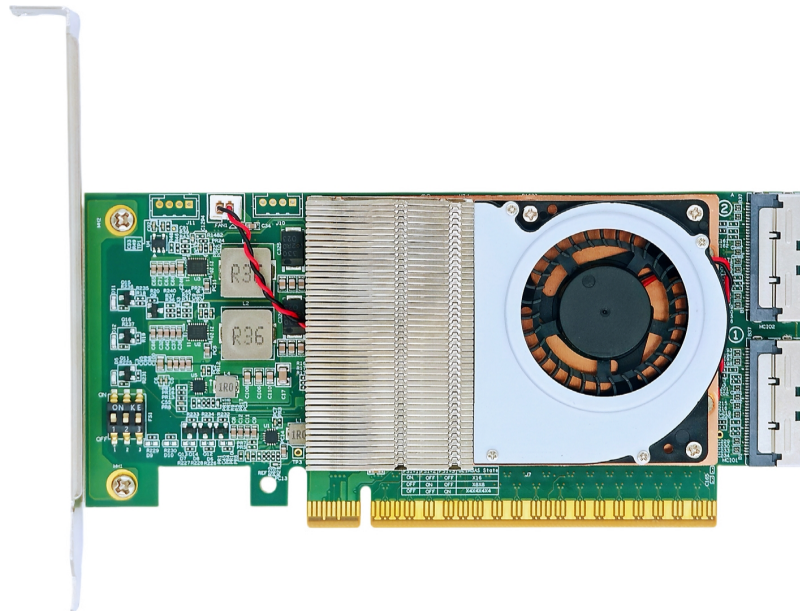




R1624L NVMe Switch Adapter User Guide



V1.01 - June 30, 2026

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1. Overview

The R1624L is a PCIe 5.0 x16 to 2x MCIO x8 Retimer adapter card designed for high-performance computing and storage. It features a Retimer chipset to ensure data transfer rate at 64GB/s, supports lane splitting, and is compatible with U.2 NVMe SSDs, backplanes, and GPUs.

1.1. Key Features

- Dedicated PCIe 5.0 x16 host interface
- Data transfer rate 32GT/s
- Provide two MCIO (SFF-1016 8x) connectors
- Up to four dedicated NVMe devices
- Support switchable lane configurations: x16, x8x8, or x4x4x4x4
- Secure Boot
- Complies with SFF-TA-1016 Rev1.1
- Support Backplane
- All operating systems that support the PCIe standard (Windows / Linux for HPT Utility Tool)

2. R1624L Hardware Description

2.1. R1624L Layout

The following figure shows the key components of the R1624L.

