Nytro® XF1440 and XM1440 NVMe SSDs

Data Sheet

Key Features and Benefits

- PCIe Gen3 ×4 interface with NVMe protocol for improved latency, consistent response time and high throughput
- Best-in-class performance per Watt of up to 25,000 IOPS/W enables more computing with less energy consumption
- Host selectable performance optimization to balance performance and power
- Industry-leading storage density of up to 1.92TB in a 2.5-inch × 7mm form factor and up to 960GB in a M.2 form factor
- Optimized for read-intensive and mixed workloads
- Hot-swappable 2.5-inch SSD with SFF-8639 connector for easy serviceability
- Power loss data protection circuit to prevent loss of data in the event of unexpected power interruptions
- Superior data security with Seagate Secure™ Self-Encrypting Drive (SED) models[1]
- End-to-end data protection and LDPC error correction for high level of data integrity and reliability

The Seagate Nytro XF1440 2.5-inch solid state drive (SSD) and Seagate Nytro XM1440 M.2 SSD are the new industry-leading class of low-power enterprise NVMe SSDs with optimized power and performance designed to increase storage density in data centers.

Increase Storage Density in Data Centers

The Nytro XF1440 and XM1440 are low power, high performance enterprise NVMe SSDs in compact form factors engineered to increase storage density as well as reduce storage footprints and power use in data centers. The SSDs enable more computing with less space, energy and cost by delivering the highest performance in the smallest power envelope.

Improve Data Center Efficiency and Lower TCO

The Nytro XF1440 and XM1440 are cost-effective, energy efficient storage solutions that combine high level of serviceability, improved power and cooling efficiency, scalability and space optimization to reduce total cost of ownership (TCO) in data centers.

The Nytro XF1440 with SFF-8639 connector enables effortless serviceability and maintenance without any downtime requirements featuring hot-swap capability for easy addition, removal or replacement of SSDs.

Enhanced Enterprise Reliability, Data Protection and Security

By leveraging Seagate's existing enterprise expertise, mature reliability, manufacturing excellence and system compatibility testing and infrastructure the Nytro XF1440 and XM1440 SSDs deliver the highest levels of data integrity, data security, and endurance for critical business applications.

The Nytro XF1440 and XM1440 feature end-to-end data protection and LDPC error correction for solid reliability and endurance. With power-loss data protection, the XF1440 and XM1440 maintain data integrity to prevent loss of data in the event of unexpected power interruptions.

Seagate Secure Self-Encrypting Drive (SED) models[1] support TCG Enterprise protocol and enable companies to keep valuable data secure.

1 Self-Encrypting Drives (SED) are not available in all models or countries. May require TCG-compliant host or controller support.

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Nytro® XF1440 and XM1440 NVMe SSDs

Nytro XF1440 SSD Specifications (4K byte sector)	Endurance Optimized			Capacity Optimized		
	1600GB[1]	800GB[1]	400GB[1]	1920GB[1]	960GB[1]	480GB[1]
Target Application	Mixed Workloads			Read-intensive Workloads		
Standard Model	ST1600HM0011	ST800HM0021	ST400HM0021	ST1920HM0001	ST960HM0001	ST480HM0001
Seagate Secure™ SED Model	—	—	—	—	—	—
Interface	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b
NAND Flash Type	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC
Sector Size Support	4K	4K	4K	4K	4K	4K
Form Factor	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm
Performance[2]						
Sequential Read (MB/s), Peak 128KB[2]	2500	2500	2400	2500	2500	2400
Sequential Write (MB/s), Peak 128KB[2]	900	900	500	900	900	500
Random Read (IOPS), Peak 4KB QD64[2]	235,000	220,000	180,000	235,000	220,000	180,000
Random Write (IOPS) Sustained, 4KB QD64[2]	40,000	33,000	25,000	15,000	12,000	10,000
Random 70/30 R/W (IOPS) Sustained, 4KB QD64[2]	85,000	65,000	55,000	45,000	35,000	25,000
Endurance/Reliability						
Lifetime Endurance (Drive Writes per Day)	3	3	3	0.3	0.3	0.3
Nonrecoverable Read Errors per Bits Read	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16
Mean Time Between Failures (MTBF, hours)	2M	2M	2M	2M	2M	2M
Power Management						
+12V Max Power (W)	12.5	12.5	12.5	12.5	12.5	12.5
Average Read/Write Power (W)	9	9	9	9	9	9
Average Idle Power (W)	2.5	2.5	2.5	2.5	2.5	2.5
Environmental						
Temperature, Operating (°C)	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70
Temperature, Nonoperating (°C)	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85
Temperature Change Rate/Hr, Max (°C)	20	20	20	20	20	20
Shock, 0.5ms (Gs)	1500	1500	1500	1500	1500	1500
Vibration, 7Hz to 800Hz (Grms)	3.08	3.08	3.08	3.08	3.08	3.08
Vibration, 20Hz to 2000Hz (Grms)	16.3	16.3	16.3	16.3	16.3	16.3
Physical						
Height (in/mm, max)[3]	0.276/7.00	0.276/7.00	0.276/7.00	0.276/7.00	0.276/7.00	0.276/7.00
Width (in/mm, max)[3]	2.750/69.85	2.750/69.85	2.750/69.85	2.750/69.85	2.750/69.85	2.750/69.85
Depth (in/mm, max)[3]	3.951/100.35	3.951/100.35	3.951/100.35	3.951/100.35	3.951/100.35	3.951/100.35
Weight (lb/g)	0.198/90	0.198/90	0.198/90	0.198/90	0.198/90	0.198/90
Carton Unit Quantity	10	10	10	10	10	10
Warranty						
Limited Warranty (years)	5	5	5	5	5	5

