



OPEN Industry Standard, Flexible Architecture

GREEN Less Heat, Less Power Consumption

STABLE Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

1U12XL RPSU/EPYC Series

User Manual

English



Version 1.0

Published March 2020

Copyright©2020 ASRockRack 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 ASRockRack 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 ASRockRack. ASRockRack assumes no responsibility for any errors or omissions that may appear in this documentation.

With respect to the contents of this documentation, ASRockRack 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 ASRockRack, 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 ASRockRack 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”

ASRockRack'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 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.

The EUT is not likely to be accessible to children.

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.

Contact Information

If you need to contact ASRockRack or want to know more about ASRockRack, you're welcome to visit ASRockRack's website at www.ASRockRack.com; or you may contact your dealer for further information.

ASRockRack Incorporation

6F., No.37, Sec. 2, Jhongyang S. Rd., Beitou District,
Taipei City 112, Taiwan (R.O.C.)

Contents

Chapter 1 Introduction	1
1.1 Shipping Box Contents	1
1.2 Specifications	4
Chapter 2 Server System Overview	5
2.1 System Components	5
2.2 Internal Features	6
2.3 System Front Panel	8
2.4 System Rear Panel	8
2.5 Front Control Panel Buttons and LEDs	9
Chapter 3 Hardware Installation and Maintenance	11
Before You Begin	11
Installing Procedures	11
3.1 Server Top Cover	12
3.2 Hard Disk Drive	14
3.3 Power Supply	19
3.4 System Fan	21
3.5 LAN Mezzanine Card	22
3.6 Chassis Cables	23
Appendix Mezzanine Card Support List	28

Chapter 1 Introduction

Thank you for purchasing 1U12XL RPSU/EPYC Series, a reliable barebone system produced under ASRockRack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRockRack's commitment to quality and endurance.



- 1. 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 ASRockRack'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.
ASRockRack's Website: www.ASRockRack.com*
- 2. The illustrations shown in this manual are examples only, the actual system may differ slightly .*

1.1 Shipping Box Contents

Item	Quantity		
	1U12XL-C622 RPSU	1U12XL-EPYC/2T	1U12XL-EPYC/2T2E
1U12XL RPSU/EPYC Series Barebone (1U form factor)	1	1	1
System Board (MB)	1	1	1
Power Supply Units	2	2	2
System Fan	6	6	6
HDD Backplane (BPB)	3	3	3
SSD/HDD(2.5" 7mm) Backplane (BPB)	2	2	2
Front Panel Board (FPB)	1	1	1
Power Distribution Boards (PDB)	1	1	1
Riser Card (RB)	0	2	2
1U CPU Passive Cooler	2	1	1
US Power Cords	2	2	2
3.5" to 2.5" HDD / SSD Mounting Bracket (Optional)	12	12	12
MiniSAS HD Cable (1040mm)	1	0	0
MiniSAS HD Cable (700mm)	1	2	2
MiniSAS HD Cable (880mm)	1	1	1
MiniSAS HD to 4 SATA Cable (1000m)	0	1	0
PMBus Cable (500mm)	1	1	1
VGA Cable, DB9P/M to 2*8PIN HSG Cable (150mm)	1	0	0
COM Dongle Cable (300mm)	1	0	0
SATA Cable, (1140mm)	2	0	0
Power Y-Cable for backplane (700mm)	1	1	0
Power Y-Cable for backplane (NVME) (1000mm)	1	0	1
Slimline Cable (NVME) (1000mm)	1	0	0
Oculink x4 to Slimline x4 Cable (1000mm)	0	0	2
Power Cable, 8PIN CPU1 power (95mm)	1	1	1
Power Cable, 8PIN CPU2 power (500mm)	1	0	0

Item	Quantity		
	1U12XL-C622 RPSU	1U12XL-EPYC/2T	1U12XL-EPYC/2T2E
Power Cable, 24PIN main power (350mm)	1	1	1
Display Cable (1550mm)	1	1	1
SMBus Y Cable (650mm)	1	1	1
USB Cable, USB 2.0 cable (830mm)	1	0	0
USB Cable, USB 3.0 cable (1350mm)	0	1	1
LAN Card (M350R)	1	0	0
Sliding Rail Kit	1	1	1
Cable Management Arm (Optional)	1	1	1
Quick Installation Guide	1	1	1
Asset Tag	1	1	1
Air Duct	2	1	1
Plastic Standoff	4	0	0



