

Western Digital®

WD Red™ NAS Storage

Storage for 1 to 8 bay NAS solutions

WD Red drives are 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 10TB
2.5-inch: 1TB

MODEL NUMBERS

3.5-inch:

WD100EFAX WD80EFZX WD40EFRX WD20EFRX
WD80EFAX WD60EFRX WD30EFRX WD10EFRX

2.5-inch:

WD10JFCX

Product Features

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

There's a leading edge WD Red drive for every compatible NAS system to help fulfill your data storage needs. With drives up to 10TB, WD Red drives offer a wide array of solutions for customers looking to build a NAS storage solution. Built for single-bay to 8-bay NAS systems, WD Red drives pack the power to store your precious data in one powerhouse unit. With WD Red drives, 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 drives raise the bar. Get as much as 80TB capacity, and with WD's exclusive NASware 3.0 technology, 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

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

Desktop drives vs. WD Red

In a Network Attached Storage device, a desktop hard drive is not typically designed for NAS environments. Do right by your NAS and choose the drive designed for NAS with an array of features to help 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 under those conditions. WD Red drives are.
- **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 not typically designed for RAID environments.
- **Noise and Vibration Protection:** Designed to operate solo, desktop drives typically offer little or no protection from the noise and vibration present 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 with the devices in your home. NASware 3.0 technology 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 drives. It's the hard drive of choice for 1 to 8 bay systems. NASware 3.0 technology 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 24-bays, count on WD Red Pro™ drives.

WD Red Pro for Big Business

If you're looking for maximum performance in a heavy use NAS, WD Red Pro drives deliver the same exceptional performance for the business customer. For NAS environments with 8 to 24 bays, WD Red Pro drives are 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 ¹	10TB	8TB	8TB	6TB
Model Number ²	WD100EFAX	WD80EFAX	WD80EFZX	WD60EFRX
Interface	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s	SATA 6 Gb/s
Formatted Capacity ¹	10TB	8TB	8TB	6TB
Form Factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch
Advanced Format (AF)	Yes	Yes	Yes	Yes
Native command queuing	Yes	Yes	Yes	Yes
RoHS compliant ³	Yes	Yes	Yes	Yes
Performance				
Interface transfer rate ¹ (max)				
Interface speed	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s
Internal transfer rate	210 MB/s	210 MB/s	178 MB/s	175 MB/s
Cache (MB) ¹	256	256	128	64
Performance 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
Non-recoverable read errors per bits read	<1 in 10 ¹⁴			
MTBF (hours) ⁵	1,000,000	1,000,000	1,000,000	1,000,000
Workload Rate (TB/year) ⁶	180	180	180	180
Limited warranty (years) ⁷	3	3	3	3
Power Management⁸				
12VDC ±10% (A, peak)	1.79	1.85	1.79	1.75
5VDC ±10% (A, peak)	-	-	-	-
Average power requirements (W)				
Read/Write	5.7	8.8	6.4	5.3
Idle	2.8	5.3	5.2	3.4
Standby/Sleep	0.5	0.8	0.7	0.4
Environmental Specifications⁹				
Temperature (°C)				
Operating ¹⁰	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
Shock (Gs)				
Operating (2 ms, read/write)	30	30	30	30
Operating (2 ms, read)	65	65	65	65
Non-operating (2 ms)	250	250	250	250
Acoustics (dBA) ¹¹				
Idle	20	27	20	25
Seek (average)	29	29	29	28
Physical Dimensions				
Height (in./mm)	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
Width (in./mm, ± .01 in.)	4/101.6	4/101.6	4/101.6	4/101.6
Weight (lb./kg, ± 10%)	1.43/0.65	1.58/0.715	1.43/0.65	1.65/0.75

¹ 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.

² Not all products may be available in all regions of the world.

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 MTBF specifications are based upon internal testing using a 40°C base casing temperature. MTBF is based on a sample population and is estimated by statistical measurements and acceleration algorithms. MTBF does not predict an individual drive's reliability and does not constitute a warranty.

⁶ Workload Rate is defined as the amount of user data transferred to or from the hard drive. Workload Rate is annualized (TB transferred X (8760 / recorded power-on hours)). Workload Rate will vary depending on your hardware and software components and configurations.

⁷ See <http://support.wd.com/warranty> for regionally specific warranty details.

⁸ Power measurements at room-ambient temperature.

⁹ No non-recoverable errors during operating tests or after non-operating tests.

¹⁰ On the base casing.

¹¹ Sound power level.

Specifications ¹	4TB	3TB	2TB	1TB	1TB
Model Number ²	WD40EFRX	WD30EFRX	WD20EFRX	WD10EFRX	WD10JFCX
Interface	SATA 6 Gb/s				
Formatted Capacity ¹	4TB	3TB	2TB	1TB	1TB
Form Factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	2.5-inch
Advanced Format (AF)	Yes	Yes	Yes	Yes	Yes
Native command queuing	Yes	Yes	Yes	Yes	Yes
RoHS compliant ³	Yes	Yes	Yes	Yes	Yes
Performance					
Interface transfer rate ¹ (max)					
Interface speed	6 Gb/s				
Internal transfer rate	150 MB/s	147 MB/s	147 MB/s	150 MB/s	144 MB/s
Cache (MB) ¹	64	64	64	64	16
Performance 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
Non-recoverable read errors per bits read	<1 in 10 ¹⁶				
MTBF (hours) ⁵	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
Workload Rate (TB/year) ⁶	180	180	180	180	180
Limited warranty (years) ⁷	3	3	3	3	3
Power Management⁸					
12VDC ±10% (A, peak)	1.75	1.73	1.73	1.20	-
5VDC ±10% (A, peak)	-	-	-	-	1.00
Average power requirements (W)					
Read/Write	4.5	4.1	4.1	3.3	1.4
Idle	3.3	2.7	2.7	2.3	0.6
Standby/Sleep	0.4	0.4	0.4	0.4	0.2
Environmental Specifications⁹					
Temperature (°C)					
Operating ¹⁰	0 to 65				
Non-operating	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 65
Shock (Gs)					
Operating (2 ms, read/write)	30	30	30	30	400
Operating (2 ms, read)	65	65	65	65	-
Non-operating (2 ms)	250	250	250	350	1000
Acoustics (dBA) ¹¹					
Idle	25	23	23	21	24
Seek (average)	28	24	24	22	25
Physical Dimensions					
Height (in./mm)	1.028/26.1	1.028/26.1	1.028/26.1	1.028/26.1	0.374/9.5
Length (in./mm)	5.787/147	5.787/147	5.787/147	5.787/147	3.94/100.2
Width (in./mm, ± .01 in.)	4/101.6	4/101.6	4/101.6	4/101.6	2.75/69.85
Weight (lb./kg, ± 10%)	1.50/0.68	1.40/0.64	1.32/0.60	0.99/0.45	0.25/0.115

¹ 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.

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⁴ Controlled unload at ambient condition.

⁵ MTBF specifications are based upon internal testing using a 40°C base casting temperature. MTBF is based on a sample population and is estimated by statistical measurements and acceleration algorithms. MTBF does not predict an individual drive's reliability and does not constitute a warranty.

⁶ Workload Rate is defined as the amount of user data transferred to or from the hard drive. Workload Rate is annualized (TB transferred X (8760 / recorded power-on hours)). Workload Rate will vary depending on your hardware and software components and configurations.

⁷ See <http://support.wd.com/warranty> for regionally specific warranty details.

⁸ Power measurements at room-ambient temperature.

⁹ No non-recoverable errors during operating tests or after non-operating tests.

¹⁰ On the base casting.

¹¹ Sound power level.

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