Western Digital.

# WD Purple™

DATA SHEET

SURVEILLANCE HARD DRIVES

## Highlights

- Capacity up to 12TB
- Support for up to 64 cameras per drive
- AllFrame™ technology
- Up to 16 AI channels for Deep Learning analytics on AI-enabled NVRs (8TB, 10TB & 12TB capacities)
- MTBF of up to 1.5 million hours
- 3-year limited warranty

**INTERFACE**
SATA 6 Gb/s

**PERFORMANCE CLASS**
5400 / 7200 RPM Class

**FORM FACTOR**
3.5-inch

**CAPACITIES**
1TB to 12TB

**MODEL NUMBERS**

| | | |
|---|---|---|
| WD121PURZ | WD101PURZ | WD82PURZ |
| WD81PURZ | WD60PURZ | WD40PURZ |
| WD30PURZ | WD20PURZ | WD10PURZ |

### THE WESTERN DIGITAL ADVANTAGE

Western Digital puts our products through extensive Functional Integrity Testing (F.I.T.) prior to any product launch. This testing ensures our products consistently meet the highest quality and reliability standards of the Western Digital brand.

Western Digital also has a detailed Knowledge Base with more than 1,000 helpful articles as well as software and utilities. Our customer support lines have long operational hours to ensure you get the help you need when you need it. Our toll-free customer support lines are here to help, or you can access our Western Digital Support site for additional details.

WD Purple™ drives are built for 24/7, always-on, high-definition security systems. WD Purple™ surveillance storage feature Western Digital's exclusive AllFrame™ technology, so you can confidently create a security system tailored to the needs of your business. Using AllFrame™ technology, WD Purple™ drives improve video capturing and helps to reduce errors, pixelation, and video interruptions that could happen in a video recorder system. WD Purple drives have an enhanced workload rating that supports systems designed for 24×7 video recording with up to 64 cameras.

## Industry-leading storage. Surveillance you can trust.

Western Digital is a worldwide leader in the hard drive industry. With WD Purple surveillance storage, you have a drive engineered for high temperature, always-on surveillance systems so you can rely on quality video playback when you need it most. Whether you're protecting loved ones or monitoring your business, WD Purple offers performance you can trust.

## Western Digital's Exclusive AllFrame Technology

All WD Purple drives are equipped with AllFrame technology, which improves ATA streaming to help reduce frame loss, improve overall video playback, and increase the number of hard drive bays supported within a NVR. Help make your surveillance solution future-ready knowing that WD Purple drives are ready for ultra high definition cameras. WD Purple capacities up to 8TB feature AllFrame 4K technology enabling high quality recording for up to 64 cameras. WD Purple 10TB and 12TB capacities feature AllFrame AI technology that enables not only recording up to 64 cameras, but also an additional 32 streams for Deep Learning analytics within the system.

## Enhanced Workload Ratings

WD Purple drives with AllFrame 4K technology feature a workload rating of up to 180TB/year - up to three times that of desktop drives – to handle the unique demands of modern video surveillance DVR and NVR systems. WD Purple 10TB and 12TB drives with AllFrame AI feature a workload rating up to 360TB/year to support the Deep Learning analytics that are features in AI capable NVRs.

## Expand your view to 64

Each WD Purple drive is optimized to support up to 64 cameras. With so many options, you have the flexibility to upgrade or expand your security system in the future.

## Designed for Today's and Tomorrow's Surveillance Solutions

With an MTBF of up to 1.5 million hours[1], WD Purple drives are engineered for mainstream surveillance DVRs and NVRs that operate 24/7. With support for more than eight bays[2] and tarnish resistant components[2], WD Purple drives deliver reliable operation in large scale surveillance systems in harsh environments.

## Field-proven High Capacity

Now on its 4th generation and with more than 27 million drives shipped[3], field-proven HelioSeal™ technology delivers trusted high-capacity WD Purple storage (8TB, 10TB, and 12TB) for the massive storage needs of 4K surveillance video.

## Wide Compatibility. Seamless Integration.

WD Purple hard drives are built with compatibility in mind, so you can quickly and seamlessly add capacity to your surveillance system. With a wide range of industry-leading enclosures and chipsets supported, you're sure to find the DVR or NVR configuration that's right for you.

## Low Power. High efficiency.

With our exclusive IntelliSeek™ technology, WD Purple drives are able to calculate optimum seek speeds. This keeps power consumption low so ambient noise and vibrations are at a minimum.

## Three Year Limited Warranty

As an industry-leading hard drive manufacturer, WD stands behind their surveillance storage solutions with a 3-year limited warranty included with every WD Purple drive.