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

2 Performance data is based on testing under certain workload conditions and is subject to change. 400GB and 480GB capacities limited to 32x 128Gb die active

3 These base deck dimensions conform to the Small Form Factor Standard (SFF-8201) found at www.sffcommittee.org. For connector-related dimensions, see SFF-8639.

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Nytro XF1440 2.5" NVMe SSD (512 byte sector) Specifications on Next Page

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Nytro® XF1440 and XM1440 NVMe SSDs

Nytro XF1440 SSD Specifications (512 byte sector)	Endurance Optimized			Capacity Optimized		
	1600GB[1]	800GB[1]	400GB[1]	1920GB[1]	960GB[1]	480GB[1]
Target Application	Mixed Workloads			Read-intensive Workloads		
Standard Model	ST1600KN0001	ST800KN0001	ST400KN0001	ST1920KN0001	ST960KN0001	ST480KN0001
Seagate Secure™ SED Model	ST1600KN0011[2]	ST800KN0011[2]	ST400KN0011[2]	ST1920KN0011[2]	ST960KN0011[2]	ST480KN0011[2]
Interface	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b	PCIe Gen3 ×4 NVMe 1.1b
NAND Flash Type	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC
Sector Size Support	512B	512B	512B	512B	512B	512B
Form Factor	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm	2.5 in × 7mm
Performance[3]						
Sequential Read (MB/s), Peak 128KB[3]	2500	2500	2400	2500	2500	2400
Sequential Write (MB/s), Peak 128KB[3]	900	900	500	900	900	500
Random Read (IOPS), Peak 4KB QD64[3]	235,000	220,000	180,000	235,000	220,000	180,000
Random Write (IOPS) Sustained, 4KB QD64[3]	40,000	33,000	25,000	15,000	12,000	10,000
Random 70/30 R/W (IOPS) Sustained, 4KB QD64[3]	85,000	65,000	55,000	45,000	35,000	25,000
Endurance/Reliability						
Lifetime Endurance (Drive Writes per Day)	3	3	3	0.3	0.3	0.3
Nonrecoverable Read Errors per Bits Read	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16
Mean Time Between Failures (MTBF, hours)	2M	2M	2M	2M	2M	2M
Power Management						
+12V Max Power (W)	12.5	12.5	12.5	12.5	12.5	12.5
Average Read/Write Power (W)	9	9	9	9	9	9
Average Idle Power (W)	2.5	2.5	2.5	2.5	2.5	2.5
Environmental						
Temperature, Operating (°C)	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70
Temperature, Nonoperating (°C)	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85
Temperature Change Rate/Hr, Max (°C)	20	20	20	20	20	20
Shock, 0.5ms (Gs)	1500	1500	1500	1500	1500	1500
Vibration, 7Hz to 800Hz (Grms)	3.08	3.08	3.08	3.08	3.08	3.08
Vibration, 20Hz to 2000Hz (Grms)	16.3	16.3	16.3	16.3	16.3	16.3
Physical						
Height (in/mm, max)[4]	0.276/7.00	0.276/7.00	0.276/7.00	0.276/7.00	0.276/7.00	0.276/7.00
Width (in/mm, max)[4]	2.750/69.85	2.750/69.85	2.750/69.85	2.750/69.85	2.750/69.85	2.750/69.85
Depth (in/mm, max)[4]	3.951/100.35	3.951/100.35	3.951/100.35	3.951/100.35	3.951/100.35	3.951/100.35
Weight (lb/g)	0.198/90	0.198/90	0.198/90	0.198/90	0.198/90	0.198/90
Carton Unit Quantity	10	10	10	10	10	10
Warranty						
Limited Warranty (years)	5	5	5	5	5	5

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

2 SED model not yet available, please contact your sales representative for info on availability. Not all drives may be available in all countries. Seagate Secure drives meet ISO/IEC 27040 and NIST 800-88 standards and may require use of TCG-compliant host or controller support.

