Western Digital.

Ultrastar® DC HC530

DATA SHEET

3.5-INCH HELIUM PLATFORM DATA CENTER HARD DRIVES

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

Highlights

- 14TB capacity[1] in a standard 3.5-inch form factor
- CMR technology works seamlessly in capacity enterprise applications & environments
- Reliable, field-proven, 5th generation design
- HelioSeal® design delivers outstanding power efficiency (Watts/TB)
- TDMR and improved dual-stage microactuator provide optimal head positioning and rotational vibration robustness
- 2.5M hours MTBF[2] rating & 5-year limited warranty
- Self-Encrypting Drive (TCG SED) 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
- Surveillance analytics

Driving Up Capacity and Driving Down TCO for Cloud and Enterprise Data Centers

The breadth and depth of big data is driving the universal need for higher capacities across a broad spectrum of applications and workloads. Laying the foundation for a worry-free data center, Western Digital delivers capacity to conquer the data explosion–the 14TB Ultrastar® DC HC530 hard drive. Built using HelioSeal technology, the industry's only fifth-generation helium platform and the basis for our high-capacity DC HC500 series, Ultrastar DC HC530 was designed for public and private cloud environments where storage density, Watts/TB and $/TB are critical parameters for creating the most cost-efficient infrastructure. HelioSeal technology is key to achieving higher drive capacities, higher reliability ratings and extreme power efficiency for lower levels of total cost of ownership (TCO) for cloud and enterprise customers.

HelioSeal Technology Helps Solve Challenges Facing Next Generation Data Centers

Data centers are facing growing pressures. Data volume is expanding, operating costs are rising, yet budgets remain flat. HelioSeal technology enables Ultrastar DC HC530 to deliver one of the lowest power profiles in the industry, helping data center architects meet eco-environmental goals and requirements. Designed to handle workloads up to 550TB per year, the Ultrastar DC HC530 is based on conventional magnetic recording (CMR) technology for drop-in simplicity in enterprise and cloud data centers. Features like TDMR technology (two-dimensional magnetic recording) and a third-generation dual-stage microactuator work together to enhance head-positioning accuracy and deliver better performance, data integrity and overall drive reliability, critical in multi-drive environments where operational vibration is present. A choice of 6Gb/s SATA or 12Gb/s SAS interface enables easy integration into high performance data centers. Trust Western Digital and the Ultrastar DC HC530 hard drive to deliver more capacity, more efficiency, more reliability and more value to your data center.

Data Durability and Data Security Features to Support Compliance and Privacy Requirements

As drive capacity grows beyond single-digit TBs, object storage systems with erasure coding generally provide better data durability compared to RAID systems, given its tolerance for simultaneous error conditions. The Ultrastar DC HC530 is ideal for object storage implementations with its massive capacity and an unbeaten reliability rating. Compliance and privacy requirements drive the need for increased data security. The Ultrastar DC HC530 offers security and encryption options to help protect data from unauthorized use, including TCG SAS models.

75%
MORE CAPACITY*

58%
LOWER IDLE WATTS/TB*

25%
HIGHER MTBF RATING*

Features & Benefits

	Feature / Function	Benefits
Capacity	• 14TB	• Provides 75% more capacity than 8TB air drives
Power Efficiency	• Ultra-low Watts per terabyte (W/TB)	• 58% lower idle W/TB than 8TB Ultrastar air-filled drives
Performance	• TDMR & Dual-stage microactuator technology • Rotational Vibration Safeguard (RVS) • Media cache plus architecture • SATA 6Gb/s & SAS 12Gb/s • 512MB cache buffer	• More accurate head positioning, especially in multi-drive environments, for better performance data integrity and reliability • Maintains drive performance in high rotational vibration environments and multi-drive systems • Better random write performance • Provides compatibility with high-performance data centers • Improves response time and data management
Reliability	• Dual Safe, RSA-signed firmware • 2.5M hours MTBF2 and 0.35% AFR • 5-year limited warranty	• Retains previous firmware version while updating safely, verified with an RSA signature • No higher reliability rating for Capacity Enterprise HDD in the industry for fewer failures/less service needs • Unbeaten for enterprise-class hard drives
Data Security	• Encryption options on SAS models	• Hardware-based encryption helps protect data from unauthorized use (TCG SAS options)

