3.2TB – 400GB | MLC
7.68TB – 480GB | TLC
2.5-inch SFF | SAS 12Gb/s

Highlights

- 3D MLC or TLC NAND Flash for ultra-high performance and endurance
- Best IOPs/Watt for reduced TCO
- 12Gb/s SAS interface for maximum throughput
- Advanced power loss data management technology
- Self-encrypting models conform to TCG's Enterprise specification

Applications/Environments

- Ultra-high performance tier-0 enterprise storage
- Enterprise-class servers and high performance computing
- Space and/or power constrained environments
- Online Transaction Processing (OLTP)
- Video pre/post-production
- Financial and e-commerce
- Database analytics

Increase Productivity and Operational Efficiency by Boosting IOPS Performance with SAS SSDs

As data centers and enterprises struggle to manage the growing abundance and availability of data, the next generation of SAS SSDs with enhanced performance and endurance arrives to help address data access challenges. The Ultrastar® DC SS300* solid-state drive (SSD) is offered in a 2.5-inch small form factor that delivers ultra-high performance to power through the most challenging workloads.

Designed with a 12Gb/s SAS interface for seamless integration into enterprise environments, the Ultrastar DC SS300 delivers high sequential throughput, up to 2100MB/s read at 14W power. Available with capacities from 7.68TB to 400GB, the DC SS300 delivers up to 400,000 read and 200,000 write IOPS—double the speed of current 12Gb/s SSDs—providing rapid access to "hot" enterprise data for higher productivity and operational efficiency. The Ultrastar DC SS300 family offers significant value in terms of IOPS per Watt, reducing total cost of ownership (TCO) through low power consumption, efficient cooling and reduced space requirements.

Data Durability and Security with Industry-Leading Quality and Reliability

Ultrastar DC SS300 combines enterprise-grade 3D MLC or TLC NAND flash memory, advanced endurance management firmware and power loss data management techniques to extend reliability, endurance, and sustained performance over the life of the SSD. The Ultrastar SAS SSD family achieves an extraordinary 0.35% annual failure rate (AFR) or 2.5 million hours mean-time-between-failure (MTBF). The 3.2TB 10 DW/D capacity DC SS300 SSD endures up to 53 petabytes (PB) of random writes over the life of the drive—the equivalent of writing 29 terabytes (TB) per day for five years.

For complete end-to-end data protection and reliability, the Ultrastar DC SS300 incorporates the T10 Data Integrity Field (DIF) standard, extended error correction code (ECC), Exclusive-OR (XOR) parity to protect against flash die failure, parity-checked internal data paths without an external write cache, and an exclusive power-loss data management feature that does not require supercapacitors. The Ultrastar DC SS300 is backed by a five-year limited warranty, or the maximum Petabytes (PB) written (based on capacity), whichever comes first.

Trust Your Storage Systems with SSD Products Developed by Experts in Enterprise Storage

Western Digital leverages decades of proven enterprise storage expertise in Serial Attached SCSI (SAS) design, reliability, firmware, customer qualification and system integration to the Ultrastar DC SS300 SAS SSD. The synergistic relationship between the new throughput-enhancing SSDs and traditional HDDs provides cost effective, end-to-end enterprise-class storage options, delivering reliability, compatibility, capacity, cost and system performance. This combination makes Western Digital storage drives an ideal choice to help meet escalating reliability, endurance, and performance in the most demanding enterprise environments.

Features & Benefits

	Feature / Function	Benefits
Performance	• SAS 12Gb/s interface • MLC NAND flash memory • 2100 / 2050 MiB/s sequential R/W • 400K / 200K IOPS random R/W • 285K IOPS on 70/30 mixed R/W	• 12G Active-Active Dual port & 12G single/dual port for enhanced reliability • Highest read/write performance at 14W operating power • Maximum throughput and IOPs for ultra-fast access to data. Double write performance of other 12Gb/s SAS SSD
Power	• 9, 11 & 14 Watt options	• Higher IOPS performance with higher power options
Capacity	• 7.68TB to 400GB	• More capacity in standard form factor with lower Watts/TB
Reliability	• 0.35% AFR (2.5M hours MTBF) • 1E-17 bit error rate • Power loss data management • Unlimited reads, up to 53PB writes • T10 end-to-end data protection • Exclusive-OR (XOR) NAND	• Reduced field replacement effort • Enhanced error detection and correction for optimal data integrity • Assures data integrity during power failure • Support for extreme write-intensive applications • Protection against flash die failure
Data Security	• Crypto Sanitize models • TCG encryption models • TCG + FIPS encryption models	• Enables swift drive redeployment and retirement • Hardware-based encryption protects data from unauthorized use
Integration	• HDD architecture commonality • Extensive systems integration and test lab	• Compatibility with Ultrastar SAS HDD • Experienced interoperability and compliance testing

