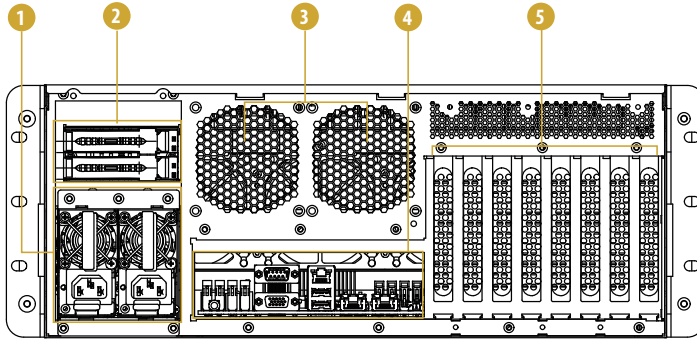
No.	Item
1	Server Board (The serverboard varies depending on the system SKU.)
2	2 x GPU Fans (optional)
3	8 x Full-Height PCIe Slots (or 4 x Double-Slot GPU Cards)
4	2 x Power Supply Units
5	2 x 2.5" Hot Swap HDD Trays
6	Hold-Down Bar (for GPU Card)
7	4 x 80*38mm System Fans
8	Fan-Retention Bracket
9	Front Control Panel / Board (FPB)
10	Chassis Handle

2.3 System Front Panel



No.	Description
1	Chassis Handles
2	Front Vent
3	Control Panel Buttons and LED Indicators 2 x USB 3.2 Gen1 Ports
4	Blanking Plate <i>(for a VGA port, depending on the system sku)</i>

2.4 System Rear Panel

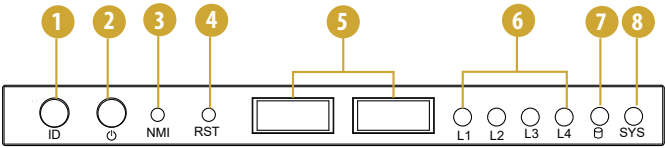


Redundant PSU 1+1: Only one PSU is allowed to be removed while the server is running.

No.	Description
1	2 x Power Supply Units (Redundant PSU 1+1) <i>*Server requires 1 working PSU, with 1 redundant PSU. It must have at least one active supply, installed, functioning and connected to AC. Only one of the PSUs is allowed to be removed while the server is running.</i>
2	2 x 2.5" HDD Trays
3	Rear Vent
4	I/O Shield (depending on the specification of the server board)
5	8 x Full-Height PCIe Slots (or 4 x Double-Slot GPU Cards)

2.5 Front Control Panel Buttons and LEDs

Front Control Panel



No.	Description
1	ID Button and LED
2	Power Button and LED
3	NMI (Nonmaskable Interrupt) Button
4	System Reset Button
5	2 x USB 3.2 Gen1 Ports
6	LAN1, LAN2, LAN3, LAN4 Activity LED
7	HDD Activity LED
8	System Event LED

Power Button

Press the power switch button to toggle the system power on and off modes.
To remove all power from the system completely, disconnect the power cord from the server.

ID Button

Press the ID button on the rear panel to toggle the front panel ID LED on and off. This can locate the server that is working on from behind a rack of servers.

NMI (Nonmaskable Interrupt) Button

Press the NMI button with a paper clip or pin to generate a nonmaskable interrupt and to put the server in a halt state for examination.

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

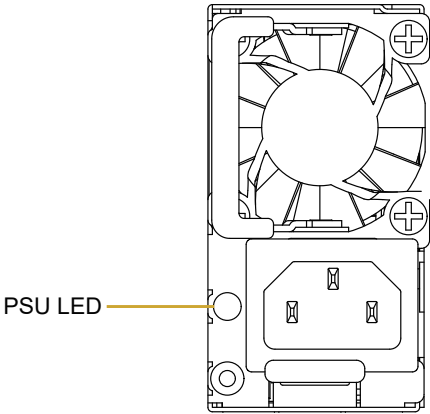
ID LED	
Status	Description
Blue	System identification is active.
Off	System identification is disabled.

LAN1, LAN2, LAN3, LAN4 LEDs	
Status	Description
Green	Link between system and network or no access
Blinking Green	Network access

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

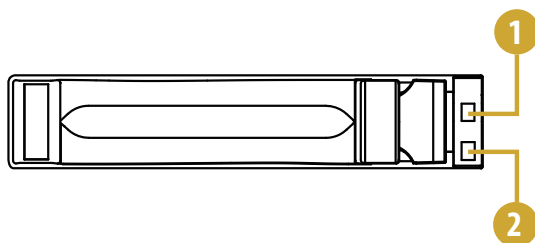
System Event LED	
Status	Description
Off	Running or normal operation
Red	At least one sensor has critical alert

2.6 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

2.7 Drive Tray LEDs



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

Chapter 3 Hardware Installation and Maintenance

This chapter helps user to 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.

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 off 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 pressing the Power button on the front panel. To remove all power from the system completely, be sure to disconnect the power cord from the server.

2. Ensure to 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.



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 for instructions on how to install server board components.

