

Hitachi Ultrastar® 15K147

HARD DISK DRIVES



147GB, 73GB and 36GB | 15,000 RPM | Ultra320 SCSI, 4GFC, 2GFC and Serial Attached SCSI (SAS)

Performance and reliability you can trust for mission-critical computing environments

Highlights

- > Capacities up to 147GB
- > Choice of Ultra320 SCSI, 4Gb/s and 2Gb/s Fibre Channel and Serial Attached SCSI (SAS) interfaces for configuration flexibility
- > Mature design provides greater reliability and faster qualification time
- > 15,000 RPM enables as much as 33 percent more I/Os per second over 10,000 RPM products
- > Large 16MB cache size minimizes command overhead
- > RoHS compliant on select models

Store more...faster!

Hitachi delivers its highest-performing hard drive ever with the introduction of the Ultrastar 15K147. With average seek times as fast as 3.3 ms, average latency of 2 ms, and as much as 33 percent more in I/Os per second than its 10,000 RPM rivals, enterprise customers can access their data more quickly and efficiently. These performance characteristics of the Ultrastar 15K147 make it the ideal solution for mission-critical enterprise computing environments like online transaction processing, data analysis, and other multi-user applications.

Applications

- > Online transaction processing
- > RAID
- > Storage Area Network (SAN)
- > Network Attached Storage (NAS)
- > Scientific engineering and data analysis
- > Imaging systems
- > Media streaming
- > Data warehousing

Features and Benefits

	Feature / Function	Benefits
Performance	15,000 RPM	Lower rotational latency for faster data access
	16 MB cache memory	Greatly improves average read/write response time
	Rotational Position Optimization	Optimizes rotational latency for faster data access
	Command Reordering Optimization	Optimizes head movement, improving throughput
	Rotational Vibration Safeguard	Maintains performance in multi-drive systems
Reliability	Highly automated manufacturing	Minimizes process variability, improving reliability
	Unique head load/unload design	Minimizes handling damage during integration
	FDB spindle motor	High reliability and low acoustics
	S.M.A.R.T. and Idle Task Manager	Self-diagnostics, early warning error detection
Capacity	147GB / 73GB / 36GB	Configuration flexibility
Interfaces	Ultra320 SCSI (68 & 80 pin), 4GFC, 2GFC and Serial Attached SCSI (SAS)	Ease of integration and configuration flexibility

Proven design for extreme performance and reliability

Performance and reliability are key requirements for enterprise-class hard drives. The mature design of the Ultrastar 15K147 ensures greater reliability which helps enable shorter qualification times. Several key technologies are designed into Ultrastar drives to ensure high reliability, enhance performance and protect customer data. The Ultrastar 15K147 incorporates Rotational Vibration Safeguard (RVS) technology to maintain drive performance in multi-drive systems where rotational vibration is likely to occur. Fluid dynamic bearing (FDB) motors deliver quieter drives with improved data integrity. Hitachi offers the only enterprise-class hard drive utilizing a head load/unload ramp which helps minimize drive failures caused by handling damage during integration.

Hitachi quality and service

Hitachi's Ultrastar 15K147 extends the company's long-standing tradition of performance and capacity leadership. Ultrastar quality, performance, and world class technical support and service provides customers with a lower total cost of ownership compared to 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.

Hitachi Ultrastar® 15K147

Product	Ultrastar 15K147	Ultrastar 15K147	Ultrastar 15K147
Model names	HUS151414VL3600* HUS151473VL3600* HUS151436VL3600* HUS151414VL3800** HUS151473VL3800** HUS151436VL3800**	HUS151414VLS300 HUS151473VLS300 HUS151436VLS300	HUS151414VLF400 HUS151473VLF400 HUS151436VLF400 HUS151414VLF200 HUS151473VLF200 HUS151436VLF200
* 68-pin, ** 80-pin			

Specifications

Configuration

Interface	Ultra320 SCSI	SAS	4GFC / 2GFC
Capacity (GB) ¹	147.0 / 73.4 / 36.7	←	←
Sector size (Bytes)	512-528 (variable, 2 byte inc.)	←	←
Recording zones	24 / 24 / 20	←	←
Data heads (physical)	10 / 5 / 3	←	←
Data disks	5 / 3 / 2	←	←
Max. areal density (Gbits/sq. inch)	61.7	←	←

Performance

Data buffer (MB) ²	16	←	←
Rotational speed (RPM)	15,000	←	←
Latency average (ms)	2	←	←
Media transfer rate (Mbits/sec, max)	1129	←	←
Interface transfer rate (MB/sec, max)	320	300	425 (4G) / 212.5 (2G)
Sustained data rate (MB/sec, max)	93.3	←	←
Seek time (read, typical) ³			
Average (ms)	3.7 / 3.6 / 3.3	←	←
Track to track (ms)	0.6	←	←
Full stroke (ms)	6.7	←	←

Reliability

Error rate (non-recoverable)	10 in 10E16	←	←
Start/stops (at 40° C)	50,000	←	←

Acoustic

Idle (Typical (Bels))	3.5	←	←
Operating (Typical (Bels))	4.6	←	←

Power

Requirement	+5VDC(+/-5%), +12VDC(+/-5%)	←	←
Dissipation			
Startup current (max. peak DC)	0.70 A (5V), 1.70A (12V)	1.08 A (5V), 1.70 A (12V)	←
Idle (W)	11.22 / 8.83 / 8.19	12.02 / 9.60 / 8.92	←
Power consump. efficiency index (W/GB)	0.08 (5-disk), 0.12 (3-disk)	0.08 (5-disk), 0.13 (3-disk)	←
	0.23 (2-disk)	0.25 (2-disk)	←

Physical Size

Height (mm, max)	26.1	←	←
Width (mm)	101.6 +/- 0.25	←	←
Depth (mm)	146.0 +/- 0.6	←	←
Weight (kg, max)	0.758	←	←

Environmental characteristics

Operating			
Ambient temperature	5° to 55° C	←	←
Shock (half sine wave)	15G (11 ms)	←	←
Random Vibration, no data loss	1.2 G, all axes	←	←
Non-operating			
Ambient temperature (shipping)	-40° to 70° C	←	←
Shock (half sine wave)	250G (2 ms) / 80G (11 ms)	←	←
Random Vibration (RMS)	1.04 G, all axes	←	←
RoHS compliant ⁴	Some (p/n dependent)	Yes	Yes (4G) / No (2G)

Hitachi Global Storage Technologies



For more information:

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- > www.hitachigst.com (Main Web site)
- > www.hitachigst.com/vpp (Reseller Web site)

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- > 49 6929 993601 (Germany)

How to Read the Ultrastar Model Number

HUS151414VL3800 = 147GB / Ultra320 80-pin

H = Hitachi

U = Ultrastar

S = Standard

15 = 15,000 RPM

14 = Full capacity – 147GB

14 = Capacity this model – 147GB,
(73=73GB, 36 = 36GB)

V = Generation code

L = 1-inch form factor

38 = Interface – U320 80-pin, (36 = U320 68-pin,
F2 = 2GFC, F4= 4GFC, S3 = 3G SAS)

0 = Reserved

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

² Buffer capacity includes 2.5 MB used for drive firmware

³ Excludes 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.