Constellation® ES.3

Data Sheet

Capacity-Optimized 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
- Industry-leading 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 maximized for enterprise RAID 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 securely protecting data at rest.[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
- Centralized 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 See FIPS 140-2 Level 2 Certificate at http://csrc.nist.gov/groups/STM/cmvp/documents/140-1/1401val2011.htm#1635

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Seagate®

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]
SED FIPS Model Number	ST4000NM0073[3,4]			
Features				
Humidity Sensor	Yes	Yes	Yes	Yes
Super Parity	Yes	Yes	Yes	Yes
Low Halogen	Yes	Yes	Yes	Yes
PowerChoice™ Technology	Yes	Yes	Yes	Yes
Cache, Multisegmented (MB)	128	128	128	128
Reliability/Data Integrity				
Mean Time Between Failures (MTBF, hours)	2.0M	2.0M	2.0M	2.0M
Reliability Rating @ Full 24x7 Operation (AFR)	0.44%	0.44%	0.44%	0.44%
Nonrecoverable 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	8760 (24×7)	8760 (24×7)	8760 (24×7)	8760 (24×7)
Bytes per Sector	512 Native	512 Native	512 Native	512 Native
Limited Warranty (years)[5]	5	5	5	5
Performance				
Spindle Speed (RPM)	7200	7200	7200	7200
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 @ 1500 Hz (rad/s²)	12.5	12.5	12.5	12.5
Power Consumption				
Idle 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, Nonoperating: <5Hz to 500Hz (Gs)	0.25	0.25	0.25	0.25
Shock, Operating, 2ms (Read/Write) (Gs)	70/40	70/40	70/40	70/40
Shock, Nonoperating, 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-optimized products shipped between December 31, 2011 and June 30, 2012, have a 3-year limited warranty. Capacity-optimized products shipped before December 31, 2011 or after June 30, 2012 have a 5-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.

SERIAL ATA

6Gb/s SAS Specifications on Next Page

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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
Humidity Sensor	Yes	Yes	Yes	Yes
Super Parity	Yes	Yes	Yes	Yes
Low Halogen	Yes	Yes	Yes	Yes
PowerChoice™ Technology	Yes	Yes	Yes	Yes
Cache, Multisegmented (MB)	128	128	128	128
Reliability/Data Integrity				
Mean Time Between Failures (MTBF, hours)	2.0M	2.0M	2.0M	2.0M
Reliability Rating @ Full 24x7 Operation (AFR)	0.44%	0.44%	0.44%	0.44%
Nonrecoverable 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	8760	8760	8760	8760
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)	7200	7200	7200	7200
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 @ 1500 Hz (rad/s²)	12.5	12.5	12.5	12.5
Power Consumption				
Idle 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, Nonoperating: <5Hz to 500Hz (Gs)	0.25	0.25	0.25	0.25
Shock, Operating, 2ms (Read/Write) (Gs)	70/40	70/40	70/40	70/40
Shock, Nonoperating, 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
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Weight (lb/g)	1.543/700	1.444/655	1.400/635	1.334/605
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FIPS VALIDATED 140-2

6Gb/s Serial Attached SCSI

www.seagate.com

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