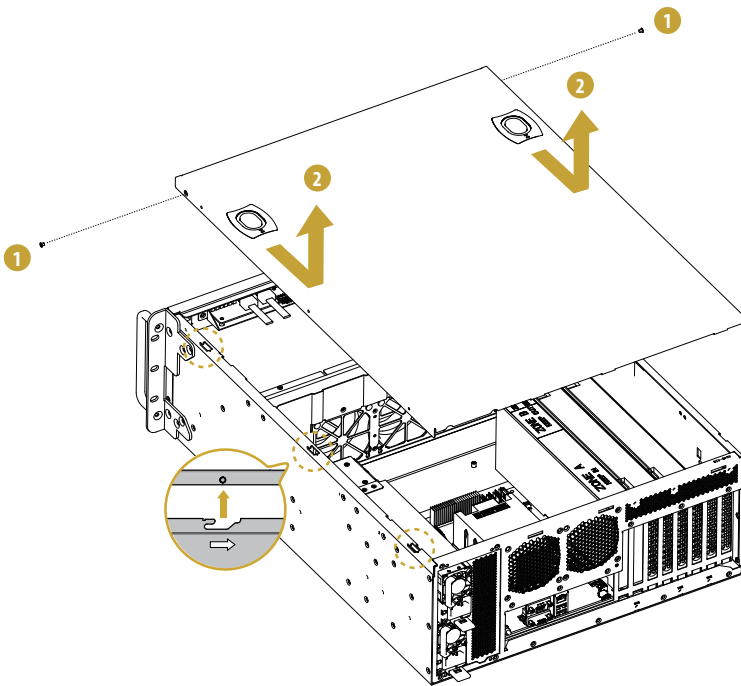
3.1 Server Top Cover

Removing the Server Top Cover



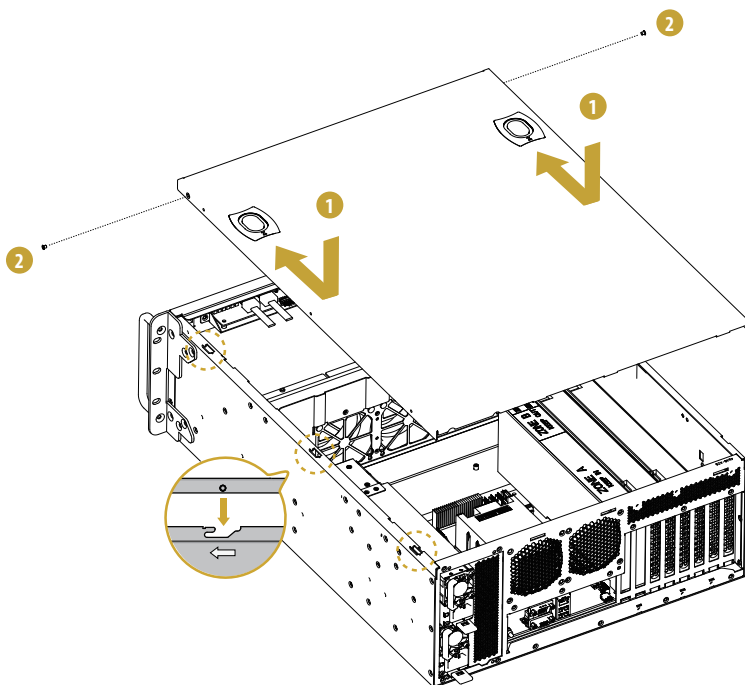
1. Before removing the top covers, power off the server and unplug the power cord.
2. The system must be operated with all the chassis top covers installed to ensure proper cooling.

1. Remove the screws that secure the top cover to the chassis.
2. Push the top cover toward the REAR of the chassis to remove the cover from the locked position. Lift up and remove the top cover.



Installing the Server Top Cover

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



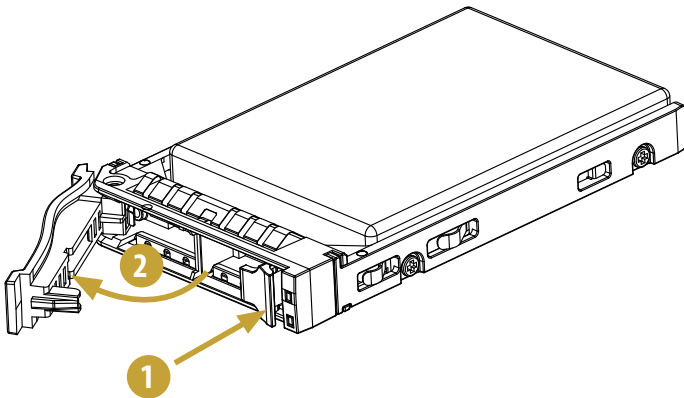
3.2 Hard Drive

3.2.1 Installing a 2.5" Hard Disk Drive into a Hard Drive Tray

The system supports hot-swappable 2.5" hard drives. The hard drive trays are located on the rear of the chassis.

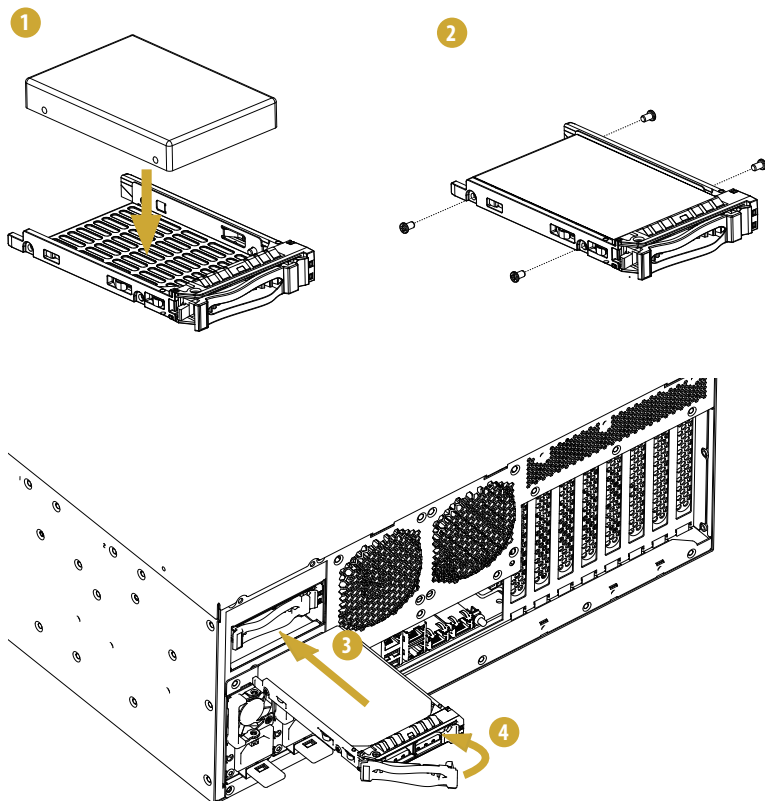
Removing Hard Drive Trays from the Chassis

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.



Installing a 2.5" Hard Drive to the Hard Drive Tray

1. Place a 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.
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.



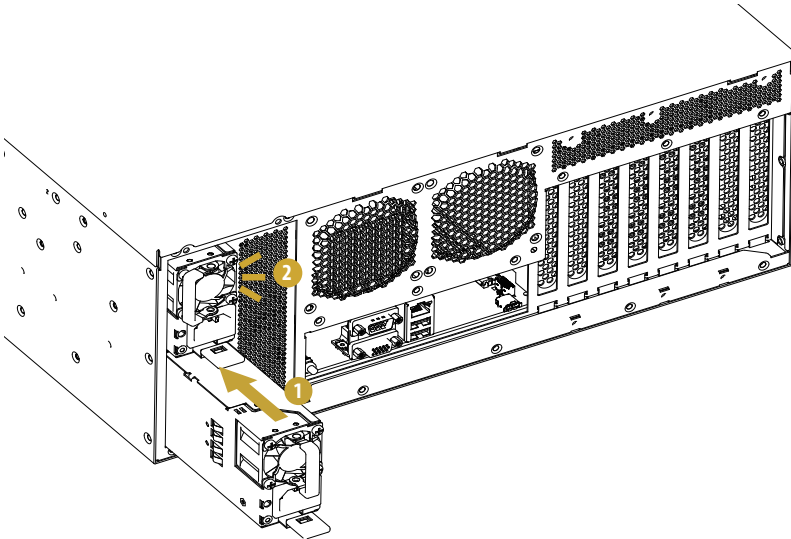
3.3 Power Supply

Installing and Removing the Power Supply

Installing the Power Supply Unit

The 4U4G Series can accommodate two AC or two DC power supplies in the bay at the rear of the chassis. Each unit provides up to 1600 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.

