Constellation® ES.3

Data Sheet

Capacity-Optimised Enterprise Hard Drive for Bulk-Data Applications

- Highest-capacity large form factor enterprise drive — up to 4TB — for demanding data growth[1]

- Sixth-generation drive technology with SAS and SATA interfaces for 24x7 reliability

- Enhanced error correction, super parity and end-to-end SAS-based data integrity for accurate data storage

- Best-in-class rotational vibration tolerance ensures consistent performance

- Improved power and cooling efficiencies with low power consumption and on-demand PowerChoice™ technology based on T10/T13 power management standards

- Multi-drive firmware maximised for enterprise system availability

- Robust performance with dual processors, ramp load technology, top-cover-attached motor and humidity sensor for optimum performance in all chassis

- Self-Encrypting Drive (AES-256) with FIPS 140-2 validation and Seagate Instant Secure Erase cuts IT drive retirement costs while protecting data at rest securely.[2,3]

Best-fit Applications

- High-capacity RAID storage

- Mainstream enterprise external storage arrays (SAN, NAS, DAS)

- Cloud bulk data storage

- Enterprise backup and restore — D2D, virtual tape

- Centralised surveillance

[1] Seagate recommends validating your configuration with your HBA/RAID controller manufacturer to ensure full capacity capabilities.

[2] Self-Encrypting Drives (SED) and FIPS 140-2 Validated drives are not available in all models or countries; may require TCG-compliant host or controller support.

[3] FIPS 140-2 in review. See FIPS 140- Level 2 Certificate at http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2011.htm#1635

Constellation® ES.3

Specifications	SATA 6Gb/s			
	4TB[1,2]	3TB[1,2]	2TB[1]	1TB[1]
Standard Model Number	ST4000NM0033	ST3000NM0033	ST2000NM0033	ST1000NM0033
SED Model Number	ST4000NM0053[3]	ST3000NM0053[3]	ST2000NM0053[3]	ST1000NM0053[3]
Features				
Humdity Sensor	Yes	Yes	Yes	Yes
Super Parity	Yes	Yes	Yes	Yes
Low Halogen	Yes	Yes	Yes	Yes
PowerChoice™ Technology	Yes	Yes	Yes	Yes
Cache, Multi-segmented (MB)	128	128	128	128
Reliability/Data Integrity				
Mean Time Between Failures (MTBF, hours)	1.4 million	1.4 million	1.4 million	1.4 million
Reliability Rating at Full 24x7 Operation (AFR)	0.63%	0.63%	0.63%	0.63%
Non-recoverable Read Errors per Bits Read	1 sector per 10^{15}	1 sector per 10^{15}	1 sector per 10^{15}	1 sector per 10^{15}
Power-On Hours per Year	8,760 (24×7)	8,760 (24×7)	8,760 (24×7)	8,760 (24×7)
Bytes per Sector	512 Native	512 Native	512 Native	512 Native
Limited Warranty (years)[4]	5	5	5	5
Performance				
Spindle Speed (RPM)	7,200	7,200	7,200	7,200
Max. Sustained Transfer Rate OD (MB/s)	175	175	175	175
Average Latency (ms)	4.16	4.16	4.16	4.16
Interface Ports	Single	Single	Single	Single
Rotational Vibration @ 1,500 Hz(rad/s²)	12.5	12.5	12.5	12.5
Power Consumption				
Idling Power (W)	6.73	6.73	5.17	4.45
Typical Operating, Random Read (W)	11.27	11.27	9.42	8.08
Power Supply Requirements	+12V and +5V	+12V and +5V	+12V and +5V	+12V and +5V
Environmental				
Temperature, Operating (°C)	5 to 60	5 to 60	5 to 60	5 to 60
Vibration, Non-operating: <5 Hz to 500 Hz (Gs)	0.25	0.25	0.25	0.25
Shock, Operating, 2ms (Read/Write) (Gs)	70/40	70/40	70/40	70/40
Shock, Non-operating, 1ms and 2ms (Gs)	300	300	300	300
Physical				
Height (in/mm, max)[5]	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1
Width (in/mm, max)[5]	4.010/101.85	4.010/101.85	4.010/101.85	4.010/101.85
Depth (in/mm, max)[5]	5.878/147.0	5.878/147.0	5.878/147.0	5.878/147.0
Weight (lb/g)	1.543/700	1.444/655	1.400/635	1.334/605
Carton Unit Quantity	20	20	20	20
Cartons per Pallet	40	40	40	40
Cartons per Layer	8	8	8	8

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

[2] Seagate recommends validating your configuration with your HBA/RAID controller manufacturer to ensure full capacity capabilities.

