Seagate

Data Sheet

Constellation®

2.5-inch Tier-2/nearline drive with the lowest enterprise power usage

500 GB and 160 GB • 7,200 RPM • SAS 6 Gb/s, SAS 3 Gb/s, SATA 3 Gb/s and SATA 1.5 Gb/s

Key Advantages

- The first 2.5-inch, 15 mm nearline drive for space-constrained data centres
- Lowest operating power and enhanced PowerChoice™ power options for unprecedented power savings (up to 54% — as low as 1.1W) during idling periods
- The highest-reliability 7,200 RPM drive, designed for 24x7 operation
- Best-in-class rotational vibration tolerance ensures unrivalled performance in high spindle-density applications, and multi-drive firmware maximises system availability
- SAS offers seamless Tier-2 enterprise experience, with improved data integrity. SAS 2.0 enables faster data access and larger topologies, increasing system scalability, data throughput and connectivity.
- Self-Encrypting Drive (SED) option cuts IT drive retirement expenses while protecting data securely[1]
- FIPS Self-Encrypting Drive option provides all the benefits of SED and is NIST certified to meet US, Canada and UK government data encryption compliance requirements[1, 2]

Best-fit Applications

- Storage-hungry business applications
- Storage area networks (SAN) and network attached storage (NAS)
- US government-grade, data-at-rest security for when drives leave your control[1, 2]
- Rich media content storage — audio, video, image
- Drive retirement cost reduction and drive life extension strategies[1]
- Reference and compliance data storage
- Enterprise backup and restore

[1] Self-Encrypting Drive and FIPS Self-Encrypting Drive options on SAS models; TCG-compliant host or controller support required. Not available in all countries.
[2] See FIPS 140-2 Level 2 Certificate at http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401vend.htm.

FIPS 140-2 INSIDE

Unified Storage™

Constellation®

2.5-inch Tier-2/nearline drive with the lowest enterprise power usage

Built on Seagate Unified Storage Architecture

- Small form factor — 15 mm z-height provides a dense, eco-friendly, robust platform for easy integration
- SAS 2.0 — 6 Gb/s enables larger topologies at higher throughput and provides a higher signal strength over longer distances for improved scalability

Enhanced Choices with Enterprise Capabilities

- PowerChoice host-selectable power options (1 to 4) reduce power consumption to a low of 1.1W
- Both SATA 3 Gb/s and SAS 6 Gb/s interfaces use perpendicular recording technology to deliver the industry's highest-capacity 2.5-inch nearline drive
- Enterprise-class firmware features and best-in-class rotational vibration tolerance maximise system availability and performance in multi-drive systems. Seagate proprietary Workload Management™ technology helps systems keep drives cool
- The best 7,200 RPM reliability for 24x7 business-critical applications with an MTBF of 1.2M hours and a non-recoverable error rate of 1 sector per 10^{15} — from a trusted source and backed by a 5-year limited warranty

Strong Enough for National Security[1]

The Constellation (SAS) drive is available in SED or FIPS SED models; both eliminate the need to overwrite or physically destroy drives, enable secure return of drives for warranty or expired lease purposes, and allow organisations to repurpose or sell hard drives securely. For added physical security and more stringent regulatory compliance needs, the FIPS SED model is FIPS 140-2 Validated™ for use with sensitive but unclassified or protected (A or B) class data.

Seagate Secure™ encryption models help OEMs and system builders gain competitive advantage, differentiate solutions (with strong data security), sell to new customers (who require strong data security) and protect brand equity (and customer confidence).

[1] Self-Encrypting Drive and FIPS Self-Encrypting Drive options on SAS models; TCG-compliant host or controller support required. Not available in all countries.

www.seagate.com
Toll free: 00 8004 SEAGATE (732 4283)
(non toll free: 001 405 324 4714)

Specifications	500 GB[1]		160 GB[1]
Model Number	ST9500430SS ST9500431SS[2] ST9500432SS[3]	ST9500530NS	ST9160511NS
Interface	SAS 2.0	SATA	SATA
Interface Access Speed	SAS 6 Gb/s SAS 3 Gb/s SAS 1.5 Gb/s	SATA 3 Gb/s SATA 1.5 Gb/s	SATA 3 Gb/s SATA 1.5 Gb/s
Performance			
Spindle Speed (RPM)	7,200	7,200	7,200
Average Latency (ms)	4.16	4.16	4.16
Seek Time Average Read/Write (ms)	8.5/9.5	8.5/9.5	8.5/9.5
Maximum Sustained Transfer Rate (MB/s)	97	95	95
Cache, Multi-segmented (MB)	16	32	32
Configuration/Organisation			
Bytes per Sector	512, 520, 524, 528	512	512
Reliability/Data Integrity			
Mean Time Between Failures (MTBF, hours)	1.2 million	1.2 million	1.2 million
Reliability Rating at Full 24x7 Operation (AFR)	0.73%	0.73%	0.73%
Non-recoverable Read Errors per Bits Read	1 sector per 10^{15}	1 sector per 10^{15}	1 sector per 10^{15}
Error Control/Correction (ECC)	10 bit	10 bit	10 bit
Interface Ports	Dual	Single	Single
Limited Warranty (years)	5	5	5
Power Management			
Power Supply Requirements	+12V and +5V	+12V and +5V	+12V and +5V
Typical Operating, Random Read (W)	4.0	3.5	2.8
Idling (W)	2.9	2.6	2.3
PowerChoice™ option, 1 to 4 range (W)	1.3 to 2.9	1.1 to 2.4	1.1 to 2.1
Environmental			
Rotational Vibration @ 1,800Hz (rad/sec²)	16	16	16
Vibration Operating, <400 Hz (Gs) Non-operating, <500 Hz (Gs)	0.5 2.4	0.5 2.4	0.5 2.4
Shock Operating, 2ms (Gs) Non-operating, 1ms and 2ms (Gs)	70 400	70 400	70 400
Temperature Operating (ºC) Non-operating (ºC)	5 to 55 −40 to 70	5 to 55 −40 to 70	5 to 55 −40 to 70
Acoustics Typical Idling (bels) Typical Operating (bels)	2.3 2.6	2.3 2.6	1.9 2.5
Encryption			
Self-Encrypting Drive Option[2]	Yes	—	—
FIPS Self-Encrypting Drive Option[3]	Yes	—	—
Physical			
Height (in/mm)	0.583/14.8	0.583/14.8	0.583/14.8
Width (in/mm)	2.76/70	2.76/70	2.76/70
Depth (in/mm)	3.957/100.5	3.957/100.5	3.957/100.5
Weight (lb/kg)	0.43/0.196	0.43/0.196	0.41/0.188

[1] One gigabyte, or GB, equals one billion bytes; and one terabyte, or TB, equals one trillion bytes when referring to hard drive capacity.

[2] Self-Encrypting Drive model (only available in 6 Gb/s SAS); requires TCG-compliant host or controller support. Not available in all countries.

[3] FIPS Self-Encrypting Drive model (only available in 6 Gb/s SAS); requires TCG-compliant host or controller support. Not available in all countries.