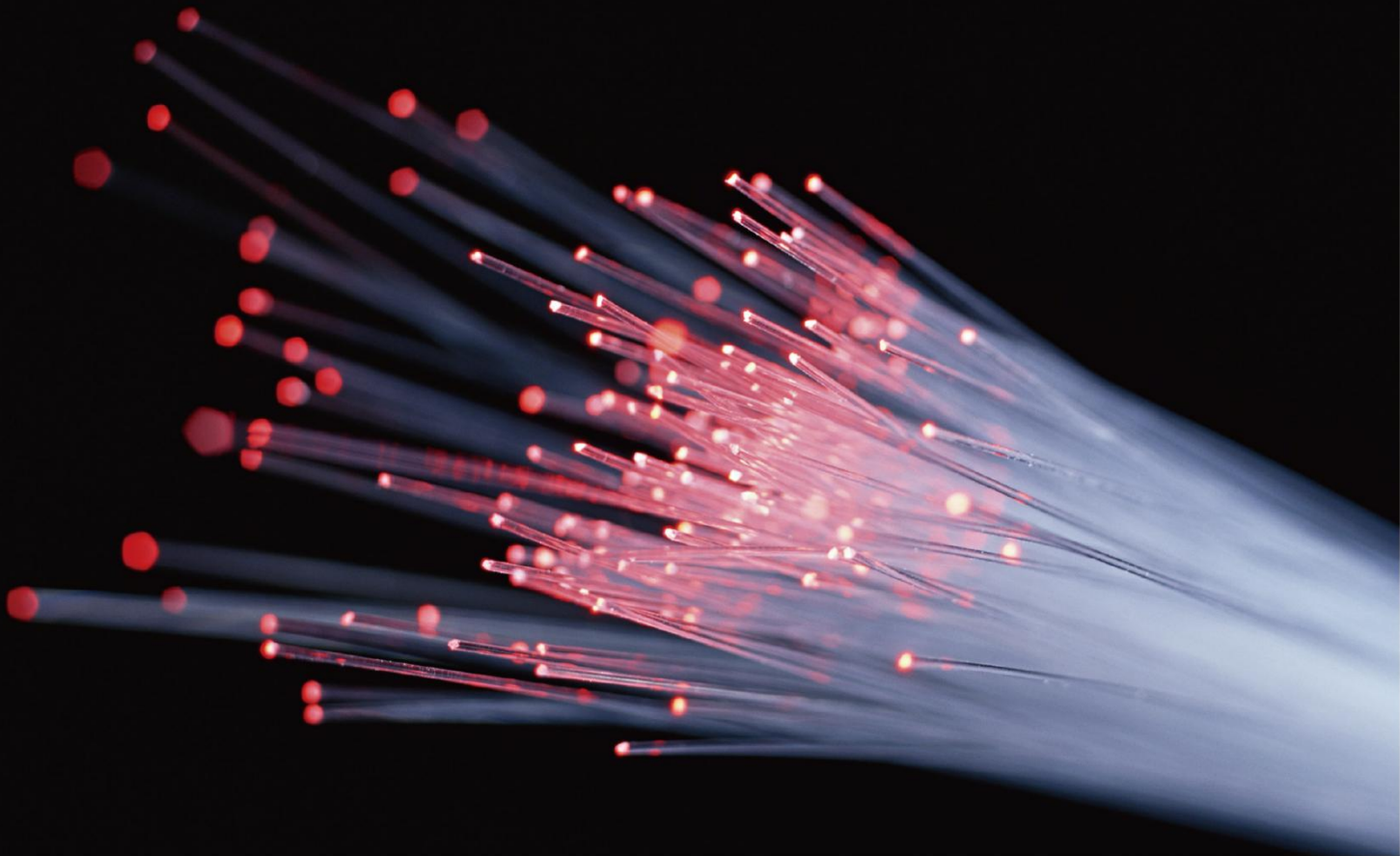




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RS-6388 Rack Server Installation Guide

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Chapter I Overview

RS-6388 Server is a 2U low-power, controller-architecture storage product suitable for large data storage, cloud storage, video surveillance network storage, and NAS storage.

Benefit from platform flexibility and maximize performance with Intel® Xeon® processors for enterprise customer, RS-6388 Server provides a high performance and storage capacity for future growth. It supports 2 ECC DDR4 DIMMs with 32GB of memory capacity. Utilizing the Intel® PCHLynx point C232 series chipset, it is well suited for ERP (Enterprise Resource Planning) and mail service. With RAS (Reliability, Availability, Serviceability) features, it is also an excellent choice for SMB solution.



Figure 1-1 Appearance

Chapter II Features

2.1 Product Introduction

FS.COM 2U 1-socket rack server has high performance storage flexibility, it is a great choice that the basic configuration options are available for SMB deployments. RS-6388 Server hardware provides high-availability features, this server has a great cooling system for a balance between performance and power efficiency, and it can maximum computing power with low power consumption.

Maximize Application Performance in SMB

- ⌘ Support Intel® Xeon® processor to drive applications faster
- ⌘ Support the memory capacity 32GB with 2x DIMM slots and high-performance DDR4 memory
- ⌘ Accelerate data throughput with 1 x PCI expansion slots
- ⌘ High scalability through various expansion devices such as 1GbE network cards and low-power grade GPUs

Flexibility and Versatility Design

- ⌘ Enhance storage options with 9TB, 3x 3.5" SATA3.0 drives
- ⌘ The cableless design in motherboard to strengthen the heat dissipation of components
- ⌘ Optimize the operational efficiency with a high compatibility

Perfect Hardware Design

- ⌘ Hot-plug redundant fans and power supplies
- ⌘ High quality electronic components and Low power consumption

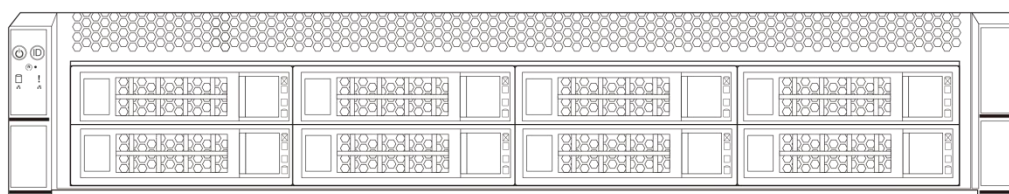
2.2 Product Specifications











CPU Type	Intel® Xeon® Processor E3-1200 v5
Memory Capacity	32GB
Drives	9TB, 3x 3.5" SATA3.0
Dimensions	2U rack mount, 19.68" x 17.63" x 3.46" (D x W x H)
CPU	Intel® Xeon® Processor E3-1200 v5/v6 series Intel® 6th/7th Generation Core i3/i5/i7 series
Memory	Up to 64GB ECC DDR4-1600/1866/2133 UDIMM
DIMM Slot Quantity	4x 288pin DDR4 DIMM slots
Drive Bays	Support 8x 3.5" (2.5" compatible) SAS 3.0/ SATA 3.0 HDDs
Chipset	Intel® PCH Lynx point C232 chipset
PCIe Devices Expansion	Support 2x PCIe x8 swap SATA Drives
Build-in RAID	Intel® RSTe Support software RAID 0, 1, 5 & 10 (for Windows only)
BMC	Aspeed AST2400
IPMI	1x Share-able IPMI Management GbE Port Default with one PMC8068 or LSI 3008 Mezzanine SAS Card
Network	4x Intel®i210-AT 1GbE LAN controller
USB	2x USB3.0 on Rear and 2x Internal USB3.0 ports
M.2	Support 1x PCIe M.2 SSD or SATA M.2 SSD, 2242/2280
PSU Module	Two 1+1 CRPS 550W 80+ Platinum Redundant PSU Modules
PSU Input/Output	AC Input: 100-240V 47Hz~63Hz; DC Output: +12V_SB, +12V
Fan Quantity	Up to 4 x 8038, support PWM smart fan control
Fan Speed	Maximum 6800RPM
Humidity	OP: 35%~80%; NON-OP: 20% ~ 90%
Temperature	OP: 10°C ~ 35°C; NON-OP: -40°C ~ 70°C

Chapter III Hardware Description

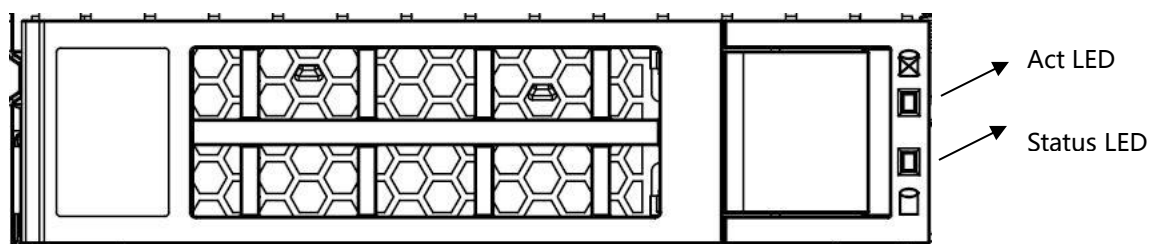
3.1 Front Panel



∞ The above figure shows the LED indicators of each module on the front panel, which is described in the following table:

LED Status Description		
Image	LED Appearance	Description
	Green light is on	Device startup
	Blue light is always on	ID indicator
	Green light flashes	Operating normally
	Yellow light is always on	Alarm indicator, including system alarm, fan alarm, power alarm, etc., which can be viewed through IPMI management software.
	Green light is on	Network port 1 is connected properly
	Green light is on	Network port 2 is connected properly
	Blue light is always on Yellow light is always on	Hard disk position indication Hard disk alarm indication
	Green light is on	Hard disk is in place

● Hard Disk Indicators



- (1) Status LED (green light)
- (2) Act LED (blue light, yellow light)
- (3) LED description as shown below:

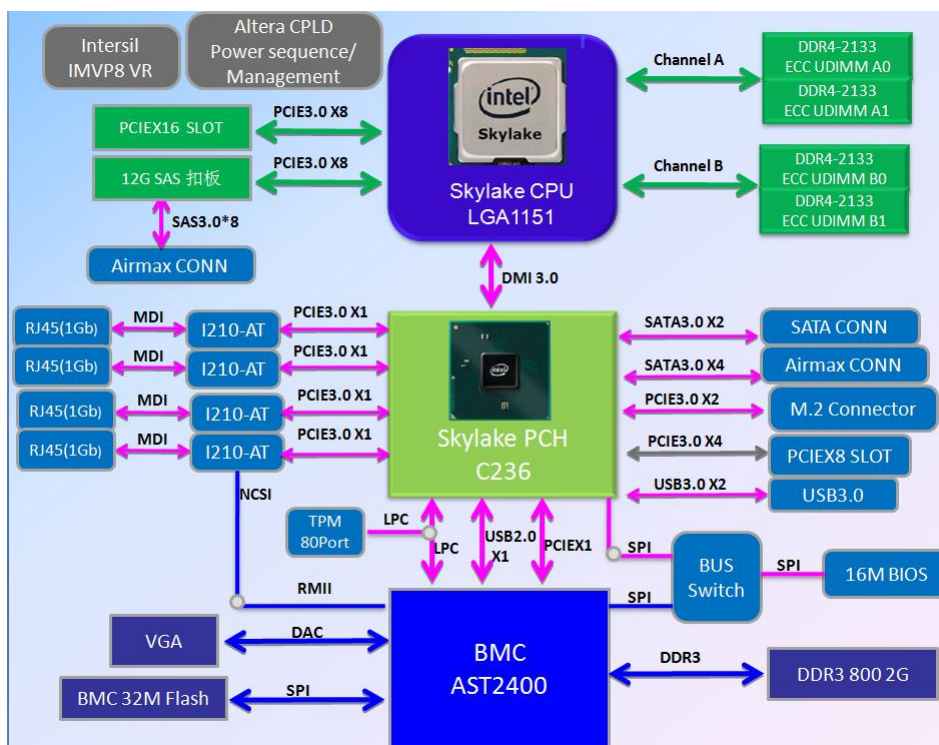
Features	Green light	Blue light	Yellow light
Hard disk does not exist	OFF	OFF	OFF
Hard disk exists	LIGHT ON	OFF	OFF
Hard disk activity	Flashing 4Hz/s	OFF	OFF
Hard disk positioning	LIGHT ON	Flashing	OFF
Hard disk failure	LIGHT ON	OFF	LIGHT ON
Offline	LIGHT ON	OFF	OFF
RAID reconstruction	The entire array flashes at 4Hz/s	OFF	Hot spare flashes 1Hz/second
Hot Standby	LIGHT ON	OFF	OFF

3.2 Mainboard

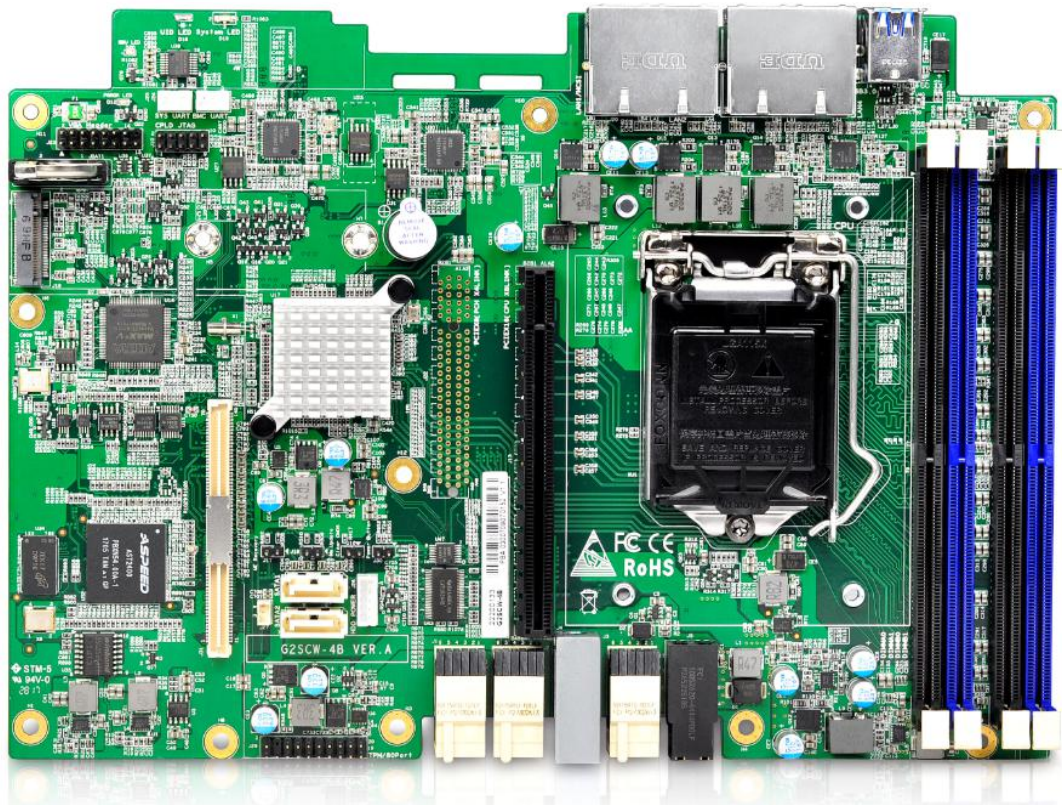
The mainboard features are as follows:

- ✎ Controller system uses Intel Greenlow platform, with LGA1151 CPU, support Celeron series, Pentium series, Intel 6th Generation Core i3/i5/i7 series, Intel Xeon Processor E3-1200 V5 series, maximum support 84W.
- ✎ System memory consists of 4 Dual Channel DIMMs which support up to 64GB ECC UDIMMs.
- ✎ Chipset uses Intel PCH C232.
- ✎ The controller module supports two 2.5-inch SATA HDDs or SSDs and also supports a half-height PCIe card.
- ✎ The system adopts 550W1+1 redundant white gold brand efficiency power supply and supports hot swapping and replacement.
- ✎ The system uses 4 easy-swapping 8038 fans.
- ✎ The system uses two Intel I210-AT RJ45 Gigabit Ethernet ports.
- ✎ The system has an independent IPMI management network port for remote management. The BMC chip uses Aspeed AST2400.
- ✎ The system has a VGA port derived from the BMC.
- ✎ The system has two USB3.0 interfaces for users.

