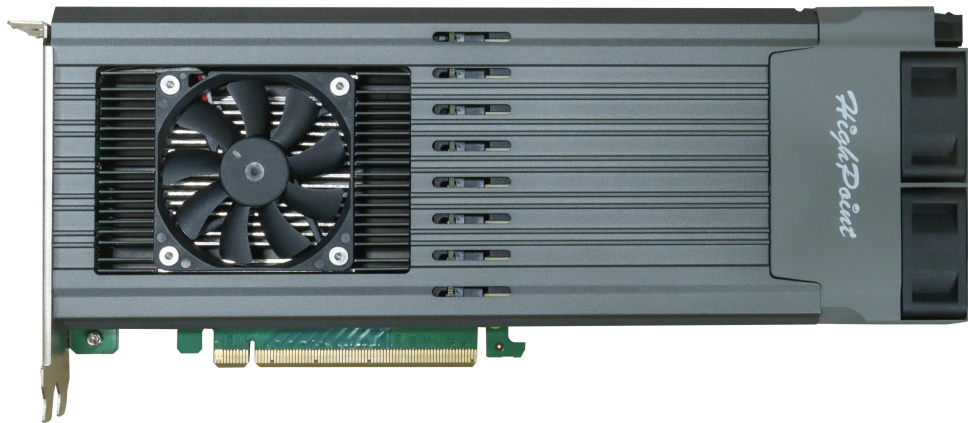# SSD7749M2 NVMe RAID AIC

User Guide

V1.01 - September 23, 2024

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1. Overview

The SSD7749M2 is the latest member of our PCIe Gen4 NVMe RAID AIC product family.

The SSD7749M2 M.2 NVMe AIC represents the next generation of compact RAID solutions and was designed for Industrial & Edge Server applications that demand a compact, easily integrated, ultra-high-density RAID storage solution with blistering PCIe Gen4 x16 performance and enterprise-class reliability and endurance.

With a hardware footprint similar to that of a modern dual-width PCIe graphics adapter, the SSD7749M2 can directly host up to sixteen 2242/ 2260/ 2280 form-factor DC-class M.2 NVMe SSDs and deliver up to 28,000MB/s of transfer bandwidth. The unique dual-width AIC architecture incorporates a tool-less SSD loading system and robust precision-engineered cooling system designed to mitigate the threat of thermal throttling to ensure each hosted SSD performs optimally under the most grueling workloads.

1.1. Key Features

- Ultra-High Density NVMe RAID Solution

- Dedicated PCIe 4.0 x16 host interface

- Support data transfer rate 32GB/s

- Support sixteen dedicated M.2 NVMe devices

- Robust, Dual-Width NVMe Cooling Solution

- Tool-less SSD Loading System

- Support the following Operating Systems:

    - Windows 11,10/ Server 2022,2019,2016/ Microsoft Hyper-V

    - RHEL/Debian/Ubuntu/Fedora/Proxmox/Rocky Linux (Linux kernel 3.10 and later)
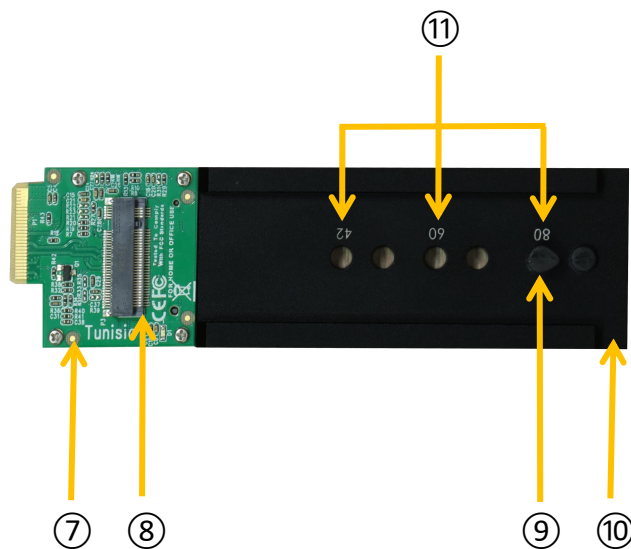
    - macOS

2. SSD7749M2 Hardware Description

2.1. SSD7749M2 Layout

The layout of the SSD7749M2 is presented in two parts.