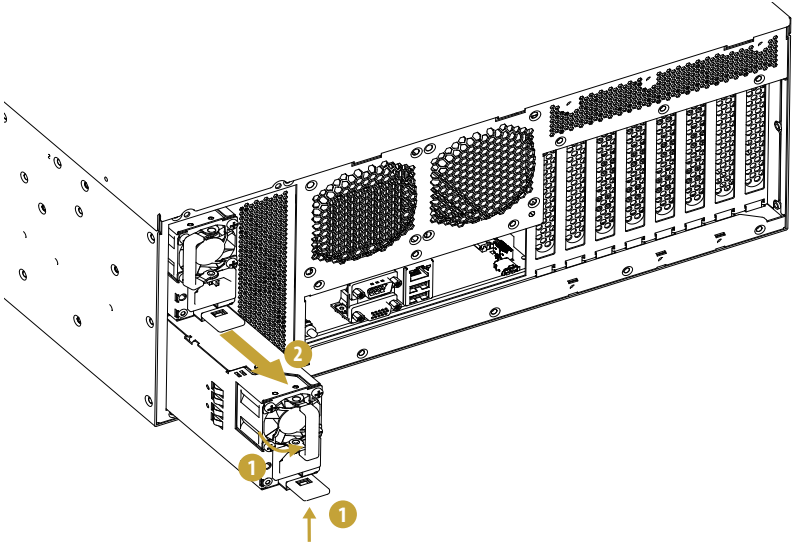
1. Align the power supply unit with the power supply slot.
2. Carefully slide the PSU all the way into the power supply bay until it clicks into place.



Removing the Power Supply Unit

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

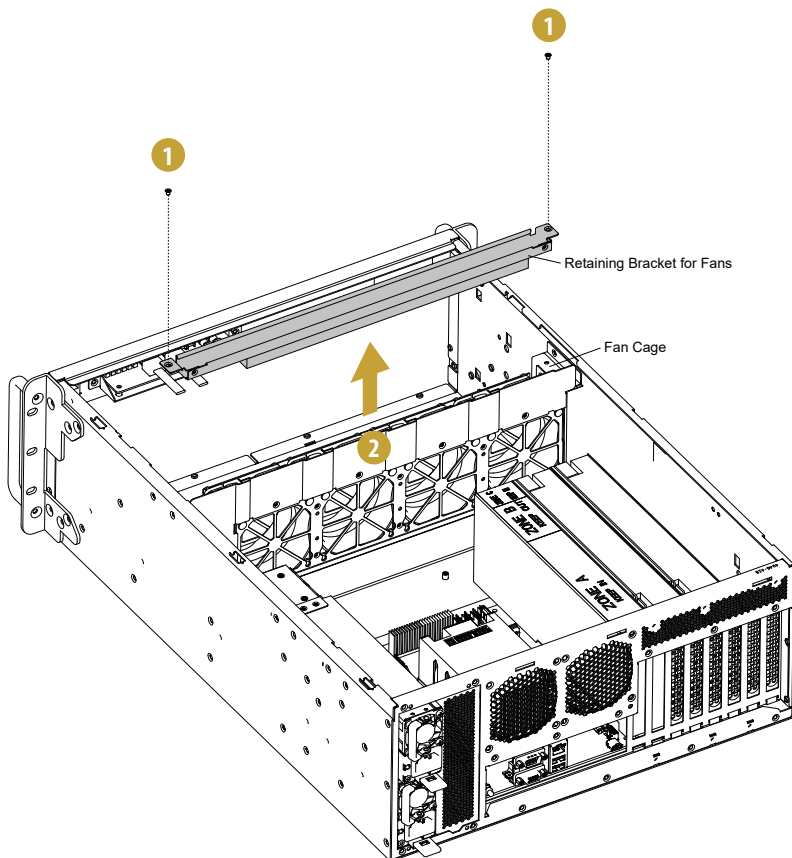
1. Hold onto the power supply handle while pressing the locking lever.
2. Pull to remove the power supply from the chassis.



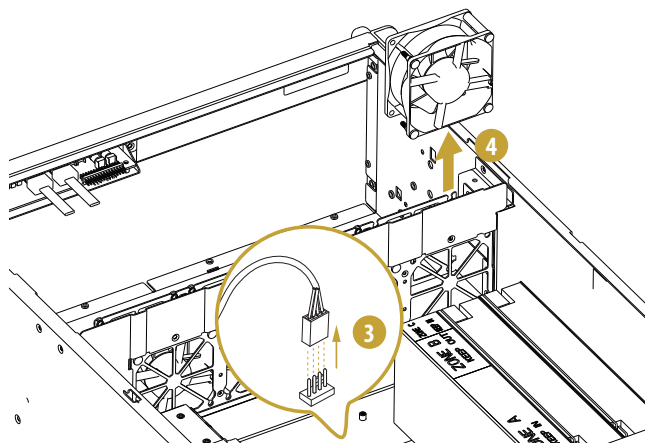
3.4 System Fan

Replacing the System Fan

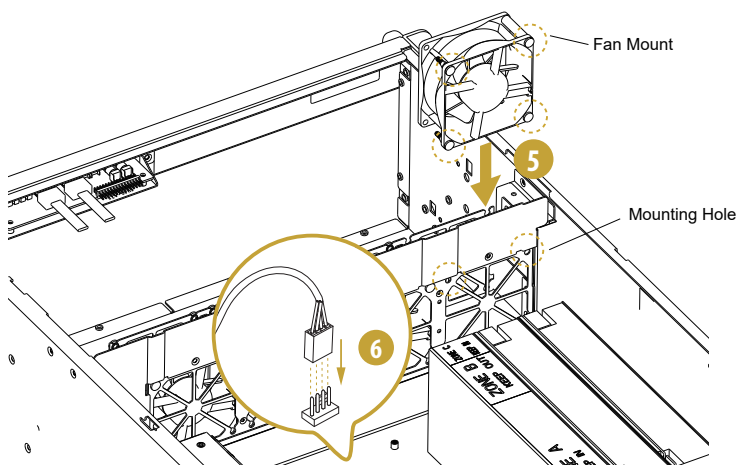
1. Release the screws that secure the fan-retention bracket to the fan cage.
2. Remove the fan-retention bracket from the chassis.