The system architecture board diagram is as follows:

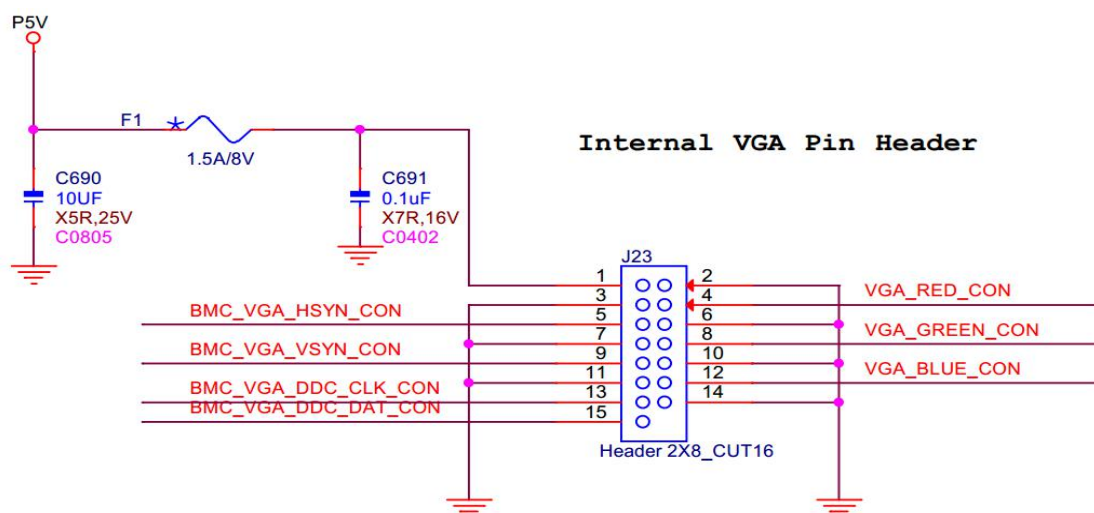
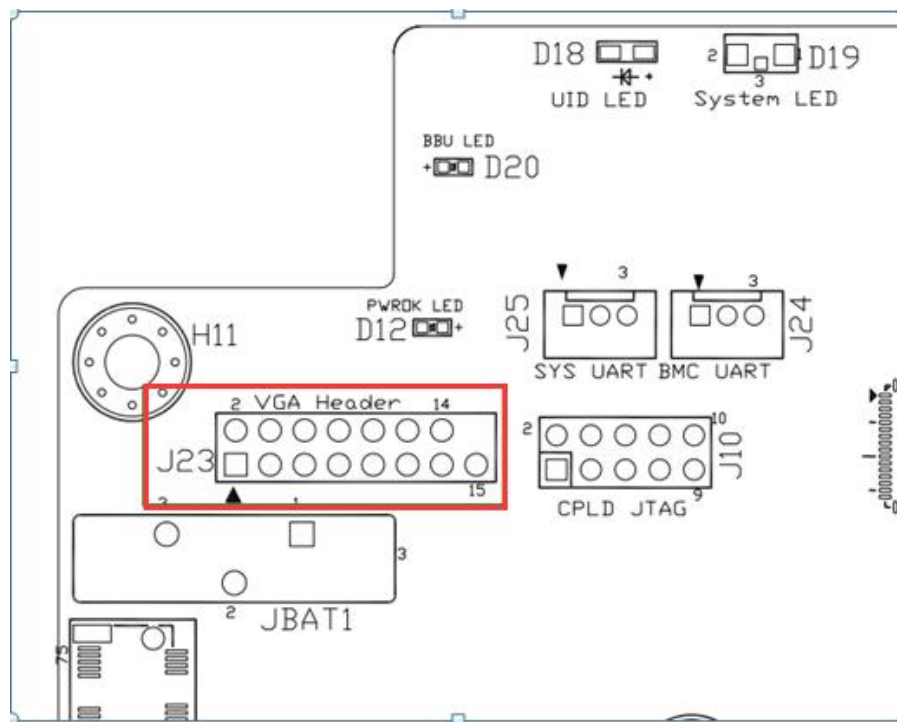


- Overview

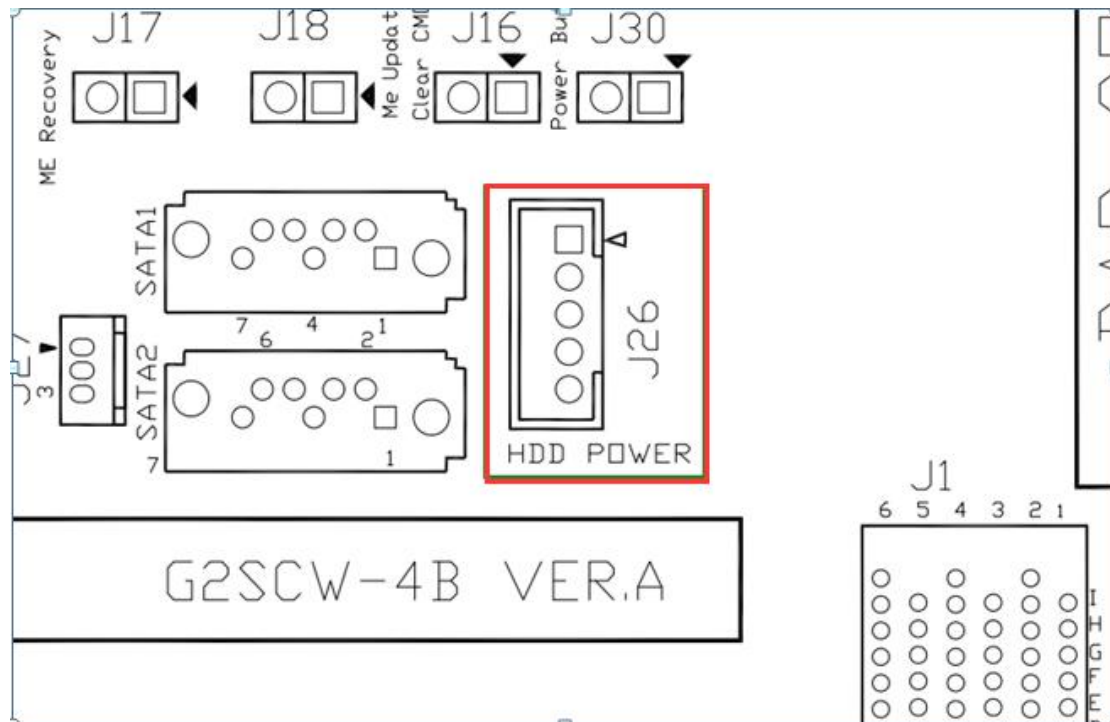


- I/O Interfaces

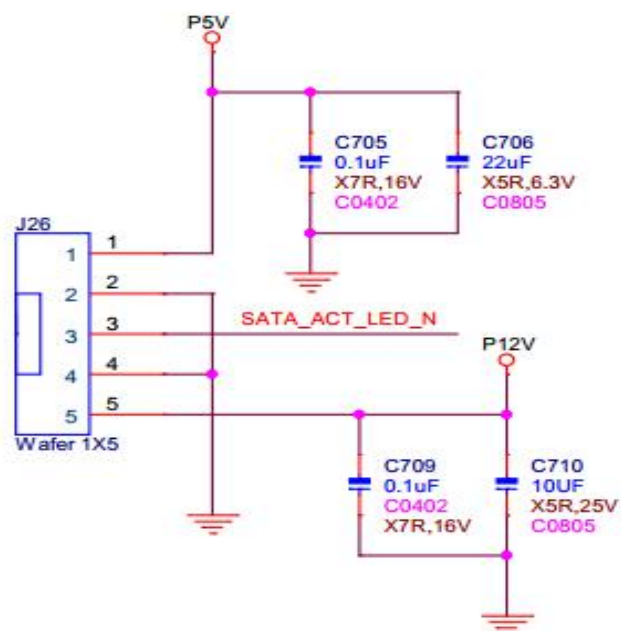
VGA connector position and Pin definition:



HDD Power Connector Location and PIN Definition:



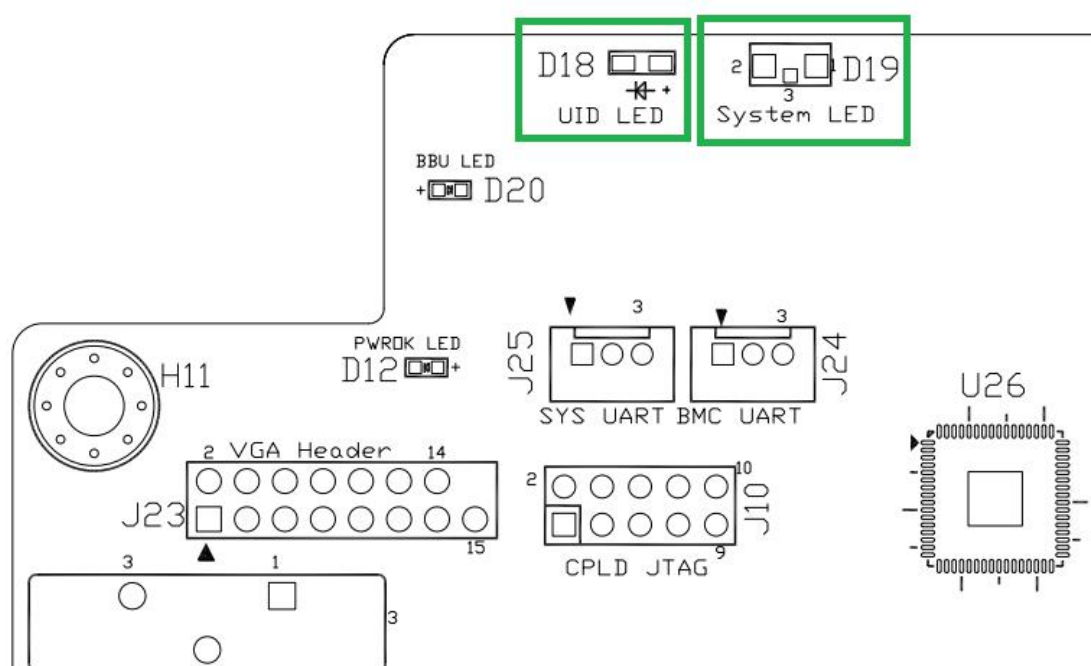
Connect with SHDB Board



In-board LED Definition and Description:

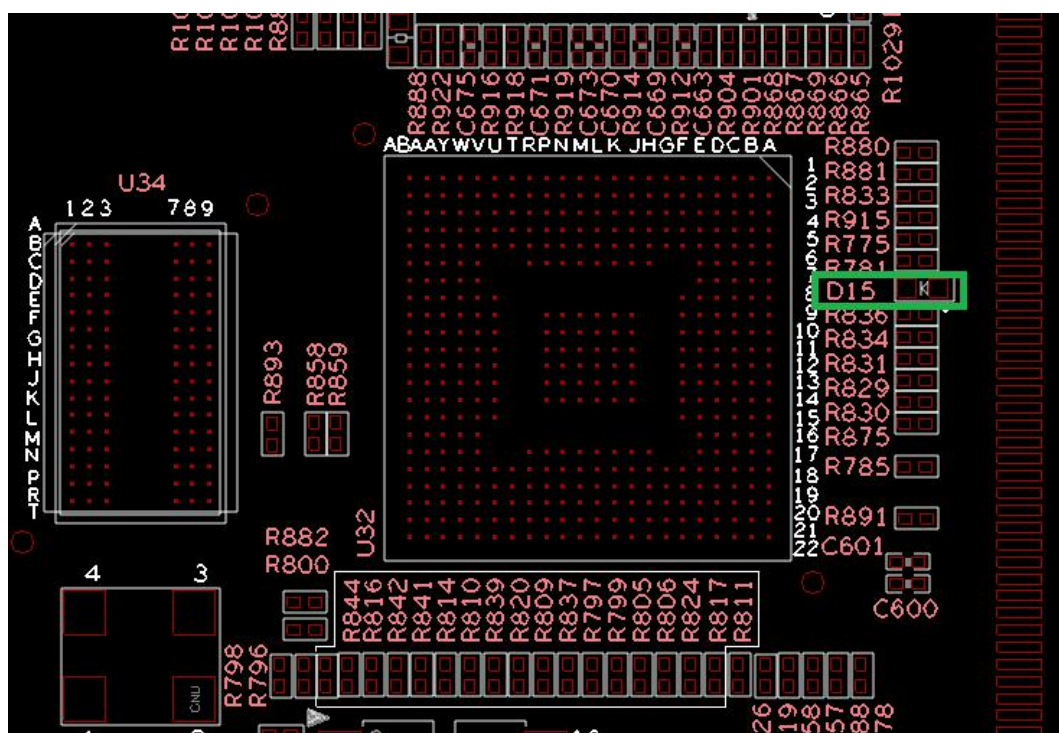
UID LED		
	Description	Location
BLUE LED	The UID LED is a user-defined indicator that is used to indicate a specific motherboard. The IPMI can be used to remotely control the web interface to turn the LED on or off. For example, when a server is found an error by remote management and needs to be maintained, it can mark the problem board with UID LED on the web, then you can find the motherboard. After maintenance, turn off the UID LED.	D18 (Front)

System LED		
	Description	Location
YELLOW/ GREEN LED	<p>System LED is used to indicate the current status of the system, with PWRBTN function.</p> <p>The LED status is as follows:</p> <p>Green Light on, the system status is normal.</p> <p>Green is 1HZ flashing, the system has CPU, but it is not on, it is in standby state.</p> <p>Yellow Light on, the system has detected a fault (overheat/fan/power failure/alarm)</p> <p>No light, AC is not powered, or AC powered but there is no CPU/BMC; not working.</p>	D19 (Front)



BMC Heart-beat LED

BMC Heart LED		
	Description	Location
Firmware initialization is OK	The green indicator light flashes at 1HZ	D15
Firmware initialization is not completed	This indicator is not lit	

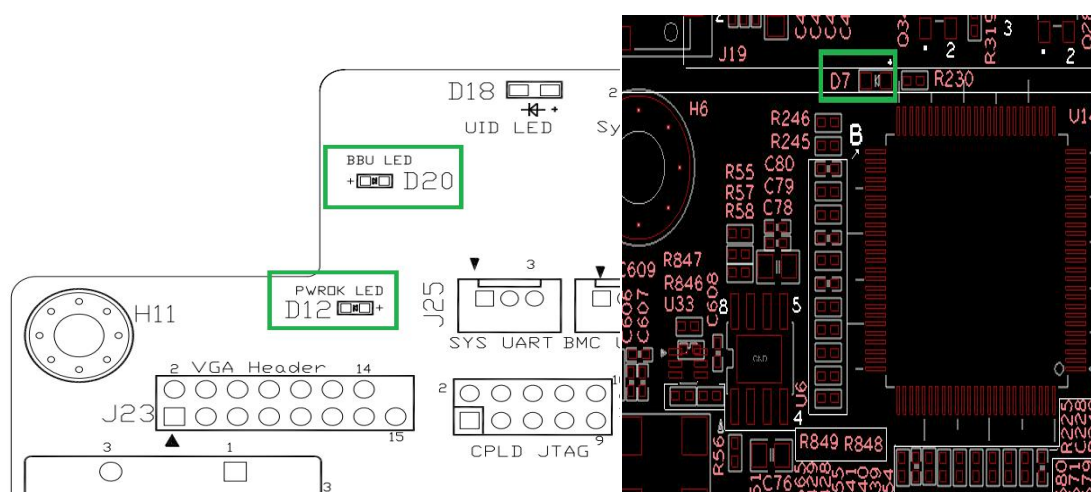


BBU LED/PWROK LED/CPLD LED:

BBU LED		
	Description	Location
BBU Green LED	BBU LED: Indicates BBU status Steady green: The BBU is charging normally. The system is ready for BBU at any time. Green flashes at 1HZ: Switched to BBU, BBU is supplying power Green is off: the BBU is not installed or the BBU is not charging.	D20

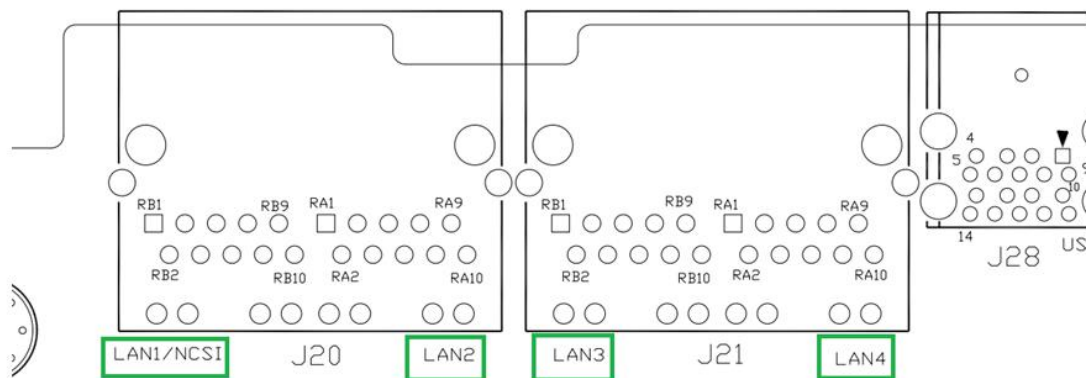
In-board PWROK LED		
	Description	Location
In-board power supply is OK	Green LED is always on	D12
In-board power supply is not OK	Green LED is off	

In-board CPLD Heartbeat LED		
	Description	Location
CPLD program is normal	Green LED flashes at 1HZ	D7
CPLD has not been programmed or abnormal	Green LED is off	



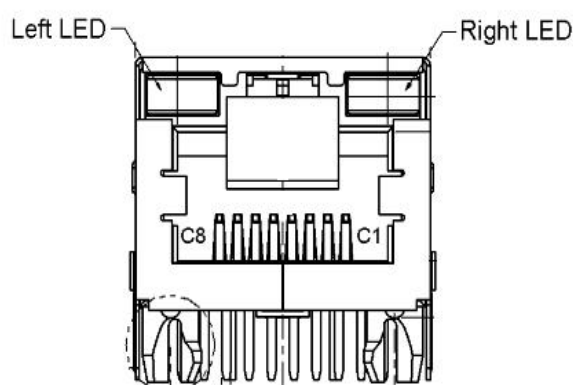
LAN Port LED:

LAN Port LED		
	Description	Note
Left LED	Link status indicator: 1. Gigabit Link, green light on; 2. 100M Link, orange light on; 3. Ten mega Link, the LED is off.	
Right LED	Active status indicator: When there is active data, the yellow light flashes; This indicator does not light when there is no data.	



