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## Inspire the Next

# Hitachi Ultrastar™ A7K1000
## 3.5-INCH ENTERPRISE HARD DISK DRIVES

World's first terabyte hard drive for the enterprise –
Ideal for lower duty cycle storage in enterprise environments

## Highlights
> Up to 1 terabyte of capacity [1]
> 3 Gb/s SATA for configuration flexibility
> Targeted 1.2 million hours MTBF [2]
> Enhanced Rotational Vibration Safeguard
  (RVS) for robust performance in multi-drive
  environments
> 5-year warranty

## Applications/Environments
> RAID arrays
> Tiered storage
> Nearline storage
> Disk-to-disk back up
> Network Attached Storage (NAS)
> Data warehousing

1.0 TB, 750 and 500 GB │ 7200 RPM
3 Gb/s SATA

## Features and Benefits

|              | Feature / Function | Benefits |
|--------------|--------------------|----------|
| **Capacity** | Up to 1.0 TB of storage | Highest capacity available in a single hard drive |
| **Reliability** | Advanced PMR heads & media | Excellent soft error rate for improved reliability & performance |
|              | Self-Protection Throttling (SPT) | Monitors and manages I/O to maximize reliability & performance |
|              | Thermal Fly-height Control (TFC) | Better soft error rate for improved reliability & performance |
|              | Fluid Dynamic Bearing (FDB) Motor | Improved acoustics & positional accuracy |
|              | Load/unload ramp | Protects user data when power is removed |
| **Performance** | Rotational Vibration Safeguard (RVS) | Maintains high performance in multi-drive systems |
|              | 3 Gb/s SATA interface | 300 MB/s burst data rate for faster data access |
|              | 32 MB cache buffer | Enhanced data transfer performance |

## Record capacity, enterprise-class reliability
The Ultrastar™ A7K1000 delivers up to one terabyte of storage capacity in a standard 3.5-inch form factor, filling a vital need for high-density storage in the enterprise. As the third generation design, based on the popular Deskstar™ E7K500, the Ultrastar A7K1000 continues to set the standard in enterprise-class reliability and performance for lower duty cycle enterprise applications. With a unique 5-platter design, Hitachi has relaxed the bit densities to achieve higher reliability. The Ultrastar A7K1000 is built using the industry's most reliable perpendicular magnetic recording (PMR) recording heads and media.

## Performance targeted for the enterprise
The Ultrastar A7K1000 features a 3 Gb/s SATA interface supporting key features in the Serial-ATA specification including Native Command Queuing (NCQ), staggered spin-up and hot-swap capability. The Ultrastar A7K1000 allows for configuration scalability and with the same physical connector as Serial Attached SCSI (SAS) drives, it's ideal for use in mixed-drive environments.

In multi-drive environments, rotational vibration, which results from the vibration of neighboring drives in a system, can degrade hard drive performance. To aid in maintaining high performance, the Ultrastar A7K1000 incorporates enhanced Rotational Vibration Safeguard (RVS) technology providing up to 50% improvement over the previous generation against performance degradation, leading the industry.

Finally, the Ultrastar A7K1000 is targeted at 1.2 million hours MTBF and provides the industry's most comprehensive 5-year warranty.

www.hitachiGST.com

## Ultrastar A7K1000 Specifications

| | |
|---|---|
| **Model(s)** | HUA721010KLA330 |
| | HUA721075KLA330 |
| | HUA721050KLA330 |
| Interface | 3 Gb/s SATA |
| Capacity [1] | 1 TB / 750 GB / 500 GB |
| Recording zones | 30 |
| Data heads (physical) | 10 / 8 / 6 |
| Data disks | 5 / 4 / 3 |
| Max areal density (Gbits/sq. in.) | 148 |
| **Performance** | |
| Data buffer (MB) [3] | 32 |
| Rotational speed (RPM) | 7200 |
| Latency average (ms) | 4.17 |
| Media transfer rate (Mbits/sec, max) | 1070 |
| Interface transfer rate (MB/sec, max) | 300 |
| Sustained transfer rate (MB/sec) | 85 - 42 (zone 0-29) |
| Seek time (read, typical, ms) [4] | 8.2 |
| **Reliability** | |
| Error rate (non-recoverable, bits read) | 1 in $10^{15}$ |
| Start/stops (at 40° C) | 50,000 |
| Availability [2] (days/week) | 24 x 7 |
| Targeted MTBF [2] (hours) | 1,200,000 |
| **Acoustics** | |
| Idle (Bels) | 2.9 |
| **Power** | |
| Requirement | +5 VDC (+ -5%), +12 VDC (+ 20% - 8%) |
| Startup current (max. A) | 2.0 (+ 12V) & 1.2 (+ 5V) |
| Idle (W) | 9.0 / 8.1 / 7.3 |
| Power consump. efficiency index (W/GB) | 0.009 / 0.0108 / 0.0146 |
| **Physical size** | |
| z-height (mm, max) | 26.1 |
| Dimensions (width x depth, mm) | 101.6 x 147 |
| Weight (g, max) | 700 |
| **Environmental (operating)** | |
| Ambient temperature | 5º to 60º C |
| Shock (half-sine wave, G/2ms) | 70 |
| Vibration, random (G RMS 5 to 500 Hz) | 0.67, all axes |
| **Environmental (non-operating)** | |
| Ambient temperature | -40º to 70º C |
| Shock (half-sine wave, G/1ms) | 300 |
| Vibration, random (G RMS 2 to 200 Hz) | 1.04, all axes |

[1] One GB is equal to one billion bytes and one TB equals 1,000 GB (one trillion bytes); accessible capacity may be less

[2] Intended for use in lower duty cycle environments in the enterprise storage hierarchy, such as RAID and nearline applications. This MTBF target is based on a sample population and is estimated by statistical measurements and acceleration algorithms under nominal operating conditions. MTBF ratings are not intended to predict an individual drive's reliability. MTBF does not constitute a warranty.

[3] Portion of buffer capacity used for firmware

[4] Excludes command overhead

## Hitachi quality and service

Hitachi's Ultrastar A7K1000 extends the company's long-standing tradition of performance and capacity leadership. The proven drive design enables high reliability and availability to customer data. Ultrastar quality, performance, and world class technical support and service provides customers with a lower total cost of ownership over previous generations.

Hitachi drives are backed by an array of technical support and services, which may include customer and integration assistance. Hitachi is dedicated to providing a breadth of hard disk drive solutions to satisfy all of today's demanding computing needs.

### How to read the Ultrastar model number

HUA721010KLA330 = 1.0 TB, 3 Gb/s SATA
H  = Hitachi
U  = Ultrastar
A  = ATA
72=  7200 RPM
10 = Full capacity — 1.0 TB
10 = Capacity this model 10 =1.0 TB
    (75 = 750 GB, 50 = 500 GB)
K  = Generation code
L  = 26.1mm z-height
A3 = Interface, 3 Gb/s SATA
0  = Reserved
0  = Reserved

### Information and Technical Support

www.hitachigst.com (Main Web site)

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