● **Front View**

① ② ③ ④ ⑤ ⑥

● **NVMe SSD Tray View**

⑦ ⑧ ⑨ ⑩ ⑪
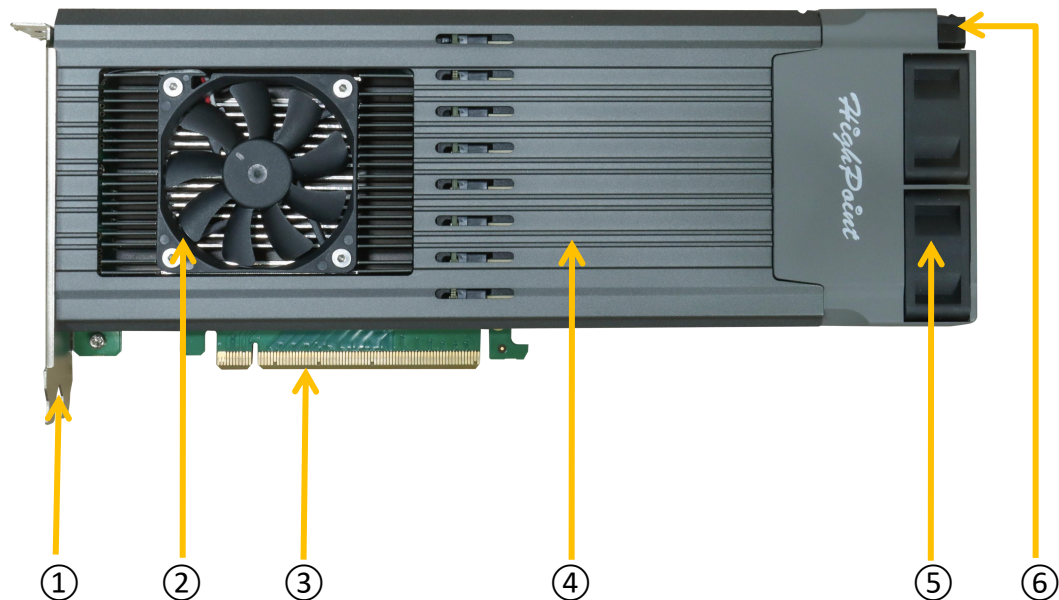
Table 2: Key component of the SSD7749M2

Number	Type	Description
①	Bracket	Double Width Full Height Ventilate Bracket. The SSD7749M2 is secured to the chassis by the Full-height bracket.
②	Embedded Cooling Fan	The fan is used to dissipate heat from institutions prone to heat generation.
③	PCIe Host Interface	The interface between the storage adapter and the host system. With the PCIe interface, this connector provides power to the board.
④	Heatsink	Full-length anodized aluminum heatsink ensures the SSD7749M2 maintains a stable operating temperature under high load conditions.
⑤	Low-Noise Cooling Fan	The fan is used to dissipate heat from the SSDs in the institution.
⑥	External Power Port	The system power supply unit powers the SSD7749M2 through this port connected to the external 6-pin PCIe power cable.
⑦	M.2 Adapter	The M.2 adapter is used for E1.s SSDs to M.2 SSDs.
⑧	M.2 Port	The M.2 port is an interface for connecting M.2 SSDs.
⑨	Rubber	The rubber is used to secure the M.2 SSD.
⑩	Tray	The tray is used to secure and protect two M.2 SSDs.
⑪	M.2 Rubber Hole Location	The M.2 rubber hole location is available in 42, 60, and 80 sizes to accommodate 2242, 2260, and 2280 sizes of M.2 SSDs.

2.2. PCIe Host Interface

The SSD7749M2's PCIe 4.0 host interface provides maximum transmission.

Other PCIe host interface features include the following:

- 16-lane PCIe host interface

- Support of x16 link width

- 16-lane aggregate bandwidth of up to 32GB/s

2.3. Storage Interface

The SSD7749M2 has sixteen M.2 connectors.

Other storage interface features include the following:

- Dedicated PCIe 4.0 x2 per port

- Supports up to sixteen NVMe devices (M.2 media)

- Data transfer at 4GB/s

2.4. Basic Specifications

The following table describes the basic specifications of the SSD7749M2.

Table 3: Basic Specifications of SSD7749M2

Model		SSD7749M2
Form Factor		Full-Height, Dual-Width
Weight		3.24 lbs
Dimension	Length	11.18"
	Width	1.53"
	Height	4.92"
Power consumption		17.28W
Power supply		PCIe 3.3V rails and the 12V rails
Work temperature		+5°C ~ + 55°C
Storage temperature		-20°C ~ +80°C
MTBF (Mean Time Before Failure)		920,585 Hours

3. SSD7749M2 Installation Instructions

1. Use a wired ESD wrist strap that is properly grounded.

2. Unpack and remove the SSD7749M2 and check it for damage. If it appears damaged, please contact HighPoint Technical Support.

3. Apply pressure at the mark to release the lock, and turn it counter-clockwise.
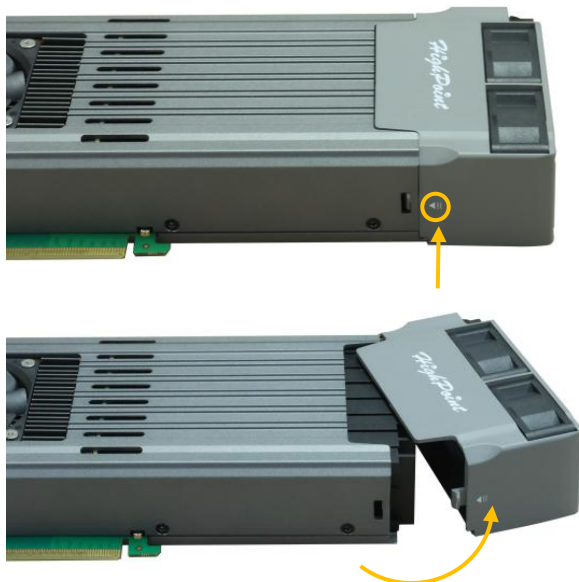
4. Gently remove the NVMe SSD tray from the SSD7749M2.

