HighPoint SSD7140A

HighPoint SSD7140A PCIe Gen3 NVMe RAID Controller Instruction Manual

Brand: HighPoint

Model: SSD7140A

1. Product Overview

The HighPoint SSD7140A is an 8-Port M.2 PCIe Gen3 NVMe RAID controller designed for professional applications requiring high-capacity, small-footprint storage solutions. It leverages PCIe 3.0 x16 bandwidth to deliver high transfer performance, supporting up to 32TB of storage capacity across eight M.2 NVMe SSDs.

Key Features:

- 8x M.2 Ports: Supports up to 32TB storage capacity.
- Dedicated PCIe 3.0 x16 Bandwidth: Ensures optimal performance.
- Platform Independent NVMe RAID Solution: Compatible with AMD & Intel motherboards with PCIe 3.0/4.0 x16 slots, no Bifurcation support required.
- Comprehensive RAID Storage Solution: Supports RAID 0, 1, 10, and single-disk configurations.
- Operating System Support: Compatible with Windows, macOS, and Linux.
- Advanced Cooling: Features an ultra-efficient, multi-stage cooling solution with a high-conductivity thermal pad, anodized aluminum heatsink, and dual low-noise fans.

2. Package Contents

Verify that all items are present in the package:

- HighPoint SSD7140A RAID Controller
- Quick Installation Guide (QIG)