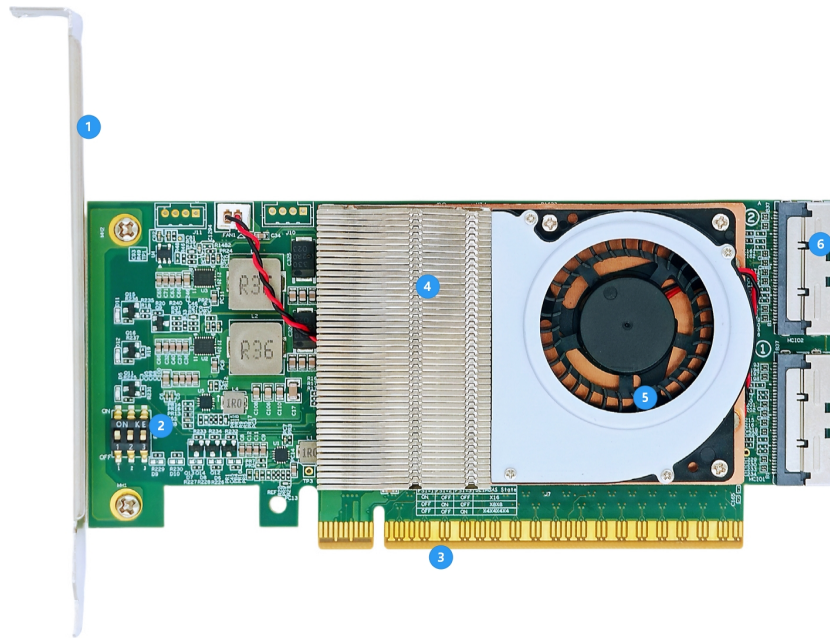


Table 1: Key component of the R1624L

Number	Type	Description
①	Bracket	Full-height bracket (optional low-profile bracket included). The R1624L is secured to the chassis by the bracket.
②	Switch	Switches (FS1-1, FS1-2, FS1-3) for PCIe lane configuration (x16 / x8x8 / x4x4x4x4). Set before powering on the system.
③	PCIe Host Interface	PCIe 5.0 x16 host interface. The interface between the R1624L and the host system. With the PCIe interface, this connector provides power to the board.
④	Heatsink	Passive heatsink for cooling the Retimer chipset and other critical components.
⑤	Fan	Active cooling fan to assist heat dissipation from the heatsink.
⑥	Storage Interface	Two MCIO (SFF-1016 8x) internal connectors. Used to connect the R1624L to NVMe drives or backplanes via MCIO cables.

2.2. Switch Configuration

The R1624L uses three switches (FS1-1, FS1-2, FS1-3) to select the PCIe lane output mode. Set the switches before powering on the system.

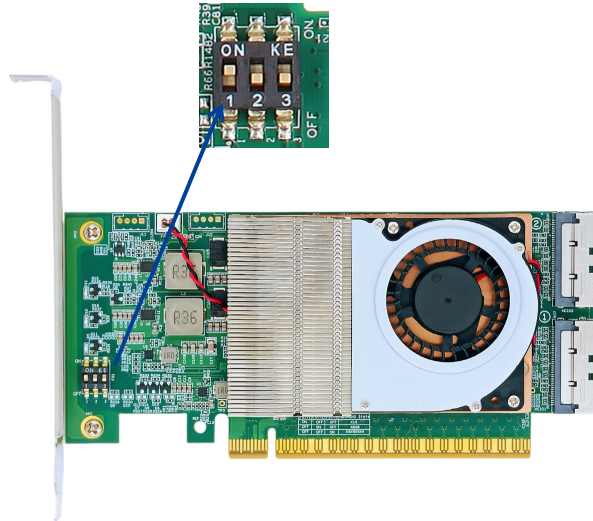


Table 2: Switch Configuration

Mode	Switch Position			Description
	FS1-1	FS1-2	FS1-3	
x16 (Default)	ON	OFF	OFF	Single x16 device (e.g., GPU)
				
x8x8	OFF	ON	OFF	Two x8 devices
				
x4x4x4x4	OFF	OFF	ON	Four x4 NVMe drives
				

Note: Changing the switch setting changes the lane configuration. The adapter firmware must also match the selected output mode. Power off the system before adjusting the switches.

2.3. PCIe Host Interface

The R1624L's PCIe 5.0 host interface provides maximum transmission. Other PCIe host interface features include the following:

- 16-lane PCIe host interface
- Support of x16 link width
- Data transfer rate 32GT/s

2.4. Storage Interface

The R1624L has two MCIO (SFF-1016 8x) interfaces. Other storage interface features include the following:

- Dedicated PCIe 5.0 x8 per port
- Supports up to four NVMe devices (up to x4 lanes, U.2/U.3 media)

2.5. Basic Specifications

The following table describes the basic specifications of the R1624L.

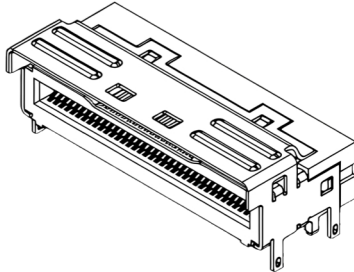
Table 3: Basic Specifications of R1624L

Model	R1624L
Form Factor	Low Profile, Single Width
Dimension	147mm(L) * 68.5mm(W) * 17mm(D)
Weight	160g
Power consumption (Typical)	15.7W
Power supply	PCIe: 12V/ 3.3V
Work Temperature & Humidity	+5°C~+40°C, 10%~90% R.H.
Storage Temperature & Humidity	-40°C~+70°C, 10%~93% R.H.

