IRONWOLF PRO™

SEAGATE

3.5 HDD DATA SHEET

Tough. Ready. Scalable. Purpose-built for Creative Pro &Medium-to-Large Business NAS Environments

IronWolf™ Pro is designed for commercial and enterprise NAS. Delivering Tough, Ready and Scalable 24x7 performance in multi-bay, multi-user environments

Best-Fit Applications

- Commercial and Enterprise NAS
- Video Production RAID and Shared Network Storage
- Workstations and Servers

Rescue DATA RECOVERY SERVICES

Key Advantages

Optimised for NAS with AgileArray™ AgileArray enables Dual-Plane Balancing and Time-Limited Error Recovery to deliver best-in-class RAID performance in multi-bay systems.

`Always On, Always Accessible IronWolf Pro drives are designed for 24x7 usage, allowing users to access their data any time, anywhere.

All-CMR Portfolio All IronWolf Pro drives utilise conventional magnetic recording (CMR) technology for consistent, best-in-class NAS performance.

Up to 24 TB Broad range of capacity options to deliver scalable and cost-efficient storage solutions.

Built Tough IronWolf Pro drives are rated for 550 TB/yr workload, allowing commercial and enterprise NAS users to seamlessly store, share and collaborate on large amounts of networked data.

Class-Leading Reliability and Dependability IronWolf Pro drives are rated for 2.5M hours MTBF and include a 5-year limited warranty for hassle-free data storage and best-in-class total cost of ownership (TCO).

Rotational Vibration (RV) sensors. Built-in RV sensors for vibration tolerance and consistent performance in multi-bay systems.

IronWolf Health Management (IHM)[1] Actively protect your NAS data with Prevention, Intervention, and Recovery recommendations to ensure peak system health.

Peace of mind with Data Recovery[2] IronWolf Pro drives include 3 years of complimentary Rescue Data Recovery Services - in-house secure facilities, with an industry-leading recovery rate of 95% - so you do not have to incur high recovery costs in the event of accidental data corruption or drive damage.

1 IHM is enabled on all leading NAS systems. Please check with your NAS vendor or a Seagate sales representative for more details.
2 Rescue Data Recovery Services not available in all countries. Contact your Seagate sales representative for further details.

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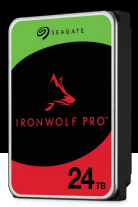

Specifications	24TB	22TB	20TB	18TB	16TB
Standard Model Number	ST24000NT002	ST22000NT001	ST20000NT001	ST18000NT001	ST16000NT001
Interface	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s
Features					
Drive Bays Supported	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Recording Technology	CMR	CMR	CMR	CMR	CMR
Drive Design (Air or Helium)	Helium	Helium	Helium	Helium	Helium
Workload Rate Limit (WRL)	550	550	550	550	550
Rotational Vibration (RV) Sensors	Yes	Yes	Yes	Yes	Yes
Cache (MB)	512 MB	512 MB	256MB	256MB	256MB
Reliability/Data Integrity					
Mean Time Between Failures (MTBF, hours)	2500000 hr	2500000 hr	2500000 hr	2500000 hr	2500000 hr
Non-recoverable Read Errors per Bits Read, Max	1 per 10E15	1 per 10E15	1 per 10E15	1 per 10E15	1 per 10E15
Power-On Hours (per year)	8,760	8,760	8,760	8,760	8,760
Sector Size (Bytes per Logical Sector)	512E	512E	512E	512E	512E
Rescue Data Recovery Services (years)[3]	3	3	3	3	3
Limited Warranty (years)	5	5	5	5	5
Performance					
Spindle Speed (RPM)	7200RPM	7200RPM	7200RPM	7200RPM	7200RPM
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	6.0, 3.0, 1.5
Max. Sustained Transfer Rate OD (MB/s)	285	285	285	285	270
Rotational Vibration @ 10-1500 Hz (rad/s)	12.5	12.5	12.5	12.5	12.5
Power Consumption					
Startup Current, Typical (12V, A)	2.0 A	2.0 A	2.0 A	2.0 A	2.0 A
Idle Power, Average (W)	6.3 W	6.0 W	5.7	5.0	5.0
Average Operating Power (W)	7.8 W	7.9 W	7.7 W	7.5 W	7.6 W
Standby Mode, Typical (W)	1.1 W	1.2 W	1.2 W	1.0	1.0 W
Sleep Mode, Typical (W)	1.1 W	1.2 W	1.2 W	1.0	1.0 W
Power Supply Requirements	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V
Environmental/Temperature					
Operating Temperature (ambient, min °C)	5°C	0°C	0°C	0°C	0°C
Operating Temperature (drive reported, max °C)[4]	65°C	65°C	65°C	65°C	65°C
Non-operating Temperature (ambient, min °C)	-40°C	-40°C	-40°C	-40°C	-40°C
Non-operating Temperature (ambient, max °C)	70°C	70°C	70°C	70°C	70°C
Environmental/Acoustics					
Vibration, Non-operating: 10 Hz to 500 Hz (Grms)	2.27	2.27	2.27	2.27	2.27
Acoustics, Idle (typical, measured in Idle 1 state) (dBA)	20	20	20	20	20
Acoustics, Seek (typical) (dBA)	26	26	26	26	26
Environmental/Shock					
Shock, Operating 2 ms (Read/Write) (Gs)	40/40 Gs	40/40 Gs	40/40 Gs	40	50/50 Gs
Shock, Non-operating, 1 ms and 2 ms (Gs)	200	200	200	200	200
Physical					
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)	685 g/1.512 lb	690 g/1.512 lb	690 g/1.521 lb	680 g/1.499 lb	670 g/1.477 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

