PCIe 5.0 SSD

Ultimate Performance for the AI Era

PBlaze®7 7A40 Series NVMe™ SSD

The PBlaze7 7A40 Series is an enterprise PCIe 5.0 SSD designed for AI infrastructure. Built on the Memblaze Unified Framework Platform and next-generation NAND flash, it delivers breakthrough performance and energy efficiency, offering up to 30.72TB per drive to efficiently handle demanding workloads such as KV Cache and Retrieval-Augmented Generation (RAG). By reducing data movement, the 7A40 enhances AI workload efficiency and provides a robust foundation for modern data-intensive applications.

High Performance, Accelerating AI Inference

Designed to set a new benchmark for enterprise PCIe 5.0 SSDs, the 7A40 delivers up to 14.2GB/s sequential read and 11.8GB/s sequential write throughput, while its random performance reaches 3.4M IOPS for 4K read and 1.28M IOPS for 4K write. This combination sustains peak compute efficiency, keeping AI training and inference pipelines fully fed and running smoothly.

Ultra-Low Latency: Down to 50 / 5 µs

By fully leveraging hardware capabilities and advanced firmware optimizations, the PBlaze7 7A40 achieves 4K random read and write latencies of 50µs and 5µs, with sequential read latency further reduced to 6µs. These ultra-low latencies accelerate data access and responsiveness, ensuring consistent performance for even the most latency-sensitive AI workloads.

30.72TB Capacity Without Performance Compromise

As data volumes continue to grow rapidly, high-capacity storage has become essential. The PBlaze7 7A40 delivers up to 30.72TB per drive without compromising performance, enabling efficient handling of massive datasets and large-scale context processing. Its superior performance-per-watt allows enterprises to consolidate storage infrastructure while significantly reducing total data center TCO.

Enterprise Reliability and Flexibility

The PBlaze7 7A40 Series is available in both 1 DWPD and 3 DWPD variants, providing flexible options for read-intensive and mixed-use workloads. Fully compliant with NVMe 2.1, it integrates enterprise-grade features including NVMe-MI over SMBus/PCIe VDM, Full Data Path Protection, Sanitize and Firmware Upgrade without Reset, simplifying large-scale deployment and lifecycle management while ensuring reliable protection for critical data.

Key Features

PCIe 5.0, NVMe2.1
3.2TB - 30.72TB
4K RR 3400K IOPS
4K RW 1280K IOPS
128K SR 14.2 GB/s
128K SW 11.8 GB/s
Ran.Latency R/W 50/5µs

Reliability

Sanitize
Full Data Path Protection
Power Failure Protection

Easy-to-use

NVMe-MI
Telemetry
Firmware Upgrade without Reset

Advanced Feature Support

Advanced Device Self-Test
128K Write Atomicity Normal
Enterprise TRIM

PCIe 5.0 SSD

PBlaze®7 7A40 Series NVMe™ SSD

Product Brief

PBlaze7 7A40 Series [1]	*7A40*				*7A46*			
User Capacity (TB)	3.84	7.68	15.36	30.72	3.2	6.4	12.8	25.6
128KB Sequential Read (GB/s)	14.2	14.2	14.2	14.2	14.2	14.2	14.2	14.2
128KB Sequential Write (GB/s)	9.5	11.2	11.8	11.8	9.5	11.2	11.8	11.8
Sustained Random Read (4KB) IOPS	3400K	3400K	3200K	3400K	3400K	3400K	3200K	3400K
Sustained Random Write (4KB) IOPS (Steady State)	580K	610K	680K	740K	1050K	1100K	1200K	1280K
Lifetime Endurance DWPD[2]	1	1	1	1	3	3	3	3
Random R/W Latency	50 / 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							
Power off Retention	3 months @ 40°C							
Protocol	NVMe 2.1							
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, Flexible Power Management							
Advanced Feature Support	TRIM, Multi-namespace, EUI64/NGUID, Firmware Upgrade without Reset, Variable Sector Size& NVMe End-to-End Data Protection (DIF/DIX), Sanitize, 128K Write Atomicity Normal, Telemetry, Advanced Device Self-Test, NVMe-MI over SMBus/PCIe VDM, OCP2.6 SMART Compliance							
Software Support	Open-source management tool, CLI debug tool OS in-box driver (Easy system integration)							

Applications & Workloads

- Artificial Intelligence
- 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

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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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