



2.5-inch U.2, 7mm, NVMe SSD
800GB, 1.6TB, 3.2TB, 6.4TB,
960GB, 1.92TB, 3.84TB, 7.68TB¹

Features

- Western Digital NVMe 1.3 compliant controller; PCIe Gen3.1x4
- Western Digital BiCS4 96L 3D TLC NAND
- 0.8 and 2.0 DWPD
- Data-loss protection
- MTBF rating of 2 million hours
- Instant Secure Erase (ISE)
- 5-year limited warranty

Benefits

- Optimized for all common read-intensive and mixed used workloads
- Up to 195K IOPS (70/30 random mixed workload)
- 5x read performance improvement over SATA SSDs and 65% less power consumption compared to 25W performance NVMe SSDs
- Vertically integrated with proven controller architecture accelerates qualification

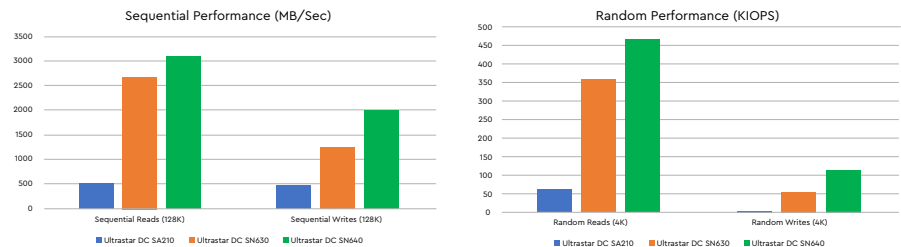
Specialized for the Following Applications

- Boot, cache or storage
- Software Defined Storage
- File, Block and Object Storage applications
- Hyper-converged Infrastructure
- Virtualization

Ultrastar® DC SN640 NVMe™ for Data Centers

NVMe™ SSDs are specifically designed to maximize flash memory performance. They offer ultra-low latency, high scalability and lower TCO over traditional SATA-based SSDs. NVMe SSDs are widely deployed in the public cloud segment to better manage peak demands and demanding workloads such as AI/ML, OLTP, virtualization, CDN and others. Traditional SATA-based SSDs have become a bottleneck for on-premises data centers utilizing higher performance CPUs in converged, hyper-converged and composable infrastructure designs. With NVMe SSDs, IT organizations can optimize their data center infrastructure, improve storage capacity utilization for demanding workloads, enhance responsiveness for critical applications, maintain uptimes and availability, and lower their TCO.

Western Digital's Ultrastar® DC SN640 NVMe SSD offers improved performance and responsiveness over prior generations, with capacities from 960GB-7.68TB at 0.8 DW/D and 800GB-6.4TB at 2 DW/D in a U.2 form factor. The DC SN640 includes Western Digital's 96-Layer BiCS4 3D TLC NAND and Western Digital's NVMe 1.3 controller, providing up to 5x read performance improvement over SATA SSDs. The DC SN640 incorporates enterprise reliability features such as power-loss protection, end-to-end data path protection, and a five-year limited warranty.



Designed for Workload Flexibility

The DC SN640 comes in two endurance classes: 0.80 DW/D and 2 DW/D, each for five years. The 0.80 DW/D endurance class is designed for read-intensive applications while the 2 DW/D endurance class can be deployed in mixed-use workloads that require higher endurance levels over the life of the drive or higher performance for write-intensive applications.

Safeguarding Data

The Ultrastar DC SN640 with Instant Secure Erase (ISE) helps safeguard data and provides instant erase upon decommissioning and recommissioning the drive. Secured Firmware downloads with RSA authentication ensure that the drive runs authentic Western Digital firmware only.

Better with NVMe

Now is the right time to upgrade from SATA SSDs to NVMe performance in cloud/ hyperscale and on-prem data centers. The Ultrastar DC SN640 NVMe SSD will help enable lower TCO compared to SATA SSDs, while providing low-latency and performance for current demanding workloads and future requirements.