3. R1624L MCIO Connector

3.1. MCIO Connector Pin Designation

The R1624L has two x8 MCIO connectors.



3.2. MCIO Connector Pinout

The following table defines the R1624L's MCIO connector pinouts.

Table 4: MCIO Connector Pinouts

1#				2#			
Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
A1	GND	B1	GND	A1	GND	B1	GND
A2	PE0_RX_DP0	B2	PE0_TX_DP0	A2	PE0_RX_DP8	B2	PE0_TX_DP8
A3	PE0_RX_DN0	B3	PE0_TX_DN0	A3	PE0_RX_DN8	B3	PE0_TX_DN8
A4	GND	B4	GND	A4	GND	B4	GND
A5	PE0_RX_DP1	B5	PE0_TX_DP1	A5	PE0_RX_DP9	B5	PE0_TX_DP9
A6	PE0_RX_DN1	B6	PE0_TX_DN1	A6	PE0_RX_DN9	B6	PE0_TX_DN9
A7	GND	B7	GND	A7	GND	B7	GND
A8	NC	B8	SMB_SLIM1_SCL1	A8	NC	B8	SMB_SLIM2_SCL1
A9	WAKE_LVC3_N	B9	SMB_SLIM1_SDA1	A9	WAKE_LVC3_N	B9	SMB_SLIM2_SDA1
A10	GND	B10	GND	A10	GND	B10	GND
A11	CLK_SLIM1_DP0	B11	SLIM_1_PERST0_N	A11	CLK_SLIM2_DP2	B11	SLIM_2_PERST0_N
A12	CLK_SLIM1_DN0	B12	SLIM_1_PRSENT0_N	A12	CLK_SLIM2_DN2	B12	SLIM_2_PRSENT0_N
A13	GND	B13	GND	A13	GND	B13	GND
A14	PE0_RX_DP2	B14	PE0_TX_DP2	A14	PE0_RX_DP10	B14	PE0_TX_DP10
A15	PE0_RX_DN2	B15	PE0_TX_DN2	A15	PE0_RX_DN10	B15	PE0_TX_DN10
A16	GND	B16	GND	A16	GND	B16	GND
A17	PE0_RX_DP3	B17	PE0_TX_DP3	A17	PE0_RX_DP11	B17	PE0_TX_DP11
A18	PE0_RX_DN3	B18	PE0_TX_DN3	A18	PE0_RX_DN11	B18	PE0_TX_DN11
A19	GND	B19	GND	A19	GND	B19	GND

A20	PE0_RX_DP4	B20	PE0_TX_DP4	A20	PE0_RX_DP12	B20	PE0_TX_DP12
A21	PE0_RX_DN4	B21	PE0_TX_DN4	A21	PE0_RX_DN12	B21	PE0_TX_DN12
A22	GND	B22	GND	A22	GND	B22	GND
A23	PE0_RX_DP5	B23	PE0_TX_DP5	A23	PE0_RX_DP13	B23	PE0_TX_DP13
A24	PE0_RX_DN5	B24	PE0_TX_DN5	A24	PE0_RX_DN13	B24	PE0_TX_DN13
A25	GND	B25	GND	A25	GND	B25	GND
A26	NC	B26	SMB_SLIM1_SCL2	A26	NC	B26	SMB_SLIM2_SCL2
A27	NC	B27	SMB_SLIM1_SDA2	A27	NC	B27	SMB_SLIM2_SDA2
A28	GND	B28	GND	A28	GND	B28	GND
A29	CLK_SLIM1_DP1	B29	SLIM_1_PERST1_N	A29	CLK_SLIM2_DP3	B29	SLIM_2_PERST1_N
A30	CLK_SLIM1_DN1	B30	SLIM_1_PRSTNT1_N	A30	CLK_SLIM2_DN3	B30	SLIM_2_PRSTNT1_N
A31	GND	B31	GND	A31	GND	B31	GND
A32	PE0_RX_DP6	B32	PE0_TX_DP6	A32	PE0_RX_DP14	B32	PE0_TX_DP14
A33	PE0_RX_DN6	B33	PE0_TX_DN6	A33	PE0_RX_DN14	B33	PE0_TX_DN14
A34	GND	B34	GND	A34	GND	B34	GND
A35	PE0_RX_DP7	B35	PE0_TX_DP7	A35	PE0_RX_DP15	B35	PE0_TX_DP15
A36	PE0_RX_DN7	B36	PE0_TX_DN7	A36	PE0_RX_DN15	B36	PE0_TX_DN15
A37	GND	B37	GND	A37	GND	B37	GND