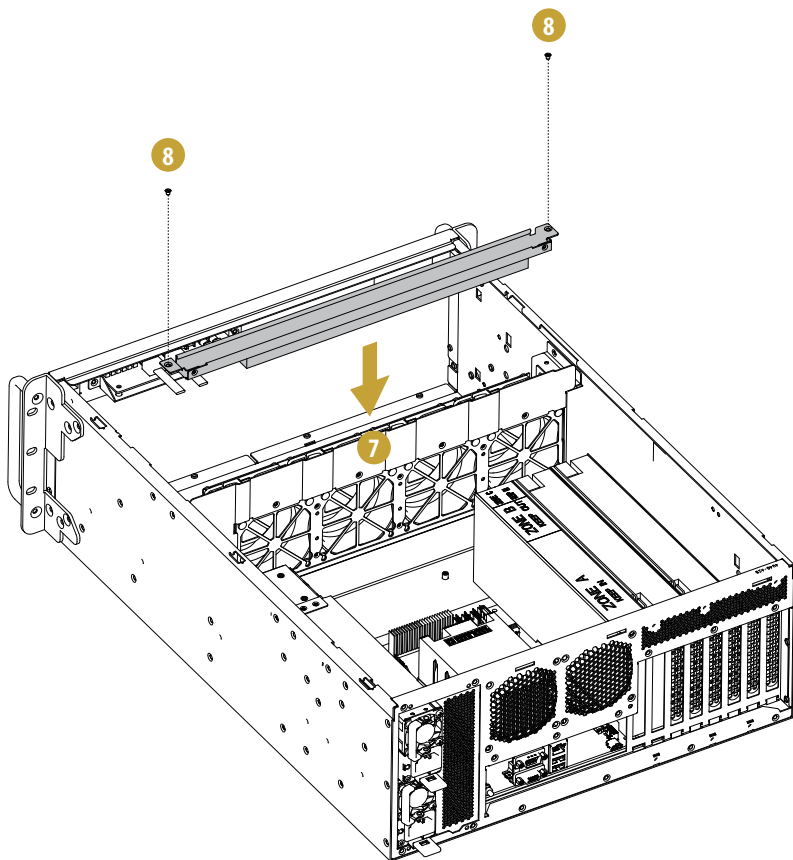
3. Unplug the fan connector.
4. Remove the failed fan.



5. Align the mounting holes on the fan bar with the fan mounts on the replacement fan corners. Please be aware that the fan cable on the replacement fan faces toward the rear side of the chassis.
Gently place the fan on the fan bar. Make sure the fan is well seated.
6. Connect the end of the fan cable to the fan connector.



7. Place the fan-retention bracket back on the fan cage.
8. Tighten the screws to secure it to the chassis.

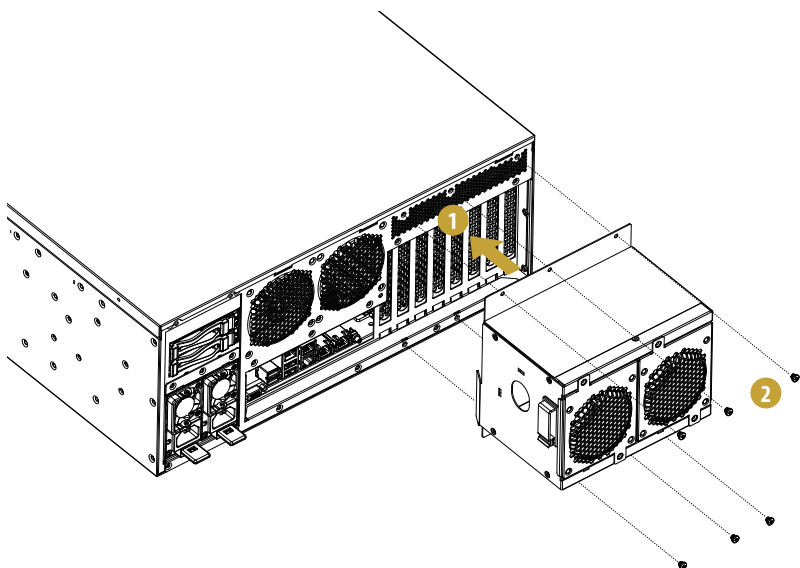


3.5 GPU Card Fan

Replacing the GPU Card Fan

Two graphics card fans, preinstalled in a fan cage, can be optionally used to help cool the computer graphics cards to avoid them from being overheated.

1. Install the GPU fan cage to the rear side of the chassis. Make sure the screw holes on the GPU fan cage are well aligned with the those on the chassis.
2. Secure the GPU fan cage to the chassis with the six screws.

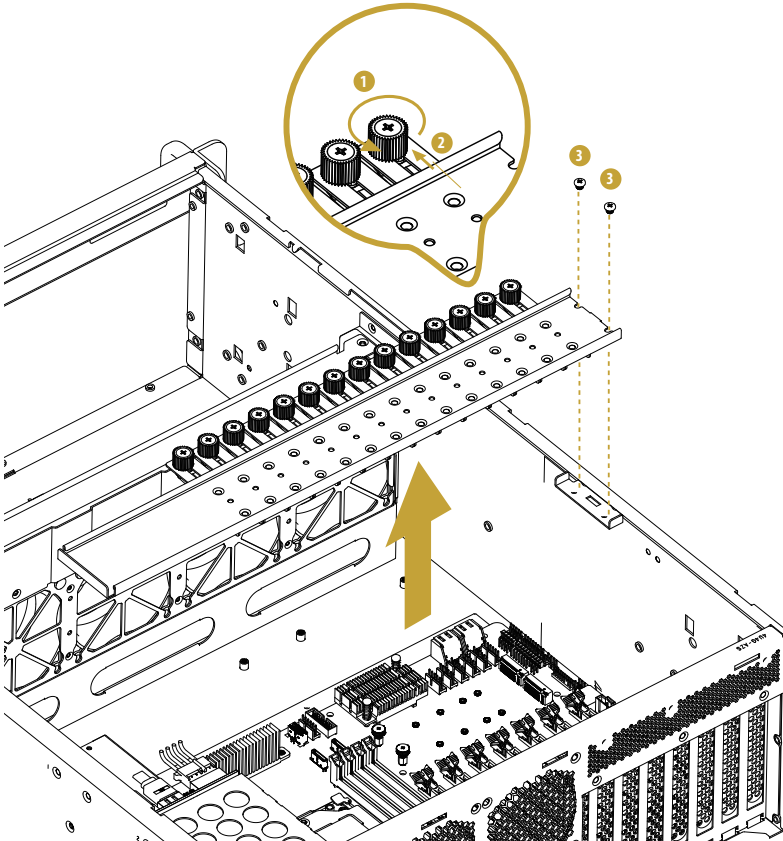


3.6 Hold-Down Bar (for GPU Card)

There is a hold-down bar fixed across the top of a server to ensure the PCIe expansion cards or GPU cards are tightly secured and installed on the server board. Please remove the hold-down bar before installing any add-on cards, and place it back when add-on cards are installed.