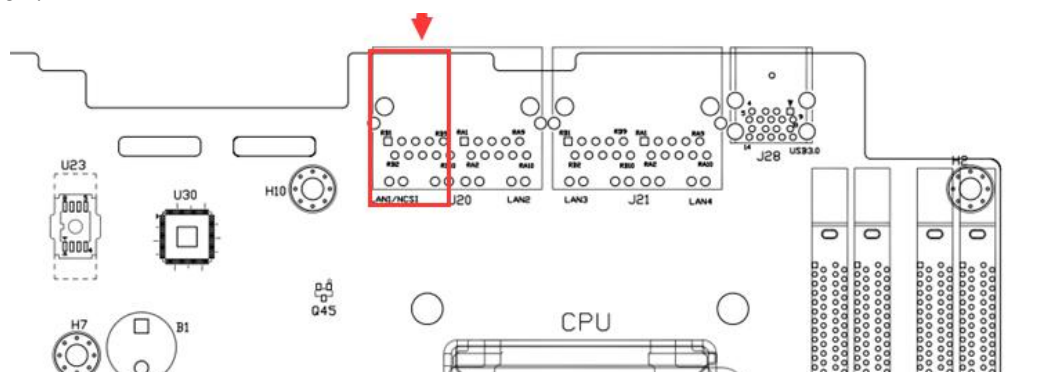
IPMI LAN Port

The network port is dedicated to IPMI (J20 location), used for IPMI remote management, connected to the switch with CAT5 and above cables, or directly connected to the client's host. It supports Gigabit, 100M, and adaptive adjustment, but it cannot be used as a service data network port. The LED indicators of this network port are as follows:



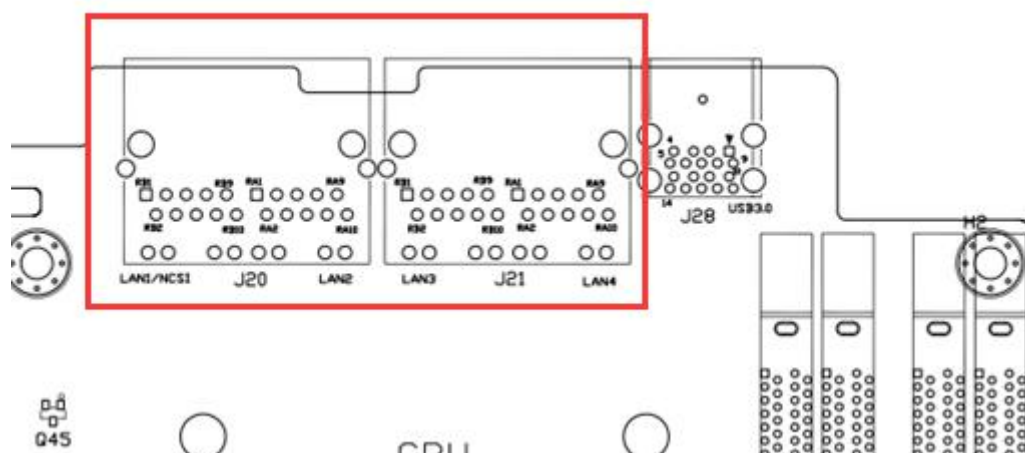
IPMI LAN Port LED	
	Description
Left LED	Link status indicator: 1. Gigabit Link, green light on; 2. 100M Link, orange light on; 3. Ten mega Link, the LED is off.
Right LED	Active status indicator: When there is active data, the yellow light flashes; This indicator does not light when there is no data.

Location:



LAN Port

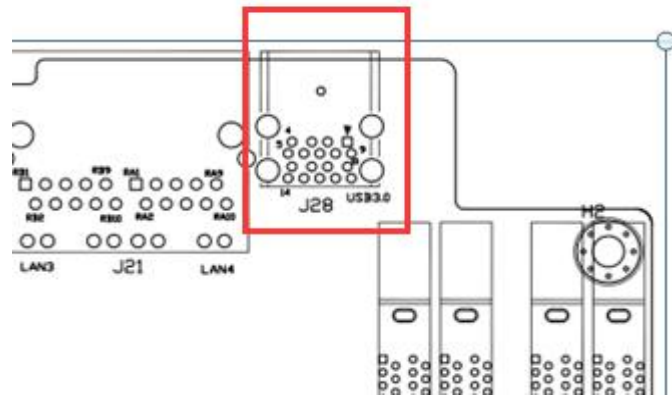
The mainboard provides two Gigabit Ethernet ports (J20/21), the main chip adopts Intel I210-AT, adaptive 1000M, 100M, 10M. The mainboard has four Gigabit service LAN ports for receiving/sending business data, using CAT5 and above cables access switch can also be directly connected to the client's host. The LED indicators of LAN portS are as follows:



LAN Port LED	
	Description
Left LED	Link status indicator: 1. Gigabit Link, green light on; 2. 100M Link, orange light on; 3. Ten mega Link, the LED is off.
Right LED	Active status indicator: When there is active data, the yellow light flashes; This indicator does not light when there is no data.

USB Interface

2 USB 3.0 ports (J28):



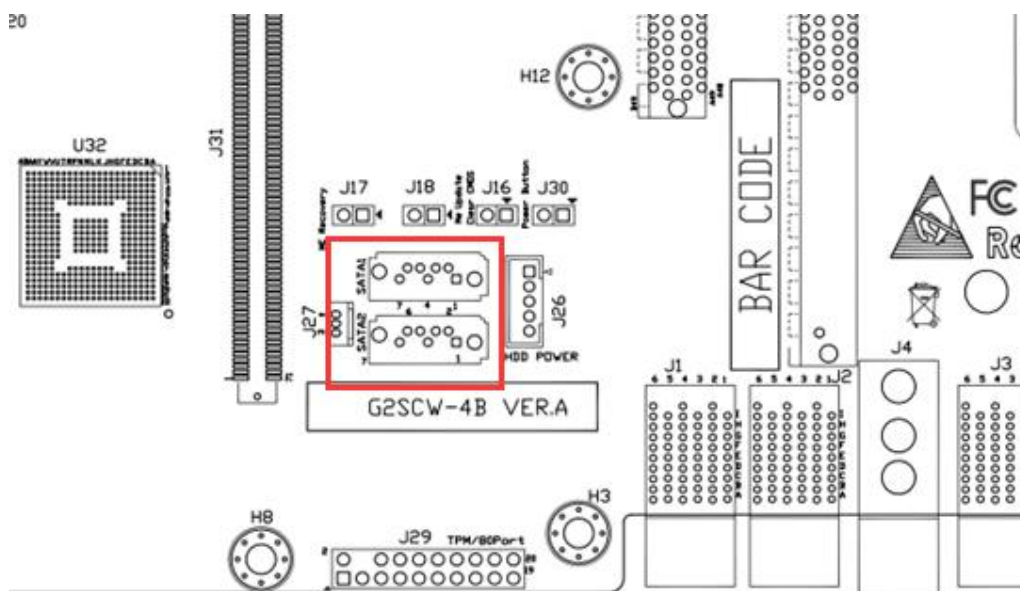
VGA Interface

The mainboard's graphics chip uses AST2400, AST2400 built-in PCIE VGA Controller, a 15PIN VGA Connector is used to access the VGA display, output host information, the location diagram is as follows:



SATA Interface

The mainboard has 2 SATA 3.0 Connectors, all from Intel PCH. This system comes standard with C232 PCH chip.



SATA Connector PIN Definition

PIN Number	Description
PIN1	Ground
PIN2	SATA HOST TX+
PIN3	SATA HOST TX-
PIN4	Ground
PIN5	SATA HOST RX-
PIN6	SATA HOST RX+
PIN7	Ground

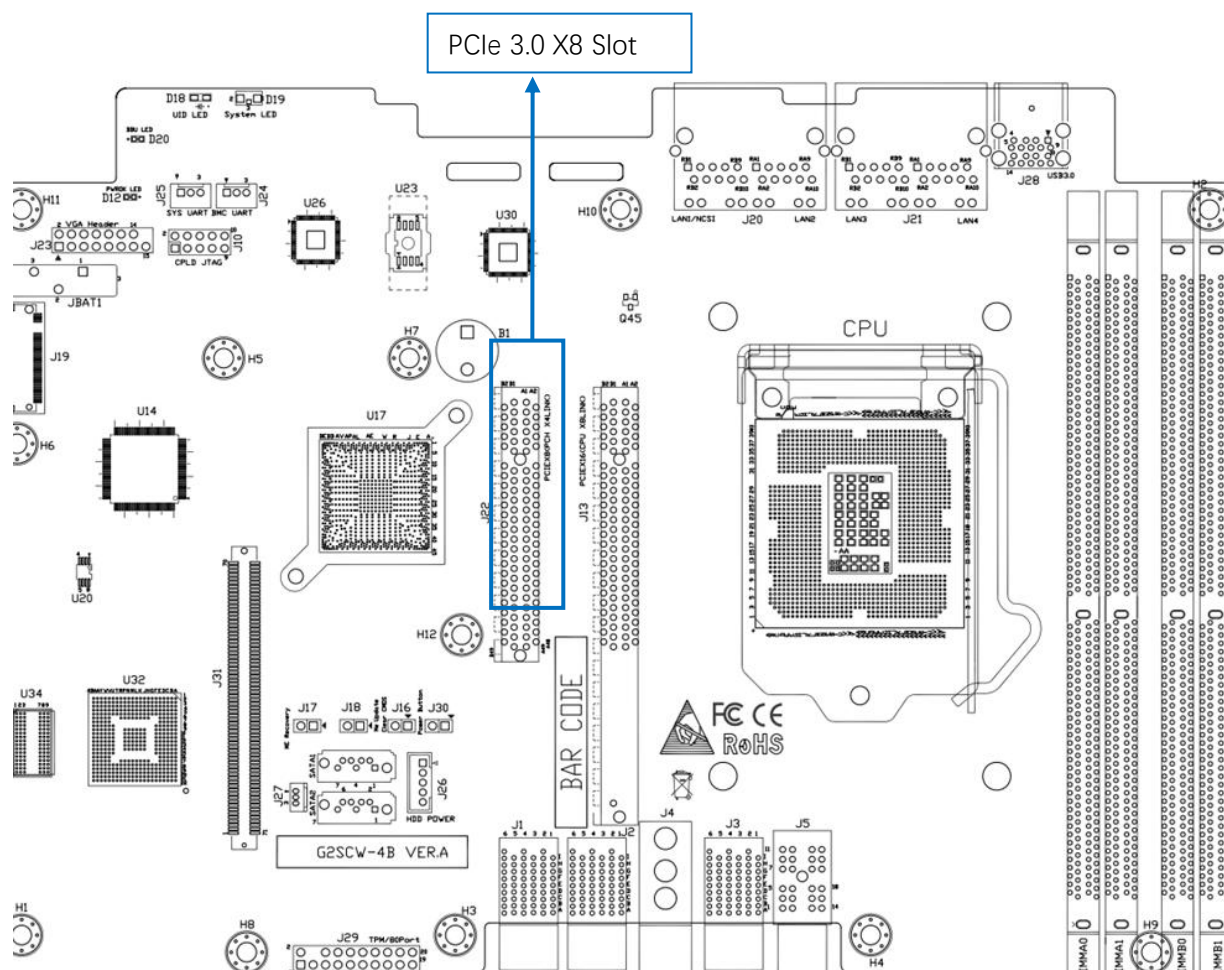
SATA DOM POWER CONNECTOR (J27)

The mainboard has 3 PIN Power Connectors for SATA DOM access to the power supply.

SATA DOM POWER Connector PIN Definition	
PIN Number	Description
PIN1	5V
PIN2	Ground
PIN3	Ground

Introduction to PCIe 3.0 X8

The motherboard has a built-in PCIe 3.0 X8 Slot (J13). The standard PCIe X8 board can be inserted with the PCIE Slot signal as the standard signal.

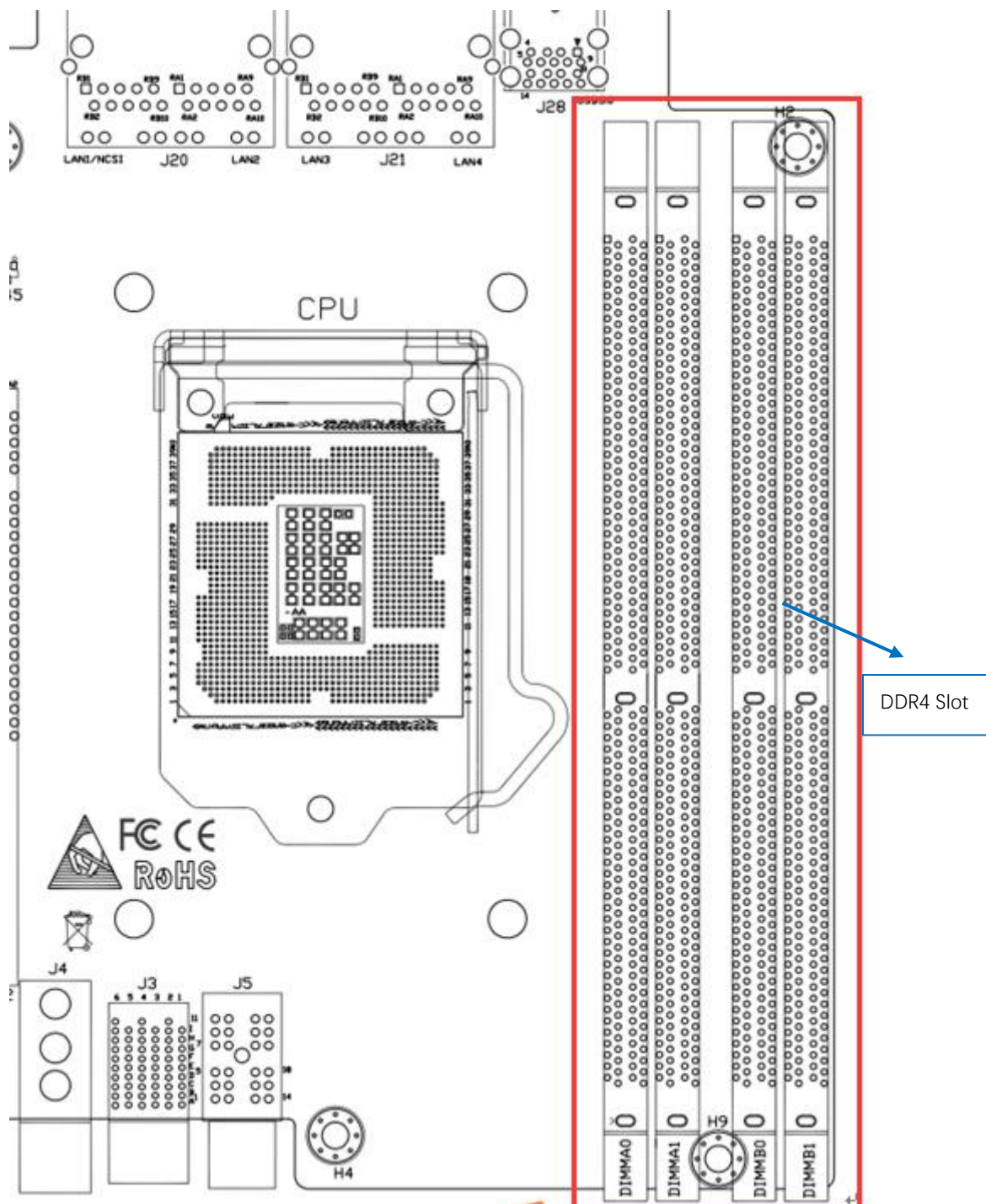


Introduction to DIMM SLOT

The mainboard has four DDR4 slots, divided into Channel A, Channel B. Each channel has two DIMM slots.

