



ExpressSAS H240F

ATTO ExpressSAS® 24Gb/s SAS Model host bus adapters (HBAs) deliver high-throughput connectivity for 24Gb SAS environments, enabling predictable performance, increased flexibility, and efficient integration across dense, scalable, mixed storage infrastructure.

## TECHNICAL FEATURES

- Capable of up to 6 million 4K IOPS
- 22.5Gb/s per SAS lane
  - Up to 32GB/s aggregate bandwidth
- RAID 0, 1, 1e and 10 levels supported
- Configurable for supporting up to 1200 target devices
- Low-profile, MD2 short form factor for versatility and improved airflow
- Exclusive Advanced Data Streaming (ADS™) Technology
- MiniSAS HD high density connectors for copper and optical cable usage with cable management support
- Wide-port support allows bandwidth aggregation for higher throughput and scalable topology
- Driver support for the latest Windows®, Linux®, macOS®, VMware®, FreeBSD and illumos operating systems
- Provide high-performance and flexible direct-attach storage connectivity for servers, JBODs, and RAID arrays
- Three-year standard product warranty

## ATTO ExpressSAS® 24Gb SAS Model HBAs

### 24GB/s SAS PCIe 4.0 Host Bus Adapters

#### INDUSTRY PROVEN TECHNOLOGY

ATTO ExpressSAS® 24Gb/s SAS Model host bus adapters (HBAs) provide high-performance host connectivity as well as providing a building block as a front-end target device for 24Gb SAS storage. These adapters take advantage of cutting-edge PCIe Gen 4 connectivity for the highest performance for all direct attached storage needs. This latest evolution in SAS HBAs shows why ATTO has been the forefront of innovations in storage connectivity for over 35 years.

#### FLEXIBLE CONNECTIVITY SOLUTIONS

Whether you need host connectivity or you are building your own 24Gb/s SAS storage solutions, ATTO has the right connectivity options for you. Offering options that fit your specific needs, ExpressSAS HBAs support dense and efficient connections to storage from rack mounted servers and workstations in datacenters, data warehousing, video on demand, and other high-availability, high-performance applications.

#### PERFORMANCE ENGINEERED

ExpressSAS 24Gb/s HBAs combine the impressive speed of the 24Gb SAS interface, coupled with a PCI Express 4.0 host interface.

ATTO Advanced Data Streaming (ADS™) Technology maximizes CPU processes to deliver smooth and reliable data transfers and the highest consistent performance. ATTO pays close attention to detail in board design and signal integrity to minimize transmission errors and data corruption. These differentiating capabilities make ATTO the premier choice for high-performance direct-attached SAS/SATA storage connectivity.

#### ADVANCED MANAGEMENT

ATTO offers a broad range of comprehensive management and diagnostic tools designed from the ground up to help optimize performance, simplify configuration, and maximize efficiency without any complexity.

Bringing state-of-the-art storage management capabilities to modern data center and enterprise ecosystems, ATTO360™ Storage leverages real-time metrics and unique intelligence derived from the field and industry to enable one-click performance boosts, ensure round-the-clock device monitoring, and provide proactive suggestions to keep your storage backbone up and running without hiccups.

Take advantage of built-in ATTOExpert AI™ to instantly troubleshoot and fix issues before they even occur - saving valuable IT hours and resources.

## APPLICATIONS

- The impressive speed of the 24Gb/s SAS interface, coupled with a x PCI Express 4.0 host interface, delivers a dense and efficient connection to all types of storage—from rack-mounted servers and workstations in data center, data warehousing, VOD and other high-availability, high-performance applications.
- Deliver performance, high-availability, and data protection for:
  - Scale-out data center topologies
  - AI/ML workflows
  - High-Performance Computing (HPC)
  - Software-Defined Storage (SDS)
  - Content delivery networks (CDN)
  - Media streaming/video on demand (VoD)
  - Data warehousing
  - Online transaction processing (OLTP)
  - Data analytics and caching

