

# Enterprise Capacity 3.5 HDD (Helium)

Channel Data Sheet

## Maximum Storage Capacity for Highest Rack Space Efficiency

- 10 TB per drive<sup>1</sup> for 25% more petabytes per rack<sup>2</sup>
- Industry's lowest power and weight for optimum data centre TCO
- Highest 10 TB HDD performance with enhanced caching, making it perfect for OLTP and HPC application
- Hyperscale SATA model tuned for large data transfers
- PowerBalance™ feature optimises IOPS/Watt
- Advanced Write Caching feature for 20% boost in random write performance<sup>2</sup>
- Forged, wrought-aluminium base and a helium sealed-drive design with no porosity and uniform density
- Superior material and weld-width design for a more robust, hermetically sealed-drive enclosure that protects from helium leaks
- Digital environmental sensors for measuring internal humidity, pressure and temperature, helping to ensure high reliability, performance and quality
- Latest hermetic interconnect technology supporting higher data rate heads and higher pin counts for extreme thermal conditions
- Proven enterprise-class reliability backed by 2.5M-hr MTBF



## Best-Fit Applications

- Hyperscale applications/cloud data centres
- Massive scale-out data centres
- OLTP and HPC applications
- High-capacity density RAID storage
- Mainstream enterprise external storage arrays
- Distributed file systems, including Hadoop and Ceph
- Enterprise backup and restore - D2D, virtual tape
- Centralised surveillance

<sup>1</sup> Seagate recommends validating your configuration with your HBA/RAID controller manufacturer to ensure full capacity capabilities.

<sup>2</sup> Compared to 8 TB competitive product.

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Specifications	SATA 6 Gb/s Hyperscale		SATA 6 Gb/s Standard		12 Gb/s SAS Standard
Capacity	10TB	8TB	10TB	8TB	10TB
Standard Model (512e) <sup>1</sup>	—	—	ST10000NM0086	ST8000NM0206	ST10000NM0096
Hyperscale Model (512e) <sup>1</sup>	ST10000NM0016	ST8000NM0016	—	—	—
Standard Model (4Kn) <sup>1</sup>	—	—	ST10000NM0146	—	ST10000NM0206
SED Model (512e) <sup>1, 2</sup>	—	—	ST10000NM0156	—	ST10000NM0216
SED Model (4Kn) <sup>1, 2</sup>	—	—	ST10000NM0166	—	ST10000NM0226
SED-FIPS Model (512e) <sup>1, 2, 3</sup>	—	—	ST10000NM0176	—	ST10000NM0236
SED-FIPS Model (4Kn) <sup>1, 2, 3</sup>	—	—	ST10000NM0186	—	ST10000NM0246
<b>Features</b>					
Helium Sealed-Drive Design With Wide Weld	Yes	Yes	Yes	Yes	Yes
Digital Environmental Sensors	Yes	Yes	Yes	Yes	Yes
Protection Information (T10 DIF)	—	—	—	—	Yes
SuperParity	Yes	Yes	Yes	Yes	Yes
PowerChoice™/PowerBalance™ Technology	Yes	Yes	Yes	Yes	Yes
Low Halogen/Hot-Plug Support <sup>4</sup>	Yes	Yes	Yes	Yes	Yes
Cache, Multi-segmented (MB)	256	256	256	256	256
Organic Solderability Preservative	Yes	Yes	Yes	Yes	Yes
<b>Reliability/Data Integrity</b>					
Mean Time Between Failures (MTBF, hours)	2.5 Million	2.5 Million	2.5 Million	2.5 Million	2.5 Million
Reliability Rating @ Full 24x7 Operation (AFR)	0.35%	0.35%	0.35%	0.35%	0.35%
Non-recoverable Read Errors per Bits Read	1 sector per 10E15	1 sector per 10E15	1 sector per 10E15	1 sector per 10E15	1 sector per 10E15
Power-On Hours per Year (24x7)	8,760	8,760	8,760	8,760	8,760
512e Sector Size (Bytes per Sector)	512	512	512	512	512, 520, 528
4Kn Sector Size (Bytes per Sector)	—	—	4,096	4,096	4,096, 4,160, 4,224
Limited Warranty (years)	5	5	5	5	5
<b>Performance</b>					
Spindle Speed (RPM)	7,200	7,200	7,200	7,200	7,200
Interface Access Speed (Gb/s)	6.0, 3.0, 1.5	6.0, 3.0, 1.5	6.0, 3.0, 1.5	6.0, 3.0, 1.5	12.0, 6.0, 3.0
Max. Sustained Transfer Rate OD (MB/s, MiB/s)	249MB/s	249MB/s	254MB/s	249MB/s	254MB/s
Random Read/Write 4K QD16 WCD (IOPS)	170, 138	170, 138	170, 370	170, 370	170, 370
Average Latency (ms)	4.16	4.16	4.16	4.16	4.16
Interface Ports	Single	Single	Single	Single	Dual
Rotational Vibration @ 1,500 Hz (rad/s <sup>2</sup> )	12.5	12.5	12.5	12.5	12.5
<b>Power Consumption</b>					
Idle A (W) Average	4.5 W	4.5 W	4.5 W	4.5 W	5.5 W
Max Operating Power, Random Write (WCD) 4K/4Q RR50% / RW50%	8.0	8.0	8.0	8.0	9.0
Max Operating Power, Random Read 4K/16Q (W)	8.4	8.4	8.4	8.4	9.4
Power Supply Requirements	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V
<b>Environmental</b>					
Temperature, Operating (°C)	5°C – 60°C	5°C – 60°C	5°C – 60°C	5°C – 60°C	5°C – 60°C
Vibration, Non-operating: 10 Hz to 500 Hz (Gms)	2.27	2.27	2.27	2.27	2.27
Shock, Operating 2 ms (Read/Write) (Gs)	70/40 Gs	70/40 Gs	70/40 Gs	70/40 Gs	70/40 Gs
Shock, Non-operating, 1 ms/2 ms (Gs)	250 Gs	250 Gs	250 Gs	250 Gs	250 Gs
<b>Physical</b>					
Height (mm/in, max) <sup>5</sup>	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in
Width (mm/in, max) <sup>5</sup>	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in
Depth (mm/in, max) <sup>5</sup>	147 mm/5.787 in	147 mm/5.787 in	147 mm/5.787 in	147 mm/5.787 in	147 mm/5.787 in
Weight (lb/g)	650 g/1.433 lb	650 g/1.433 lb	650 g/1.433 lb	650 g/1.433 lb	650 g/1.433 lb
Carton Unit Quantity	20	20	20	20	20
Cartons per Pallet / Cartons per Layer	40/8	40/8	40/8	40/8	40/8

<sup>1</sup> Invoice SPA required for all 8 TB models and most SED and SED-FIPS models.

<sup>2</sup> Self-Encrypting Drives (SED) and FIPS 140-2 Validated drives are not available in all models or countries. May require TCG-compliant host or controller support.

<sup>3</sup> See FIPS 140-2 Level 2 Certificate at: <http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2011.htm#1635>.

<sup>4</sup> Supports Hotplug operation per Serial ATA Revision 2.6 specification.

<sup>5</sup> These base deck dimensions conform to the Small Form Factor Standard (SFF-8301) found at [www.sffcommittee.org](http://www.sffcommittee.org). For connector-related dimensions, see SFF-8323.

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