

Applications

- High speed, high capacity - file and block data storage for small to large volumes of mission data.
- Supports applications operating in the field or on the range. Suited for a wide variety of workloads such as off-grid video recording, data logging, IP data recording, industrial IoT, telemetry, avionics and aerospace, command, control, communications, computers, intelligence, surveillance, reconnaissance (C4ISR).
- Ultra-low SWaP, compact/ portable, and ultra-low power for use on remote and mobile platforms where space and system resources are limited.
- Cyber secure embedded AES 256, NIST ratified and FIPS 197- approved encryption protects sensitive and classified data created and stored in unpredictable environments. Embedded Hardware Root of Trust and Secure Boot guard ACUMEN Node against malicious attacks.
- Fixed-in-place installation for continuous operation or use with the ACUMEN low profile multi-insertion/extraction tray when data needs to be physically removed, transported, or kept in a more secure environment.
- Power over Ethernet (PoE) unifies power and data transmission into a single, easy to deploy cable when quick deployment, simple installation, and maintenance are desired.

Benefits

- Flexible and agile networked platform is easy to configure, expand, and re-assign to meet diverse, ever changing environments.
- Cyber secure, encrypted data storage, prevents unauthorized access to sensitive information.
- Designed to withstand the harshest remote environments.
- Ultra-low SWaP when small size, lightweight, and low power are required.

ACUMEN™

ACUMEN Node – ULTRA-LOW SWAP NAS/FILE AND BLOCK STORAGE

CYBER SECURITY AND POWER OVER ETHERNET

ACUMEN Node – Ultra Low-SWaP NAS/file and block storage supports data-intensive applications where high capacity, performance, low power, and security are essential.

ACUMEN Node provides both file and block storage to address a variety of workloads. Its Ultra-low SWaP design is ideal for avionics, autonomous, and mobile C4ISR systems. ACUMEN Node’s Power over Ethernet feature delivers a highly efficient network connection for power and data communication; replacing cumbersome legacy cables. With PoE, ACUMEN Node is more portable and easier to deploy than existing multi-cable systems. ACUMEN Node’s security features include NIST ratified, FIPS 197- approved AES-256 encryption for stored data and data transmitted between locations. ACUMEN Node is rugged; it can be fixed in place in harsh environments or use the quick release when frequent removal is required.

The ACUMEN platform supports various NAS/file and block storage interfaces and protocols. ACUMEN Node incorporates cutting-edge technology, including NVMe over Fabrics (NVMe/oF). With NVMe/oF, multiple networked ACUMEN Node systems can be concatenated to provide greater capacity and performance for demanding high-speed low-latency applications, or mirrored to provide continuous access to data in the event of an infrastructure outage.

ACUMEN Node is extremely compact, efficient, rugged, and secure. Agility and reliability are at the core of ACUMEN Node. It’s a unique platform designed to meet the needs of ever-evolving applications and environments.



Feature Highlights:

- NAS/file and block storage.
- NIST ratified, FIPS 197- approved AES-256 encryption for protecting data when stored.
- Embedded Hardware Root of Trust and Secure Boot prevent ACUMEN Node from being compromised.
- Dual 10Gb/s Ethernet ports for easy network connectivity and namespace creation.
- Each ACUMEN Node provides 2TB or 4TB of capacity.
- 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.
- RAMPART™ Security Configuration Utility is a management tool designed to manage, configure, monitor, and control the ACUMEN Node. It manages and controls security functions such as Access Rights Management, Authentication, Crypto Erase, and Zeroization. RAMPART Utility is offered in browser-based user interface and optional RESTful API version.

