



14/16/18TB
7200 RPM SATA 6Gb/s and SAS 12Gb/s

Ultrastar® DC HC550 Data Center HDD

Total Cost of Ownership (TCO) Drives the Data Center Architecture

Data center decisions are driven by TCO. Higher capacity hard drives play a leading role in reducing TCO. An 18TB data center HDD provides 29% more capacity in the same form factor as a 14TB HDD. Higher capacity HDDs enable data centers to lower CapEx by reducing supporting hardware and system level costs when compared to lower capacity drives. Helium-sealed, low power, high reliability drives reduce energy and maintenance costs, contributing to OpEx savings. For example, a data center using 18TB HDDs vs. 14TB HDDs requires 22% fewer racks while consuming 21% less power per TB at idle, resulting in significant overall TCO reduction for data center environments.

Highlights

- 14/16/18TB capacity¹ in a standard 3.5-inch form factor
- CMR technology works with all capacity enterprise applications & environments
- Reliable, field-proven, 6th generation design
- Industry's first HDD with Energy-Assisted Magnetic Recording technology
- Industry's first Triple Stage Actuator
- HelioSeal® design delivers outstanding power efficiency
- 2.5M hours (projected) MTBF² rating & 5-year limited warranty
- Self-Encrypting Drive Options

Applications

- Cloud & Hyperscale storage
- Massive scale-out (MSO), high-density data centers
- Distributed File Systems
- Bulk storage using object storage solutions like Ceph™ and OpenStack® Swift
- Primary and secondary storage for Apache Hadoop® for Big Data Analytics

Raising the Capacity Bar with New Technologies

Ultrastar DC HC550 integrates a suite of technologies on a 9-disk platform to create a new class of HDDs. 18TB capacity is achieved by combining technologies that improve areal density working together with technologies that improve performance and reduce power consumption.

The first HDD in the industry to harness Energy-Assisted Magnetic Recording (EAMR) technology improves writability and therefore increases areal density. The industry's first Triple Stage Actuator (TSA) enhances head-positioning accuracy, delivering better performance and increased areal density.

HelioSeal® technology is the foundation for Western Digital's high capacity HDDs and this is the 6th generation of HelioSeal product. Western Digital has shipped >100 million HelioSeal products to date.

Trusted Reliability and Quality for Data at Scale

With its massive capacity and 2.5M MTBF (projected) reliability rating, the Ultrastar DC HC550 is ideal for object storage implementations. Object storage systems with erasure coding provide better data durability compared to RAID systems, given their tolerance for simultaneous error conditions. The DC HC550 offers security and encryption options to help protect data from unauthorized use, including SED models in both SATA & SAS. A SED-FIPS will be available in a SAS configuration. Trust Western Digital and the Ultrastar DC HC550 hard drive to deliver highest capacity, lower TCO and more value to your data center.

29% More Capacity*

21% Lower Watts/TB*

	Feature / Function	Benefits
Capacity	14/16/18TB, enabled by EAMR	18TB provides 29% more capacity than 14TB Ultrastar DC HC530
Power Efficiency	Ultra-low Watts per Terabyte (W/TB)	18TB provides 21% lower idle W/TB than 14TB Ultrastar DC HC530
Performance	Triple Stage Actuator and Two-Dimensional Magnetic Recording (TDMR) technology	More accurate head positioning, especially in multi-drive environments, for better performance and data integrity
	Rotational Vibration Safeguard (RVS)	Maintains drive performance in high rotational environments and multi-drive systems
	Media Cache Plus architecture	Increases random write performance
	SATA 6Gb/s & SAS 12Gb/s	Provides compatibility with high-performance data centers
Reliability	2.5M hours MTBF ² and 0.35% AFR	Unsurpassed reliability rating for fewer failures/less service needs
	5-year limited warranty	Unbeaten for enterprise-class hard drives
Security	RSA-signed firmware	Safeguards against download of unauthorized firmware to HDD
	AES-256 data encryption	Hardware-based encryption helps protect data from unauthorized use (select models)
	Trusted Computing Group (TCG)	Industry standard access control protocol (select models)

*compared to 14TB Ultrastar DC HC530 HDD. Power at idle condition.