[3] Self-Encrypting Drives (SED) and FIPS 140-2 Validated drives are not available in all models or countries; may require TCG-compliant host or controller support.

[4] Capacity-optimised products delivered between 31 December 2011 and 30 June 2012 have a three-year limited warranty. Capacity-optimised products delivered before 31 December 2011 or after 30 June 2012 have a five-year limited warranty.

[5] These base deck dimensions conform to the Small Form Factor Standard (SFF-8201) found at www.sffcommittee.org. For connector-related dimensions, see SFF-8223.

SERIAL ATA

Constellation® ES.3

Seagate ®

Specifications	6Gb/s SAS			
	4TB[1,2]	3TB[1,2]	2TB[1]	1TB[1]
Standard Model Number	ST4000NM0023	ST3000NM0023	ST2000NM0023	ST1000NM0023
SED Model Number	ST4000NM0043[3]	ST3000NM0043[3]	ST2000NM0043[3]	ST1000NM0043[3]
SED-FIPS Model Number	ST4000NM0063[3,4]	ST3000NM0063[3,4]	ST2000NM0063[3,4]	ST1000NM0063[3,4]
Features				
Protection Information (T10 DIF)	Yes	Yes	Yes	Yes
Humdity Sensor	Yes	Yes	Yes	Yes
Super Parity	Yes	Yes	Yes	Yes
Low Halogen	Yes	Yes	Yes	Yes
PowerChoice™ Technology	Yes	Yes	Yes	Yes
Cache, Multi-segmented (MB)	128	128	128	128
Reliability/Data Integrity				
Mean Time Between Failures (MTBF, hours)	1.4 million	1.4 million	1.4 million	1.4 million
Reliability Rating at Full 24x7 Operation (AFR)	0.63%	0.63%	0.63%	0.63%
Non-recoverable Read Errors per Bits Read	1 sector per 10^{15}	1 sector per 10^{15}	1 sector per 10^{15}	1 sector per 10^{15}
Power-On Hours per Year	8,760	8,760	8,760	8,760
Bytes per Sector	512, 520, 528	512, 520, 528	512, 520, 528	512, 520, 528
Limited Warranty (years)[5]	5	5	5	5
Performance				
Spindle Speed (RPM)	7,200	7,200	7,200	7,200
Max. Sustained Transfer Rate OD (MB/s)	175	175	175	175
Average Latency (ms)	4.16	4.16	4.16	4.16
Interface Ports	Dual	Dual	Dual	Dual
Rotational Vibration @ 1,500 Hz (rad/s²)	12.5	12.5	12.5	12.5
Power Consumption				
Idling Power (W)	7.80	6.74	5.78	4.84
Typical Operating, Random Read (W)	11.86	10.72	9.59	8.93
Power Supply Requirements	+12V and +5V	+12V and +5V	+12V and +5V	+12V and +5V
Environmental				
Temperature, Operating (°C)	5 to 60	5 to 60	5 to 60	5 to 60
Vibration, Non-operating: <5 Hz to 500 Hz (Gs)	0.25	0.25	0.25	0.25
Shock, Operating, 2ms (Read/Write) (Gs)	70/40	70/40	70/40	70/40
Shock, Non-operating, 1ms and 2ms (Gs)	300	300	300	300
Physical				
Height (in/mm, max)[6]	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1
Width (in/mm, max)[6]	4.010/101.85	4.010/101.85	4.010/101.85	4.010/101.85
Depth (in/mm, max)[6]	5.878/147.0	5.878/147.0	5.878/147.0	5.878/147.0
Weight (lb/g)	1.543/700	1.444/655	1.400/635	1.334/605
Carton Unit Quantity	20	20	20	20
Cartons per Pallet	40	40	40	40
Cartons per Layer	8	8	8	8

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

[2] Seagate recommends validating your configuration with your HBA/RAID controller manufacturer to ensure full capacity capabilities.

[3] Self-Encrypting Drives (SED) and FIPS 140-2 Validated drives are not available in all models or countries; may require TCG-compliant host or controller support.

[4] FIPS 140-2 in review. See FIPS 140-2 Level 2 Certificate at: http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2011.htm#1635

[5] Capacity-optimised products delivered between 31 December 2011 and 30 June 2012 have a three-year limited warranty. Capacity-optimised products delivered before 31 December 2011 or after 30 June 2012 have a five-year limited warranty.

[6] These base deck dimensions conform to the Small Form Factor Standard (SFF-8201) found at www.sffcommittee.org. For connector-related dimensions, see SFF-8223.

6Gb/s Serial Attached SCSI

www.seagate.com