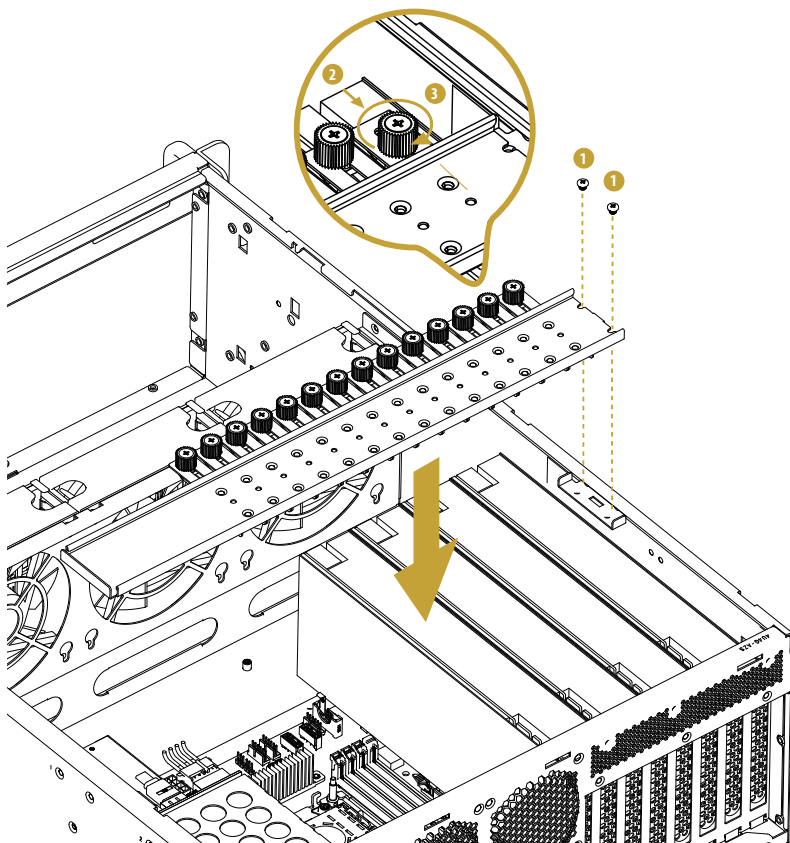
Removing the Hold-Down Bar

1. Hand-release the thumbscrew.
2. Slide the thumbscrew forward, as shown in the picture below.
3. Release the screws securing the hold-down bar to the chassis. Keep the screws for later use.



Installing the Hold-Down Bar

1. Lower the the hold-down bar into the chassis and secure it into place with the screws.
2. Slide the thumbscrew backward, as shown in the picture below.
3. Hand-tighten the thumbscrew.

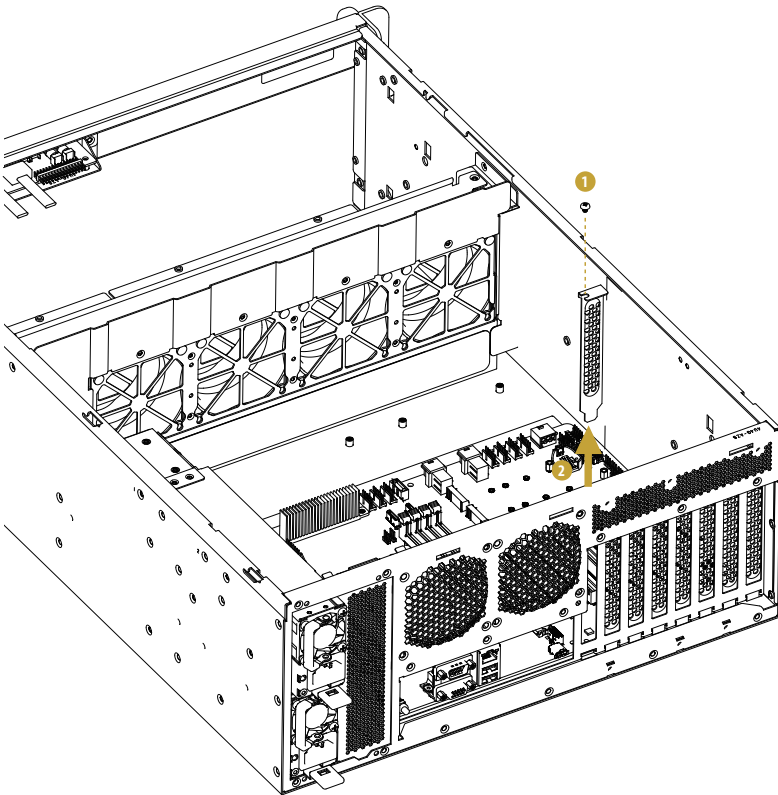


3.7 Add-on Card (PCIe/GPU Card)

The system allows user to install eight full-height single-width PCIe expansion cards or four double-slot GPU cards.

If there is a hold-down bar affixed on the chassis, please remove it before installing an add-on card. Be sure to replace the hold-down bar after installing the add-on cards. Refer to the section entitled "Hold-Down Bar (for GPU Card)" for more instructions.

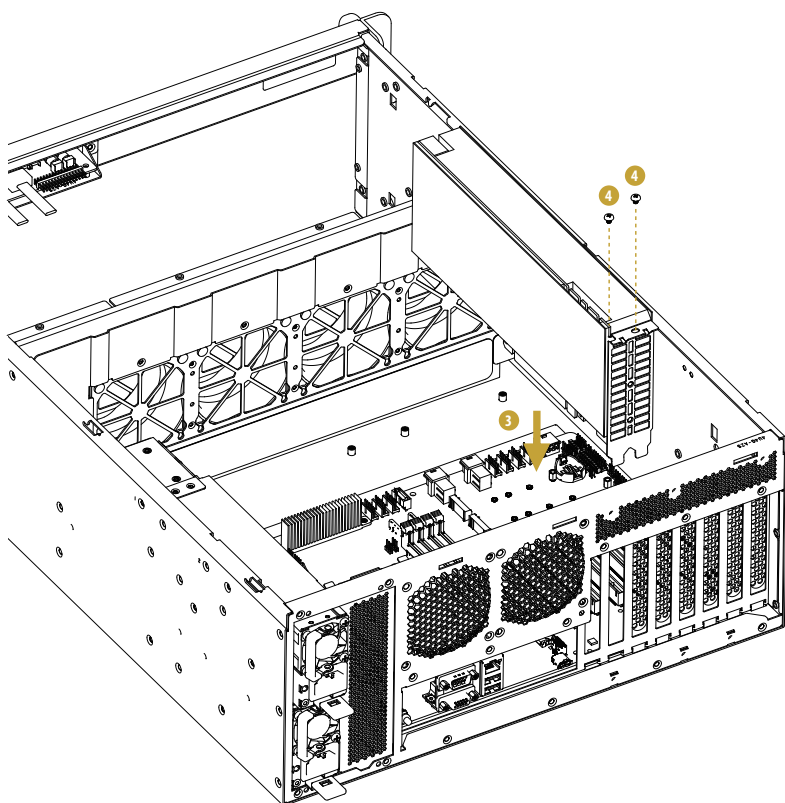
1. Release the screw securing the slot cover to the chassis.
2. Remove the slot cover.



