

ARC-1389-8N

(PCIe 5.0 x16 Fastest and Reliable Switch Adapter)

The ARC-1389-8N presents advanced switch technology with enhanced performance using 8 Bays Gen5 x4 M.2 NVMe. The switch adapter supports off module power loss protection (PLP), and ARC-1689-CBM provides features for guaranteed data protection. This system is designed with a high performance performance management engine and PCIe Gen 5.0 host/device interface, and supports internal synthetic switch mode, allowing customers to build high-bandwidth, low-latency, scalable, cost-effective and robust performance storage solutions for ML/AI, HPC and enterprise applications



Highlights

- Supports up to 8 bays M.2
- PCIe Gen5 x4 interface at each M.2 bays (up to 4x 2280 FF and 4x 22110 FF)
- x16 PCIe Gen5.0 host interface
- Delivers high-speed performance with speeds of 60GB/s
- Advanced, intelligent thermal solution to control fan speed
- Surprise Add and Remove (Hot-Plug) support
- Support for UEFI secure boot
- Hardware secure boot ready
- Support off module power loss protection for Non PLP NVMe drive using ARC-1689-CBM (optional)
- In-box (native) driver support for all operation system
- View NVMe device and slot signal integrity status
- Management utility support for Windows, Linux, FreeBSD

NVMe Performance Gains for Fast Data

Based on Broadcom's 48-Channel PEX89048 switch chip that provides x16 lanes of dedicated PCIe Gen 5.0 upstream bandwidth and x4 lanes of dedicated downstream bandwidth to each device interface, the ARC-1389-8N NVMe switch adapter raises the standard to higher performance levels with several enhancements, including a new high performance management engine, outstanding performance PCIe Gen 5.0 host and PCIe Gen 5.0 (NVMe) interface bus interconnection. The ARC-1389-8N provides an extremely fast, reliable and ultra-compact solution for companies that need storage and is especially designed for accelerated computing, ML/AI, HPC and enterprise applications. This switch adapter can support up to 8x Gen5 x4 NVMe drives on just one PCIe adapter, increasing capacity and speed as more NVMe drives are added. The ARC-1389-8N supports both up to 4x 2280 and 4x 22110 form factor NVMe drives and combines them on a switch adapter for high-capacity, high-performance, low latency storage array environments.

Unsurpassed Advantages

In Areca's high-performance switch solution, ARC-1389-8N brings PCIe NVMe to superior performance switch adapter with elevated throughput, and low latency. ARC-1389-8N hardware secure boot helps ensure that the firmware code running on ARC-1389-8N hardware platforms is authentic and unmodified. During the adapter firmware upgrade process, it is possible for a problem to occur, resulting in corruption of the controller firmware. With our redundant flash image feature, the adapter will revert back to the last known good firmware and continue operating. The ARC-1389-8N switch adapter off module power loss protection (PLP) is optimized for datacenter environments. Its efficient PLP typically uses the capacitors on the NVMe SSD to provide hold-up power until the data is flushed from the NVMe internal DRAM to the NAND flash upon sudden power loss or any failure condition occurrence. The ARC-1689-CBM module (optional) supports the supercapacitor to provide off module hold-up power, eliminating the need for capacitors on the NVMe SSDs which helps reduce cost. The ARC-1389-8N advanced thermal solution employs a full-length aluminum heatsink and two low-profile cooling fans to effectively cool the installed M.2 NVMe SSDs so they always operate and perform within their operating temperature rating to maximize reliable performance and endurance. Also, with LED status for each individual NVMe channel on the bracket is closely monitored to help your business continuity.

Maximum Interoperability

The ARC-1389-8N switch adapter enables support for maximum interoperability using standard system UEFI secure boot and OS in-box driver. The in-box plug-and-play function allows automatic installation of the best-matched driver with no user intervention required for driver media insertion. The ARC-1389-8N switch supports in-box NVMe drivers for most major operating systems, including Windows, Linux, FreeBSD, VMware and more, along with key system monitoring features such as enclosure management, SMTP and SNMP functions. ARC-1389-8N products and technology are based on extensive testing and validation processes, optimizing switch adapter in field-proven compatibility with operating systems, motherboards, and applications.

