



# Ultrastar® He<sup>10</sup>

## Highlights

- 10TB capacity<sup>1</sup> in a standard 3.5-inch form factor
- PMR technology works with all capacity enterprise applications & environments
- Reliable, field-proven, 3rd generation design
- Industry's best power efficiency (Watts/TB)
- Compared to 8TB air drives
  - 25% more capacity
  - 56% more power efficient (Watts/TB)
  - 25% more reliable
- SATA 6Gb/s and SAS 12Gb/s
  - 12Gb/s SAS compatible with next gen data centers; backwards compatible with 6Gb/s SAS
- 2.5M hours MTBF<sup>2</sup> rating & 5-year limited warranty
- Instant Secure Erase (ISE) & Self-Encrypting Drive (SED) options

## Applications/Environments

- Enterprise and data center applications where capacity density and power efficiency are paramount
- Cloud & Hyperscale storage
- Massive scale-out high-density data centers (MSO)
- Bulk storage using object storage solutions like Ceph™ and Hadoop® to support Big Data Analytics
- Centralized video surveillance
- Drop-in ready for all mainstream enterprise capacity applications



10TB and 8TB | 7200 RPM  
SATA 6Gb/s and SAS 12Gb/s



## Industry's Best Capacity, Power Efficiency and Reliability Delivers Value to the Data Center

Laying the foundation for a worry-free data center, HGST delivers the very best capacity hard drive in the industry – Ultrastar He<sup>10</sup>. The He<sup>10</sup> uses PMR technology and is the industry's first 10TB drive that is drop-in ready for any enterprise-capacity application or environment. Based on field proven, third-generation HelioSeal® technology, it offers the lowest power profile in the industry to help data center architects meet eco-environmental goals and requirements. Targeted at 2.5M hours MTBF, the He<sup>10</sup> provides the highest reliability rating available of all HDDs on the market today by building on the successful design of its 8TB and 6TB predecessors. Trust HGST and Ultrastar He<sup>10</sup> 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 He<sup>10</sup> provides the best value proposition and greatest storage efficiency available. Compared to 8TB air-filled drives, this HelioSeal hard drive provides 25% more capacity, uses 44% less power, is 56% more power efficient (Watts/TB), and is 25% more reliable, rated at 2.5M hours MTBF. New features include a second-generation, dual-stage actuator — the HGST Micro-Actuator — enhancing 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 HMA technical brief to learn more. A choice of 6Gb/s SATA and 12Gb/s SAS interface enables easy integration into high performance data centers.

## Data Durability and Security with Industry-Leading Quality and Reliability

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 errors conditions. Ultrastar He<sup>10</sup> is a best-fit for object storage implementations given its massive capacity and industry-leading reliability rating. Compliance and privacy requirements drive the need for increased data security. Ultrastar He<sup>10</sup> offers security and encryption options to protect data from unauthorized use, including a new option for TCG support on some SATA models.

## HGST Quality and Service

Ultrastar He<sup>10</sup> extends the HGST brand's long-standing tradition of performance and capacity leadership. The proven drive design enables high reliability and availability to customer data. Ultrastar quality, performance and world class technical service and support provides customers with a lower total cost of ownership over previous generations. HGST drives are backed by an array of technical support and services, which may include customer and integration assistance. Dedicated to providing a complete portfolio of devices and systems, HGST products help the world harness the power of data.

25%

MORE CAPACITY\*

56%

LOWER WATTS/TB\*

25%

MORE RELIABLE\*

\* VS. 8TB AIR DRIVES



# Ultrastar® He<sup>10</sup>

## Features & Benefits

Feature / Function	Benefits
<b>Capacity</b>	<ul style="list-style-type: none"> <li>10TB and 8TB</li> <li>10TB provides 25% more capacity than 8TB drives</li> </ul>
<b>Power Efficiency</b>	<ul style="list-style-type: none"> <li>Industry's lowest Watts per terabyte (W/TB)</li> <li>56% lower idle W/TB than 8TB air drives</li> </ul>
<b>Performance</b>	<ul style="list-style-type: none"> <li>HGST Micro-Actuator</li> <li>Rotational Vibration Safeguard (RVS)</li> <li>NVC Quick Cache (SAS only)</li> <li>Media cache architecture</li> <li>Rebuild Assist mode</li> <li>SATA 6Gb/s &amp; SAS 12Gb/s</li> <li>256MB cache buffer</li> <li>More accurate head positioning, especially in multi-drive environments, for better performance, data integrity and reliability</li> <li>Maintains drive performance in high rotational vibration environments and multi-drive systems</li> <li>Better random write performance</li> <li>Dramatically improves RAID recovery time and maintains system performance during recovery</li> <li>Provides compatibility with high-performance data centers</li> <li>Improves response time and data management</li> </ul>
<b>Reliability</b>	<ul style="list-style-type: none"> <li>Dual safe firmware</li> <li>Electronic Depop</li> <li>2.5M hours MTBF<sup>2</sup> and 0.35% AFR<sup>2</sup></li> <li>5-year limited warranty</li> <li>Retains previous firmware version for safe firmware updates</li> <li>Extends drive longevity with in-place redeployment at lower capacity</li> <li>Industry's highest reliability rating for Capacity Enterprise HDD for fewer failures/less service needs</li> </ul>
<b>Data Security</b>	<ul style="list-style-type: none"> <li>Instant Secure Erase</li> <li>New TCG option for SATA models</li> <li>Enables swift and efficient drive redeployment and retirement</li> <li>Hardware-based encryption protects data from unauthorized use</li> </ul>

