Ultrastar® C10K1800

2.5-Inch SFF Enterprise 10K RPM Hard Disk Drives

Highlights

- Industry-leading 1.8TB[1] capacity in a 10K RPM HDD, 50% more than previous generations
- Best-in-class performance
  - 2.5X faster random write*
  - 23% faster sequential*
- Advance format (4KN and 512e) and 512n models
- 12Gb/s SAS moves more data quickly & reliably
- 128MB cache buffer manages data efficiency
- Advanced Power Management optimizes power consumption
- Best-in-class power efficiency
- 2M hours MTBF[2] rating and 5-year warranty
- Security & encryption models including ISE, TCG-SED & FIPS 140-2 certified TCG-SED

Applications/Environments

- Tier 1 enterprise-class, high-performance servers in data centers processing hot and warm data
- Traditional mission-critical enterprise-class servers and storage
- HPC, databases, OLTP, and BP applications requiring high reliability and 24x7 availability
- Enterprise-class data security environments requiring increased security & easy drive retirement
- Power- and space-constrained, mission-critical environments

Big Capacity and Performance in a Small Package

HGST delivers best-in-class capacity and performance in one small form factor hard drive. The Ultrastar® C10K1800 is a 10K RPM enterprise-class HDD that stores up to 1.8TB of data, 50% more capacity than prior generations, plus delivers best-in-class active and idle power efficiency, enabling next generation data centers to keep pace with digital data growth and improve space and power efficiencies. Data center architects can also leverage best-in-class performance on the C10K1800, achieving up to 2.5X better random write performance and 23% faster sequential performance over prior generation 2.5-inch SFF 10K RPM HDDs for demanding 24x7 enterprise workloads.

Technology Innovation

Ultrastar C10K1800 delivers unmatched performance thanks to several HGST technology innovations including media cache architecture, the industry's fastest 12Gb/s Serial-Attached SCSI (SAS) interface and advanced format options. HGST's media cache architecture is a disk-based caching technology, which provides a large non-volatile cache on the media resulting in improved reliability and data integrity during unexpected power loss, as well as a significant improvement in write performance even at high workloads when compared to solutions with limited NAND or flash-based NVC. The C10K1800 is the industry's first 10K RPM drive to leverage an industry-leading 12Gb/s SAS interface, enabling very high transfer rates between host and drive. Advanced format models enable the industry's highest 10K RPM capacity at 1.8TB with 4K native and 512 emulation to support new systems, and also offers 512 native format models to support legacy systems.

Enterprise Security and Reliability

The Ultrastar C10K1800 offers the broadest range of encryption and security options available on SAS HDDs from HGST, including Trusted Computing Group (TCG) enterprise SSC-compliant Self-Encrypting Drives (SED) which provide data protection without any performance loss, and TCG with FIPS (Federal Information Processing Standard) 140-2 certification, which adds and tamper evidence protection for the most stringent regulatory data security compliance requirements. Instant Secure Erase (ISE) models enable fast, cost-effective and secure drive repurposing and retirement. C10K1800 extends the company's long-standing tradition of reliability leadership with a 2M hours MTBF rating and a 5-year limited warranty.

Features and Benefits

	Feature / Function	Benefits
Performance	10K RPM	Low latency for faster access to data
	12Gb/s SAS	Industry's fastest SAS interface for maximum throughput
	Media cache architecture	Significantly enhanced performance over solutions with limited NAND or flash-based non-volatile cache (NVC)
	Rotational Vibration Safeguard (RVS)	Maintains optimum performance in multi-drive systems
	Workload detector technology	Maximizes performance in RAID environments
Capacity	Up to 1.8TB with Advanced Format	50% more capacity than previous generation 10K HDDs
Power Efficiency	2.5-inch form factor	Consumes less power than previous generation 10K HDDs
	Advanced Power Management technology	Optimizes power consumption to lower data center energy usage and cooling costs
Reliability	IDRC technology	Improves signal processing for more robust data integrity
	RRO fields	Improves handling of repeatable run out to lower risk of data squeeze and write inhibit rate
	End-to-end data protection (ANSI)	Enhances error detection for optimal data integrity
Security	Optional SED models	Encrypts data, providing security and easy redeployment

* Compared to previous generation

1.8TB / 1.2TB / 900GB / 600GB / 450GB / 300GB
10K RPM | 2.5-inch SFF | SAS 12Gb/s

ADVANCED 4Kn FORMAT

ADVANCED AF FORMAT

Eco Trac

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HGST Quality and Service

The Ultrastar C10K1800 extends the long-standing HGST tradition of performance and reliability leadership. A balanced combination of new and proven technologies helps ensure high reliability and availability of customer data.

