More Value to the Data Center with Maximum Capacity, Power Efficiency and Reliability

Laying the foundation for a worry-free data center, Western Digital delivers capacity to conquer the data explosion - Ultrastar® DC HC520, previously known as Ultrastar He™ and part of our HC500 series of helium-filled hard drives. Designed to handle workloads up to 550TB per year, the Ultrastar DC HC520 is the industry’s first 12TB drive and uses traditional perpendicular magnetic recording (PMR) technology to make it drop-in ready for any enterprise-capacity application or environment. The stable internal environment created by fourth-generation HelioSeal® technology enables a new 8-disk design, increasing the capacity by 20% when compared to the 7-disk design of the prior generation, Ultrastar DC HCS10. This high capacity helium drive offers one of the lowest power profiles in the industry to help data center architects meet eco-environmental goals and requirements. Targeted at 2.5M hours MTBF, the Ultrastar DC HC520 provides the highest reliability rating available of all HDDs on the market today by building on the successful design of its 10TB, 8TB and 6TB predecessors. Trust Western Digital and the Ultrastar DC HC520 to deliver more capacity, more efficiency, more reliability and more value to your data center.

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. Lowering the total cost of ownership (TCO) has become the focus of data center architects and the Ultrastar DC HC520 provides the best value proposition and greatest storage efficiency available. Compared to 8TB Ultrastar air-filled drives, this HelioSeal hard drive provides 50% more capacity, uses 52% less power (Watts/TB), and is 25% more reliable, rated at 2.5M hours MTBF. Data-center ready features like a second generation dual-stage actuator—the Western Digital Micro Actuator—enhance head-positioning accuracy to deliver better performance, data integrity and overall drive reliability, especially in multi-drive environments where operational vibration is present. Refer to our technical brief to learn more. A choice of 6Gb/s SATA and 12Gb/s SAS interfaces enables easy integration into high performance data centers.

Data Durability and Data Security to Support Compliance and Privacy Requirements

As drive capacity grows beyond single-digit TBs, object storage systems with erasure coding provide better data durability compared to RAID systems, given its tolerance for simultaneous error conditions. The Ultrastar DC HC520 is a best-fit for object storage implementations with its massive capacity and unbeaten reliability rating. Compliance and privacy requirements drive the need for increased data security. The Ultrastar DC HC520 offers security and encryption options to help protect data from unauthorized use, including TCG SAS models.

Western Digital Quality and Service

The Ultrastar DC HC520 extends Western Digital’s long-standing tradition of reliability leadership with a 2.5M-hour MTBF rating and a 5-year limited warranty. Ultrastar quality, capacity, power efficiency, and world-class technical support and service provides customers with a lower total cost of ownership over previous generations. Western Digital data center drives are backed by an array of technical support and services, which may include customer and integration assistance. Western Digital is dedicated to providing a complete portfolio of products and services to help create environments for data to thrive.

More Capacity | Lower Power | More Reliable
---|---|---
50% | 52% | 25%

* compared to 8TB air-filled Ultrastar hard drives
### Features & Benefits

#### Capacity
- 12TB: Provides 50% more capacity than 8TB drives

#### Power Efficiency
- Ultra-low Watts per terabyte (W/TB): 52% lower idle W/TB than 8TB Ultrastar air-filled drives

#### Performance
- Dual Stage Micro Actuator: More accurate head positioning, especially in multi-drive environments, for better performance, data integrity and reliability
- Rotational Vibration Safeguard (RVS): Maintains drive performance in high rotational vibration environments and multi-drive systems
- Media Cache Plus architecture: Better random write performance
- Rebuild Assist mode: Dramatically improves RAID recovery time and maintains system performance during recovery
- SATA 6Gb/s & SAS 12Gb/s: Provides compatibility with high-performance data centers
- 256MB cache buffer: Improves response time and data management

#### Reliability
- Dual safe firmware: Retains previous firmware version for safe firmware updates, verified with an RSA signature
- Rotational Vibration Safeguard (RVS): Better random write performance
- 2.5M hours MTBF and 0.35% AFR: Industry’s highest reliability rating for Capacity
- 5-year limited warranty: Industry’s best for enterprise-class hard drives

