

ORANGE Series

Rugged U.2 NVMe/PCIe SSD's



OVERVIEW

The U.2 PCIe/NVMe SSD shares all the benefits of SFF-8201 form factor such as extend of form factor use, and considering industrial and defense application a relative ease of ruggedization. Most of all, it leverages the PCIe/NVMe architecture minimizing operational latencies and maximizing SSD performance. For deployments in elevated temperatures, it is necessary to limit the performance to reduce the heat dissipation. However, Memkor Orange series U.2 PCIe drive sustained write performance can reach 1,200 MB/s at elevated temperatures, exceeding the performance of other PCIe Gen3 or 4 industrial grade drives available on the market. The U.2 FF uses SFF-8369 connector. It allows computer designers to architect dual storage port that may use either PCIe or SATA based SSD, hence widen computer deployment flexibility.

MEMKOR M+ SECURITY - CUTTING-EDGE DATA PROTECTION

Memkor's ORANGE Series SSDs ensure Data at Rest (DAR) protection through the embedded FIPS 197 validated encryption engine. In addition, some U.2/PCIe models are validated under FIPS 140-2, Level 2 program that includes strength testing of algorithms and methods used to authenticate users, safe-keeping of security parameters and anti-tempering measures. The encryption management are either FIPS validated procedures or TCG OPAL method. Both use the concept of Shadow MBR thus allowing for pre-boot authentication and the use of the SSD as a boot drive.

Data protection includes a Write Protect function option which ensures data integrity and prevents malicious or accidental Data alteration. The Write Protect function can be enabled and disabled by the user through software or hardware triggering.

RELIABILITY

Through the use of the highest reliability MLC and SLC NAND, combined with the state of the art flash management techniques, strong ECC/CRC, end-to-end data protection strategy and sudden power loss safeguards integrated in software and hardware, Memkor's ORANGE Series SSDs provide the highest level of reliability, durability and endurance.

CLIENT or ENTERPRISE CLASS OPERATIONS

Designed for extreme temperatures, Memkor's ORANGE Series U.2 SSDs can be optimized for Client operations such as boot drives or Enterprise class operations to maximize performance and reduce latencies.

SUMMARY

- Rugged U.2/2.5"
- PCIe Gen2 / NVMe 1.1
- Client and Enterprise versions

U.2 / PCIe FORM FACTOR (FF) APPLICATIONS

- Where highest performance is required
- Provides highest capacity per port
- High speed ruggedized Data recorder
- Best FF where SSD shock/vibration resilience is required
- Best FF where high performance in extreme temperature is required
- Simplified architecture - SSD directly on PCIe bus

MEMKOR ORANGE SERIES ADDED VALUE

- Selected models FIPS 140-2 validated
- All models FIPS 197 validated
- Optional TCG OPAL
- Faster write performance than other PCIe SSDs at extreme temperatures
- HW or SW triggered Crypto and Secure Erase
- HW or SW enabled Write Protect
- Use of high reliability components
- End-to-end Data protection
- End-to-end operation monitoring
- Sudden power loss safeguards
- Standard conformal coating on Industrial/ Defense grade SSDs
- Each SSD thoroughly tested
- Locked BOM
- Obsolescence management
- Custom features when required
- 5 year/TBW warranty

ABOUT ORANGE SERIES

Memkor's 3rd generation Orange Series SATA and PCIe SSDs aim to provide the highest throughput performance combined with the highest capacities available in the standard form factors. They are built with high quality industrial grade MLC, pSLC NAND or the most reliable SLC NAND available today. With carefully selected BOM and mature firmware, it is backed by 5 year limited warranty. The family supports SATA, PCIe/NVMe, USB, SAS or PATA interface. All Memkor products are available with locked BOM configurations and Supply Chain component management for long-term deployment applications.

MEMKOR—PART OF YOUR PROJECT

- We will support your design process
- Each SSD undergoes ESS test
- We offer Locked BOM Management
- We offer obsolescence management

MEMKOR U.2 PCIe/NVMe ORANGE SERIES SSD SPECIFICATION⁽³⁾

Standard Form Factor	<ul style="list-style-type: none"> • Standard U.2/2.5" • SFF-8369 Connector
Interface	<ul style="list-style-type: none"> • PCIe V2.0/NVMe 1.1a
Data throughput	<ul style="list-style-type: none"> • PCIe: up to 1200/1200 Write/Read
Maximum Capacity	<ul style="list-style-type: none"> • up to 4192 GB MLC NAND • up to 2048 GB pSLC NAND
Temperature Range	<ul style="list-style-type: none"> • -40°C to 85°C Industrial/Military • 0°C to 70°C Commercial
Vibration/shock	<ul style="list-style-type: none"> • 16.3 GRMS 10-2000Hz / 50G 11 ms
Data Reliability	<ul style="list-style-type: none"> • Flash managed by static and dynamic wear leveling and powerful ECC/CRC • End-to-end Data Protection • End-to-end operation monitoring and recording • Uncorrectable bit error rate (UBER): less than 10⁻¹⁶
Data Retention	<ul style="list-style-type: none"> • 1 year at 30°C when power off and TBW reached⁽⁴⁾
Endurance ⁽¹⁾	<ul style="list-style-type: none"> • 3,200 TBW (2048 GB MLC NAND) • 32,000 TBW (2048 GB pSLC NAND)
Data Security	<ul style="list-style-type: none"> • FIPS 197 AES 256 • FIPS 140-2 validated selected models • NVMe Command Security/Authentication support • Optional TCG OPAL V2.0 Self Encrypted Drive (SED) • HW/SW triggered military grade Crypto Erase and Data Elimination • HW and/or SW Write Protect
Component reliability	<ul style="list-style-type: none"> • MTBF: >1,000,000⁽²⁾
Health monitoring	<ul style="list-style-type: none"> • S.M.A.R.T. to report system health • Thermal performance monitoring and management

(1) Per JEDEC219. Contact Memkor for TBW for other capacities and specific workloads.

(2) Contact Memkor for MTBF prediction for specific environmental conditions and field MTBF data.

(3) Refer also to Industrial TLC/QLC NAND based WHITE Series 2.5"/U.2" SSD specifications

(4) Per JESD47/JEP122. Contact Memkor for Data Retention prediction for your application.

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Memkor® is an American engineering company dedicated to providing flash solid state storage solutions for defense, industrial and enterprise applications. We create secure, reliable, robust and innovative solutions with rich feature sets, tailored, as required, to meet your technology investment objectives. We are dedicated to delivering on our promises. We simply believe that your satisfaction enables the continuous success of our company.



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