



DATA SHEET

Exos X24 — Powerful performance. Proven technology. Scalable design.



Powerful performance with proven technology — Seagate's® Exos® X24 drives are built off the platform that's shipped millions globally and deployed in leading cloud service provider solutions — making them the most sought-after drives in our datasphere. Designed with the highest rack-space efficiency and protected with Seagate

Secure™, Exos X24 offers extreme market-leading capacity, earning customer confidence by delivering trusted peace of mind.



Best-Fit Applications

- Scalable 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

Market-leading 24 TB HDD offering the highest capacity available for more petabytes per rack¹

Highly reliable performance with enhanced caching — making it the logical choice 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 per TB

Maximise 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 — featuring Seagate Instant Secure for safe, affordable, fast, and easy drive retirement

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

¹ Compared to 20 TB competitive product



| Specifications | SATA 6Gb/s | | | |
|--|--------------------|--------------------|--------------------|--------------------|
| Capacity | 24TB | 20TB | 16TB | 12TB |
| Standard Model - Seagate Instant Secure Erase (ISE) ¹ | ST24000NM002H | ST20000NM002H | ST16000NM002H | ST12000NM002H |
| SED Model ² | ST24000NM001H | ST20000NM001H | ST16000NM001H | ST12000NM001H |
| SED-FIPS ² | — | — | — | — |
| FEATURES | | | | |
| Helium Sealed-Drive Design | Yes | Yes | Yes | Yes |
| Conventional Magnetic Recording (CMR) | Yes | Yes | Yes | Yes |
| Super Parity | 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) | 512 | 512 | 512 | 512 |
| RSA 3072 Firmware Verification (SD&D) | Yes | Yes | Yes | Yes |
| RELIABILITY/DATA INTEGRITY | | | | |
| Mean Time Between Failures (MTBF, hours) | 2500000 hr | 2500000 hr | 2500000 hr | 2500000 hr |
| Reliability Rating @ Full 24x7 Operation (AFR) | 0.35% | 0.35% | 0.35% | 0.35% |
| Non-recoverable Read Errors per Bits Read | <1 in 10E15 | <1 in 10E15 | <1 in 10E15 | <1 in 10E15 |
| Power-On Hours per Year (24x7) | 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 | 4,096 | 4,096 |
| Limited Warranty (years) | 5 | 5 | 5 | 5 |
| PERFORMANCE | | | | |
| Spindle Speed (RPM) | 7200 RPM | 7200 RPM | 7200 RPM | 7200 RPM |
| Max. Sustained Transfer Rate OD (MB/s, MiB/s) | 285/272 | 285/272 | 285/272 | 285/272 |
| Random Read/Write 4K QD16 WCD (IOPS) | 168/550 | 168/550 | 168/550 | 168/550 |
| Interface Ports | Single | Single | Single | Single |
| Rotation Vibration @ 20-1500 Hz (rad/sec ²) | 12.5 | 12.5 | 12.5 | 12.5 |
| POWER | | | | |
| Idle A (W) Average | 6.3 | 6.3 | 6.3 | 6.3 |
| Max Operating, Random Read/Write 4K/16Q (W) | 8.9, 7.1 | 8.9, 7.1 | 8.9, 7.1 | 8.9, 7.1 |
| Power Supply Requirements | +12 V and +5 V |
| ENVIRONMENTAL | | | | |
| Temperature, Operating (°C) (Ambient/Drive Reported) | 5 / 60 | 5 / 60 | 5 / 60 | 5 / 60 |
| Vibration, Non-operating: 2 to 500 Hz (Grms) | 2.27 | 2.27 | 2.27 | 2.27 |
| Shock, Operating 2 ms (Read/Write) (Gs) | 40 Gs | 40 Gs | 40 Gs | 40 Gs |
| Shock, Non-operating 2 ms (GS) | 200 | 200 | 200 | 200 |
| PHYSICAL | | | | |
| Height (mm/in, max) ⁴ | 26.1 mm/1.028 in | 26.1 mm/1.028 in | 26.1 mm/1.028 in | 26.1 mm/1.028 in |
| Width (mm/in, max) ⁴ | 101.85 mm/4.010 in | 101.85 mm/4.010 in | 101.85 mm/4.010 in | 101.85 mm/4.010 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 (gm/lb) | 685 g/1.51 lb | 685 g/1.51 lb | 685 g/1.51 lb | 685 g/1.51 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 format

² Self-Encrypting Drives (SED) and FIPS 140-3 Validated drives available through franchised authorised distributors. May require TCG-compliant host or controller support.