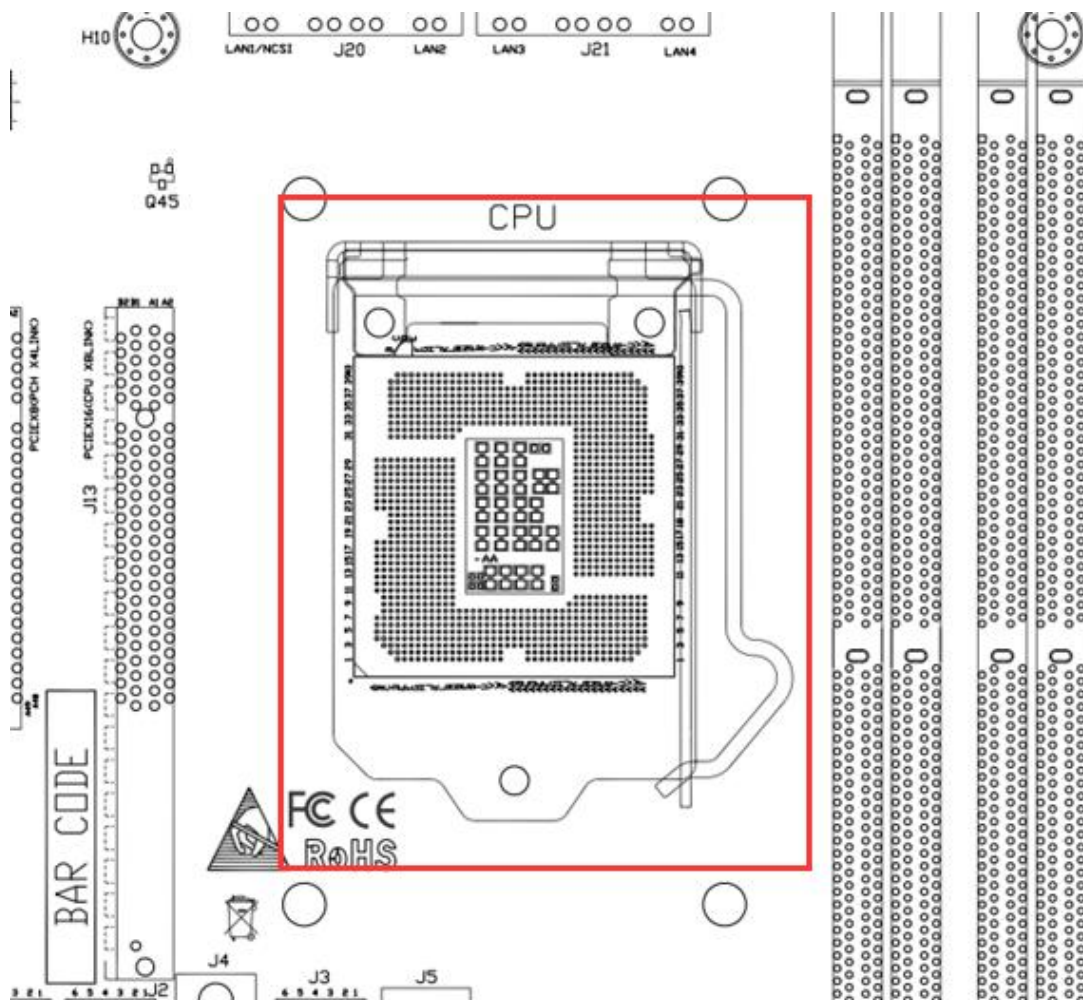


Note: If only one DIMM strip is inserted into each Channel, it needs to be inserted into the slot away from the CPU.

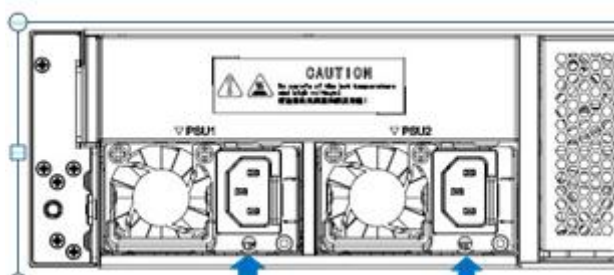


Introduction to CPU SOCKET

LGA1151 CPU SOCKET is the CPU used to load the LGA1151. During the CPU installation, you need to pay attention to the installation of the first PIN. The first PIN is shown below. As indicated by the triangular arrow, it is a triangular arrow corresponding to the CPU.



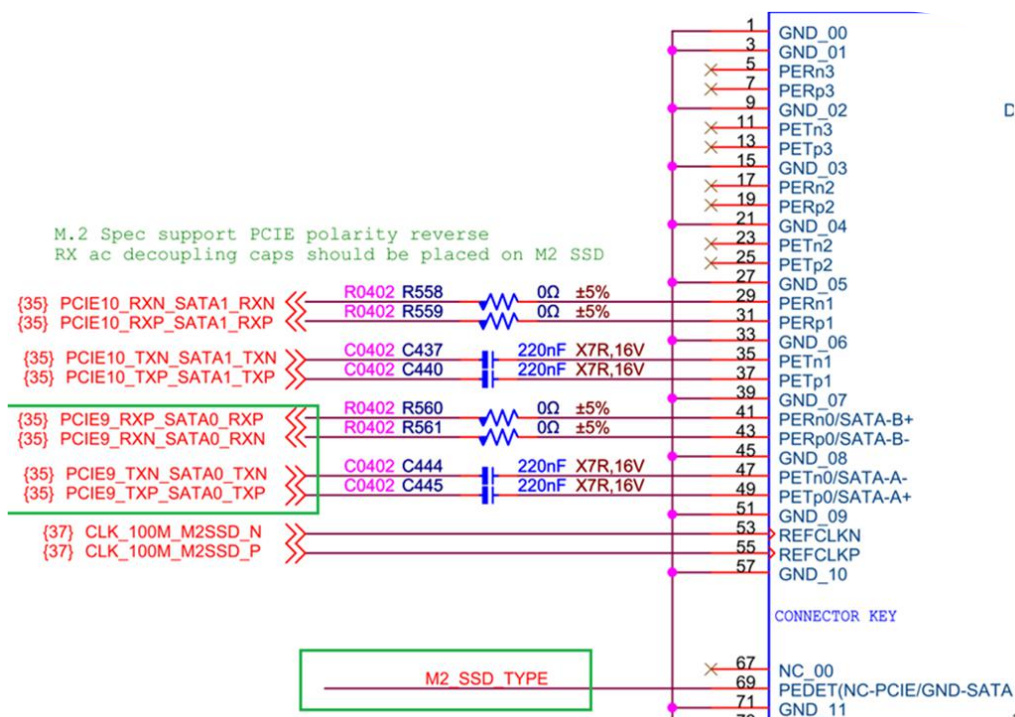
● Power Module



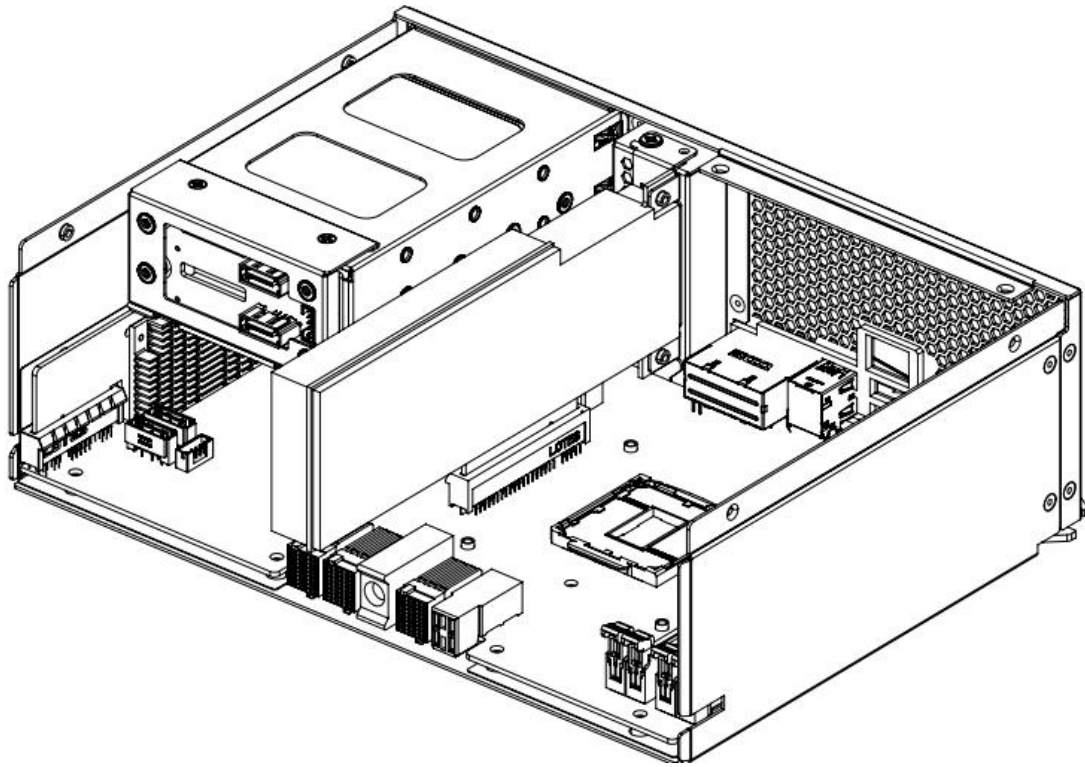
The arrows in the above figure are labeled as the LED indicators of the power module. Each power module has its own LED indication, as described in the following table:

LED	
	Description
GREEN ON	The power module is operating normally
ORANGE ON	Power module alarm, may over temperature, over voltage, over current, or fan failure
OFF	AC power is not connected to the power module

● 75Pin M.2 SSD Connector with PCIe X2 and SATA Specification Adaptive SSD



Chapter IV Controller Module Installation



4.1 CPU Installation

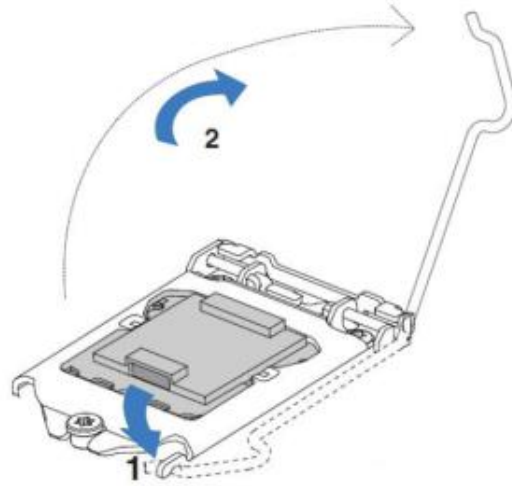


CAUTION:

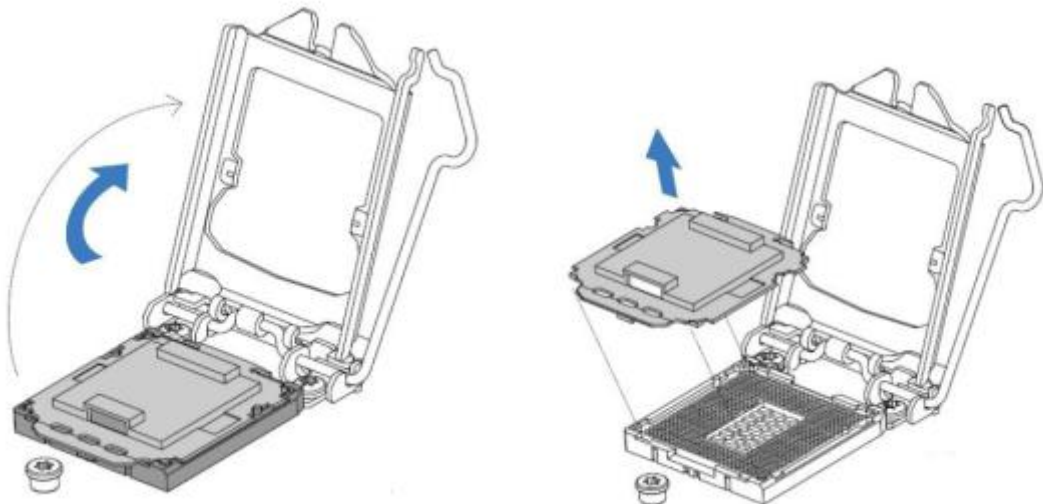
1. Please purchase Intel CPU through formal channels.
2. Please make sure that the purchased processor specifications belong to this system's support type.

Detailed installation of LGA1151 processor steps:

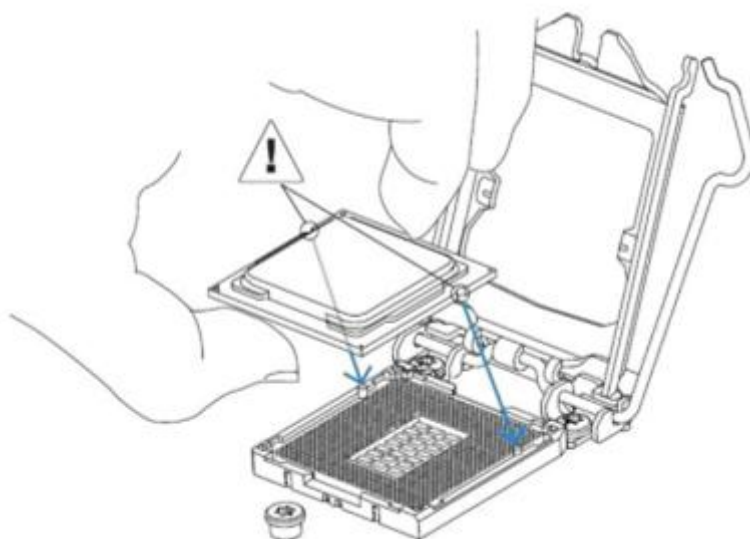
1. Press gently on the platen and push outwards (to the right) to unlock.



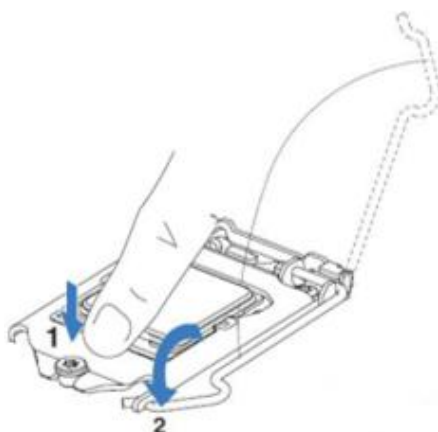
2. Once the pressure plate handle is unlocked, gently lift the handle to open the pressure plate.



3. Once the load board is open, use your thumb and forefinger to pinch the north central edge of the CPU and the south central edge of the CPU, hold the processor with your thumb and forefinger, and make sure that the socket's alignment point is aligned with the processor's gap. Place the processor straight into the slot, do not lean or slide, and gently release the processor to ensure it is properly seated in the socket.

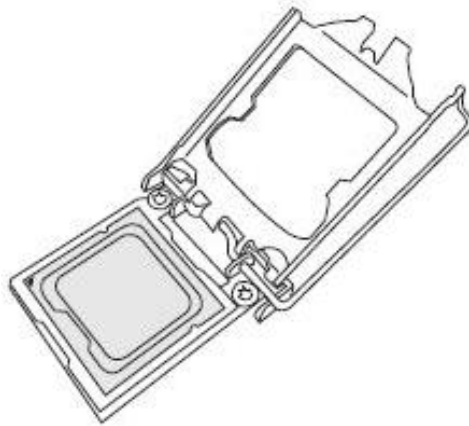


4. No force is required to close the load plate. Press down the load plate, close and hold the slot lever.



5. Once they are aligned, carefully insert the CPU straight down into the slot. (To avoid damage to the CPU or socket, do not rub the surface of the CPU or any pin sockets.)

For the CPU in place in the socket, check the four corners of the CPU to ensure correct installation.

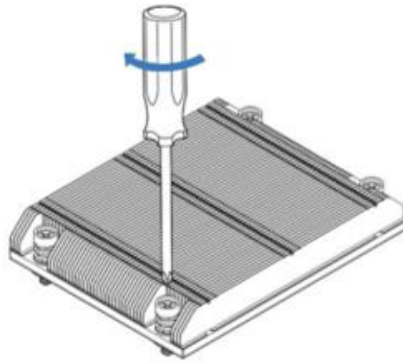


Warning:

You can install the CPU inside the socket only in one direction to make sure it is plugged into the CPU socket correctly before closing the load board. If it does not close properly, do not force it, as this may damage your CPU; instead, check that the CPU is properly aligned and securely seated in the socket before opening the platen.

4.2 CPU Heatsink Installation

1. Remove the heat sink and apply the appropriate amount of hot silicone paste to the bottom of the heat sink.
2. Place the heat sink on top of the CPU so that the four mounting holes are aligned with the motherboard and the lower heat sink bracket.
3. First tighten the two diagonal screws until they are just in place (to avoid damage to the CPU and heat sink, do not overtighten the screws).
4. Tighten the four bolts fully to complete the installation.
5. Reverse the sequence of this process to remove the heat sink.