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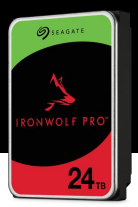

Specifications	14TB	12TB	10TB	8TB	6TB
Standard Model Number	ST14000NT001	ST12000NT001	ST10000NT001	ST8000NT001	ST6000NT001
Interface	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s	SATA 6Gb/s
Features					
Drive Bays Supported	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited
Recording Technology	CMR	CMR	CMR	CMR	CMR
Drive Design (Air or Helium)	Helium	Helium	Air	Air	Air
Workload Rate Limit (WRL)	550	550	550	550	550
Rotational Vibration (RV) Sensors	Yes	Yes	Yes	Yes	Yes
Cache (MB)	256MB	256MB	256MB	256MB	256MB
Reliability/Data Integrity					
Mean Time Between Failures (MTBF, hours)	2500000 hr	2500000 hr	2000000 hr	2000000 hr	2000000 hr
Non-recoverable Read Errors per Bits Read, Max	1 per 10E15	1 per 10E15	1 per 10E15	1 per 10E15	1 per 10E15
Power-On Hours (per year)	8,760	8,760	8,760	8,760	8,760
Sector Size (Bytes per Logical Sector)	512E	512E	512E	512E	512E
Rescue Data Recovery Services (years)[3]	3	3	3	3	3
Limited Warranty (years)	5	5	5	5	5
Performance					
Spindle Speed (RPM)	7200RPM	7200RPM	7200RPM	7200RPM	7200RPM
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	6.0, 3.0, 1.5
Max. Sustained Transfer Rate OD (MB/s)	270 MB/s	270MB/s	263MB/s	255MB/s	250MB/s
Rotational Vibration @ 10-1500 Hz (rad/s)	12.5	12.5	12.5	12.5	12.5
Power Consumption					
Startup Current, Typical (12V, A)	2.0 A	2.0 A	1.8 A	2.0 A	2.0 A
Idle Power, Average (W)	5.0	5.0	7.8 W	7.8	7.1
Average Operating Power (W)	7.6 W	7.8 W	10.1 W	10.1 W	9.3 W
Standby Mode, Typical (W)	1.0 W	1.0 W	1.0 W	1.0 W	1.0 W
Sleep Mode, Typical (W)	1.0 W	1.0 W	1.0 W	1.0 W	1.0 W
Power Supply Requirements	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V	+12 V and +5 V
Environmental/Temperature					
Operating Temperature (ambient, min °C)	0°C	0°C	0°C	0°C	0°C
Operating Temperature (drive reported, max °C)[4]	65°C	65°C	65°C	65°C	65°C
Non-operating Temperature (ambient, min °C)	-40°C	-40°C	-40°C	-40°C	-40°C
Non-operating Temperature (ambient, max °C)	70°C	70°C	70°C	70°C	70°C
Environmental/Acoustics					
Vibration, Non-operating: 10 Hz to 500 Hz (Grms)	2.27	2.27	2.27	2.27	2.27
Acoustics, Idle (typical, measured in Idle 1 state) (dBA)	20	20	28	28	28
Acoustics, Seek (typical) (dBA)	26	26	30	30	30
Environmental/Shock					
Shock, Operating 2 ms (Read/Write) (Gs)	50/50 Gs	50/50 Gs	70/40 Gs	70/40 Gs	70/40 Gs
Shock, Non-operating, 1 ms and 2 ms (Gs)	200	200	250	300	300
Physical					
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	720 g/1.59 lb	720 g/1.59 lb	716 g/1.58 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

