# MEMBLAZE

# PBlaze®5 920 Series NVMe™ SSD

## High-performance SSD for Application Acceleration

Memblaze PBlaze5 920 Series NVMe SSD adopts 96-layer 3D NAND and provides larger capacity up to 7.68TB, comes in both 2.5" U.2 and HHHL form factor. The PBlaze5 920 Series NVMe SSD offers up to 5.9GB/s read bandwidth and 970,000 read IOPS, presents read and write latencies of 90μs and 12μs respectively. With superior performance, complete data protection, good compatibility, and rich enterprise-class features, the PBlaze5 920 Series NVMe SSD enables enterprises to efficiently build high-speed, high-reliability, and flexible storage solutions for their mission-critical applications.

## Key Features

- Utilizing 96-layer 3D NAND, providing up to 7.68TB in single disk
- Up to 5.9GB/s throughput
- Firmware Upgrade without Reset
- Support up to 32 Namespaces and 32 encryption keys for data isolation
- QoS improvement with Quota by Namespace
- NVMe End-to-End Data Protection
- Variable Sector Size Management
- Up to 8TB/s enterprise TRIM function
- Support Dual Port and NVMe Reservation

## 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

## Guaranteed Data Reliability

PBlaze5 920 series is implemented with patent data protection technology, including LDPC error correction, AES-256bit Data Encryption, Full Data Path Protection, NVMe End-to-End Data Protection(DIF/DIX), Enhanced Power Failure Protection, from device to link path layer, fully protect enterprise data in a safe and reliable storage environment.

## Firmware Upgrade without Reset

To satisfy continuity of enterprise critical business and reduce the complexity of large-scale SSD upgrade operations in data center, PBlaze5 920 series NVMe SSD supports feature firmware upgrade without reset, enabling complete firmware upgrade without stopping businesses or shutting down systems.

## Quota by Namespace

PBlaze5 920 series supports up to 32 namespaces, share capacity and performance on single drive for multi-application deployment scenario. Each namespace has a different AES-256 key to encrypt data, to avoid new user access to old data and provide data access isolation. To ensure QoS of critical business, PBlaze5 920 series provides feature Quota by Namespace to set performance limitation for non-critical application deployed in different namespaces.

## Variable Sector Size Management

The Variable Sector Size (VSS) transfers user data with metadata. PBlaze5 920 supports 512, 520, 4096, 4104, and 4160 bytes Variable Sector Size, which means an I/Os from service application carry 8 bytes or 64 bytes of metadata simultaneously. On the premise of ensuring high consistent performance, VSS further guarantees high data reliability requirements for storage systems and distributed file systems.

## Up to 8TB/s Enterprise TRIM Function

To meet the high security and high-performance requirements of cloud computing, the PBlaze5 920 series supports enterprise-class TRIM function to ensure that trimmed old data will not be accessed by new users, while, significantly improves performance and endurance. Special designed TRIM mechanism has minimal impact on the business. The speed of TRIM is up to 8TB/s. Combining with applications to realize flexible TRIM strategy.

## High-availability Dual Port

The PBlaze5 920 series supports dual-port function which solving the single-path failure problem. The two ports can be accessed simultaneously, which ensures the continuity of data access and minimizes the impact on QoS of critical service. PBlaze5 920 series is applicable to high-availability storage system and all-flash arrays with multi-controller, multi-path architecture. The PBlaze5 920 series also supports NVMe reservation function, which can be used for quorum disks in storage system.

# PBlaze®5 920 Series NVMe™ SSD

## High-performance SSD for Application Acceleration

| PBlaze5 920 Series [1] | D920 | | C920 | | D926 | | C926 | |
|---|---|---|---|---|---|---|---|---|
| User Capacity (TB) | 3.84 | 7.68 | 3.84 | 7.68 | 3.2 | 6.4 | 3.2 | 6.4 |
| Form Factor | 2.5-inch U.2 | | HHHL AIC | | 2.5-inch U.2 | | HHHL AIC | |
| Interface | PCIe 3.0 x 4 | | PCIe 3.0 x 8 | | PCIe 3.0 x 4 | | PCIe 3.0 x 8 | |
| 128KB Sequential Read(GB/s) | 3.5 | 3.5 | 5.6 | 5.9 | 3.5 | 3.5 | 5.5 | 5.9 |
| 128KB Sequential Write(GB/s) | 3.3 | 3.5 | 3.3 | 3.7 | 3.3 | 3.5 | 3.3 | 3.7 |
| Sustained Random Read (4KB) IOPS | 825K | 840K | 835K | 970K | 825K | 835K | 825K | 970K |
| Sustained Random Write (4KB) IOPS (Steady State) [2] | 140K | 150K | 140K | 150K | 280K | 300K | 280K | 300K |
| Latency Read/Write (µs) [3] | 90 / 12 | | | | 90 / 12 | | | |
| Lifetime Endurance [4] | 1 DWPD | | | | 3 DWPD | | | |
| Operating Temperature [5] | 2.5-inch U.2: Ambient: 0°C to 35°C with suggested airflow; Case: 0°C to 70°C AIC: Ambient 0°C to 55°C with suggested airflow | | | | | | | |
| Uncorrectable Bit Error Rate | $< 10^{-17}$ | | | | | | | |
| Mean Time Between Failures | 2 million hours | | | | | | | |
| Protocol | NVMe 1.2 | | | | | | | |
| NAND Flash Memory | 96L 3D NAND | | | | | | | |
| Operation System | RHEL, SLES, CentOS, Ubuntu, Windows Server, VMware ESXi | | | | | | | |
| Power Consumption | 7~25 W | | | | | | | |
| Basic Feature Support | Power Failure Protection, Hot Pluggable, Full Data Path Protection, S.M.A.R.T, Flexible Power Management | | | | | | | |
| Advanced Feature Support | TRIM, Multi-namespace, AES 256 Data Encryption & Crypto Erase, Dual Port & Reservation (U.2 only), EUI64/NGUID Variable Sector Size Management & NVMe End-to-End Data Protection (DIF/DIX), Firmware Upgrade without Reset, Quota by Namespace | | | | | | | |
| Software Support | Open source management tool, CLI debug tool OS in-box driver (Easy system integration) | | | | | | | |

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