



DATA SHEET

Scalable. Responsive. Innovative.

# Exos 2X14



Seagate manufactures hard drives that specifically address the needs of the hyperscale storage market. As the highest-performing hard drive in the Seagate® X class, the Exos® 2X14 enterprise dual-actuator hard drive utilises MACH.2™ technology enabling up to 2× the performance of an enterprise single-actuator 3.5-inch hard drive.



## Best-Fit Applications

- Hyperscale applications/cloud data centres
- Massive scale-out data centres
- Big data applications
- content delivery networks
- Mainstream enterprise external storage arrays
- Distributed file systems, including Hadoop and Ceph
- Enterprise backup and restore — D2D, virtual tape
- Centralised surveillance
- High-bandwidth streaming applications

## Highest Performance for Highest Rack Space Efficiency

**MACH.2** technology enables up to 2× the performance of an enterprise single-actuator 3.5-inch hard drive<sup>1</sup>

**Highest 14 TB hard drive performance**, making it the logical choice for cloud data centre and massive scale-out data centre applications

**14 TB of capacity** available as two independently addressable, 7 TB logical units

**PowerBalance™** feature optimises IOPS/Watt

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

**Next-generation helium side-sealed weld technology** for added handling robustness and leak protection

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

**Latest hermetic interconnect technology supporting higher data rate heads and higher pin counts for extreme thermal conditions**

Proven enterprise-class reliability backed by **5-year limited warranty and 2.5M-hr MTBF rating**

<sup>1</sup> When operating both actuators simultaneously



Specifications	12 Gb/s SAS	12 Gb/s SAS
Capacity	14 TB	14 TB
Hyperscale (4Kn)	ST14000NM0001	—
Standard Model FastFormat™ (512e/4Kn) <sup>1</sup>	—	ST14000NM0081
Capacity per Logical Unit	7 TB	7 TB
<b>Features</b>		
Helium Sealed-Drive Design	Yes	Yes
Protection Information (T10 DIF)	No	No
SuperParity	Yes	Yes
Low Halogen	Yes	Yes
PowerChoice™ Idle Power Technology	Yes	Yes
PowerBalance™ Power/Performance Technology	Yes	Yes
Hot-Plug Support <sup>2</sup>	Yes	Yes
Cache, Multi-segmented (MB)	256	256
Organic Solderability Preservative	Yes	Yes
RSA 2048 Firmware Verification (SD&D)	Yes	Yes
<b>Reliability/Data Integrity</b>		
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
4Kn Sector Size (Bytes per Sector)	4,096	4,096
Limited Warranty (years)	5	5
<b>Performance</b>		
Spindle Speed (RPM)	7,200 RPM	7,200 RPM
Interface Access Speed (Gb/s)	12.0, 6.0, 3.0	12.0, 6.0, 3.0
Max. Sustained Transfer Rate OD (MB/s, MiB/s) <sup>3</sup>	524, 500	524, 500
Random Read/Write 4K QD16 (IOPS) <sup>3</sup>	304/384	304/448
Average Latency (ms)	4.16	4.16
Interface Ports	Single	Single
Rotation Vibration @ 20-1500 Hz (rad/sec <sup>2</sup> )	12.5	12.5
<b>POWER CONSUMPTION</b>		
Idle A (W) Average	7.2 W	7.2 W
Random Read/Write 4K/16Q (W) <sup>3</sup>	12.3/8.7	12.3/8.7
Sequential Read/Write 256K/16Q (W) <sup>3</sup>	13.5/11.8	13.5/11.8
Power Supply Requirements	+12 V and +5 V	+12 V and +5 V
<b>Environmental</b>		
Temperature, Operating (°C)	5°C – 60°C	5°C – 60°C
Vibration, Non-operating: 2 to 500 Hz (Grms)	2.27	2.27
Shock, Operating 2 ms (Read/Write) (Gs)	50	50
Shock, Non-operating 2 ms (GS)	200	200
<b>Physical</b>		
Height (in/mm, max) <sup>4</sup>	1.028 in/26.1 mm	1.028 in/26.1 mm
Width (in/mm, max) <sup>4</sup>	4.01 in/101.85 mm	4.01 in/101.85 mm
Depth (in/mm, max) <sup>4</sup>	5.787 in/147 mm	5.787 in/147 mm
Weight (lb/g)	1.51 lb/685 g	1.51 lb/685 g
Carton Unit Quantity	20	20
Cartons per Pallet / Cartons per Layer	40/8	40/8

<sup>1</sup> 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.

<sup>2</sup> Supports Hotplug operation per the SAS-3 and SPL-3 specifications

<sup>3</sup> When operating both actuators simultaneously

<sup>4</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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