



WD Red™ NAS Storage

Storage for 1 to 8 bay NAS solutions

WD Red is designed specifically for NAS systems that have 1 to 8 drive bays in both 3.5-inch and 2.5-inch form factors. The drives are designed and extensively tested for compatibility in the unique 24x7 operating environment and for the demanding system requirements of home and small office NAS.



INTERFACE

SATA 6 Gb/s

FORM FACTORS

3.5-inch
2.5-inch

PERFORMANCE CLASS

5400 RPM Class

CAPACITIES

3.5-inch: 1TB to 8TB
2.5-inch: 750GB and 1TB

MODEL NUMBERS

3.5-inch

WD80EFZX WD30EFRX
WD60EFRX WD20EFRX
WD50EFRX WD10EFRX
WD40EFRX

2.5-inch

WD10JFCX
WD7500BFCX

Product Features

Fill your NAS with WD Red, then fill it with awesome.

There's an industry-leading WD Red drive for every compatible NAS system to help fulfill your data storage needs. With drives up to 8 TB, WD Red offers a wide array of solutions for customers looking to build the biggest, best-performing NAS storage solution. Built for single-bay to 8-bay NAS systems, WD Red packs the power to store your precious data in one powerhouse unit. With WD Red, you're ready for what's next.

Exclusive NASware™ 3.0

Not just any drive will do. In single-bay to 8-bay NAS systems, WD Red raises the bar. Get as much as 64 TB capacity, and with WD's exclusive NASware 3.0, you can optimize every single one of them. Built into every WD Red hard drive, NASware 3.0's advanced technology improves your system's storage performance by increasing compatibility, integration, upgradeability, and reliability.

Built for optimum NAS compatibility

Our exclusive advanced firmware Desktop drives aren't purpose-built for NAS. But WD Red drives with NASware are. Our exclusive technology takes the guesswork out of selecting a drive. WD Red is for small NAS systems, and our unique algorithm balances performance and reliability in NAS and RAID environments. Simply put, WD Red is the most compatible drive available for NAS enclosures. But don't take our word for it. WD Red is a reflection of the most extensive NAS partner compatibility-testing list that is available on the market.*

*Compatibility list as of March 2016

Desktop drives vs. WD Red

In a Network Attached Storage device, a desktop hard drive is not designed for NAS environments. Do right by your NAS and choose the drive with an array of features to preserve your data and maintain optimum performance. Take the following into consideration when choosing a hard drive for your NAS:

- **Compatibility:** Without being tested for compatibility with your NAS system, optimum performance is not guaranteed.
- **Reliability:** The always-on environment of a NAS or RAID is a hot one. And desktop drives aren't typically designed and tested in those conditions. WD Red is.
- **Error recovery Controls:** WD Red NAS hard drives are specifically designed with RAID error recovery control to help reduce failures within the NAS system. Desktop drives are typically not designed for RAID environments where this can be an issue.
- **Noise and Vibration Protection:** Designed to operate solo, desktop drives offer little or no protection from the noise and vibration faced in a multi-drive system. WD Red drives are designed for multi-bay NAS systems.

WD Red for Home

Stream, backup, share and organize your digital content at home with a NAS and WD Red drives designed

to effortlessly share content to the devices in your home. Red NASware increases your drives' compatibility with your devices, TV, stereo and more. Live in a connected world.

WD Red for Small Business

Businesses thrive on productivity and efficiency – two of the guiding principles built into the design of WD Red. It's the hard drive of choice for 1 to 8 bay systems. NASware 3.0 allows for seamless integration with your existing network so WD Red can share and backup files at the speed of your business. And for larger businesses with up to 16 bays, count on WD Red Pro.

WD Red Pro for Big Business

If you're looking for maximum performance in a heavy use NAS, WD Red Pro delivers the same exceptional performance for the business customer. For NAS environments with 8 to 16 bays, WD Red Pro is designed to handle an increase in workload and comes with a 5-year limited warranty.

Applications

WD Red NAS hard drives are recommended for use in home and small office 1-8 bay NAS systems. For systems that use more than 8 bays, please consider WD Red Pro hard drives.*

* WD hard drives are designed and tested for use in specific applications and environments. This ensures that your hard drive is compatible with and functions properly in your application. Our hard drives are warranted against defects in materials and workmanship in the system for which they were designed. Use in systems other than for what the hard drive was designed could result in compatibility problems that affect proper function, unrelated to material and/or workmanship defects. For best results, be sure to select the appropriate product for your application by consulting our product spec sheets on our website at www.wd.com or by calling our customer support line where we would be happy to help you through the selection process.