# WD Purple™



## Specifications[5]

| | 12TB | 10TB | 8TB | 8TB | 6TB | 4TB | 3TB | 2TB | 1TB |
|---|---|---|---|---|---|---|---|---|---|
| **Model Number[4]** | WD121PURZ | WD101PURZ | WD82PURZ | WD81PURZ | WD60PURZ | WD40PURZ | WD30PURZ | WD20PURZ | WD10PURZ |
| Formatted capacity[5] | 12TB | 10TB | 8TB | 8TB | 6TB | 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 | 3.5-inch | 3.5-inch |
| Advanced Format (AF) | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| RoHS compliant[6] | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| **Product Features** | | | | | | | | | |
| Cameras supported | Up to 64 | Up to 64 | Up to 64 | Up to 64 | Up to 64 | Up to 64 | Up to 64 | Up to 64 | Up to 64 |
| Drive Bays Supported | 16+ | 16+ | 16+ | 8+ | 8+ | 8+ | 8 | 8 | 8 |
| AI Streams | 32 | 32 | 32 | -- | -- | -- | -- | -- | -- |
| Firmware Feature Name | AllFrame AI | AllFrame AI | AllFrame AI | AllFrame 4K | AllFrame 4K | AllFrame 4K | AllFrame 4K | AllFrame 4K | AllFrame 4K |
| Tarnish resistant components | Yes | Yes | Yes | Yes | Yes | Yes | No | No | No |
| **Performance** | | | | | | | | | |
| Interface transfer rate (max)[5] | | | | | | | | | |
| Buffer to host | 6 Gb/s | 6 Gb/s | 6 Gb/s | 6 Gb/s | 6 Gb/s | 6 Gb/s | 6 Gb/s | 6 Gb/s | 6 Gb/s |
| Host to/from drive (sustained) | 245 MB/s | 245 MB/s | 245 MB/s | 213 MB/s | 175 MB/s | 150 MB/s | 145 MB/s | 145 MB/s | 110 MB/s |
| Cache (MB)[5] | 256 | 256 | 256 | 256 | 64 | 64 | 64 | 64 | 64 |
| Performance Class | 7200 RPM | 7200 RPM | 7200 RPM | 5400 RPM | 5400 RPM | 5400 RPM | 5400 RPM | 5400 RPM | 5400 RPM |
| **Reliability/Data Integrity** | | | | | | | | | |
| Load/unload cycles[7] | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 | 300,000 |
| Annualized workload rating[8] | 360TB/yr | 360TB/yr | 360TB/yr | 180TB/yr | 180TB/yr | 180TB/yr | 180TB/yr | 180TB/yr | 180TB/yr |
| Non-recoverable read errors per bits read | <1 in $10^{15}$ | <1 in $10^{15}$ | <1 in $10^{15}$ | <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 | 1,500,000 | 1,500,000 | 1,500,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 | 1,000,000 |
| Limited warranty (years)[9] | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| **Power Management[10]** | | | | | | | | | |
| Average power requirements (W) | | | | | | | | | |
| Read/Write | 6.6 | 6.3 | 8.6 | 8.5 | 5.3 | 5.1 | 4.4 | 4.4 | 3.3 |
| Idle | 5.6 | 5.2 | 7.4 | 7.3 | 4.9 | 4.5 | 4.1 | 4.1 | 2.9 |
| Standby and Sleep | 0.6 | 0.5 | 0.4 | 0.44 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| **Environmental Specifications[11]** | | | | | | | | | |
| Temperature (°C, on the base casting) | | | | | | | | | |
| Operating[12] | 0 to 65 | 0 to 65 | 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 | -40 to 70 | -40 to 70 |
| Shock (Gs) | | | | | | | | | |
| Operating (2 ms, read/write) | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| Operating (2 ms, read) | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 | 65 |
| Non-operating (2 ms) | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 | 250 |
| Acoustics (dBA)[13] | | | | | | | | | |
| Idle | 20 | 20 | 27 | 27 | 25 | 25 | 23 | 23 | 21 |
| Seek (average) | 29 | 29 | 29 | 29 | 28 | 28 | 24 | 24 | 22 |
| **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 | 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 | 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 | 4/101.6 | 4/101.6 |
| Weight (lb/kg, ± 10%) | 1.46/0.66 | 1.43/0.65 | 1.58/0.715 | 1.58/0.715 | 1.65/0.75 | 1.50/0.68 | 1.40/0.64 | 1.32/0.60 | 0.99/0.45 |

[1] Up to 1.5M MTBF for 8TB, 10TB, and 12TB capacities (up to 1.0M MTBF for lower capacities). 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.

[2] For capacities 4TB and higher.

[3] As of April 2018

[4] Not all products may be available in all regions of the world.

[5] As used for storage capacity, 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.

[6] 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.

[7] Controlled unload at ambient condition.

[8] 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.

[9] See http://support.wdc.com/warranty for regional specific warranty details.

[10] Power measurements at room-ambient temperature.

[11] No non-recoverable errors during operating tests or after non-operating tests.

[12] On the base casting.

[13] Sound power level.

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