## KEY FEATURES

- Automatic link negotiation:
  - 24Gb/s, 12Gb/s and 6Gb/s SAS targets
  - 6Gb/s SATA targets
- Defaults to supporting 512 targets, configurable up to 1200
- Onboard ATTO PowerCenter Pro RAID 0, 1, 1e and 10 included for performance and data protection for Mac, Windows, and Linux
- Supports Serial SCSI Protocol (SSP), SATA Tunneling Protocol (STP), SMP, SAT and direct attached SATA protocol
- Supports T10-DIF/PI standards
- 32MB on-board flash memory to store persistent parameters
- Wide-port end device support
- Dynamic drive insertion and removal support
- Support for advanced format storage media: 512e, 4Kn
- Dual port SAS support for high-availability configurations
- SGPIO, SCSI Enclosure Services (SES), and ATTO Virtual SES support to manage connected storage device status and activity
- Target mode driver development kit available for storage servers, storage systems and appliances

## MANAGEMENT TOOLS

- Management APIs via CSMI and IOCTLs
- Scriptable Command Line Interface (CLI) for advanced functionality, including phy and cable management
- ATTO360™ Storage GUI support for management and configuration
- Extensive event and trace logging
- External locate LED on bracket
- Onboard temperature monitoring

## BUS SPECIFICATIONS

- H240F and H24F0 - x16 PCI Express 4.0 host interface
- H240N- x8 PCI Express 4.0 host interface
- Backward compatible with PCI Express 3.0 host interface
- PCIe low profile form factor
- Supports PCI Express Base Spec 4.0
- Supports PCI Express CEM Spec 4.0

## CONNECTIVITY

- SFF-8674 connectors externally (H24F0)
- SFF-8654 connectors internally (H240F and H240N)
- Full cable management and reporting
- Supports active and passive cabling
- Easy-to-install full height and low profile connection brackets included

## OPERATING SYSTEM SUPPORT

- Windows® / Windows® Server
- macOS®
- SUSE Linux® Enterprise Server (SLES)
- Red Hat Enterprise Linux (RHEL)
- Rocky Linux
- Ubuntu Linux
- VMware ESXi Server®
- FreeBSD
- illumos

## BOOT SUPPORT

- UEFI v2.3.1 with HII support

## RELIABILITY

- Average MTBF > 5,260,000 hrs (*calculated*)

## SAFETY & ENVIRONMENTAL COMPLIANCE

- CE and IEC 62368-1
- RoHS Compliant (2011/65/EU) EU (2015/863)
- FCC Part 15, Subpart B:2023 (Class A)
- ICES-003 (Canada)
- EN55032:2015, CISPR 32:2015 (Class A)
- EN55035:2017
- VCCI CISPR32-1:2016
- AS/NZ CISPR32.2015

## OPERATING TEMPERATURE

### HARDWARE ENVIRONMENT:

- Airflow: 200 lf/m (min) recommended (H24F0, H240F), 150 lf/m (min) recommended (H240N)
- Temperature: 0-55° C
- Humidity: 10 - 90% non-condensing

### STORAGE ENVIRONMENT:

- Temperature: -40°-70° C
- Humidity: 5 - 95% non-condensing

## DIMENSIONS

- Low profile:
  - Length = 6.600"
  - Height = 2.713"

## POWER

- H240F - 22W (max)
- H24F0 - 22W (max)
- H240N - 22W (max)

## WARRANTY

- Three Year (Standard product)

For OEM configurations, [contact ATTO sales](#) for details.

ATTO ExpressSAS®	H240F	H24F0	H240N
<b>Ports</b>	16 Internal	16 External	24 Internal
<b>Bus Characteristics</b>	x16 PCIe 4.0	x16 PCIe 4.0	x8 PCIe 4.0
<b>Connections</b>	2 x8 SlimSAS SFF-8654 internal	4x4 miniSAS HD SFF-8674 external	3 x8 SlimSAS SFF-8654 internal