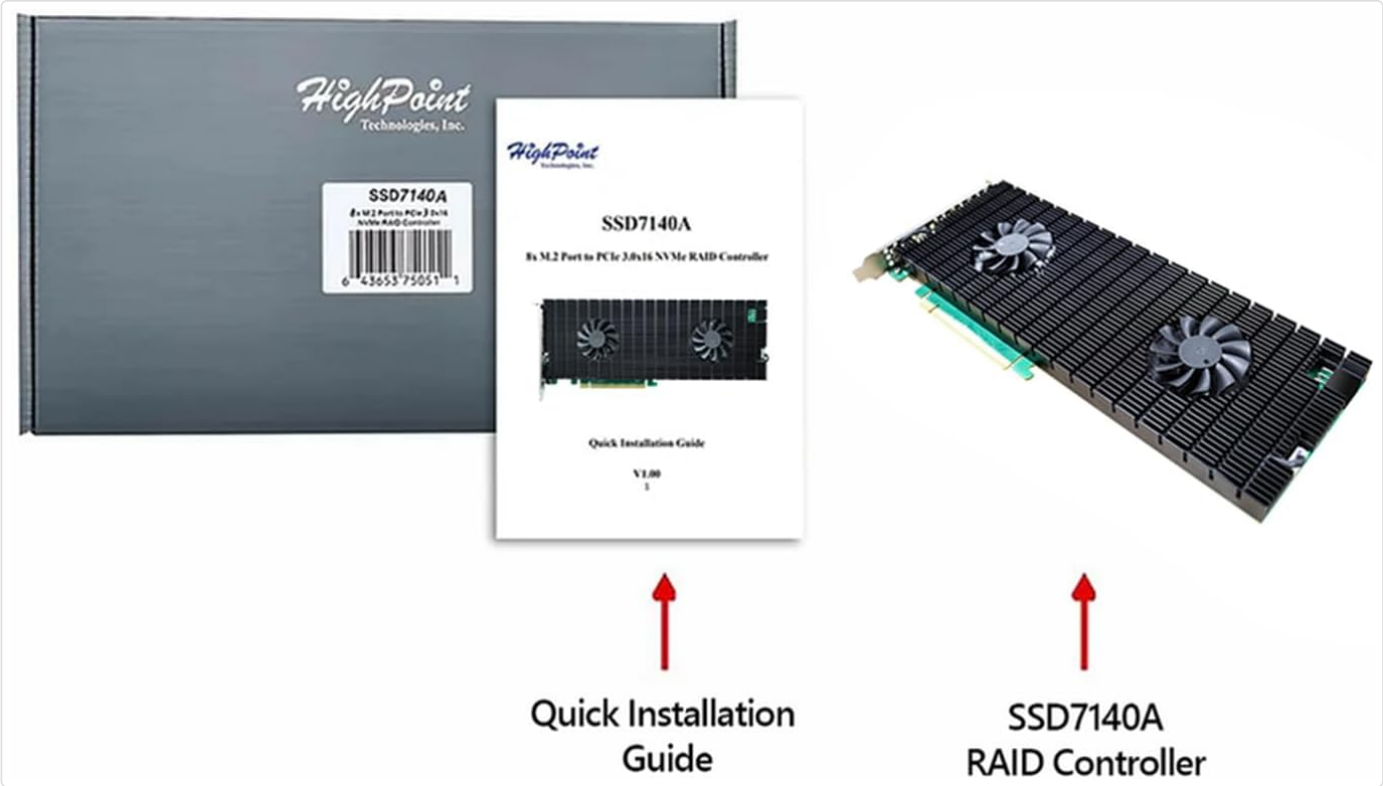

Figure 2.1: HighPoint SSD7140A package contents, showing the RAID controller and Quick Installation Guide.

3. Hardware Installation

3.1 Installing M.2 NVMe SSDs

The SSD7140A controller supports up to eight M.2 NVMe SSDs. Carefully insert each M.2 SSD into its designated slot on the controller card, securing it with the provided screws or retention clips.

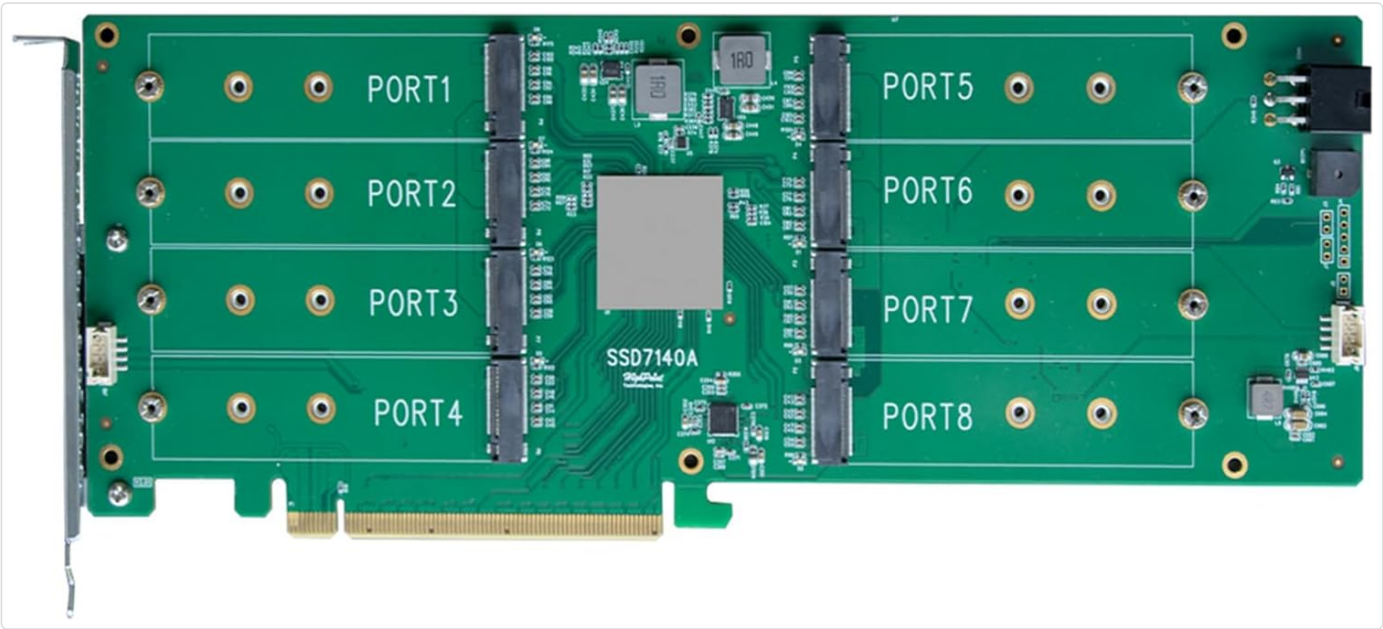

Figure 3.1: Top view of the HighPoint SSD7140A RAID controller with M.2 NVMe SSDs installed in its eight ports.