*Previously known as Ultrastar SS300

Ultrastar® **DC SS300**

Specifications

	MLC NAND Technology		TLC NAND Technology
Model: x in Model Number denotes Encryption level: 0 = Instant Secure Erase 1 = TCG Encryption 4 = No Encryption, Secure Erase 5 = TCG + FIPS	HUSMM3232ASS20x HUSMM3216ASS20x HUSMM3280ASS20x HUSMM3240ASS20x	HUSMR3232ASS20x HUSMR3216ASS20x HUSMR3280ASS20x HUSMR3240ASS20x	HUSTR7676ASS20x HUSTR7638ASS20x HUSTR7619ASS20x HUSTR7696ASS20x HUSTR7648ASS20x

Configuration

Interface	SAS 6/12Gb/s supports Wide port @ 12Gb/s		
Capacity[1]	3.2TB / 1.6TB / 800GB / 400GB		7.68TB / 3.84TB / 1.92TB / 960GB / 480GB
Endurance (Drive Writes per Day – DW/D)[2]	10	3	~ 1
Endurance (max Terabytes written – TBW)[2]	53,100 / 26,500 / 13,200 / 7,300	15,900 / 7,900 / 3,900 / 1,980	13,100 / 6,600 / 3,150 / 1,900 / 960
Form Factor	2.5-inch SFF		
Flash Memory Technology	3D MLC NAND		3D TLC NAND

Performance[3]

Read Throughput (max MiB/s, Seq. 128KiB)	2100	2100	2100
Write Throughput (max MiB/s, Seq. 128KiB)	2050	2050	1250
Read IOPS (max, Rnd 4KiB)	400K	400K	400K
Write IOPS (max, Rnd 4KiB)	200K	170K	85K
Mixed IOPS (70/30 R/W, max R/W, 4KiB)	285K	265K	170K
Latency[4] (µs , max)	85	85	105

Reliability

Unrecoverable Bit Error Rate (UBER)	1 in 10^{17}
MTBF[5] (M hours)	2.5
Annualized Failure Rate[6] (AFR)	0.35%
Availability (hrs/day x days/week)	24×7
Limited Warranty[6]	5 years

Power

Requirement (+/- 5%)	+5 VDC, +12VDC
Operating Modes (W, typical)	9, 11, 14
Idle (W, max)	<3.2TB: 3.7, ≥ 3.2TB: 4.7

Physical Size

z-height (mm)	15
Dimensions (width x depth, mm)	70.1 × 100.45
Weight (max, g)	140

Environmental

Operating Temperature[7]	0º to 75º C
Non-operating Temperature	-40º to 80º C

[1] 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 PB equals 1,000 TB when referring to storage capacity. Accessible capacity will vary from the stated capacity due to formatting, system software, and other factors.

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

[3] 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 R/W latency at 4KiB QD=1

[5] MTBF and AFR targets are based on a sample population and are estimated by statistical measurement and acceleration algorithms under median operating conditions. MTBF and AFR rating 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] Internal drive temperature as measured via the drive's temperature sensor.

How to Read the Ultrastar Model Number

HUSMM3232ASS201=3.2TB, SAS 12Gb/s, TCG encryption

H = Western Digital
U = Ultrastar
S = Standard
MM = NAND type/endurance
(MM=MLC/mainstream endurance,
MR=MLC/read-intensive, TR=TLC/read intensive)
32 = Full capacity (3.2TB)
2 = Capacity of this model
(76=7.6TB, 38=3.84TB, 32=3.2TB, 19=1.92TB,
16=1.6TB, 96=960GB, 80=800GB, 48=480GB,
40=400GB)

A = Generation code
S = Small form factor (2.5" SFF)
S2 = Interface, SAS 12Gb/s
1 = Encryption setting
(0=Instant Secure Erase, 1=TCG
encryption, 4=No encryption/
Secure Erase, 5 = TCG+FIPS)

Western Digital®