



2.5-inch U.3, 15mm, NVMe SSD  
3.84TB, 7.68TB, 15.36TB, 30.72TB, 61.44TB<sup>1</sup>

## Features

- Western Digital NVMe 1.4 Compliant Controller; PCIe® 4.0
- Western Digital BiCS5 3D TLC NAND
- U.3 interface (U.2 Backplane Compatible)
- 1.0 DWPD<sup>2</sup>
- Enterprise features including:
  - Power Loss Protection
  - End-to-End data Path Protection
  - Variable Sector Sizes
  - NVMe-MI™ 1.1b
- MTBF rating of 2.5 million hours<sup>5</sup> (projected)
- Secure Erase (SE), Instant Secure Erase (ISE), and TCG Ruby
- 5-year Limited Warranty<sup>6</sup>

## Applications/Environments

- Cloud datacenters
- Scale-out or Software Defined Solutions
- Big Data
- NoSQL or Distributed databases
- AI/ML Deep Learning
- Data Archiving

## Unlocking the Full Potential of Enterprise SSDs

Western Digital NVMe™ solid state drives provide the trusted performance, reliability, and security demanded by enterprise environments. The Ultrastar DC SN655 NVMe SSD expands the Ultrastar SN65x family with a dual-port drive, expanded encryption capabilities, added performance, and multiple capacities now up to 61.44TB. Ultrastar NVMe SSDs continue to be the ideal solution for cloud and server providers who need performant, high-capacity, cost-optimized, read-intensive performance for their data-intensive applications.

With dual-port redundancy and failover capability, end-to-end data protection and additional enterprise features, the SN655 helps ensure your data is secure and available when needed. With high-capacity, low-latency performance reaching up to 1.1M IOPs, storage providers are efficiently able to increase capacity for modern applications processing large unstructured datasets for analytics, artificial intelligence, or machine learning. With these workloads growing to gigabytes and even petabytes, storage-optimized Ultrastar NVMe SSDs are reducing time-to-insights of big data and enabling efficient machine learning.

## Features

The new Ultrastar DC SN655 NVMe SSDs includes the next generation Western Digital NVMe 1.4b controller with PCIe Generation 4.0 interface and Western Digital BiCS5 TLC 3D NAND. NVMe provides hosts low-latency access to direct attached NVMe SSDs or to NVMe-oF™ storage arrays. BiCS5 TLC 3D NAND is the next generation of 3D NAND driving higher bit densities per mm<sup>2</sup> for higher capacities than prior generations, up to 61.44TB<sup>1</sup>. Equipped with the latest PCIe Generation 4.0, the SN655 enables performance at scale for increasingly larger application workloads. Designed and built for the standard 2.5" SSD storage infrastructure, the SN655 includes support for U.2 and U.3 backplanes. And with enterprise grade power loss protection, 2.5M MTBF<sup>5</sup> (projected) and 1.0 DWPD<sup>2</sup> with a 5 year limited warranty<sup>6</sup>, cloud and IT managers can deploy and scale their datacenters confidently.

## Emerging Workloads

Ultrastar DC SN650 and SN655 NVMe SSDs are optimized for cloud and scale-out workloads, providing high capacities, higher QoS consistency, and better utilization for cloud as-a-service offerings, virtualization, and object or file storage. Emerging workloads for big data, artificial intelligence, and machine learning are increasing in size and complexity and are typically stored across distributed, tiered, or disaggregated architectures. The SN65x NVMe SSDs are optimized for moving these large data sets fast and servicing multiple hosts with performance consistency making them the ideal solution for scaling capacity and maximizing GB/watt.

# Ultrastar® DC SN655

## DATA SHEET

## DATA CENTER SOLID STATE DRIVE

Product Information						
Capacity <sup>1</sup>	3.84TB	7.68TB	15.36TB	30.72TB	61.44TB	
Endurance <sup>2</sup>	1 DWPD					
Security	SE, ISE, TCG					
Form Factor	U.3 15mm					
Interface	PCIe Gen4, NVMe 1.4					
Performance <sup>3</sup>						
Read Throughput (max MB/, Seq 128KiB)	6,800MB/s	6,800MB/s	6,800MB/s	6,100MB/s	4,300MB/s	
Write Throughput (max MB/, Seq 128KiB)	2,600MB/s	2,000MB/s	3,700MB/s	3,400MB/s	3,150MB/s	
Read IOPS (max, Rnd 4KiB)	1000K	980K	1100K	1052K	890K	
Write IOPS (max, Rnd 4KiB)	112K	80K	135K	66K	29K	
Read Latency (μs) <sup>4</sup>	80	78	125	110	115	
Write Latency (μs) <sup>4</sup>	10	15	10	15	40	
Reliability						
MTBF <sup>5</sup> (hours, projected)	2.5M					
Uncorrectable Bit Error Rate (UBER)	1 in 10 <sup>17</sup>					
Annualized Failure Rate <sup>5</sup> (AFR, projected)	0.35%					
Limited Warranty <sup>6</sup> (years)	5					
Power Management						
Requirement (DC, +/- 10%)	+12v					
Operating Modes (typical)	16W, 20W(Default)					
Idle (Average)	<8W					
Physical Size						
z-height (mm)	15 mm					
Dimensions (width x length)	69.85 x 100.45 mm					
Environmental						
Operating Temperature (Ambient) <sup>7</sup>	0°C to 70°C					
Non-Operating Temperature <sup>8</sup>	-40°C to 85°C					

Ordering Information		Security	3.84TB	7.68TB	15.36TB	30.72TB	61.44TB
OTS Number	SE	OTS2458	OTS2459	OTS2460	OTS2507	OTS2508	
Model Number	SE	WUS5EA138ESP7E1	WUS5EA176ESP7E1	WUS5EA1A1ESP7E1	WUS5EC1B1ESP7Y1	WUS5EC1C1ESP7Y1	
OTS Number	ISE	OTS2461	OTS2462	OTS2463	OTS2509	OTS2510	
Model Number	ISE	WUS5EA138ESP7E3	WUS5EA176ESP7E3	WUS5EA1A1ESP7E3	WUS5EC1B1ESP7Y3	WUS5EC1C1ESP7Y3	
OTS Number	TCG-Ruby	OTS2467	OTS2468	OTS2469	OTS2511	OTS2512	
Model Number	TCG-Ruby	WUS5EA138ESP7E4	WUS5EA176ESP7E4	WUS5EA1A1ESP7E4	WUS5EC1B1ESP7Y4	WUS5EC1C1ESP7Y4	

<sup>1</sup> One megabyte (MB) is equal to one million bytes, one gigabyte (GB) is equal to 1,000MB (one billion bytes), one terabyte (TB) is equal to 1,000GB (one trillion bytes), and one petabyte (PB) is equal to 1,000TB. Actual user capacity may be less due to operating environment.

<sup>2</sup> Endurance rating based on DWPD using 4KiB 100% random write and JESD 219 workloads over 5 years.

<sup>3</sup> 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.

<sup>4</sup> Average random read latency at 4KiB, QD=1

<sup>5</sup> MTBF and AFR specifications will be 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.

<sup>6</sup> 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 5 years..

<sup>7</sup> Composite temperature reading

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



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