3.2 Installing the Controller into a System

The SSD7140A is designed for easy installation into systems with a dedicated PCIe 3.0 x16 slot. It does not require an external power supply or motherboard Bifurcation support.

1. Power down your system and disconnect all power cables.

2. Open your computer case.
3. Locate an available PCIe 3.0 x16 slot. For optimal performance, ensure the slot provides full x16 lanes.
4. Carefully insert the SSD7140A controller into the PCIe slot until it is fully seated. Secure the card with the system's retention mechanism.
5. Close the computer case and reconnect power cables.

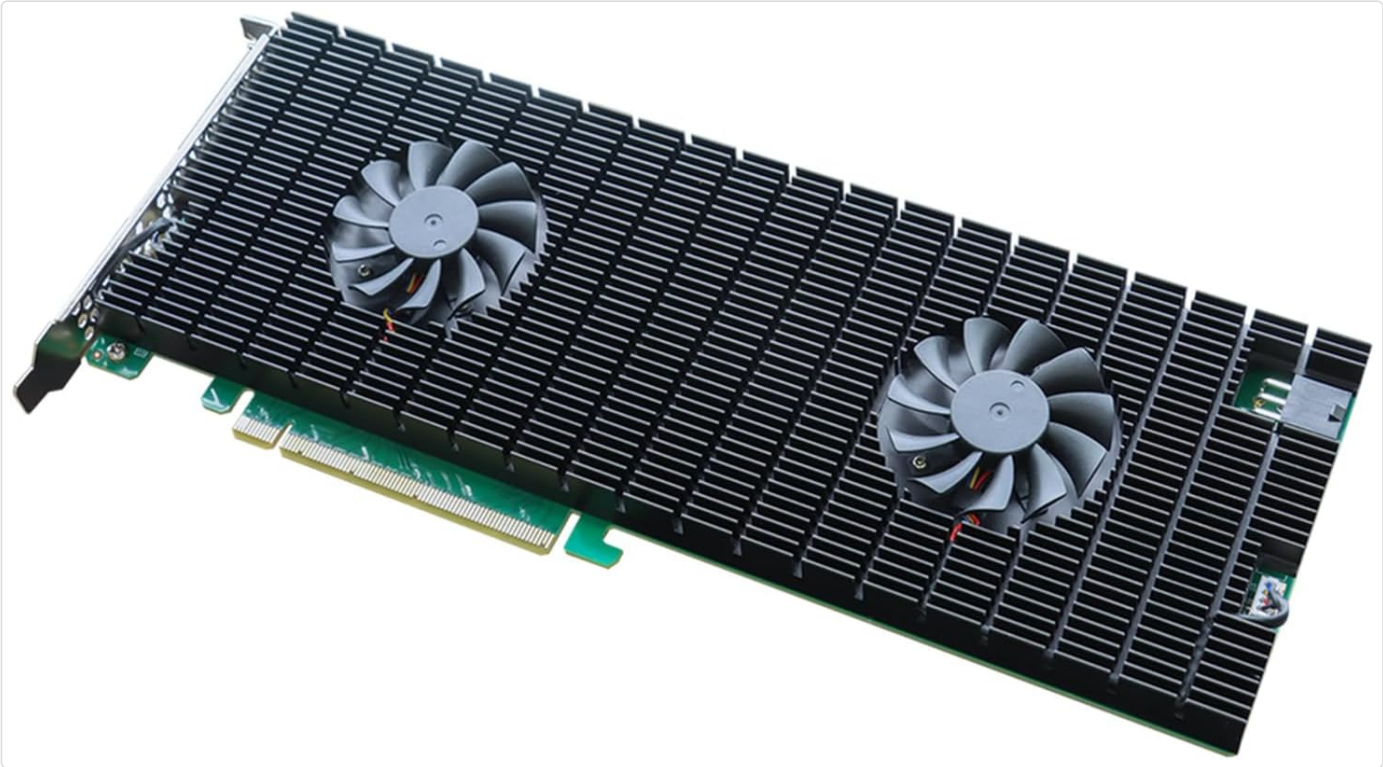

Figure 3.2: The HighPoint SSD7140A RAID controller shown with its heatsink and fans, ready for installation into a PCIe slot.

