

FlashMAX[®] III PCIe

Enterprise Solid-State Drives

Highlights

- Uncompromised performance across a wide variety of workloads
- Sustained, predictable performance over the lifetime of the product
- UEFI boot support
- Enterprise-grade reliability: Flash-aware RAID, End-to-End data-path protection, advanced ECC, secure erase, power fail protection

Applications/Environments

- Cloud, hyperscale, enterprise and high performance computing
- Suitable for the most demanding scale-out database workloads
- Online Transaction Processing (OLTP) and Online Analytical Processing (OLAP)
- High Frequency Trading (HFT)
- Virtualized computing
- Space and/or power constrained environments



2200GB and 1100GB | MLC
HH-HL | PCIe Gen 2.0

HGST FlashMAX[®] III PCIe Accelerators

FlashMAX III offers unprecedented application-performance in a half-height, half-length PCIe Flash card, allowing today's most demanding cloud, hyperscale and enterprise applications to scale to new heights. The HGST architecture has been designed to tightly integrate different kinds of Flash media, hardware and software to deliver memory-class performance with storage-class capacity and persistence. HGST's FlashMAX III devices and associated software deliver performance without compromise, along with HDD-like capacity in a very compact, universal form factor.

vFAS[™]

vFAS is an Adaptive Scheduling algorithm, which delivers the most efficient access to Flash media for applications. In addition to providing optimized access for peak performance, vFAS also includes sophisticated techniques to ensure applications get steady sustained performance at all times. vFAS virtualizes the underlying Flash media to present a standard block device interface to applications, without inefficient storage protocols or interconnects, resulting in significant gains in application performance.

Unconditional Performance

FlashMAX III with vFAS delivers consistent performance across all application workloads, even when the device is fully utilized. FlashMAX III with vFAS delivers application performance whether it is peak small block read performance, or sustained mixed read/write performance when the drive is full.

Simplified Management

Unlike many competing solutions, 100% of the capacity available on a FlashMAX III card is available as a single host volume on the server without having to leverage 3rd party software RAID products to stripe across multiple drives. With FlashMAX III you can have a single volume presented to the operating system up to the formatted advertised capacity.

FlashMAX III presents a traditional block storage volume to the host so that applications can easily access it without modification. vFAS has been designed to treat Flash media more like an extension of memory, while maintaining a traditional block storage interface for applications. All of this is done without the use of storage protocols, storage controllers, or storage interconnects. The result is access latencies under 30 μ s, which is closer to DRAM performance than storage.

Features and Benefits

	Feature / Function	Benefits
Performance	150k 70/30 mixed R/W IOPS	Maximum performance density in a HH-HL PCIe SSD drives maximum consolidation and savings
	2700MB/s / 1400MB/s sequential R/W IOPS	
	531k random read IOPS	
Low Latency	< 30 μ s write latencies	DRAM-like performance
Capacity	2200GB, 1100GB	High capacity, all presented as a single volume
Reliability	0.44% AFR (2M hours MTBF)	Higher reliability increases return on investment
	Power-safe write processing	
	End-to-end data-path protection	
	Advanced ECC and global wear-leveling	

HGST Quality and Service

HGST's FlashMAX III family extends the company's long-standing tradition of performance and reliability leadership. A balanced combination of new and proven technologies enables high reliability and availability to customer data.

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 SSD/HDD solutions to satisfy today's monumental computing needs.

Global and Local Wear Leveling

FlashMAX III with vFAS offers global wear leveling to maximize the lifetime of the Flash media. Also, data is relocated to other parts of Flash that are less-used whenever needed. The sophisticated wear leveling delivers maximum lifetime of the Flash media.

Information and Technical Support

www.hgst.com (main website)
www.hgst.com/partners (partner website)

North America

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Toll Free: +1 888 426-5214, Direct: +1 408 717-8087

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support_uk@hgst.com / +49 6929 993601

Program Support

Partners First Program: channelpartners@hgst.com

Specifications

Model # / Part #	VIR-M3-LP-1100-1A / 0T00795 VIR-M3-LP-2200-1A / 0T00797	
Configuration		
Interface	PCIe 2.0 (x8)	
Form factor	Half-Height, Half-Length (HH-HL) add-in card	
Performance¹		
Capacities (GB ²)	1100	2200
Read throughput (max MB/s, sequential 128k)	2,700	2,700
Write throughput (max MB/s, sequential 128k)	1,400	1,400
Read IOPS (max IOPS, random 4k)	531,000	531,000
Write IOPS (max IOPS, random 4k)	59,000	59,000
Peak write IOPS (max IOPS, random 4k)	308,000	308,000
Mixed IOPS (70/30 R/W, random 4k)	150,000	150,000
Peak mixed IOPS (70/30 R/W, random 4k)	335,000	335,000
Read IOPS (max IOPS, random 8k)	281,000	281,000
Write IOPS (max IOPS, random 8k)	30,000	30,000
Latency 512B (µs)	22	22
Reliability		
MTBF ³ (M hours)	2.0	2.0
Annual failure rate ³ (AFR)	0.44%	0.44%
Endurance	2 DW/D	2 DW/D
Warranty		
Warranty	5 years	5 years
Physical		
Dimensions, without bracket (mm)	167.54 x 68.91 x 18.39	
Weight, without bracket (g)	200	
Environmental		
Power consumption (max)	25 Watts	
Operating temperature	0° to 45°C	
Non-operating temperature	-40° to 70°C	
JEDEC compliance	3-month retention at 40°C at EOL	
Operating Systems		
Linux	RHEL 5/6, SLES 10/11, CentOS 5/6, Oracle EL 5/6, Debian 4/5/6, Ubuntu 8/9/10/11/12, Fedora Core 12-18, Open SUSE 11, 12	
Windows	64-Bit Microsoft Server 2008 R2 SP1, Windows 2K-8 R2, Hyper-V core server, Windows 2012 Server, Windows 2012 Hyper-V core server	
VMware	ESXi 5.X	
Software		
HGST Device Manager (HDM)	CLI and GUI interface	

¹ All performance measurements are in full sustained mode except where noted as "Peak."

² One gigabyte (GB) is equal to one billion bytes, one terabyte (TB) is equal to 1,000GB (one trillion bytes), and one petabyte (PB) is equal to 1,000TB (one quadrillion bytes) when referring to solid-state drive or hard drive capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the drive, the computer's operating system, and other factors.

³ MTBF and AFR targets are based on a sample population and are estimated by statistical measurements and acceleration algorithms under median operating conditions. MTBF and AFR ratings do not predict an individual drive's reliability and do not constitute a warranty.

Agency Certifications

RoHS (DIRECTIVE 2011/65/EU) REACH SVHC; WEEE (DIRECTIVE 2012/19/EU)
USA/Canada | UL 60950 1 & CSA C22.2, FCC Part 15 Subpart B; Section 15.109A/ANSI C63.4 (2003); ICES-003 Version 4, Class A; cTUVus; Radiated & Conducted Emissions Class A; EN 55022, Class A; EN 55024 Immunity
Europe | 2004/108/EC EMC Directive; CE IEC 61000 Class A Mark; TUV-Bauart
Japan | VCCI - V-3/2014.04
Taiwan | BSMI CNS 13438:2006 Class A
Korea | KCC - KN 22/24 - MSIP-REM-HG2-M3-LP-yyyy-z
Russia/Belarus/Kazakhstan | EAC - Customs Union Commission
Australia/New Zealand | ACMA - AS/NZ CISPR 22:2009+A1, CISPR24: 2010



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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.