



Highlights

- Designed with a workload rating up to 550TB per year, 10X typical desktop rating
- Up to 2.5M hours MTBF with a 5-year limited warranty
- Five generations of HelioSeal technology (12TB and above)
- Rotational Vibration Safeguard (RVS) technology for vibration protection
- Works with all major enterprise operating systems

INTERFACE
SATA 6 Gb/s

PERFORMANCE CLASS
7200 RPM-Class

FORM FACTOR
3.5-inch

CAPACITIES***
1TB to 14TB

ULTRASTAR ADVANTAGE

The Ultrastar family delivers a long-standing tradition of reliability leadership with MTBF ratings of at least 2.5M hours and a 5-year limited warranty. Ultrastar capacity, power efficiency and reliability provide customers with a lower total cost of ownership.

Ultrastar hard drives feature up to 10 times the workload rating of desktop drives and employ advanced technologies for enterprise-class reliability, power efficiency and performance. Designed from the ground up to be an ultra-robust storage device, Ultrastar drives are the perfect solution for your business.

High Workload Rating

Delivering dependable performance to any storage environment, Ultrastar hard drives are designed with a workload rating up to 550TB per year*, among the highest of any 3.5-inch hard drive.

Enterprise-class Storage to Rely On

Ultrastar is our top-end drive for data centers. With up to 2.5 million hours MTBF, Ultrastar hard drives deliver reliability and durability, are built for yearly operation (24x7x365) within the most demanding storage environments, and are backed with a 5-year limited warranty.

HelioSeal® Technology

Featured in over 48 million Western Digital hard drives shipped**, HelioSeal technology allows for higher capacities and lower power on large storage arrays. And now on its 5th generation design, HelioSeal technology is field-tested and proven to deliver high capacity, reliability, and power efficiency you can trust. HelioSeal is a key technology on 10TB capacities and above.

Vibration Protection

Enhanced Rotational Vibration Safeguard (RVS) technology uses sophisticated electronics to monitor the drive and correct linear and rotational vibrations in real time for improved performance versus traditional desktop drives in high-vibration environments.

Dynamic Fly-height Technology

Each read-write head's fly height is adjusted in real time to ensure consistent performance for reduced errors and optimized reliability.

Dual-stage Actuator Technology

Ultrastar drives feature a dual-stage actuator head positioning system for a high degree of accuracy. The primary stage provides course displacement while the secondary stage uses piezoelectric motion to fine tune the head positioning to a higher degree of precision.

Compatibility testing

All Ultrastar hard drives are extensively tested across a variety of popular OEM storage systems, SATA controllers, and host bus adapters to ensure ease of integration for a plug and play solution.

7200RPM-Class

This family of 7200RPM-class hard drives delivers the fastest performance with the highest workload rating of any drive in Western Digital's hard drive lineup. Ensure you have the most capable hard drive regardless of the application with Ultrastar hard drives.

*Workload Rate is defined as the amount of user data transferred to or from the hard drive. Workload Rate is annualized (TB transferred X (8760 / recorded power-on hours)). Workload Rate will vary depending on your hardware and software components and configurations.

** As of July 2019.

*** As used for storage capacity, one gigabyte (GB) = billion bytes and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second. Effective maximum SATA 6 Gb/s transfer rate calculated according to the Serial ATA specification published by the SATA-IO organization as of the date of this specification sheet. Visit www.sata-io.org for details.

Ultrastar® SATA Series

DATA SHEET

DATA CENTER DRIVES

Specifications

	14TB	12TB	10TB	8TB	6TB	4TB	2TB	1TB
Part Number ¹	0F31284	0F30146	0B42266	0B36404	0B36039	0B36040	1W10002	1W10001
Ultrastar DC family ¹	HC530	HC520	HC330	HC320	HC310	HC310	HA210	HA210
Capacity ²	14TB	12TB	10TB	8TB	6TB	4TB	2TB	1TB
Interface	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s
Format Sector size (bytes) ³	512e	512e	512e	512e	512e	512e	512n	512n
Native Command Queuing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Form factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch
RoHS compliant ⁴	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Performance								
Interface transfer rate (max sustained) ⁵	267 MB/s	255 MB/s	273 MB/s	255 MB/s	255 MB/s	233 MB/s	200 MB/s	184 MB/s
Performance Class	7200 RPM	7200 RPM	7200 RPM	7200 RPM	7200 RPM	7200 RPM	7200 RPM	7200 RPM
Cache (MB) ⁶	512	256	256	256	256	256	128	128
Reliability								
MTBF (hours) ⁷	2,500,000	2,500,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Annualized Failure Rate (AFR, %) ⁷	0.35	0.35	0.44	0.44	0.44	0.44	0.44	0.44
Load/unload cycles	600,000	600,000	600,000	600,000	600,000	600,000	600,000	600,000
Error rate (non-recoverable)	1 in 10 ¹⁵	1 in 10 ¹⁵	1 in 10 ¹⁵	1 in 10 ¹⁵	1 in 10 ¹⁵	1 in 10 ¹⁵	1 in 10 ¹⁵	1 in 10 ¹⁵
Limited warranty (years)	5	5	5	5	5	5	5	5
Power Management ⁸								
Average power requirements (W)								
Operational	6.0	6.9	9.2	8.8	7.0	7.0	8.1	8.1
Idle	5.5	5.0	8.0	7.4	5.9	5.9	5.9	5.9
Power efficiency index (W/TB, idle)	0.4	0.417	0.80	0.925	0.983	1.475	2.95	5.9
Environmental Specifications								
Temperature (°C, on the base casting)								
Operating	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C
Non-operating	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
Shock								
Operating (Read/Write (G))								
(half-sine wave, 2ms)	70/70	70G/70	70G/50	70G/70	70G/70	70G/70	65G/65	65G/65
Non-operating (G)(half-sine wave, 2ms)	300	300	250	300	300	300	300	300
Acoustics (dBA, average)								
Idle	20	20	34	29	29	29	25	25
Seek	36	36	38	36	36	36	28	28
Physical Dimensions								
Height (in./mm, max)	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1
Length (in./mm, max)	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147
Width (in./mm, ± .01 in.)	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6
Weight (lb/kg, ± 10%)	1.52/0.69	1.46/0.66	1.65/0.75	1.58/0.715	1.58/0.715	1.58/0.715	1.41/0.64	1.41/0.64

¹ Not all products may be available in all regions of the world.

² As used for storage capacity, one gigabyte (GB) = one billion bytes and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second. Effective maximum SATA 6 Gb/s transfer rate calculated according to the Serial ATA specification published by the SATA-IO organization as of the date of this specification sheet. Visit www.sata-io.org for details.

³ FORMAT: 512e: Advanced Format drive with 512-byte logical sectors and 4K (4096-byte) physical sectors; 512n: Native 512-byte logical and physical sectors.

⁴ Western Digital hard drive products manufactured and sold worldwide after June 8, 2011, meet or exceed Restriction of Hazardous Substances (RoHS) compliance requirements as mandated by the RoHS Directive 2011/65/EU.

⁵ Interface transfer rate: MB/s is 1,000,000 bytes per second.

⁶ Cache buffer: Portion of buffer capacity used for drive firmware.

⁷ 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.

⁸ Operational Power: 8K Queue Depth = 1 @ 40 IOPS; Idle Power: Based on use of Idle_A

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CAN ICES-3 (B)/ NMB-3 (B)

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