

Enterprise PCIe Gen5 M.2 2280 Opal SED

- TAA COMPLIANT
- TCG OPAL 2.0
- M.2 2280
- PCIe GEN5 X4

This is a PCIe Gen5 x4 Solid State Drive in M.2 2280 form factor. Leveraging the NVMe high-speed interface, it delivers outstanding sequential and random performance, low latency, and enterprise-class Quality of Service — with hardware AES-XTS 256-bit encryption and TCG Opal 2.0 security support.

Top Features

- PCIe Gen5 x4 — backward compatible to Gen4/3/2/1
 - Sequential Read up to 13,800 MB/s
 - Sequential Write up to 9,000 MB/s
 - Random Read up to 2,800K IOPS
 - Random Write up to 260K IOPS
 - 3D TLC NAND Flash
- Hardware AES-XTS 256-bit Encryption
 - TCG Opal 2.0
 - Hardware-Based Power Loss Data Protection
 - End-to-End Data Path Protection (SECDDED)
 - Up to 128 Namespaces
 - TBW: up to 16,200 TB | DWPD: 1 | 5-Year Warranty

Available Models

Part Number	Capacity	Form Factor	Interface	Encryption	DWPD
DIG-P5M20G31-0T4	480GB	M.2 2280	PCIe Gen5 x4	TCG Opal 2.0	1
DIG-P5M20G31-0T9	960GB	M.2 2280	PCIe Gen5 x4	TCG Opal 2.0	1
DIG-P5M20G31-1T9	1.92TB	M.2 2280	PCIe Gen5 x4	TCG Opal 2.0	1
DIG-P5M20G31-3T8	3.84TB	M.2 2280	PCIe Gen5 x4	TCG Opal 2.0	1
DIG-P5M20G31-7T6	7.68TB	M.2 2280	PCIe Gen5 x4	TCG Opal 2.0	1

Performance Summary

Capacity	Seq. Read	Seq. Write	Rand. Read	Rand. Write	TBW	Flash
480GB	6,000 MB/s	850 MB/s	350K IOPS	30K IOPS	860 TB	3D TLC
960GB	12,000 MB/s	1,700 MB/s	700K IOPS	65K IOPS	1,850 TB	3D TLC
1.92TB	13,800 MB/s	3,500 MB/s	1,500K IOPS	155K IOPS	3,900 TB	3D TLC
3.84TB	13,800 MB/s	6,900 MB/s	2,200K IOPS	220K IOPS	8,100 TB	3D TLC
7.68TB	13,800 MB/s*	9,000 MB/s*	2,800K IOPS*	260K IOPS*	16,200 TB	3D TLC

* 7.68TB performance values are preliminary and subject to change.

Note: Performance measured using FIO on Linux with full unformatted drive. Sequential performance at 512KB QD=32 Job=1; Random performance at 4KB QD=128 Jobs=8. Test platform: Ubuntu 20.04.2 LTS, Intel Xeon Gold 5416S, Giga Computing MS03-CE0-000, DDR5 64G. Performance may differ according to flash configuration and platform.

This document describes a product that is currently under development. Specifications, features, and performance characteristics are subject to change without notice as the product design is finalized. 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	2.0 million hours
UBER	< 1 sector per 10 ¹⁷ bits read
Op. Temp.	0°C to 70°C
Storage Temp.	-40°C to 85°C
Op. Humidity	0% to 90% RH
Shock (op / non-op)	1000G, 0.5ms / 1500G, 0.5ms
Vibration (op)	3.08 Grms (7–800 Hz)
Vibration (non-op)	20G (20–2000 Hz)
ESD	±4 kV (EN 61000-4-2 / IEC 61000-4-2)
Active Power (Read)	up to 6.7 W
Active Power (Write)	up to 7.8 W
Idle Power	2.5 W (Avg. RMS)
Inrush Current	2A @ 3.3V
Op. Voltage	3.3V ± 5%
Dimensions	80.00 × 22.00 × 4.08 mm
Weight	TBD

Compliance

- CE, FCC, RCM
- TAA Compliant
- TCG Opal 2.0 Compliant

 **Contact:** sales@digistor.com | support@digistor.com |
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subject to change without notice.

Security Capabilities

- Hardware AES-XTS 256-bit Encryption
- TCG Opal 2.0
- Sanitize (separate firmware setting, available on request)
- Hardware-Based Power Loss Data Protection
- End-to-End Data Path Protection
- SECDED (Single-Error Correction, Double-Error Detection)
- Namespace Reservation support
- Up to 128 Namespaces
- SMBus / I2C Management Interface
- 129 queues (1 admin + 128 IO), 16K entries per IO queue

Flash Management Technology

Thermal Throttling

4-stage thermal management (TMT1/TMT2/Protect/Fatal) protects device integrity under heavy workloads.

Power Loss Protection

Hardware-based circuitry ensures data integrity during unexpected power failures.

E2E Data Protection

End-to-end data path protection with SECDED guards against data corruption across the full I/O path.

IOPS Consistency

95% IOPS consistency (QD=1 and QD=8) for predictable, deterministic performance in enterprise workloads.

Typical Applications

- Enterprise storage servers and hyper-converged infrastructure
- High-performance databases and OLTP workloads
- AI/ML training data pipelines and inference acceleration
- Cloud service provider and data center deployments requiring PCIe Gen5 bandwidth