Specifications	8TB	6TB	5TB	4TB	3TB	2TB	1TB
Model number ¹	WD80EFZX	WD60EFRX	WD50EFRX	WD40EFRX	WD30EFRX	WD20EFRX	WD10EFRX
Interface	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s
Formatted capacity ²	8TB	6TB	5TB	4TB	3TB	2TB	1TB
Form factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch
Advanced Format (AF)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Native command queuing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RoHS compliant ³	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Performance							
Data transfer rate (max)							
Interface speed	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s
Internal transfer rate	178 MB/s	175 MB/s	170 MB/s	150 MB/s	147 MB/s	147 MB/s	150 MB/s
Cache (MB)	128	64	64	64	64	64	64
Performance Class	5400 RPM Class	5400 RPM Class	5400 RPM Class	5400 RPM Class	5400 RPM Class	5400 RPM Class	5400 RPM Class
Reliability/Data Integrity							
Load/unload cycles ⁴	600,000	600,000	600,000	600,000	600,000	600,000	600,000
Non-recoverable read errors per bits read	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴	<1 in 10 ¹⁴
MTBF (hours) ⁵	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Limited warranty (years) ⁶	3	3	3	3	3	3	3
Power Management							
12VDC ±10% (A, peak)	1.79	1.75	1.75	1.75	1.73	1.73	1.20
5VDC ±10% (A, peak)	-	-	-	-	-	-	-
Average power requirements (W)							
Read/Write	6.4	5.3	5.3	4.5	4.1	4.1	3.3
Idle	5.2	3.4	3.4	3.3	2.7	2.7	2.3
Standby/Sleep	0.7	0.4	0.4	0.4	0.4	0.4	0.4
Environmental Specifications⁷							
Temperature (°C)							
Operating ⁸	0 to 65	0 to 65	0 to 65	0 to 65	0 to 65	0 to 65	0 to 65
Non-operating	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 70
Shock (Gs)							
Operating (2 ms, read/write)	30	30	30	30	30	30	30
Operating (2 ms, read)	65	65	65	65	65	65	65
Non-operating (2 ms)	250	250	250	250	250	250	350
Acoustics (dBA) ⁹							
Idle	20	25	25	25	23	23	21
Seek (average)	29	28	28	28	24	24	22
Physical Dimensions							
Height (in./mm)	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1
Length (in./mm)	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147
Width (in./mm, ± .01 in.)	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6
Weight (lb./kg, ± 10%)	1.43/0.65	1.65/0.75	1.65/0.75	1.50/0.68	1.40/0.64	1.32/0.60	0.99/0.45

¹ Not all products may be available in all regions of the world.

² As used for storage capacity, one megabyte (MB) = one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second. Effective maximum SATA 3 Gb/s transfer rate calculated according to the Serial ATA specification published by the SATA-IO organization as of the date of this specification sheet. Visit www.sata-io.org for details.

³ WD hard drive products manufactured and sold worldwide after June 8, 2011, meet or exceed Restriction of Hazardous Substances (RoHS) compliance requirements as mandated by the RoHS Directive 2011/65/EU.

⁴ Controlled unload at ambient condition.

⁵ Based on a typical NAS product environment under normal operating conditions.

⁶ The term of the limited warranty may vary by region. Visit <http://support.wd.com/warranty> for details.

⁷ No non-recoverable errors during operating tests or after non-operating tests.

⁸ On the base casing.

⁹ Sound power level.



WD Red™

Specifications	1TB	750GB
Model number ¹	WD10JFCX	WD7500BFCX
Interface	SATA 6 Gb/s	SATA 6 Gb/s
Formatted capacity ²	1TB	750GB
Form factor	2.5-inch	2.5-inch
Advanced Format (AF)	Yes	Yes
Native command queuing	Yes	Yes
RoHS compliant ³	Yes	Yes
Performance		
Data transfer rate (max)		
Interface speed	6 Gb/s	6 Gb/s
Internal transfer rate	144 MB/s	144 MB/s
Cache (MB)	16	16
Performance Class	5400 RPM Class	5400 RPM Class
Reliability/Data Integrity		
Load/unload cycles ⁴	600,000	600,000
Non-recoverable read errors per bits read	<1 in 10 ¹⁴	<1 in 10 ¹⁴
MTBF (hours) ⁵	1,000,000	1,000,000
Limited warranty (years) ⁶	3	3
Power Management		
12VDC ±10% (A, peak)	-	-
5VDC ±10% (A, peak)	1.00	1.00
Average power requirements (W)		
Read/Write	1.4	1.4
Idle	0.6	0.6
Standby/Sleep	0.2	0.2
Environmental Specifications⁷		
Temperature (°C)		
Operating ⁸	0 to 65	0 to 65
Non-operating	-40 to 65	-40 to 65
Shock (Gs)		
Operating (2 ms, read/write)	400	400
Operating (2 ms, read)	-	-
Non-operating (2 ms)	1000	1000
Acoustics (dBA) ⁹		
Idle	24	24
Seek (average)	25	25
Physical Dimensions		
Height (in./mm)	0.374/9.5	0.374/9.5
Length (in./mm)	3.94/100.2	3.94/100.2
Width (in./mm, ± .01 in.)	2.75/69.85	2.75/69.85
Weight (lb./kg, ± 10%)	0.25/0.115	0.25/0.115

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² As used for storage capacity, one megabyte (MB) = one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second. Effective maximum SATA 3 Gb/s transfer rate calculated according to the Serial ATA specification published by the SATA-IO organization as of the date of this specification sheet. Visit www.sata-io.org for details.