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

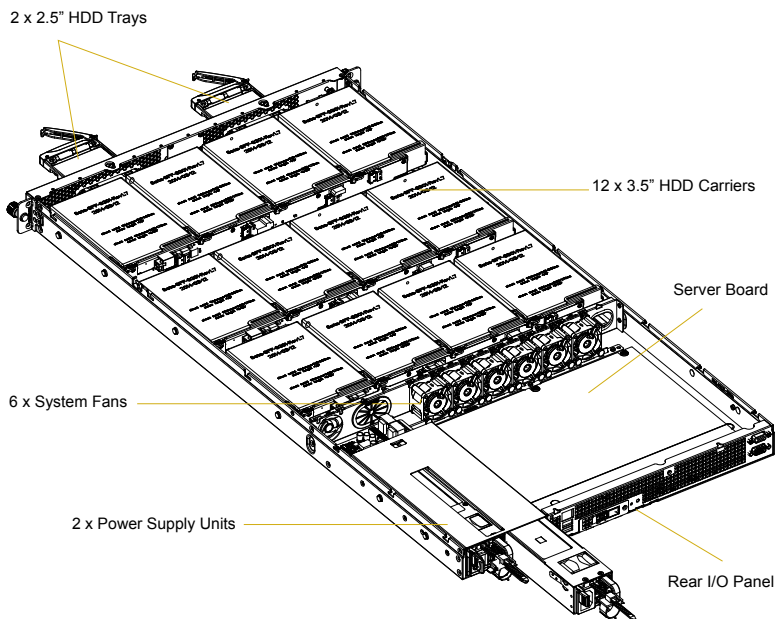
1.2 Specifications

1U12XL RPSU/EPYC Series	
System Physical Status	
Form Factor	1U Rackmount
Chassis Model	1U12L
Dimension (D x W x H)	860 x 438.5 x 43.2 mm (33.9 x 17.2 x 1.7 inches)
Support MB Size	EP2C622D16FM (12" x 10.5") EPYCD8 (12" x 9.6") EPYCD8-2T (12" x 9.6")
Front Panel	
Buttons	• Power On/Off button • UID button • System reset button
LEDs	• 1 x Power status LED • 1 x LAN activity LED • 1 x HDD status LED
I/O Ports	N/A
Hard Drive Bay	
Front Side Drive Bay	2 Hot-Swappable Bay for 2.5" 7mm SATA / SAS* / NVMe** HDD <i>*SAS HDD is going to be supported soon. Please contact our sales representatives for the information of when it is available.</i> <i>**Please contact our sales representatives for required accessories to support NVMe features.</i>
Front Side Backplane	Dual single Backplanes for each drive
Internal Side Drive Bay	12 Bay multi-function Hot-Swappable Bay for 3.5" or 2.5" SATA/SAS HDD/SSD* <i>*2.5" SATA/SAS HDD/SSD is supported with bracket.</i> <i>*A raid card is required to support SAS HDD/SSD. How many HDD/SSD are supported vary depending on the type of raid card you use.</i>
Internal Side Backplane	3x Quad ports Backplane for drives* <i>*SFF-8482 connector</i>
Power Supply	
Type	1U, Redundant
Output Watts	700W
Efficiency	Platinum
System Fan	
Fan	40 x 28 mm Fan x6

