

Enterprise Capacity 3.5 HDD (Helium)

Channel Data Sheet

Maximum Storage Capacity for Highest Rack Space Efficiency

- 10 TB per drive¹ for 25% more petabytes per rack²
- 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 performance²
- 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

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

² Compared to 8 TB competitive product.



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Specifications	SATA 6 Gb/s Hyperscale		SATA 6 Gb/s Standard	
Capacity	10TB	8TB	10TB	8TB
Standard Model (512e) ¹	—	—	ST10000NM0086	ST8000NM0206
Hyperscale Model (512e) ¹	ST10000NM0016	ST8000NM0016	—	—
Standard Model (4Kn) ¹	—	—	ST10000NM0146	—
SED Model (512e) ^{1,2}	—	—	ST10000NM0156	—
SED Model (4Kn) ^{1,2}	—	—	ST10000NM0166	—
SED-FIPS Model (512e) ^{1,2,3}	—	—	ST10000NM0176	—
SED-FIPS Model (4Kn) ^{1,2,3}	—	—	ST10000NM0186	—
Features				
Helium Sealed-Drive Design With Wide Weld	Yes	Yes	Yes	Yes
Digital Environmental Sensors	Yes	Yes	Yes	Yes
Protection Information (T10 DIF)	—	—	—	—
SuperParity	Yes	Yes	Yes	Yes
PowerChoice™/PowerBalance™ Technology	Yes	Yes	Yes	Yes
Low Halogen/Hot-Plug Support ³	Yes	Yes	Yes	Yes
Cache, Multi-segmented (MB)	256	256	256	256
Organic Solderability Preservative	Yes	Yes	Yes	Yes
Reliability/Data Integrity				
Mean Time Between Failures (MTBF, hours)	2,500,000	2,500,000	2,500,000	2,500,000
Reliability Rating @ Full 24×7 Operation (AFR)	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
Power-On Hours per Year (24×7)	8,760	8,760	8,760	8,760
512e Sector Size (Bytes per Sector)	512	512	512	512
4Kn Sector Size (Bytes per Sector)	—	—	4,096	4,096
Limited Warranty (years)	5	5	5	5
Performance				
Spindle Speed (RPM)	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
Max. Sustained Transfer Rate OD (MB/s)	249MB/s	249MB/s	254MB/s	249MB/s
Random Read/Write 4K QD16 WCD (IOPS)	170, 138	170, 138	170, 370	170, 370
Average Latency (ms)	4.16	4.16	4.16	4.16
Interface Ports	Single	Single	Single	Single
Rotational Vibration @ 1,500 Hz (rad/s²)	12.5	12.5	12.5	12.5
Power Consumption				
Idle A (W) Average	4.5 W	4.5 W	4.5 W	4.5 W
Max Operating Power, Random Write (WCD) 4K/4Q RR50% / RW50%	8.0	8.0	8.0	8.0
Max Operating Power, Random Read 4K/16Q (W)	8.4	8.4	8.4	8.4
Power Supply Requirements	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V
Environmental				
Temperature, Operating (°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
Shock, Operating 2 ms (Read/Write) (Gs)	70/40 Gs	70/40 Gs	70/40 Gs	70/40 Gs
Shock, Non-operating, 1 ms/2 ms (Gs)	250	250	250	250
PHYSICAL				
Height (mm/in, max) ⁴	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) ⁵	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) ⁵	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
Carton Unit Quantity	20	20	20	20
Cartons per Pallet / Cartons per Layer	40/8	40/8	40/8	40/8

¹ Invoice SPA required for most SED and SED-FIPS models.

² 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.

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



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Specifications	12 Gb/s SAS Standard	
Capacity	10TB	8TB
Standard Model (512e) ¹	ST10000NM0096	ST8000NM0156
Hyperscale Model (512e) ¹	—	—
Standard Model (4Kn) ¹	ST10000NM0206	—
SED Model (512e) ^{1,2}	ST10000NM0216	—
SED Model (4Kn) ^{1,2}	ST10000NM0226	—
SED-FIPS Model (512e) ^{1,2,3}	ST10000NM0236	—
SED-FIPS Model (4Kn) ^{1,2,3}	ST10000NM0246	—
Features		
Helium Sealed-Drive Design With Wide Weld	Yes	Yes
Digital Environmental Sensors	Yes	Yes
Protection Information (T10 DIF)	Yes	Yes
SuperParity	Yes	Yes
PowerChoice™/PowerBalance™ Technology	Yes	Yes
Low Halogen/Hot-Plug Support ³	Yes	Yes
Cache, Multi-segmented (MB)	256	256
Organic Solderability Preservative	Yes	Yes
Reliability/Data Integrity		
Mean Time Between Failures (MTBF, hours)	2,500,000	2,500,000
Reliability Rating @ Full 24x7 Operation (AFR)	0.35%	0.35%
Non-recoverable Read Errors per Bits Read	1 sector per 10E15	1 sector per 10E15
Power-On Hours per Year (24x7)	8,760	8,760
512e Sector Size (Bytes per Sector)	512, 520, 528	512, 520, 528
4Kn Sector Size (Bytes per Sector)	4,096, 4,160, 4,224	4,096, 4,160, 4,224
Limited Warranty (years)	5	5
Performance		
Spindle Speed (RPM)	7,200	7,200
Interface Access Speed (Gb/s)	12.0, 6.0, 3.0	12.0, 6.0, 3.0
Max. Sustained Transfer Rate OD (MB/s)	254MB/s	249MB/s
Random Read/Write 4K QD16 WCD (IOPS)	170, 370	170, 370
Average Latency (ms)	4.16	4.16
Interface Ports	Dual	Dual
Rotational Vibration @ 1,500 Hz (rad/s²)	12.5	12.5
Power Consumption		
Idle A (W) Average	5.5 W	5.5 W
Max Operating Power, Random Write (WCD) 4K/4Q RR50% / RW50%	9.0	9.0
Max Operating Power, Random Read 4K/16Q (W)	9.4	9.4
Power Supply Requirements	+12 V and +5 V	+12 V and +5 V
Environmental		
Temperature, Operating (°C)	5°C – 60°C	5°C – 60°C
Vibration, Non-operating: 10 Hz to 500 Hz (Gms)	2.27	2.27
Shock, Operating 2 ms (Read/Write) (Gs)	70/40 Gs	70/40 Gs
Shock, Non-operating, 1 ms/2 ms (Gs)	250	250
PHYSICAL		
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Weight (lb/g)	650 g/1.433 lb	650 g/1.433 lb
Carton Unit Quantity	20	20
Cartons per Pallet / Cartons per Layer	40/8	40/8

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