3. Install an add-on card into to the slot.

Note: It needs to remove the two slot covers when installing a double-width PCIe/GPU card.

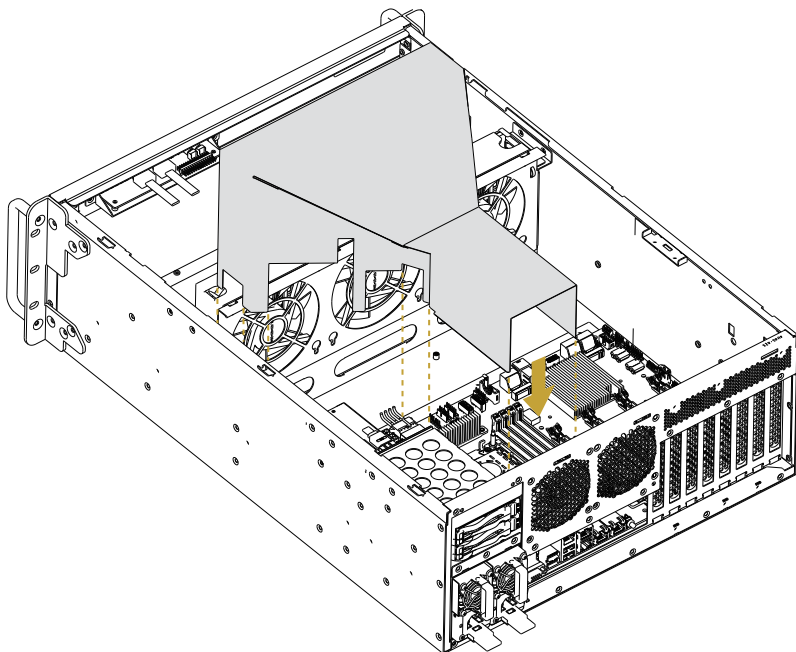
4. Tighten the screw(s) to secure the card to the chassis.



3.8 Air Duct

Installing the Air Duct

To install the air duct, align the air duct with the heatsink and the add-on cards. Lower the air duct into the server system.



Appendix A Installing the CPU

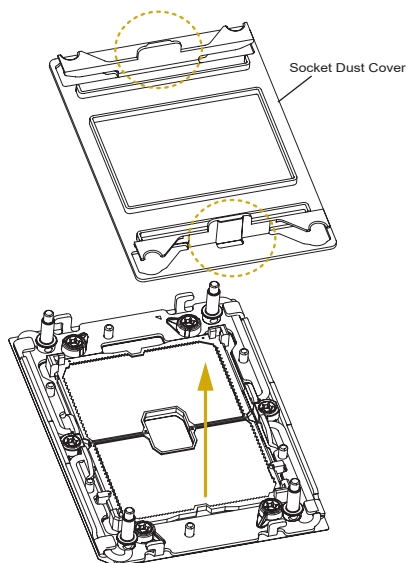
Please refer to the user's manual of the serverboard for more information of the serverboard components.

4U4G-SPC621D8



1. Before inserting 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.

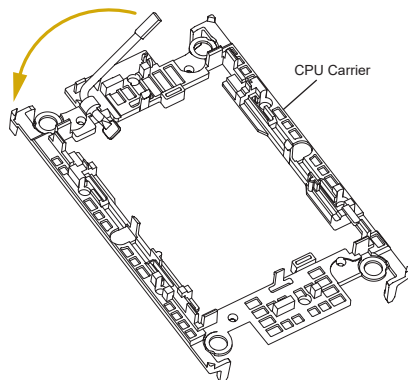
1



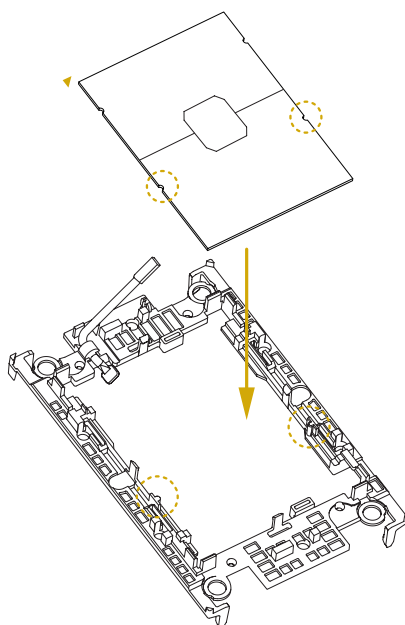


1. Before installing the heatsink, it needs to spray thermal interface material between the CPU and the heatsink to improve heat dissipation.
2. Illustration in this documentation are examples only. Heatsink or fan cooler type may differ.

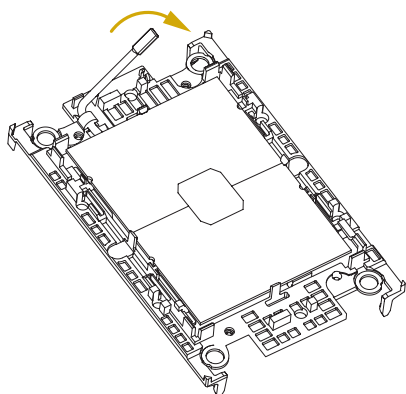
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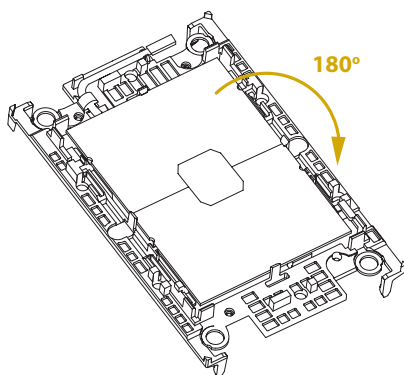
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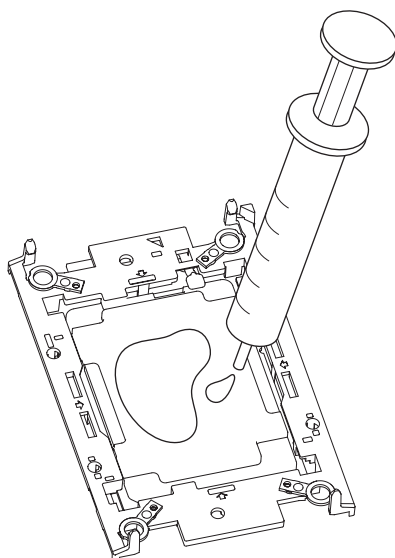
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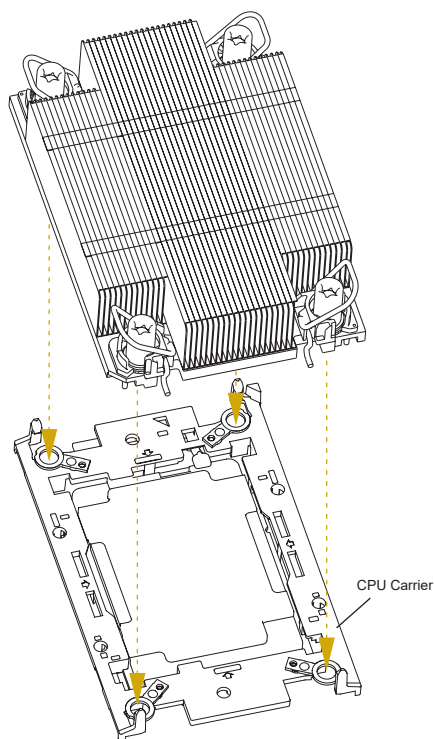
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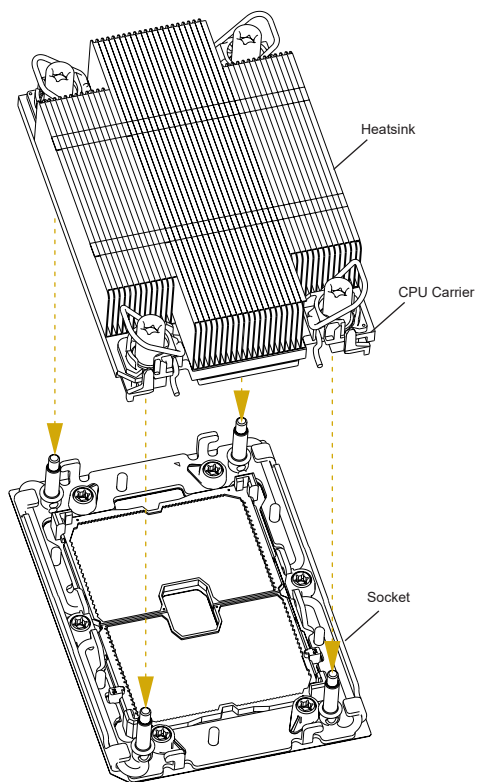