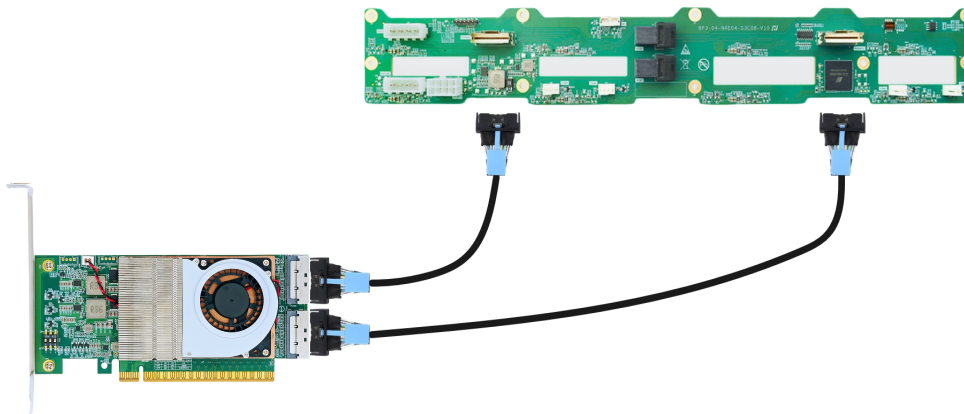
3.3. Backplane Connector Support

The R1624L supports the Backplane.

The following steps show the connection of the backplane to the R1624L.

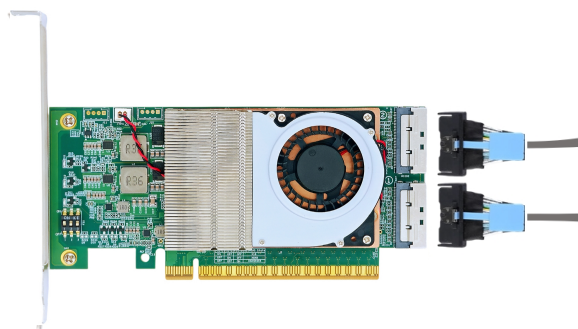
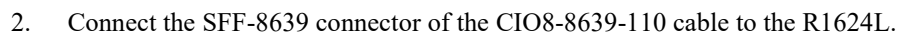
1. Connect the SSDs to the backplane.
2. Connect the MCIO connectors to the backplane.
3. Connect the MCIO connector to the R1624L.

The following shows the R1624L connected to a backplane via MCIO cables, with the four SSDs installed on the backplane.





1. Connect the SFF-8639 connector of the CIO8-8639-110 cable to the NVMe SSD, and connect the 15-pin SATA power connector to the power supply.

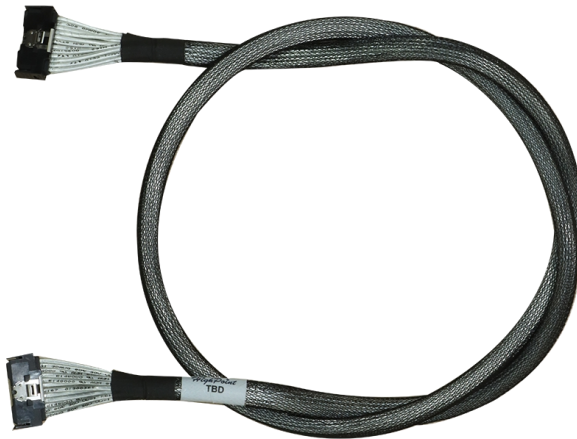


4.2. CIO8-CIO8-110

MCIO Host to MCIO Device cable. Each cable can host up to two NVMe SSDs. Length 1M.

