



MegaScaleDC™ 4000.B

Highlights

- 24x7 accessibility for enterprise-class, capacity-optimized applications
- 800K hours MTBF¹
- 3-year limited warranty
- 4 terabytes² of capacity
- Advanced Format³ with 512-byte emulation (512e)
- 6Gb/s SATA interface
- Dual Stage Actuator (DSA) and Enhanced Rotational Vibration Safeguard (RVS) for robust performance in multi-drive environments

Applications/Environments

- Low application workload cloud storage
- Massive Scale Out (MSO)
- Data warehousing & mining
- Disk-to-disk backup & archiving



Application Workload Rating



1TB, 750GB and 640GB
5400 RPM | SATA 6Gb/s



Innovation to Support Low-workload Applications

The HGST MegaScale DC™ 4000.B is designed to meet the needs of the scale-out data center where low-power, high-capacity, cost-effective storage is essential. MegaScale DC addresses low application workloads that operate within 180TB per year. Typical low-workload applications include multi-drive replicated environments, disk-to-disk backup and restore snapshots, online archives, big data stores and long-term data retention that benefit from low-cost or energy usage.

Understanding Workload is Key

HGST offers a comprehensive product portfolio to address the different workloads within the data center so our customers can maximize their return. When selecting hard disk drive, it's important to consider the application workload. Workload is defined as the amount of work stress the HDD can endure during normal operating conditions. To achieve high storage density, components within the hard drive chassis move with precision. This complex engineering requires that HDDs have an optimized design rated for a specific usage time and workload range. Our products have the highest reliability ratings for the rated workloads. To ensure optimal efficiency, it's critical that data center managers make informed decisions when selecting the right storage design with the right specifications for the right application workload.

Minimizing Power Consumption

MegaScale DC drives leverage Advanced Power Management technology which offers five levels of granularity to help manage power consumption including: normal idle; unload idle; low RPM idle; standby; and sleep. The standby and sleep modes consume less than 1 watt, enabling archival applications to remain online and ready to respond, yet at eco-friendly power levels.

HGST Quality and Service

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

HGST drives are backed by an array of technical support and services, which may include customer and integration assistance. HGST is dedicated to providing a complete portfolio of HDD/SSD solutions to satisfy today's monumental computing needs.

Features and Benefits

	Feature / Function	Benefits
Capacity	4TB in 5-disk design	Highest enterprise capacity availability in a single platform
Performance	Rotational Vibration Safeguard (RVS)	Maintains drive performance in high rotational vibration environments and multi-drive systems
Interface	SATA 6Gb/s	Higher data throughput
Reliability	<ul style="list-style-type: none"> • Thermal Fly-height Control (TFC) with internal thermal sensor • Head load/unload • SMART command transport 	<ul style="list-style-type: none"> • Better soft error rate for improved reliability and performance • Protects disk during non-operation • Adaptive error correction
Power	CoolSpin™ Technology	Saves on power
Security	Bulk Data Encryption with Enhanced Secure Erase	Encrypt data, providing security and easy, safe redeployment

¹Actual storage may vary depending on the compression rate applied. Capacities may not be combined.



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Specifications

Models	HMS5C4040BLE640 HMS5C4040BLE641	
Configuration		
Interface	SATA 6Gb/s	←
Capacity (GB) ² at 512 bytes/sector	4TB	←
Sector size (bytes) ³	512e	←
Sector size (bytes) ³	512e	←
Max. areal density (Gbits/sq. in.)	694	←
Performance		
Data buffer (MB) ⁴	64	←
Rotational speed (RPM)	CoolSpin	←
Interface transfer rate (MB/s, max)	600	←
Sustained transfer rate (MB/s, typical) ⁵	110-140	←
Reliability		
Error rate (non-recoverable, bits read)	1 in 10 ¹⁴	←
Load/Unload cycles (at 40° C)	300,000	←
Availability (hrs/day x days/wk)	24x7	←
MTBF ¹ (hours)	800K	←
Warranty (yrs.)	3	←
Acoustics		
Idle (Bels, typical)	2.5	←
Power		
Requirement	+5 VDC (+/-5%) +12VDC (+10%/-8%)	←
Startup current (A, max)	1.2 (+5V), 1.5 (+12V)	←
Read/write (W)	6.2	←
Idle (W, average)	4.9	←
Unload idle (W)	4.0	←

Physical size

z-height (mm)	26.1	←
Dimensions (width x depth, mm)	101.6 (+/-0.25) x 147	←
Weight (g, typical)	690	←

Environmental (operating)

Ambient temperature	5° to 60° C	←
Shock (half-sine wave, 2ms, G)	70	←
Vibration (G RMS, 5 to 500 Hz)	0.67 (XYZ)	←

Environmental (non-operating)

Ambient temperature	-40° to 70° C	←
Shock (half-sine wave, 1ms, G)	300	←

¹ Use of MegaScale products in higher duty cycle environments will have a negative impact on reliability. MTBF target is based on a sample population and is estimated by statistical measurements and acceleration algorithms under median operating conditions. MTBF ratings are not intended to predict an individual drive's reliability. MTBF does not constitute a warranty.

² One MB is equal to one million bytes, one GB is equal to one billion bytes and one TB equals 1,000GB (one trillion bytes) when referring to hard drive capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the hard drive, the computer's operating system, and other factors.

³ Advanced Format drive: 4K (4096-byte) physical sectors with 512-byte emulation (512e).
512n=512-byte native physical sectors.

⁴ Portion of buffer capacity used for firmware

⁵ MB/s based on 1,000,000 bytes per second

How to read the Ultrastar model number

HMS5C4040BLE640 = 4TB, SATA 6Gb/s,
64MB buffer
H = HGST
M = Megascale DC
S = Standard
5C = CoolSpin
40 = Full capacity — 4TB
40 = Capacity this model, 40 = 4TB
B = Generation code
L = 26.1mm z-height
E6 = Interface, SATA 6Gb/s, 512e
4 = 64MB buffer
0 = No encryption (1 = encryption)

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Product specifications provided are sample specifications and do not constitute a warranty. Information is true as of the date of publication and is subject to change. Actual specifications for unique part numbers may vary.

Please visit the Support section of our website, www.hgst.com/support, for additional information on product specifications. Photographs may show design models.

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