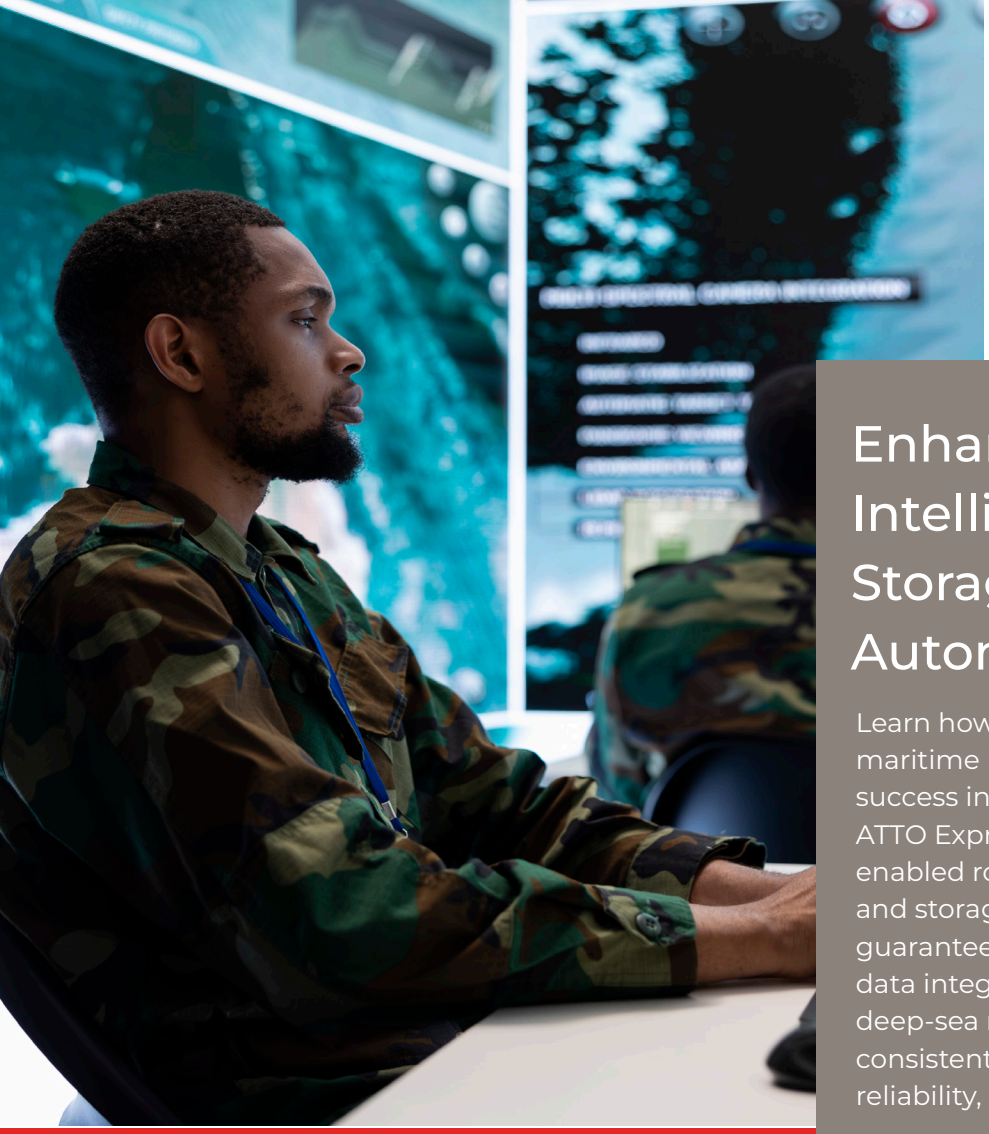


Enhancing Maritime Intelligence with Reliable Storage Connectivity in Autonomous Sea Drones

Learn how a leading naval agency enhanced maritime intelligence and ensured mission success in autonomous sea drones using ATTO ExpressSAS SAS HBAs. This solution enabled robust, high-speed data capture and storage in extreme environments, guaranteeing continuous operation and data integrity from air deployment to deep-sea missions. As a result, they achieved consistent performance, proven hardware reliability, and simplified system integration.

