



ATTO ExpressSAS® 6Gb/s SAS/SATA RAID Adapters offer the fastest available connectivity to SAS or SATA storage with integrated RAID protection.

## TECHNICAL FEATURES

- Port configurations include 16 internal, 8 external, 8 internal, and 4 internal / 4 external
- 1200 MB/s per port/phy throughput in full-duplex mode
- Features a high-performance x8 PCIe 2.0 host interface
- Low-profile form factor
- SAS 2.0, SAS, SATA and SATA II connectivity
- Supports up to 256 SAS/SATA devices
- Exclusive Advanced Data Streaming (ADS™) technology, DriveAssure™ and CacheAssure™
- Data Recovery mode increases the probability of retrieving lost data from a failed drive
- Disk and Tape support in one PCIe slot
- Driver support for Windows®, Linux®, and macOS®
- Optional CacheAssure for secure backup of data • RAID 0, 1, 4, 5, 6, 10, 50, 60, JBOD and DVRAID™
- Three year standard product warranty

## LONG-STANDING RAID EXPERIENCE

Leveraging over 18 years of RAID technology development, ATTO Technology Inc.'s family of ExpressSAS® 6Gb/s SAS/SATA RAID adapters feature the time-proven ATTO RAID Stack, DVRAID™ and CacheAssure™, proprietary technologies developed to provide the most robust RAID-based connectivity solution in the industry.

## FLEXIBLE CONNECTIVITY SOLUTIONS

With several port configuration options including 16 internal, 8 external, 8 internal, and 4 external/4 internal, ExpressSAS 6Gb/s SAS/SATA RAID adapters are ideal for a wide variety of IT and digital media environments requiring high-performance and parity RAID protected data. ExpressSAS RAID adapters offer driver support for Windows®, Linux® and macOS®, providing a single connectivity solution for customers with heterogeneous operating system environments.

## PERFORMANCE ENGINEERED

The ExpressSAS 6Gb/s SAS/SATA RAID adapter family allows users to instantly protect their critical data while enhancing performance. ATTO designs ExpressSAS RAID adapters to maintain full performance in degraded mode and to minimize downtime with 50% faster rebuilds, limiting exposure to a second drive failure. Exclusive latency management features like Advanced Data Streaming (ADS™) Technology and DriveAssure™ minimize data transfer interruptions to ensure the highest level of consistent performance. These differentiating capabilities make ATTO the premier choice for high-performance host-based RAID connectivity.

## ADVANCED MANAGEMENT TOOLS

The easy-to-use ATTO ConfigTool™ features an intuitive GUI that simplifies RAID group configuration, management and monitoring. ATTO ExpressSAS RAID adapters offer the most advanced performance tuning capabilities and troubleshooting utilities, providing users with sophisticated diagnostics and the flexibility to control settings for specific applications.

## APPLICATIONS

ExpressSAS® RAID adapters add high-performance RAID data protection to direct-attached SAS and SATA JBOD storage. They are an ideal connectivity solution for high-performance media and entertainment and general IT environments.

ExpressSAS 6Gb/s SAS/SATA RAID adapters deliver affordable host-level RAID for high-bandwidth workflows such as digital content creation, streaming video, transactional databases, and email and Web servers.

## ADVANCED DATA STREAMING (ADS™)

Latency-management technology that controls the acceleration of data transfers to move large amounts of data faster and more efficiently.

## DRIVEASSURE™ TECHNOLOGY

Drive assessment and latency management technology that minimizes the likelihood of RAID groups becoming degraded or taken offline due to slow drives, ensuring uninterrupted access to data.

## CACHEASSURE™ TECHNOLOGY

Flash-based protection module providing a maintenance-free solution that safeguards against the loss of cached data during a power or system failure.

## RAID FEATURES AND FUNCTIONALITY

- SAS 2.0, SAS, SATA and SATA II support
- RAID Levels 0, 1, 4, 5, 6, 10, 50, 60, JBOD, DVRAID™
- ATTO RAID stack
- Adaptive path optimization for improved performance and availability
- Support for advanced format storage media: 512e, 4Kn\
- Command coalescing
- Staggered drive spin-up
- Hot swap with auto rebuild
- Online performance metrics and event logs
- Native command queuing

## RAID FEATURES AND FUNCTIONALITY (CONTINUED)

- 1GB ECC protected cache memory
- SES, SNMP and S.M.A.R.T. Support
- Pass-through support for tape and tape devices
- Configurable stripe size
- Global and dedicated hot spares
- Automatic and tunable online rebuilds
- N-way mirroring

## USER BENEFITS

- High-performance host-based RAID for direct-attached storage
- Four port configurations for flexible connectivity
- Full performance in degraded or rebuild mode
- Flash-based cache protection protects against lost data during power or system failure
- More options for retrieving data from a failed drive with Data Recovery mode
- 50% faster rebuilds
- Efficient scalability with host-level RAID
- Maintain high priority workflows with tunable rebuilds
- RAID group partitioning for better management

## MANAGEMENT TOOLS

- User-friendly GUI for quick and easy RAID setup
- Command Line Interface for advanced functionality
- ATTO Config Tool: RAID management and configuration utility

## BUS SPECIFICATIONS

- x8 PCI Express 2.0 host interface

## EXTERNAL CONNECTIVITY

- x4 Mini SAS connectors
- Low profile form factor; full-height bracket included

## AGENCY APPROVALS

- FCC Part 15, Subpart B, Class B
- EN55024: 1998 + A1: 2001 + A2: 2003
- EN55022: 2006, + A1: 2007 Class B

## COMPLIANCE

- EN60950-1
- EU RoHS Compliant (2002/95/EC)

## OPERATING SYSTEM SUPPORT

- Windows Server®
- Windows
- macOS®
- SUSE Linux® Enterprise Server (SLES)
- openSUSE Linux
- Red Hat Enterprise Linux (RHEL)
- CentOS Linux
- Fedora Linux

## DIMENSIONS

### R608/R680/R644

- Length 6.600", Height 2.713"

## OPERATING TEMPERATURE

### Hardware Environment

- Temperature: 0-40° C
- Humidity: 10 - 90% non-condensing

### Storage Environment

- Temperature: -40°-70°C (-40°-157°F)
- Humidity: 5 - 95% non-condensing

## OPERATING VOLTAGE

### R680/R608/R644

- 9.6W (typical)

## AIRFLOW

- 150 lf/m (min) recommended

## WARRANTY

- Three Year

ATTO ExpressSAS	R680	R608	R644
<b>Ports</b>	8 External	8 Internal	4 External/4 Internal
<b>Bus Characteristics</b>	X8 PCIe 2.0	X8 PCIe 2.0	X8 PCIe 2.0
<b>Form Factor</b>	Low Profile	Low Profile	Low Profile
<b>Connections</b>	2 Mini SAS (x4) SFF 8088 External	2 Mini SAS (x4) SFF 8087 Internal	1 Mini SAS (x4) SFF 8087 Internal 1 Mini SAS (x4) SFF 8088 External
<b>Part Number (With CacheAssure Option)</b>	ESAS-R680-000 (ESAS-R680-C00)	ESAS-R608-000 (ESAS-R608-C00)	ESAS-R644-000 (ESAS-R644-C00)