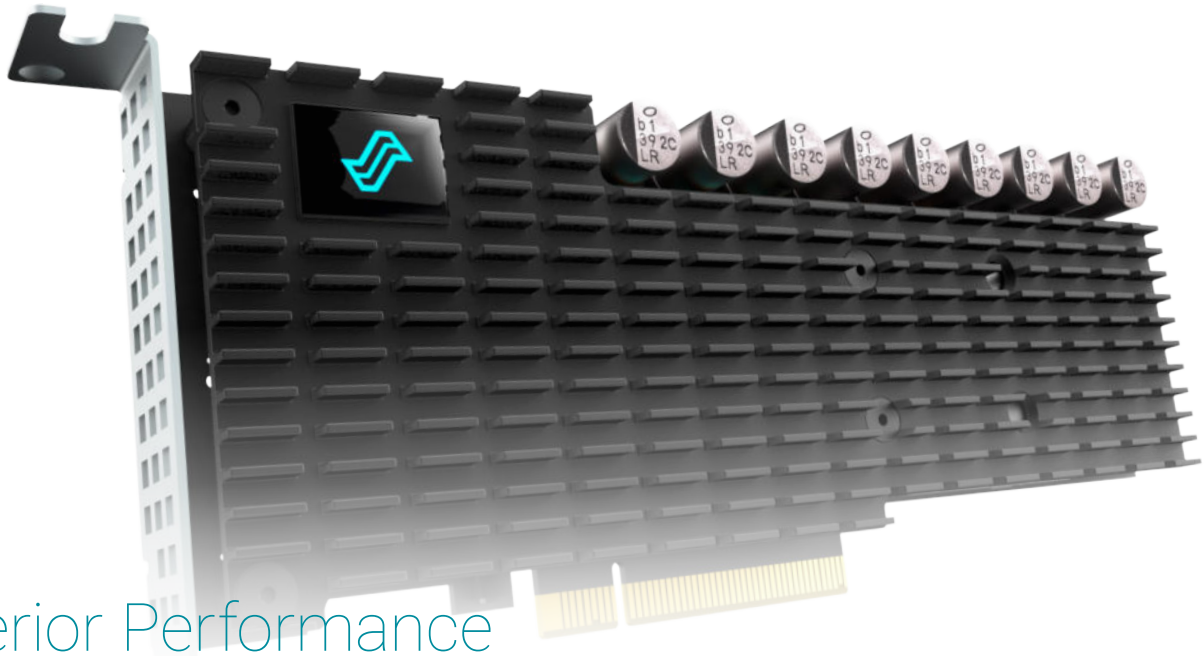
LIQID

Element LQD3000
PCIe AIC SSD Specifications



Superior Performance

The Liqid Element PCIe Add-In-Card (AIC) features high dense capacity and extreme performance for mission critical and performance-demanding workloads. It is an ultra-thin, standard form factor half-height half-length (HHHL) card that works seamlessly with systems that have existing PCIe slots. This makes the Element AIC ideal for deployment in data center and enterprise applications.

The Element AIC offers a Gen 3.0 x8 PCIe interface, which 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 1.25 M IOPS of random performance, over 7 GB/s of throughput and ultra-low transactional latency of 20 µs.

The Element AIC's innovative design enables multiple drive configurations ranging from maximum performance to maximum redundancy. The AIC also features enterprise-class power failure protection for increased reliability to prevent data loss and ensure uninterrupted work in case of power failure.

> Ultra Fast PCIe Gen 3.0 x8 Interface

> Performance of 1.25 M IOPS and 7 GB/s

> High-capacity NVMe SSD, up to 16 TB

> Enterprise-class Power Failure Protection

Key Features

- High Performance PCIe SSD
- Ultra Fast PCIe 3.0 x8 Interface
- NVMe 1.2.1 Protocol Supported
- High Capacity Design, up to 16 TB
- Standard Form Factor SSD
- Low Profile HHHL Card
- Plug-n-Play Compatibility
- UEFI Boot Support
- Enterprise Grade Reliability
- Power Loss Data Protection
- 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 Data Protection