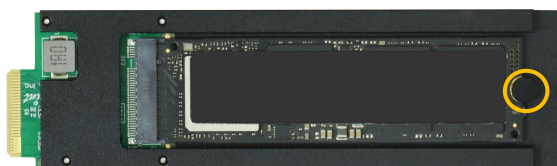5. Gently insert the SSD into the M.2 port of the NVMe SSD tray.
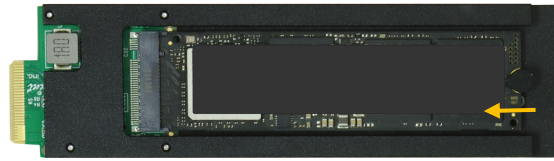

   Notes:
   Ensure the SSD contacts ("golden fingers") are clean before installation.
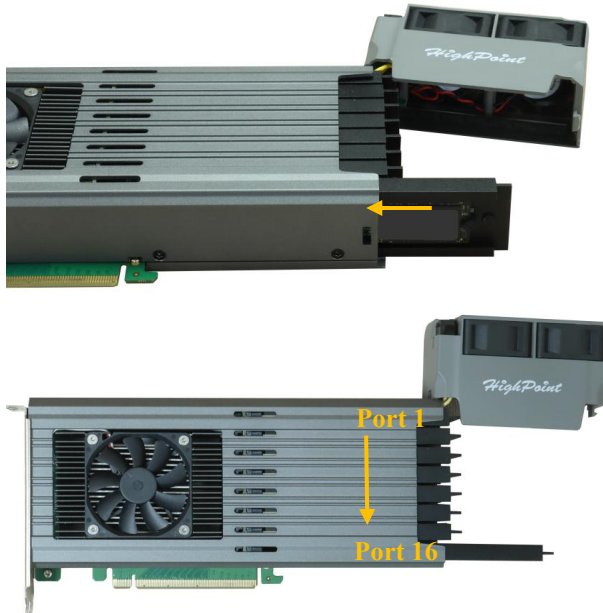   The SSD can be installed in front or rear of each NVMe SSD tray.

6. Press the right side of the rubber to align it and insert it into the retention hole on the end of the NVMe SSD.
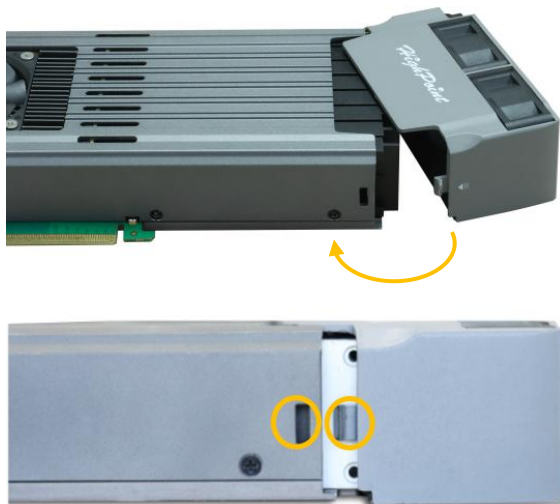
7.   Rotate the rubber to secure the SSD.

8.   After installing all SSDs, carefully insert the NVMe SSD trays into the slots.

Note: Ensure the NVMe SSD tray is carefully but securely mounted to each port. Loose connections can cause various stability and performance issues and may ultimately result in data loss.

9.   Align the fan module and press down to secure.

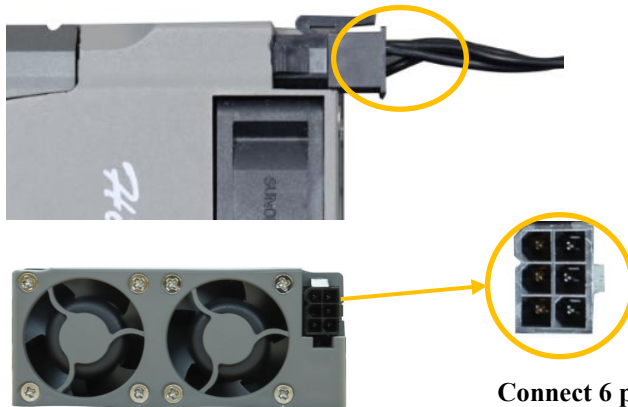10.   Shut down the system and disconnect the AC power cord.

11.   Insert the SSD7749M2 into the system's open PCIe x16 slot.

12.   When finished, turn on the power to the system.

Note: In case the motherboard PCIe slot has insufficient power, connect the 6-pin PCIe power cable to the external power connector on the right side of the SSD7749M2 before turning on the system's power.

Connect 6 pin PCIe power cable

4. Revision History

Version 1.00, July 15, 2024

Initial version.

Version 1.01, September 23, 2024

1. Update Key Features, add macOS support

2. Update SSD7749M2 Installation Instructions