SP506 Gen5 SSD

The BIWIN SP506, an enterprise-class PCIe SSD built on the PCIe 5.0 x4 interface, offers double the bandwidth of Gen4 products. It adopts the U.2 2.5-inch form factor and complies with the NVMe 2.0 specification and NVMe-MI 1.2 specification. The SP506 employs an innovative controller architecture that delivers ultra-low and consistent latency while maintaining exceptional throughput and power efficiency. It delivers leading KIOPS-per-Watt performance.

Designed for 1 DWPD read-intensive applications, the SP506 is available in 1.92 TB, 3.84 TB, and 7.68 TB capacities, providing the performance needed for next-generation servers, traditional servers, and workstations. The drive also integrates a full range of enterprise-class features, including AES-256 hardware encryption, sanitize, end-to-end data path protection, in-drive RAID, secure boot, and TCG Opal 2.0. These features enable secure, reliable, and high-quality service delivery in modern IT infrastructure, including hyperscale data centers, cloud computing platforms, compute-intensive servers, and AI servers.

Key Features

Low Power Consumption and High Energy Efficiency

Through controller optimization and firmware tuning, the SP506 achieves ultra-low latency with optimized power consumption. It achieves higher performance per watt, making it an efficient solution to help data centers move toward greener, more sustainable operations.

Sustained Performance and Reliability

The SP506 leverages PCIe Gen5 bandwidth to provide next-generation read and write speeds. It is rated for 1 DWPD endurance and is available in capacities up to 7.68 TB, with sequential speeds reaching 13600 MB/s read and 10500 MB/s write, and random performance up to 3200K IOPS read and 500K IOPS write. The SP506 maintains low-latency response and consistent quality of service, even under heavy workloads.

Comprehensive Data Protection

The SP506 incorporates multiple layers of protection, including power-loss protection, end-to-end data path protection, and data scrubbing. In-drive RAID enhances fault tolerance by enabling recovery from single-die failures. The drive also supports AES encryption, TCG Opal 2.0, and atomic write for enhanced data security and integrity.

Advanced Features for Data Centers

Designed for scalable data center environments that require efficient and standardized monitoring and management, the SP506 supports a wide range of enterprise-class features. These include multiple namespaces, S.M.A.R.T. monitoring, latency monitoring, health and telemetry logs, and power-loss protection. With a high degree of configurability, the SP506 helps streamline system management and reduce overall operating costs.

Stringent Quality and Reliability

The SP506 undergoes rigorous quality control and follows a strict manufacturing process under BIWIN's enterprise-grade quality management system. Backed by ongoing reliability testing (ORT), the drive maintains consistent performance and long-term stability throughout its lifecycle.

Technologies

OCP 2.0	TCG Opal 2.0	NVMe-MI 1.2	Multiple Namespaces	Multiple Sector Size	Atomic Write
In-drive RAID	Power Loss Protection	Data-path E2E Protection	Intelligent Thermal Throttling	Intelligent Low-Power Management	S.M.A.R.T.
Health Log	Telemetry Log	Secure Boot	AES	TCG Opal	

Applications

Data Center   Cloud Computing   AI Server   General-Purpose Server

Specifications

Model Name	SP506
Interface	PCIe Gen5x4, NVMe 2.0 & OCP 2.0 & NVMe-MI 1.2
Form Factor	U.2 2.5"
Flash Type	eTLC
DWPD (Drive Writes Per Day)	1
Capacity	1.92 TB / 3.84 TB / 7.68 TB
Sequential Read (Up to)	13600 MB/s
Sequential Write (Up to)	10500 MB/s
Random Read 4K (Up to)	3200K IOPS
Random Write 4K (Up to)	500K IOPS
Random Read/Write Latency (μs)	67/9
Read Power Consumption (Max.)	23 W
Write Power Consumption (Max.)	21 W
Idle Power Consumption (Max.)	5 W
Operating Temperature	0°C to + 70°C
Storage Temperature	-40°C to + 85°C
Data Retention	3 months at 40°C
MTBF	>2,500,000 hours
Certifications	CE, FCC, RoHS, REACH, WEEE, HF, China RoHS
Warranty	5-Year Limited

Order Information

Capacity	Part Number	Power Loss Protection
1.92 TB	CEAU2W6F510-1T9	Firmware-Based, Hardware-Based
3.84 TB	CEAU2W6F510-3T8	Firmware-Based, Hardware-Based
7.68 TB	CEAU2W6F510-7T6	Firmware-Based, Hardware-Based

1. Tested by BIWIN labs. Actual performance may vary due to systems, devices, or environment.
2. Maintenance and future updates are required throughout the product lifecycle. Specifications are subject to change without notice.
3. The pictures are for illustration only. Actual products may vary due to product enhancements or changes.
4. Not all products are sold in all regions of the world.
5. As used for storage capacity, one megabyte (MB)= one million bytes, one gigabyte (GB) = one billion bytes, and one terabyte (TB) = one trillion bytes. Total accessible capacity varies depending on the operating environment. As used for buffer or cache, one megabyte (MB) = 1,048,576 bytes. As used for transfer rate or interface, megabyte per second (MB/s) = one million bytes per second, and gigabyte per second (GB/s) = one billion bytes per second.
6. MTBF = Mean Time Between Failures based on internal testing using the Telcordia stress testing standard.
7. Please visit www.biwintechnology.com for warranty details in your region.
8. For more information, please contact sales@biwintech.com.

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