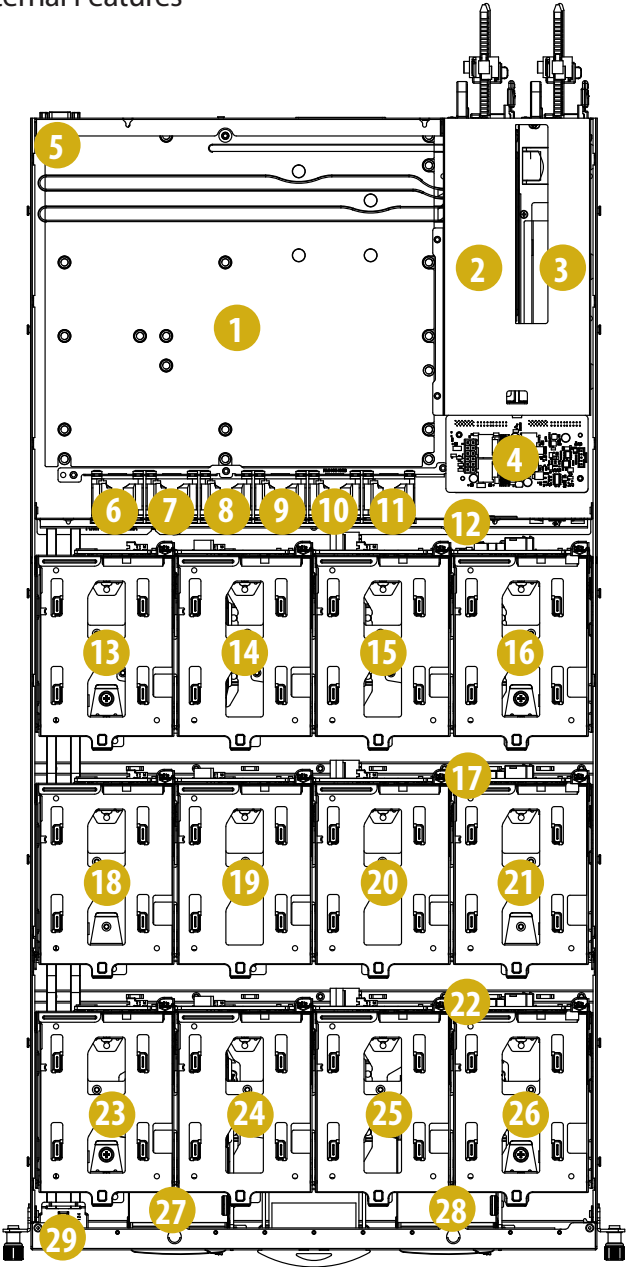
Chapter 2 Server System Overview

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

2.1 System Components

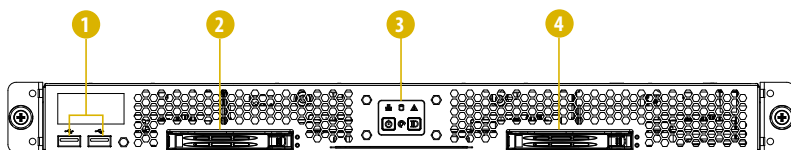


2.2 Internal Features



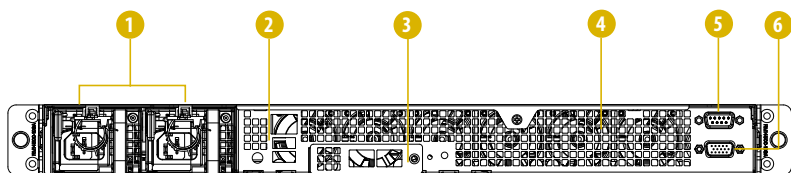
No.	From
1	Serverboard
2	Power Supply Unit (PSU) 2
3	Power Supply Unit (PSU) 1
4	Power Distribution Board (PDB)
5	VGA Port & COM Port <i>(supported depending on the server board)</i>
6	System Fan 6
7	System Fan 5
8	System Fan 4
9	System Fan 3
10	System Fan 2
11	System Fan 1
12	HDD Backplane Board (BPB)
13	3.5" HDD 8 (SSATA2)
14	3.5" HDD 9 (SSATA3)
15	3.5" HDD 10 (SSATA4)
16	3.5" HDD 11 (SSATA5)
17	HDD Backplane Board (BPB)
18	3.5" HDD 4 (SATA4)
19	3.5" HDD 5 (SATA5)
20	3.5" HDD 6 (SATA6)
21	3.5" HDD 7 (SATA7)
22	HDD Backplane Board (BPB)
23	3.5" HDD 0 (SATA0)
24	3.5" HDD 1 (SATA1)
25	3.5" HDD 2 (SATA2)
26	3.5" HDD 3 (SATA3)
27	2.5" SATA HDD 0 (Hot-swappable)
28	2.5" SATA HDD 1 (Hot-swappable)
29	USB 2.0 or 3.0 Ports <i>(supported depending on the server board)</i>

2.3 System Front Panel



No.	Description
1	2 x USB 2.0 or 3.0 Ports <i>(supported depending on the server board)</i>
2	2.5" SATA HDD Tray 0 (SSATA0)
3	Control Panel Buttons and LEDs
4	2.5" SATA HDD Tray 1 (SSATA1)

2.4 System Rear Panel

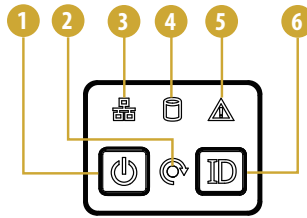


No.	Description
1	2 x Power Supply Units
2	I/O Shield (depends on the specification of the server board)*
3	1 x LAN Mezzanine Card Slot
4	Rear Vent*
5	COM Port <i>(supported depending on the server board)</i>
6	VGA Port <i>(supported depending on the server board)</i>

*The locations of I/O shield and rear vent may vary depending on the system and server board models.

2.5 Front Control Panel Buttons and LEDs

Front Control Panel



No.	Description
1	Power Button and LED
2	System Reset Button
3	LAN Status LED*
4	HDD Status LED*
5	System Fault LED
6	UID Button and LED*

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

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.

UID Button

Press the UID 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.

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.

Status LED Definitions

Power LED	
Status	Description
Green	Power on
Off	Power off

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

LAN LED	
Status	Description
Green	Link between system and network and no access
Blinking Green	Network access

HDD Status LED	
Status	Description
Off	No one or more HDDs are connected.
Green	The corresponding HDD is connected.

HDD Fail LED	
Status	Description
Off	Normal
Red	The corresponding HDD fails.

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 Supplies (Pre-installed)
- Server Board (Pre-installed)
- Power Distribution Board (Pre-installed)
- HDD Backplanes (Pre-installed)
- Fans (Pre-installed)



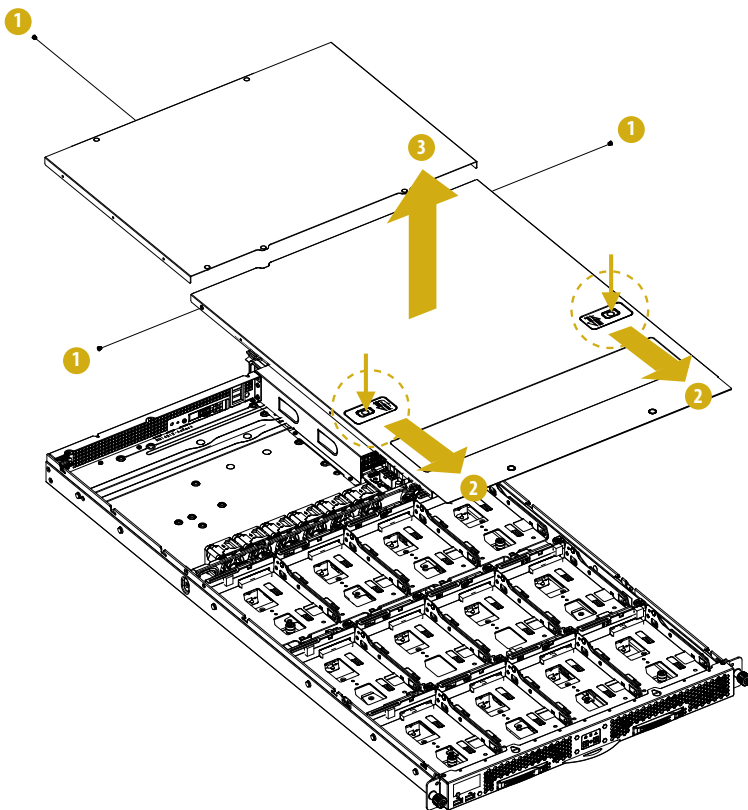
1. Some components are already pre-installed. Simply properly connect the relevant cables before or after installation. See the Quick Installation Guide for more details.
2. Refer to the user manual of the server board you use for instructions on how to install server board components.