4.2.1. Cable Diagram

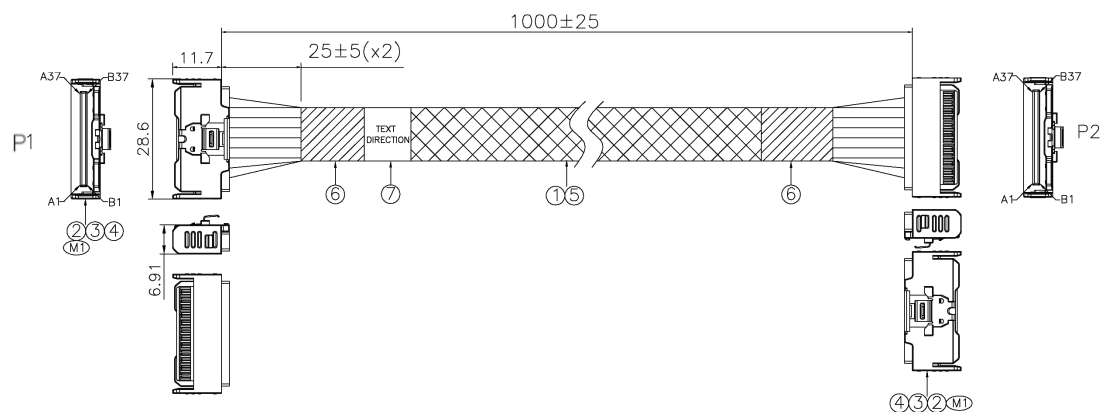
MCIO



MCIO

4.2.2. Cable Drawings and Pinouts

The following figure shows the pinout for the HighPoint CIO8-CIO8-110 cable, one x8 MCIO to one x8 MCIO connection.



WIRING TABLE

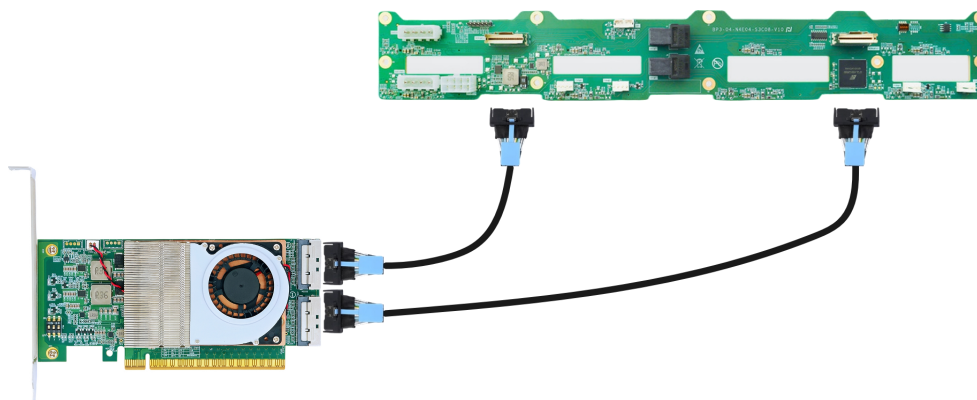
P1		P2		P1		P2	
GROUND	B37		A37	GROUND	A37		B37
TX7-	B36		A36	RX7-	A36		B36
TX7+	B35		A35	RX7+	A35		B35
GROUND	B34		A34	GROUND	A34		B34
TX6-	B33		A33	RX6-	A33		B33
TX6+	B32		A32	RX6+	A32		B32
GROUND	B31		A31	GROUND	A31		B31
SB4-	B30		A30	SB8-	A30		B30
SB4+	B29		A29	SB8+	A29		B29
GROUND	B28		A28	GROUND	A28		B28
SB3-	B27		A27	SB7-	A27		B27
SB3+	B26		A26	SB7+	A26		B26
GROUND	B25		A25	GROUND	A25		B25
TX5-	B24		A24	RX5-	A24		B24
TX5+	B23		A23	RX5+	A23		B23
GROUND	B22		A22	GROUND	A22		B22
TX4-	B21		A21	RX4-	A21		B21
TX4+	B20		A20	RX4+	A20		B20
GROUND	B19		A19	GROUND	A19		B19
TX3-	B18		A18	RX3-	A18		B18
TX3+	B17		A17	RX3+	A17		B17
GROUND	B16		A16	GROUND	A16		B16
TX2-	B15		A15	RX2-	A15		B15
TX2+	B14		A14	RX2+	A14		B14
GROUND	B13		A13	GROUND	A13		B13
SB2-	B12		A12	SB6-	A12		B12
SB2+	B11		A11	SB6+	A11		B11
GROUND	B10		A10	GROUND	A10		B10
SB1-	B9		A9	SB5-	A9		B9
SB1+	B8		A8	SB5+	A8		B8
GROUND	B7		A7	GROUND	A7		B7
TX1-	B6		A6	RX1-	A6		B6
TX1+	B5		A5	RX1+	A5		B5
GROUND	B4		A4	GROUND	A4		B4
TX0-	B3		A3	RX0-	A3		B3
TX0+	B2		A2	RX0+	A2		B2
GROUND	B1		A1	GROUND	A1		B1

