



NVMe PCIe Data Center SSD

Skyhawk™ & Skyhawk™ Ultra NVMe PCIe SSD

Data Center Grade Flash Storage

Features & Benefits:

- PCIe Gen 3, x4 interface and NVMe™ 1.2 compliant with in-box driver support
- Industry-standard 2.5-inch small form factor for high serviceability
- Capacities up to 3.84TB¹
- Optimized for read-intensive & mixed-use workloads
- Up to 150K IOPS (70/30 random mixed workload)
- Half the power consumption compared to 25W PCIe SSD solutions
- Hot Swap/Hot Plug support with data-loss protection
- Includes the innovative Guardian Technology™ Platform for improved flash endurance and data integrity/protection
- MTBF² rating of 2 million hours
- Instant Secure Erase (ISE)

Specialized for the following applications:

- Cloud object storage
- Microsoft® Storage Spaces Direct (S2D)
- Microsoft Azure® Stack (MAS)
- OLAP
- File/Web Servers
- Media Streaming & VoD

Economies of Scale Propel Cloud Storage

Cloud services are revolutionizing how companies think of data storage by transitioning from fixed-cost IT infrastructure to variable cost models. As more business services move to the cloud to reap the benefits of the “pay as you go” model, the demands on cloud service providers to scale increase exponentially. Finding ways to maximize and streamline storage by running concurrent workloads across the storage infrastructure has become essential. Furthermore, cloud storage services must offer high availability and consistent I/O performance to be delivered 24/7, 365 days a year. The Skyhawk™ PCIe SSD helps customers meet these rigorous requirements at a viable \$/GB.

Skyhawk SSDs Help Increase Productivity and Lower TCO

SATA SSDs have long been used in data centers and cloud storage. But as capacity needs grow along with the necessity to access data with minimal latency, the adequacy of the interface bandwidth between the host and the drive comes under scrutiny. With no announced evolution of the SATA standard beyond SATA 3.x (6Gbps), the use of SATA SSDs in the cloud has reached performance limits. While capacity and bandwidth can be scaled by supplementing more SATA drives, they will come at the cost of increased floor space and lower PUE (Power Usage Effectiveness). The sprawling effect of SATA SSDs can be mitigated by the use of Skyhawk NVMe-compliant SSDs. By delivering 3x the bandwidth of enterprise SATA SSDs*, Skyhawk SSDs can yield server consolidation benefits as much as 3:1.

Highly Reliable Storage Innovation

Utilizing the industry standard NVMe command protocol that lowers latency and improves bandwidth, Skyhawk PCIe SSDs enable a cost-effective transition to next-generation storage platforms.

Available in the 2.5-inch small form factor with typical power consumption under 11W and hot-swap capability, Skyhawk PCIe SSDs simplify large-scale deployment in the data center. This results in efficient workload utilization, a lower thermal profile compared to 25W PCIe SSDs and improved TCO.

Skyhawk SSDs are powered by an innovative Guardian Technology Platform, a comprehensive suite of enterprise features comprised of FlashGuard™, DataGuard™, and EverGuard™ technologies. By leveraging Western Digital's history of providing world class enterprise storage solutions, manufacturing excellence combined with commitment to reliability leadership, the SanDisk-branded Skyhawk PCIe SSD enables data center customers to innovate with minimal risk.

*Compared to SanDisk CloudSpeed™ Gen. II SATA SSDs

SanDisk®

Model	Standard	Ultra
Configuration		
15nm MLC User Capacities (GB) ¹	3840 / 1920	3200 / 1600
Form Factor	SFF 2.5-inch drive	
Interface	PCIe Gen3, x4	
NVMe Compliance	1.2 Gold	
Performance ³		
Sequential Reads, 128KiB, QD128 (MiB/s) ⁴	Up to 1,500	Up to 1,700
Sequential Writes, 128KiB, QD128 (MiB/s)	Up to 1,170	Up to 1,200
Random Read, 4KiB ⁵ , QD128 (KIOPs)	Up to 250	Up to 250
Random Write, 4KiB, QD128 (KIOPs)	Up to 47	Up to 83
Random Mix 70/30, 4KiB, QD128 (KIOPs)	Up to 99	Up to 150
Latency		
Average Random Read Latency, 4KiB, QD32 (μs)	127 / 128	126 / 125
Average Random Write Latency, 4KiB, QD32 (μs)	1,331 / 718	693 / 351
Reliability		
Uncorrectable Bit Error Rate (UBER)	1 un-recoverable error in 10 ¹⁷ bits read	
Power Off data retention @ EOL	3 months at 40° C	
MTBF (Mean Time Between Failure) ²	2 million hours	
AFR (Annualized Failure Rate) ²	0.44%	
Data Integrity	Guardian Technology Platform (FlashGuard/DataGuard/EverGuard)	
Power Fail Recovery	Write cache immunity with in-flight data protection	
Temperature Monitoring	S.M.A.R.T. warning with performance throttling.	
Warranty ⁶	5 years	
Endurance		
5-yr DWPD (JESD-219 Workload)	0.5 / 0.6	1.2 / 1.7
Electrical		
V _{DD} (V)	12 ± 10%	
Typical Active Power Consumption (W)	10.5	
Idle Power Consumption (W)	5.6	
Environmental		
Shock (Operating)	1500g, 0.5 msec, Half-Sine; 3 axes - 3 shocks per direction per axis	
Vibration (Operating Non-operating)	2.17g rms (7-1000Hz) 3.13g rms (7-1000Hz)	
Temperature (Operating Non-operating)	0° C to 70° C (Internal) ⁷ -40° C to +85° C	
Humidity (Operating Non-operating) ⁸	5% to 90% (non-condensing) 5% to 95% (non-condensing)	
Altitude (Operating Non-operating)	-1,000 to 15,000 feet -1,000 to 40,000 feet	
Mechanical		
Length (mm)	100.45	
Width (mm)	69.85	
Height (mm)	15	

Contact information

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For more than 25 years, our ideas have helped transform the industry, delivering next generation storage solutions for consumers and businesses around the globe. We're delivering the possibilities of data.

Ordering Information

Part Number	Capacity	Model
SDLC2CLR-019T-3NA1	1920GB	Standard
SDLC2LLR-038T-3NA1	3840GB	Standard
SDLC2CLR-016T-3NA1	1600GB	Ultra
SDLC2LLR-032T-3NA1	3200GB	Ultra

¹ One gigabyte (GB) is equal to 1,000MB (one billion bytes) and one terabyte (TB) is equal to 1,000GB (one trillion bytes) when referring to solid-state capacity. Accessible capacity will vary from the stated capacity due to formatting and partitioning of the drive, the computer's operating system, and other factors.

² MTBF and AFR targets are based on a sample population and are estimated by statistical measurement and acceleration algorithms under median operating conditions. MTBF and AFR rating do not predict an individual drive's reliability and do not constitute a warranty.

³ Performance will vary by capacity point, or with the changes in useable capacity. Consult product manual for further details. All performance measurements are in full sustained mode and are peak values. Preliminary and subject to change.

⁴ 1MiB= 1,048,576 bytes or 2²⁰

⁵ KiB= 1,024 bytes or 2¹⁰

⁶ The lesser of 5 years from the date of manufacture of the product or the date on which the product's relevant endurance thresholds set forth in the product specifications are reached

⁷ Internal temperature sensor reading

⁸ Based on MIL-STD 883C, Method 2009.4

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