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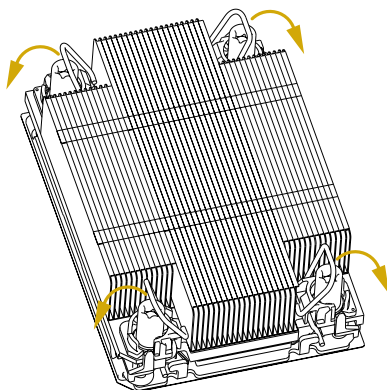


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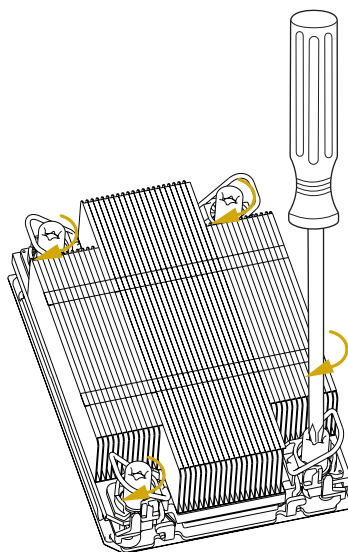




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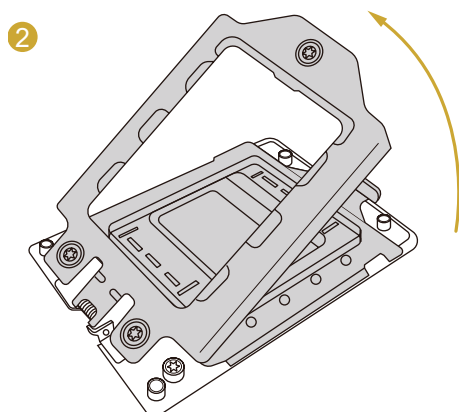
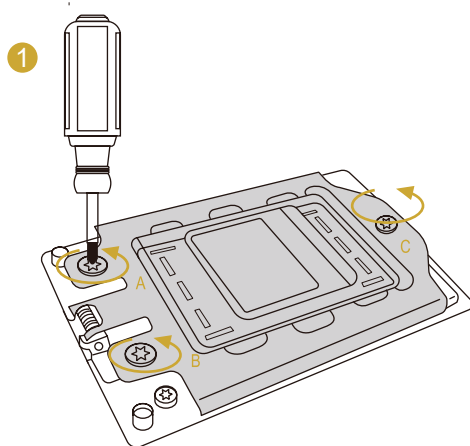
10



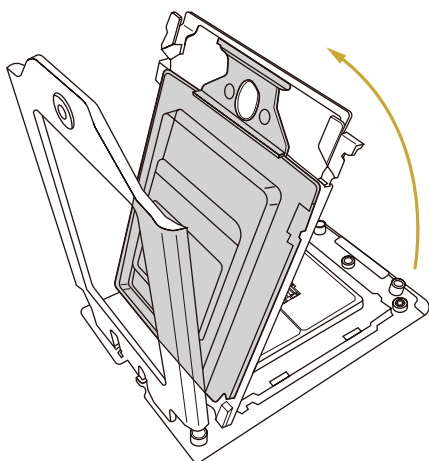
4U4G-WRX80/2T



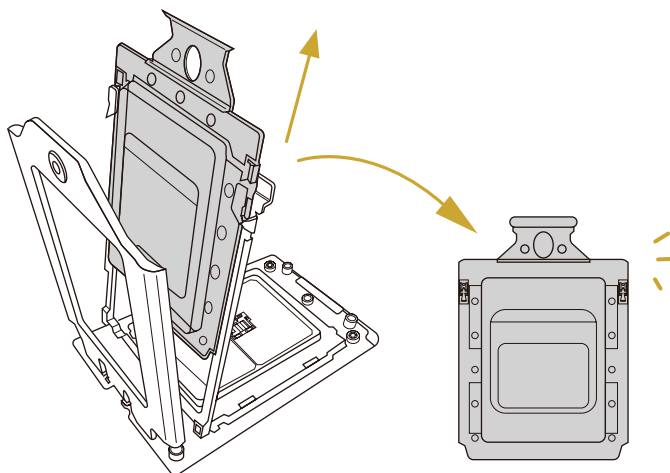
Unplug all power cables before installing the CPU.