4.2.3. Cable Connection

The following steps show the connection of the backplane to the R1624L using the CIO8-CIO8-110 cable.

1. Connect the MCIO connector of the CIO8-CIO8-110 cable to the backplane.
2. Connect the MCIO connectors to the backplane.
3. Connect the MCIO connector to the R1624L.

The following shows the R1624L connected to a backplane via MCIO cables, with the four SSDs installed on the backplane.



5. R1624L Installation Instructions

This chapter describes how to install the R1624L adapter in x16, x8x8, or x4x4x4x4 mode.

Notes:

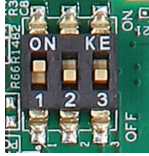
PCIe Bifurcation is a BIOS setting. Incorrect settings may prevent device detection. Menu paths vary by motherboard.

Replace the full-height bracket with the optional low-profile bracket if required.

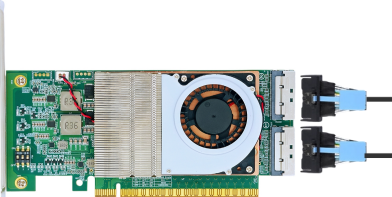
The cable connection images in the steps are for reference only. Refer to the Optional Certified Cable Accessories for specific cable models.

5.1. x16 Mode (Single Device e.g., GPU)

1. Use a wired ESD wrist strap that is properly grounded.
2. Unpack and remove the R1624L and check it for damage. If it appears damaged, please get in touch with HighPoint Technical Support.
3. Ensure the system is powered off and the AC power cord is disconnected.
4. Insert the R1624L, connect cables, and install the single device (For example: GPU).
 - 1) Set the switches to x16 mode (FS1-1: ON, FS1-2: OFF, FS1-3: OFF).



- 2) Connect the MCIO connectors of CIO8-CIO8-110 cables to the R1624L.



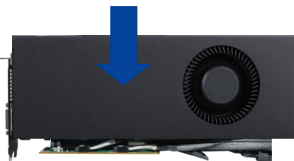
- 3) Connect the MCIO connector of the CIO8-CIO8-110 cable to the MCIO- to- PCIe adapter.



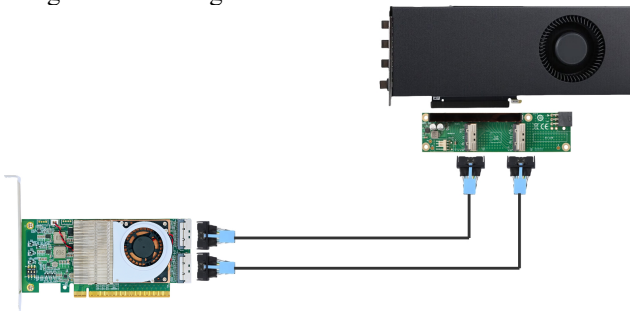
- 4) Connect the system's power connector to the external power port.



