



## Rocket 7604A PCIe Gen5 x16 to 4x M.2 NVMe RAID Adapter

### Revolutionize NVMe Storage Performance with Highpoint PCIe Gen5 Switch Technology

#### Rocket 7600 PCIe Gen5 NVMe RAID Series AICs & Adapters

HighPoint RocketRAID 7600 PCIe Gen5 NVMe RAID AICs and Adapters are engineered to enhance the capabilities of Linux and Windows-based Edge Server and High-End workstation platforms. Built on the foundation of our Rocket 1600 Switch series product lines, each RAID AICs/Adapter is armed with industry proven RAID technology and an unparalleled storage health monitoring and management suite designed to maximize the performance, reliability and serviceability of NVMe arrays.

#### Ultra-Compact Half-Length PCIe Gen5 x16 M.2 NVMe RAID Solution for Industrial & Edge Computing Environments

The Rocket 7604A is an ultra-compact half-length PCIe Gen5 x16 4-Port M.2 NVMe RAID AIC (add-in-card) engineered for high-performance industrial and Edge computing environments.

Each Rocket 7604A AIC can support up to 32TB of storage capacity at speeds up to 56GB/s via single PCIe connection. This self-contained, small-footprint design directly hosts up to four 2280 M.2 SSDs eliminating the need for internal drive bays and cabling. The half-height form-factor PCIe card can be easily integrated into any x86 Intel/AMD or ARM platform with a free PCIe x16 slot, including space-constrained desktops, tower workstations and rackmount platforms.

Class-leading transfer performance, combined with HighPoint's proven RAID & Storage technology enable Rocket 7604A AICs to accommodate a wide range of data-intensive workloads including media post production and content creation, high-speed data acquisition, and scientific/medical applications.

#### Powered by Industry Proven PCIe Switching Technology

Rocket 7604A AICs are powered by HighPoint's revolutionary PCIe Gen5 Switching Architecture, which leverages Broadcom's industry leading PEX89048 PCIe Switch IC to optimize signal integrity, minimize latency, maximize data transfer speed, and enable the AIC to provide x48 lanes of internal PCIe Gen5 bandwidth; x16 lanes to the upstream connection and x4 lanes to each M.2 port. This guarantees that maximum bandwidth is available to each M.2 SSD at all times, enabling the AIC to deliver a class-leading 56GB/s of real-world transfer performance.

#### All-In-One RAID and Storage Management Solutions

##### Empower NVMe Storage with HighPoint's Industry-Proven RAID Technology

HighPoint's industry-proven NVMe RAID technology provides unparalleled flexibility, enabling administrators to easily craft, maintain and scale RAID storage to address the unique requirements of each target application and workflow.

- ◆ Host up to four RAID arrays including bootable volumes
- ◆ Mix individual SSD configurations with RAID arrays
- ◆ Optimize for Performance, Redundancy or a mix of both.

##### RAID Modes Tailored for Every Application

**RAID 0 (Striping)** - Also known as a "stripe" array, this mode delivers Maximum Performance and capacity by linking multiple NVMe SSD's together to act as a single storage unit.

**RAID 1 (Mirroring)** - This mode creates a hidden duplicate of the target SSD, and is ideal for applications that require an extra layer of data security, such as a bootable volume.

### Feature Highlights

- 4 Independent M.2 Ports
- Leverages Broadcom's 48-lane PCIe Gen5 PEX89048 PCIe Switch IC
  - Ensures the fastest, densest downstream connectivity possible
  - Optimizes signal integrity & stability, and minimizes latency
- Designed to maximize performance & connectivity density per PCIe 5.0 x16 slot: nearly 60GB/s and 12 Million IOPs
- Customizable Firmware Solutions for Gen5 AICs
- Wide-range of M.2 Form factor Support (2242, 2260, 2280)
- HighPoint's Pro-Series Storage Suite
  - RAID Solution: 0, 1, 10 & Single-Disk
  - Intelligent Pro-Active Cooling Solution
  - Storage Active Sensor Logging & Analysis Suite
  - SafeStorage SED Solution
  - Incorporates customizable Firmware Solutions
- Supports Bootable RAID Configurations
- Supports x86 Intel/AMD & ARM Platforms
- Firmware-based Diagnostics Capability

**RAID 10 (Security & Speed)** - RAID 10 offers a "best of both worlds" by leveraging striping with mirroring technology; two RAID 1 arrays are striped together to maximize performance. RAID 10 is capable of delivering read performance on par with RAID 0.

#### Advanced RAID Features

Unlock Advanced RAID Capabilities with HighPoint Storage Technology.

**Bootable RAID Support:** Maximize performance and capacity with RAID 0 striping or mitigate the threat of downtime with RAID 1 mirroring

**Online RAID Roaming:** Move RAID configurations between HighPoint AICs or Adapters without reconfiguration

**Cross-Sync RAID Technology:** Combine up to 16 SSDs across as many as four AICs into a single unified RAID volume for unapparelled performance and capacity.

#### Field Service Feature Suite

**Intelligent Self-Diagnostic LEDs & Alarms:** HighPoint PCIe Gen5 Adapters feature Built-In Early Warning LED Indicators and Audible Alarms. Simple color coding and light/sound patterns enable administrators to instantly assess the status of hosted M.2 media, the strength of the PCIe connection, and temperature of the PCIe switch hardware.

#### Environmental Monitoring, Logging & Analysis Solution:

HighPoint's PCIe Gen5 x16 NVMe RAID Adapters employ an innovative Performance and Troubleshooting solution that combines an active NVMe sensor suite with real-time Environmental Logging and Analysis capability. The solution has been integrated into the WebGUI Management Tool, and will automatically track and log the temperature and power consumption of each hosted SSD.

