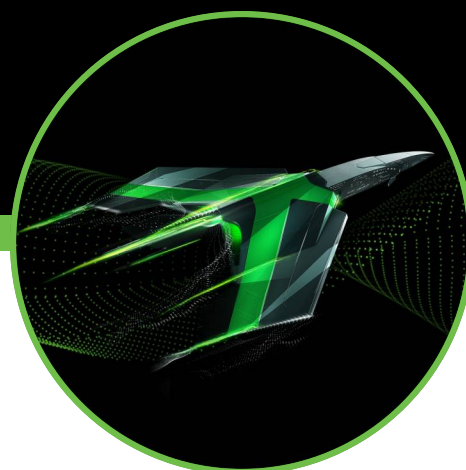




DATA SHEET

Scalable. Responsive. Innovative.

Exos



Seagate manufactures hard drives that specifically address the demand for hyperscale cloud scalability. The Exos[®] enterprise hard drives are the highest-capacity hard drives in the fleet.



Best-Fit Applications

- Scalable hyperscale applications/cloud data centers
- Massive scale-out data centers
- Big data 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

Maximum Storage Capacity for Highest Rack Space Efficiency

Market-leading HDD offering the highest capacity available for more petabytes per rack

Highly reliable performance making it the logical choice for cloud data center and massive scale-out data center applications

Hyperscale SATA model tuned for large data transfers and low latency

PowerBalance[™] feature optimizes Watts/TB

Maximize total cost of ownership savings through lower power and weight with helium sealed-drive design

Proven helium side-sealing weld technology for added handling robustness and leak protection

Digital environmental sensors to monitor internal drive conditions for optimal operation and performance

Data protection and security—Seagate Secure[™] features for safe, affordable, fast, and easy drive retirement

Proven enterprise-class reliability backed by 6-month limited warranty and 2.5M-hr MTBF rating



Specifications	SATA 6Gb/s				
Product Name	Exos	Exos	Exos	Exos	Exos
CMR Capacity	16TB	20TB	22TB	24TB	26TB
Standard Model (512E) ¹	ST16000NM002C	ST20000NM002C	ST22000NM000C	ST24000NM000C	ST26000NM000C
Features					
CMR	Yes	Yes	Yes	Yes	Yes
Helium Sealed-Drive Design	Yes	Yes	Yes	Yes	Yes
Super Parity	Yes	Yes	Yes	Yes	Yes
Low Halogen	Yes	Yes	Yes	Yes	Yes
PowerChoice™ Idle Power Technology	Yes	Yes	Yes	Yes	Yes
PowerBalance™ Power/Performance Technology	Yes	Yes	Yes	Yes	Yes
Hot-Plug Support ²	Yes	Yes	Yes	Yes	Yes
Cache, Multisegmented (MB)	512	512	512	512	512
Organic Solderability Preservative	Yes	Yes	Yes	Yes	Yes
RSA 3072 Firmware Verification (SD&D)	Yes	Yes	Yes	Yes	Yes
Reliability and Data Integrity					
Mean Time Between Failures (MTBF, hours)	2500000hr	2500000hr	2500000hr	2500000hr	2500000hr
Reliability Rating @ Full 24x7 Operation (AFR)	0.35%	0.35%	0.35%	0.35%	0.35%
Nonrecoverable 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)	8760	8760	8760	8760	8760
512e Sector Size (Bytes per Sector)	512e	512e	512e	512e	512e
Limited Warranty (months)	6 months	6 months	6 months	6 months	6 months
Performance					
Spindle Speed (RPM)	7200	7200	7200	7200	7200
Interface Access Speed (Gb/s)	6.0, 3.0	6.0, 3.0	6.0, 3.0	6.0, 3.0	6.0, 3.0
Max. Sustained Transfer Rate OD (MB/s, MiB/s)	190MB/s / 181MiB/s	190MB/s / 181MiB/s	190MB/s / 181MiB/s	190MB/s / 181MiB/s	190MB/s / 181MiB/s
Random Read/Write 4K QD16 WCD (IOPS)	170 / 320	170 / 320	170 / 320	170 / 320	170 / 320
Average Latency (ms)	4.16	4.16	4.16	4.16	4.16
Interface Ports	Single	Single	Single	Single	Single
Rotation Vibration @ 20-1500 Hz (rad/sec ²)	12.5	12.5	12.5	12.5	12.5
Power Consumption					
Idle A (W) Average	6.7W	6.7W	6.7W	6.7W	6.7W
Max Operating, Random Read 4K/16Q (W)	10.5W	10.5W	10.5W	10.5W	10.5W
Power Supply Requirements	+12V and +5V	+12V and +5V	+12V and +5V	+12V and +5V	+12V and +5V
Environmental					
Temperature, Operating (°C) - drive reported	10C - 60C	10C - 60C	10C - 60C	10C - 60C	10C - 60C
Vibration, Nonoperating: 2 to 500Hz (Grms)	2.27	2.27	2.27	2.27	2.27
Shock, Operating 2ms (Read/Write) (Gs)	30Gs	30Gs	30Gs	30Gs	30Gs
Shock, Nonoperating 2ms (Gs)	200	200	200	200	200
Physical					
Height (mm/in, max) ³	26.1mm/1.028in	26.1mm/1.028in	26.1mm/1.028in	26.1mm/1.028in	26.1mm/1.028in
Width (mm/in, max) ³	101.85mm/4.010in	101.85mm/4.010in	101.85mm/4.010in	101.85mm/4.010in	101.85mm/4.010in
Depth (mm/in, max) ³	147.0mm/5.787in	147.0mm/5.787in	147.0mm/5.787in	147.0mm/5.787in	147.0mm/5.787in
Weight (gm/lb)	695g/1.532lb	695g/1.532lb	695g/1.532lb	695g/1.532lb	695g/1.532lb
Carton Unit Quantity	20	20	20	20	20
Cartons per Pallet/Cartons per Layer	40 / 8	40 / 8	40 / 8	40 / 8	40 / 8

