Enterprise Capacity 3.5 HDD

Data Sheet

Capacity-Optimized Enterprise Hard Drive for Bulk-Data Applications

- Highest-capacity large form factor enterprise drive—50% more capacity over last generation with up to 6TB—for demanding data growth[1]
- Fastest high-capacity HDD with best-in-class random and sequential read/write performance
- Eighth-generation drive technology for reliable access to bulk storage of unstructured data
- Both 12Gb/s SAS and SATA 6Gb/s interfaces for easy integration into replicated and RAID storage systems
- 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
- Engineered for 24×7 workloads of 550TB/yr—10× that of desktop drives
- 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

- Hyperscale applications
- High-capacity RAID storage
- Mainstream enterprise external storage arrays (SAN, NAS, DAS)
- Cloud data centers—replicated 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 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

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Specifications	SATA 6Gb/s			
	6TB[1,2]	5TB[1,2]	4TB[1,2]	2TB[1]
Standard Model Number (4KN)	ST6000NM0004	—	—	—
Standard Model Number (512E)	ST6000NM0024	ST5000NM0024	ST4000NM0024	ST2000NM0024
SED Model Number (512E)	ST6000NM0044[3]	ST5000NM0044[3]	ST4000NM0044[3]	ST2000NM0044[3]
SED-FIPS Model Number (512E)	ST6000NM0084[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
Hot-Plug Support[6]	Yes	Yes	Yes	Yes
Cache, Multisegmented (MB)	128	128	128	128
Reliability/Data Integrity				
Mean Time Between Failures (MTBF, hours)	1.4M	1.4M	1.4M	1.4M
Reliability Rating @ Full 24x7 Operation (AFR)	0.63%	0.63%	0.63%	0.63%
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 (24x7)	8760 (24x7)	8760 (24x7)	8760 (24x7)
Sector Size (Bytes per Sector)	512	512	512	512
Limited Warranty (years)	5	5	5	5
Performance				
Spindle Speed (RPM)	7200	7200	7200	7200
Interface Access Speed (Gb/s)	6.0, 3.0, 1.5	6.0, 3.0, 1.5	6.0, 3.0, 1.5	6.0, 3.0, 1.5
Max. Sustained Transfer Rate OD (MB/s)	216	216	216	216
Average Latency (ms)	4.16	4.16	4.16	4.16
Interface Ports	Single	Single	Single	Single
Rotation Vibration @ 1500 Hz (rad/s²)	12.5	12.5	12.5	12.5
Power Consumption				
Idle Power, Average (W)	6.9	6.9	6.0	4.5
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: 10Hz to 500Hz (Grms)	5.0	5.0	5.0	5.0
Shock, Operating, 2ms (Read/Write) (Gs)	70/40	70/40	70/40	70/40
Shock, Nonoperating, 1ms and 2ms (Gs)	250	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)	1.720/780	1.720/780	1.400/635	1.344/605
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 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.

6 Supports Hotplug operation per Serial ATA Revision 2.6 specification.

12Gb/s SAS Specifications on Next Page

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Specifications	12Gb/s SAS			
	6TB[1,2]	5TB[1,2]	4TB[1,2]	2TB[1]
Standard Model Number (4KN)	ST6000NM0014	—	—	—
Standard Model Number (512E)	ST6000NM0034	ST5000NM0034	ST4000NM0034	ST2000NM0034
SED Model Number (512E)	ST6000NM0054[3]	ST5000NM0054[3]	ST4000NM0054[3]	ST2000NM0054[3]
SED-FIPS Model Number (512E)	ST6000NM0104[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)	1.4M	1.4M	1.4M	1.4M
Reliability Rating @ Full 24x7 Operation (AFR)	0.63%	0.63%	0.63%	0.63%
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 (24x7)	8760 (24x7)	8760 (24x7)	8760 (24x7)
Sector Size (Bytes per Sector)	512, 520, 528	512, 520, 528	512, 520, 528	512, 520, 528
Limited Warranty (years)	5	5	5	5
Performance				
Spindle Speed (RPM)	7200	7200	7200	7200
Interface Access Speed (Gb/s)	12.0, 6.0, 3.0	12.0, 6.0, 3.0	12.0, 6.0, 3.0	12.0, 6.0, 3.0
Max. Sustained Transfer Rate OD (MB/s)	up to 226	up to 226	up to 226	up to 226
Average Latency (ms)	4.16	4.16	4.16	4.16
Interface Ports	Dual	Dual	Dual	Dual
Rotation Vibration @ 1500 Hz (rad/s²)	12.5	12.5	12.5	12.5
Power Consumption				
Idle Power, Average (W)	7.97	6.96	5.73	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: 10Hz to 500Hz (Grms)	4.9	4.9	4.9	4.9
Shock, Operating, 2ms (Read/Write) (Gs)	70/40	70/40	70/40	70/40
Shock, Nonoperating, 1ms and 2ms (Gs)	250	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
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Weight (lb/g)	1.720/780	1.720/780	1.400/635	1.344/605
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12Gb/s SAS

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