LIQID

Element LQD3000
PCIe AIC SSD Specifications

Specification	Model: Element LQD3000 PCIe AIC SSD
Raw Capacity	Up to 16 TB
NAND Type	TLC 3D NAND
Read Bandwidth (GB/s)	~7.0
Write Bandwidth (GB/s)	~6.3
Ran. Read IOPS (4k)	~1,250,000
Ran. Write IOPS (4k)	~900,000
Ran. Write IOPS (4k) (SS)	~275,000
Read Access Latency	~80 µs
Write Access Latency	~20 µs
Protocol	NVMe 1.2.1
Bus Interface	PCI Express 3.0 x8
Endurance	Up to 30.76 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: ~25 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

Data Center Selection

L3000-001T92-030
1.92TB, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

L3000-003T84-030
3.84TB, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

L3000-007T68-030
7.68TB, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

L3000-015T36-030
15.36TB, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

Enterprise Selection

L3000-001T60-030
1.60TB, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

L3000-003T20-030
3.20TB, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

L3000-006T40-030
6.40TB, NVMe PCIe Gen 3.0 x8 HHHL AIC SSD

L3000-012T80-030
12.80TB, 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.

About Liqid

A leader in composable infrastructure, Liqid 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.

Contact Information

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LIQID

Element LQD3900
PCIe AIC SSD Specifications

intel OPTANE

Taking aim at DRAM

Liqid and Intel® Optane™ Techonology 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 Liqid's industry-leading PCIe fabric technology to deliver higher user capacity and application performance. Achieving DRAM memory-like speeds, the Liqid and Intel Optane solution suite is available in capacities of up to 1.50 TB for high-value workloads.

The collaborative design between Liqid 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 Liqid 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

LIQID

Element LQD3900
PCIe AIC SSD Specifications

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 Liqid

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Selections

Liqid 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

Liqid 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

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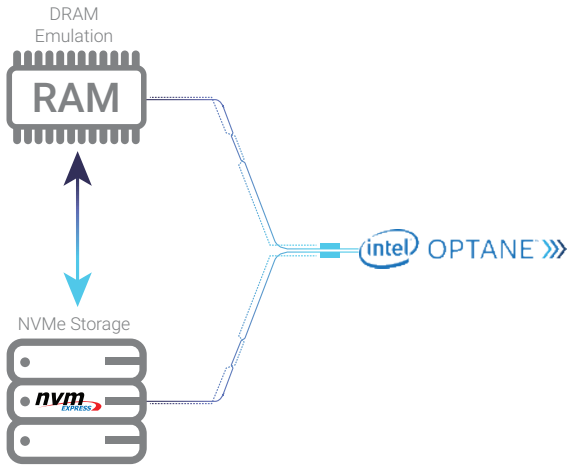
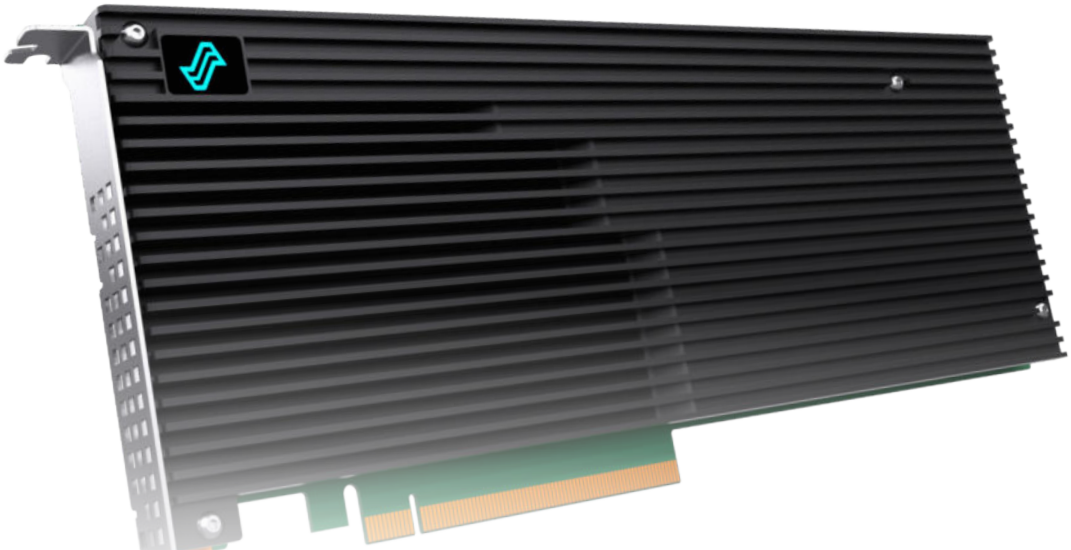
Liqid and Intel® Optane™ Technology

Intel® Memory Drive Technology software enables the Liqid 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.



