



X201P

Accelerating Next-Gen Database Workloads

Solutions Brief



- U.2 and E3.S form factors
- Single- or dual-port PCIe 5.0

PHISON

Unlocking class-leading performance, density, and efficiency with PCIe Gen5 and 1 Tb TLC NAND.

Modern enterprise data layers face unprecedented pressures from increasingly demanding workloads. Phison's latest Pascari X201P enterprise SSDs provide maximum performance and reliability, with class leading latency and throughput for modern enterprise infrastructures. The Pascari X201P reaches new levels of enterprise throughput, database scalability, and structural efficiency.

The convergence of real-time AI inference, massive multi-tenant database applications, and large-scale predictive analytics requires a storage infrastructure that can keep pace and evolve. For such demanding environments, database engines frequently encounter storage input/output bottlenecks rather than being gated by CPU or memory. This causes volatile tail latencies and inconsistent throughput.

Advancements in controller firmware and NAND flash support allow the Pascari X201P models to deliver up to a 40% improvement compared to the highly acclaimed X200P. The Pascari X201P isn't just faster than its predecessor, as the new drives deliver 30% higher typical performance than leading competing drives. Pascari X201P tackles the most demanding enterprise storage needs, providing up to 30.72 TB per drive capacity with optimized performance-per-watt metrics that can grow to meet tomorrow's demands.

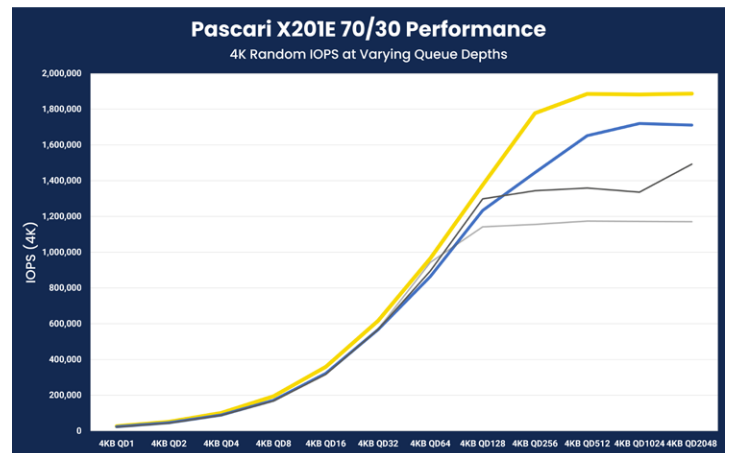
Scaling Database Capacity and Performance

The Pascari X201P targets higher capacities of 15.36 TB and 30.72 TB, bringing substantial improvements over the prior generation X200P at those same capacities. Higher density 3D TLC NAND means fewer NAND die and packages are required, which reduces the amount of power per package and thus allows the Pascari X201P to increase efficiency and performance.

Using the demanding 4K random 70/30 read/write workload, a key metric when looking at real-world database concurrency, the Pascari X201P delivers exceptional performance under heavier workloads. As transactional concurrency increases and queue depths climb, the Pascari X201P ramps up much faster than both its predecessor as well as the top-performing competing enterprise SSDs.

Pascari X201P breaks the one million IOPS barrier at a queue depth of just 128, with over 40% higher IOPS than the prior generation X200P.

It's also up to 30% faster than the closest competitor drive (Comp A) in the queue depth range of 256 to 1024, and 67% faster than another competitor (Comp B). The Pascari X201P unlocks an industry leading 1.25 million IOPS from QD256 and above, with consistent throughput even under extreme saturation.



The 70/30 performance profile directly targets the hardest challenges in modern enterprise database architectures. High-frequency OLTP frameworks, PostgreSQL, and distributed database clusters rarely operate in pure read or write isolation. Instead, it constantly interweaves read-heavy index lookups with table updates. The Pascari X201P excels at eliminating bottlenecks and slashes 99.99% tail latencies under heavy loads.

Pascari X201P: Performance Under Pressure

Data center architects can give enterprise databases the I/O headroom required to process millions of concurrent transactions by standardizing on the Pascari X201P. This ensures bulletproof application responsiveness and uncompromising SLA performance during peak database utilization.



Phison Pascari X201P SSD Family

The Pascari X201P serves as the direct successor to the existing X200P, featuring a modern architecture with an advanced 16-channel controller, cutting-edge high-density 3D TLC NAND, and refinements to the underlying firmware. It utilizes the latest flash NAND, with 1 Tb per die capacity, paving the way for improved density, scalability, and performance.

The Pascari X201P targets high-density workloads with massive 15.36 TB and 30.72 TB capacities, utilizing a high-performance configurable PCIe Gen5 x4 or 2x2 dual-port interface, with the latter providing failover support. It uses the latest 3D TLC NAND to provide up to 40% higher performance than the previous generation X200P series, with 1 DDPD (Drive Write Per Day) endurance. It's available in both U.2 and E3.S form factors.

Pascari X201P U.2 Specifications

Capacity	7.68 TB	15.36 TB
Interface	PCIe 5.0 1x4, 2x2	PCIe 5.0 1x4, 2x2
NVMe Protocol	2.0d	2.0d
NAND Flash	3D TLC	3D TLC
Sequential Read (MB/s)	14,800	14,800
Sequential Write (MB/s)	9,200	11,800
4K Random Read (IOPS)	3,300K	3,250K
4K Random Write (IOPS)	480K	600K
Random Read Latency (µs)	55	55
Random Write Latency (µs)	8	8
Active Power (W)	≤25	≤25
Idle Power (W)	≤5	≤5
DWPD	1	1
MTBF (million hours)	2.5	2.5
Warranty	5	5



Improvements in the firmware and the use of newer, higher density 3D TLC NAND keep sequential reads at close to the PCIe x4 interface maximum, with up to 14,800 MB/s. More importantly, write speeds now reach up to 11,800 MB/s (compared to 8,500 MB/s on the X200P 15.36 TB model). Random reads and writes also see substantial gains, with up to 3,300K read IOPS for the Pascari X201P and up to 600K write IOPS (versus 2,800K and 435K on the same capacity 15.36 TB X200P).



Pascari X201P E3.S Specifications

Capacity	7.68 TB	15.36 TB
Interface	PCIe 5.0 1x4, 2x2	PCIe 5.0 1x4, 2x2
NVMe Protocol	2.0d	2.0d
NAND Flash	3D TLC	3D TLC
Sequential Read (MB/s)	14,800	14,800
Sequential Write (MB/s)	9,200	11,000
4K Random Read (IOPS)	3,300K	3,000K
4K Random Write (IOPS)	480K	570K
Random Read Latency (µs)	55	55
Random Write Latency (µs)	8	8
Active Power (W)	≤25	≤25
Idle Power (W)	≤5	≤5
DWPD	1	1
MTBF (million hours)	2.5	2.5
Warranty	5	5

Testing Details: All testing was conducted on an Intel Xeon w5-3435X processor, using an ASUS Pro WS W790E-SAGE SE motherboard, equipped with 128GB (8x16GB) of DDR5-4800 memory. Benchmarks were collected on Ubuntu 24.04.4 LTS, with testing done running FIO 3.36 after full SSD conditioning.

Legal Disclaimer: 1 TB = 1,000,000,000,000 bytes. Performance figures, specifications, and other technical information are based on specified test conditions and are provided for informational purposes only. Actual performance can vary depending on system configuration, workload, operating environment, firmware, and other factors. Specifications and product availability are subject to change without notice.