³ Supports Hotplug operation per Serial ATA Revision 3.5 specification

⁴ 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 | SAS 12Gb/s | | | |
|--|---------------------|---------------------|---------------------|---------------------|
| | 24TB | 20TB | 16TB | 12TB |
| Capacity | 24TB | 20TB | 16TB | 12TB |
| Standard Model - Seagate Instant Secure Erase (ISE) ¹ | ST24000NM007H | ST20000NM007H | ST16000NM007H | ST12000NM007H |
| SED Model ² | ST24000NM005H | ST20000NM005H | ST16000NM005H | ST12000NM005H |
| SED-FIPS ² | ST24000NM006H | ST20000NM006H | ST16000NM006H | ST12000NM009H |
| FEATURES | | | | |
| Helium Sealed-Drive Design | Yes | Yes | Yes | Yes |
| Conventional Magnetic Recording (CMR) | Yes | Yes | Yes | Yes |
| Super Parity | 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) | 512 | 512 | 512 | 512 |
| RSA 3072 Firmware Verification (SD&D) | Yes | Yes | Yes | Yes |
| RELIABILITY/DATA INTEGRITY | | | | |
| Mean Time Between Failures (MTBF, hours) | 2500000 hr | 2500000 hr | 2500000 hr | 2500000 hr |
| Reliability Rating @ Full 24x7 Operation (AFR) | 0.35% | 0.35% | 0.35% | 0.35% |
| Non-recoverable Read Errors per Bits Read | <1 in 10E15 | <1 in 10E15 | <1 in 10E15 | <1 in 10E15 |
| Power-On Hours per Year (24x7) | 8,760 | 8,760 | 8,760 | 8,760 |
| 512e Sector Size (Bytes per Sector) | 512, 520, 528 | 512, 520, 528 | 512, 520, 528 | 512, 520, 528 |
| 4Kn Sector Size (Bytes per Sector) | 4,096, 4,160, 4,224 | 4,096, 4,160, 4,224 | 4,096, 4,160, 4,224 | 4,096, 4,160, 4,224 |
| Limited Warranty (years) | 5 | 5 | 5 | 5 |
| PERFORMANCE | | | | |
| Spindle Speed (RPM) | 7200 RPM | 7200 RPM | 7200 RPM | 7200 RPM |
| Max. Sustained Transfer Rate OD (MB/s, MiB/s) | 285/272 | 285/272 | 285/272 | 285/272 |
| Random Read/Write 4K QD16 WCD (IOPS) | 168/550 | 168/550 | 168/550 | 168/550 |
| Interface Ports | Dual | Dual | Dual | Dual |
| Rotation Vibration @ 20-1500 Hz (rad/sec ²) | 12.5 | 12.5 | 12.5 | 12.5 |
| POWER | | | | |
| Idle A (W) Average | 6.5 | 6.5 | 6.5 | 6.5 |
| Max Operating, Random Read/Write 4K/16Q (W) | 9.8, 8.2 | 9.8, 8.2 | 9.8, 8.2 | 9.8, 8.2 |
| Power Supply Requirements | +12 V and +5 V |
| ENVIRONMENTAL | | | | |
| Temperature, Operating (°C) (Ambient/Drive Reported) | 5 / 60 | 5 / 60 | 5 / 60 | 5 / 60 |
| Vibration, Non-operating: 2 to 500 Hz (Grms) | 2.27 | 2.27 | 2.27 | 2.27 |
| Shock, Operating 2 ms (Read/Write) (Gs) | 40 Gs | 40 Gs | 40 Gs | 40 Gs |
| Shock, Non-operating 2 ms (GS) | 200 | 200 | 200 | 200 |
| PHYSICAL | | | | |
| Height (mm/in, max) ⁴ | 26.1 mm/1.028 in | 26.1 mm/1.028 in | 26.1 mm/1.028 in | 26.1 mm/1.028 in |
| Width (mm/in, max) ⁴ | 101.85 mm/4.010 in | 101.85 mm/4.010 in | 101.85 mm/4.010 in | 101.85 mm/4.010 in |
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| Carton Unit Quantity | 20 | 20 | 20 | 20 |
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