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⁴ Controlled unload at ambient condition.

⁵ Based on a typical NAS product environment under normal operating conditions.

⁶ The term of the limited warranty may vary by region. Visit <http://support.wd.com/warranty> for details.

⁷ No non-recoverable errors during operating tests or after non-operating tests.

⁸ On the base casing.

⁹ Sound power level.

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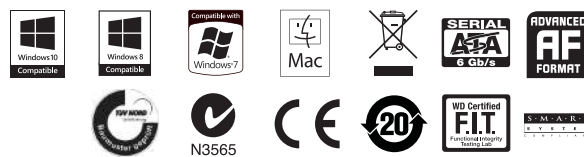
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www.wd.com

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WD Red premium support

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Learn more about WD Red hard drives





WD Red™ Pro NAS Storage

Storage for 1 to 16 bay NAS solutions

Joining the original color of NAS, WD Red Pro continues the formula of success that has led the WD Red product family by adding support beyond consumer, SOHO, and small business markets into medium and large 1-16 bay business storage systems. WD Red Pro hard drives integrate WD's exclusive technology, NASware™ 3.0, to provide unparalleled support for drive compatibility, reliability, and performance.



INTERFACE

SATA 6 Gb/s

FORM FACTOR

3.5-inch

PERFORMANCE CLASS

7200 RPM Class

CAPACITIES

2TB to 6TB

MODEL NUMBERS

WD6002FFWX
WD6001FFWX
WD5001FFWX
WD4002FFWX
WD4001FFSX
WD3001FFSX
WD2001FFSX

Product Benefits

Professional Solutions

Designed specifically with SMB customers in mind, WD Red Pro is available for up to 16 bay medium to large-scale NAS environments. Engineered to handle increased workloads from your business, WD Red Pro is extensively tested and carries a longer 5-year limited warranty.

NAS for Big Business

Increase the efficiency and productivity of your business with WD Red Pro hard drives for up to 16 bay NAS system. WD Red Pro comes equipped with NASware 3.0, which increases system compatibility allowing for seamless integration with your existing network infrastructure. Add value to your business by enabling your employees to quickly share their files and back up folders reliably with WD Red Pro NAS hard drives in your NAS solution.

Exclusive NASware 3.0 technology

Our exclusive advanced firmware technology, NASware 3.0 enables seamless integration, robust data protection and optimal performance for NAS systems operating under heavy demand.

Built for optimum NAS compatibility

Desktop drives aren't purpose-built for NAS. But WD Red Pro drives with NASware are. Our exclusive technology takes the guesswork out of selecting a drive and balances performance and reliability in NAS and RAID environments. Simply put, WD Red Pro is the most compatible drive available for medium to large NAS enclosures. But don't take our word for it. WD Red Pro is a reflection of the most extensive NAS partner compatibility-testing list that is available on the market.*

*Compatibility list as of March 2016

Larger NAS Bay Shock Protection

WD Red Pro is equipped with a multi-axis shock sensor that automatically detects subtle shock events and dynamic fly height technology which adjusts each read-write function to compensate and protect the data. This combination of technology further protects the drives in larger 1 to 16 bay NAS environments and helps increase hard drive reliability. NAS environments.

Applications

Specifically targeted at the medium to large business NAS applications with 1-16 bays.



