Micron® 5210 ION Data Center SATA QLC SSD

SATA | 2.5”



Introducing the world’s first QLC SSD. Created for the data age.

The first SSD to challenge hard drives is here. The Micron® 5210 ION is the world’s first SSD to market with ground-breaking quad-level cell (QLC) NAND technology, delivering fast capacity for less.*

Designed for the workloads of today and tomorrow, the Micron 5210 SSD accelerates analysis into action. It’s ideal for handling the demands of real-time analytics, big data, media streaming, block/object stores, SQL/NoSQL, and the data lakes that feed artificial intelligence (AI) and machine learning.

Before the age of AI, data center read-to-write ratios** were typically 4:1. Now they’re more like 5,000:1 and solutions to problems are increasingly found in data patterns. Whether you’re querying a 10TB SQL database, streaming content and adjusting to traffic, or analyzing daily transactions to tune your business model, real-time speed reading is key.

Key Benefits

Spin Struggles. You Don’t Have To.
Get 175X faster random reads, 30X faster random writes, 2X faster sequential throughput and 3X more energy efficiency than the largest 10K hybrid HDDs.***

Quickly Access and Analyze Data Stores
Cull oceans of data for answers while writing lots of data.**** Adjust endurance and write performance with our signature Flex Capacity feature.

Unlock the Potential of Huge Data Sets
Capacities starting in terabytes, not gigabytes. QLC technology allows you to store 33 percent more bits per cell and get more fast capacity for less.

Rely on a Trusted, Proven Architecture
The same controller and core components as our popular Micron 5200 series of SSDs. New QLC NAND. The result? Easy to qualify at comparable value to 10K RPM hard drives.

Experience a Full Data Center Feature Set
Get everything you expect: AES 256-bit encryption, TCG Enterprise options, end-to-end data path protection, power loss protection, and 5-year warranty.

Target Workloads & Applications

AI DATA LAKES	MACHINE/ DEEP LEARNING DATA LAKES	REAL-TIME ANALYTICS, BIG DATA	BLOCK AND OBJECT STORES	MEDIA STREAMING

*The Micron 5210 was the world’s first QLC SSD to be shipped and sold, on May 21, 2018.
**According to research published in “Data Storage, AI, and IO Patterns” (http://www.enterprisestorageforum.com/print/storage-technology/data-storage-ai-and-io-patterns.html).
*** Based on public datasheet values for the 1.92TB Micron 5210 SSD (70,000 IOPS random reads, 13,000 IOPS random writes) and SNIA PTSe IOPS industry-standard test results on 2.4TB 10k hybrid HDDs (rounded up to 400 IOPS for both random reads and writes). Actual performance may vary. Energy efficiency comparison based on datasheet values for active average reads.
****Endurance varies by workload and drive capacity. See the Key Specifications table in this document for additional workload-specific information.

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How Customers Use QLC SSDs

Real-Time Analytics and Big Data
Quickly access and analyze terabytes of unstructured data that’s queried in Hadoop distributed file systems.

Artificial Intelligence: Data Lakes
Get the speed AI algorithms depend on to quickly identify patterns in sprawling data sets.

Machine/Deep Learning: Data Lakes
Store and feed the 100TB+ data sets that training platforms depend on for fast learning and overcome the HDD bottleneck.

Active Archives and Large Block Stores
Turn scale-out active archives into a strategic asset and deliver massive large-block streams with ease.

SQL Databases and Business Intelligence
Quickly mine massive data sets using faster, deeper queries for real-time insights and decision-making.

NoSQL Databases
Breathe life into data-driven workloads like content classification, tagging, and user profile caching.

Content Delivery and Media Streaming
Deliver more assets to more users more consistently while supporting lots of parallel requests and streams.

User Authentication
Perform quick authentication with quick storage.



Key Specifications

		5210 ION		
Capacity[1]		**1.92TB**	**3.84TB**	**7.68TB**
Performance	**Sequential Reads (MB/s)**[2]	540	540	540
	Sequential Writes (MB/s)[2]	260	350	360
	Random Reads (K IOPS)[3]	70	83	90
	Random Writes (K IOPS)[3]	13	6.5	4.5
Endurance (DWPD for 5 years)	**100% 128K Sequential Writes**	0.8	0.8	0.8
	90% 128K Sequential Writes/ 10% 4K Random Writes	0.72	0.62	0.56
	80% 128K Sequential Writes / 20% 4K Random Writes	0.66	0.56	0.39
	70% 128K Sequential Writes / 30% 4K Random Writes	0.56	0.41	0.27
	50% 128K Sequential Writes / 50% 4K Random Writes	0.44	0.25	0.16
	100% 16K Random Writes	0.2	0.2	0.2
	100% 8K Random Writes	0.2	0.18	0.1
	100% 4K Random Writes	0.2	0.09	0.05
Basic Attributes	**Interface**	SATA 6 Gb/s		
	Form Factor	2.5-inch, 7mm		
	NAND	Micron 3D QLC NAND		
	Encryption	AES 256-bit (with TCG Enterprise options)		
Reliability	**MTTF**	2 million device hours		
	UBER	<1 sector per 10^{17} bits read		
	Warranty	5 years		
Environmental Characteristics	**Power Consumption**	Sequential read: 2.8W max Sequential write: 3.6W max Idle: 1.5W		
	Temperature (Operating)	0–70°C		
Physical Characteristics	**Size (L x W x H)**	100.45mm x 69.85mm x 7.00mm		
	Weight	<70g		
Advanced Features[4]	Flex Capacity, AES 256-bit encryption, TCG Enterprise configurability, power-loss protection for data in flight, end-to-end data center data path protection, secure firmware, adaptive thermal monitoring, easy to install (hot-pluggable), Storage Executive SSD management tool, RAIN			

QLC SSD best-fit workload zone

1. Unformatted. 1GB = 1 billion bytes. Formatted capacity is less.
2. 128KB transfer size, steady state.
3. 4KB transfer size, steady state.
4. No hardware, software or system can provide absolute security under all conditions. Micron assumes no liability for lost, stolen or corrupted data arising from the use of any Micron products, including those products that incorporate any of the mentioned security features.

Base Part Numbers

Standard Part	Capacity	Form Factor
MTFDDAK1T9QDE-2AV1ZABYY	1.92TB	2.5-inch
MTFDDAK3T8QDE-2AV1ZABYY	3.84TB	2.5-inch
MTFDDAK7T6QDE-2AV1ZABYY	7.68TB	2.5-inch

Note: All capacities available in TCG-Enterprise encrypted models (SED).

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