**FRU (Field Replaceable Unit) Support:** The Rocket 7604A is a field replaceable unit (FRU); the VPD stored on each adapter enables customers and service providers to easily procure replacements with the correct firmware/driver combination.

#### Intelligent Pro-Active Cooling Solution

Rocket 7604A AICs are equipped with a powerful, ultra-efficient hardware cooling solution comprised of an anodized aluminum heatsink with an integrated low-decibel cooling fan, multiple layers of high-efficiency thermal padding, and a ventilated PCIe bracket. The solution rapidly transfers waste heat away from the hosted M.2 media and Switch chipset, and keep the performance-sapping threat of thermal throttling at bay.

On the software side, Rocket 7604A AICs leverage our proven SHI (Storage Health Inspector) solution.

SHI utilizes SMART technology to log & report the physical characteristics of each SSD, such as temperature, voltage and endurance (Total Bytes Written / Disk Writes per Day).

#### HighPoint SafeStorage SED Solution

Rocket 7604A AICs are protected by SafeStorage - a state-of-the-art data encryption solution for OPAL SSC compliant SED drives and arrays.

Stored data is automatically locked down whenever storage is unplugged from the AIC, effectively preventing unauthorized access to sensitive information should physical disks be misplaced or stolen.

#### Applications & Use Cases

The compact half-length Rocket 7604A NVMe Switch AIC's revolutionary PCIe Gen5 Switch Architecture and four independent M.2 ports can support up to 32TB of storage capacity at speeds up to 56GB/s; ideal for high-speed data-intensive applications hosted by Industrial and Edge computing environments.

HighPoint's advanced NVMe RAID engine and comprehensive Management and Monitoring suite enables customers to custom-tailor storage configurations for specific applications and workflows, prioritizing speed, reliability, storage capacity, or a balanced combination via RAID 10 technology.

The Rocket 7604A's small-hardware footprint, flexible RAID capabilities, and class-leading transfer speed are ideal for high-performance Industrial and Edge computing platforms designed host data-intensive workloads such as high-speed data ingestion, media post production and content creation, and Medical/Scientific imaging.

Product Model	Rocket 7604A
<b>Hardware Features</b>	
Bus Interface	PCIe 5.0 x16
Number of Channel / Port	4 x NVMe Ports (Dedicated PCIe 5.0 x4 per port)
Port Type	M.2
Data Transfer Rate	64GB/s
Number of devices	4
SSD Form Factor	M.2 (2242, 2260, 2280)
Synthetic Hierarchy	Yes
LED Indication	Intelligent, Self-Diagnostic LEDs
Power Measurement	Real Time Power Measurement
FRU Support	Yes Store VPD Data
SED Support	Support (Only Windows and Linux) Not Supported On ARM Platform
<b>Host CPU Architect Support</b>	
CPU Architect Support	X86 / ARM
<b>Mechanical Features</b>	
Form Factor	Full-Height, Half-Length
Card Dimensions	167mm x 110mm
Width	Single Width
Card Weight	0.80 lbs.
PCIe Bracket	Full-Height ventilated bracket
Heatsink	1. One Big heatsink to cover all the board area 2. One 8010 Fan inside the Heatsink 3. the Adapter with Heatsink installed will not violate the PCIe Spec
Cooling System	Heatsink with a 8010 Fan inside
Toolless SSD mounting system	Yes
<b>Supported Systems</b>	
OS	Only Supports 64-bit operating systems
	Windows 11, 10 / Windows Server 2022, 2019, 2016 / Microsoft Hyper-V
	RHEL, Debian, Ubuntu, Fedora, Proxmox, Rocky Linux (Linux kernel 3.10 and later)
Software Secure Boot	Yes
<b>NVMe Configuration</b>	
RAID Support	Single, RAID 0, 1, 10
TRIM RAID Support	Single, RAID 0, 1, 10
<b>Storage Mode - NVMe</b>	
Data-RAID	Yes
Boot-RAID	Yes
<b>NVMe RAID Management</b>	
Management Suites	WebGUI (Browser-Based management tool), CLI (Command Line Interface - scriptable configuration tool), API package, UEFI BIOS/HII (Not Support on ARM)
SMTP Email Alert Notification	Yes
Alarm Buzzer	Yes
Storage Health Inspector	Yes
NVMe SMART status	Yes
Automatic and configurable RAID Rebuilding Priority	Yes
Auto resume incomplete rebuilding after power on or reboot system	Yes
Single-RAID or Multi-RAID Arrays per Controller	Yes

<b>Product Model</b>	<b>Rocket 7604A</b>
<b>Hardware Features</b>	
Cross-Sync RAID Solution Across Controllers	Yes
<b>Advanced RAID features</b>	
Online Array Roaming	Yes
RAID Quick Initialization for fast array setup	Yes
Global Hot Spare Disk support	Yes
<b>Operating Environment</b>	
Working Temp	+5°C ~ + 55°C
Storage Temp	-20°C ~ +80°C
Operating Voltage	PCIe: 12V, 3.3V
MTBF	920,585 Hours
<b>Kit Contents</b>	
Kit Contents	Rocket 7604A RAID AIC
	QIG
	Thermal pad: 70*90*0.75mm, K=8, Gray; V100; x1 Thermal pad: 70*90*1.5mm, K=3, Blue; V100; x1 Thermal pad: 70*90*1mm, K=8, Gray; V100; x1
	4 x additional M.2 Rubber

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HighPoint Headquarters

Phone: 1-408-942-5800

Fax: 1-408-942-5801

E-mail: [sales@highpoint-tech.com](mailto:sales@highpoint-tech.com)

Website: [www.highpoint-tech.com](http://www.highpoint-tech.com)

Address: 41650 Christy St. Fremont, CA, 94538

