



3.5 HDD DATA SHEET

## The Power of Agility for Home, SOHO, and SMB NAS Enclosures



IronWolf™ is designed for everything NAS. Get used to tough, ready, and scalable 24x7 performance that can handle multi-drive environments across a wide range of capacities.



### Best-Fit Applications

- 1- to 8-bay network attached storage (NAS)
- Desktop RAID and servers
- Multimedia server storage
- Private cloud



## Key Advantages

**Optimised for NAS with AgileArray.™** AgileArray enables dual-plane balancing and RAID optimisation in multi-bay environments, with the most advanced power management possible.

**Actively protect your NAS with IronWolf Health Management** focusing on prevention, intervention, and recovery.<sup>1</sup>

**High performance means no lag time** or downtime for users during workload traffic for the NAS. Seagate leads the competition with the highest-performing NAS drive portfolio.<sup>2</sup>

**Rotational Vibration (RV) sensors.** First in its class of drives to include RV sensors to maintain high performance in multi-drive NAS enclosures.<sup>3</sup>

**Range of capacities up to 16 TB.** More capacity options means more choices that will fit within the budget. Seagate provides a scalable solution for any NAS use-case scenario.

**Do more in multi-user environments.** IronWolf provides a workload rate of 180 TB/year. Multiple users can confidently upload and download data to the NAS server, knowing IronWolf can handle the workload, whether you are a creative professional or a small business.

**Designed for always-on, always-accessible 24x7 performance.** Access data on your NAS any time, remotely or on site.

**1 M hours MTBF, 3-year limited warranty** represents an improved total cost of ownership (TCO) over desktop drives with reduced maintenance costs.

<sup>1</sup> Contact your Seagate sales representative for further information.

<sup>2</sup> Performance may vary depending on user's hardware configuration and operating system.

<sup>3</sup> Included on 4, 6, 8, 10, 12, 14, and 16 TB models.



Specifications	16 TB	14 TB	12 TB	10 TB	8 TB
Capacity	16TB	14TB	12TB	10TB	8TB
Standard Model Number	ST16000VN001	ST14000VN0008	ST12000VN0008	ST10000VN0008	ST8000VN004
Interface	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s
<b>Features and Performance</b>					
Drive Bays Supported	1 – 8 Bays	1 – 8 Bays	1 – 8 Bays	1 – 8 Bays	1 – 8 Bays
Multi-User Technology	180 TB/year	180 TB/year	180 TB/year	180 TB/year	180 TB/year
Rotational Vibration (RV) Sensor	Yes	Yes	Yes	Yes	Yes
Dual-Plane Balance	Yes	Yes	Yes	Yes	Yes
Error Recovery Control	Yes	Yes	Yes	Yes	Yes
Max. Sustained Transfer Rate OD (MB/s)	210MB/s	210MB/s	210MB/s	210MB/s	210MB/s
Spindle Speed (RPM)	7,200	7,200	7,200	7,200	7,200
Cache (MB)	256	256	256	256	256
<b>Reliability</b>					
Load/Unload Cycles <sup>1</sup>	600,000	600,000	600,000	600,000	600,000
Non-recoverable Read Errors Rate, Max	1 per 10E15	1 per 10E15	1 per 10E15	1 per 10E15	1 per 10E15
Power-on Hours	8,760	8,760	8,760	8,760	8,760
Workload Rate Limit (WRL)	180	180	180	180	180
Mean Time Between Failures (MTBF, hours)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Limited Warranty (years)	3	3	3	3	3
<b>Power Management</b>					
Startup Current, Typical (12V, A)	1.8	1.8	1.8	1.8	1.8
Average Operating Power (W)	7.3 W	7.3 W	7.8 W	7.8 W	8.8 W
Idling Average (W)	5.3 W	5.3 W	5 W	5 W	7.6 W
Standby Mode/Sleep Mode, Typical (W)	0.8/0.8	0.8/0.8	0.8/0.8	0.8/0.8	0.6/0.6
Voltage Tolerance, Inc. Noise (5 V)	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance, Inc. Noise (12 V)	±10%	±10%	±10%	±10%	±10%
<b>Environmental/Temperature</b>					
Operating (ambient, min °C)	5	5	5	5	5
Operating (drive case, max °C) <sup>2</sup>	70	70	70	70	70
Non-operating (ambient, min °C)	-40	-40	-40	-40	-40
Non-operating (ambient max °C)	70	70	70	70	70
Halogen-free	Yes	Yes	Yes	Yes	Yes
<b>Environmental/Shock</b>					
Shock, Operating/Non-operating: 2 ms (max)	50Gs/200Gs	50Gs/200Gs	70Gs/250Gs	70Gs/250Gs	70Gs/250Gs
<b>Environmental/Acoustics</b>					
Idle (typical) <sup>3</sup>	2.8 bels	2.8 bels	1.8 bels	1.8 bels	2.8 bels
Seek (typical)	3.0bels	3.0bels	2.8 bels	2.8 bels	3.2 bels
<b>Physical</b>					
Height (mm/in)	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in
Width (mm/in, max)	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in
Depth (mm/in, max)	146.99 mm/5.787 in	146.99 mm/5.787 in	146.99 mm/5.787 in	146.99 mm/5.787 in	146.99 mm/5.787 in
Weight (g/lb, typical)	670 g/1.477 lb	670 g/1.477 lb	690 g/1.521 lb	690 g/1.521 lb	722 g/1.59 lb
Carton Unit Quantity	20	20	20	20	20
Cartons per Pallet / Cartons per Layer	40/8	40/8	40/8	40/8	40/8