Specifications

Model Information								
Endurance ²	2DW/D	2DW/D	2DW/D	2DW/D	0.8DW/D	0.8DW/D	0.8DW/D	0.8DW/D
Capacity	800GB	1,600GB	3,200GB	6,400GB	960GB	1,920GB	3,840GB	7,680GB
Maximum Petabytes Written ²	2.92	5.84	11.68	23.36	1.4	2.8	5.61	11.21
Configuration								
Interface	PCIe Gen 3.1 x4 (Compliant to NVMe 1.3)							
Form Factor	2.5-inch U.2, 7mm							
Flash Memory Technology	Western Digital BiCS4 3D TLC NAND							
Performance ³								
Read Throughput (max MiB/s, Seq 128KiB)	3K	3.1K	3.1K	3.1K	3K	3.1K	3.1K	3.1K
Write Throughput (max MiB/s, Seq 128KiB)	1K	2K	1.8K	1.8K	1.1K	2K	1.8K	1.8K
Read IOPS (max, Rnd 4KiB)	414K	473K	468K	469K	413K	472K	469K	467K
Write IOPS (max, Rnd 4KiB)	108K	116K	115K	116K	44K	63K	63K	65K
Mixed IOPS (max, 70/30 R/W, 4KiB)	184K	307K	286K	304K	111K	194K	174K	187K
Read Latency (µs, avg.) ⁴	204	208	225	225	210	208	221	225
Reliability								
Uncorrectable Bit Error Rate (UBER)	1 in 10 ¹⁷							
MTBF ⁵ (M hours)	2							
Annualized Failure Rate (AFR) ⁵	0.44%							
Availability (hrs/day x days/wk)	24x7							
Limited Warranty ⁶ (years)	5							
Power								
Requirement (DC +/- 10%)	+12V							
Operating Power States (W, typical)	10, 11, 12							
Idle (W, average)	< 5W							
Physical Size								
z-height (mm)	7.00 +0.2/-0.5 (including labels)							
Dimensions (width x length x mm)	69.85 (+/- 0.25) x 100.45							
Weight (g, max)	95							
Environmental								
Operating Temperature ⁷	0°C to 70°C							
Non-Operating Temperature ⁸	-40°C to 85°C							

Feature	Part Number	Model Number	Capacity	Endurance
Instant Secure Erase	0TS1927	WUS4BB096D7P3E3	960GB	0.8 DW/D
	0TS1928	WUS4BB038D7P3E3	1,920GB	0.8 DW/D
	0TS1929	WUS4BB076D7P3E3	3,840GB	0.8 DW/D
	0TS1930	WUS4BB076D7P3E3	7,680GB	0.8 DW/D
	0TS1952	WUS4CB080D7P3E3	800GB	2 DW/D
	0TS1953	WUS4CB016D7P3E3	1,600GB	2 DW/D
	0TS1954	WUS4CB032D7P3E3	3,200GB	2 DW/D
	0TS1955	WUS4CB064D7P3E3	6,400GB	2 DW/D

¹ One gigabyte (GB) is equal to 1,000MB (one billion bytes) due to operating environment.

² Endurance rating based on DW/D using 4KiB random write workload over 5 years.

³ Based on internal testing. Performance will vary by capacity point, or with the changes in useable capacity. Consult product manual for further details. All performance measurements are in full sustained mode and are peak values. Subject to change.

⁴ Average read latency at 4KiB, QD=1.

⁵ MTBF and AFR specifications are based on a sample population and are estimated by statistical measurements and acceleration algorithms under typical operating conditions for this drive model. MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

⁶ The warranty for the product will expire on the earlier of (i) the date when the flash media has reached one-percent (1%) of its remaining life or (ii) the expiration of the time period associated with the product.

⁷ Composite temperature reading.

⁸ Values are based on ambient temperature. Avoid non-operational exposure to temperatures in excess of 40°C for periods exceeding three months.

Western Digital

5601 Great Oaks Parkway
 San Jose, CA 95119, USA
 US (Toll-Free): 1-888-426-5214
www.westerndigital.com

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