DATA SHEET

Scalable. Responsive. Innovative.

Exos X16



Seagate manufactures hard drives that specifically address the needs of the hyperscale storage market. As the flagship of the Seagate® X class, the Exos® X16 enterprise hard drives are the highest-capacity hard drives in the fleet.



Best-Fit Applications

- Hyperscale applications/cloud data centres
- Massive scale-out data centres
- 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
- Centralised surveillance

Maximum Storage Capacity for Highest Rack Space Efficiency

Industry's first 16 TB drive for 33% more petabytes per rack[1]

Highest 16 TB hard drive performance with enhanced caching, making it perfect for cloud data centre and massive scale-out data centre applications

Hyperscale SATA model tuned for large data transfers and low latency

PowerBalance™ feature optimises Watts/TB

Helium sealed-drive design delivers lower total cost of ownership through lower power and weight

Next-generation 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 **5-year limited warranty and 2.5M-hr MTBF rating**

1 Compared to 12 TB competitive product

EXOS ENTERPRISE



Specifications	SATA 6 Gb/s	12 Gb/s SAS	SATA 6 Gb/s	12 Gb/s SAS
Capacity	14 TB	16 TB	16 TB	14 TB
Standard Model FastFormat™ (512e/4Kn)[1]	ST14000NM001G	ST16000NM002G	ST16000NM001G	ST14000NM002G
SED Model FastFormat (512e/4Kn)[1,2]	ST14000NM003G	ST16000NM004G	ST16000NM003G	ST14000NM004G
SED-FIPS FastFormat (512e/4Kn)[1,2]	—	ST16000NM009G	—	ST14000NM012G
Features				
Helium Sealed-Drive Design	Yes	Yes	Yes	Yes
Protection Information (T10 DIF)	—	Yes	—	Yes
SuperParity	Yes	Yes	Yes	Yes
Low Halogen	Yes	Yes	Yes	Yes
PowerChoice™ Idle Power Technology	Yes	Yes	Yes	Yes
PowerBalance™ Power/Performance Technology	Yes	Yes	Yes	Yes
Hot-Plug Support[3]	Yes	Yes	Yes	Yes
Cache, Multi-segmented (MB)	256	256	256	256
Organic Solderability Preservative	Yes	Yes	Yes	Yes
RSA 2048 Firmware Verification (SD&D)	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, 520, 528	512	512, 520, 528
4Kn Sector Size (Bytes per Sector)	4,096	4,096, 4,160, 4,224	4,096	4,096, 4,160, 4,224
Limited Warranty (years)	5	5	5	5
Performance				
Spindle Speed (RPM)	7,200 RPM	7,200 RPM	7,200 RPM	7,200 RPM
Interface Access Speed (Gb/s)	6.0, 3.0	12.0, 6.0, 3.0	6.0, 3.0	12.0, 6.0, 3.0
Max. Sustained Transfer Rate OD (MB/s, MiB/s)	249, 261	261, 249	261, 249	261, 249
Random Read/Write 4K QD16 WCD (IOPS)	170/440	170/440	170/440	170/440
Average Latency (ms)	4.16	4.16	4.16	4.16
Interface Ports	Single	Dual	Single	Dual
Rotation Vibration @ 20-1500 Hz (rad/sec²)	12.5	12.5	12.5	12.5
POWER CONSUMPTION				
Idle A (W) Average	5 W	5 W	5 W	5 W
Max Operating, Random Read/Write 4K/16Q (W)	10.0, 6.3	10.2, 6.2	10.0, 6.3	10.2, 6.2
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: 2 to 500 Hz (Grms)	2.27	2.27	2.27	2.27
Shock, Operating 2 ms (Read/Write) (Gs)	50	50	50	50
Shock, Non-operating 2 ms (GS)	200	200	200	200
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)[4]	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)[4]	147 mm/5.787 in	147 mm/5.787 in	147 mm/5.787 in	147 mm/5.787 in
Weight (lb/g)	670 g/1.477 lb	670 g/1.477 lb	670 g/1.477 lb	670 g/1.477 lb
Carton Unit Quantity	20	20	20	20
Cartons per Pallet / Cartons per Layer	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 fomat.

2 Self-Encrypting Drives (SED) and FIPS 140-2 Validated drives available through franchised authorised distributors. May require TCG-compliant host or controller support.

3 Supports Hotplug operation per Serial ATA Revision 3.2 specification

4 These base deck dimensions conform to the Small Form Factor Standard (SFF-8301) found at www.sffcommittee.org. For connector-related dimensions, see SFF-8323.

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