HighPoint

Technologies, Inc.

SSD7749E

8x E1.S to PCIe 4.0 x16 NVMe RAID Controller

Designed for High-Performance Industrial/Edge Server Applications

HighPoint's SSD7749E PCIe 4.0 x16 8-Channel E1.S NVMe RAID controller was designed for Industrial and Edge Server applications that demand a compact, easily integrated high-density RAID storage solution with blistering PCIe Gen4 x16 performance and enterprise class 24/7 reliability.

The SSD7749E is a simple, cost-efficient PCIe Gen4 RAID storage upgrade solution for Intel and AMD x86 based servers. It can directly host up to eight 9.5mm E1.S SSDs at speeds up to 28,000MB/s, yet is no larger than a modern PCIe graphics adapter, and can be easily integrated into industry-standard computing platforms with a free PCIe 4.0 x16 slot.

Performance Matters! The SSD7749E unveils the true performance potential of Gen 4 NVMe Storge

The SSD7749E represents the epitome of PCIe Gen4 Storage Technology. Armed with HighPoint's advanced NVMe RAID engine and NVMe Hardware Architecture, the SSD7749E is capable of supporting RAID 0, 1, 10 arrays & single-drives, including mixed configurations of single-disks and arrays, multiple arrays, multiple bootable volumes, and boot + storage configurations at speeds up to 28GB/s! State of the art PCIe switch technology enables the controller to dynamically allocate up to x4 lanes of PCIe 4.0 transfer bandwidth to each E1.S SSD.

Multi-CPU/Core Performance Optimizer: Edge and Industrial Computing platforms utilize multi-core/CPU motherboards. While resources are readily available, they may not be properly allocated to the target application and NVMe storage. HighPoint's HPT-Optimize utility simplifies the tuning process for all Multi-Core platforms by intelligently allocating system resources to ensure the target application utilizes the full potential of the NVMe media. The utility intuitively maps the most Efficient I/O processing route to minimize the risk of latency and eliminate performance bottlenecks.

Cross-Sync RAID Technology: The SSD7749E enables administrators to optimize RAID performance by scaling available bus bandwidth up to 32 lanes, and deliver up to 55,000MB/s of transfer performance.

Advanced Cooling Solution Prevents Performance Throttling

Configurable Temperature Thresholds & 24/7 Monitoring with Email notification & Event Logging

PCIe Gen4 NVMe SSDs generate a considerable amount of waste heat under load, especially when compared to PCIe 3.0 media. This is why many E1.S SSDs are available with optional heat sinks. In addition, many Gen4 NVMe SSDs will limit throughput when faced with the threat of overheating; a technique known as "thermal throttling". The SSD7749E was designed to actively combat the risk of thermal throttling and ensure E1.S media is always operating at peak performance. The unique HBA architecture incorporates an advanced cooling system which combines a full-length anodized aluminum casing and integrated heat sinks with a pair of ultra-durable, low-decibel cooling fans. This compact, efficient solution fully encases and insulates the E1.S media, and rapidly transfers waste heat away from critical componentry without injecting excessive noise into the work environment. The cooling system was designed to work in conjunction with the SHI (Storage Health Inspector) management interface, which allows administrators to instantly check the operating status and temperature of NVMe media in real-time via S.M.A.R.T. technology.

Revolutionary Board Design & Toolless Loading System

The SSD7749E represents the next generation of compact RAID solutions, and features a unique loading system designed to simplify installation, upgrade and maintenance procedures. Administrators will no longer need to remove the PCIe device from the host system in order to access the storage media; the cooling system features a unique latch-lock mechanism that enables the module to swing up and away from the PCB to reveal the SSD slots. The HBA houses up to eight 9.5mm or four 15mm E1.S SSDs. Each SDS slot features a quick-release latch which enables administrators to quickly install or remove the SSDs without the need for hand tools or fasteners.

Feature Highlights

- Up to 8x ES.1 Form factor SSDs
- Directly Hosts over 60TB of enterprise class storage
- Dedicated PCIe Gen4 x16 Host Bandwidth delivers up to 28,000MB/s
- Cross-Sync Technology: Scale Up to x32 Lanes of Gen4 Transfer Bandwidth
- RAID 0, 1, 10 & Singe Disk
- Advanced Cooling Solution Prevents Thermal Throttling
- Toolless SSD Installation
- For Linux, macOS & Windows

Universal Software Suite Easily Manages & Monitors RAID Storage

The SSD7749E's comprehensive management suite streamlines installation, service and upgrade workflows.

Pre-OS Level Management: The UEFI Tool is a command line utility designed to configure arrays prior to OS installation.

BIOS Level Management: The UEFI HII utility will add RAID creation menus to the motherboard's BIOS interface for systems that support 3rd party HII capable devices.