3.1 Server Top Cover

Removing the Server Top Covers

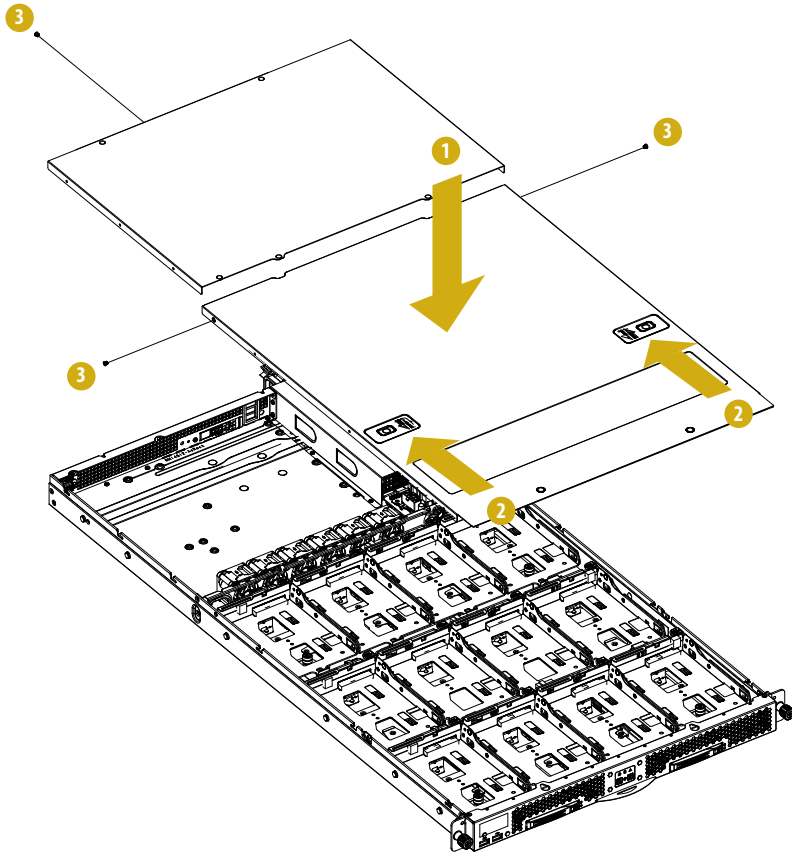


1. Before removing the top cover, power off the server and unplug the power cord.
2. The system must be operated with the chassis top cover installed to ensure proper cooling.



1. Remove the screws that secure the top covers to the chassis.
2. Press the latch button to release the cover, and push the top front cover toward the front of the chassis to remove the cover from the locked position.
3. Lift up and remove the top rear cover.

Installing the Server Top Covers

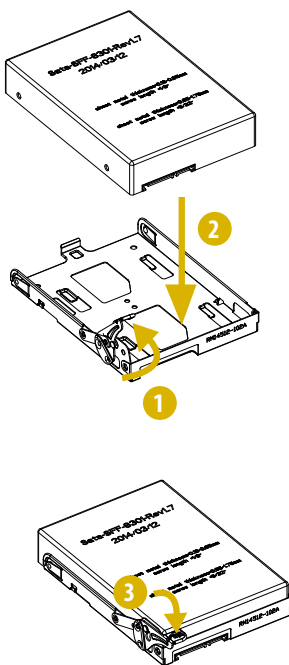


1. Lower the top covers on the chassis, making sure the side latches align with the cutouts.
2. Slide the top front cover toward the rear.
3. Secure the top covers with the screws.

3.2 Hard Disk Drive

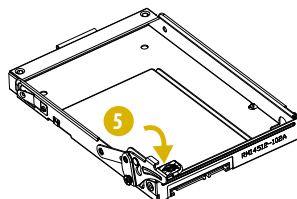
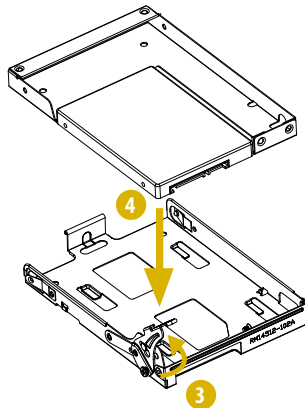
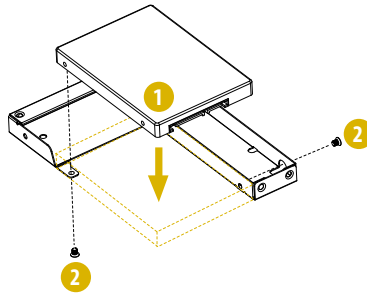
3.2.1 Installing a Hard Disk Drive into a 3.5" Hard Drive Carrier

1. Open the hard drive release lever.
2. Lower a 3.5" HDD into the carrier.
3. Carefully align the hard drive with the carrier and make sure it is well seated.
4. Close the hard drive release lever to secure the hard drive to the carrier.
5. Reverse the procedures to remove a 3.5" hard drive.



3.2.2 Installing a 2.5" Hard Disk Drive(or Solid-State Drive) into a 3.5" Hard Drive Carrier

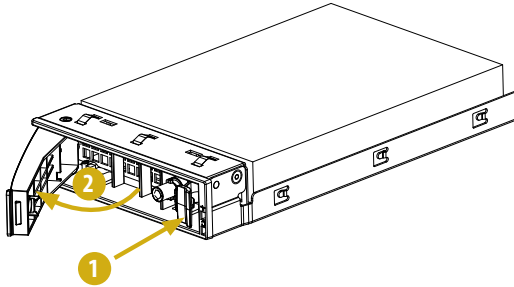
1. Install the 2.5" HDD/SSD into bracket and align with the 2 screw holes on bracket.
2. Secure it to the bracket the screws.
3. Open the hard drive release lever.
4. Lower the 2.5" HDD/SSD assembly into a 3.5" hard drive carrier.
5. Carefully align the assembly with the carrier and make sure it is well seated. Close the hard drive release lever to secure the hard drive assembly to the carrier.



