

DigiStor Enterprise E3.S PCIe Gen5 Opal SED

TAA Compliant | TCG Opal 2.0 | AES-256 | E3.S | PCIe Gen5

The DigiStor Enterprise E3.S series SSD delivers the full advantages of flash technology with a PCIe Gen5 x4 interface, fully compliant with the standard E3.S form factor and hot-swap capability. Capacities reach up to 16TB with sequential read/write performance up to 14,000 MB/s using 3D TLC NAND flash with DDR4. Hardware AES-XTS 256-bit encryption via TCG Opal 2.0 makes it an ideal secure embedded solution for new enterprise platforms.

- PCIe Gen5 x4
- Sequential Read up to 14,000 MB/s
- Sequential Write up to 8,500 MB/s
- 4K Random Read up to 3,300,000 IOPS
- 4K Random Write up to 900,000 IOPS
- Capacities: 1.92 / 3.84 / 7.68 / 15.36 TB
- TCG Opal 2.0 Hardware AES-XTS 256-bit Encryption
- PSID Revert & Crypto Erase support
- IEEE 1667 (activatable via vendor tool)
- Power Loss Protection (PLP)
- NVMe-MI (Management Interface) & SMBus Support
- MTBF 2.5 million hours | UBER < 1 per 10¹⁸ bits read

Available Models

Part Number	Capacity	Form Factor	Interface	Encryption	DWPD
DIG-P5E3SG31-1T9	1.92 TB	E3.S	PCIe Gen5 x4 Single Port	TCG Opal	1
DIG-P5E3SG31-3T8	3.84 TB	E3.S	PCIe Gen5 x4 Single Port	TCG Opal	1
DIG-P5E3SG31-7T6	7.68 TB	E3.S	PCIe Gen5 x4 Single Port	TCG Opal	1
DIG-P5E3SG31-15T	15.36 TB	E3.S	PCIe Gen5 x4 Single Port	TCG Opal	1

Performance Summary

Capacity	Seq. Read	Seq. Write	Rand. Read	Rand. Write	Flash
1.92 TB	14,000 MB/s	4,200 MB/s	2,350,000 IOPS	140,000 IOPS	3D TLC
3.84 TB	14,000 MB/s	8,500 MB/s	3,300,000 IOPS	320,000 IOPS	3D TLC
7.68 TB	14,000 MB/s	8,500 MB/s	3,200,000 IOPS	460,000 IOPS	3D TLC
15.36 TB	14,000 MB/s	8,400 MB/s	2,600,000 IOPS	420,000 IOPS	3D TLC

Note: Sequential performance measured at 128KB QD=32, Jobs=1. Random performance measured at 4K QD=128, Jobs=8. Test platform: Intel Xeon Gold 5416S, DDR5 64G, Ubuntu 20.04.2 LTS. Performance may vary based on flash configuration and platform.

The information provided herein is for reference and evaluation purposes only and should not be relied upon for final design decisions. Photos in this document are for illustrative purposes only and might not be representative of the exact product described.

Reliability & Environmental

Parameter	Rating
MTBF	2.5 million hours
UBER	< 1 sector per 10^{18} bits read
DWPD	1
Interface	PCIe Gen5 x4; backward compatible with PCIe Gen 4, Gen 3, Gen 2, and Gen 1*
Op. Temp.	0°C to 70°C (with specified airflow)
Storage Temp.	-40°C to 85°C
Op. Humidity	5% to 95% RH
Shock (op / non-op)	500G, 2ms / 1000G, 0.5ms
Vibration (op)	7–800 Hz, 2.17 Grms
Vibration (non-op)	10–2000 Hz, 16.3 Grms
ESD	±4 KV (EN 61000-4-2)
Typical Power	25 W
Idle Power	< 5 W
Inrush Current	2.5 A (all capacities, 12V)
Op. Voltage	12V ±10%; 3.3V aux +5%/–10%
Dimensions	112.75 × 76 × 7.45 mm
Weight	106–119 g (capacity dependent)

Compliance

- PCIe Express Base 5.0
- NVMe Express 2.0
- PCIe Express SFF-TA-1009
- TAA Compliant
- RoHS Compliant
- FCC, CE, RCM

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Security Capabilities

- **TCG Opal 2.0:** Scalable hardware encryption management with access control, key management, and read/write lock state
- **AES-XTS 256-bit:** Full-drive hardware encryption with no performance penalty
- **Secure Erase:** Writes 0xFF to all blocks, returning the drive to factory default state
- **Crypto Erase:** Resets the cryptographic key, rendering previously encrypted data irrecoverable
- **PSID Revert:** Physical Presence SID (32-char string printed on label) reverts drive to manufacturing settings
- **Instant Security Erase:** Reverts Opal-activated encrypted SSD via PSID, resetting the key immediately
- **IEEE 1667:** Supported; must be activated via vendor tool to prevent unintended eDrive implementation
- **Namespace Support:** Single-port namespace with reservation and metadata protection
- **NVMe-MI:** Full NVMe Management Interface Rev 1.2 with SMBus/I2C support
- **Data Retention:** 3 months at rated temperature conditions

Flash Management Technology

- **Thermal Throttling** — Multi-stage TMT protection (TMT1 <7,300 MB/s at 77–81°C; TMT2 <1,700 MB/s at 81°C; thermal shutdown at ≥85°C flash / ≥115°C controller)
- **Power Loss Protection** — On-board PLP capacitors safeguard in-flight data during unexpected power loss events
- **IOPS Consistency** — ≥95% IOPS consistency at QD=1 and QD=8 across all capacities, ensuring predictable latency under sustained workloads
- **Endurance (TBW)** — 1 DWPD models rated up to 28,032 TB written (15360 GB)

Typical Applications

- Enterprise data center storage and hyper-converged infrastructure
- AI/ML training workloads requiring high-throughput, low-latency NVMe storage
- Government and defense deployments requiring TAA compliance and hardware encryption
- Cloud service providers needing hot-swappable, high-density PCIe Gen5 storage

*Performance is limited to the maximum PCIe generation and lane configuration supported by the host system.