



14TB & 15TB Host-Managed SMR HDD
7200 RPM | SATA 6Gb/s & SAS 12Gb/s

Highlights

- Industry's first enterprise-grade 15TB¹ HDD
- Combines HelioSeal® and host-managed SMR to deliver 25% more capacity than 12TB CMR drives
- Purpose-built for "sequential write" applications
- Consistent, predictable performance with uncompromising enterprise-class quality and reliability for true enterprise experience
- 2.5M hour MTBF³ rating
- 5-year limited warranty

Applications/Environments

- Big Data or Bulk Storage
- Cloud Storage
- Social Media
- Content Libraries, Streaming Media and Digital Media Assets
- Online Back-up and Replication
- Compliance, Audits and Regulatory Records

Beyond Create and Modify: Purpose-built for Sequential Write Workloads

As cloud and hyperscale data centers look for affordable options to capture the growing volume and variety of data, Western Digital delivers the world's first enterprise-class 15TB HDD, a new capacity high for our Ultrastar® DC HC620* product line. This 3.5-inch hard drive is part of our Ultrastar DC HC600 series portfolio, which is based on host-managed shingled magnetic recording (SMR) technology, designed to help address Big Data challenges and the emerging sequential write workload segment in the data center. Optimized to deliver the highest capacity at low total cost of ownership (TCO), the DC HC620 provides unprecedented capacity leadership by harnessing two core complementary technologies—4th generation HelioSeal® technology and 2nd generation host-managed SMR. These field-proven technologies provide the foundation for delivering efficiency, quality and reliable performance required by cloud and hyperscale data centers.

Preparing to use Host-Managed SMR

To take advantage of the capacity and predictable performance of host-managed SMR, customers will need to modify their end application or kernel space to interface with new command sets, and data streams must be sequentially written to the drive. Ultrastar DC HC620 drives are designed specifically for sequential-write environments and will not work as drop-in replacements for traditional capacity enterprise drives. The investments made in software changes will also help enable future host-based SMR solutions, and provide a path to streamlined deployment of future recording technologies.

Designed with the Customer in Mind

The Ultrastar DC HC620 is built on the proven and mature HelioSeal platform to deliver an unmatched Watts/TB power footprint for online storage. Built for enterprise workloads up to 550TB/year, DC HC620 is ideal for ultra-dense scale-out storage systems, with uncompromising product reliability, necessary for private and public cloud enterprise applications. Industry-standard SATA 6Gb/s or SAS 12Gb/s interface options support a variety of data center configurations.

By combining host-managed SMR with HelioSeal technology, the 15TB model of Ultrastar DC HC620 offers a 25% increase in capacity compared to 12TB drives using conventional magnetic recording (CMR) technology, while delivering highly predictable, highly reliable performance. Because host-managed SMR enforces a sequential stream of all incoming data, and also provides control at the host level, customers can now intelligently tier their storage from hot-to-cold while maintaining a consistent performance profile regardless of packet size, number of data streams, or workload.

Western Digital Quality and Service

The Ultrastar DC HC620 HDD 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 offers a complete portfolio of product offerings designed to create environments for data to thrive.

*Previously known as Ultrastar Hs¹⁴

Features & Benefits

| Feature / Function | Benefits | |
|---------------------------------------|---|--|
| Technology | <ul style="list-style-type: none"> • HelioSeal technology • Host-managed SMR | <ul style="list-style-type: none"> • Up to 25% boost in capacity over 12TB CMR-based alternatives, while delivering consistent performance for enterprise applications |
| Capacity | <ul style="list-style-type: none"> • 15TB & 14TB | <ul style="list-style-type: none"> • Highest enterprise-grade storage capacity for sequential write workloads |
| Power Efficiency | <ul style="list-style-type: none"> • Extremely low Watts/TB • Advanced power management technology | <ul style="list-style-type: none"> • 15TB model is 17% better than 12TB Ultrastar DC HC520 (SATA) • Additional power savings with instant-on capability |
| Reliability (enterprise-grade) | <ul style="list-style-type: none"> • 2.5M hour MTBF • 5-yr limited warranty • Rotational Vibration Safeguard | <ul style="list-style-type: none"> • Lower AFR over product life provides for appreciable TCO savings • Best-in-class SMR drive warranty to match enterprise-grade quality • Helps maintain performance in multi-drive, ultra-dense systems |
| Performance | <ul style="list-style-type: none"> • 7200 RPM • 255MB/s (max) sustained transfer rate | <ul style="list-style-type: none"> • Enterprise-grade performance for data center applications • Consistent, predictable performance for sequential workloads |
| Data Security | <ul style="list-style-type: none"> • Instant Secure Erase | <ul style="list-style-type: none"> • Provides security and easy redeployment |