#### Data Security
- Instant Secure Erase: Enables swift and efficient drive redeployment and retirement
- Encryption options on SAS models: Hardware-based encryption protects data from unauthorized use (TCG SAS options)

### Specifications

#### SATA Models
- Model No.: HUH721212ALE60y, HUH721212AH60y

#### SAS Models
- Model No.: HUH721212AL420y, HUH721212AL520y

### Data Sheet

**features & benefits**

- SAS models: provides 50% more capacity than 8TB drives
- Power efficiency: ultra-low watts per terabyte (W/TB), 52% lower idle W/TB than 8TB Ultrastar air-filled drives
- Performance: dual-stage micro actuator, rotational vibration safeguard (RVS), media cache plus architecture, rebuild assist mode, SATA 6Gb/s & SAS 12Gb/s, 256MB cache buffer
- Reliability: dual safe firmware, 2.5M hours MTBF and 0.35% AFR, 5-year limited warranty
- Data security: instant secure erase, encryption options on SAS models

### Specifications

#### Configuration
- Interface: SATA 6Gb/s
- Capacity (TB): 12TB
- Format: Sector size(bytes): 512e: 512, 520, 528
- Max. Areal density (Gb/sq. in): 864

#### Performance
- Data buffer (MB): 256
- Rotational speed (RPM): 7200
- Latency average (ms): 4.16
- Interface transfer rate (MB/s, max): 600
- Sustained transfer rate (MB/s, typical): 243
- (MB/s, typical): 255

#### Reliability
- Error rate (non-recoverable, bits read): 1 in 10^15
- Load/Unload cycles (at 40°C): 600,000
- Availability (hrs/day x days/wk): 24/7
- MTBF (M hours): 2.5
- Annualized Failure Rate (AFR): 0.35% (1 in 3000)
- Warranty (yrs): 5

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**Acoustics**

<table>
<thead>
<tr>
<th>Feature / Function</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drive’s reliability and do not constitute a warranty.</td>
<td>[ \text{2.0/3.6} ]</td>
</tr>
<tr>
<td>More accurate head positioning, especially in multi-drive environments, for better performance, data integrity and reliability.</td>
<td>[ \text{4.16} ]</td>
</tr>
<tr>
<td>Maintains drive performance in high rotational vibration environments and multi-drive systems.</td>
<td>[ \text{70} ]</td>
</tr>
<tr>
<td>Better random write performance.</td>
<td>[ \text{12TB} ]</td>
</tr>
<tr>
<td>Dramatically improves RAID recovery time and maintains system performance during recovery.</td>
<td>[ \text{Shortest} ]</td>
</tr>
<tr>
<td>Provides compatibility with high-performance data centers.</td>
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**Power**

- Requirement: +5 VDC, -12VDC
- Operating: 6.9 (101.6 (+/-0.25) x 147)
- Idle (W): 5.0 (61.0)

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**Physical size**

- z-height (mm): 26.1
- Dimensions (width x depth, mm): 101.6 (+/-0.25) x 147
- Weight (g, max): 660

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**Environmental (Operating)**

- Ambient temperature: 5 to 60°C
- Shock half-sine wave 2 ms, G: 70
- Power consumption efficiency at idle (W/TB): 0.42 (0.51)

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**Environmental (Non-Operating)**

- Ambient temperature: -40 to 70°C
- Shock half-sine wave, G: 300 (2ms) / 150 (11ms)
- Random vibration (G RMS 2 to 200 Hz): 1.04 (XYZ)

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**NOTE:** See “How to read the Ultrastar model number” below for possible values for xx and y.

### How to Read the Ultrastar Model Number

- H = Western Digital
- U = Ultrastar
- H = Helium (vs. S for Standard)
- 72 = 7200 RPM
- 12 = Full capacity—12TB (12,000GB)
- xx = Capacity this model
- 12TB (12,000GB)
- A = Generation code
- L = 26.1mm z-height

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**How to Read the Ultrastar Model Number**

- Example: HUH721212AL420y = 7200 RPM, 12TB, 4Kn SAS 12Gb/s
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