



Creating Tomorrow's Memories

U.2 NVMe PCIeexpress UHC
Ultra High Capacity to 30TB
3D eNAND SED OPAL Flash Disk

Photon Series
AS25-NVMe_UHC
NVMe PCIe Gen5 x4 • 8TB–30TB

13,000
MB/s

Max Seq. Read

6,300
MB/s

Max Seq. Write

1,000 G

Shock Operating

2,000,000
hrs

MTBF

30.7 TB

Max Capacity

AES-256

TCG OPAL

PRODUCT OVERVIEW

The **Photon Series AS25-NVMe_UHC** is ASINE's flagship ultra-high-capacity U.2 drive, delivering NVMe PCIe Gen5 x4 performance in the industry-standard SFF-8639 2.5" form factor. Designed for defense, aerospace, AI infrastructure, and mission-critical industrial deployments, this drive combines enterprise-class throughput with ruggedized reliability and hardware-enforced security.

Available from 7.6TB to 30.7TB, the AS25-NVMe_UHC features AES-256 TCG OPAL hardware encryption, fast sanitize erase, capacitor-backed power-loss protection, and industrial-grade construction — purpose-built to sustain full-capacity performance across long operational lifetimes without compromising data integrity.

The AS25-NVMe_UHC is the right choice for organizations that cannot afford storage to be the limiting factor in their most demanding systems.

QUICK REFERENCE

Interface: NVMe PCIe Gen5 x4 • Gen3 x4 • SFF-8639 U.2

NVMe Rev.: Gen5/1.4a and Gen3/1.3 compliant

Capacity: 330GB – 30.7TB

Seq. Read (Gen5): Up to 13,000 MB/s (128KB, 15TB & 30TB)

Seq. Write (Gen5): Up to 6,300 MB/s (128KB, 15TB & 30TB)

Random Read: Up to 27,000K IOPS (4KB, 15TB–30TB)

Operating Temp: Commercial 0°C to +70°C • Extended -30°C to +80°C

Storage Temp: -40°C to +85°C

Shock: 1,000 G / 0.5 ms half-sine (operating)

MTBF: 2,000,000 hours (JEDEC-218/219)

Security: AES-256 TCG OPAL • Fast sanitize erase

OS Support: Windows • Linux • No special drivers



AS25-NVMe_UHC Photon Series — U.2 2.5"
Images for reference only

PERFORMANCE SPECIFICATIONS

Parameter	Specification	Notes
Seq. Read — 15TB & 30TB (128KB)	Up to 13,000 MB/s sustained	PCIe Gen5 x4
Seq. Write — 15TB & 30TB (128KB)	Up to 6,300 MB/s sustained	PCIe Gen5 x4
Seq. Read — 1TB/2TB Gen3	Up to 3,000 MB/s	
Seq. Write — 1TB/2TB Gen3	Up to 1,000 MB/s	IOPS 4K R: 350K / W: 180K (Q32)
Seq. Read — 330GB/660GB Gen3	Up to 3,000 MB/s	
Seq. Write — 330GB/660GB Gen3	Up to 2,500 MB/s	IOPS 4K R: 350K / W: 250K (Q32)
Random Read IOPS (4KB)	Up to 27,000K IOPS	15TB & 30TB

Random Write IOPS (4KB)	280K – 320K IOPS	15TB–30TB capacity dependent
Interface	NVMe PCIe Gen5 x4 • Gen3 x4 • SFF-8639 U.2	NVMe 1.4a / 1.3 compliant
OS Support	Windows • Linux • NVMe native	No special drivers required
Power Loss Protection	Capacitor-backed — in-flight writes committed	Mission-critical data integrity

ENVIRONMENTAL, MECHANICAL & RELIABILITY

Environmental	Specification	Reliability & Power	Specification
Operating Temp	Commercial: 0°C to +70°C	MTBF	2,000,000 hours (JEDEC-218/219)
Extended Temp	–30°C to +80°C • Throttle +77°C	UBER	10 ⁻¹⁷
Storage Temp	–40°C to +85°C	Error Correction	EDC/ECC • Bad Block Mapping & Mgmt
Humidity	5% to 95% RH, non-condensing	Wear Leveling	Dynamic & Static
Altitude (>7TB)	–1,000 ft. to 20,000 ft.	Self-Test	Power-up self-test • Auto diagnostics
Altitude (≤2TB)	–1,000 ft. to 70,000 ft.	Security	AES-256 TCG OPAL • Fast sanitize erase
Shock (Operating)	1,000 G / 0.5 ms half-sine	H/W Secure Erase	Up to 2TB models
Vibration	2.17 Grms • 7–700 Hz	Power Idle (>7TB)	Max 6.5W
Displacement	Pk-Pk 1.5mm (20–80Hz)	Power Active (>7TB)	18W @ 8TB • 25W @ 15–30TB
Acceleration	20G (80–2000Hz)	Power Idle (≤2TB)	Max 1.1W
Dimensions (>7TB)	100.2 × 69.85 × 14.9 mm	Power Active (≤2TB)	Max 3.2W (all capacities)
Dimensions (≤2TB)	100.2 × 69.85 × 9.5 mm	TBW (15TB)	28,000 TBW / 1 DWPD @ 5yr (JESD219)
Weight (>7TB)	Max 200g @ 8TB • Max 168g @ 15–30TB	TBW (30TB, 64KB seq)	112,000 TBW
Weight (≤2TB)	Max 120g	TBW 1TB/2TB Gen3	1,200 TBW @ 2TB
Conformal Coating	MIL-grade available on request	TBW 330/660GB Gen3	4,000 TBW @ 660GB

WHY ASINE 3D eNAND TLC — INDUSTRIAL GRADE ADVANTAGE

The 3D eNAND TLC in this product is not commodity TLC. It is enterprise-screened, industrially qualified NAND delivering the highest reliability for mission-critical applications.

Parameter	Standard TLC (Commodity)	ASINE 3D eNAND TLC	Significance
Bit Error Rate	Higher — standard TLC	Lower than MLC grade	Data reliability under write stress
ECC Engine	Basic BCH	LDPC + advanced ECC	Stronger correction, longer drive life
Write Endurance (30TB)	Standard consumer limits	112,000 TBW @ 64KB sequential	Mission-critical continuous write
Operating Temp	+70°C commercial	Extended –30°C to +80°C	Rugged and demanding environments
Shock Resistance	150–300G typical	1,000 G / 0.5 ms operating	Defense, aerospace, rugged compute
Field Heritage	Limited industrial data	8+ years mil/aero deployed	Proven in active operational programs

VALIDATED APPLICATIONS

Defense, Aerospace & Security	Enterprise & Industrial	Commercial & Embedded
<ul style="list-style-type: none"> Airborne & Rugged Computer Systems Security / Homeland Security High-Speed Data Recording JBOD / NAS / SAN / RAID Video Surveillance / JPEG2000 Military Ground Vehicle 	<ul style="list-style-type: none"> Servers • Data Warehouse AI & Machine Learning Infrastructure Factory Automation Medical Systems & Imaging High-Performance Computing Virtual Reality 	<ul style="list-style-type: none"> Industrial & Commercial PC Navigation & Infotainment Smart Terminals • ATM • Kiosk Broadcasting & Video Production Virtual Reality Platforms Factory Automation

THE ASINE ADVANTAGE

Space-qualified architecture at commercial scale. Trusted by defense primes and aerospace programs worldwide for over 25 years.

www.asine-global.com • info@asinegroup.com