<sup>1</sup> Load/unload tested to 600,000 cycles.

<sup>2</sup> Seagate does not recommend operating at sustained case temperatures above 60°C. Operating at higher temperatures will reduce useful life of the product.

<sup>3</sup> Idle measured in Idle1 state.



Specifications	8 TB	6 TB	4 TB	3 TB	2 TB
Capacity	8TB	6TB	4TB	3TB	2TB
Standard Model Number	ST8000VN0022	ST6000VN0033	ST4000VN008	ST3000VN007	ST2000VN004
Interface	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s
<b>Features and Performance</b>					
Drive Bays Supported	1 – 8 Bays	1 – 8 Bays	1 – 8 Bays	1 – 8 Bays	1 – 8 Bays
Multi-User Technology	180 TB/year	180 TB/year	180 TB/year	180 TB/year	180 TB/year
Rotational Vibration (RV) Sensor	Yes	Yes	Yes	No	No
Dual-Plane Balance	Yes	Yes	Yes	Yes	Yes
Error Recovery Control	Yes	Yes	Yes	Yes	Yes
Max. Sustained Transfer Rate OD (MB/s)	210MB/s	210MB/s	180MB/s	180MB/s	180MB/s
Spindle Speed (RPM)	7,200	7,200	5,900	5,900	5,900
Cache (MB)	256	256	64	64	64
<b>Reliability</b>					
Load/Unload Cycles <sup>1</sup>	600,000	600,000	600,000	600,000	600,000
Non-recoverable Read Errors Rate, Max	1 per 10E15	1 per 10E15	1 per 10E14	1 per 10E14	1 per 10E14
Power-on Hours	8,760	8,760	8,760	8,760	8,760
Workload Rate Limit (WRL)	180	180	180	180	180
Mean Time Between Failures (MTBF, hours)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Limited Warranty (years)	3	3	3	3	3
<b>Power Management</b>					
Startup Current, Typical (12V, A)	1.8	1.8	1.8	2	2
Average Operating Power (W)	8.8 W	8.1 W	4.8 W	4.8 W	4.3 W
Idling Average (W)	7.6 W	7.2 W	3.95 W	4.8 W	3.56 W
Standby Mode/Sleep Mode, Typical (W)	0.6/0.6	0.6/0.6	0.5/0.5	0.5/0.5	0.5/0.5
Voltage Tolerance, Inc. Noise (5 V)	±5%	±5%	±5%	±5%	±5%
Voltage Tolerance, Inc. Noise (12 V)	±10%	±10%	±10%	±10%	±10%
<b>Environmental/Temperature</b>					
Operating (ambient, min °C)	5	5	5	5	5
Operating (drive case, max °C) <sup>2</sup>	70	70	70	70	70
Non-operating (ambient, min °C)	-40	-40	-40	-40	-40
Non-operating (ambient max °C)	70	70	70	70	70
Halogen-free	Yes	Yes	Yes	Yes	Yes
<b>Environmental/Shock</b>					
Shock, Operating/Non-operating: 2 ms (max)	70Gs/250Gs	70Gs/250Gs	80Gs/300Gs	80Gs/300Gs	80Gs/300Gs
<b>Environmental/Acoustics</b>					
Idle (typical) <sup>3</sup>	2.7 bels	2.7 bels	2.3 bels	2.3 bels	1.9 bels
Seek (typical)	2.8 bels	2.8 bels	2.5 bels	2.5 bels	2.1 bels
<b>Physical</b>					
Height (mm/in)	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in	26.11 mm/1.028 in
Width (mm/in, max)	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in	101.85 mm/4.01 in
Depth (mm/in, max)	146.99 mm/5.787 in	146.99 mm/5.787 in	146.99 mm/5.787 in	146.99 mm/5.787 in	146.99 mm/5.787 in
Weight (g/lb, typical)	780 g/1.72 lb	705 g/1.55 lb	610 g/1.345 lb	610 g/1.345 lb	535 g/1.18 lb
Carton Unit Quantity	20	20	20	20	20
Cartons per Pallet / Cartons per Layer	40/8	40/8	40/8	40/8	40/8

<sup>1</sup> Load/unload tested to 600,000 cycles.

