

# Deskstar™ 7K1000

3.5-INCH HARD DISK DRIVES

**HITACHI**  
Inspire the Next

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

## Highlights

- > Storage capacities up to 1TB
- > Perpendicular magnetic recording technology
- > SATA 3.0Gb/s interface
- > 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



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

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

## Specifications

<b>Model(s)</b>	HDS721075KLA330 HDS721010KLA330	
<b>Interface</b>	Serial ATA3.0Gb/s	
<b>Capacity<sup>1</sup></b>	750GB	1TB
<b>Sector size</b>	512 bytes	
<b>Disks/heads</b>	4/8	5/10

### Performance

<b>Data buffer<sup>2</sup></b>	32MB	
<b>Rotational speed</b>	7200 RPM	
<b>Media transfer rate (max)</b>	1070Mb/s	
<b>Interface transfer rate (max)</b>	300Mb/s	
<b>Latency</b>	4.17ms (average, 7200 RPM)	
<b>Seek time<sup>3</sup></b>	8.2ms read (typical), 9.2ms write (typical)	
<b>Silent-seek time<sup>3</sup></b>	14ms read (typical), 15ms write (typical)	

### Reliability

<b>Error rate (non-recoverable)</b>	1 per 1.0 E15 bits transferred	
<b>Load/unload cycles (at 40°C)</b>	50,000	
<b>Availability<sup>4</sup> (hrs/day x days/wk)</b>	24x7	
<b>Warranty</b>	3 years	

### Power

<b>Supply</b>	+5 VDC (+/- 5%), +12 VDC (+10% / -8%)	
<b>Start up current (max)</b>	2.0A (+12V), 1.2A (+5V)	
<b>Random read/write (average)</b>	11.5W	12.3W
<b>Silent read/write (average)</b>	9.2W	10.2W
<b>Idle (average)</b>	7.6W	8.4W
<b>Unload idle</b>	5.5W	6.1W
<b>Low RPM idle</b>	3.5W	3.7W

### Acoustics (A-weighted sound power)

<b>Idle</b>	2.9bels (typical)	
<b>Silent seek, Seek</b>	3.0bels (typical), 3.2bels (typical)	

### Physical

<b>Dimensions</b>	H (26.1mm) x W (101.6mm) x D (147mm)	
<b>Weight (max)</b>	700g	

### Environmental

<b>Temperature</b>	5 to 60 °C operating, -40 to 70 °C non-operating	
<b>Relative humidity (non-condensing)</b>	8 to 90% operating, 5 to 95% non-operating	
<b>Shock (half sine wave)</b>	70 G/2 ms pulse operating, 300 G/1 ms pulse non-operating	
<b>Vibration (random) (RMS)</b>	0.67G horizontal, 0.56G vertical operating, 1.04G XYZ non-operating	
<b>RoHS<sup>5</sup> compliant</b>	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 Intended for low duty cycle, non-mission critical applications in PC, nearline and consumer electronics environments.

Note that customer environments may vary from application to application.

5 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.

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## 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.

### Information and Technical Support

[www.hitachigst.com](http://www.hitachigst.com) (Main Web site)

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