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

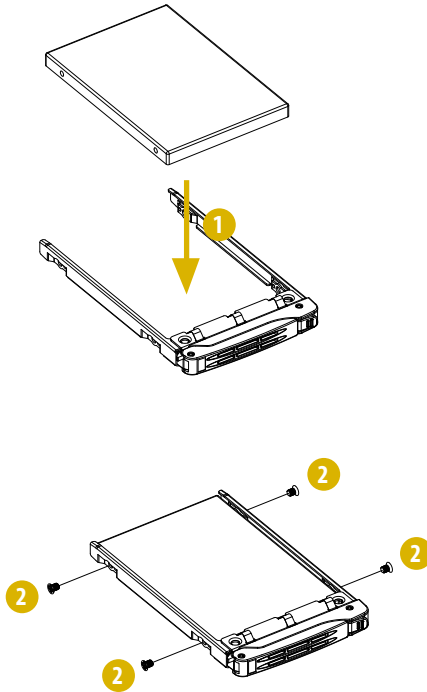
Removing 2.5" Hard Drive Trays from the Chassis

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.

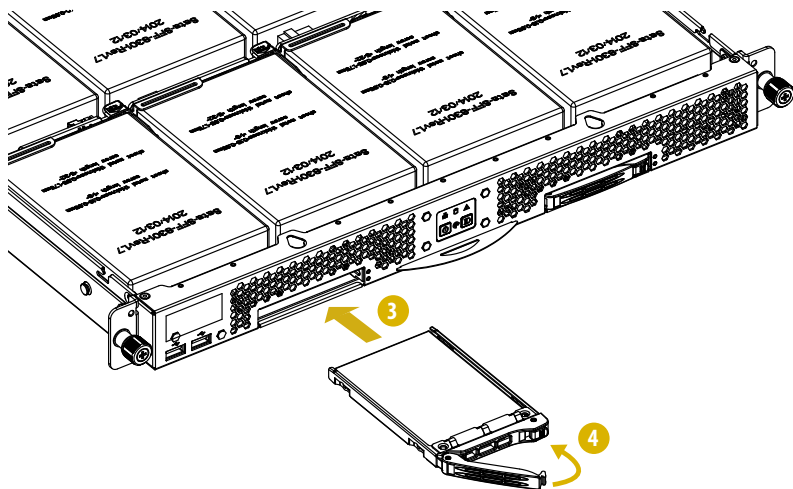


Installing a 2.5" Hard Drive to the Hard Drive Tray

1. 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.
2. Secure the hard drive using the four 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.

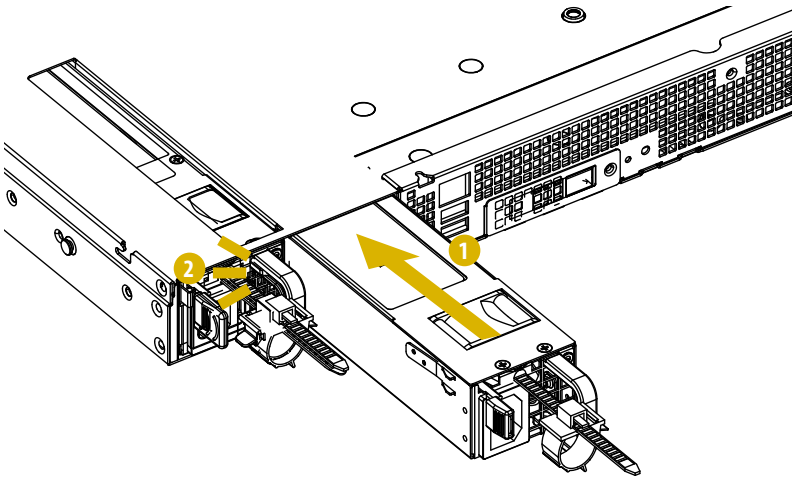


3.3 Power Supply

The 1U12XL-C622 RPSU can accommodate two AC or two DC power supplies in the bay at the rear of the chassis. Each unit provides up to 700 Watts of power. Only a single power supply is required for operation, with the second power supply purely as a redundant, load-sharing backup. It can be removed without affecting system operation.

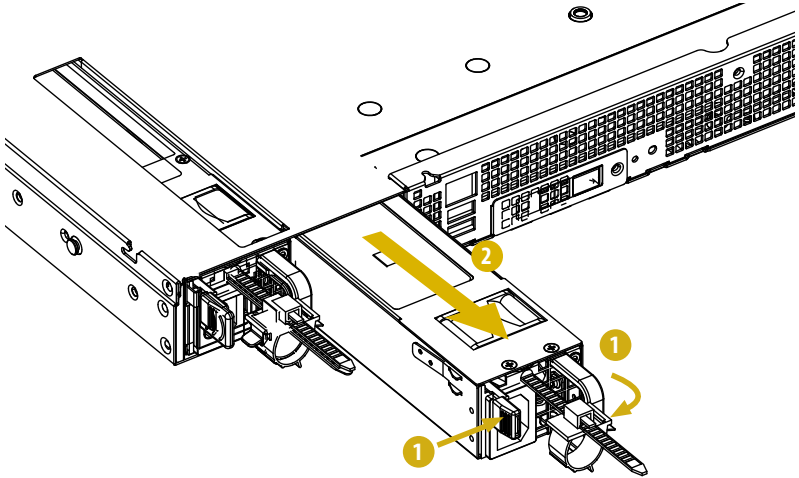
Installing the Power Supply

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

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.