LIQID

Element LQD4500
PCIe AIC SSD Specifications



Superior Performance

The Liqid Element LQD4500 PCIe Add-In-Card (AIC) features high storage capacity and extreme performance for mission critical and performance-demanding workloads. It is an ultra-thin, standard form factor full-height full-length (FHFL) card that works seamlessly with systems that have existing PCIe slots. This makes the Element LQD4500 ideal for deployment in data center and enterprise applications.

The Element LQD4500 offers a Gen 4.0 x16 PCIe interface, which enables high throughput and low latency transactions and utilizes the latest NVMe protocol in order to deliver increased performance and efficiency from a single device. The LQD4500 outperforms legacy architectures by delivering up to 4 M IOPS of random performance, and over 24 GB/s of throughput, and ultra-low transactional latency of 20 us.

The Element LQD4500 innovative design enables multiple drive configurations ranging from maximum performance to maximum redundancy. The LQD4500 also features enterprise-class power failure protection for increased reliability to prevent data loss and ensure uninterrupted work in case of power failure.

> Ultra Fast PCIe Gen 4.0 x16 Interface

> Performance of 4 M IOPS and 24 GB/s

> High-capacity NVMe SSD, up to 32 TB

> Enterprise-class Power Failure Protection

Key Features

- High Performance PCIe SSD
- Ultra Fast PCIe 4.0 x16 Interface
- NVMe 1.3 Protocol Supported
- High Capacity Design, up to 32 TB
- Standard Form Factor SSD
- Single Width FHFL Card
- Plug-n-Play Compatibility
- UEFI Boot Support
- Enterprise Grade Reliability
- Power Loss Data Protection
- 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 Data Protection

LIQID

Element LQD4500
PCIe AIC SSD Specifications

Specification	Model: Element LQD4500 PCIe AIC SSD
Raw Capacity	Up to 32 TB
NAND Type	TLC 3D NAND
Read Bandwidth (GB/s)	~24
Write Bandwidth (GB/s)	~24
Ran. Read IOPS (4k)	~4,000,000
Ran. Write IOPS (4k)	~4,000,000
Ran. Write IOPS (4k) (SS)	~600,000
Read Access Latency	~80 µs
Write Access Latency	~20 µs
Protocol	NVMe 1.3
Bus Interface	PCI Express 4.0 x16
Endurance	Up to 61.53 PBW*
Security	AES Data Encryption
Weight	20 oz
Warranty	3 years or maximum endurance used
Form Factor	Standard Form Factor FHFL Card
Temperature	Op: 0 to 55 deg C
	Non-Op: -40 to 75 deg C
Power	Active: ~65 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

Data Center Selection

L4500-007T68-040
7.68TB, 983, NVMe PCIe Gen 4.0 x16 FHFL AIC SSD

L4500-015T36-040
15.36TB, 983, NVMe PCIe Gen 4.0 x16 FHFL AIC SSD

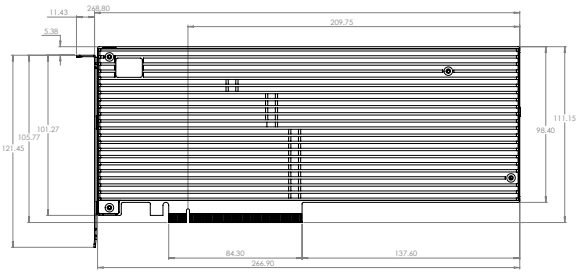
L4500-030T72-040
30.72TB, 983, NVMe PCIe Gen 4.0 x16 FHFL AIC SSD

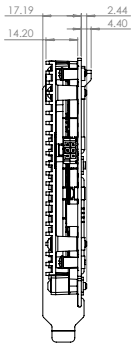
Enterprise Selection

L4500-006T40-040
6.40TB, 983, NVMe PCIe Gen 4.0 x16 FHFL AIC SSD

L4500-012T80-040
12.80TB, 983, NVMe PCIe Gen 4.0 x16 FHFL AIC SSD

L4500-025T60-040
25.60TB, 983, NVMe PCIe Gen 4.0 x16 FHFL AIC SSD





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