# KIOXIA

# KIOXIA CD8-R Series (2.5-inch)

## (KCD81RUG/KCD8XRUG/KCD8DRUG)

## Data Center NVMe™ Read Intensive SSD

KIOXIA CD8-R Series is a read intensive data center NVMe™ SSD that is optimized to support a broad range of scale-out and cloud applications, including big data/IoT, online transaction processing, and virtualization. Built with a PCIe® 4.0 (16 GT/s x4) interface, the CD8-R Series SSDs deliver consistent performance up to 1,250K IOPS (random read) and 200K IOPS (random write).

Featuring KIOXIA 112-layer BiCS FLASH™ 3D TLC flash memory, the CD8-R 2.5-inch form factor SSDs deliver 1 DWPD (Drive Writes Per Day) of endurance and storage capacities up to 15.36 TB in a 2.5-inch form factor, making them well-suited for hyperscale data center applications.

Product image may represent a design model.

## Key Features

- PCIe® 4.0, NVMe™ 1.4 specification compliant
- Open Compute Project Datacenter NVMe™ SSD specification v2.0 support (not all requirements)
- Form factor: 2.5-inch, 15mm thickness
- Proprietary KIOXIA architecture: controller, firmware and 112-layer BiCS FLASH™ 3D TLC
- Single-port design, optimized for data center class workloads
- Consistent performance and reliability for demanding 24x7 environments
- Designed for high-density storage deployments
- Power loss protection (PLP) and end-to-end data correction
- Security options: SIE, SED[1][2][3][4]

## Key Applications

- Hyperscale
- IoT and big data analytics
- Online transaction processing (OLTP) (transactional and relational databases)
- Virtualized environments
- Streaming media and content delivery networks

## Specifications

| Base Model Number | KCD81RUG15T3 | KCD81RUG7T68 | KCD81RUG3T84 | KCD81RUG1T92 | KCD81RUG960G |
|---|---|---|---|---|---|
| SIE Model Number | KCD8XRUG15T3 | KCD8XRUG7T68 | KCD8XRUG3T84 | KCD8XRUG1T92 | KCD8XRUG960G |
| SED Model Number | KCD8DRUG15T3 | KCD8DRUG7T68 | KCD8DRUG3T84 | KCD8DRUG1T92 | KCD8DRUG960G |
| Capacity | 15,360 GB | 7,680 GB | 3,840 GB | 1,920 GB | 960 GB |
| **Basic Specifications** | | | | | |
| Form Factor | 2.5-inch, 15mm thickness | | | | |
| Interface | PCIe® 4.0, NVMe™ 1.4 | | | | |
| Maximum Interface Speed | 64 GT/s (PCIe® Gen4 x4) | | | | |
| Flash Memory Type | BiCS FLASH™ TLC | | | | |

# Specifications (Continued)

| Capacity | 15,360 GB | 7,680 GB | 3,840 GB | 1,920 GB | 960 GB |
|---|---|---|---|---|---|
| **Performance (Up to)** | | | | | |
| Sustained 128 KiB Sequential Read | 6,600 MB/s | 7,100 MB/s | 7,200 MB/s | | |
| Sustained 128 KiB Sequential Write | 6,000 MB/s | | 3,800 MB/s | 3,500 MB/s | 1,800 MB/s |
| Sustained 4 KiB Random Read | 1,050K IOPS | 1,150K IOPS | 1,250K IOPS | | 1,000K IOPS |
| Sustained 4 KiB Random Write | 195K IOPS | 200K IOPS | 195K IOPS | 150K IOPS | 80K IOPS |
| **Power Requirements** | | | | | |
| Supply Voltage | 12 V ± 10 %, 3.3 V ± 15 % | | | | |
| Power Consumption (Active) | 20 W typ. | 19 W typ. | 14 W typ. | 13 W typ. | 11 W typ. |
| Power Consumption (Ready) | 5 W typ. | | | | |
| **Reliability** | | | | | |
| MTTF | 2,500,000 hours | | | | |
| Warranty | 5 years | | | | |
| DWPD | 1 | | | | |
| **Dimensions** | | | | | |
| Thickness | 15 mm +0 / -0.5 mm | | | | |
| Width | 69.85 mm ± 0.25 mm | | | | |
| Length | 100.45 mm Max | | | | |
| Weight | 130 g Max | | | | |
| **Environmental** | | | | | |
| Temperature (Operating) | 0 ℃ to 74 ℃ | 0 ℃ to 75 ℃ | | | |
| Temperature (Non-operating) | -40 ℃ to 85 ℃ | | | | |
| Humidity  (Operating) | 5 % to 95 % R.H. | | | | |
| Vibration (Operating) | 21.27 m/s$^2$ { 2.17 Grms } ( 5 to 800 Hz ) | | | | |
| Shock (Operating) | 9.8 km/s$^2$ { 1,000 G } ( 0.5 ms ) | | | | |

Definition of capacity: KIOXIA Corporation defines a megabyte (MB) as 1,000,000 bytes, a gigabyte (GB) as 1,000,000,000 bytes and a terabyte (TB) as 1,000,000,000,000 bytes. A computer operating system, however, reports storage capacity using powers of 2 for the definition of 1GB = 2^30 = 1,073,741,824 bytes and therefore shows less storage capacity. Available storage capacity (including examples of various media files) will vary based on file size, formatting, settings, software and operating system, and/or pre-installed software applications, or media content. Actual formatted capacity may vary.

GT/s: Giga Transfers per second.

A kibibyte (KiB) means 2^10, or 1,024 bytes.

MTTF (Mean Time to Failure) is not a guarantee or estimate of product life; it is a statistical value related to mean failure rates for a large number of products which may not accurately reflect actual operation. Actual operating life of the product may be different from the MTTF.

DWPD: Drive Writes Per Day. One full drive write per day means the drive can be written and re-written to full capacity once a day every day for the specified lifetime. Actual results may vary due to system configuration, usage and other factors.

Read and write speed may vary depending on various factors such as host devices, software (drivers, OS etc.), and read/write conditions.

IOPS: Input Output Per Second (or the number of I/O operations per second).

Temperature (operating): Specified by the composite temperature reported by SMART.

[1] Sanitize Instant Erase (SIE) and Self-Encrypting Drive (SED) security optional models are available.

[2] SIE optional model supports Crypto Erase, which is a standardized feature defined by the technical committees (T10) of INCITS (the InterNational Committee for Information Technology Standards).

[3] SED optional model supports TCG Opal and Ruby SSCs. It has a few unsupported features of TCG Opal SSC. For more details, please make inquiries through "Contact us" in each region's website, https://www.kioxia.com/.

[4] Security optional models are not available in all countries due to export and local regulations.

All information provided here is subject to change without prior notice.

PCIe is a registered trademark of PCI-SIG.
NVMe is a registered or unregistered mark of NVM Express, Inc. in the United States and other countries.
Other company names, product names, and service names may be trademarks of third-party companies.