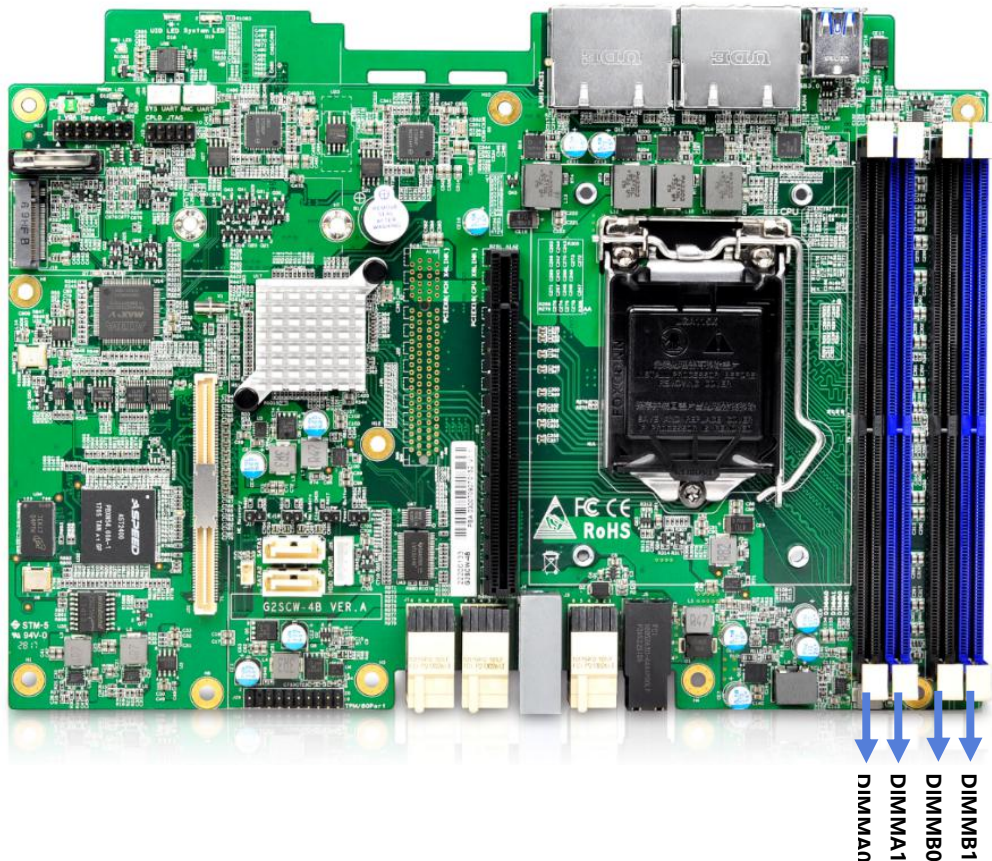
4.3 Memory Installation



Note: When installing or removing DIMMs, prevent any possible damage to DIMMs or their respective slots.

HOW TO INSTALL MEMORY

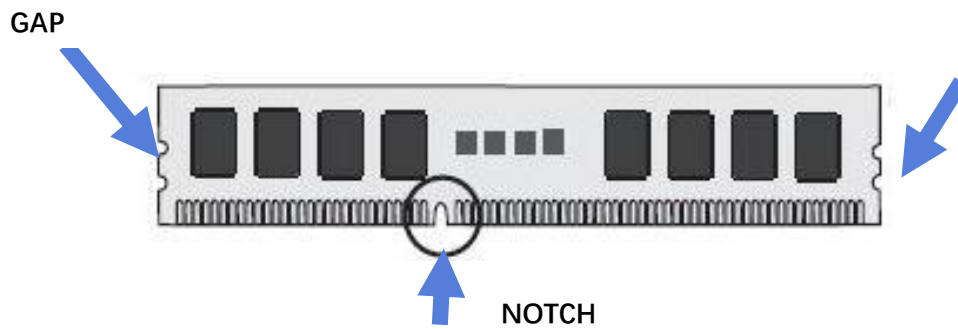
1. Motherboard DIMM slot sequence: DIMMA0, DIMMB0, DIMMA1, and DIMMB1, pay attention to the memory of the hole and the DIMM slot gap to prevent incorrect installation.
2. Vertically snap each DIMM module into place.



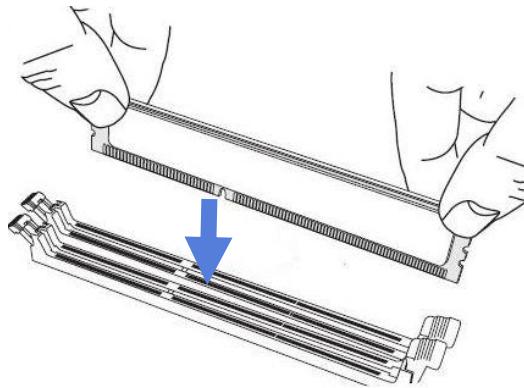
● MEMORY SUPPORT SPECIFICATIONS

The motherboard supports up to 1066/1333/1600 MHz of ECC DDR3 64GB memory. There are four DIMM slots and use the same size, type, and speed of DDR3 memory modules. The board will support the installation of one, two, or four DIMM modules, and for the best memory performance it needs to be installed in the same color slot as the DIMM.

Installation: Insert the memory module vertically and press the memory slot snap-in position. Note the bottom of the alignment notch.

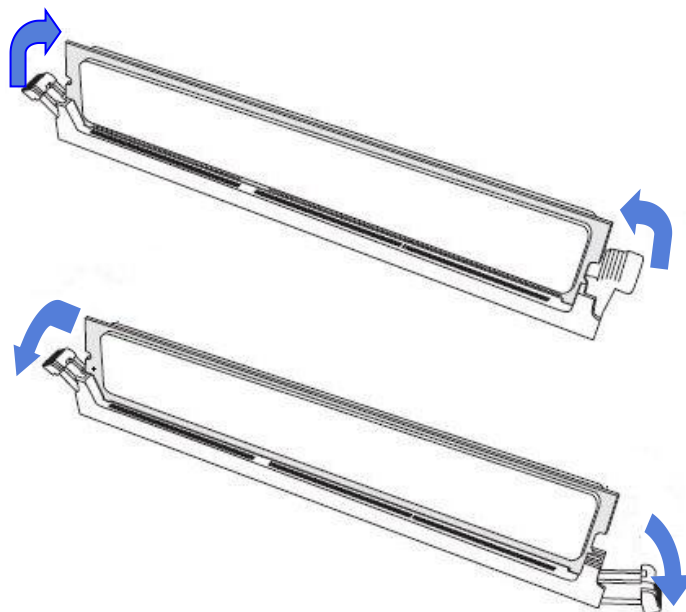


Simulate the demo diagram inserted into the memory bar:



Removal: Use your thumb to gently push the release tab near both ends of the memory module socket to release the memory from the socket.

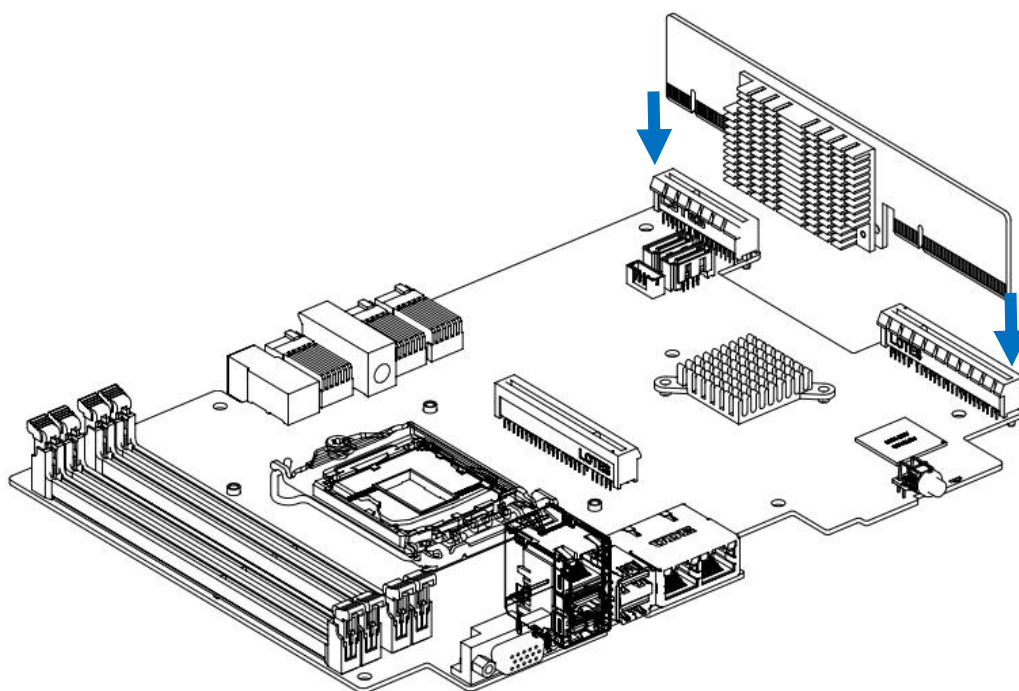
Simulate the demo picture of disassembling the memory:



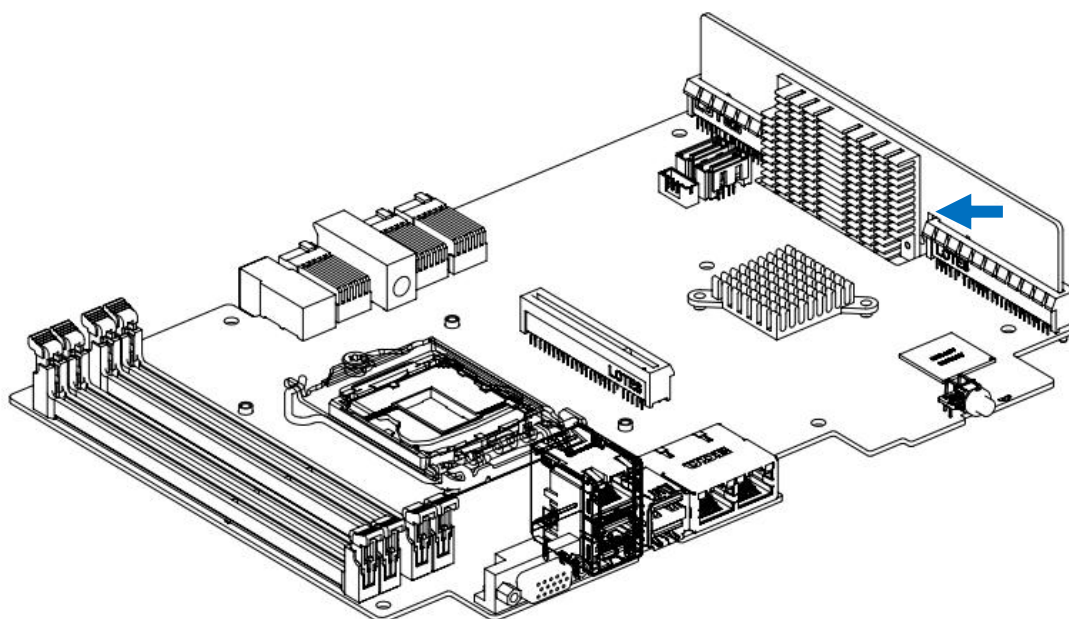
4.4 PIKE Card and Expansion Card Installation

The system controller module comes standard with the LSI SAS2008 chipset PIKE card and also supports the expansion of a half-height PCIe expansion card.

PIKE card installation as shown below:



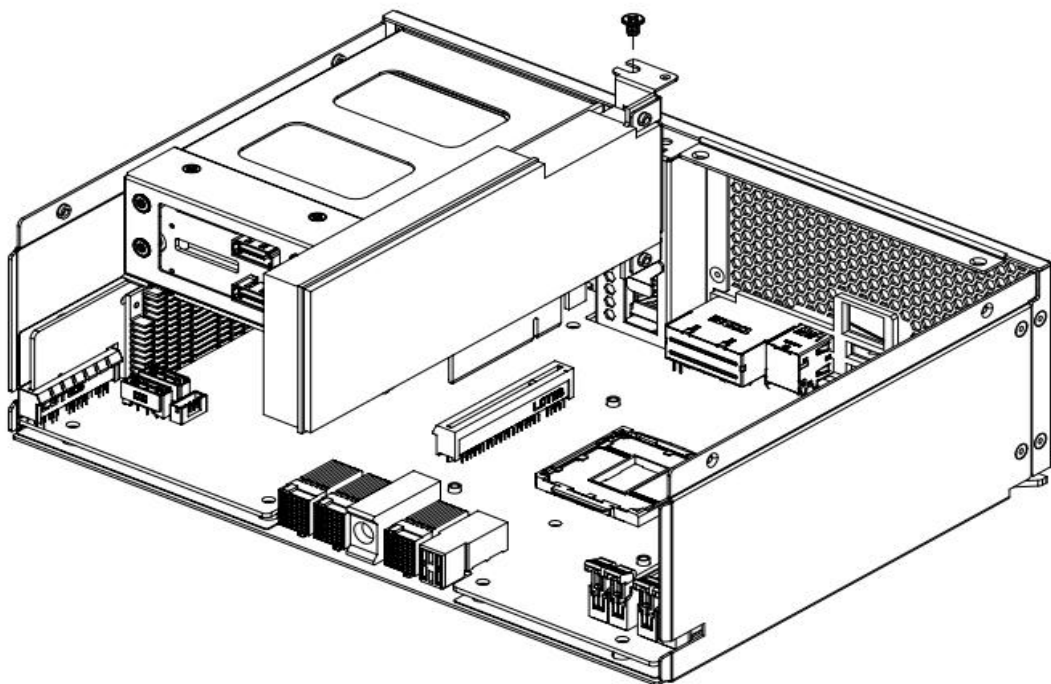
Note: Align the groove, and press it firmly on both sides at the same time.



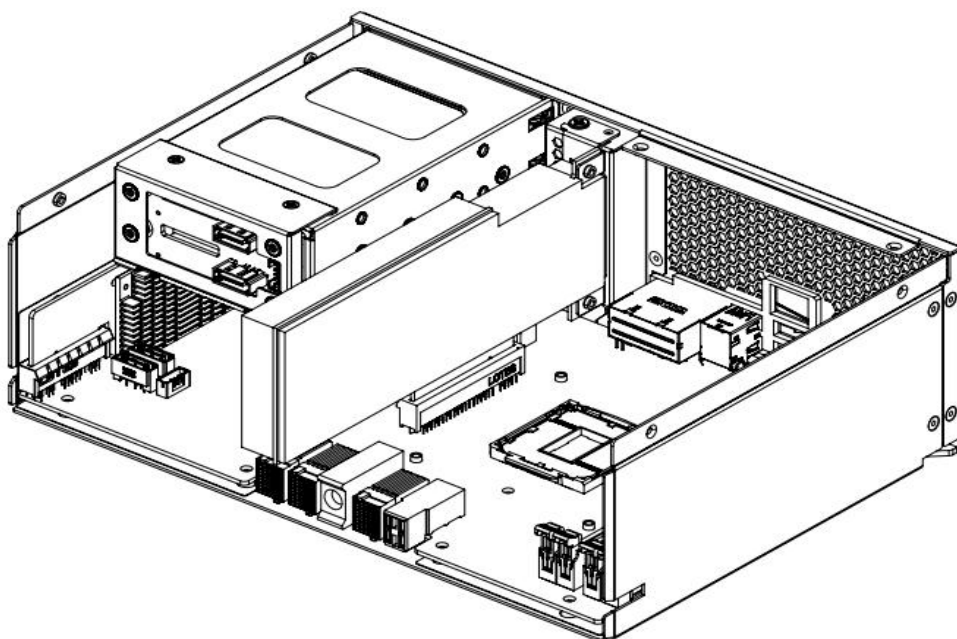
Note: Make sure the PIKE card is in place.

Installing a PCIe Expansion Card:

Install the expansion card to the PCIe expansion card and secure it to the bracket with screws. The schematic diagram is as follows:



Note: Pay attention to balance force during installation, and ensure that the expansion card is inserted into the motherboard vertically.