Intuitive Management Access

Modern IT infrastructure relies heavily on efficient storage management to ensure optimal performance, reliability, and longevity of hardware components. Software management provides critical insights into adapter drive health, and predictive failure analysis. By leveraging these metrics, organizations can optimize storage efficiency, reduce downtime, and extend hardware lifespan. Similar to Areca RAID adapter, the ARC-1639-8N switch adapter is supplied with fully validated and supported firmware and in-band manageability (S.M.A.R.T) features. McBIOS switch manager is a BIOS based utility used to simplify monitor Areca switch adapter. The switch adapter firmware contains a browser-based switch storage manager which can be accessed through the ArcHttp proxy server in Windows, Linux, FreeBSD and more environments. The switch storage manager allows local and remote to configure from standard web browser. The adapter also supports CLI and API libraries for custom configurations.

Adapter Architecture

- PEX 89048 Gen5 Switch/ High-performance management engine
- PCIe Gen5 x16 lane host interface
- Support both 4x 2280 and 4x 22110 form factor M.2 NVMe drives
- Support 8 bays M.2 (PCIe Gen5 x4 per bay)
- Drive interface at each M.2 bay - PCIe Gen5 at 32GT/per lane
- Hardware secure boot
- Multi-adapter support for large storage requirements
- Delivers 64GB/s bandwidth & sustained transfer speeds up to 60GB/s
- Advanced intelligent thermal solution to control dual cooling fan
- Support External PCIe standard 2x3 power connector
- Support NVMe off module power loss protection using ARC-1689-CBM supercapacitor module (optional)

Monitors/Notification

- System status indication through alarm buzzer
- SMTP support for email notification
- Bracket LED for each NVMe activity status
- SNMP support for remote manager

Management Access

- Field-upgradeable firmware in flash ROM
- UEFI OS to launch McBIOS switch manager
- Web browser-based switch storage manager via Archttp utility in Windows, Linux, and FreeBSD
- Support command-line interface (CLI)
- API library for developers to monitor switch adapters with their own utility

Firmware Features


- Internal synthetic switch mode support
- Downstream port containment
- Read tracking
- Surprise Add and Remove (Hot-Plug) support
- Synthetic Hierarchy generation
- Support for UEFI secure boot
- Redundant flash image for adapter availability
- Support S.M.A.R.T status via In-band management
- NVRAM for switch adapter event
- Support slot link control capabilities, link status and error count monitoring for signal integrity

Operating System

OS Native NVMe Driver Support

Environmental Specifications

Operating Voltage	12V
Temperature	Operating: 0°C to 55°C Storage: -20°C to 80°C
Humidity	Operating: 10-85%, relative humidity Non-operating: 5-90%, relative humidity
Compliance Certification	CE, FCC, RoHS, REACHE

Model Name	ARC-1389-8N Switch Adapter	ARC-1689-8N H/W RAID Adapter
PCIe Switch	PEX89048 48 Lanes Gen5 Switch/High-performance Management Engine	
Host Interface	PCIe Gen5 x16 Lanes	
Form Factor	107.2(H) x 262(L) mm	
Device Connector	8 x M.2 Connector	
Max M.2 Devices Support	4 x 2280 FF + 4 x 22110 FF	
RAID Level	N/A (W/O RAID function on GUI)	0, 1(Simple/Multi Mirroring), 10, Single Disk(Single/Dual/Triple)
Device Interface	PCIe Gen 5 x4 (NVMe)	
Management Port	In-Band: PCIe	
Power Loss Protection (PLP) Support	Yes (need to install ARC-1689-CBM)	
Hold-up Supercapacitor	ARC-1689-CBM(optional)	
Device Driver	In-Box(Native) NVMe Driver	
Software Package	Same as ARC-1886 Tri-Mode RAID Adapter	
Power Consumption	Each M.2 slot	Peak Current: 6.0A (3.3V) *
	Controller	Worst Case: 23.7 Watts Typical: 18 Watts
Products View		

* **NOTE:** Please check the M.2 vendor about the peak current of the device when operating.



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