Product Specifications

Model	Ultra-Low SWaP Model
Connectivity	
Interface	2 x 10GbE Auto MDIX 1 x USB 3.0 (Ethernet over USB) Slave Mode
IP Address Management	IPv4 and IPv6 Support (Static IP and DHCP)
Network Protocol	File-based: SMB3 (NAS) File-based: CephFS (NAS) Block-based: NVMe/TCP (NVMe over Fabrics) Block-based: iSCSI FTPS NFS Network Boot / PXE <i>Notes:</i> - Supports multiple network protocols in a single ACUMEN Node. - SMB1 support is available as an add-on feature.
Physical	
Form Factor	Fanless, No Active Cooling, Self-contained External Chassis
Dimensions (L x W x H)	ACUMEN Node: 6.71 in x 3.38 in x 2.55 in (170.4 mm x 85.9 mm x 64.7 mm) Swap-Pluggable Tray: 10.04 in x 3.55 in x 4.43 in (255 mm x 90.2 mm x 112.4 mm) <i>Note:</i> - ACUMEN Node dimensions do not include the Knurled Knob. - Swap-Pluggable Tray dimensions include the Hold-Down Knob and Ground Mount.
Weight (approximate)	ACUMEN Node: 2.9 lbs (1,315 gms) Swap-Pluggable Tray: 1 lb (458 gms)
Capacity	
Storage Capacity	2TB or 4TB
Performance	
Sequential (R/W)	Read: 428 MB/s Write: 327 MB/s
Security	
Self-Encrypting Drive (SED)	
Hardware Root of Trust	
Secure Boot	
HTTPS for RAMPART Security Configuration Utility	

Product Specifications

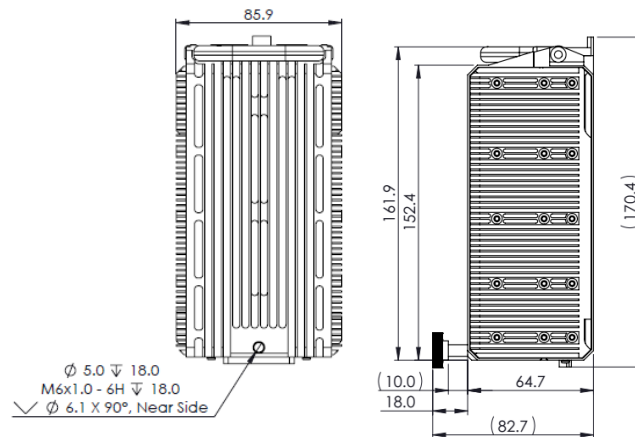
Model	Ultra-Low SWaP Model
RAMPART Security Configuration Utility	
Access Rights Management (Browser-based User Interface and RESTful API)	Add or Delete Users (up to 16 users)
	Modify User Passwords
	Share Folders (by any user to other users)
Security Features (Browser-based User Interface and RESTful API)	Role-based Access Control
	Identity-based Access Control
	Crypto Erase
	Zeroization
Node Shutdown (Browser-based User Interface and RESTful API)	Supported
<i>Note: RESTful API version is an add-on feature.</i>	
Power	
PowerGuard® Power Protection	Add-On Feature <i>Provides additional power to support operations during power fluctuations or power interruption.</i>
Power Consumption	~ 24W
Voltage	12V DC and Power over Ethernet (PoE as per 802.3bt standard) <i>Note: PoE-enabled Ethernet in one port. 12V DC used by default when both 12V DC and PoE power sources are present.</i>
Environmental (Operational)	
Temperature	Industrial Low Temperature: -40 to +55 °C Industrial Extended Temperature: -40 to +71 °C
Defense and Avionics Options	
Connectors	Rugged, multi-insertion, blind-mate, and/or environmentally sealed connectors
Solder	Leaded
Potting / Encapsulation	All methods/types
Conformal Coating	All methods/types – including Silicone, Acrylic, Urethane
Warranty	
Standard	1 Year
Extended	3 Years (Add-On Feature)

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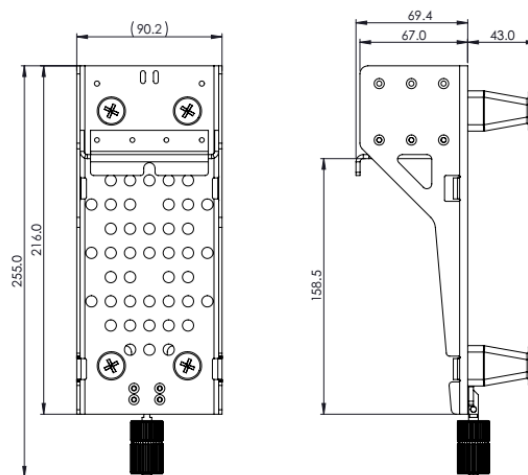
Product Dimensions



ACUMEN Node Dimensions



Swap-Pluggable Tray Dimensions



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