

Hitachi Deskstar 7K1000

Industry's first terabyte hard disk drive for consumer and commercial computing applications

Highlights

- > Storage capacities up to 1 TB
- > Perpendicular magnetic recording technology
- > SATA 3.0 Gb/s and PATA-133 interfaces
- > Ramp load design increases shock protection and power savings
- > Thermal monitoring and fly height control enhance reliability
- > Three low-power idle modes boost power efficiency
- > Silent seek acoustics achieve ultra-quiet operation
- > Host/drive authentication for hardware security

Applications

- > Internal and external storage for consumer computers
- > Networked storage servers
- > Extreme gaming machines
- > Video editing arrays



1 TB, 750 GB | 7200 RPM |
Serial ATA 3.0 Gb/s and Parallel ATA 133

An industry first, the Hitachi Deskstar® 7K1000 hard disk drive delivers up to one terabyte of storage capacity for demanding consumer and commercial computing products. It leverages the industry's most reliable perpendicular magnetic recording (PMR) techniques and the latest advancements in silent acoustics, shock protection, and head technology to maximize capacity, performance and field reliability. Best-in-class power management and thermal emissions help manufacturers meet energy compliance targets and extend drive life.

Proven PMR technology

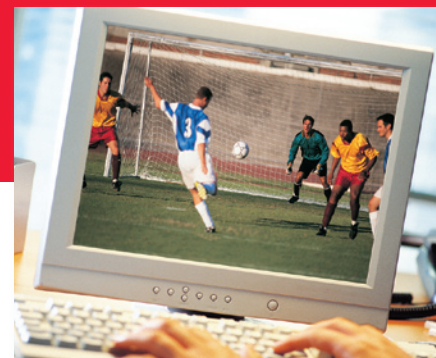
Field-proven in 2.5-in. drives, Hitachi's PMR implementation continues to demonstrate reliability equal to or exceeding conventional longitudinal technology. The Deskstar 7K1000's second-generation PMR head and media technology improves noise characteristics and thermal stability.

Reduced power idle modes

Unique to Hitachi drives, the Deskstar 7K1000 features three advanced low-power idle modes – active, unload and low-power. Together, they reduce power consumption at the drive level up to 20%, optimize non-operational latency and lower drive temperature for cooler system operation.

Outstanding shock resistance and power efficiency

Through a patented ramp load/unload design disk heads (in non-operating modes) are unloaded to a ramp outside the disk where they rest in a low-power 'unload idle' state until activated. In low RPM drives, this can reduce power by up to 50%. Ramp load/unload provides tangible benefits for the drive and host product. It greatly minimizes the risk



of shock damage by eliminating direct contact between the heads and disks. Reduced wear and heat improve overall drive reliability. In the event of power loss to the drive, heads are unloaded using energy extracted from the spinning disks. This patented power-saving feature helps to reduce overall maintenance costs and extends the drive service life.

Another contributor to Deskstar 7K1000's exceptional shock performance and power savings is the use of compact, low-mass femto air-bearing sliders.

Extended field reliability

An integrated thermal sensor monitors operating temperature, enabling the host processor to intelligently adjust airflow as needed for cooling. Sensor integration reduces component cost and increases reliability.

Deskstar 7K1000's thermal fly-height control (TFC) uses an integrated heating element to precisely maintain a constant fly-height throughout read and write operations. This reduces raw soft error rate and, in turn, improves overall data integrity, drive performance and reliability.

Deskstar 7K1000's iridium-manganese-chromium (IrMnCr) read head sensor technology offers better performance and reliability in harsh conditions.

Hitachi Design Studios

Located around the world, Hitachi Design Studios assist customers with all aspects of integrating hard drives into consumer electronic devices. Their services focus on

Deskstar 7K1000 Specifications

Model(s)	HDS721075KLA760 HDS721010KLA760		HDS721075KLA330 HDS721010KLA330	
Interface	Parallel ATA-133		Serial ATA 3.0 Gb/s	
Capacity ¹	750 GB	1 TB	750 GB	1 TB
Sector size	512 bytes			
Disks/heads	4/8	5/10	4/8	5/10
Performance				
Data buffer ²	8 MB		32 MB	
Rotational speed	7200 RPM			
Media transfer rate (max)	1070 Mb/s			
Interface transfer rate (max)	133 MB/s		300 MB/s	
Latency	4.17 ms (average, 7200 RPM)			
Seek time ³	8.5 ms read (typical), 9.2 ms write (typical)			
Silent-seek time ³	14 ms read (typical), 15 ms write (typical)			
Reliability				
Error rate (non-recoverable)	1 per 1.0 E15 bits transferred			
Load/unload cycles (at 40°C)	50,000			
Warranty	3 years			
Power				
Supply	+5 VDC (+/- 5%), +12 VDC (+10% / -8%)			
Start up current (max)	2.0 A (+12V), 1.4 A (+5V)		2.0 A (+12V), 1.2 A (+5V)	
Random read/write (average)	12.8 W	13.6 W	12.8 W	13.6 W
Silent read/write (average)	9.9 W	10.8 W	9.9 W	10.8 W
Idle (average)	8.1 W	9.0 W	8.1 W	9.0 W
Unload idle	6.4 W	6.9 W	6.4 W	6.9 W
Low RPM idle	4.3 W	4.5 W	4.3 W	4.5 W
Acoustics (A-weighted sound power)				
Idle	2.9 bels (typical)			
Silent seek, Seek	3.0 bels (typical), 3.2 bels (typical)			
Physical				
Dimensions	H (26.1 mm) x W (101.6 mm) x D (147 mm)			
Weight (max)	700 g			
Environmental				
Temperature	5 to 60 °C operating, -40 to 70 °C non-operating			
Relative humidity (non-condensing)	8 to 90% operating, 5 to 95% non-operating			
Shock (half sine wave)	70 G/2 ms pulse operating, 300 G/1 ms pulse non-operating			
Vibration (random) (RMS)	0.67 G horizontal, 0.56 G vertical operating, 1.04 G XYZ non-operating			
RoHS ⁴ compliant	yes			

¹ GB equals one billion bytes when referring to hard drive capacity; accessible capacity may be less.

² Buffer capacity includes 270 or less KB used for drive firmware.

³ Does not include command overhead.

⁴ RoHS refers to the European Union Directive 2002/95/EC on the restriction of certain hazardous substances in electrical and electronic equipment.

Specific application environments such as temperature and duty cycle will affect the overall reliability rates.

For specific application environment reliability rates, please consult Hitachi technical support.

drive selection, evaluation and optimization, integration and design-in consulting, software compatibility assessment, performance profiling, problem analysis and reliability consulting.

Hitachi quality and service

All Hitachi hard drives are designed to the highest quality standards with field-proven components. They are backed by Hitachi's worldwide technical support and integration services, enabling global customers to bring their products to market quickly.

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