



Key Differentiators

- Predictable performance, low latency with sustained IOPS of 4K Read/Write over the life time of the product
- Best-in-class \$/IOPS with deduplication, built-in RAID and error correction
- Host-selectable performance optimization to balance performance and power
- Designed to tightly integrate NAND flash with TruRandom technology and software to deliver SCM-like performance
- High density NVMe SSD in Half Length Half Height (HHHL), and U.2 form factor, up to 12.8TB
- Optimized for write-intensive and mixed workloads
- Power Loss Protection (PLP) to protect against unexpected power failure

Data Engine™ High Performance Edition

Smart IOPS Data Engine solid state drives (SSDs) are the new category of enterprise PCIe NVMe SSDs that offer supercharged performance engineered to remove the storage bottleneck in High Performance Computing (HPC) and high-end enterprise datacenters. With its unprecedented 1,700,000 I/O Operations per second (IOPS), Data Engine SSDs deliver 4x the I/O processing bandwidth of competing high-end PCIe NVMe enterprise SSDs with ultra-low latency, eliminating performance bottlenecks and significantly improving quality of service.

TruRandom™: A Significant Leap Forward

In the age of commodity NAND flash, the real SSD differentiation comes from tight integration between the controller and the firmware suite developed to fully harness its power. TruRandom is an innovative new technology from Smart IOPS that minimizes the overhead associated with internal SSD housekeeping, garbage collection and program/erase to unleash the raw I/O processing capability in the solid-state device.

Baked in patent-pending logic enhances data pattern recognition heuristics for data access such that random and sequential I/O requests become indistinguishable – a feat not achieved by competing NVMe SSDs. As a result, Data Engine SSDs offer unprecedented I/O processing power that enable today's most demanding datacenter applications scale to new heights:

- Multiple orders of magnitude faster than the closest competitor SSD with low latency that generate superior application SLA
- TruRandom pattern recognition reduces the power signature when processing non-random I/O
- Non-blocking, stateful and scalable architecture that supports unlimited concurrent sustained random data requests
- Intelligent lookup techniques increase performance by orders of magnitude
- Scalable to over a billion IOPS inside the rack

Product Highlights

Target Workload	Mixed Use
NAND	3D TLC
Interface	PCIe Gen3x8 NVMe 1.2.1 (AIC HHHL); PCIe 3 Gen3x4 NVMe 1.2.1 (2.5" U.2)
Form Factor	HHHL Add-in-Card & 2.5" U.2
Warranty	3-years
Supported In-box Drivers	Windows, Linux, UNIX, X86 Solaris, Vmware ESXi, UEFI

Data Engine™ - High Performance Edition

Performance at a Glance

Data Engine T1/T2 HP Highlights			TruRandom Performance (4KB)				
User Capacity	Physical Capacity	Endurance	Random Read	Random Write	Sequential Read	Sequential Write	
TB	TB	DWPD	IOPS		MB/s		
AIC HHHL	3.2	4.0	3	1,700,000	600,000	6,800	6,000
	6.4	8.0	3	1,700,000	600,000	6,800	6,000
	12.8	16.0	3	1,700,000	600,000	6,800	6,000
	25.6	32.0	3	1,700,000	600,000	6,800	6,000
U.2	3.2	4.0	3	850,000	380,000	3,400	3,000
	6.4	8.0	3	850,000	380,000	3,400	3,000
	12.8	16.0	3	850,000	380,000	3,400	3,000

Note: Performance measured with pre-production units.

Environmental

Power Consumption	AIC HHHL Idle: ~ 15W, Active: ~ 40W & 2.5" U.2 Idle: ~ 7W, Active: ~ 22W
Operating Temperature	0°C ~ 55°C
Storage Temperature	-45°C ~ 85°C

Quality of Service Latency

Specifications			QD = 1	QD = 128
100% random, 4K transfers				
Quality of Service (99%)				
Reads	µs		60	200
Writes	µs		5	11
Quality of Service (99.99%)				
Reads	µs		70	270
Writes	µs		7	13

Target Applications

Data Engine T1/T2 HP Series (mixed workloads): OLTP, Big Data analytics, Database Mining, Data Warehousing, High Transaction Trading or Life Science, High Performance Computing (HPC), Virtual Desktop Infrastructure (VDI), Email as a Service, OLAP, Scale-out Storage and Cloud Service Provider environments.

Ordering Information

Data Engine	Part Number	IDEMA	Endurance
T2 HP AIC HHHL	SIA2P3N2TPCX0320T	3.2TB	3 DWPD / 5-Years
	SIA2P3N2TPCX0640T	6.4TB	3 DWPD / 5-Years
	SIA2P3N2TPCX1280T	12.8TB	3 DWPD / 5-Years
	SIA2P3N2TPCX2560T	25.6TB	3 DWPD / 5-Years
T1 HP 2.5" U.2	SIB1P3N2TPCX0320T	3.2TB	3 DWPD / 5-Years
	SIB1P3N2TPCX0640T	6.4TB	3 DWPD / 5-Years
	SIB1P3N2TPCX1280T	12.8TB	3 DWPD / 5-Years

