Ultrastar® SN100 Series

Highlights

- Supports standard NVMe drivers
- Up to 3.2TB capacity in both the HH-HL add-in card and SFF 2.5-inch drive form factors
- Supports the latest generation PCIe Gen 3.0 server platforms
- UEFI boot support
- Advanced power management
- Enterprise-grade reliability: Flash-aware RAID, end-to-end data-path protection, advanced ECC, secure erase, power fail protection

Applications/ Environments

- Cloud, hyperscale, enterprise and high performance computing
- Suitable for the most demanding scale-out database workloads
- Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP)
- High Frequency Trading (HFT)
- Virtualized computing
- Space and/or power constrained environments

Ultrastar SN150 | 3200GB and 1600GB
Ultrastar SN100 | 3200GB, 1600GB and 800GB
MLC | HH-HL, 2.5" SFF | PCIe 3.0

PCIe SSDs for Application Acceleration

The HGST Ultrastar® SN100 Series offers unprecedented performance acceleration for today's most demanding cloud, hyperscale and enterprise applications, allowing them to scale to new heights. The HGST architecture has been designed to tightly integrate different kinds of Flash media, hardware and software to deliver memory-class performance with storage-class capacity and persistence. The Ultrastar SN100 Series comes in multiple form factors, as a low-profile HH-HL expansion card and as a highly-serviceable SFF 2.5-inch drive.

NVMe™ Support Eases Deployment and Management

To enable broad product interoperability and improve ease of deployment, the Ultrastar SN100 Series supports standard NVM Express (NVMe) drivers. NVMe is an interface specification that was created to deliver the full potential of non-volatile memory in PCIe-based solid-state storage devices to meet the needs of enterprise and client platforms. The NVMe standard allows the Ultrastar SN100 Series of products to effectively use the high speed PCIe interconnect with a standard OS driver. As a result, NVMe enables simplified configuration management and control in enterprise environments.

Leading Performance

The Ultrastar SN100 Series delivers consistent performance across all application workloads over the lifecycle of the product, even when the device is fully utilized. In addition, the products provide high performance for various workloads, whether it is random, sequential or mixed I/O. By offering 310,000 mixed random I/O performance, the Ultrastar SN100 Series will allow OLTP applications to scale to new levels.

High Density

Offered in up to 3.2TB capacity in both form factors, the Ultrastar SN100 Series delivers high storage density in a very compact size. In fact, the SFF form factor in this product family delivers the highest density amongst NVMe compliant SFF devices in the industry today.

Lower Capital and Operating Cost

By combining high performance, high density, support for the NVMe standard and trusted HGST reliability, less infrastructure is required to meet the the demanding requirements of enterprise and hyperscale data centers, directly resulting in overall lower total cost of ownership.

HGST Quality and Service

HGST Ultrastar SN100 Series 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	Flexibility	Low Latency	Capacity	Reliability
Feature/ function	• 3000MB/s / 1600MB/s sequential R/W • 743k / 140k IOPS random R/W • 310k IOPS on 70/30 mix R/W	• PCIe Gen 3.0 • HH-HL and SFF form factors	< 20 µs write latencies	• 3200GB • 1600GB • 800GB	• 0.44% AFR (2M hours MTBF) • Power-safe write processing • End-to-end data-path protection • Advanced ECC and global wear-leveling, T10 DIF support
Benefit	Maximum performance delivers unprecendented application throughput	Support for latest generation server platforms, including SFF-capable servers	DRAM-like performance	High capacity, all presented as a single volume	Higher reliability increases return on investment

Ultrastar® SN100 Series

Specifications

	ULTRASTAR SN150	ULTRASTAR SN100
Model/Part #	HUSPR3232AHP301 / 0T00833 HUSPR3216AHP301 / 0T00831	HUSPR3232ADP301 / 0T00839 HUSPR3216ADP301 / 0T00837 HUSPR3280ADP301 / 0T00835
Configuration		
Default capacities (GB[1])	3200 / 1600	3200 / 1600 / 800
Capacity range[2] (min-max GB)	2240-3820 / 1120-1910	2240-3820 / 1120-1910 / 560-955
Interface	PCIe 3.0 x4	PCIe 3.0 x4 (8639)
Form factors	HH-HL add-in card	SFF 2.5-inch drive
Performance[3]		
Read throughput (max MB/s, sequential 128k)	3000 / 3000	3000 / 3000 / 2600
Write throughput (max MB/s, sequential 128k)	1600 / 1600	1600 / 1600 / 1400
Read IOPS (max IOPS, random 4k)	743,000 / 743,000	743,000 / 743,000 / 634,000
Write IOPS (max IOPS, random 4k)	140,000 / 140,000	140,000 / 140,000 / 80,000
Mixed IOPS (70/30 R/W, random 4k)	310,000 / 310,000	310,000 / 310,000 / 190,000
Read IOPS (max IOPS, random 8k)	385,000 / 385,000	385,000 / 385,000 / 330,000
Write IOPS (max IOPS, random 8k)	75,000 / 75,000	75,000 / 75,000 / 42,000
Latency 512B (µs)	20 / 20	20 / 20 / 20
Reliability		
MTBF[4] (M hours)	2.0	2.0
Annual failure rate[4] (AFR)	0.44%	0.44%
Endurance	3 DW/D	3 DW/D
Warranty	5 Years	5 Years
Physical		
Dimensions, without bracket (mm)	167.65 x 68.9 x 14.49	100.45 x 69.85 x 15
Weight, without bracket (g)	232 / 231	177 / 174 / 166
Environmental		
Power consumption (active/idle)	25 Watts / 8 Watts	25 Watts / 8 Watts
Operating temperature	0° to 55°C	0° to 70°C
Non-operating temperature	-40° to 70°C	-40° to 70°C
Airflow (LFM)	300	300
Thermal throttling	Supported	
Temperature monitoring	In-band and out-band using SMBus	
PowerSafe® technology	Data protection during power loss	
Power throttling	Supported	
Power rails	3.3V aux, 12V supply rail	
JEDEC compliance	3-month retention at 40°C at EOL	
Operating Systems		
Linux	RHEL 6/7, SLES 12, CentOS 6/7, Open SUSE 12	
Windows	Microsoft Server 2008 R2, Windows 2012, Windows 2012 Server	
Software		
HGST Device Manager (HDM)	HDM 3.1 (CLI)	
NVMe standard	1.1a	
Manufacturing Standards		
Penang, Malaysia	ISO 9001:2008 certified, ISO 14001:2004 certified	

How to Read the Ultrastar Model Number

HUSPR3232AHP301

- = 3200GB, HH-HL, PCIe Gen 3.0
- H = HGST
- U = Ultrastar
- S = Standard
- PR = PCIe read intense
- 32 = Full capacity (3200GB)
- 32 = Capacity of this model (32 = 3200GB, 16 = 1600GB, 80 = 800GB)
- A = Generation code
- H = HH-HL form factor (vs. D for SFF form factor)
- P3 = Interface, PCIe Gen 3.0
- 0 = Reserved
- 1 = NVMe compatible

[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] Performance and endurance will vary with changes in usable capacity. Consult product manual for further details.

[3] All performance measurements are in full sustained mode.

[4] MTBF and AFR targets are based on a sample population and are estimated by statistical measurements and acceleration algorithms under median operating conditions. MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

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