Samsung PM1633a SAS SSD

PM1633a exceeds HDDs in both speed and capacity, achieving valuable cost effectiveness and outstanding reliability.

Product Brief

BREAKTHROUGH VALUE ENABLES ALL FLASH ENTERPRISE STORAGE TO ELIMINATE SPINNING RUST IN DATA CENTERS

Samsung PM1633a solid-state drive offers up to 1,000 times the performance of 15K RPM hard disk drives at a comparable cost per gigabyte.

Enterprise server and storage administrators face challenging requirements to deliver mission critical business infrastructure on a limited budget. Enterprise environments need to deliver on-premises computing solutions that reliably deliver predictable performance 24/7, 365 days a year. Considering each of these factors, IT and data center managers are tasked with finding optimal storage solutions. Samsung provides enterprise server and storage administrators with SSDs that deliver exceptional performance and reliability in primary enterprise storage applications, such as virtual desktop infrastructure (VDI), collaboration platforms, web servers, email, enterprise resource planning, customer relationship management (CRM), and SQL databases. Compared to performance HDDs, these high-performing SAS SSDs deliver up to four times the performance for sequential workloads, and up to 1,000 times the performance for random workloads, while still maintaining a comparable cost per gigabyte. As the pioneer in V-NAND technology, Samsung has been delivering enterprise grade SSDs based on cost-effective TLC memory longer than anyone else. Additionally, Samsung has the advantage of being an integrated supplier of SSDs, ensuring the highest levels of quality.

Samsung PM1633a SAS SSD delivers:

Consistently High Performance – Up to 1,000 times the performance of the fastest 15K RPM hard drives, the Samsung PM1633a SAS SSD provides enterprise IT administrators performance to spare. An optimized Samsung native SAS 3.0 controller supplies the drive with 12 Gb/s of bandwidth and provides enterprises the performance margin to prevent costly and disruptive application support tickets.
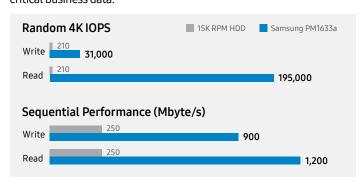
Exceptional Value – The same low cost per gigabyte as slower SAS HDDs. By utilizing Samsung state-of-the-art V-NAND flash memory, cost effective TLC flash memory can address high-end enterprise applications, outperforming older planar MLC flash memory, and providing solid state performance and reliability at hard drive cost. With no moving parts, the PM1633a SAS SSD delivers over 10 times the reliability of spinning disks, reducing the administrative cost overhead associated with drive replacement.

Breakthrough Storage Density – Capacities up to 15.36TB in a 2.5" small form factor (SFF) drive. With 60% higher capacity per drive, and a smaller 2.5" form factor, up to 384TB can be stored in a 2U server. This breakthrough in storage density more than triples the density available with high-capacity HDDs, using an industry standard form factor, and without sacrificing enterprise reliability, availability, and serviceability (RAS).

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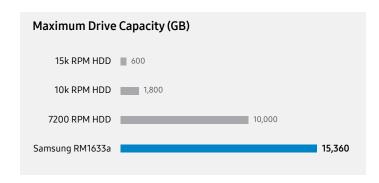# Ultra-high-capacity SAS SSDs from leading enterprise storage system

Optimized for enterprise environments

To deliver enterprise reliability and performance, the Samsung PM1633a uses a native SAS 3.0 controller, supporting dual-port highavailability needs. To meet the demand for high utilization, highly virtualized enterprise environments, the PM1633a SAS SSD utilizes firmware that prioritizes quality of service (QoS) for sustained random workloads, to keep all virtual machines running quickly and smoothly. The firmware is also optimized for always on, always busy workloads ready to respond quickly to incoming host requests. With no moving parts to fail, the PM1633a delivers enterprise class reliability for your critical business data.

Random 4K IOPS

■ 15K RPM HDD ■ Samsung PM1633a

Write	210 / 31,000
Read	210 / 195,000

Sequential Performance (Mbyte/s)

Write	250 / 900
Read	250 / 1,200

Built for high-density deployments

With 60% more capacity than today's highest capacity HDDs, the PM1633a enables enterprise system administrators to keep up with the growth of business data, without costly datacenter expansions. The PM1633a delivers all of this storage capacity in a compact 2.5" 15mm enterprise form factor, rather than the bulky 3.5" form factor needed for high-capacity hard drives. The high capacity PM1633a SSD allows for drive count consolidation, and provides a critical capability to expand storage within existing infrastructure, rather than requiring costly new facilities.

Maximum Drive Capacity (GB)

15k RPM HDD	600
10k RPM HDD	1,800
7200 RPM HDD	10,000
Samsung RM1633a	15,360

Enterprise-grade power loss protection

During normal power-off periods, the host server allocates time to preserve data integrity by transmitting a standby command to each device. In the event of an unexpected power loss, though, the cached data in a storage device's internal buffers (DRAM) can be lost. This can occur with unexpected power outages or when users unplug devices from the system. However, the Samsung PM1633a SAS SSD has been designed to prevent data loss resulting from unexpected power shutdowns with its power-loss protection architecture. Upon detection of a power failure, the SSD immediately uses the stored energy from tantalum capacitors to provide enough time to transfer the cached data in DRAM to the flash memory, ensuring no loss of data.

Samsung PM1633a SSD Technical Specifications	
Form Factor	2.5"
Capacity	480 GB, 960 GB, 1.92 TB, 3.84 TB, 7.68 TB, 15.36 TB
Host Interface	SAS 3.0 @ 12 Gb/s
MTBF	2,000,000 hours
Power Consumption (Active/Idle)	11 W / 4.5 W
Endurance	1 DWPD for 5 Years
UBER	1 in 10^17
Random Read IOPS (4KB)	Up to 200,000 IOPS
Random Write IOPS (4KB)	Up to 35,000 IOPS
Sequential Read (128KB)	Up to 1,250 MB/s
Sequential Write (128KB)	Up to 1,250 MB/s
Physical Dimensions	70 x 100 x 15 mm
Weight	140 grams

For more information

For more information about the Samsung PM1633a SAS SSD, visit **www.samsung.com/semiconductor**.

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