

Western Digital

# Ultrastar<sup>®</sup>

## SATA Series Hard Drives

### Drive to endure.

Ultrastar<sup>®</sup> hard drives feature up to ten times the workload rating<sup>1</sup> 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 choice for your business.



#### INTERFACE

SATA 6Gb/s

#### FORM FACTOR / HEIGHT

3.5-inch / 1-inch

#### PERFORMANCE CLASS

7200 RPM Class

#### CAPACITIES

1TB to 12TB

### DATA SHEET

#### Best-fit Applications

- Enterprise servers and storage systems
- Business-critical applications needing reliable, robust high-capacity storage
- Surveillance analytics and industrial applications

#### Ultrastar Advantage

The Ultrastar family delivers a long-standing tradition of reliability leadership with MTBF ratings of at least 2M hours and a 5-year limited warranty.

Ultrastar quality, capacity, power efficiency, and world-class technical support and service help provide customers with a lower total cost of ownership.

Western Digital is dedicated to providing a complete portfolio of hard drives to create environments for data to thrive.

#### Product Benefits

##### High Workload Rating

Delivering dependable performance to any storage environment, Ultrastar hard drives are designed with a workload rating up to 550TB per year<sup>1</sup>, among the highest of any 3.5-inch hard drive.

##### HelioSeal<sup>®</sup> Technology

Featured in over 20 million shipped Western Digital hard drives<sup>2</sup>, HelioSeal technology enables the highest capacities and less turbulence on large storage arrays. And now on its 4th generation design, HelioSeal technology is field-tested and proven to deliver high capacity, reliability, and power efficiency you can trust.

##### Enterprise-class Storage to Rely On

With up to 2.5 million hours MTBF rating, 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.

##### 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.

##### 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.

##### 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.

##### 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.

##### 7200 RPM Class

This 7200 RPM-class hard drive delivers the fastest performance with the highest workload rating of any high-capacity drive from Western Digital. Ensure you have the most capable hard drive regardless of the application with Ultrastar hard drives.

# Ultrastar® SATA Series

## 3.5-inch Hard Drives

Specifications	HelioSeal Technology DC HC500 Series		DC HC300 Series			DC HA200 Series	
	12TB	10TB	8TB	6TB	4TB	2TB	1TB
512 emulation (512e) order number	0F30146	0F27606	0B36404	0B36039	--	--	--
512 native (512n) order number	--	--	--	--	0B35950	1W10002	1W10001
Capacity <sup>3</sup>	12TB	10TB	8TB	6TB	4TB	2TB	1TB
Format: Sector size <sup>4</sup> (bytes)	512e		512e			512n	512n
User sectors per drive	23,437,770,752	19,532,873,728	15,628,053,168	11,721,045,168	7,814,037,168	3,907,029,168	1,953,525,168
Interface	SATA 6Gb/s						
Native command queuing	Yes						
Form factor	3.5-inch						
RoHS compliant <sup>5</sup>	Yes						
<b>Performance</b>							
Sustained data transfer rate <sup>6</sup> Buffer to host (max) Host to/from drive (typical)	600MB/s 255MB/s	600MB/s 249MB/s	600MB/s 255MB/s	600MB/s 233MB/s	600MB/s 200MB/s	600MB/s 184MB/s	600MB/s 184MB/s
Cache (MB) <sup>7</sup>	256		256			128	
Performance class	7200 RPM						
<b>Reliability/Data Integrity</b>							
MTBF (hours) <sup>8</sup>	2,500,000		2,000,000			2,000,000	
AFR (%) <sup>8</sup>	0.35		0.44			0.44	
Load/unload cycles	600,000						
Error rate (non-recoverable bits read)	1 in 10 <sup>15</sup>						
Limited warranty (years)	5						
<b>Power Management</b>							
Average power requirements (W) Operational <sup>9</sup> Idle <sup>10</sup> Power efficiency index (W/TB, Idle)	6.9 5.0 0.417	6.8 5.0 0.500	8.8 7.4 0.925	7.0 5.9 0.983	7.0 5.9 1.475	8.1 5.9 2.95	8.1 5.9 5.9
<b>Environmental Specifications</b>							
Shock (Gs) Operating (half-sine wave, 2ms) Non-operating (half-sine wave, 2ms)	70 300		70 300			65 300	
Acoustics (dBA) Idle Seek (average)	20 36		29 36			25 28	
Temperature (°C) Operating Non-operating	5° to 60° -40° to 70°						
<b>Physical Dimensions</b>							
Weight (lb/kg, ± 10%)	1.46 / 0.66		1.58 / 0.715			1.41 / 0.641	
Height (in/mm, max)	1.028 / 26.1						
Length (in/mm, max)	5.787 / 147						
Width (in/mm, ± 0.01 in.)	4 / 101.6						

1 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.

2 As of December 2017

3 One gigabyte (GB) is equal to 1,000,000,000 bytes (one billion bytes) and one terabyte (TB) is equal to 1,000GB (one trillion bytes) when referring to storage capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the drive, a computers' operating system, and other factors.

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

5 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.

6 MB/s is 10<sup>6</sup> bytes

7 Portion of buffer capacity used for drive firmware

8 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.

9 8K Queue Depth = 1 @ 40 IOPS

10 Idle specification is based on use of Idle\_A

## Western Digital

### Information & Technical Support

[www.wdc.com/ultrastar-sata](http://www.wdc.com/ultrastar-sata)  
[www.wdc.com/hqst-support](http://www.wdc.com/hqst-support)

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