Ultrastar® C15K600

2.5-Inch SFF Enterprise 15K RPM Hard Disk Drives

Highlights

- 15,000 RPM performance for Tier 0/1 applications
- Capacities up to 600GB[1]
- Industry-leading 12Gb/s SAS moves more data quickly and reliably
- Compared to 15K 3.5-inch HDDs:
  - 2.5X faster random write performance
  - 14% faster random read performance
  - 38% faster sequential performance
  - 54% lower active and idle power
  - 70% smaller footprint
- 2M hours MTBF[2] rating
- 128MB cache buffer manages data efficiency
- Security & encryption models including ISE, TCG-SED & FIPS 140-2 certified TCG-SED

Applications/Environments

- High Performance Computing (HPC) & other high-performance, mission-critical applications requiring 24x7 availability
- Tier 0/1 enterprise-class servers and networked storage arrays
- High reliability blade, pedestal and rack-mounted servers
- Systems needing the highest levels of data security to meet compliance-driven requirements
- Databases and intense Online Transaction Processing (OLTP)
- Servers and storage arrays (DAS, SAN and NAS)

600GB, 450GB and 300GB
15,000 RPM
2.5-inch SFF I SAS 12Gb/s

Big Performance and Capacity in a Small Package

HGST delivers the world's fastest hard disk drive in the Ultrastar® C15K600, a 15K RPM, 2.5-inch small form factor hard drive ideally suited for mission-critical data center and high performance computing environments. At 600GB, Ultrastar C15K600 provides double the capacity of current generation 2.5-inch 15K drives, and matches the highest capacity point of 3.5-inch 15K drives. This latest addition to the Ultrastar small form factor (SFF) family outperforms not only the competition but also legacy 3.5-inch 15K drives from HGST, achieving 38% faster sequential and 2.5X faster random write performance for faster data processing, while consuming half as much active and idle power.

Best-in-class performance is achieved through several innovations, including media caching technology that provides a large caching mechanism for incoming data resulting in significantly enhanced write performance over solutions with limited NAND or flash-based non-volatile cache (NVC). The C15K600 is HGST's first hard drive to leverage an industry-leading 12Gb/s Serial-Attached SCSI (SAS) interface enabling very high transfer rates between host and drive, supporting the performance and reliability required in the most demanding enterprise computing environments like on-line transaction processing (OLTP), big data analytics, multi-user applications and data warehousing.

Power and Density Efficiency

The compact size and power management innovations designed into the Ultrastar C15K600 enable high levels of power efficiency and translate into reduced power requirements and lower cooling costs, an ideal choice for enterprise data centers faced with space and power limitations. Compared to legacy 3.5-inch 15K drives, Ultrastar C15K600 consumes 70% less space yet provides up to 55% lower active power and 54% lower idle power requirements. HGST Advanced Power Management technology, with multi-state idle modes, uses industry-recognized standards for power optimization and can be pre-programmed or manually initiated in the system.

Enterprise Reliability and Data Security

The Ultrastar C15K600 offers the broadest range of security options and encryption options available from HGST, including Instant Secure Erase (ISE), Trusted Computing Group (TCG) enterprise SSC-compliant Self-Encrypting Drives (SED), and TCG enterprise SED with FIPS (Federal Information Processing Standard) 140-2 certification, Level 2, which provides data-at-rest and tamper evidence protection for the most stringent regulatory data security compliance requirements. Ultrastar C15K600 extends the company's long-standing tradition of reliability leadership with a 2M hour MTBF rating, an annualized failure rate (AFR) of 0.44% and a 5-year limited warranty.

Features and Benefits

	Feature / Function	Benefits
Performance	15K RPM	Highest speed available for enterprise-class HDDs
	SAS 12Gb/s	Industry's fastest SAS interface for maximum throughput
	Media caching technology	Significantly enhanced 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 multi-drive systems
Capacity	Up to 600GB	Double current 2.5-inch 15K drives and matches 3.5-inch 15K drives
Power Efficiency	2.5-inch form factor	Consumes up to 55% less power than 3.5-inch HGST drives
	Advanced Power Management	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

ADVANCED 4Kn FORMAT · ADVANCED AF FORMAT · EcoTrac

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HGST Quality and Service

HGST's Ultrastar C15K600 extends the company's long-standing tradition of performance and reliability leadership. A balanced combination of new and proven technologies enables high reliability and availability to 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

HUC156060CSS200 = 600GB, SAS 12Gb/s

H = HGST
U = Ultrastar
C = Compact (vs S for Standard)
15 = 15,000 RPM
60 = Full capacity — 600GB
60 = Capacity this model, 60 = 600GB
(45 = 450GB, 30 = 300GB)
C = Generation code
S = 15mm z-height
S2 = Interface, SAS 12Gb/s 512n
(42 = SAS 12Gb/s 4Kn/512e)
0 = Reserved
0 = Data Security Mode
(0 = Instant secure erase
1 = TCG SED
4 = Secure erase
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

Model # NOTE: See "How to read the Ultrastar model number" at left for possible values for last character of model number.	HUC156060CSS20x HUC156045CSS20x HUC156030CSS20x	HUC156060CS420x HUC156045CS420x HUC156030CS420x
Configuration		
Interface	SAS 12Gb/s	←
Capacity[1] (GB)	600GB / 450GB / 300GB	←
Sector size (variable, bytes/sector)	512-Byte (512n)	4096-Byte (512e, 4Kn)
Recording zones	40	←
Data heads (physical)	6 / 4 / 3	←
Data disks	3 / 2 / 2	←
Max. Areal density (Gbits/sq. in.)	528	460
Performance		
Data buffer[3] (MB)	128	←
Rotational speed (RPM)	15,030	←
Latency average (ms)	<2.0	←
Interface transfer rate[4] (MB/s, max)	1200	←
Sustained transfer rate[4] (MB/s, typical)	175 to 250	189 to 271
Seek time[5] (read, ms, typical)	2.9 / 3.1	←
Reliability		
Error rate (non-recoverable, bits read)	10 in 10^{17}	←
MTBF[2] (M hours)	2.0	←
Availability (hrs/day x days/wk)	24x7	←
Acoustics		
Idle (Bels, typical)	3.2	←
Power		
Requirement	+5 VDC (+/-5%), +12 VDC (+/-5%)	←
Operating[6] (W, typical)	7.5 / 7.0 / 7.0	←
Idle[7] (W)	5.8 / 5.1 / 5.0	←
Idle efficiency (Watt/GB)	0.0096 / 0.0113 / 0.0168	←
Physical size		
z-height (mm)	14.8	←
Dimensions (width x depth, mm)	70.1 x 100.45	←
Weight (g, max)	219	←
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)	>300G	←
Vibration (RMS 5 to 500 Hz)	1.5G, 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 median 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 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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