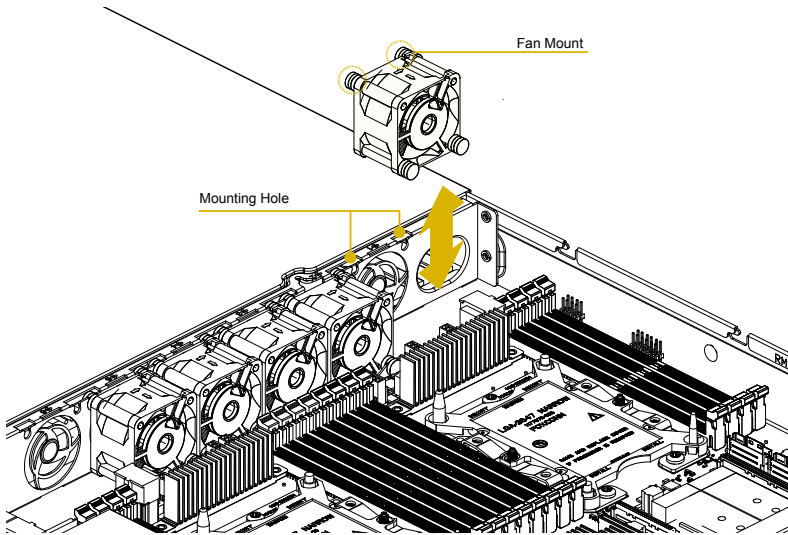


1. Before replacing the power supply, power off the server, unplug the power cord, and disconnect all wiring from the power supply.
2. In a redundant system, you do not need to power down the server.

3.4 System Fan

Replacing the System Fan

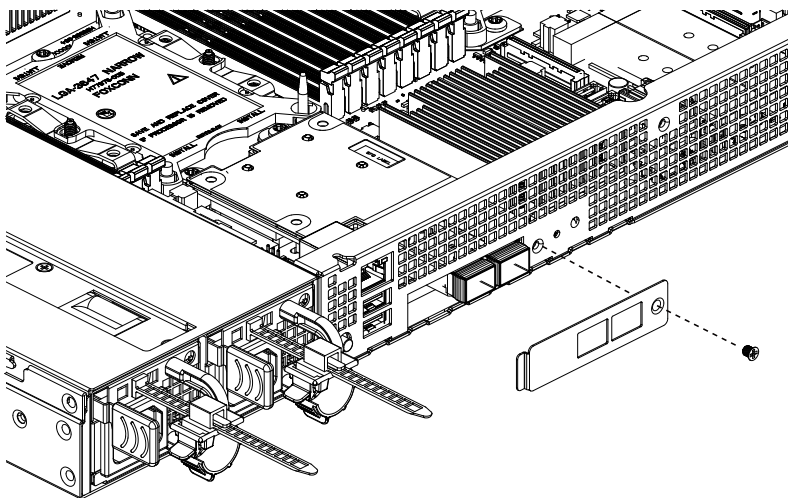
1. Unplug the fan connector and remove the failed fan.
2. Align the mounting holes on the fan bar with the fan mounts on the replacement fan corners.
3. Gently place the fan on the fan bar. Make sure the fan is well seated.
4. Connect the end of the fan cable to the fan connector.



3.5 LAN Mezzanine Card

You can use an optional Ethernet mezzanine card for additional LAN ports. Please be aware that the mezzanine card must be used in conjunction with a matching I/O module.

1. Remove the screws that secure the blanking plate on the chassis. Keep the screws for later use.
2. Gently insert the mezzanine card into the mezzanine card slot on the motherboard.
3. Use screws to secure the mezzanine card to the motherboard standoffs.
4. Tighten the screws to secure the matching I/O module to the chassis.



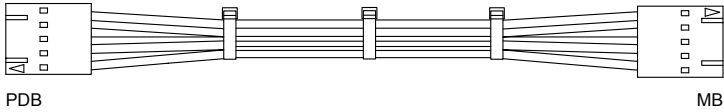
3.6 Chassis Cables

This section lists supported cables for your chassis system.

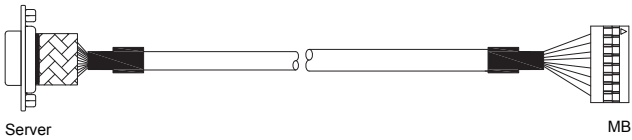


Cable type and quantity vary depending on the server board that comes with your system.

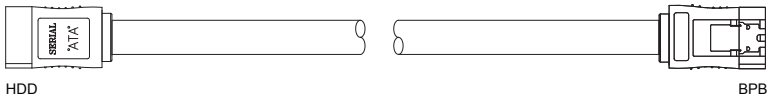
1. PMBus Cable (500mm) (Quantity: 1)



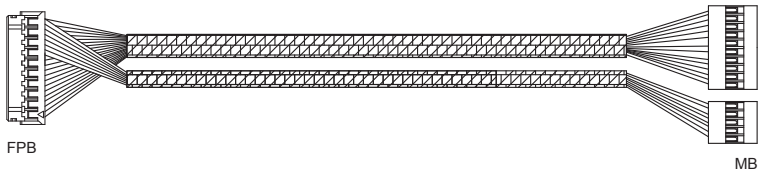
2. VGA cable, DB9P/M TO 2*8P HSG Cable (150mm) (Quantity: 1)



