



## Taking aim at DRAM

Liquid and Intel® Optane™ Technology PCIe Add-in-Card (AIC) solid state drive (SSD) solutions combine the unparalleled high throughput, low latency, quality of service (QoS) and endurance of Intel® Optane™ Technology with Liquid's industry-leading PCIe fabric technology to deliver higher user capacity and application performance. Achieving DRAM memory-like speeds, the Liquid and Intel Optane solution suite is available in capacities of up to 1.50 TB for high-value workloads.

The collaborative design between Liquid and Intel® offers an ultra-thin, standard form factor half-height half-length (HHHL) card that works seamlessly with systems that have existing PCIe slots. A Gen 3.0 x8 PCIe interface enables high-throughput and low-latency transactions. It utilizes the latest NVMe protocol in order to deliver increased performance and efficiency from a single device. The AIC outperforms legacy architectures by delivering 1.6 M IOPS of random performance, over 7 GB/s of throughput and ultra-low transactional latency of <10 μs.

The Liquid solutions also supports Intel® Memory Drive Technology software that extends system memory transparently. Intel® Memory Drive Technology integrates the SSD into the memory subsystem and makes it appear like DRAM to the OS and applications. As a fully transparent memory solution, no changes are required to the OS or applications.

- > Ultra Fast PCIe Gen 3.0 x8 Interface
- > Performance of 1.6 M IOPS and 7 GB/s
- > High-capacity Intel® Optane™ SSD up to 1.50 TB
- > Intel® Memory Drive Technology Software for DRAM Emulation

### Key Features

- High Performance Intel® Optane™ Technology
- Ultra Fast PCIe 3.0 x8 Interface
- NVMe 1.0 Protocol Supported
- High Capacity Design, up to 1.50TB
- Standard Form Factor SSD
- Low Profile HHHL Card
- Plug-n-Play Compatibility
- UEFI Boot Support
- Enterprise Grade Reliability
- Non-Volatile Storage Media
- Active Thermal Throttling
- Active Power Management
- Advanced ECC and Data Protection
- Advanced Error Recovery
- Active Telemetry Monitoring
- Low Overhead Architecture
- No Host CPU or DRAM Off Load
- RAID on Card Supported
- Intel® Memory Drive Technology Software Support for DRAM Emulation

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### Specification

### Model: Element LQD3900 PCIe AIC SSD

Raw Capacity	Up to 1.50 TB
Media Type	Intel® Optane™ Technology
Read Bandwidth (GB/s)	~7.0
Write Bandwidth (GB/s)	~7.0
Ran. Read IOPS (4k)	~1,600,000
Ran. Write IOPS (4k)	~1,600,000
Ran. Write IOPS (4k) (SS)	~1,600,000
Read Access Latency	~10 µs
Write Access Latency	~10 µs
Protocol	NVMe 1.0
Bus Interface	PCI Express 3.0 x8
Endurance	Up to 164 PBW*
Security	256 Bits AES Data Encryption
Weight	6-10 oz
Warranty	3 years, or maximum endurance used
Form Factor	Standard Form Factor HHHL Card
Temperature	Op: 0 to 55 deg C Non-Op: -40 to 75 deg C
Power	Active: ~30 W Typical Input: 12 V Only (optional aux power cable)
Air Flow	Min 400 LFM
Humidity	5% to 95% (non-condensing)
Altitude	0 ft to 10,000 ft
Operating Environments	Windows, Windows Server 2012, 2012 R2 RHEL; SLES; CentOS, Solaris, SUSE, VMware
Agency & Safety	UL, CB, CE, CCS, KCC, HF, BSMI, VCCI, FCC Class B and CISPR Class B, JEDEC

\*PBW table per capacity/configuration available upon request

## About Liquid

A leader in composable infrastructure, Liquid enables users to configure and manage physical, bare-metal server systems in seconds. Storage, compute, networking and graphics processing devices are interconnected over PCI-Express fabric to deliver dynamically configurable bare-metal servers perfectly sized with the exact physical resources required by the application being deployed.

### Selections

Liquid and Intel® Optane™ SSD:

**LQD-E1APNIA04P001T50**

1.50TB, Intel® Optane™, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

**LQD-E1APNIA04P800T00**

800GB, Intel® Optane™, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

Liquid and Intel® Optane™ Persistent Memory:

**LQD-E1APNIA04PM001T50**

1.50TB, Intel® Optane™ Memory, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

**LQD-E1APNIA04PM800G00**

800GB, Intel® Optane™ Memory, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

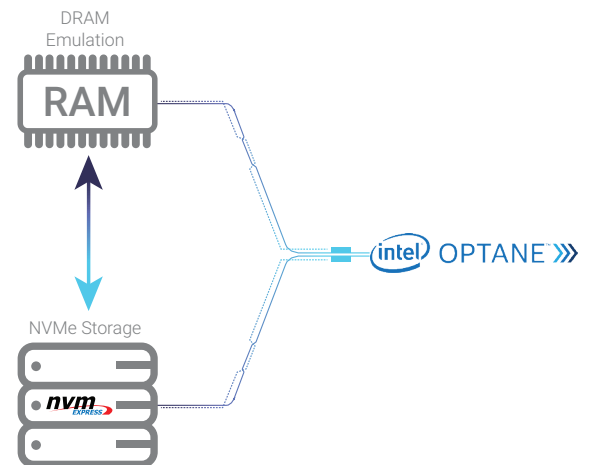
Please contact your sales rep for more information and to determine which configuration is best for use. Specification subject to change without notice.

### Contact Information

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### Liquid and Intel® Optane™ Technology

Intel® Memory Drive Technology software enables the Liquid and Intel® Optane™ solutions to be fully integrated into the memory subsystem and presented transparently to the OS and applications layer as native DRAM. The technology also supports NVMe storage without DRAM emulation.



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