WD Caviar® Black™

Desktop Hard Drives

WD Caviar Black drives combine a high performance electronics architecture with a rock solid mechanical architecture to deliver the perfect storage solution for your fully-loaded PC or maxed out gaming machine. Cool drive operation, no-touch head technology, leading-edge vibration protection ensure enhanced reliability.

INTERFACE	WIDTH/HEIGHT	ROTATIONAL SPEED	CAPACITIES
SATA 6 Gb/s	3.5-inch/1-inch	7200 RPM	500 GB to 2 TB

MODEL NUMBERS

WD2002FAEX   WD7502AAEX
WD1502FAEX   WD5003AZEX
WD1002FAEX   WD5002AALX

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

Product Features

Rock Solid Mechanical Architecture

- **Dual actuator technology**
A head positioning system with two actuators that improves positional accuracy over the data track(s). The primary actuator provides coarse displacement using conventional electromagnetic actuator principles. The secondary actuator uses a piezoelectric motor to fine tune the head positioning to a higher degree of accuracy. (2 TB and 1.5 TB models only)

- **StableTrac™** — The motor shaft is secured at both ends to reduce system-induced vibration and stabilize platters for accurate tracking, during read and write operations. (2 TB and 1.5 TB models only)

- **NoTouch™ ramp load technology**
The recording head never touches the disk media ensuring significantly less wear to the recording head and media, as well as better drive protection in transit.

High Performance Electronics Architecture

- **Dual processor** — Twice the processing power to maximize performance.
- **Colossal cache** — Bigger, faster cache of up to 64 MB means faster performance.

Massive Capacity

WD Caviar Black SATA drives are available in capacities up to 2 TB.

Compatible

We perform tests on hundreds of systems and a multitude of platforms in our FIT Lab™ and Mobile Compatibility Lab to give our customers confidence that our drives will work in their systems.

5-year limited warranty

Applications

- Power computing applications such as multimedia, video and photo editing, and maxed out gaming computers.
- Desktop / Consumer RAID Environments - WD Caviar Black Hard Drives are tested and recommended for use in consumer-type RAID applications (RAID-0 / RAID-1).
  - Business Critical RAID Environments – WD Caviar Black Hard Drives are not recommended for and are not warranted for use in RAID environments utilizing Enterprise HBAs and/or expanders and in multi-bay chassis, as they are not designed for, nor tested in, these specific types of RAID applications. For all Business Critical RAID applications, please consider WD's Enterprise Hard Drives that are specifically designed with RAID-specific, time-limited error recovery (TLER), are tested extensively in 24x7 RAID applications, and include features like enhanced RAFF technology and thermal extended burn-in testing.

PUT YOUR LIFE ON IT®

Specifications[1]	2 TB	1.5 TB	1 TB	750 GB	500 GB	500 GB
Model number	WD2002FAEX	WD1502FAEX	WD1002FAEX	WD7502AAEX	WD5003AZEX	WD5002AALX
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
Formatted capacity	2,000,398 MB	1,500,301 MB	1,000,204 MB	750,156 MB	500,107 MB	500,107 MB
User sectors per drive	3,907,029,168	2,930,277,168	1,953,525,169	1,465,149,168	976,773,168	976,773,168
SATA latching connector	Yes	Yes	Yes	Yes	Yes	Yes
Form factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch
RoHS compliant[2]	Yes	Yes	Yes	Yes	Yes	Yes
Performance						
Data 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)	138 MB/s	138 MB/s	126 MB/s	126 MB/s	150 MB/s	126 MB/s
Cache (MB)	64	64	64	64	64	32
Rotational speed (RPM)	7200	7200	7200	7200	7200	7200
Reliability/Data Integrity						
Load/unload cycles[3]	300,000	300,000	300,000	300,000	300,000	300,000
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}
Limited warranty (years)[4]	5	5	5	5	5	5
Power Management						
Average power requirements (W)						
Read/Write	10.7	10.7	6.8	6.8	6.8	6.0
Idle	8.2	8.2	6.1	6.1	6.1	5.6
Standby	1.3	1.3	0.7	0.7	0.8	0.9
Sleep	1.3	1.3	0.7	0.7	0.8	0.9
Environmental Specifications[5]						
Temperature (°C)						
Operating	0 to 60	0 to 60	0 to 60	0 to 60	0 to 60	0 to 60
Non-operating	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 70	-40 to 70
Shock (Gs)						
Operating (2 ms, read)	30	30	30	30	30	30
Operating (2 ms, read/write)	65	65	65	65	65	65
Non-operating (2 ms)	300	300	300	300	350	350
Average acoustics (dBA)[6]						
Idle mode	29	29	28	28	29	29
Seek mode	34	34	33	33	30	30
Physical Dimensions						
Height (in./mm, max)	1.028/25.4	1.028/25.4	1.028/25.4	1.028/25.4	1.028/25.4	1.028/25.4
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, ± .01 in.)	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6	4/101.6
Weight (lb./kg, ± 10%)	1.66/0.75	1.66/0.75	1.52/0.69	1.52/0.69	0.97/0.44	0.97/0.44

[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 3 Gb/s and SATA 6 Gb/s transfer rates 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]WD hard drive products manufactured and sold worldwide after June 1, 2006, meet or exceed Restriction of Hazardous Substances (RoHS) compliance requirements as mandated by the RoHS Directive 2011/65/EU..

[3]Controlled unload at ambient condition

[4]The term of the limited warranty may vary by region. Visit http://support.wdc.com/warranty for details.

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

[6]Sound power level.

WD Caviar Black is part of WD's complete lineup of desktop hard drives.

WD Caviar® Blue™
Desktop Hard Drives
Performance and reliability for everyday computing.

WD Caviar® Green™
Desktop Hard Drives
Cool, quiet, eco-friendly.

WD Caviar® Black™
Desktop Hard Drives
Maximum performance for power computing.

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