

PS5012-E12DC

*the Enterprise **PCIe** SSD*



The Phison Electronic PS5012-E12DC PCIe Gen 3x4 NVMe SSD is the 2nd generation of our high performance PCIe NVMe SSD controller. Preceded by the PS5007-E7DC the new E12DC pushes the limits of capacities and performance. Offering capacities of up to 3840GB and sustained performance of up to 3200MB/s in Sequential Reads and 1000MB/s in Sequential Writes.

Utilizing an advanced 28nm process technology, incorporating the LDPC 3.0 ECC engine, the CoXProcessor 2.0, and the DSP 2.0, the E12DC will maximize endurance, reduce latencies, and provide consistent performance on various workloads.

Advanced Features

LDPC 3.0 ECC Engine

Phison's 3rd generation LDPC ECC Engine can correct up to 160 bits/2k via the hard decoder and up to 400bits/2k via the soft decoder. This will ensure that your data can be protected throughout the life of the SSD.

Encryption

For data security, the PS5012-E12DC supports AES 256 bit hardware-based encryption. The E12DC is also fully compliant with Trusted Computing Group (TCG) Opal Specification.

Power Loss Data Protection

Power loss protection is provided using additional circuitry and capacitors. This gives the E12DC additional power and time to flush the data residing in the DRAM and buffers. This ensures the data integrity of the drive and protects against data corruption in the event of power loss or system failures.

End-to-End Data Protection

From the moment the data enters the SSD, the E12DC generates associated parities to prevent soft errors. The data is safeguarded from corruption at every step of the way from the host device to the NAND flash.

The data within this specification is subject to change by Phison without notice. Performance numbers may vary based on system configuration and testing conditions.

Controller

PS5012-E12DC

Capacities	Up to 3840GB
Interface	PCIe Gen3x4 NVMe 1.3
Form Factor	M.2 2280, M.2 22110, U.2, HHHL
NAND Flash	3D TLC
Sustained Performance (Up to)^{1,2}	
Sequential Read	3200 MB/s
Sequential Write	1000 MB/s
4K Random Read	460K IOPS
4K Random Write	70K IOPS
4K Mixed Read / Write 70/30	168K IOPS
Quality of Service (99.9%)	
4K Random Read QD1 Latency	130µs
4K Random Write QD1 Latency	40µs
Reliability	
UBER	< 1 sector per 10 ¹⁷ bits read
Power	
Max	< 7.2W
Idle	< 2.4W
Temperature	
Operating	0°C ~ 70°C
Non-Operating	-40°C ~ 85°C
Advanced Features	<ul style="list-style-type: none"> • LDPC • Power loss Data Protection • End-to-End Data Protection • Encryption

1) 1MB/s = 1,000,000 bytes / second

2) Performance measured using FIO under Linux on the full LBA span of the test drive.

- Sequential 128K queue depth 32 with 1 worker.
- 4K Random queue with depth 32 with 8 workers / 8 jobs.