

Applications

- High speed, high capacity, secure data recording for: test and development applications operating in the range, storing mission data in the field, and applications such as telemetry, avionics and aerospace, command, control, communications, intelligence, surveillance, reconnaissance (C4ISR).
- Scalable compute and storage architecture for data intensive workloads by aggregating capacity and performance through multiple networked ACUMEN nodes using NVMe over IP.
- Cyber secure embedded AES-256, NIST ratified and FIPS approved encryption protects sensitive and classified, stored and transmitted data in remote and unpredictable environments.
- Ultra-rugged data storage for systems operating in marine, desert, jungle, polar, or space conditions.
- Compact, powerful, and secure for remote, distributed, and mobile applications
- Enhance ACUMEN with compute capability and create a powerful platform for data-recording, AI, smart sensors, autonomous systems, or gateway services.

Benefits

- Flexible and agile multi-node networked architecture is easy to configure, expand, and re-assign to meet diverse, ever changing environments.
- Cyber secure, encrypted data storage and protected data transmission between systems
- Designed to withstand the harshest remote environments
- Low SWaP when small size, light weight, and low power are required.

ACUMEN™

SCALABLE SECURE NETWORK STORAGE NODES

WITH CYBER SECURITY AND COMPUTE CAPABILITY

M-SERIES FOR MILITARY APPLICATIONS

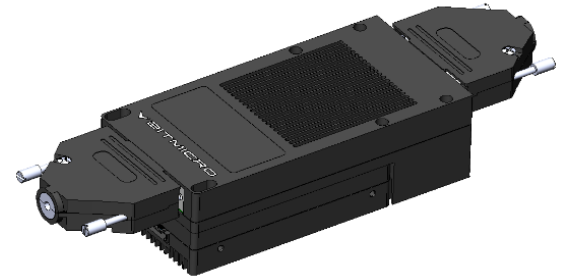
BITMICRO® ACUMEN Scalable Secure Network Storage Nodes provide AES-256 encrypted storage and cyber-secure transmission of military data. Combine multiple ACUMEN nodes to increase performance and capacity as-needed to solve your most data intensive workloads. ACUMEN can be enhanced with compute capability, providing an intelligent platform for a broad range of applications.

Each ACUMEN node includes secure, block-based, solid-state storage capacity with two 10Gb/s NVMe over IP ports for high-bandwidth data transfers. With NVMe over IP, one or many ACUMEN nodes can be combined to create a single namespace. To scale capacity and performance for a namespace, simply add more ACUMEN nodes.

ACUMEN nodes are compact, portable and have embedded Power over Ethernet, reducing the footprint required for space-constrained platforms through a single connection for power and data. ACUMEN nodes can easily be transported from an airborne system to a base system or to a remote location. ACUMEN nodes are military grade, capable of operating reliably in the harshest air, land, sea, and space environments. ACUMEN nodes are verified rugged to withstand the shock and vibration associated with mobile, widely distributed, and remote systems.

ACUMEN Scalable Secure Network Storage Nodes can be integrated with RAMPART™ Embedded Cyber Security for cyber-secure data transmission to another RAMPART-equipped ACUMEN node or any host equipped with RAMPART Module.

ACUMEN can be enhanced with different levels of compute capability, providing a secure, scalable, and powerful platform for data-recording, AI, smart sensors, autonomous systems, or gateway services.



Feature Highlights:

- Seamless end-to-end AES-256 encryption for protecting data when stored and when transmitted through the network.
- Two 10Gb/s NVMe over IP ports for easy network connectivity and namespace creation.
- Each ACUMEN node provides up to 8TB of capacity and/or up to 2GB/s of performance.
- Aggregate multiple networked ACUMEN nodes to increase namespace capacity and performance.
- Use standard file system commands and data protection methods to ensure continuous access to mission data.
- Compact size, portable, minimal power, and low weight allow for use in a large variety of systems where low SWaP is important.
- Mil-Spec focused rugged design withstands wide temperature ranges, high humidity, extreme vibration and shock.

ACUMEN nodes are available in three models to address the specific requirements of different applications:

- ACUMEN HS: High Capacity,
- ACUMEN HP: High Performance,
- ACUMEN SWaP: Highly efficient Size, Weight, and Power

Product Specifications

Model	HS Model	HC Model	SWaP Model
Capacity			
Storage Capacity	4TB	8TB	4TB
Supported NAND Types	SLC, SLC Mode over 3D TLC, MLC Mode over 3D TLC, 3D TLC, 3D eTLC NAND		
Performance			
Sequential Read / Write	Up to 2GB/s	500MB/s – Upgradable Up to 2GB/s	500MB/s
Power			
Power Consumption	<100W	<100W	~ 39W
Voltage	48v DC (POE)		
Network			
Protocol	NVMe/TCP (NVMe over Fabrics)		
Interface	2 x 10GbE (Option: 1 x 40GbE), 1 x USB 3.0		
Security and Data Protection			
Data Encryption-Stored Data	Included - Embedded AES-256, NIST ratified and FIPS approved		
Data Encryption-Transmitted Data	Optional - BiTMICRO RAMPART™ Cyber Security - Data remains encrypted during transmission - Embedded, Distributed, End-to-End, AES-256, NIST ratified and FIPS approved		
TCG Opal 2.0 Compliance	Optional		
FIPS 140-2 Level 3 Compliance	Optional		
Crypto Erase	Optional		
Secure Erase	Optional		
Military Sanitization	Optional		
PowerGuard® Power Loss Data Protection	Supported		
Compute Options			
Multi-core GPUs and CPUs, memory, encoders and decoders, accelerators, and specialized off-load engines. Special connectors for cameras, sensors, and other input devices.			
Manufacturing and Other Military Option			
Ruggedness Level	Verified Rugged		
Connectors	Optional Rugged, multi-insertion, and/or environmentally sealed connectors		
Solder	Lead or Lead-free		
Potting / Encapsulation	All methods/types		
Conformal Coating	All methods/types – including Silicon, Acrylic, Urethane		
Physical			
Form Factor	Self-contained External Chassis		
Dimensions (L x W x H)	153mm x 203mm x 76mm		
Environmental (Operational)			
Temperature	Industrial Extended Temp: -40 to 70 °C Industrial Wide Temp: -40 to 85 °C		
Warranty			
Standard	1 Year		
Extended (Optional)	3 Years		

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