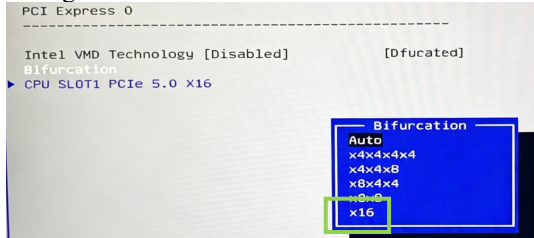
- 5) Hold the GPU by its edges, insert it connector-down into the PCIe slot.



The following shows the R1624L connected to a MCIO- to- PCIe adapter (e.g., MCIO-PCIEX16-G5A) via MCIO cables, with the GPU installed on the adapter. All 16 lanes are assigned to this single device.



- 6) Insert the R1624L into the motherboard's PCIe x16 slot. Press down gently but firmly to seat it correctly.
5. Reconnect the AC power cord and power on the system.
6. Set the motherboard's PCIe Bifurcation Configuration.
Using a Supermicro motherboard as an example:
 - 1) Enter BIOS Setup by pressing **Del** or **F2** during boot.
 - 2) Navigate to **Advanced**→**Chipset Configuration**→**IIO Configuration**→**CPU Configuration**→**PCI Express**.
 - 3) Locate the setting for your target PCIe x16 slot.
 - 4) Change the mode from **Auto** to **x16**.



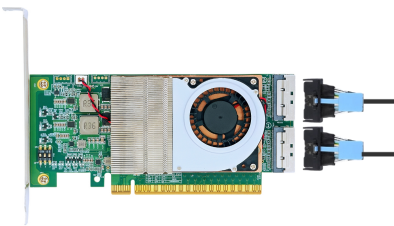
- 5) Save & Exit and reboot.

5.2. x8x8 Mode (Two Devices e.g., Two GPUs)

1. Use a wired ESD wrist strap that is properly grounded.
2. Unpack and remove the R1624L and check it for damage. If it appears damaged, please get in touch with HighPoint Technical Support.
3. Ensure the system is powered off and the AC power cord is disconnected.
4. Insert the R1624L, connect cables, and install the two devices (For example: two GPUs).

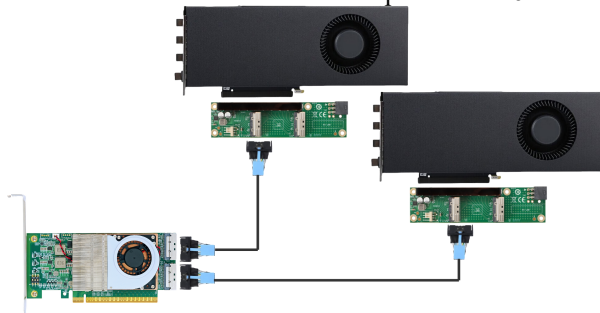


- 1) Set the switches to x8x8 mode (FS1-1: OFF, FS1-2: ON, FS1-3: OFF).
- 2) Connect the MCIO connectors of CIO8-CIO8-110 cables to the R1624L.

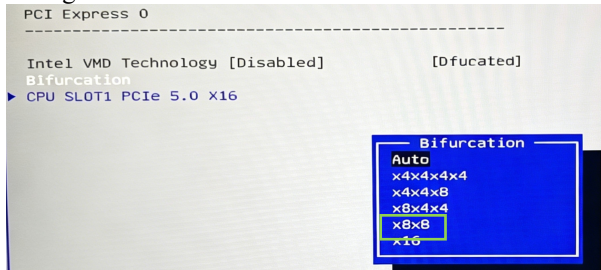


- 3) Connect the MCIO connector of the CIO8-CIO8-110 cable to Port 1 of the MCIO-to-PCIe adapter.
- 4) Connect the system's power connector to the external power port.
- 5) Hold the GPU by its edges, insert it connector-down into the PCIe slot.
- 6) Repeat steps 3)- 5) for the second GPU.

The following shows the R1624L connected to two MCIO-to-PCIe adapters via MCIO cables, with two GPUs installed on the adapters. The 16 lanes are split into two x8 groups.