¹ FastFormat models ship in 512e format state. When switching from 512e to 4Kn by executing the FastFormat routine, all data on the drive will be deleted. Note that data must be aligned to 4K sectors to see improved performance in 4Kn format.

² Supports Hotplug operation per Serial ATA Revision 3.3 specification.

³ These base deck dimensions conform to the Small Form Factor Standard (SFF-8301) found at <https://www.snia.org/sff>. For connector-related dimensions, see SFF-8323.



Specifications	SATA 6Gb/s
Product Name	Exos
CMR Capacity	28TB
Standard Model (512E) ¹	ST28000NM000C
Features	
CMR	Yes
Helium Sealed-Drive Design	Yes
Super Parity	Yes
Low Halogen	Yes
PowerChoice™ Idle Power Technology	Yes
PowerBalance™ Power/Performance Technology	Yes
Hot-Plug Support ²	Yes
Cache, Multisegmented (MB)	512
Organic Solderability Preservative	Yes
RSA 3072 Firmware Verification (SD&D)	Yes
Reliability and Data Integrity	
Mean Time Between Failures (MTBF, hours)	2500000hr
Reliability Rating @ Full 24x7 Operation (AFR)	0.35%
Nonrecoverable Read Errors per Bits Read	1 sector per 10E15
Power-On Hours per Year (24x7)	8760
512e Sector Size (Bytes per Sector)	512e
Limited Warranty (months)	6 months
Performance	
Spindle Speed (RPM)	7200
Interface Access Speed (Gb/s)	6.0, 3.0
Max. Sustained Transfer Rate OD (MB/s, MiB/s)	190MB/s / 181MiB/s
Random Read/Write 4K QD16 WCD (IOPS)	170 / 320
Average Latency (ms)	4.16
Interface Ports	Single
Rotation Vibration @ 20-1500 Hz (rad/sec ²)	12.5
Power Consumption	
Idle A (W) Average	6.7W
Max Operating, Random Read 4K/16Q (W)	10.5W
Power Supply Requirements	+12V and +5V
Environmental	
Temperature, Operating (°C) - drive reported	10C - 60C
Vibration, Nonoperating: 2 to 500Hz (Grms)	2.27
Shock, Operating 2ms (Read/Write) (Gs)	30Gs
Shock, Nonoperating 2ms (Gs)	200
Physical	
Height (mm/in, max) ³	26.1mm/1.028in
Width (mm/in, max) ³	101.85mm/4.010in
Depth (mm/in, max) ³	147.0mm/5.787in
Weight (gm/lb)	695g/1.532lb
Carton Unit Quantity	20
Cartons per Pallet/Cartons per Layer	40 / 8

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