# Ultrastar® SSD800MH

## Highlights

- MLC NAND Flash for ultra-high performance and endurance
- Endurance: 25 drive writes per day (DW/D) for five years
- Best IOPS/Watt for reduced TCO
- 12Gb/s SAS interface for maximum throughput
- Advanced power loss data management technology
- Self-encrypting models conform to TCG's Enterprise 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)
- Financial and e-commerce
- Database analytics

800GB, 400GB and 200GB | MLC
2.5-inch SFF | SAS 12Gb/s

### HGST Enterprise Storage Experience

HGST leverages decades of proven enterprise storage expertise in Serial Attached SCSI (SAS) design, reliability, firmware, customer qualification and system integration to the Ultrastar® SSD800MH solid-state drive (SSD) family. The synergistic relationship between HGST's 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 SSD/HDD provider with the experience and technology needed to meet escalating reliability, endurance and performance in the most demanding enterprise environments.

### Maximum Performance, Reliability and Endurance

The Ultrastar SSD800MH delivers high sequential throughput, up to 1200MB/s read and 750MB/s write (12Gb/s SAS). The Ultrastar SSD800MH also delivers up to 145,000 read and 100,000 write IOPS, reaching speeds >100 times faster than HDDs and double the speed of current 6Gb/s SSDs, allowing rapid access to "hot" enterprise data for improved productivity and operational efficiency. The Ultrastar SSD800MH 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 SSD800MH family combines enterprise-grade MLC 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 SSD800MH family achieves an extraordinary 0.44% annual failure rate (AFR) or two million hour mean-time-between-failure (MTBF). The 800GB capacity model endures up to 36.5 Petabytes (PB) of random writes over the life of the drive—the equivalent of writing 20 Terabytes (TB) per day for five years.

For complete end-to-end data protection and reliability, the Ultrastar SSD800MH 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 SSD800MH 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 SSD800MH 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 SSD/HDD solutions to satisfy today's monumental computing needs.

## Features & Benefits

| | Performance | Power | Capacity | Reliability | Integration |
|---|---|---|---|---|---|
| Feature/function | • SAS 12Gb/s<br>• MLC NAND flash memory<br>• 1200MB/s / 750MB/s sequential R/W<br>• 145K / 100K IOPS random R/W<br>• 120K IOPS on 70/30 mix R/W | 9.0 and 11.0 Watt options | • 800GB<br>• 400GB<br>• 200GB | • 0.44% AFR (2M hours MTBF)<br>• 1E-17 bit error rate<br>• T10 end-to-end data protection<br>• Exclusive-OR (XOR) NAND<br>• Power loss data management<br>• Unlimited reads, up to 36.5PB random writes (800GB) | • HDD architecture commonality<br>• Systems integration and test lab |
| Benefit | • 6Gb/s Active-Active Dual Port or 12Gb/s Single/Dual port for enhanced reliability<br>• Highest write performance and endurance<br>• Maximum throughput and IOPS for ultra-fast access to data; >100x faster than typical HDD | Improved performance with higher power option | More capacity for less space and power | • Reduced field replacement effort<br>• Enhanced error detection and correction for optimal data integrity<br>• Protection against flash die failure<br>• Assures data integrity during power failure<br>• Maximum endurance over the life of SSD | • Compatibility with Ultrastar SAS HDDs<br>• Extensive interoperability and compliance testing |

# Ultrastar® SSD800MH

## Specifications

| Model / Part No. | |
|---|---|
| | HUSMH8080ASS200 / 0B28630 |
| | HUSMH8040ASS200 / 0B28629 |
| | HUSMH8020ASS200 / 0B28628 |
| | HUSMH8080ASS201 / 0B28633 |
| | HUSMH8040ASS201 / 0B28632 |
| | HUSMH8020ASS201 / 0B28631 |
| | HUSMH8080ASS204 / 0B30068 |
| | HUSMH8040ASS204 / 0B30067 |
| | HUSMH8020ASS204 / 0B30066 |
| | HUSMH8080ASS205 / 0B30189 |
| | HUSMH8040ASS205 / 0B30188 |
| | HUSMH8020ASS205 / 0B30187 |

### Configuration

| | |
|---|---|
| Interface | SAS 12Gb/s |
| Capacity (GB[1]) at 512 bytes/sector | 800 / 400 / 200 |
| Form factor | 2.5-inch |
| Flash memory technology | Multi Level Cell (MLC) |

### Performance

| | |
|---|---|
| Read throughput (max MB/s, sequential 64K) | 1200 |
| Write throughput (max MB/s, sequential 64K) | 750 |
| Read IOPS (max IOPS, random 4K) | 145,000 |
| Write IOPS (max IOPS, random 4K) | 100,000 |

### Reliability

| | |
|---|---|
| Error rate (non-recoverable, bits read) | 1 in $10^{17}$ |
| MTBF[2] (M hours) | 2.0 |
| Availability (hrs/day x days/wk) | 24x7 |
| Endurance (max PB[1], random write) | 36.5 / 18.3 / 9.1 |

### Power

| | |
|---|---|
| Requirement | +5 VDC (+/-5%) |
| | +12VDC (+/-5%) |
| Operating (W) | 9.0 and 11.0 |
| Idle (W) | 2.2 / 2.1 / 2.1 |

### Physical

| | |
|---|---|
| z-height (mm, max) | 15.0 |
| Dimensions (width x depth, mm) | 70.1 x 100.6 |
| Weight (g, typical) | 164 |

### Environmental (operating)

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

[1] One gigabyte (GB) is equal to one billion bytes, one terabyte (TB) is equal to 1,000GB (one trillion bytes), and one petabyte (PB) is equal to 1,000TB (one quadrillion bytes) when referring to solid-state drive or hard drive capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the 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.

**How to Read the Ultrastar Model Number**

HUSMH8080ASS200 = 800GB, SAS 12Gb/s

| | | |
|---|---|---|
| H | = | HGST |
| U | = | Ultrastar |
| S | = | Standard |
| MH | = | Multi level cell, high endurance (25DW/D) |
| 80 | = | Full capacity (800GB) |
| 80 | = | Capacity of this model |
| | | (80 = 800GB, 40 = 400GB, 20 = 200GB) |
| A | = | Generation code |
| S | = | Small form factor (vs. L for Large FF) |
| S2 | = | Interface, SAS 12Gb/s |
| 0 | = | Reserved |
| 0 | = | Crypto sanitize |
| | | (1 = TCG encryption, 4 = No encryption, 5 = TCG + FIPS certified encryption) |

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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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