2.5-inch U.2, 15mm, NVMe SSD
1.6TB, 3.2TB, 6.4TB,
1.92TB, 3.84TB, 7.68TB, 15.36TB[1]

Features

- Western Digital dual-port NVMe 1.3c compliant controller; PCIe 3.1

- Western Digital 96-Layer 3D TLC NAND

- 1 and 3 DW/D[2]

- Performance: up to RR = 780K IOPS, RW = 257K IOPS, Mixed Random 70/30 Read/Write = 503K IOPS

- MTBF rating of 2.5 million hours (projected)

- Security Options: Secure Erase (SE) and Instant Secure Erase (ISE), TCG Ruby, FIPS 140–2 validation (forthcoming)

- 5-year limited warranty

- Enterprise features including – 128 namespaces, atomic writes, multiple sector sizes, protection information, SGL, NVMe-MI version 1.1

Applications & Workloads

- High performance computing (HPC)

- High availability storage arrays

- All mixed use workloads

- Artificial Intelligence/Machine Learning

- Online transaction processing (OLTP) and online analytical processing (OLAP)

- Real-time analytics

- Pattern recognition

- Virtualization

Performance NVMe™ SSDs Enable Enterprise Workloads

NVMe™ adoption in the data center continues to grow as modern applications and workloads demand more performance. Performance NVMe SSDs are designed for primary storage for HPC servers and primary storage in external storage arrays. Performance NVMe SSDs target cloud compute and enterprise workloads that require low latency to data and high availability of data. These applications include real-time data analytics, cloud computing, OLTP/OLAP databases, artificial intelligence (AI), machine learning (ML), pattern recognition and virtualization. The Ultrastar DC SN840 is Western Digital's 3rd generation of performance NVMe SSD for data center with PCIe Gen 3.1 (dual-port), NVMe 1.3, providing up to 3,470/3,330 MB/s Sequential Read/Write and up to 503K IOPS mixed random 70/30 read/write performance.

Dual-port Leadership

Ultrastar DC SN840 extends Western Digital's leadership in dual-port architecture by vertically integrating proven flash controllers. Dual-port high availability supports two redundant paths to the SSD, and is critical to ensuring access to data in the event of a failure in the data path.

Quality, Reliability and Security

Ultrastar DC SN840 is built on Western Digital's 96-layer 3D TLC NAND, with capacities up to 15.36TB in a U.2 2.5" form factor. It offers two endurance classes for workloads; 1 DW/D for read intensive workloads common with the majority of enterprise applications and cloud services, and 3 DW/D for higher write or mixed use workloads such as running SQL. The DC SN840 has a five-year limited warranty with enterprise reliability MTBF of 2.5M hours (projected). The DC SN840 offers security options with Secure Erase (SE), Instant Secure Erase (ISE) with an AES-256 encryption engine, TCG Ruby and FIPS 140–2 validation (forthcoming).

up to **45%**
MORE SEQUENTIAL WRITE PERFORMANCE[8]

up to **67%**
MORE MIXED IOPS
(max, 70/30, 4KiB)[8]

Specifications

Model Information

Endurance[2]	1 DW/D	1 DW/D	1 DW/D	1 DW/D	3 DW/D	3 DW/D	3 DW/D
Capacity	1,920GB	3,840GB	7,680GB	15,360GB	1,600GB	3,200GB	6,400GB
Maximum Petabytes Written[2]	3.504	7.008	14.016	28.032	8.76	17.52	35.04

Configuration

Interface	Western Digital NVMe 1.3c Controller, Dual Port PCIe 3.1 1×4 or 2×2
Form Factor	U.2 2.5-inch, 15mm
Flash Memory Technology	Western Digital 96-Layer 3D TLC NAND

Performance[3]

Read Throughput (max MB/s, Seq 64KiB)	3470	3470	3470	3470	3470	3470	3470
Write Throughput (max MB/s, Seq 64KiB)	2280	3250	3200	3190	2300	3300	3200
Read IOPS (max, Rnd 4KiB)	736K	780K	780K	780K	736K	780K	780K
Write IOPS (max, Rnd 4KiB)	108K	159K	160K	149K	224K	257K	253K
Mixed IOPS (max, 70/30 R/W, 4KiB)	231K	389K	373K	401K	341K	503K	472K
Read Latency (µs, avg.)[4]	74	75	82	84	74	75	82

Reliability

Uncorrectable Bit Error Rate (UBER)	1 in 10^{17}
MTBF[5] (M hours, projected)	2.5M hours
Annualized Failure Rate[5] (AFR, projected)	0.35%
Availability (hrs/day x days/wk)	24×7
Limited Warranty[6] (years)	5
Data Retention	40C/90-day equivalent

Power

Requirement (DC +/- 5%)	12V +/-15% 3.3V +/- 15%
Operating (W, max average)	18
Idle (W)	6

Physical Size

z-height (mm)				15			
Dimensions (width x length, mm)				69.85 × 100.45			
Weight (g, max)	172	173	160	180	172	173	184

Environmental

Operating Temperature	0° to 70°C (Case)
Non-Operating Temperature[7]	-40° to 85°C

Part Number

SE	ISE	TCG Ruby	TCG FIPS 140–2	Model Number	Capacity	Endurance
0TS1875	0TS2046	0TS2053	0TS2060	WUS4BA119DSP3Xz	1,920GB	1 DW/D
0TS1877	0TS2048	0TS2055	0TS2062	WUS4BA138DSP3Xz	3,840GB	1 DW/D
0TS1879	0TS2050	0TS2057	0TS2064	WUS4BA176DSP3Xz	7,680GB	1 DW/D
0TS1881	0TS2051	0TS2058	0TS2065	WUS4BA1A1DSP3Xz	15,360GB	1 DW/D
0TS1874	0TS2045	0TS2052	0TS2059	WUS4C6416DSP3Xz	1,600GB	3 DW/D
0TS1876	0TS2047	0TS2054	0TS2061	WUS4C6432DSP3Xz	3,200GB	3 DW/D
0TS1878	0TS2049	0TS2056	0TS2063	WUS4C6464DSP3Xz	6,400GB	3 DW/D

z = Encryption Setting

1 = Secure Erase

3 = Instant Secure Erase

4 = TCG Ruby

5 = TCG FIPs 140–2

Western Digital®