*Compared to 8TB air-filled Ultrastar hard drives

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Specifications

	SATA Models	SAS Models
Model Number	WUH721414ALE6Ly* WUH721414ALN6Ly*	WUH721414AL420y* WUH721414AL520y*
Configuration		
Interface	SATA 6Gb/s	SAS 12Gb/s
Capacity[1]	14TB	←
Format: Sector size[3] (bytes)	4Kn: 4096 512e: 512	4Kn: 4096, 4112, 4160, 4224 512e: 512, 520, 528
Areal Density (Gbits/sq. in, max)	904	←
Performance		
Data buffer[4] (MB)	512	←
Rotational speed (RPM)	7200	←
Latency average (ms)	4.16	←
Interface transfer rate (MB/s, max)	600	1200
Sustained transfer rate[5] (MiB/s, typical) / (MB/s, typical)	255 / 267	←
Reliability		
Error rate (non-recoverable bits read)	1 in 10^{15}	←
Load/Unload cycles (at 40oC)	600,000	←
Availability (hrs/day x days/wk)	24x7	←
MTBF[2] (M hours)	2.5	←
Annualized Failure Rate[2] (AFR)	0.35%	←
Limited warranty (yrs)	5	←

	SATA Models	SAS Models
Acoustics		
Idle/Operating (Bels, typical)	2.0/3.6	←
Power		
Requirement	+5 VDC, +12VDC	←
Operating[7] (W)	6.0	8.5
Idle[8] (W)	5.5	5.9
Power consumption efficiency at idle (W/TB) (Watts/TB) (Watts/GB)	 0.39 0.00039	 0.42 0.00042
Physical Size		
z-height (mm)	26.1	←
Dimensions (width x depth, mm)	101.6 (+/-0.25) x 147	←
Weight (g, max)	690	←
Environmental (Operating)		
Ambient temperature	5° to 60°C	←
Shock (half-sine wave, 2ms, G)	70	←
Vibration (G RMS, 5 to 500Hz)	0.67 (XYZ)	←
Environmental (Non-operating)		
Ambient temperature	-40° to 70°C	←
Shock (half-sine wave, 2ms, G)	300 (2ms) / 150 (11mx)	←
Vibration (G RMS, 2 to 200Hz)	1.04 (XYZ)	←

* See "How to Read the Ultrastar model number" below for possible values for y.

[1] One megabyte (MB) is equal to one million bytes, one gigabyte (GB) is equal to 1,000MB (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, system software, and other factors.

[2] 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.

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

[4] Portion of buffer capacity used for drive firmware

[5] MiB/s is 2^{20} bytes, MB/s is 10^{6} bytes

[6] Excludes command overhead

[7] SATA models: 8KB Queue Depth = 1 @ 40 IOPS, SAS models: 4KB Queue Depth = 4 @ Max IOPS

[8] Idle specification is based on use of Idle_A

How to Read Model Number

Example: WUH721414AL420y = 7200 RPM, 14TB, 4Kn SAS 12Gb/s

W = Western Digital
U = Ultrastar
H = Helium (vs. S for Standard)
72 = 7200 RPM
14 = Full capacity (14TB)
14 = Capacity this model (14TB)
A = Generation code
L = 26.1 z-height
42 = Interface, 4Kn SAS 12Gb/s
(52 = 512e SAS 12Gb/s,
E6 = 512e SATA 6Gb/s,
N6 = 4Kn SATA 6Gb/s)
0 = Power Disable Pin 3 support
(L = Legacy Pin 3 config – No Power Disable Support)
y = Data Security Mode
1 = TCG encryption (SAS)
4 = Secure Erase (overwrite only)
5 = TCG encryption with FIPS (SAS)

Western Digital.

5601 Great Oaks Parkway
San Jose, CA 95119, USA
US (Toll-Free): 800.801.4618
International: 408.717.6000

www.wdc.com/dc-hc530