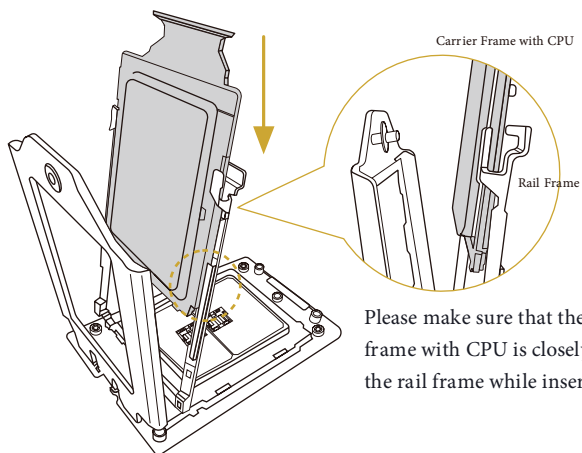
3



4



5

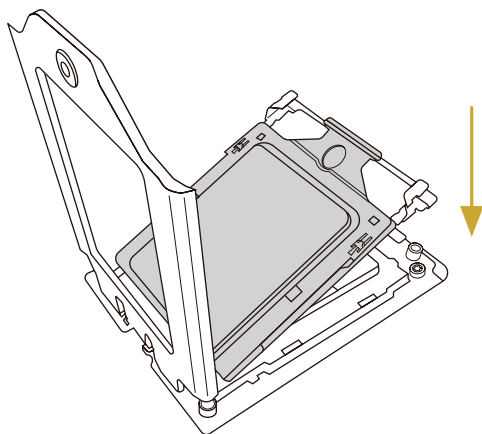


Please make sure that the carrier frame with CPU is closely attached to the rail frame while inserting it.

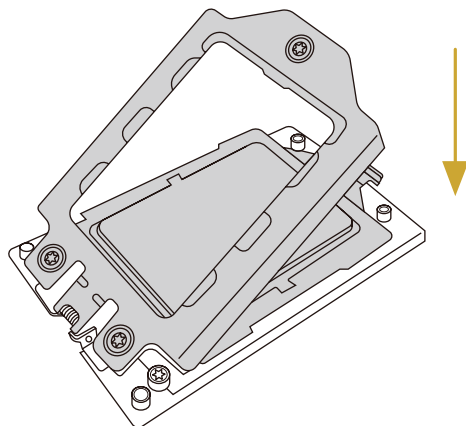


Install the orange carrier frame with CPU. Don't separate them.

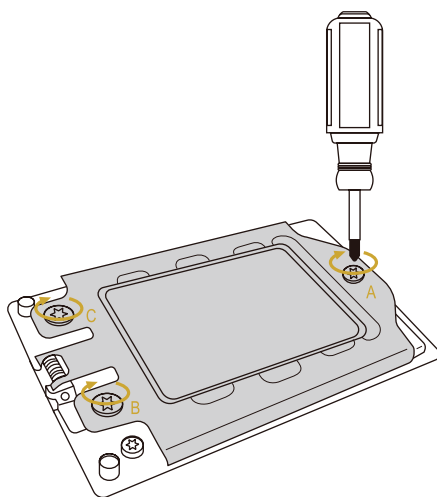
6



7



8

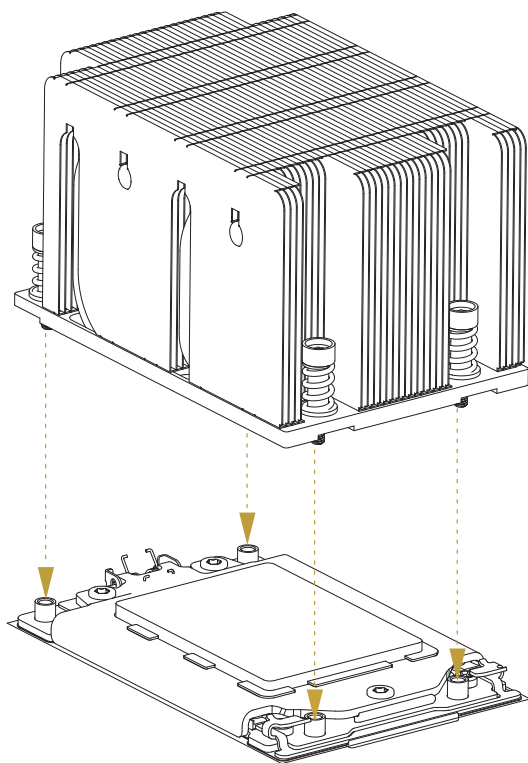


After installing the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. It also needs to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other.

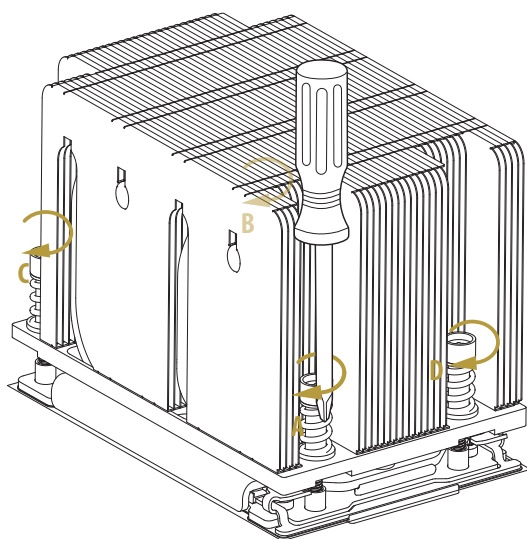


Please turn off the power or remove the power cord before changing a CPU or heatsink.

9

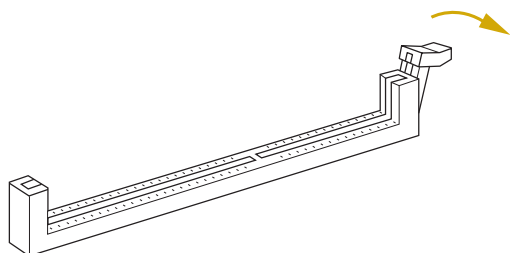


10

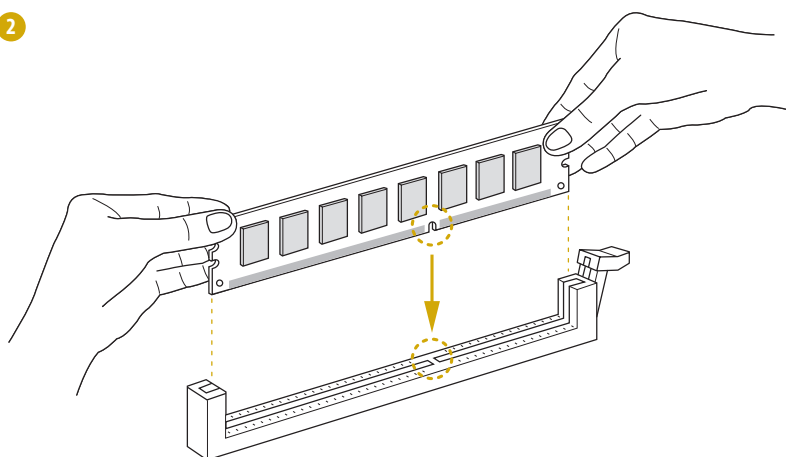


Appendix B Installing Memory Modules (DIMM)

1



2



3