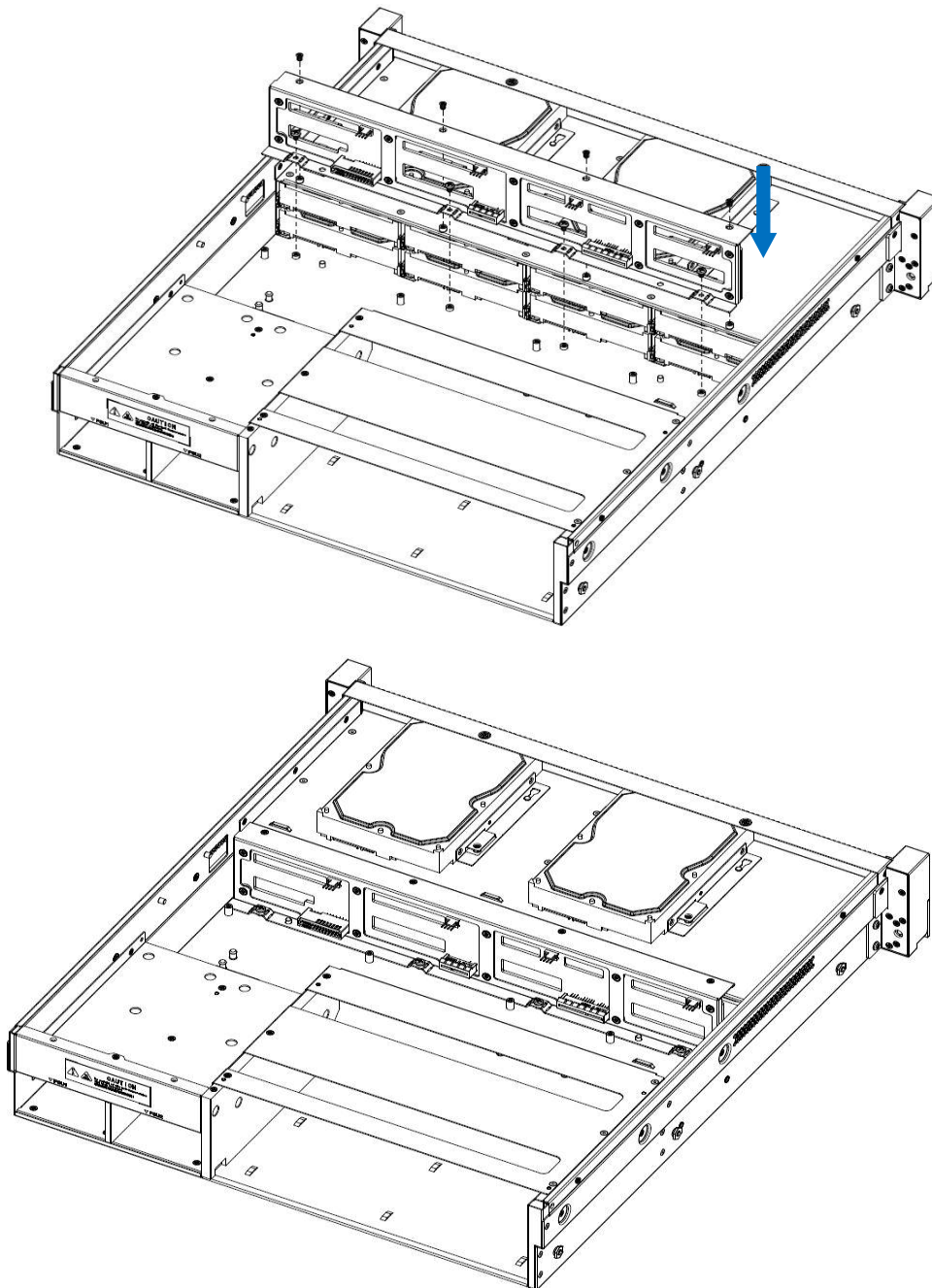


Note: Make sure the PCIe expansion card is in place and lock the screw.

Chapter V Chassis Installation

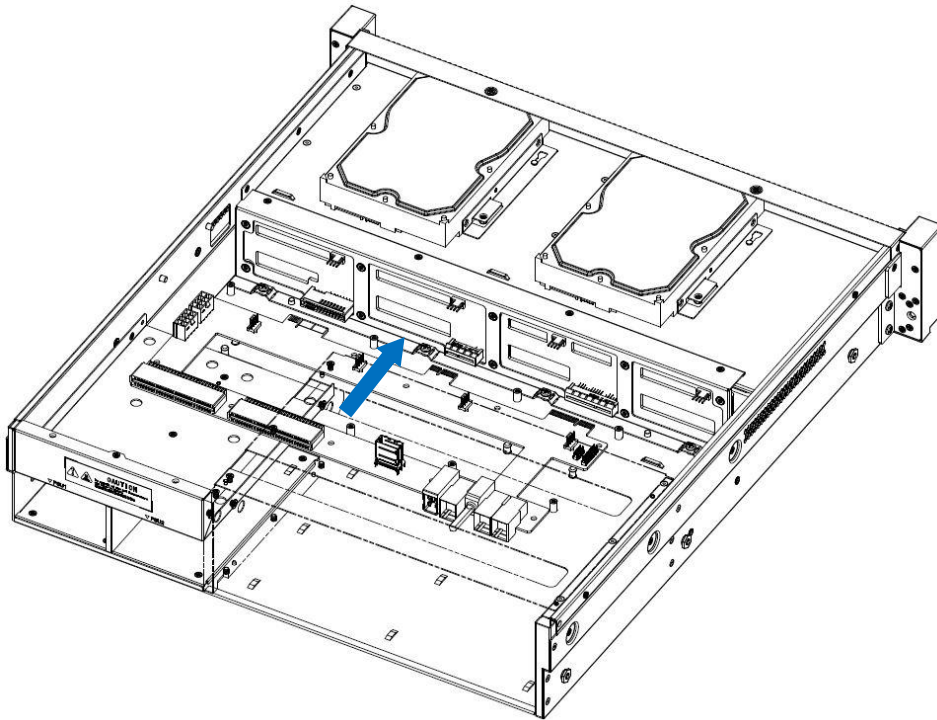
5.1 Backplane and SPIB Board Installation

Installation diagram of the backplane is as follows:

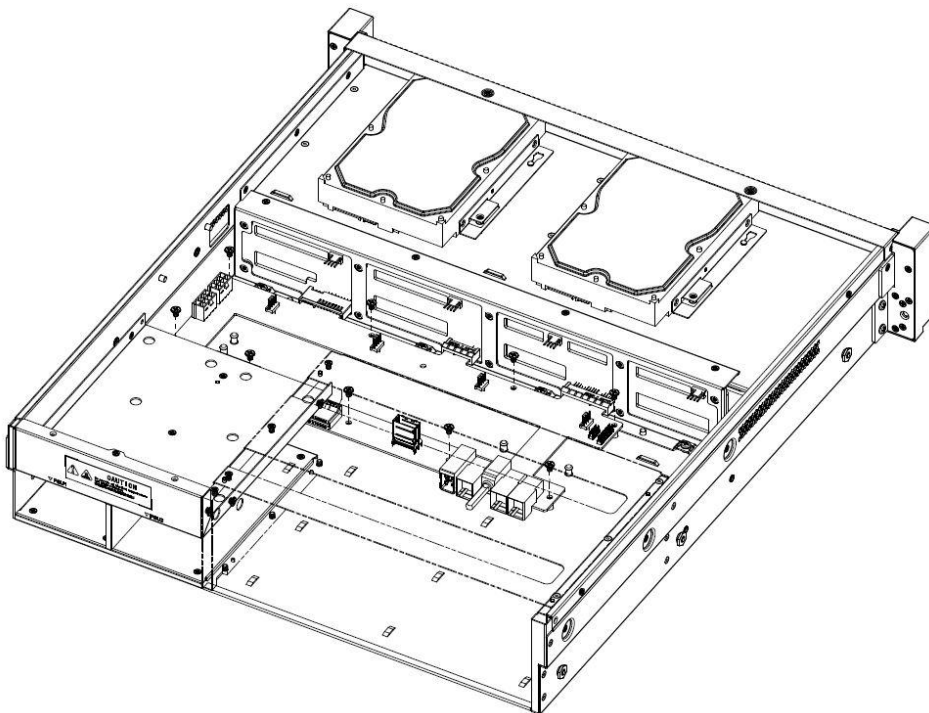


Note: Make sure that the backboard is inserted vertically, and fix the fixing screws on three sides

The schematic diagram of installing the SPIB board is as follows:



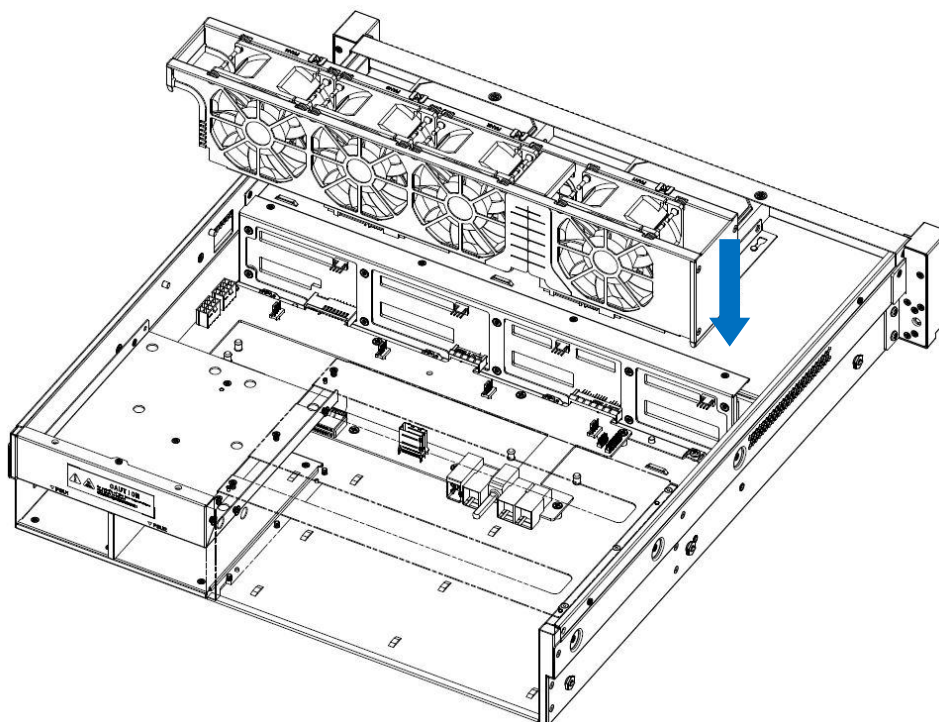
Note: When installing or removing the SPIB board, please pay attention to the components in the PCBA and do not collide with the chassis.



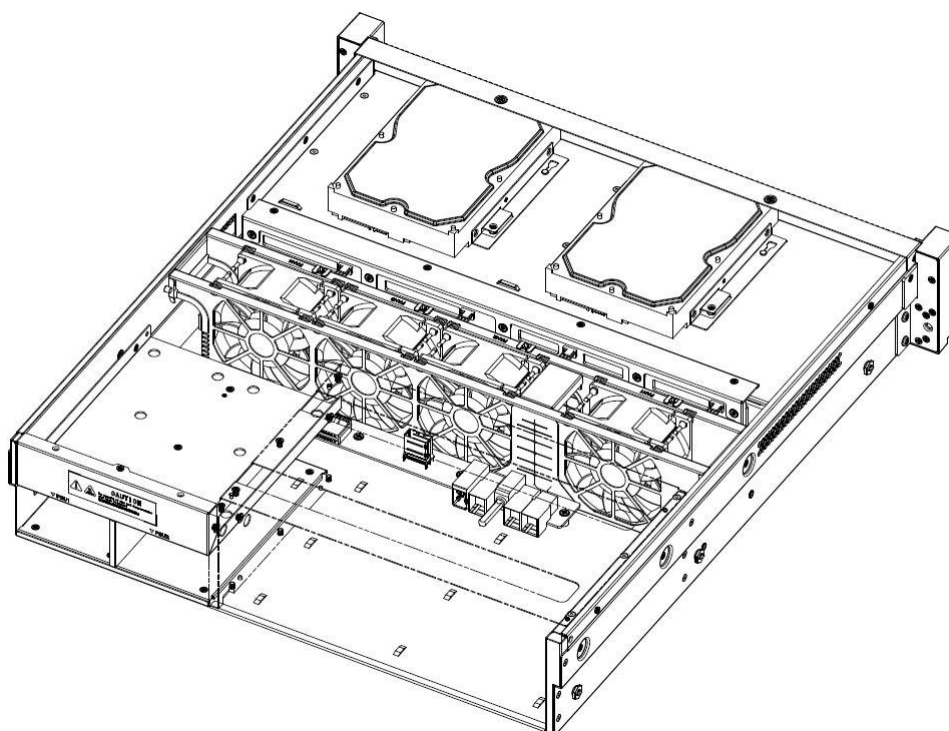
The installation is complete

5.2 Fan Installation

The system adopts modular fan wall heat dissipation, and the wind wall support module has no screws and no tools to install. The installation diagram is as follows:



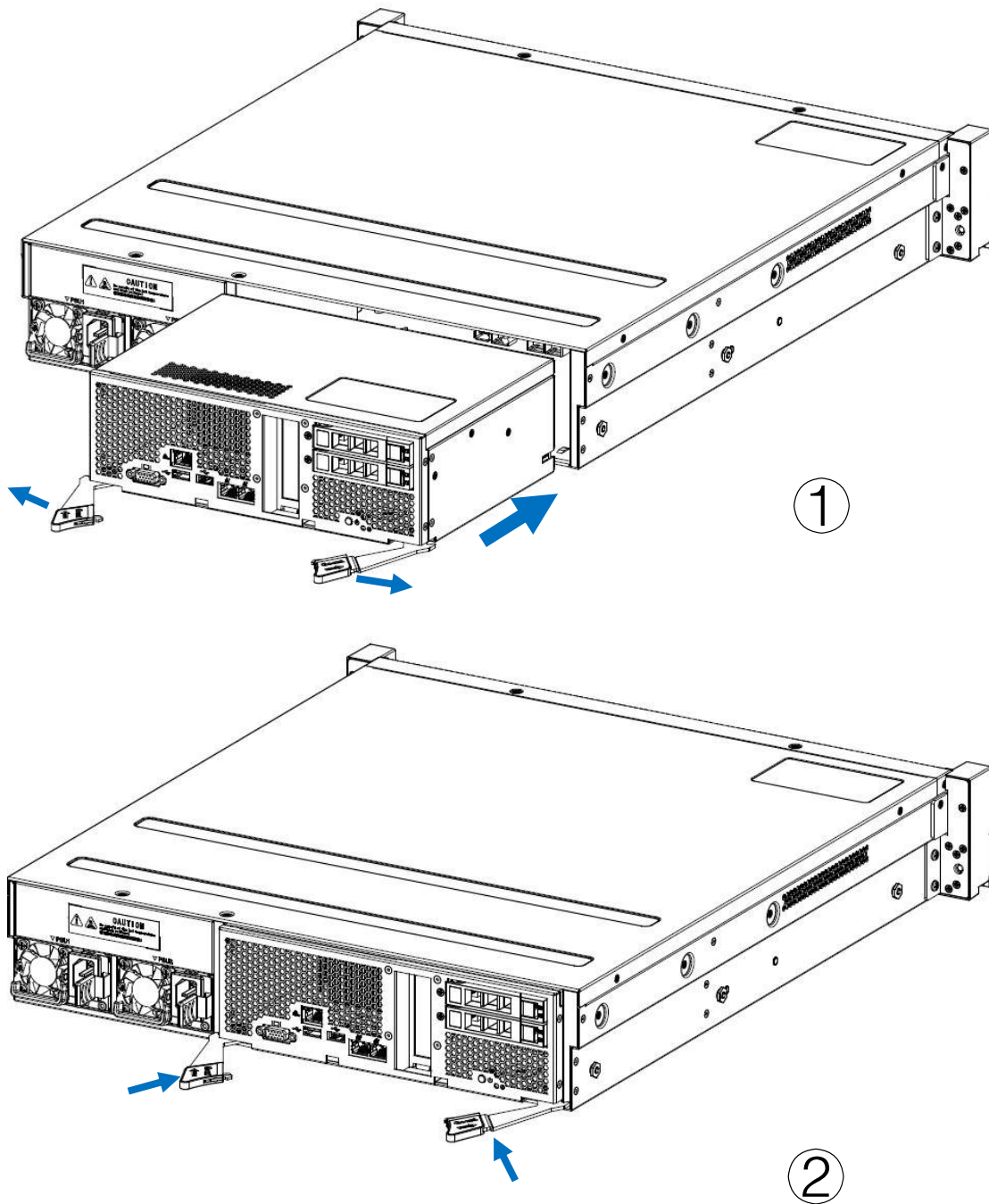
Note: The gap in the fan wall is aligned with the snap on the chassis, and then the power cables of each fan are connected to the backplane.