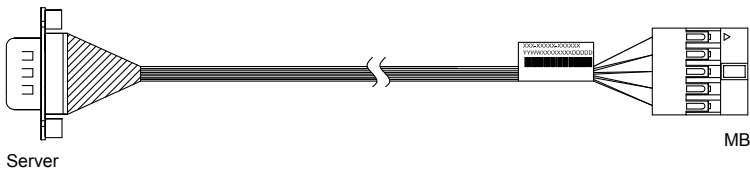
3. SATA Cable, (1140mm) (Quantity: 2)



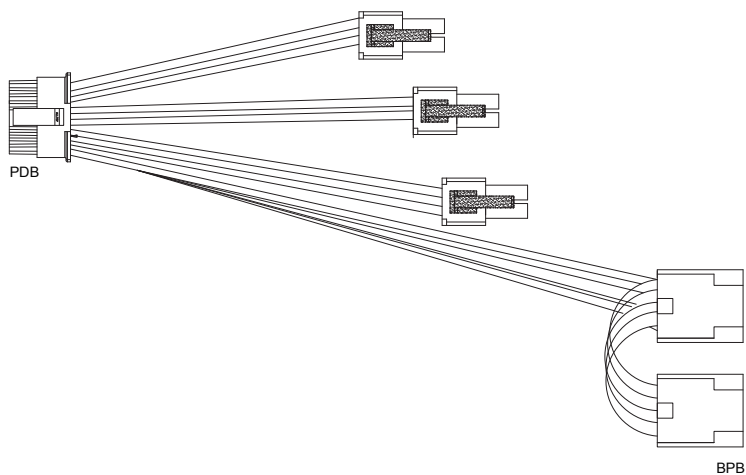
4. Display Cable (1550mm) (Quantity: 1)



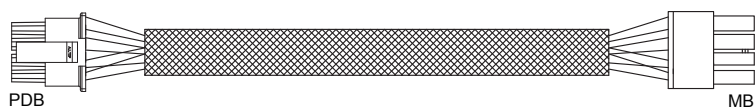
5. COM Dongle Cable (100mm) (Quantity: 1)



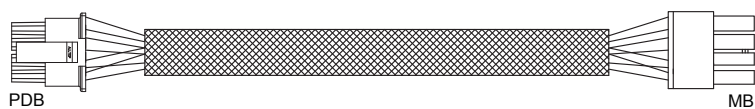
6. Power Y-Cable for backplane (700mm) (Quantity: 1)



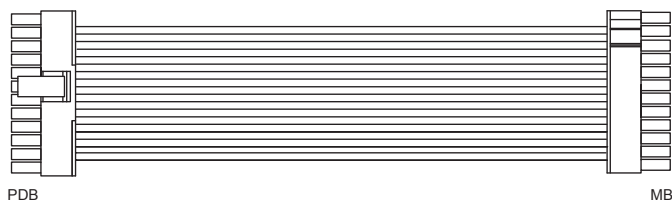
7. Power Cable, 8P CPU1 power (95mm) (Quantity: 1)



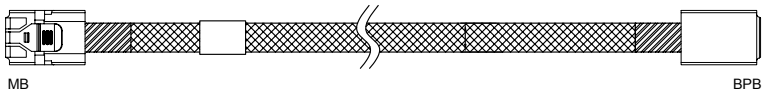
8. Power Cable, 8P CPU2 power (500mm) (Quantity: 1)



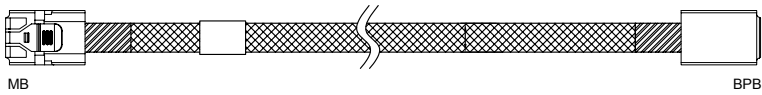
9. Power Cable, 24P main power (350mm) (Quantity: 1)



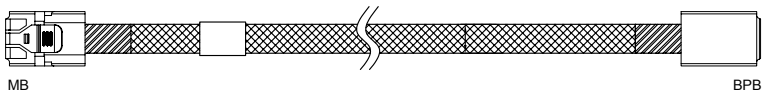
10. MiniSAS HD Cable (700mm) (Quantity: 1)



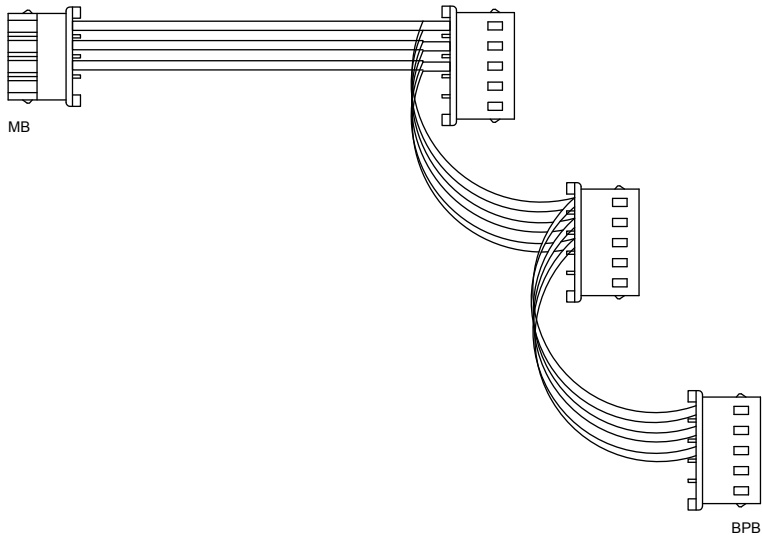
11. MiniSAS HD Cable (880mm) (Quantity: 1)



