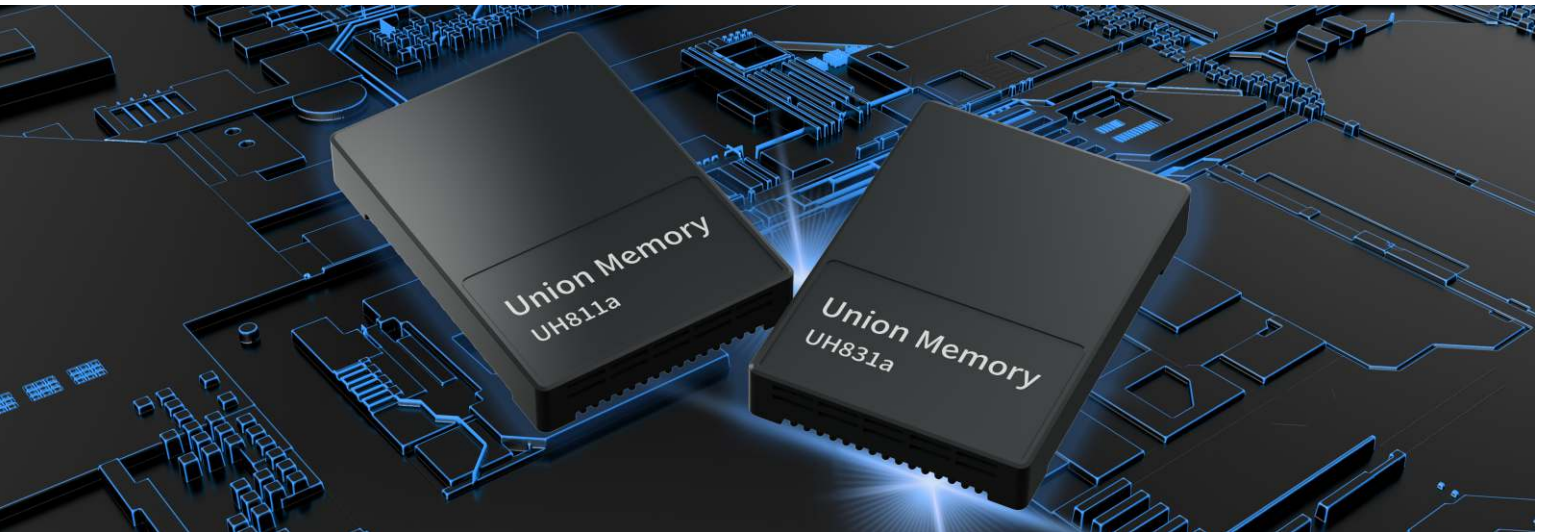# Union Memory

UH811a/UH831a
The PCIe Gen 4 ESSD with High Performance, Low Latency and High Reliability

UH811a/UH831a offers high performance, low latency and high reliability for servers and data centers by applying PCIe Gen 4 and NVMe 1.4, achieving 7100 MB/s in sequential read, 1700K IOPS in random read speed and 96 μs in average read latency.

Highlights

- High-performance PCIe Gen 4 and NVMe 1.4 compliant.
- Storage capacity is 7.68 TB in U.2 for highly available system designs.
- Powered by 12 nm in-house controller and advanced processing technique, the performance is higher and the power consumption and cost are much lower.
- Based on intelligent multi-stream aggregation technology, hot and cold data streams are layered, improving the performance and service life of ESSD while lowering the cost.

- Ultra-low consistent latency and High Quality of Service (QoS), achieving 96 μs in average read latency.
- Superior enterprise-grade reliability: Flash-aware RAID, end-to-end data path protection, advanced ECC, secure erase, Power-loss protection.
- Ultrastar Quality and Reliability.

Features

⏱ Outstanding Performance

UH811a/UH831a supports high-speed PCIe Gen 4 interfaces and adopts Union Memory's in-house controller and firmware. In order to give full play to the ultimate performance of ESSDs, the controller sets multiple hardware acceleration modules in the key data path, enabling UH811a/UH831a to achieve 7100 MB/s in sequential read and 1700K IOPS in random read speed, become an industry leader in terms of reading and writing delay, QoS and other features.

⊞ Easy Maintenance

UH811a/UH831a supports online activation of firmware upgrade within 1 second, so you do not need to Power On and Power Off again. Also, the ESSD supports Notify Hot Plug, Brute-Force Hot Plug, and various mainstream open-source tools.

⚛ Perfect Experience

UH811a/UH831a incorporates a variety of intelligent algorithms and supports such enhanced features as variable sector, multi-threaded streams, atomic writing, and QoS. With combined dynamic and static wear-leveling algorithm, it can prolong the lifecycle of hard disk drives effectively. Moreover, it can protect partners core data by virtue of dual firmware backup and upgrade mechanism and power failure protection mechanism.

Specifications

Product Series	UH811a			UH831a		
Capacity	1.92 TB	3.84 TB	7.68 TB	1.6 TB	3.2 TB	6.4 TB
Sequential Read(128 KB)	7100 MB/s	7100 MB/s	7100 MB/s	7100 MB/s	7100 MB/s	7100 MB/s
Sequential Write(128 KB)	2500 MB/s	4500 MB/s	4500 MB/s	2500 MB/s	4500 MB/s	4500 MB/s
Random Read IOPS(4 KB)	900K	1700K	1700K	900K	1700K	1700K
Random Write IOPS(4 KB)	170K	240K	210K	280K	450K	400K
Average Read Latency(4 KB)	96 µs	96 µs	96 µs	96 µs	96 µs	96 µs
Average Write Latency(4 KB)	17 µs	17 µs	17 µs	14 µs	14 µs	14 µs
Power(Typ./Max.)	8.5 W/21W	8.5 W/21 W	8.5 W/21 W	8.5 W/21W	8.5 W/21 W	8.5 W/21 W
TBW	3.50 PB	7.01 PB	14.02 PB	8.76 PB	17.52 PB	35.04 PB
Endurance(4K Random)	1 DWPD			3 DWPD		
Form Factor	U.2					
NAND Flash	3D eTLC					

Basic Function	
Sector Size	Support 512/512+8/4096/4096+8/4096+64 sectors
Power Loss Protection	Supported
Product Upgrade	Supported Through NVMe Commands

Reliability	
UBER	e^{10-17}
MTBF	2 million hours
AFR	0.44%
Data Retention(Power Off)	40℃, >3 months
Service Time	5 years (Not exceed the TBW)

Protocol	
Bus Interface and NVMe Protocol	PCIe Gen 4*4，NVMe 1.4，SP*4
TRIM	Supported

Environmental Parameter	
Storage Temperature	- 40℃~85℃
Operating Temperature	0℃~78℃
Humidity	5% to 95% R.H, non-condensing
Altitude	Operating: -305 m to 3048 m Non-operating: -305 m to 12192 m
Vibration	Operating: 2.17 GRMS(5 to 700 HZ) Storage: 3.13 GRMS(5 to 800 HZ)
Shock	1000 G@0.5 ms (Half Sine Wave)
Power Supply	DC 12V, +/-10%
Impulse Current (Max.)	<3A@1s

Physical Form	
Form Factor	2.5 inches
Weight	<350 g