<sup>2</sup> Seagate does not recommend operating at sustained case temperatures above 60°C. Operating at higher temperatures will reduce useful life of the product.

<sup>3</sup> Idle measured in Idle1 state.



Specifications	1 TB
Capacity	1TB
Standard Model Number	ST1000VN002
Interface	SATA 6Gb/s
<b>Features and Performance</b>	
Drive Bays Supported	1 – 8 Bays
Multi-User Technology	180 TB/year
Rotational Vibration (RV) Sensor	No
Dual-Plane Balance	Yes
Error Recovery Control	Yes
Max. Sustained Transfer Rate OD (MB/s)	180MB/s
Spindle Speed (RPM)	5,900
Cache (MB)	64
<b>Reliability</b>	
Load/Unload Cycles <sup>1</sup>	—
Non-recoverable Read Errors Rate, Max	1 per 10E14
Power-on Hours	8,760
Workload Rate Limit (WRL)	180
Mean Time Between Failures (MTBF, hours)	1,000,000
Limited Warranty (years)	3
<b>Power Management</b>	
Startup Current, Typical (12V, A)	1.2
Average Operating Power (W)	3.76 W
Idling Average (W)	2.5 W
Standby Mode/Sleep Mode, Typical (W)	0.5/0.5
Voltage Tolerance, Inc. Noise (5 V)	±5%
Voltage Tolerance, Inc. Noise (12 V)	±10%
<b>Environmental/Temperature</b>	
Operating (ambient, min °C)	5
Operating (drive case, max °C) <sup>2</sup>	70
Non-operating (ambient, min °C)	-40
Non-operating (ambient max °C)	70
Halogen-free	Yes
<b>Environmental/Shock</b>	
Shock, Operating/Non-operating: 2 ms (max)	80Gs/300Gs
<b>Environmental/Acoustics</b>	
Idle (typical) <sup>3</sup>	2.1 bels
Seek (typical)	2.3 bels
<b>Physical</b>	
Height (mm/in)	20.2 mm/0.795 in
Width (mm/in, max)	101.85 mm/4.01 in
Depth (mm/in, max)	146.99 mm/5.787 in
Weight (g/lb, typical)	415 g/0.915 lb
Carton Unit Quantity	25
Cartons per Pallet / Cartons per Layer	40/8

<sup>1</sup> Load/unload tested to 600,000 cycles.

<sup>2</sup> Seagate does not recommend operating at sustained case temperatures above 60°C. Operating at higher temperatures will reduce useful life of the product.

<sup>3</sup> Idle measured in Idle1 state.

AMERICAS Seagate Technology LLC 10200 South De Anza Boulevard, Cupertino, California 95014, United States, 408-658-1000  
ASIA/PACIFIC Seagate Singapore International Headquarters Pte. Ltd. 90 Woodlands Avenue 7, Singapore 737911, 65-6485-3888  
EUROPE, MIDDLE EAST, AND AFRICA Seagate Technology SAS 16-18, rue du Dôme, 92100 Boulogne-Billancourt, France, 33 1-4186 10 00

© 2019 Seagate Technology LLC. All rights reserved. Seagate, Seagate Technology, and the Spiral Logo are registered trademarks of Seagate Technology LLC in the United States and/or other countries. AgileArray and IronWolf are either trademarks or registered trademarks of Seagate Technology LLC or one of its affiliated companies in the United States and/or other countries. All other trademarks or registered trademarks are the property of their respective owners. When referring to drive capacity, one gigabyte, or GB, equals one billion bytes; and one terabyte, or TB, equals one trillion bytes. Your computer's operating system may use a different standard of measurement and report a lower capacity. In addition, some of the listed capacity is used for formatting and other functions, and thus will not be available for data storage. Actual data rates may vary depending on operating environment and other factors. Seagate reserves the right to change, without notice, product offerings or specifications. DS1904.13-1905GB May 2019