- 7) Insert the R1624L into the motherboard's PCIe x16 slot. Press down gently but firmly to seat it correctly.
5. Reconnect the AC power cord and power on the system.
6. Set the motherboard's PCIe Bifurcation Configuration.
Using a Supermicro motherboard as an example:
 - 1) Enter BIOS Setup by pressing **Del** or **F2** during boot.
 - 2) Navigate to **Advanced** → **PCIe/PCI/PnP Configuration** → **PCIe slot# Configuration**.
 - 3) Locate the setting for your target PCIe x16 slot.
 - 4) Change the mode from **Auto** to **x8x8**.



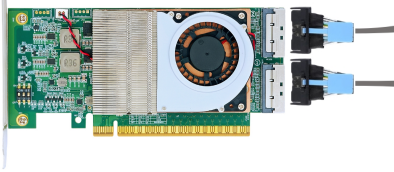
- 5) Save & Exit and reboot.

5.3. x4x4x4x4 Mode (Four Devices e.g., Four U.2 NVMe Drives)

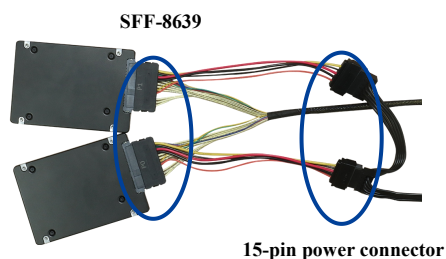
1. Use a wired ESD wrist strap that is properly grounded.
2. Unpack and remove the R1624L and check it for damage. If it appears damaged, please get in touch with HighPoint Technical Support.
3. Ensure the system is powered off and the AC power cord is disconnected.
4. Insert the R1624L, connect cables, and install the four devices (For example: Four U.2 NVMe Drives).
 - 1) Set the switches to x4x4x4x4 mode (FS1-1: OFF, FS1-2: OFF, FS1-3: ON).



- 2) Connect the MCIO connectors of two CIO8-8639-110 cable to the R1624L.

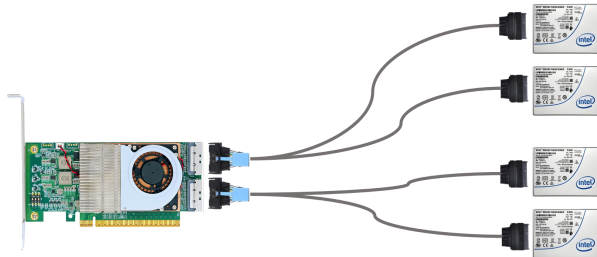


- 3) Connect the SFF-8639 connector of the CIO8-8639-110 cable to the NVMe SSD, and connect the 15-pin power connector to the power supply.



4) Repeat steps 3) for the remaining NVMe Drives.

The following shows the R1624L connected directly to four U.2 NVMe drives via CIO8-8639-110 cables.



5) Insert the R1624L into the motherboard's PCIe x16 slot. Press down gently but firmly to seat it correctly.

5. Reconnect the AC power cord and power on the system.

6. Set the motherboard's PCIe Bifurcation Configuration.

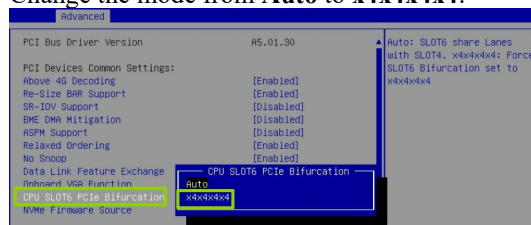
Using a Supermicro motherboard as an example:

1) Enter BIOS Setup by pressing **Del** or **F2** during boot.

2) Navigate to **Advanced** → **PCIe/PCI/PnP Configuration** → **PCIe slot# Configuration**.

3) Locate the setting for your target PCIe x16 slot.

4) Change the mode from **Auto** to **x4x4x4x4**.



5) Save & Exit and reboot.

6. Revision History

6.1. Version 1.00, June 10, 2026

Initial version.

6.2. Version 1.01, June 30, 2026

1. Update pictures.
2. Add Work Temperature and Humidity
3. Add Storage Temperature and Humidity.
4. Add Weight information.