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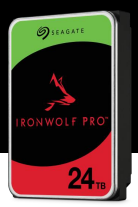

Specifications	4TB	2TB
Standard Model Number	ST4000NT001	ST2000NT001
Interface	SATA 6Gb/s	SATA 6Gb/s
Features		
Drive Bays Supported	Unlimited	Unlimited
Recording Technology	CMR	CMR
Drive Design (Air or Helium)	Air	Air
Workload Rate Limit (WRL)	550	550
Rotational Vibration (RV) Sensors	Yes	Yes
Cache (MB)	256MB	256MB
Reliability/Data Integrity		
Mean Time Between Failures (MTBF, hours)	2000000 hr	2000000 hr
Non-recoverable Read Errors per Bits Read, Max	1 per 10E15	1 per 10E15
Power-On Hours (per year)	8,760	8,760
Sector Size (Bytes per Logical Sector)	512E	512E
Rescue Data Recovery Services (years)[3]	3	3
Limited Warranty (years)	5	5
Performance		
Spindle Speed (RPM)	7200RPM	7200RPM
Interface Access Speed (Gb/s)	6.0, 3.0, 1.5	6.0, 3.0, 1.5
Max. Sustained Transfer Rate OD (MB/s)	250	226MB/s
Rotational Vibration @ 10-1500 Hz (rad/s)	12.5	12.5
Power Consumption		
Startup Current, Typical (12V, A)	2.0	2.0
Idle Power, Average (W)	5.5	5.5
Average Operating Power (W)	8.7 W	6.7 W
Standby Mode, Typical (W)	1.0 W	1.0 W
Sleep Mode, Typical (W)	1.0 W	1.0 W
Power Supply Requirements	+12 V and +5 V	+12 V and +5 V
Environmental/Temperature		
Operating Temperature (ambient, min °C)	0°C	0°C
Operating Temperature (drive reported, max °C)[4]	65°C	65°C
Non-operating Temperature (ambient, min °C)	-40°C	-40°C
Non-operating Temperature (ambient, max °C)	70°C	70°C
Environmental/Acoustics		
Vibration, Non-operating: 10 Hz to 500 Hz (Grms)	2.27	2.27
Acoustics, Idle (typical, measured in Idle 1 state) (dBA)	28	28
Acoustics, Seek (typical) (dBA)	30	30
Environmental/Shock		
Shock, Operating 2 ms (Read/Write) (Gs)	70/40 Gs	70/40 Gs
Shock, Non-operating, 1 ms and 2 ms (Gs)	300	300
Physical		
Height (mm/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
Depth (mm/in, max)	146.99 mm/5.787 in	146.99 mm/5.787 in
Weight (g/lb, typical)	650 g/1.431 lb	620 g/1.37 lb
Carton Unit Quantity	20	20
Cartons per Pallet / Cartons per Layer	40/8	40/8

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