3.3 Mac Pro 2019 Hardware Installation

For 2019 Mac Pro systems, the SSD7140A/SSD7540 controllers are easily installed. These controllers do not require an external power supply when installed into this platform. We recommend installing these controllers into either slot 3 or 5, as both slots can be set to operate at a full x16-lanes.

Your browser does not support the video tag.

Video 3.3: This video demonstrates the hardware installation process for the HighPoint SSD7140/SSD7540 into a 2019 Mac Pro system, highlighting the recommended PCIe slots for optimal performance.

4. Operating and RAID Configuration

The SSD7140A supports various RAID levels (0, 1, 10) and single-disk configurations. Management can be performed via a web-based GUI or a command-line interface (CLI).

4.1 RAID Levels Explained:

- **RAID 0 (Striping):** Combines multiple drives into a single logical unit for increased performance. Data is written across all drives simultaneously. Requires a minimum of 2 NVMe SSDs.
- **RAID 1 (Mirroring):** Duplicates data across two drives, providing redundancy. If one drive fails, data is preserved on the other. Requires 2 NVMe SSDs.
- **RAID 10 (Stripe of Mirrors):** Combines striping and mirroring for both performance and redundancy. Requires a minimum of 4 NVMe SSDs.
- **Single-Disk:** Each M.2 NVMe SSD operates independently.