### How to read the Ultrastar model number

Example: HUH7210xxAL420y = 7200 RPM, xxTB, 4Kn SAS 12Gb/s

H = HGST	42 = Interface, 4Kn SAS 12Gb/s
U = Ultrastar	(52 = 512e SAS 12Gb/s,
H = Helium (vs. S for Standard)	E6 = 512e SATA 6Gb/s,
72 = 7200 RPM	N6 = 4Kn SATA 6Gb/s)
10 = Full capacity — 10TB (10,000GB)	0 = Reserved
xx = Capacity this model (10 = 10TB, 08 = 8TB)	y = Data Security Mode
A = Generation code	0 = Instant Secure Erase
L = 26.1mm z-height	1 = Self-encrypting Drive (SED)*
	4 = Secure Erase (overwrite only)
	5 = TCG encryption with FIPS (SAS)
	* Bulk Data Encryption+TCG (SATA), TCG (SAS)

<sup>1</sup> One MB is equal to one million bytes, one GB is equal to one billion bytes and one TBequals 1,000GB (one trillion bytes) when referring to hard drive capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the hard drive, the computer's operating system, and other factors.

<sup>2</sup> MTBF and AFR targets are based on a sample population and are estimated by statistical measurements and acceleration algorithms under median operating conditions. MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

<sup>3</sup> Advanced Format drive: 4K (4096-byte) physical sectors

<sup>4</sup> Portion of buffer capacity used for drive firmware

<sup>5</sup> MiB/s is 2<sup>20</sup> bytes, MB/s is 10<sup>6</sup> bytes

<sup>6</sup> Excludes command overhead

<sup>7</sup> SATA models: 8K Queue Depth = 1, SAS models: 4K Queue Depth = 4

<sup>8</sup> Idle specification is based on use of Idle\_A

## Specifications

	SATA Models	SAS Models
Model No.	HUH7210xxALE60y HUH7210xxALN60y	HUH7210xxAL420y HUH7210xxAL520y
<b>Configuration</b>		
Interface	SATA 6Gb/s	SAS 12Gb/s
Capacity <sup>1</sup> (TB)	10TB / 8TB	←
Format: Sector size <sup>2</sup> (bytes)	4Kn: 4096 512e: 512	4Kn: 4096, 4112, 4160, 4224 512e: 512, 520, 528
Max. Areal density (Gbits/sq. in.)	816 (10TB)	←
<b>Performance</b>		
Data buffer <sup>4</sup> (MB)	256	←
Rotational speed (RPM)	7200	←
Latency average (ms)	4.16	←
Interface transfer rate (MB/s, max)	600	1200
Sustained transfer rate <sup>5</sup> (MiB/s, typical)	237 / 215	←
(MB/s, typical)	249 / 225	←
Seek time <sup>6</sup> (read/write, ms, typical)	8.0/8.6	←
<b>Reliability</b>		
Error rate (non-recoverable, bits read)	1 in 10 <sup>15</sup>	←
Load/Unload cycles (at 40°C)	600,000	←
Availability (hrs/day x days/wk)	24x7	←
MTBF <sup>2</sup> (M hours)	2.5	←
Annualized Failure Rate <sup>2</sup> (AFR)	0.35%	←
Warranty (yrs)	5	←

	SATA Models	SAS Models
<b>Acoustics</b>		
Idle (Bels, typical)	2.0/3.6	←
<b>Power</b>		
Requirement	+5 VDC, +12VDC	←
Operating <sup>7</sup>	6.8	9.5
Idle <sup>8</sup> (W)	5.0	5.8
Power consumption efficiency at Idle (W/TB)		
(Watts/TB)	0.50	0.58
(Watts/GB)	0.00050	0.00058
<b>Physical size</b>		
z-height (mm)	26.1	←
Dimensions (width x depth, mm)	101.6 (+/-0.25) x 147	←
Weight (g, max)	660	←
<b>Environmental (Operating)</b>		
Ambient temperature	5° to 60° C	←
Shock (half-sine wave 2 ms, G)	70	←
Vibration (G RMS 5 to 500 Hz)	0.67 (XYZ)	←
<b>Environmental (Non-Operating)</b>		
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)	←

NOTE: See "How to read the Ultrastar model number" at the top of the page for possible values for xx and y.

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