



ATTO

Optimizing AWACS Mission Performance with High-Speed Storage Connectivity

Learn how A Middle Eastern provider of rugged systems sought a high-performance, reliable storage connectivity solution for AWACS aircraft to modernize defense infrastructure. They selected ATTO ExpressSAS SAS HBAs to enable real-time data acquisition, rapid analysis, and immediate decision-making in demanding airborne conditions. These HBAs facilitate continuous, low-latency data transfer between computing modules and storage arrays, ensuring operational continuity, ruggedized reliability, and high-speed performance crucial for mission-critical operations.

ExpressSAS® SAS/SATA HBAs

Overview

A leading rugged systems and turnkey solutions provider in the Middle East was tasked with modernizing infrastructure for defense and military agencies. Their objective: implement a highly reliable, high-performance storage connectivity solution capable of meeting the rigorous demands of mission critical airborne platforms.

One of the key deployments involved AWACS (or AEW&Cs) aircraft – advanced flying command centers equipped with cutting-edge battle management, surveillance, and reconnaissance systems. These systems demand real-time data acquisition, rapid analysis, and immediate decision-making capabilities, all of which rely heavily on robust, high-speed data storage infrastructure. To ensure operational success, the onboard infrastructure required a robust, low-latency storage backbone that perform reliably under extreme environmental conditions.

Key Solution Features:

- **Real-Time Operational Demands**
Capture and process high-resolution sensor, radar, and communication data instantly without latency or loss.
- **Harsh Environmental Conditions**
Operate reliably under extreme temperatures, vibration, altitude changes, and electromagnetic interference.
- **Compact, Reliable Design**
Fit strict space and power constraints while ensuring uptime and fault tolerance.
- **Data Integrity**
Maintain error-free, high-throughput performance during intense, prolonged missions.

The Solution

To meet these demanding performance and reliability standards, the provider selected ATTO ExpressSAS® SAS HBAs as the core storage connectivity technology for the AWACS platform. ATTO SAS adapters deliver enterprise-class, low-latency connectivity optimized for mission critical applications and rugged deployments.

ATTO ExpressSAS HBAs were integrated into the airborne storage systems to support high-speed data transfer between computing modules and SAS-based storage arrays. This enabled continuous streaming of radar, sensor, and communications data without interruption. Featuring exclusive technologies such as Adaptive Path Optimization and Advanced Data Streaming, ATTO SAS HBAs are designed for precision control and resilience while ensuring deterministic latency – vital for real-time responsiveness and synchronization with mission systems.

Key Solution Features

- **High-Bandwidth, low latency performance** tailored for real-time operations.
- **Advanced error handling** and end-to-end data integrity ensures reliability.
- **Shared memory allocation** allows for higher performance and throughputs.
- **Easy-to-install** small form factor with **low power footprint** and **lower management overhead**.
- **Rugged, tested reliability** for high-stress environments with flexible connectivity options.



Benefits

- **Real-Time Read/Write Performance**
Enables rapid storage and retrieval of mission-critical data to support time-sensitive decisions.
- **Rugged Reliability**
Operates flawlessly in airborne conditions, withstanding vibrations, temperature swings, and power fluctuations.
- **Operational Continuity**
Maintains consistent throughput and data integrity under the demands of continuous surveillance and command operations.
- **Future-Ready Flexibility**
Easily integrates with evolving infrastructure and scalable storage architectures without compromising.
- **Defense-Grade Test**
Selected by leading defense integrators for use in



In critical defense operations requiring flawless performance, ATTO ExpressSAS adapters provide the speed, reliability, and resilience necessary for high-performance storage connectivity in AWACS aircraft. This enables real-time mission execution and enhanced situational awareness. As defense agencies modernize, ATTO's solutions offer the cutting-edge performance and reliability crucial for future missions.

ExpressSAS® 12Gb	ESAH-1208	ESAH-120F	ESAH-1244	ESAH-1280	ESAH-12F0
Ports	8 Internal	16 Internal	4 External, 4 Internal	8 External	16 External
Bus Characteristics	x8 PCIe 4.0	x8 PCIe 4.0	x8 PCIe 4.0	x8 PCIe 4.0	x8 PCIe 4.0
Connections	2 Mini SAS HD (x4) SFF 8643 Internal	4 Mini SAS HD (x4) SFF 8643 Internal	1 Mini SAS HD (x4) SFF 8644 External 1 Mini SAS HD (x4) SFF 8643 Internal	2 Mini SAS HD (x4) SFF 8644 External	4 Mini SAS HD (x4) SFF 8644 External

ExpressSAS® 24Gb	ESAH-24F0	ESAH-240F	ESAH-240N
Ports	16 External	16 Internal	24 Internal
Bus Characteristics	x16 PCIe 4.0	x16 PCIe 4.0	x8 PCIe 4.0
Connections	4x4 miniSAS HD SFF-8674 external	2 x8 SlimSAS SFF-8654 internal	3 x8 SlimSAS SFF-8654 internal