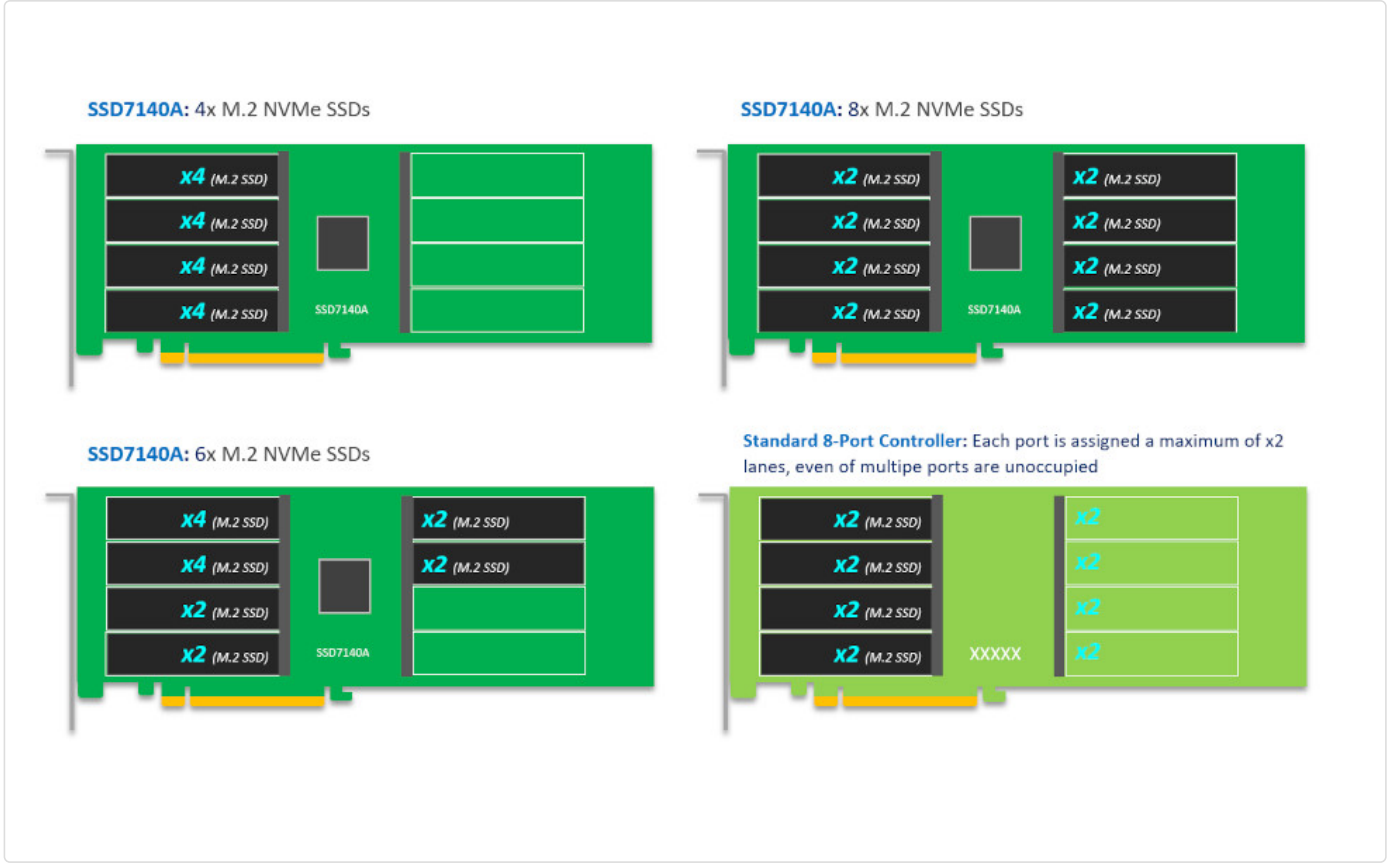

Figure 4.1: Diagram illustrating various RAID configurations supported by the HighPoint SSD7140A, including RAID 0, RAID 1, and RAID 1/0 (RAID 10).

4.2 Performance Overview

The SSD7140A is capable of delivering high transfer performance, exceeding 14,000MB/s in optimal configurations. The following video demonstrates the performance capabilities of the SSD7140A in both single card and cross-sync RAID 0 setups.

Your browser does not support the video tag.

Video 4.2: This video showcases the single card and cross-sync performance of the HighPoint SSD7140A, demonstrating its high-speed data transfer capabilities in a RAID 0 configuration.

5. Maintenance

The SSD7140A features an advanced cooling solution to maintain optimal operating temperatures for the M.2 SSDs, NVMe chipset, and RAID componentry. To ensure longevity and consistent performance:

- Ensure adequate airflow within your system chassis.
- Regularly check for dust accumulation on the heatsink and fans, and clean as necessary using compressed air.
- Monitor the temperature of individual NVMe SSDs and the controller using the Web RAID Management Interface (WebGUI) or CLI.

Figure 5.1: Close-up view of the HighPoint SSD7140A's multi-stage cooling solution, featuring a large heatsink and dual fans for efficient heat dissipation.

6. Troubleshooting

If you encounter issues with your HighPoint SSD7140A controller, consider the following:

- **Controller Not Detected:** Ensure the card is fully seated in the PCIe slot. Verify that the PCIe slot is functional and provides sufficient lanes (x16 recommended).
- **RAID Array Issues:** Use the Web RAID Management Interface (WebGUI) or CLI to check the status of your RAID configuration and individual SSDs. Ensure all SSDs are properly installed and recognized.
- **Performance Degradation:** Check system resource utilization (CPU, RAM) and ensure adequate cooling for the controller and SSDs. Verify that the PCIe slot is operating at its full x16 bandwidth.
- **Operating System Compatibility:** Confirm that your operating system version is supported (Windows 10/11, Windows Server 2012 R2/2016/2019/2022, macOS 10.13-12.x, Linux Kernel 3.10+).

For further assistance, refer to the official HighPoint support resources or contact their technical support team.

7. Specifications

Feature	Detail
Brand	HighPoint
Model Number	SSD7140A

Hard Drive Interface	NVMe
Hardware Interface	PCI Express 3.0 x16
Number of M.2 Ports	8
Max Storage Capacity	Up to 32TB
RAID Levels Supported	RAID 0, 1, 10, Single-Disk
Operating System Support	Linux (RHEL/Debian/Ubuntu/Proxmox/Fedora/XenProject, Arch Linux), Windows (10/11, Server 2012 R2/2016/2019/2022, Microsoft Hyper-V), macOS (10.13 - Monterey 12.x)
Cooling Solution	Multi-stage cooling with heatsink and dual fans
Product Dimensions	11.18 x 4.41 x 0.94 inches
Item Weight	1.72 pounds (0.78 Kilograms)

8. Warranty and Support

For warranty information and technical support, please visit the official HighPoint website or contact their customer service. Keep your purchase receipt for warranty claims.
HighPoint Technologies, Inc. Support: www.highpoint-tech.com/support