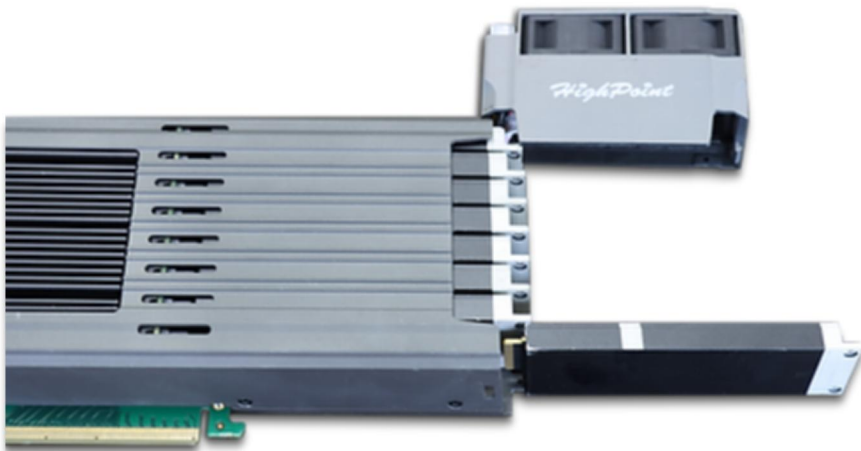*OS-Level Management:* The *WebGUI* is an intuitive graphical user interface designed to work with all modern Web Browsers. The CLI(Command Line Interface) is ideal for seasoned administrators and platforms that do not utilize graphical operating systems.

Drive Encryption Support: designed for use with self-encrypting drives (SEDs); secures data against unauthorized access.

1-Click Self Diagnostic & Logging Service: The WebGUI's Diagnostic tab enables the interface to gather all necessary hardware, software and storage configuration data and compile it into a single file.

Product feature	
Bus Interface	PCI-Express 4.0 x16
No. of Channel / Ports	8x E1.S NVMe port (Dedicated PCIe 4.0 x4 per port)
Port Type	8x E1.S NVMe
Data Transfer Rate	16 GT/s
No. of Devices	8x 9.5 mm E1.S NVMe SSDs 4x 15 mm E1.S NVMe SSDs
External Power Support	Yes (Use 6pin PCIe Power Connector)
Form Factor	Full-Height, Dual-Width
Dimensions	11.18" L x 4.92" H x 1.53" W
Weight	2.67 lbs.
Warranty	2 Years
Supported Operating Systems	
Windows (64-bit only)	Windows 11, 10, Windows Server 2022, 2019, 2016 Microsoft Hyper-V
Linux (64-bit only)	RHEL/Debian/Ubuntu/Fedora/Rocky Linux (Linux kernel 3.10 & later)
macOS	macOS 10.13 ~ macOS Ventura 13.x
ARM Platform Support (NVIDIA models)	Yes (Linux)
System Requirements	Mac Platforms: • Apple Mac Pro Systems: 2012 and later Mac Pro systems; 5.1, 7.1 (2019) • Intel & Apple M1 Platform compatible
	PC Platforms: • Any PC Systems or Motherboard with an industry standard PCIe x16 physical Slot (Bifurcation is not required)
Secure Boot(PC platforms)	Windows: Supports Secure Boot enable and disable Linux: Supports Secure Boot disable
Cooling System	Aluminum casing with integrated thermal pad & cooling fan
Fan Control	Yes (Windows, Mac)
NVMe Configuration	
RAID Support	Single, RAID 0, 1, 10
TRIM RAID Support	Single, RAID 0, 1, 10
Storage Mode-NVMe	
Data RAID(Non-Bootable)	Windows, Linux, Mac
Boot RAID	Windows: Windows 10, Windows server 2016 and later
	Linux: kernel 3.10 and later
	Mac: Not support
NVMe RAID Management	
Management Suites	WebGUI (Browser-Based management tool), CLI (Command Line Interface- scriptable configuration tool), API Package, UEFI Tool
SMTP Email Alert Notification	Yes
Alarm Buzzer	Yes
Storage Health Inspector	Yes
NVMe SMART status	Yes
Automatic & configurable RAID Rebuilding Priority	Yes
Auto resume incomplete rebuilding after power on or reboot system	Yes
Single-RAID / Multi-RAID Arrays per Controller	Yes
Cross-Sync RAID Solution Across Controllers	Yes (Windows, Linux, Mac)
Advanced RAID features	
Flash ROM for Upgradeable UEFI	Yes
Bootable RAID Array	Yes
Multiple RAID Partitions supported	Yes
Online Array Roaming	Yes
RAID Quick Initialization for fast array setup	Yes
Global Hot Spare Disk support	Yes
Operating Environment	
Work Temp	+5°C ~ + 55°C
Storage Temp	-20°C ~ +80°C
Operating Voltage	PCI-e: 12V, 3.3V
Power	Typical:
MTBF (Mean Time Before Failure)	920,585 Hours
Certification / Approval	CE, FCC, RoHS, REACH, WEEE
Kit Contents	
Kit Contents	1x SSD7749E
	1x Quick Installation Guide

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E1.S Loading System

The fan-module is hinged and can be unlatched and moved counter-clockwise to expose the SSD slots.

SSD7749E HBA