Ultrastar® SSD400S.B

Highlights

- SLC NAND Flash for ultra-high performance and endurance
- Best IOPS/Watt for reduced TCO
- 6Gb/s SAS interface for maximum throughput
- Advanced Power-loss Data Management technology
- Trusted Computing Group's (TCG) Self-encrypting models designed to Enterprise A specification

Applications/Environments

- Ultra-high performance tier-0 enterprise storage
- Enterprise-class servers and High Performance Computing
- Space and/or power constrained environments
- Online Transaction Processing (OLTP)
- Video pre/post production
- Financial, eCommerce
- Database Analytics
- Cloud Computing

400B, 200GB and 100GB SLC
2.5-inch SFF | SAS 6Gb/s

Next Generation SSD From a Proven Enterprise Storage Player

HGST leverages decades of proven enterprise storage expertise in Serial Attached SCSI (SAS) design reliability, firmware, customer qualification and system integration to the new Ultrastar SSD400S.B solid-state drive (SSD) family. The synergistic relationship between HGST's new throughput-enhancing SSDs and traditional HDDs provides cost effective, end-to-end enterprise-class storage solutions, delivering reliability, compatibility, capacity, cost and system performance. This combination makes HGST a leading HDD/SSD provider with the experience and technology needed to meet escalating reliability, endurance, and performance in the most demanding enterprise environments.

Extreme Endurance and Performance for the Enterprise

The new Ultrastar SSD400S.B delivers high sequential throughput, up to 536MB/s read and 502MB/s write (6Gb SAS). The Ultrastar SSD400S.B also delivers up to 57,500 read and 25,500 write IOPS, reaching speeds 100 times faster than HDDs, allowing rapid access to "hot" enterprise data for improved productivity and operational efficiency. Since less SSDs are required to achieve the same HDD IOPS performance, the new Ultrastar SSD400S.B family offers significant value in terms of IOPS per Watt, while reducing total cost of ownership (TCO) through low power consumption, efficient cooling and reduced space requirements.

The Ultrastar SSD400S.B family combines enterprise-grade SLC NAND flash memory, advanced endurance management firmware and power loss data management techniques to extend reliability, endurance, and sustained performance over the life of the SSD. The Ultrastar SSD400S.B family achieves an extraordinary 0.44% annual failure rate (AFR) or two million hour mean-time-between-failure (MTBF). The 400GB capacity Ultrastar SSD endures up to 35 petabytes (PB) of random writes over the life of the drive – the equivalent of writing 19.2 terabytes (TB) per day for five years.

For complete end-to-end data protection and reliability, the Ultrastar SSD400S.B family incorporates the T10 Data Integrity Field (DIF) standard, extended error correction code (ECC), Exclusive-OR (XOR) parity to protect against flash die failure, parity-checked internal data paths without an external write cache, and an exclusive power loss data management feature that does not require supercapacitors. The Ultrastar SSD400S.B family is backed by a five year limited warranty, or the maximum petabytes (PB) written (based on capacity).

HGST Quality and Service

HGST's Ultrastar SSD400S.B family 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 complete portfolio of HDD/SSD solutions to satisfy today's monumental computing needs.

Features & Benefits

	Feature / Function	Benefits
Performance	• SAS 6Gb/s • SLC NAND Flash Memory • 536 / 502MB/s Sequential R/W • 57K / 25K IOPS Random R/W	• Dual port for enhanced reliability • Highest write performance and endurance • Max throughput and IOPs for ultra-fast access to data. • 100x faster than typical HDD
Power	5.5 Watts, typical	Up to 60% less power than 3.5-inch 15K RPM HDD
Capacity[1]	400GB, 200GB, 100GB	More capacity for less space and power
Reliablity	• 0.44% AFR (2M Hours MTBF) • 1E-16 Bit Error Rate (BER) • T10 End-to-end Data Protection • Exclusive-OR (XOR) NAND • Power-loss Data Management • Unlimited reads, up to 35PB writes	• Reduced field replacement effort • Enhanced error detection and correction for optimal data integrity • Protection against flash die failure • Enhances data integrity during power failure • Maximum endurance over the life of SSD
Integration	• HDD architecture commonality • Global Systems Integration & Test Labs	• Compatibility with Ultrastar SAS/FC HDD • Extensive interoperability and compliance testing

Ultrastar® SSD400S.B

Specifications

Model / Part No.

HUSSL4040BSS600 / 0B27397
HUSSL4040BSS601 / 0B27447
HUSSL4020BSS600 / 0B27396
HUSSL4020BSS601 / 0B27446
HUSSL4010BSS600 / 0B27395
HUSSL4010BSS601 / 0B27445

Configuration

Interface	SAS 6Gb/s
Capacity (GB)[1]	400 / 200 / 100
Form factor	2.5-inch SSD
Flash memory technology	Single-level cell (SLC)

Performance

Read Throughput (max MB/s, sequential 64K)	536
Write Throughput (max MB/s, sequential 64K)	502
Read IOPS (max IOPS, random 4K)	57,500
Write IOPS (max IOPS, random 4K)	25,500

Reliability

Error rate (non-recoverable, bits read)	1 in 10^{16}
MTBF[2] (M hours)	2.0
Availability (hrs/day x days/wk)	24x7
Endurance (max PB[1], random write)	35 / 18 / 9

Power

Requirement	+5 VDC (+/-5%) +12 VDC (+/-5%)
Operating, (W, typical)	5.5
Idle (W)	1.7
Power consumption efficiency (IOPS/Watt)	8,360

Physical size

z-height (mm)	15.0
Dimensions (width x depth, mm)	70.1 x 100.6
Weight (g, max)	222

Environmental (operating)

Ambient temperature	0° to 60° C
Shock (half-sine wave)	1000G (0.5ms) 500G (2ms)
Vibration (G RMS)	2.16, all axes 5 to 700 Hz

Environmental (non-operating)

Ambient temperature	-55° to 95° C
Shock (half-sine wave)	1000G (0.5ms) 500G (2ms) 100G (11ms)
Vibration, random (G RMS)	3.13, all axes 5 to 800 Hz

[1] One gigabyte (GB) is equal to one billion bytes when referring to hard drive and SSD capacity. One terabyte (TB) equals 1,000GB, and one petabyte (PB) equals 1,000TB. Accessible capacity will vary depending on the operating environment and formatting.

[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.

How to read the Ultrastar model number

HUSSL4040BSS600 = 400GB, SAS 6Gb/s
H = HGST
U = Ultrastar
S = Standard
SL = Single-level cell (NAND)
40 = Full capacity — 400GB
40 = Capacity this model, 40 = 400GB
(20 = 200GB, 10 = 100GB)
A = Generation code
S = Small Form Factor (vs. L for Large FF)
S6 = Interface, SAS 6Gb/s
0 = Reserved
0 = Reserved (1= TCG Encryption)

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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