



## WD Gold™ Enterprise Class SATA HDD

### Your Data Is Gold

Customize your business's storage mix to fit your specific needs with a full portfolio of enterprise-class WD Gold™ HDDs in capacities of 1TB to 22TB<sup>1</sup>, with OptiNAND™ technology in 20TB and 22TB. These highly reliable solutions for demanding storage environments provide up to 2.5M hours MTBF<sup>2</sup>, vibration protection technology, and a low power draw thanks to HelioSeal® technology (for 12TB and above). Specifically designed for use in enterprise-class data centers and storage systems, WD Gold SATA HDDs deliver the world-class performance you expect from Western Digital® hard drives.

### More Flexibility, More Freedom

WD Gold™ lets you build out your storage your way with a full portfolio of SATA HDDs from 1TB to 22TB<sup>1</sup>, engineered for heavy application workloads and designed to handle workloads up to 550TB<sup>3</sup> per year.

### Enhanced Reliability

With up to 2.5M hours MTBF<sup>2</sup>, WD Gold™ hard drives deliver enhanced levels of dependability and durability.

### Vibration Protection

WD Gold™ drives have sophisticated monitoring electronics that help correct linear and rotational vibrations in real time using enhanced vibration protection technology for improved performance in high-vibration environments.

### Plays Well with Others

Specifically designed for use in enterprise-grade storage systems and data centers, WD Gold™ HDDs are broadly compatible with major enterprise operating systems.

### Scale Your Business

WD Gold™ drives are available in an unsurpassed, industry-leading 22TB<sup>1</sup> CMR capacity utilizing the OptiNAND™ technology's capacity-enabling feature.

### Helps Protect Your Data

The innovative ArmorCache™ feature (22TB only) provides enterprise power loss protection of your data in write-cache enabled (WCE) mode while increasing performance in write-cache disabled (WCD) mode.

### Product Highlights

- Optimize your storage for your business with a full portfolio of enterprise-class WD Gold™ HDDs in capacities up to 22TB<sup>1</sup>
- Quality and reliability with up to 2.5M hours MTBF<sup>2</sup> to help you store your data with confidence
- Specifically designed for use in enterprise-class storage systems and data centers
- Improve performance with our vibration protection technology
- HelioSeal® technology delivers high capacities with low power draw (12TB & up)
- Get peace of mind with a 5-year limited warranty

## Specifications

	22TB <sup>1</sup>	20TB <sup>1</sup>	20TB <sup>1</sup>	18TB <sup>1</sup>	16TB <sup>1</sup>	14TB <sup>1</sup>	12TB <sup>1</sup>
<b>Model Number</b>	WD221KRYZ	WD202KRYZ	WD201KRYZ	WD181KRYZ	WD161KRYZ	WD141KRYZ	WD121KRYZ
Form factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch
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
512n / 512e user sectors per drive <sup>4</sup>	512e	512e	512e	512e	512e	512e	512e
Formatted capacity <sup>1</sup>	22TB	20TB	20TB	18TB	16TB	14TB	12TB
OptiNAND™ technology	Yes	Yes	Yes	No	No	No	No
RoHS compliant <sup>5</sup>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<b>Performance</b>							
Data transfer rate <sup>6</sup> (max Sustained)	291MB/s	269MB/s	269MB/s	269MB/s	262MB/s	267MB/s	255MB/s
RPM	7200	7200	7200	7200	7200	7200	7200
Cache <sup>1,7</sup>	512MB	512MB	512MB	512MB	512MB	512MB	256MB
<b>Power Management</b>							
Average power requirements (W)							
Operational <sup>8</sup>	9.3W	6.9W	7.0W	6.5W	6.5W	6.0W	6.9W
Idle <sup>9</sup>	5.7W	5.8W	6.0W	5.6W	5.6W	5.5W	5.0W
Power efficiency index (W/TB, idle)	0.26	0.29	0.30	0.31	0.35	0.40	0.40
<b>Reliability</b>							
MTBF (hours, projected) <sup>2</sup>	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000
Annualized Failure Rate <sup>2</sup> (AFR, %)	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Limited Warranty	5 years	5 years	5 years	5 years	5 years	5 years	5 years
<b>Environmental</b>							
Operating temperature <sup>10</sup>	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C
Non-operating temperature	-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	-40°C to 70°C
Shock (Read/Write) Operating (half-sine wave, 2ms)	40G/40G	50G/50G	50G/50G	50G/50G	50G/50G	70G/70G	70G/70G
Non-operating (half-sine wave, 2ms)	200G	250G	250G	250G	250G	300G	300G
Acoustics (average)							
Idle Mode	20 dBA	20 dBA	20 dBA	20 dBA	20 dBA	20 dBA	20 dBA
Seek Mode	32 dBA	32 dBA	32 dBA	36 dBA	36 dBA	36 dBA	36 dBA
<b>Physical Dimensions</b>							
Height (max)	26.1mm	26.1mm	26.1mm	26.1mm	26.1mm	26.1mm	26.1mm
Length (max)	147.0mm	147.0mm	147.0mm	147.0mm	147.0mm	147.0mm	147.0mm
Width (± .01 in.)	101.6mm	101.6mm	101.6mm	101.6mm	101.6mm	101.6mm	101.6mm
Weight	1.47 lb (.67 kg) ± 10%	1.52 lb (.69 kg) ± 10%	1.52 lb (.69 kg) ± 10%	1.52 lb (.69 kg) ± 10%	1.52 lb (.69 kg) ± 10%	1.52 lb (.69 kg) ± 10%	1.46 lb (.66 kg) ± 10%

