



WD Purple™ Pro Smart Video Hard Drive

Purpose-built storage for your smart video solution

The WD Purple™ Pro HDD, with OptiNAND™ technology in 22TB¹, delivers big capacity in an enterprise-class drive for video analytics servers, AI, and deep learning systems to enable data-driven outcomes.

Western Digital's exclusive AllFrame™ AI technology

AllFrame AI technology supports up to 32 AI streams for deep learning analytics within the system while reducing frame drops.

Multiple cameras, multiple streams

WD Purple™ Pro drives are optimized to handle up to 64 single-stream HD cameras² in addition to 32 concurrent AI streams. This flexibility allows you to easily upgrade and scale your smart video solution to meet your changing needs.

Advanced workload capability for advanced systems

These reliable drives are built with a workload rating up to 550TB/year³ to keep up with the 24/7 data capture and analysis demands of advanced AI-enabled recorders, video analytics appliances, and deep learning analytics servers.

Designed for reliable operation

Engineered with an MTBF of up to 2.5 million hours⁴ and backed with a 5-year limited warranty, the WD Purple™ Pro HDD also features tarnish-resistant components and full multi-bay support for dependable operation in large-scale surveillance systems.

Proactive storage management with WDDA™

Western Digital Device Analytics™ (WDDA) provides drive health management features for compatible recorders and video management systems.

Highlights

- The WD Purple™ Pro HDD, with OptiNAND™ technology in 22TB¹, delivers massive capacity in a drive engineered for advanced, AI-enabled, always-on smart video recorders, appliances, and servers.
- Western Digital's exclusive AllFrame™ AI technology improves ATA streaming to help reduce frame loss and improve overall video playback.
- WD Purple™ Pro drives are optimized to handle up to 64 single-stream HD cameras² as well as many of the latest smart cameras that transmit multiple streams.
- With a workload rating up to 550TB/year³, these drives are built to keep up with heavy video data capture and analysis.
- The reliable WD Purple™ Pro is engineered with an MTBF of up to 2.5 million hours⁴ for advanced smart video solutions that operate in 24/7 environments.
- Western Digital Device Analytics™ provides a wealth of storage device parametric operational and diagnostic data to compatible systems.

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PRODUCT BRIEF

SURVEILLANCE HARD DRIVES

Specifications

	22TB ¹	18TB ¹	14TB ¹	12TB ¹	10TB ¹	8TB ¹
Model Number	WD221PURP	WD181PURP	WD141PURP	WD121PURP	WD101PURP	WD8001PURP
Formatted capacity ¹	22TB	18TB	14TB	12TB	10TB	8TB
Form factor	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
Recording technology	CMR	CMR	CMR	CMR	CMR	CMR
RoHS compliant ⁵	Yes	Yes	Yes	Yes	Yes	Yes
Product Features						
Cameras supported	Up to 64 HD ²	Up to 64 HD ²	Up to 64 HD ²	Up to 64 HD ²	Up to 64 HD ²	Up to 64 HD ²
AI streams	32	32	32	32	32	32
Firmware feature name	AllFrame AI	AllFrame AI	AllFrame AI	AllFrame AI	AllFrame AI	AllFrame AI
Tarnish resistant components	Yes	Yes	Yes	Yes	Yes	Yes
Performance						
Interface transfer rate (max)						
Buffer to host	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s	6 Gb/s
Host to/from drive (sustained) ⁶	265 MB/s	272 MB/s	255 MB/s	245 MB/s	265 MB/s	245 MB/s
Cache (MB) ¹	512	512	512	256	256	256
RPM	7200	7200	7200	7200	7200	7200
Reliability/Data Entegrity						
Load/unload cycles ⁷	600,000	600,000	600,000	600,000	600,000	600,000
Annualized workload rating ³	Up to 550 TB/yr	Up to 550 TB/yr	Up to 550 TB/yr	Up to 550 TB/yr	Up to 550 TB/year	Up to 550 TB/year
Non-recoverable read errors per bits read	<1 in 10 ¹⁵	<1 in 10 ¹⁵	<1 in 10 ¹⁵	<1 in 10 ¹⁵	<1 in 10 ¹⁵	<1 in 10 ¹⁵
MTBF ⁴	2,500,000	2,500,000	2,500,000	2,500,000	2,000,000	2,000,000
Limited Warranty (years) ⁸	5	5	5	5	5	5
Power Management						
Average power requirements (W)						
Read/write	6.9	6.3	6.0	6.6	9	8.6
Idle	5.6	5.9	5.7	5.6	8	7.4
Standby and sleep	1.2	0.9	0.8	0.6	0.5	0.4
Environmental specifications						
Temperature						
Operating	0°C to 65°C	0°C to 65°C	0°C to 65°C	0°C to 65°C	0°C to 65°C	0°C to 65°C
Non-operating	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C	-40°C to 70°C
Shock (Gs)						
Operating	40	50	70	30	70	30
Non-operating	200	250	300	250	250	250
Acoustics (dBA)						
Idle	20	20	20	20	34	27
Seek (average)	32	27	36	29	38	29
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
Length (in/mm, max)	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147	5.787/147
Width (in/mm, ± .01in)	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6
Weight (lb/kg, ± 3%)	1.48/0.67	1.52/0.69	1.52/0.69	1.46/0.66	1.65/0.75	1.58/0.715

¹ 1MB = one million bytes, 1GB = one billion bytes, and 1TB = one trillion bytes. Actual user capacity may be less, depending on operating environment.

² Single stream per camera @ 3.2Mbps (1080p, H.265, 25 fps). Results may vary depending on camera resolution, file format, frames per second, software, system settings, video quality, and other factors.

³ 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

⁴ Projected values. When final, MTBF, and AFR specifications will be based on a sample population and are estimated by statistical measurements and acceleration algorithms under typical operating conditions, workload of 220TB/year, and drive temperature of 40°C. Derating of MTBF and AFR will occur above these parameters, up to 550TB writes per year, and 65°C drive temperature. MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

⁵ This drive is in compliance with the European Union Directive 2011/65/EU and Directive (EU) 2015/863 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

⁶ Up to stated speed. 1 MB/s = 1 million bytes per second. Based on internal testing; performance may vary depending upon host device, usage conditions, drive capacity, and other factors.

⁷ Controlled unload at ambient condition

⁸ See support.wdc.com/warranty for regional specific warranty details.