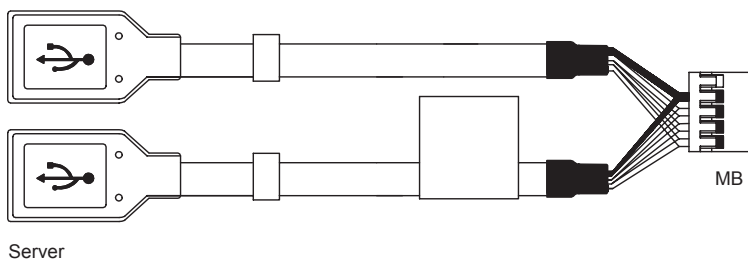
12. MiniSAS HD Cable (1040mm) (Quantity: 1)



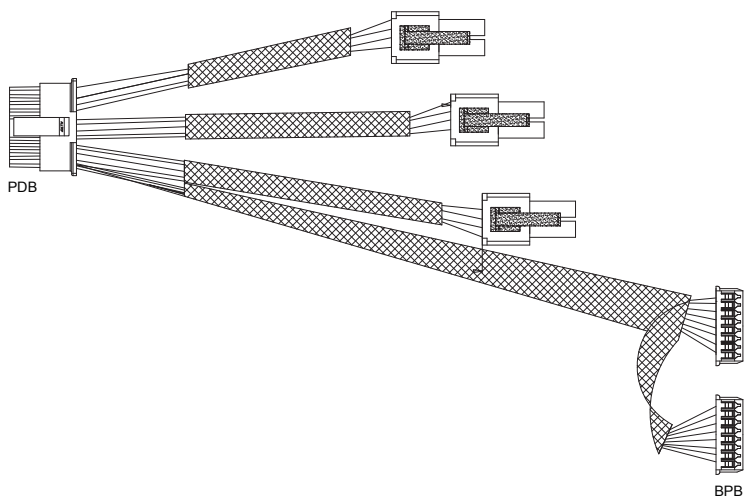
13. SMBus Y Cable (650mm) (Quantity: 1)



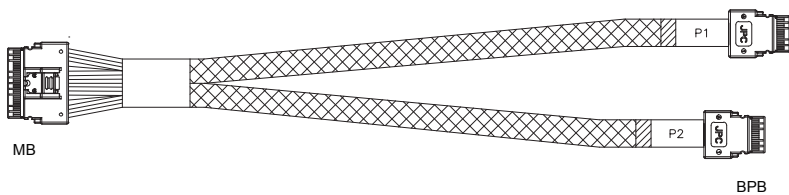
14. USB Cable, USB 2.0 Cable (830mm) (Quantity: 1)



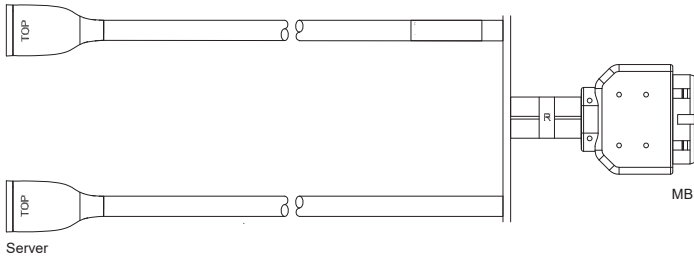
15. Power Y-Cable for backplane (NVME) (Optional) (700mm) (Quantity: 1)



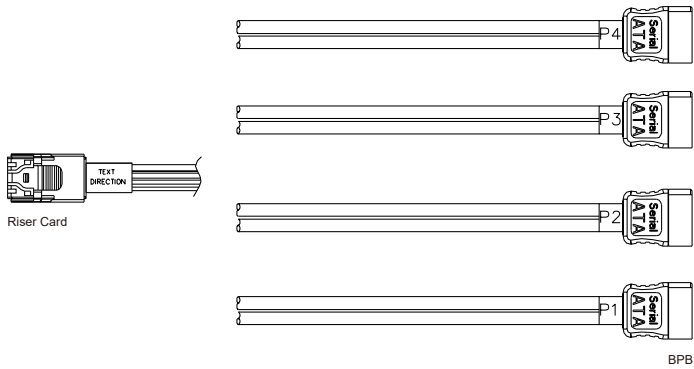
16. Slimline Cable (NVME) (Optional) (1000mm) (Quantity: 1)



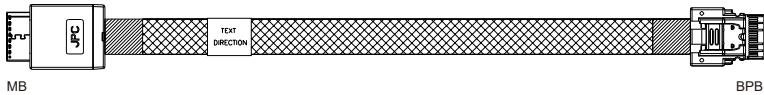
17. USB Cable, USB 3.0 Cable (1350mm) (Quantity: 1)



18. MiniSAS HD to 4 SATA Cable (1000m) (Quantity: 1)



19. Oculink x4 to Slimline x4 Cable (1000mm) (Quantity: 2)



Appendix Mezzanine Card Support List

This motherboard supports the following ASRock Rack mezzanine cards.

1U12XL-C622 RPSU:

Mezz Card Type	Mezz Slot Type	Model
LAN Card	Mezz Type A	M350R
LAN Card	Mezz Type A	MX710R
PHY Card	Mezz Type C	MP-557R2
PHY Card	Mezz Type C	MP-1543R4
PHY Card	Mezz Type C	MP-4223R4 (2 x 10G + 2 x 1G)
PHY Card	Mezz Type C	MP-4227R2

**Please refer to our website for the latest support list.
Due to mechanical limits, use one type of the mezzanine card at a time.

1U12XL-EPYC/2T / 1U12XL-EPYC/2T2E: No mezzanine cards supported