Ultrastar® DC HC550 Data Center HDD

Specifications

	SATA Models	SAS Models
Model Numbers	WUH721818ALE6L1 WUH721818ALE6L4 WUH721816ALE6L1 WUH721816ALE6L4 WUH721814ALE6L1 WUH721814ALE6L4	WUH721818AL5200 WUH721818AL5201 WUH721818AL5204 WUH721818AL5205 WUH721816AL5201 WUH721816AL5204 WUH721816AL5205 WUH721814AL5201 WUH721814AL5204 WUH721814AL5205
Configuration		
Interface	SATA 6Gb/s	SAS 12Gb/s
Capacity ¹ (TB)	14/16/18TB	14/16/18TB
Format: Sector size (bytes) ³	4Kn: 4096 512e: 512	4Kn: 4096, 4160, 4224 512e: 512, 520, 528
Areal Density (Gbits/sq. in, max)	1022 (18TB) 918 (14/16TB)	1022 (18TB) 918 (14/16TB)
Performance		
Data buffer ⁴ (MB)	512	512
Rotational speed (RPM)	7200	7200
Latency average (ms)	4.16	4.16
Interface transfer rate (MB/s, max)	600	1200
Sustained transfer rate ⁵ (MB/s, max) / (MiB/s, max)	269/257 (18TB) 262/250 (14/16TB)	269/257 (18TB) 262/250 (14/16TB)
Reliability		
Error rate (non-recoverable, bits read)	1 in 10 ¹⁵	1 in 10 ¹⁵
Load/Unload cycles (at 40°C)	600,000	600,000
Availability (hrs/day x days/wk)	24x7	24x7
MTBF ² (M hours, projected)	2.5	2.5
Annualized Failure Rate ² (AFR, projected)	0.35%	0.35%
Workloads	Up to 550 TB/year	Up to 550 TB/year
Limited warranty (yrs)	5	5

¹ One MB is equal to one million bytes, one GB is equal to one billion bytes and one TB equals 1,000GB (one trillion bytes). Actual user capacity may be less due to operating environment.

² Projected values. Final MTBF and AFR specifications will be based on a sample population and are estimated by statistical measurements and acceleration algorithms under typical operating conditions, workload 220TB/year and temperature 40C. Derating of MTBF and AFR will occur above these parameters, up to 550TB writes per year and 60°C ambient (65°C device temp). MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

³ Advanced Format drive: 4K (4096-byte) physical sectors.

⁴ Portion of buffer capacity used for drive firmware.

⁵ Based on internal testing; performance may vary depending on host environment, drive capacity and other factors. 1MiB = 1,048,576 bytes (220), 1MB = 1,000,000 bytes (106).

⁶ SATA models:
Random RW 50/50 8KB QD=1 @40 IOPS,
SAS models:
Random RW 50/50 4KB QD=4 @MAX IOPS

⁷ Idle specification is based on use of Idle_A.

⁸ 5°C ambient temperature.

	SATA Models	SAS Models
Acoustics		
Idle/Operating (Bels, typical)	2.0/3.6	2.0/3.6
Power		
Requirement	+5 VDC, +12VDC	+5 VDC, +12VDC
Operating ⁶ (W)	6.5	8.8
Idle ⁷ (W)	5.6	5.8
Power consumption efficiency at idle (W/TB)		
18TB	0.31	0.32
16TB	0.35	0.36
14TB	0.40	0.41

Physical Size		
z-height (mm)	26.1	26.1
Dimensions (width x depth, mm)	101.6 (+/-0.25) x 147	101.6 (+/-0.25) x 147
Weight (g, max)	690	690

Environmental (Operating)		
Temperature ⁸	5° C to 60° C	5° C to 60° C
Shock (half-sine wave, 2ms, G)	50	50
Vibration (G RMS, 5 to 500Hz)	0.67 (XYZ)	0.67 (XYZ)

Environmental (Non-Operating)		
Ambient Temperature	-40° to 70° C	-40° to 70° C
Shock (half-sine wave, 2ms, G)	250 (2ms)	250 (2ms)
Vibration (G RMS, 2 to 200Hz)	1.04 (XYZ)	1.04 (XYZ)

How to Read the Ultrastar Model Number

Example: WUH721818ALxxyz

W = Western Digital
U = Ultrastar
H = Helium (vs. S for Standard)
72 = 7200 RPM
18 = Full capacity (18TB)
18 = Capacity this model (18TB)
A = Generation code
L = 26.1 z-height

xx = Interface
E6 = 512e SATA 6Gb/s
52 = 512e SAS 12Gb/s
y = Power Disable Pin 3 status
0 = Power Disable Pin 3 support
L = Legacy Pin 3 config – No Power Disable Support
z = Data Security Mode
0 = Instant Secure Erase
1 = SED*: Self Encrypting Drive
TCG-Enterprise and Sanitize Crypto Scramble / Erase
4 = Base (SE)*: No Encryption. Sanitize Overwrite only.
5 = SED-FIPS: SED w/ certification

* ATA Security Feature Set comes standard on SATA

Part Numbers

Capacity	SATA/SAS	SE	SED	SED-FIPS
18TB	SATA	OF38459	OF38458	--
18TB	SAS	OF38353	OF38352	OF38354
16TB	SATA	OF38462	OF38461	--
16TB	SAS	OF38357	OF38356	OF38358
14TB	SAS	OF38528	OF38527	OF38529
14TB	SATA	OF38581	OF38580	--



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