HGST

Ultrastar® He⁸

Highlights

- Industry's leading 8TB capacity[1] in a standard 3.5-inch form factor
- Industry's best Idle and Active power efficiency (Watts/TB)
- Reliable, field-proven, 2nd generation HelioSeal® process and 7Stac™ design
- Compared to 6TB air drives
  - 33% more capacity
  - 23% lower idle power
  - 44% more power efficient (Watts/TB)
- 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[2] rating & 5-year limited warranty
- Instant Secure Erase (ISE) & Self-Encrypting Drive (SED) options
- Advanced format 4Kn and 512e models

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)
- Distributed Files Systems like Ceph™ and Hadoop® to support Big Data Analytics
- RAID arrays
- Video surveillance & content distribution
- Ideal for all mainstream enterprise capacity applications

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

33% MORE CAPACITY*   **23%** LOWER IDLE POWER*   **44%** BETTER WATTS/TB*

HelioSeal® Delivers Twice the Capacity Using One-Quarter Less Power

One-third more capacity and 23% lower energy consumption. Available today. That's the power of helium. Delivering the industry's leading capacity at 8TB, Ultrastar He⁸ is based on the widely accepted and proven HelioSeal® platform. HelioSeal technology replaces air with helium inside the drive, reducing air turbulence and enabling 7Stac™, a seven-disk design in a traditional 3.5-inch form factor. Ultrastar He⁸ goes beyond what any air-based HDD can do and seamlessly integrates into virtually any mainstream enterprise environment. Cooler and quieter with industry-leading power efficiency (Watts/TB) and no-compromise performance, the Ultrastar He⁸ lays the foundation for future growth in massive scale-out environments.

TCOptimized™ – Increasing Storage Efficiency to Drive Down Data Center TCO

We recognize the growing pressures that data centers face. Volume is expanding, operating costs are rising while budgets remain flat. Lowering the total cost of ownership (TCO) has become the focus of data center architects.

Ultrastar He⁸ provides the best TCO value proposition and delivers greater storage efficiency with breakthroughs in capacity, power efficiency and best-in-class performance. This HelioSeal hard drive achieves up to 3X higher random write performance than the prior generation, Ultrastar He⁶, thanks to HGST media cache architecture, a disk-based caching technology. He⁸ offers a 12Gb/s SAS (6Gb/s SATA) interface for easy integration into high performance data centers. Features like Rebuild Assist dramatically reduce RAID rebuild times and maintain system performance during the rebuild process. Learn more in our Rebuild Assist technical brief.

Data Security with Industry-Leading Quality and Reliability

Compliance and privacy requirements drive the need for increased data security. Ultrastar He⁸ offers security and encryption options to protect data from unauthorized use. Instant Secure Erase (ISE) models expedite drive redeployment and retirement. Encryption models protect data with hardware-based encryption, including a Trusted Computing Group (TCG) option with FIPS 140-2 certification, Level 2. The Ultrastar He⁸ extends HGST's long-standing tradition of reliability leadership with a 2.5M-hour MTBF rating and a 5-year limited warranty. HGSTs drive reliability and security options also help lower data center TCO.

Features & Benefits

	Feature / Function	Benefits
Capacity	• 8TB and 6TB	• 8TB provides 33% more capacity than 6TB drives
Power Efficiency	• Industry's lowest Watts per terabyte (W/TB)	• 44% lower idle W/TB than 6TB air drives
Performance	• Media cache architecture • Rebuild Assist mode • SATA 6Gb/s & SAS 12Gb/s • 128MB cache buffer • Rotational Vibration Safeguard (RVS)	• Delivers up to 3X better random write performance compared to He⁶ • Dramatically improves RAID recovery time and maintains system performance during recovery • Provides compatibility with high-performance data centers • Improves response time and data management • Maintains drive performance in high rotational vibration environments and multi-drive systems
Reliability	• 2.5M hours MTBF[2] and 0.35% AFR[2] • 5-year limited warranty	• Industry's highest reliability rating for Capacity Enterprise HDD • Industry's best for enterprise-class hard drives soft error rate for improved reliability & performance
Data Security	• Instant Secure Erase • Optional Bulk Data Encryption (SATA) and TCG Enterprise_A (SAS)	• Enables swift and efficient drive redeployment and retirement • Hardware-based encryption protects data from unauthorized use

* VS. 6TB AIR DRIVES

Ultrastar® He⁸

Specifications

Model No.	SATA Models	SAS Models
	HUH7280xxALN60y	HUH7280xxAL420y
	HUH7280xxALE60y	HUH7280xxAL520y