WD Red™ Pro

Specifications	6TB		5TB	4TB	
Model number ¹	WD6002FFWX	WD6001FFWX	WD5001FFWX	WD4002FFWX	WD4001FFSX
Interface	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s
Formatted capacity ²	6TB	6TB	5TB	4TB	4TB
Form factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch
Advanced Format	Yes	Yes	Yes	Yes	Yes
Native command queuing	Yes	Yes	Yes	Yes	Yes
RoHS compliant ³	Yes	Yes	Yes	Yes	Yes
Performance					
Data transfer rate (max) Buffer to host Host to/from drive (sustained)	6 Gb/s 226 MB/s	6 Gb/s 214 MB/s	6 Gb/s 194 MB/s	6 Gb/s 201 MB/s	6 Gb/s 171 MB/s
Cache (MB)	128	128	128	128	64
Performance Class	7200 RPM Class	7200 RPM Class	7200 RPM Class	7200 RPM Class	7200 RPM Class
Reliability/Data Integrity					
Load/unload cycles ⁴	600,000	600,000	600,000	600,000	600,000
Non-recoverable read errors per bits read	<10 in 10 ¹⁵	<10 in 10 ¹⁵	<10 in 10 ¹⁵	<10 in 10 ¹⁵	<10 in 10 ¹⁵
MTBF (hours) for 8-16 bay NAS ⁵	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Limited warranty (years) ⁶	5	5	5	5	5
Power Management					
12VDC +/-10% (A, peak)	1.79	1.9	1.9	1.79	1.9
Average power requirements (W) Read/Write Idle Standby/Sleep	9.1 5.8 1.0	10.6 7.4 1.6	10.6 7.4 1.6	9.1 5.8 1.0	8.6 6.5 0.6
Environmental Specifications ⁷					
Temperature (°C) Operating ⁸ Non-operating	5 to 60 -40 to 70	5 to 60 -40 to 70	5 to 60 -40 to 70	5 to 60 -40 to 70	5 to 60 -40 to 70
Shock (Gs) Operating (2 ms, read/write) Operating (2 ms, read) Non-operating (2 ms)	30 65 300	30 65 300	30 65 300	30 65 300	30 65 300
Acoustics (dBA) ⁹ Idle Seek (average)	29 36	31 34	31 34	29 36	31 34
Physical Dimensions					
Height (in./mm, max)	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1
Length (in./mm, max)	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147
Width (in./mm, ±.01 in.)	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6
Weight (lb/kg, ± 10%)	1.58/0.72	1.66/0.75	1.66/0.75	1.58/0.72	1.66/0.75

¹ Not all products may be available in all regions of the world.

² As used for storage capacity, one megabyte (MB) = one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabit per second (Gb/s) = one billion bits per second. Effective maximum SATA 6 Gb/s transfer rate calculated according to the Serial ATA specification published by the SATA-IO organization as of the date of this specification sheet. Visit www.sata-io.org for details.

³ WD hard drive products manufactured and sold worldwide after June 8, 2011, meet or exceed Restriction of Hazardous Substances (RoHS) compliance requirements as mandated by the RoHS Directive 2011/65/EU.

⁴ Controlled unload at ambient condition.

⁵ Based on a typical 8-16 bay tabletop NAS product environment under normal operating conditions.

⁶ The term of the limited warranty may vary by region. Visit <http://support.wd.com/warranty> for details.

⁷ No non-recoverable errors during operating tests or after non-operating tests.

⁸ On the base casting.

⁹ Sound power level.



WD Red™ Pro

Specifications	3TB	2TB
Model number ¹	WD3001FFSX	WD2001FFSX
Interface	SATA 6 Gb/s	SATA 6 Gb/s
Formatted capacity ²	3TB	2TB
Form factor	3.5-inch	3.5-inch
Advanced Format	Yes	Yes
Native command queuing	Yes	Yes
RoHS compliant ³	Yes	Yes
Performance		
Data transfer rate (max)		
Buffer to host	6 Gb/s	6 Gb/s
Host to/from drive (sustained)	168 MB/s	164 MB/s
Cache (MB)	64	64
Performance Class	7200 RPM Class	7200 RPM Class
Reliability/Data Integrity		
Load/unload cycles ⁴	600,000	600,000
Non-recoverable read errors per bits read	<10 in 10 ¹⁵	<10 in 10 ¹⁵
MTBF (hours) for 8-16 bay NAS ⁵	1,000,000	1,000,000
Limited warranty (years) ⁶	5	5
Power Management		
12VDC +/-10% (A, peak)	1.9	1.9
Average power requirements (W)		
Read/Write	8.6	6.5
Idle	6.5	4.9
Standby/Sleep	0.6	0.4
Environmental Specifications⁷		
Temperature (°C)		
Operating ⁸	5 to 60	5 to 60
Non-operating	-40 to 70	-40 to 70
Shock (Gs)		
Operating (2 ms, read/write)	30	30
Operating (2 ms, read)	65	65
Non-operating (2 ms)	300	300
Acoustics (dBA) ⁹		
Idle	31	31
Seek (average)	34	34
Physical Dimensions		
Height (in./mm, max)	1.028/26.1	1.028/26.1
Length (in./mm, max)	5.787/147	5.787/147
Width (in./mm, ± .01 in.)	4/101.6	4/101.6
Weight (lb/kg, ± 10%)	1.66/0.75	1.55/0.70

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⁴ Controlled unload at ambient condition.

⁵ Based on a typical 8-16 bay desktop NAS product environment under normal operating conditions.

⁶ The term of the limited warranty may vary by region. Visit <http://support.wd.com/warranty> for details.

⁷ No non-recoverable errors during operating tests or after non-operating tests.

⁸ On the base casing.

⁹ Sound power level.

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WD Red premium support

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Learn more about WD Red hard drives



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