

PCIe 5.0 SSD

High Performance and Power Efficiency



PBlaze[®]7 7A40 Series NVMe[™] SSD

The PBlaze7 7A40 series PCIe 5.0 enterprise NVMe SSDs, featuring exceptional power efficiency alongside outstanding performance, are aimed at further accelerating applications such as AI, databases, cloud computing, and virtualization. Notably, this groundbreaking performance has made it the first of its kind to surpass one million IOPS for 4K random write operations.

Outstanding Performance

As the latest member of the PBlaze product family, PBlaze7 7A40 is developed based on the MUFP, with deep optimization of hardware and firmware, it delivers 3,300K IOPS for 4K random reads and 1,000K IOPS for 4K random writes, respectively, which is 3x and 2.5x the performance of maintain PCIe 4.0 SSDs. The sequential read and write speeds are 14.1GB/s and 11.2GB/s, leading the enterprise PCIe 5.0 SSD market.

Latency as Low as 5μs

The PBlaze7 7A40 leverages its controller architecture to reduce latency significantly by optimizing the I/O path, streamlining processing flows, and enhancing data layouts. This results in a 4K random read latency as low as 55μs and a random write latency of 5μs. Additionally, with enhanced flow control and intelligent sequential flow prefetch technology, its sequential read latency can also be as low as 6μs, boosting performance under low workloads and providing stronger support for various latency-sensitive business applications.

Remarkable Power Efficiency

The PBlaze7 7A40 offers a 110% improvement in 4K random read performance per watt and a 73% increase in 4K random write performance per watt compared to its predecessor products. It consumes 13W for sequential reads and 18W for sequential writes, with an optimized thermal design to minimize thermal impact in dense deployment scenarios.

Comprehensive Enterprise-grade Feature Support

The PBlaze7 7A40 supports NVMe 2.0 and NVMe-MI 1.2b protocols, providing essential enterprise-grade features such as full data path protection, power-loss data protection, firmware upgrade without reset and so on.

Key Features

PCIe 5.0, NVMe2.0
3.2TB - 7.68TB
3300K IOPS 4K Ran.Read
1000K IOPS 4K Ran.Write
14.1 GB/s 128K Seq.Read
11.2 GB/s 128K Seq.Write
Ran.Latency R/W 55/5μs

Reliability

Sanitize
Full Data Path Protection
Power Failure Protection

Easy-to-use

NVMe-MI 1.2
Telemetry
Firmware Upgrade
without Reset

Advanced Feature Support

Timestamp
Enterprise TRIM

PCIe 5.0 SSD

PBlaze[®] 7 7A40 Series NVMe™ SSD

PRODUCT BRIEF

Applications & Workloads

Database
Searching, Indexing, CDN
Cloud and Hyper-scale Computing
High Performance Software-defined Storage
Deep Learning and Big Data Analytics
High Performance Storage System
ERP, SAP HANA
BOSS, Banking, Taxing
High Frequency Trading
Online Payment



For more information, please visit:
www.memblaze.com

Phone:
400-650-7995

Email:
contact@memblaze.com

<i>PBlaze7 7A40 Series</i> ^[1]	<i>7A40</i>		<i>7A46</i>	
User Capacity (TB)	3.84	7.68	3.2	6.4
128KB Sequential Read(GB/s)	14.1	14.1	14.1	14.1
128KB Sequential Write(GB/s)	6.0	11.2	6.0	11.2
Sustained Random Read (4KB) IOPS	3300K	3300K	3300K	3300K
Sustained Random Write (4KB) IOPS (Steady State)	270K	500K	580K	1000K
Lifetime Endurance DWPD ^[2]	1		3	
Random R/W Latency	55 / 5 μs			
Sequential R/W Latency	6 / 5 μs			
Form Factor	2.5-inch U.2			
Interface	PCIe 5.0 x 4			
Operating Temperature	Case: 0°C to 77°C			
Uncorrectable Bit Error Rate	< 10 ⁻¹⁸			
Mean Time Between Failures	2.5 million hours			
Protocol	NVMe 2.0			
NAND Flash Memory	3D TLC NAND			
Operation System	RHEL, SLES, CentOS, Ubuntu, Windows Server, VMware ESXi			
Power Consumption	< 25 W			
Basic Feature Support	Power Failure Protection, Full Data Path Protection, S.M.A.R.T, Hot Pluggable			
Advanced Feature Support	TRIM, EUI64/NGUID, Format, Firmware Upgrade without Reset, Sanitize, Timestamp, Telemetry, NVMe-MI/SMBus			
Software Support	Open-source management tool, CLI debug tool OS in-box driver (Easy system integration)			

NOTES:

[1] Performance may vary due to different system configurations and firmware version.

[2] DWPD, Drive Writes per Day for 5 years.

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