Specifications

| Configuration | SATA Models | SAS Models |
|---|--|--|
| Model No. | HSH7214xxALE6M0 HSH7214xxALE6M4 HSH7214xxALN6M0 HSH7214xxALN6M4 | HSH7214xxAL52M0 HSH7214xxAL52M4 HSH7214xxAL42M0 HSH7214xxAL42M4 |
| Interface | SATA 6Gb/s | SAS 12Gb/s |
| Capacity¹ (TB) | 15 / 14 | ← |
| Form Factor | 3.5-inch | ← |
| Format: Sector size³ (bytes) | 512e: 512 4Kn: 4096 | 512e: 512, 520, 528 4Kn: 4096, 4112, 4160, 4224 |
| Areal density (Gbits/sq. in., max) | 1108 / 1034 | ← |
| Performance | | |
| Data buffer⁴ (MB) | 512 | ← |
| Rotational speed (RPM) | 7200 | ← |
| Latency average (ms) | 4.16 | ← |
| Interface transfer rate⁵ (MB/s, max) | 600 | 1200 |
| Sustained transfer rate⁵ (MiB/s, max) | 236 / 223 | ← |
| (MB/s, max) | 247 / 233 | ← |
| Seek time⁶ (read/write, ms, typical) | 7.7/12.0 | ← |
| Reliability | | |
| Error rate (non-recoverable, bits read) | 1 in 10 ¹⁵ | ← |
| Load/Unload cycles (at 40°C) | 600,000 | ← |
| MTBF² (M hours) | 2.5 | ← |
| Annualized failure rate² (AFR) | 0.35% | ← |
| Availability (hrs/day x days/wk) | 24x7 | ← |
| Limited warranty (yrs) | 5 | ← |

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 object storage methodologies, 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 2²⁰ bytes, MB/s is 10⁶ 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

| | SATA Models | SAS Models |
|---|------------------------|-------------------|
| Power | | |
| Requirement | +5 VDC, +12VDC (+/-5%) | ← |
| Operating⁷ (W) | 6.4 | 8.3 |
| Idle⁸ (W) | 5.2 | 6.2 |
| Power consumption efficiency at Idle | | |
| (Watts/GB) | 0.00035 / 0.00037 | 0.00041 / 0.00044 |
| (Watts/TB) | 0.35 / 0.37 | 0.41 / 0.44 |
| Acoustics | | |
| Idle (Bels, typical) | 2.0/3.6 | ← |
| Physical size | | |
| z-height (mm) | 26.1 | ← |
| Dimensions (width x depth, mm) | 101.6 (+/-0.25) x 147 | ← |
| Weight (g, max) | 660 | ← |
| Environmental (Operating) | | |
| Ambient temperature | 5° to 60° C | ← |
| Shock (half-sine wave 2 ms, G) | 70 | ← |
| Vibration (G RMS 5 to 500 Hz) | 0.67 (XYZ) | ← |
| Environmental (Non-Operating) | | |
| Ambient temperature | -40° to 70° C | ← |
| Shock (half-sine wave, G) | 300 | ← |
| Random vibration (G RMS 2 to 200 Hz) | 1.04 (XYZ) | ← |

NOTE: See "How to read the Ultrastar model number" below for possible values of xx.

How to Read the Ultrastar Model Number

Example: HSH7214xxALE6M0 = xxTB SATA 6Gb/s 512e

| | |
|---|----------------------------------|
| H = Western Digital | L = 26.1mm z-height |
| S = SMR Ultrastar | E6 = Interface |
| H = HelioSeal technology | (E6=512e SATA 6Gb/s, |
| 72 = 7200 RPM | N6=4Kn SATA 6Gb/s, |
| 14 = Original capacity in series (14TB) | 52=512e SAS 12Gb/s, |
| xx = Capacity of this model | 42=4Kn SAS 12Gb/s) |
| (14=14TB, 15=15TB) | M = Host-Managed |
| A = Generation code | 0 = Instant Secure Erase support |
| | (4 = Secure Erase support) |

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