## Specifications

	10TB <sup>1</sup>	8TB <sup>1</sup>	6TB <sup>1</sup>	4TB <sup>1</sup>	2TB <sup>1</sup>	1TB <sup>1</sup>
<b>Model Number</b>	WD102KRYZ	WD8004FRYZ	WD6003FRYZ	WD4003FRYZ	WD2005FBYZ	WD1005FBYZ
Form factor	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch	3.5-inch
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
512n / 512e user sectors per drive <sup>4</sup>	512e	512e	512e	512e	512n	512n
Formatted capacity <sup>1</sup>	10TB	8TB	6TB	4TB	2TB	1TB
OptiNAND™ technology	No	No	No	No	No	No
RoHS compliant <sup>5</sup>	Yes	Yes	Yes	Yes	Yes	Yes

### Performance

Data Transfer Rate <sup>6</sup> (max Sustained)	262MB/s	255MB/s	255MB/s	255MB/s	200MB/s	184MB/s
RPM	7200	7200	7200	7200	7200	7200
Cache <sup>1,7</sup>	256MB	256MB	256MB	256MB	128MB	128MB

### Power Management

Average power requirements (W)						
Operational <sup>8</sup>	9.2W	8.8W	7.0W	7.0W	8.1W	8.1W
Idle <sup>9</sup>	8.0W	7.4W	5.9W	5.9W	5.9W	5.9W
Power efficiency index (W/TB, idle)	0.80	0.90	1.0	1.5	3.0	5.9

### Reliability

MTBF (hours, projected) <sup>2</sup>	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000
Annualized Failure Rate <sup>2</sup> (AFR, %)	0.44	0.44	0.44	0.44	0.44	0.44
Limited warranty	5 years	5 years	5 years	5 years	5 years	5 years

### Environmental

Operating temperature <sup>10</sup>	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C	5°C to 60°C
Non-operating temperature	-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 (Read/Write) Operating (half-sine wave, 2ms)	70G/50G	70G/70G	70G/70G	70G/70G	65G/65G	65G/65G
Non-operating (half-sine wave, 2ms)	250G	300G	300G	300G	300G	300G
Acoustics (average)						
Idle Mode	34 dBA	29 dBA	29 dBA	29 dBA	25 dBA	25 dBA
Seek Mode	38 dBA	36 dBA	36 dBA	36 dBA	28 dBA	28 dBA

### Physical Dimensions

Height (max)	26.1mm	26.1mm	26.1mm	26.1mm	26.1mm	26.1mm
Length (max)	147.0mm	147.0mm	147.0mm	147.0mm	147.0mm	147.0mm
Width (± .01 in.)	101.6mm	101.6mm	101.6mm	101.6mm	101.6mm	101.6mm
Weight	1.65 lb. (.75 kg) ± 10%	1.58 lb. (.715 kg) ± 10%	1.58 lb. (.715 kg) ± 10%	1.58 lb. (.715 kg) ± 10%	1.41 lb. (.64 kg) ± 10%	1.41 lb. (.64 kg) ± 10%

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

<sup>2</sup> Projected values for model number WD221KRYZ and WD202KRYZ. 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 220TB/year and device temperature 40°C. Derating of MTBF and AFR will occur above these parameters, up to 550TB writes per year and 60°C device temp. MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

<sup>3</sup> 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.

<sup>4</sup> 512e: Advanced Format drive with 512-byte logical sectors and 4K (4096-byte) physical sectors; 512n: Native 512-byte logical and physical sectors.

<sup>5</sup> 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 (RoHS) in electrical and electronic equipment.

<sup>6</sup> 1 MB/s = 1 million bytes per second. Based on internal testing; performance may vary depending upon host device, usage conditions, drive capacity, logical block address (LBA), and other factors.

<sup>7</sup> Portion of buffer capacity used for drive firmware.

<sup>8</sup> 1-20TB Random RW 50/50 8KB QD=1 @40 IOPS, 22TB Random RW 50/50 4KB QD=4 @Max IOPS.

<sup>9</sup> Based on use of Idle\_A.

<sup>10</sup> 5°C ambient temperature, 60°C device reported temperature.