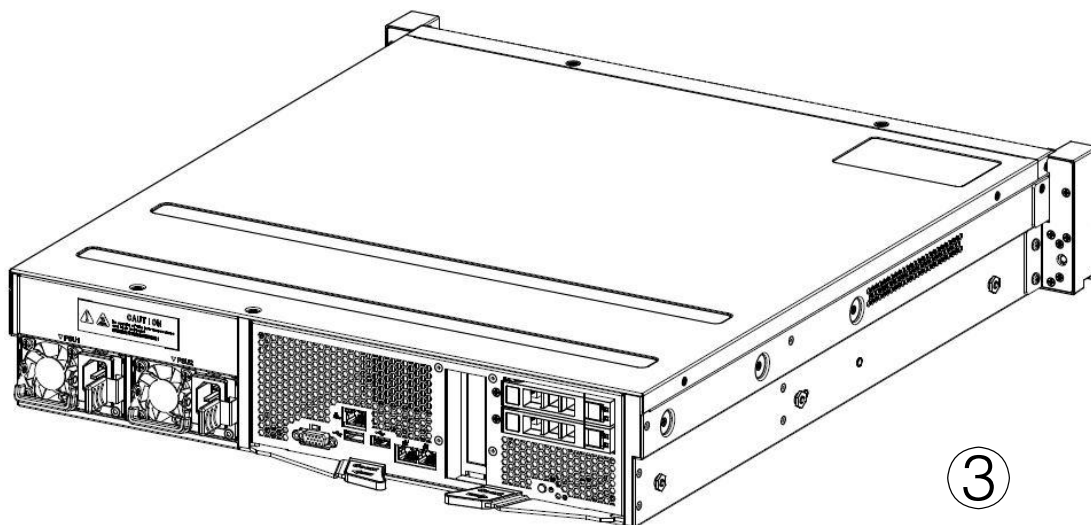


The installation is complete

5.3 Controller Module Installation

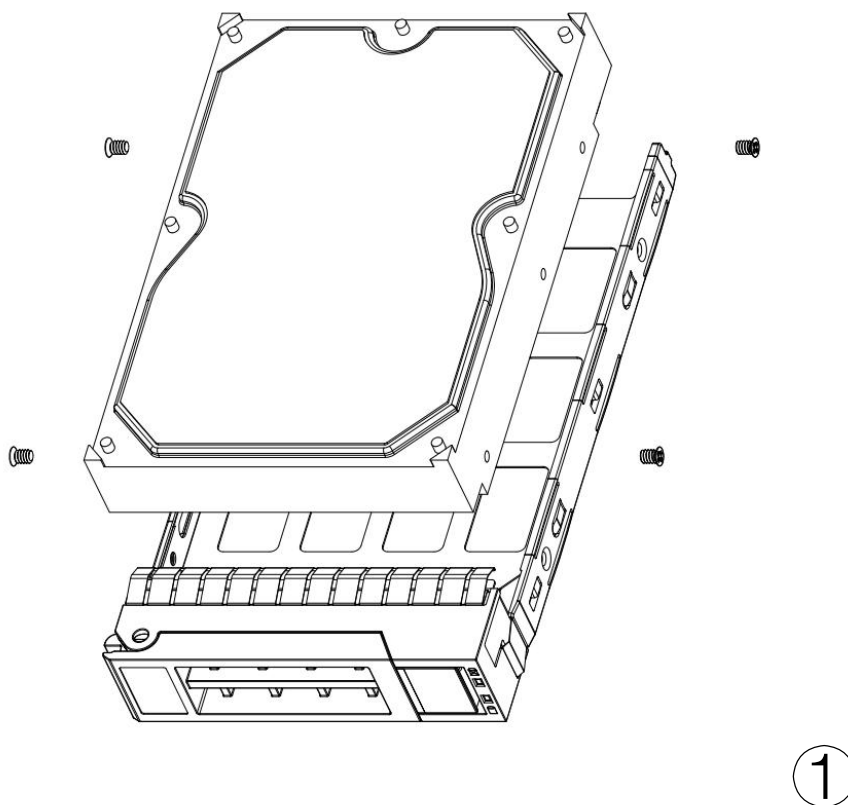
The system adopts a modular installation and supports hot swap; installation and maintenance are simple and convenient. The installation diagram is as follows:

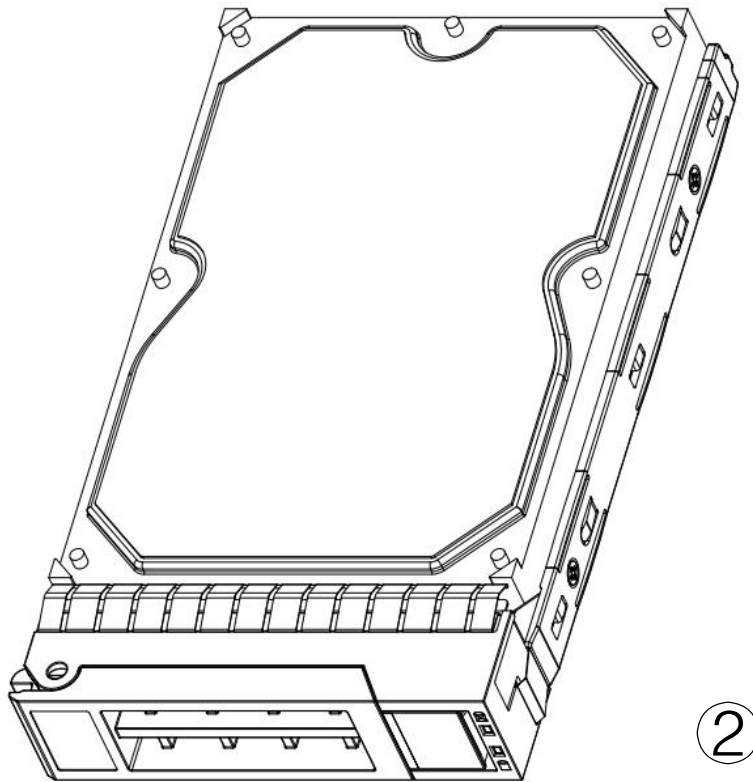




5.4 Hard Disk Installation

The system supports 16 3.5-inch hard disks. The installation method of each hard disk is the same. The following installation diagrams are as follows:





The installation is complete

Chapter VI System Cabinet Installation

6.1 Overview

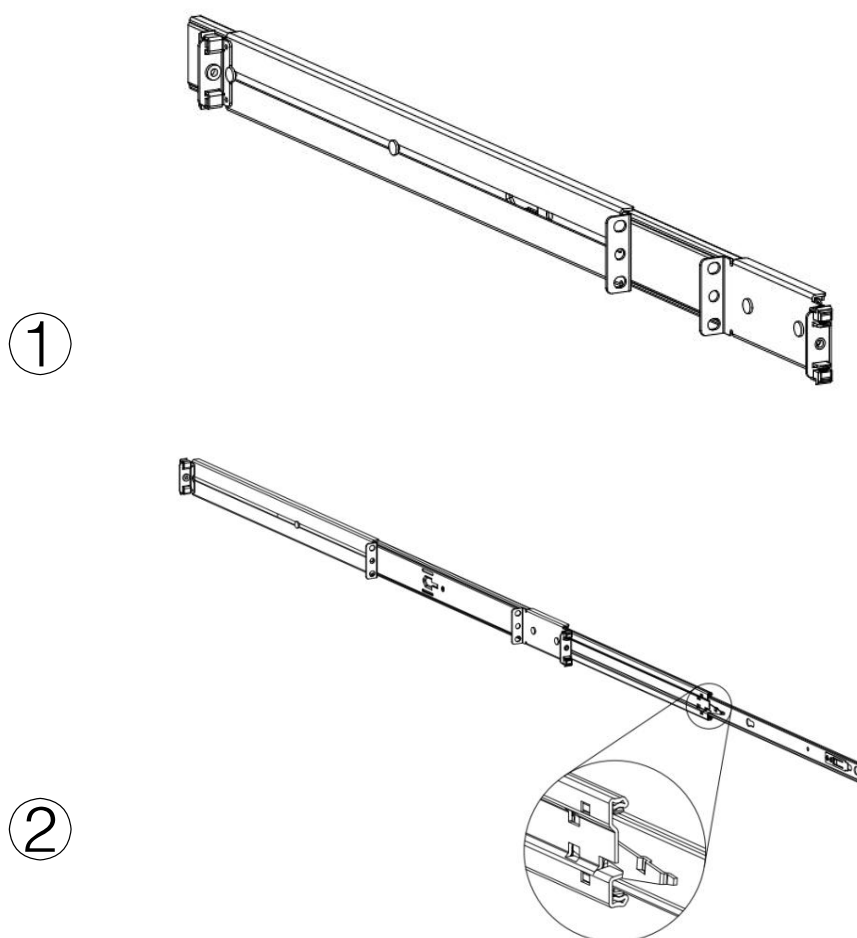
This section describes the procedures for using RS-6388.

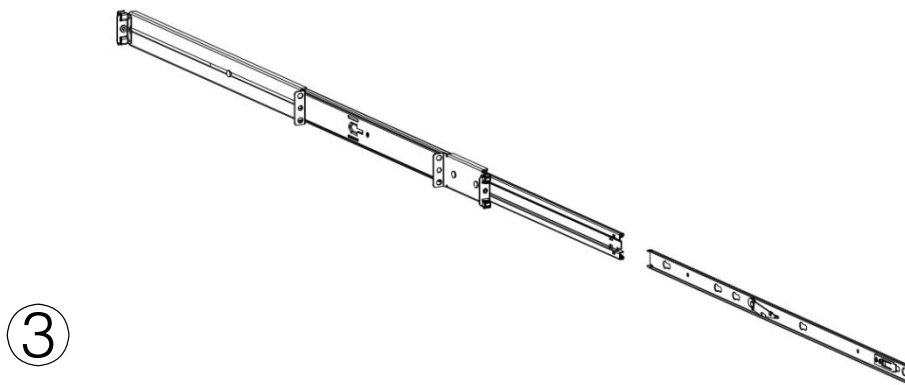
Select a suitable location on the rack to place the server system. This location should meet the following conditions: clean, well-ventilated, dust-free or dust-free areas, take care to avoid high temperatures, electrical noise and electromagnetic interference, and you also need to place a power outlet nearby.

6.2 Rail Mounting

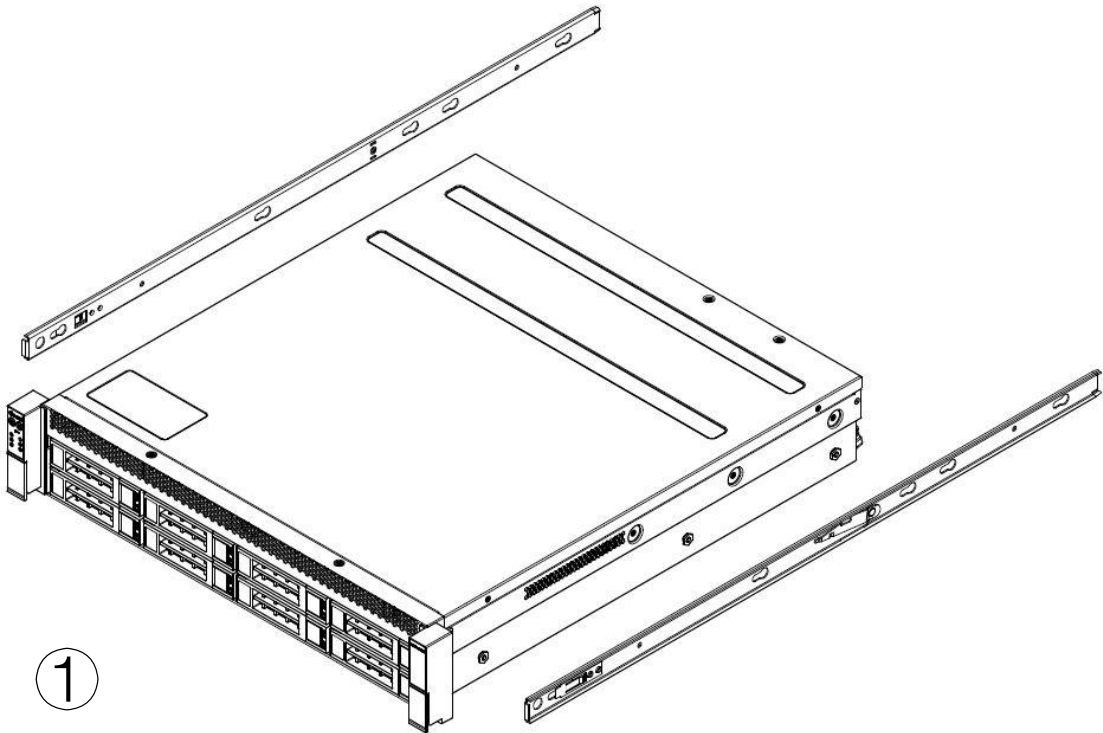
RS-6388 uses a full set of screw-free tool-free rails, easy to install. Please use the following steps to install the system into a rack.

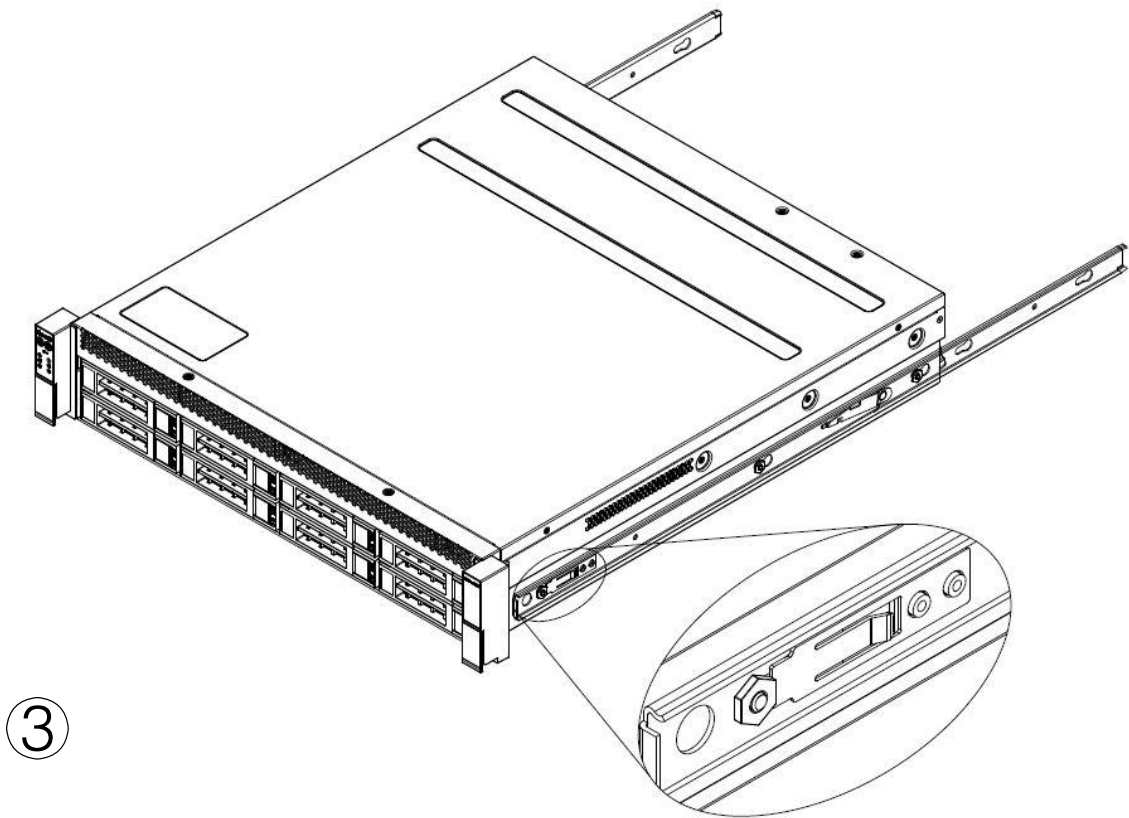
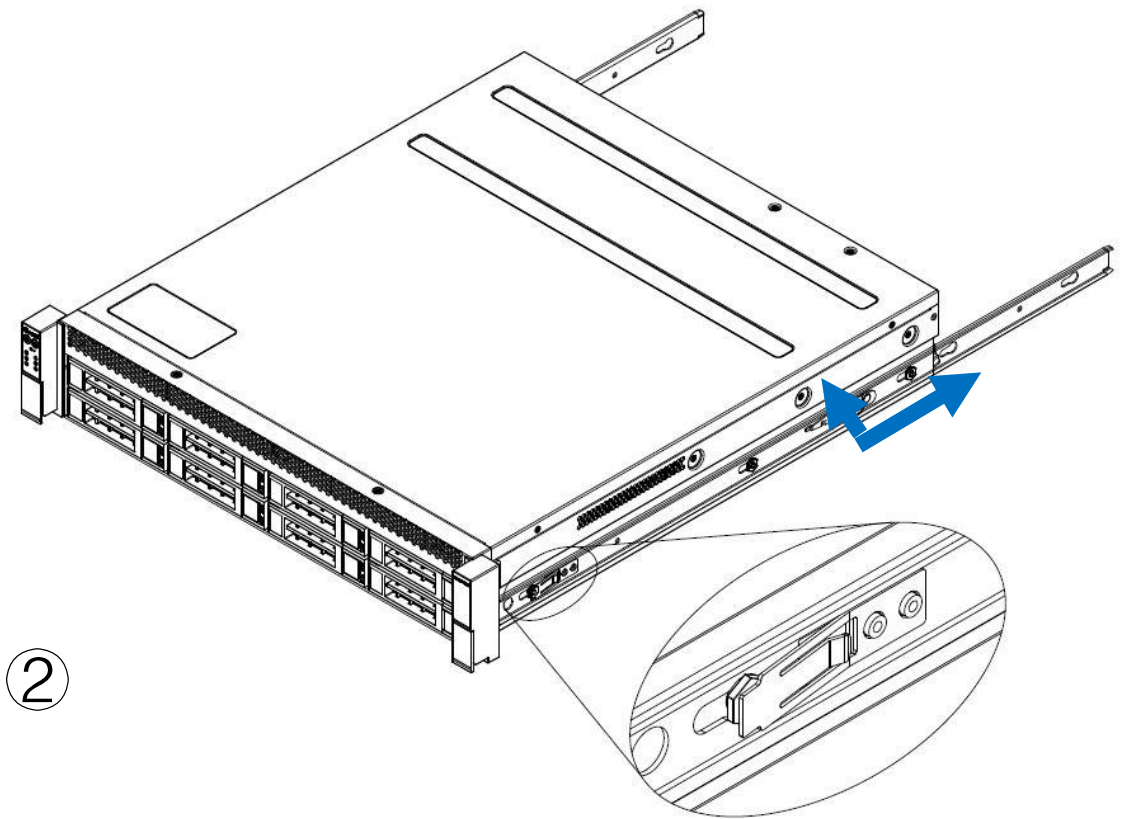
1. Pull out the inner rail of the rail. As shown below:



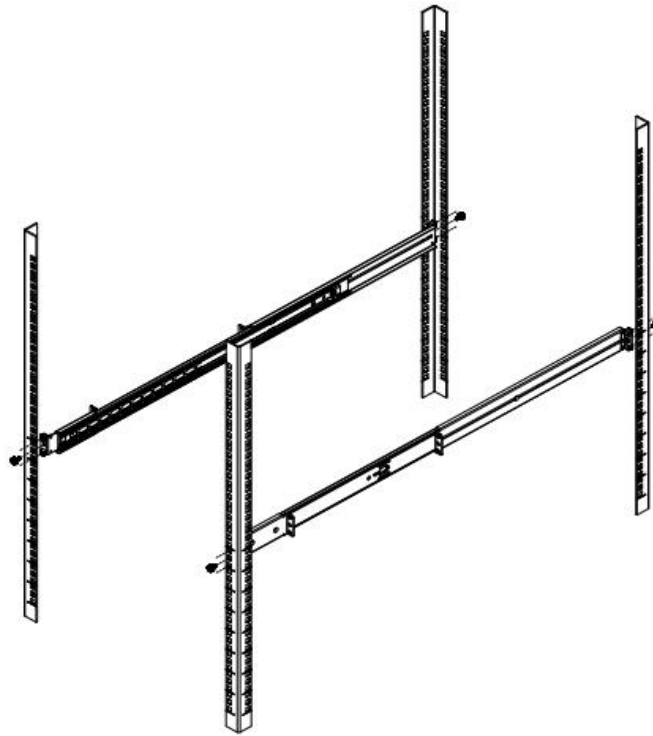


2. Install the extracted inner rail into the chassis, as shown below.

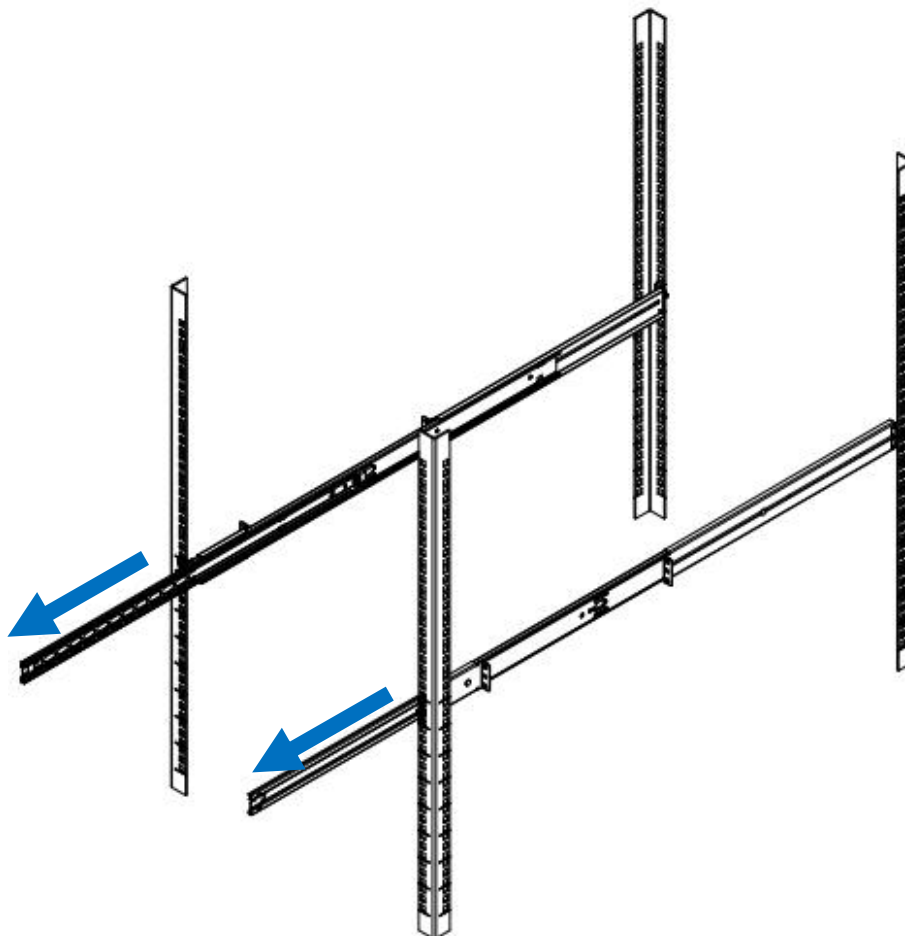




3. Secure the rails into the cabinet and pull out the middle rails. As shown below:

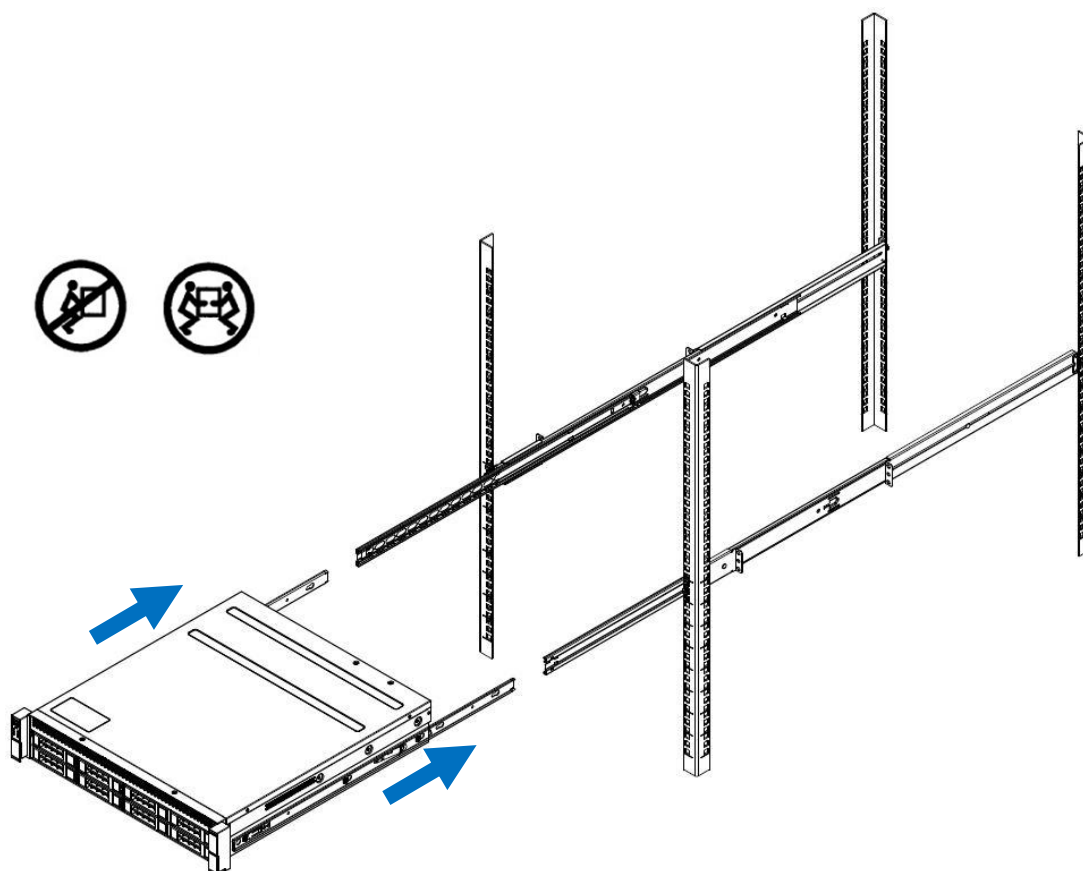


①



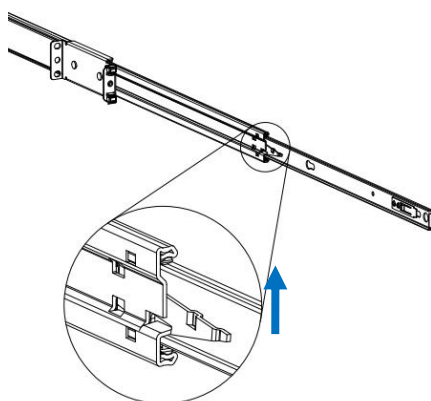
②

4. Place the system in a full rack and place it horizontally into the rails and into the rack. As shown below:

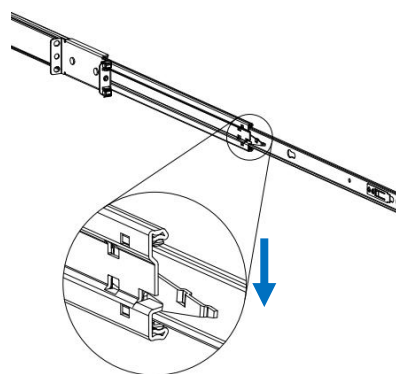


Note: In the flat push-in process, there is a buckle on each side of the slide rails on both sides. The left buckle is lifted upwards and the right buckle is pressed downwards to continue pushing. As shown below:

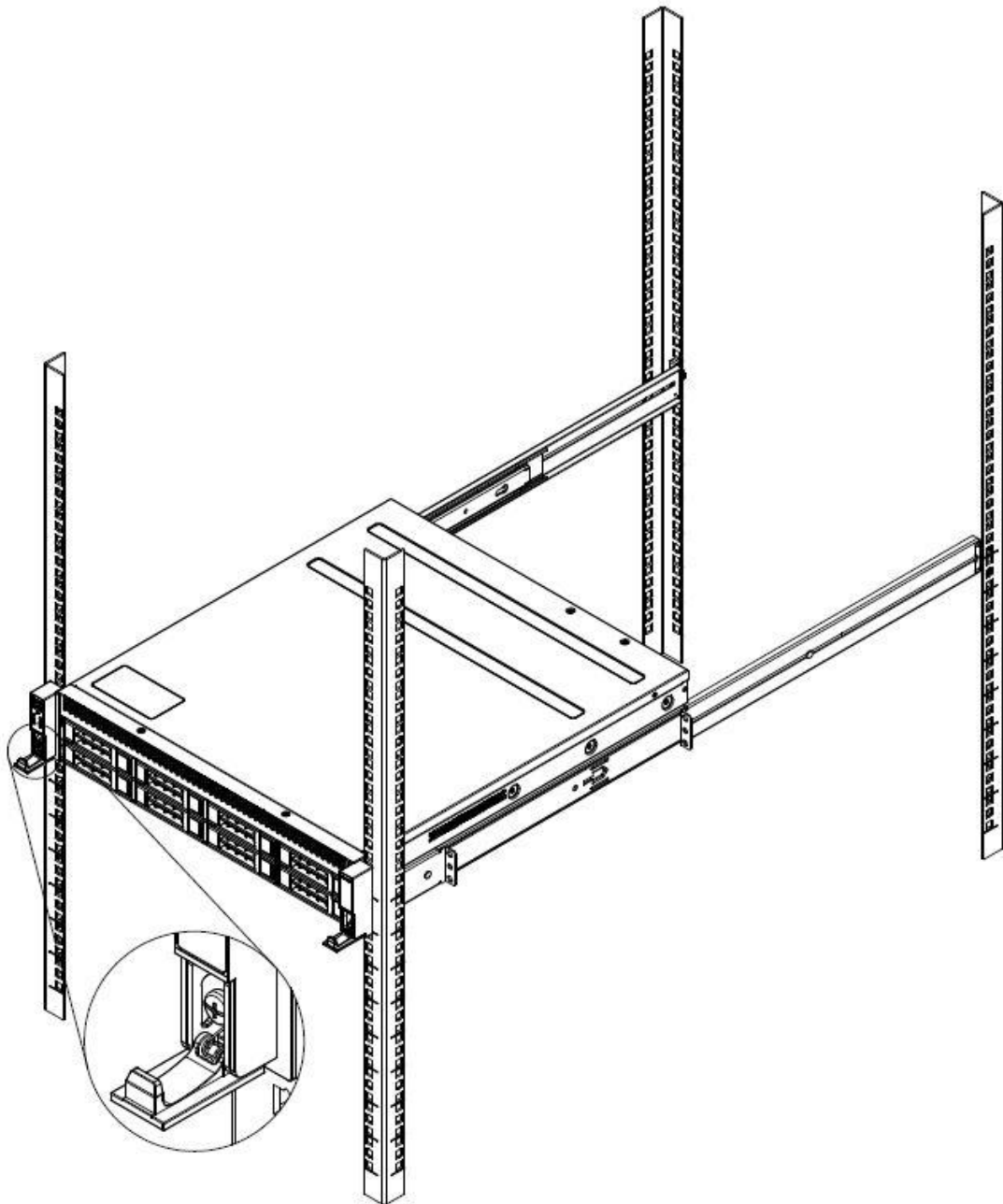
The left side of the buckle is lifted up



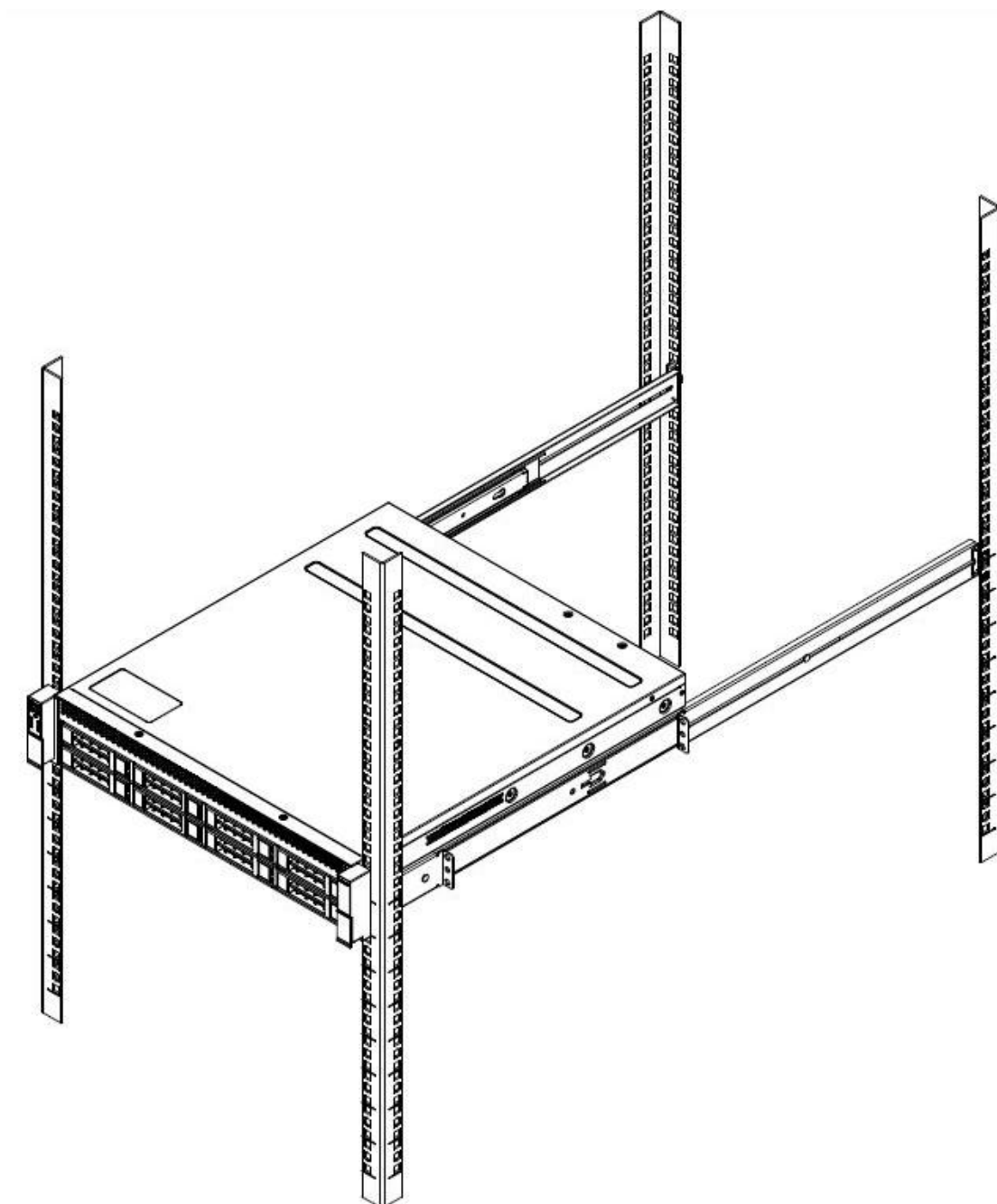
Press down on the right side



5. Lock the fixing screw, as shown below:



6. The final schematic of the entire storage server system in the rack is as follows:



Warning: Do not pull the handle of the server system. Otherwise, the system will be pulled out of the rack, which may make the system power off or down. The rack must be secure, the unstable rack will cause the rack to tip over.

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