Configuration

	SATA Models	SAS Models
Interface	SATA 6Gb/s	SAS 12Gb/s
Capacity¹ (TB)	8TB / 6TB	←
Format: Sector size³ (bytes)	4Kn: 4096	4Kn: 4096, 4112, 4160, 4224
	512e: 512	512e: 512, 520, 528
Max. Areal density (Gbits/sq. in.)	664 (8TB)	←

Performance

Data buffer⁴ (MB)	128	←
Rotational speed (RPM)	7200	←
Latency average (ms)	4.16	
Interface transfer rate (MB/s, max)	600	1200
Sustained transfer rate⁵ (MiB/s, typical)	195 (8TB)	←
(MB/s, typical)	205 (8TB)	←
Seek time⁶ (read/write, ms, typical)	8.5/9.0	←

Reliability

Error rate (non-recoverable, bits read)	1 in 10¹⁵	←
Load/Unload cycles (at 40°C)	600,000	←
Availability (hrs/day x days/wk)	24x7	←
MTBF² (M hours)	2.5	←
Annualized Failure Rate² (AFR)	0.35%	←
Warranty (yrs)	5	←

NOTE: See "How to read the Ultrastar model number" at right for possible values for xx and y

Acoustics

	SATA Models	SAS Models
Idle (Bels, typical)	2.0/3.6	←

Power

Requirement	+5 VDC, +12VDC	←
Operating⁷	7.4	9.1
Idle⁸ (W)	5.1	5.7
Power consumption efficiency at Idle (W/TB)		
(Watts/TB)	0.64 (8TB)	0.71 (8TB)
(Watts/GB)	0.00064 (8TB)	0.00071 (8TB)

Physical size

z-height (mm)	26.1	←
Dimensions (width x depth, mm)	101.6 (+/-0.25) x 147	←
Weight (g, max)	650	←

Environmental (Operating)

Ambient temperature	5º to 60º C	←
Shock (half-sine wave 2 ms, G)	70	←
Vibration (G RMS 5 to 500 Hz)	0.67 (XYZ)	←

Environmental (Non-Operating)

Ambient temperature	-40º to 70º C	←
Shock (half-sine wave, G)	300 (1ms) / 150 (11ms)	←
Random vibration (G RMS 2 to 200 Hz)	1.04 (XYZ)	←

HGST Quality and Service

HGST's Ultrastar He⁸ extends the company'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 support and service 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. HGST is dedicated to providing a complete portfolio of HDD, SSD and software solutions to help the world harness the power of data.

How to read the Ultrastar model number

Example: HUH7280xxAL420y = 7200 RPM, xTB, 4Kn SAS 12Gb/s

H = HGST
U = Ultrastar
H = Helium (vs. S for Standard)
72 = 7200 RPM
80 = Full capacity — 8TB (8000GB)
xx = Capacity this model
  (80 = 8TB, 60 = 6TB)
A = Generation code
L = 26.1mm z-height

42 = Interface, 4Kn SAS 12Gb/s
  (52 = 512e SAS 12Gb/s,
  E6 = 512e SATA 6Gb/s,
  N6 = 4Kn SATA 6Gb/s)
0 = Reserved
y = Data Security Mode
  0 = Instant Secure Erase
  1 = Bulk Data Encryption (SATA),
    TCG SED encryption (SAS)
  4 = Secure Erase (overwrite only)
  5 = TCG encryption with FIPS (SAS)

¹ One MB is equal to one million bytes, one GB is equal to one billion bytes and one TB equals 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.
² 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.
³ Advanced Format drive: 4K (4096-byte) physical sectors
⁴ Portion of buffer capacity used for drive firmware
⁵ MiB/s is 2²⁰ bytes, MB/s is 10⁶ bytes
⁶ Excludes command overhead
⁷ SATA models: 8K Queue Depth = 1, SAS models: 4K Queue Depth = 4
⁸ Idle specification is based on use of Idle_A

References in this publication to HGST's products, programs, or services do not imply that HGST intends to make these available in all countries in which it operates.

Product specifications provided are sample specifications and do not constitute a warranty. Information is true as of the date of publication and is subject to change. Actual specifications for unique part numbers may vary.

Please visit the Support section of our website, www.hgst.com/support, for additional information on product specifications. Photographs may show design models.

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www.hgst.com
www.hgst.com/support

Partners First Program
channelpartners@hgst.com
www.hgst.com/partners