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 breadth of hard disk drive solutions to satisfy all of today's demanding computing needs.

How to read the Ultrastar model number

HUC101818CSS200 = 1.8TB, SAS 12Gb/s

H = HGST
U = Ultrastar
C = Compact (vs S for Standard)
10 = 10K RPM class
18 = Full capacity — 1800GB (1.8TB)
18 = Capacity this model, 18 = 1800GB (1.8TB), 12=1200GB (1.2TB), 90=900GB, 60=600GB, 45=450GB, 30=300GB
C = Generation code
S = 14.8mm z-height
S2 = Interface, SAS 12Gb/s with 512n sectors, 42=12Gb/s SAS with 4Kn or 512e sectors
0 = Reserved
0 = Data Security Mode
0 = Instant Secure Erase
1 = TCG SED encryption
4 = No encryption, Secure Erase (overwrite)
5 = TCG SED with FIPS

Information and Technical Support

www.hgst.com (Main Web site)
www.hgst.com/support (Support Web site)

Program Support

Partners First Program: channelpartners@hgst.com
www.hgst.com/partners (Partners Web site)

Specifications

Models	HUC101812CSS20x HUC101890CSS20x HUC101860CSS20x HUC101830CSS20x	HUC101818CS420x HUC101812CS420x HUC101890CS420x HUC101860CS420x HUC101845CS420x
NOTE: See "How to read the Ultrastar model number" at left for possible values for last character of model number.		
Configuration		
Interface	SAS 12Gb/s	←
Capacity (GB)[1]	1.2TB / 900 / 600 / 300	1.8TB / 1.2TB / 900 / 600 / 450
Sector size (variable, bytes/sector)	512-Byte (512n)	4096-Byte (512e, 4Kn)
Recording zones	40	←
Data heads (physical)	6 / 5 / 3 / 2	8 / 6 / 4 / 3 / 2
Data disks	3 / 3 / 2 / 1	4 / 3 / 2 / 2 / 1
Max. areal density (Gbits/sq. in.)	580	620
Performance		
Data buffer (MB)[3]	128	←
Rotational speed (RPM)	10,520	←
Latency average (ms)	2.85	←
Interface transfer rate (MB/s, max)[4]	1200	←
Sustained transfer rate (MB/s, typical)[4]	129 to 224	146 to 247
Seek time (read/write, ms, typical range)[5]	3.3-3.5 / 3.8-4.2	3.3-3.7 / 3.8-4.4
Reliability		
Error rate (non-recoverable, bits read)	1 in 10^{16}	←
MTBF[2] (M hours)	2.0	←
Availability (hrs/day x days/wk)	24x7	←
Acoustics		
Idle (Bels)	3.4	←
Power		
Requirement	+5 VDC (+/-5%), +12 VDC (+/-5%)	←
Operating, (W, typical)[6]	6.6 / 6.5 / 5.9 / 5.7	7.4 / 6.7 / 6.2 / 6.2 / 5.9
Idle (W)[7]	4.7 / 4.7 / 4.3 / 3.9	5.1 / 4.8 / 4.3 / 4.3 / 3.9
Idle efficiency (W/GB)	0.0042 (1.2TB)	0.003 (1.8TB)
Physical size		
z-height (mm)	15	←
Dimensions (width x depth, mm)	70.1 x 100.45	←
Weight (g, max)	227	←
Environmental (operating)		
Ambient temperature	5° to 55° C	←
Shock (half-sine wave 2ms, read operation)	60G	←
Vibration, random, no errors (G RMS 5 to 500 Hz)	0.4, all axes	←
Environmental (non-operating)		
Ambient temperature	-40° to 70° C	←
Shock (half-sine wave, 2ms, read operation)	300G	←
Vibration, random (G RMS, 5 to 500 Hz)	1.5, all axes	←

1 One MB is equal to on 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 target is based on a sample population and is estimated by statistical measurements and acceleration algorithms under nominal operating conditions. MTBF ratings are not intended to predict an individual drive's reliability. MTBF does not constitute a warranty.
3 Portion of buffer capacity used for drive firmware
4 1MB/s is equal to 1,000,000 Bytes/s; Sustained Transfer rate is shown from Outer to Inner Diameter
5 Excludes command overhead
6 Operating power calculated based on a Random RW 4KB workload at Queue Depth of 1
7 Idle specification is based on use of Idle_A

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DS018-EN-US-0614-01