3 Performance data is based on testing under certain workload conditions and is subject to change. 400GB and 480GB capacities limited to 32x 128Gb die active

4 These base deck dimensions conform to the Small Form Factor Standard (SFF-8201) found at www.sffcommittee.org. For connector-related dimensions, see SFF-8639.

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Nytro XM1440 M.2 NVMe SSD Specifications on Next Page

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Nytro® XF1440 and XM1440 NVMe SSDs

Nytro XM1440 SSD Specifications[1]	Endurance Optimized				Capacity Optimized			
	800GB[2]	800GB[2]	400GB[2]	400GB[2]	960GB[2]	960GB[2]	480GB[2]	480GB[2]
Target Aplication	Mixed Workloads				Read-intensive Workloads			
Standard Model	ST800HM0031	ST800KN0021	ST400HM0031	ST400KN0021	ST960HM0011	ST960KN0021	ST480HM0011	ST480KN0021
Seagate Secure™ SED Model	—	ST800KN0031[3]	—	ST400KN0031[3]	—	ST960KN0031[3]	—	ST480KN0031[3]
Interface	PCIe Gen3 x4 NVMe 1.1b	PCIe Gen3 x4 NVMe 1.1b	PCIe Gen3 x4 NVMe 1.1b	PCIe Gen3 x4 NVMe 1.1b	PCIe Gen3 x4 NVMe 1.1b	PCIe Gen3 x4 NVMe 1.1b	PCIe Gen3 x4 NVMe 1.1b	PCIe Gen3 x4 NVMe 1.1b
NAND Flash Type	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC	eMLC
Sector Size Support	4K	512B	4K	512B	4K	512B	4K	512B
Form Factor	M.2 22110	M.2 22110	M.2 22110	M.2 22110	M.2 22110	M.2 22110	M.2 22110	M.2 22110
Performance[4]								
Sequential Read (MB/s), Peak 128KB[4]	2500	2500	2400	2400	2500	2500	2400	2400
Sequential Write (MB/s), Peak 128KB[4]	600	600	475	475	600	600	475	475
Random Read (IOPS), Peak 4KB QD64[4]	220,000	220,000	180,000	180,000	220,000	220,000	180,000	180,000
Random Write (IOPS) Sustained, 4KB QD64[4]	33,000	33,000	25,000	25,000	12,000	12,000	10,000	10,000
Random 70/30 R/W (IOPS) Sustained, 4KB QD64[4]	65,000	65,000	55,000	55,000	35,000	35,000	25,000	25,000
Endurance/Reliability								
Lifetime Endurance (Drive Writes per Day)	3	3	3	3	0.3	0.3	0.3	0.3
Nonrecoverable Read Errors per Bits Read	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16	1 per 10E16
Mean Time Between Failures (MTBF, hours)	2M	2M	2M	2M	2M	2M	2M	2M
Power Management								
+3.3V Max Power (W)	8.25	8.25	8.25	8.25	8.25	8.25	8.25	8.25
Average Read/Write Power (W)	7	7	7	7	7	7	7	7
Environmental								
Temperature, Operating (°C)	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70	0 to 70
Temperature, Nonoperating (°C)	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85	–40 to 85
Temperature Change Rate/Hr, Max (°C)	30	30	30	30	30	30	30	30
Shock, 0.5ms (Gs)	1500	1500	1500	1500	1500	1500	1500	1500
Vibration, 7Hz to 800Hz (Grms)	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08
Vibration, 20Hz to 2000Hz (Grms)	16.3	16.3	16.3	16.3	16.3	16.3	16.3	16.3
Physical								
Component Max Height - Top (mm)	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Component Max Height - Bottom (mm)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Width (mm)	22.0	22.0	22.0	22.0	22 .0	22.0	22	22.0
Length (mm)	110.0	110.0	110.0	110.0	110.0	110.0	110	110.0
Weight (g)	12	12	12	12	12	12	12	12
Carton Unit Quantity	10	10	10	10	10	10	10	10
Warranty								
Limited Warranty (years)	5	5	5	5	5	5	5	5

1 Announced product not yet available, please contact your sales representative for info on availability. Specifications are preliminary and subject to change.

2 One gigabyte, or GB, equals one billion bytes and one terabyte, or TB, equals one trillion bytes when referring to drive capacity.

2 SED model not yet available, please contact your sales representative for info on availability. Not all drives may be available in all countries. Seagate Secure drives meet ISO/IEC 27040 and NIST 800-88 standards and may require use of TCG-compliant host or controller support.

3 Performance data is based on testing under certain workload conditions and is subject to change. 400GB and 480GB capacities limited to 32x 128Gb die active

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