ATTO ExpressSAS® SAS HBAs

The Challenge

A leading naval agency sought to enhance its maritime intelligence capabilities through autonomous sea drones. These unmanned systems are engineered for underwater surveillance, reconnaissance, countermeasures, and intelligence gathering. Operating independently in challenging and unpredictable underwater environments, these compact, high-tech platforms are launched from the air and transition seamlessly into the ocean.

To support this project, the agency required a robust storage solution embedded within the drone's payload, capable of meeting stringent performance, reliability, and environmental standards. The solution had to perform flawlessly during airborne deployment, ocean entry, and underwater operations, capturing and storing critical data in real-time. This demanded hardware resilient to extreme conditions, including rapid environmental shifts and prolonged exposure to corrosive saltwater. Additionally, the system needed to maintain high-speed data logging within the drone's compact design and limited power constraints, ensuring mission success without compromise.

KEY CHALLENGES

- **Extreme Environmental Shifts**
  The drones must ensure continuous operation through rapid transitions in altitude, pressure, humidity, and temperature from air to sea.
- **Limited Space and Power**
  Storage componenets need to fit within the drone's footprint and work efficiently under restricted power availability.
- **High-Speed Data Logging**
  Continuous collection of SONAR, environmental, and navigational data demands fast, uniterrupted write speeds to onboard storage.
- **No Margin for Failure**
  Once deployed, the drones operate autonomously with no manual intervention - meaning storage systems must function without failure.

The Solution

To meet the rigorous demands of autonomous sea drone operations, a robust and high-performance storage connectivity solution was essential. The naval agency carefully evaluated options and ultimately selected ATTO ExpressSAS SAS HBAs to serve as the critical link between the drones' onboard compute systems and SAS storage devices. This decision was driven by ATTO's proven ability to deliver reliable, low-latency data transfers even in the most challenging and unpredictable underwater environments.

Key Solution Features

- **High-Speed SAS Connectivity** supporting multi-lane throughput for real-time, high-volume data capture
- **Low latency architecture** ensuring consistent performance in time-sensitive missions
- **Advanced error recovery** and data protection maintains data integrity under stress and signal degradation
- **Engineered to withstand vibration, shock, and extreme temperature/pressure** variations
- **Efficient power consumption** and cooling in thermally constrained environments
- **Product support and firmware stability** reducing integration risk while ensuring long deployment cycles

Benefits

- **Reliable Performance**
  Ensures fast, uninterrupted data transfers under pressure, maintaining mission integrity.
- **Robust Reliaiblity**
  Propretary design supports long-term autonomous operation with minimal failure risk.
- **Simplified Integration**
  Standard interface and optimized firmware streamline system integration.
- **Scalable Interoperability**
  Supports future storage expansion without platform redesign.



Unmanned systems like sea drones play a vital role in collecting and delivering real-time intelligence from hostile underwater environments that are otherwise dangerous to access. ATTO ExpressSAS adapters deliver the performance, durability, and efficiency required for underwater drone missions – where the success of the mission hinges on the reliability of onboard technology, especially data storage and connectivity. With a proven track record in rugged deployments, ATTO stands out as a trusted choice for defense, military, and security integrators – who need dependable, high-speed storage and network connectivity in the most challenging conditions – on land, in the air, and under the sea.

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



ATTO ExpressSAS®	H1280 GT	H12F0 GT	H1208 GT	H120F GT	H1244 GT
Ports	8 External	16 External	8 Internal	16 Internal	4 External, 4 Internal
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 8644 External	4 Mini SAS HD (x4) SFF 8644 External	2 Mini SAS HD (x4) SFF 8643 Internal	4 Mini SAS HD (x4) SFF 8643 Internal	1 Mini SAS HD (x4) SFF 8644 External

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