MEMKOR

BLUE Series - Maximized Capacity

Rugged U.2 NVMe/PCIe SSD's

OVERVIEW

The U.2 SSD is the most popular PCIe/NVMe storage form factor for ruggedized computers. It builds on the SFF-8201 standard that allows for an adequate ruggedization for deployments in the most demanding environments. It leverages the PCIe/NVMe architecture minimizing operational latencies and maximizing SSD performance.

Memkor BLUE Series SSDs share the same capabilities and features as the ORANGE Series SSDs. However, they have increased height allowing to scale capacity to 16 TB (MLC NAND) in 0.591" (15 mm) or up to 24 TB in 0.945" (24 mm).

For deployments in elevated temperatures, it is usually necessary to limit the performance to reduce the heat dissipation. However, Memkor Blue series U.2 PCIe drive sustained write performance can reach 1,000 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 BLUE Series SSDs ensure Data at Rest (DAR) protection through the embedded FIPS 197 validated encryption engine and architecture shared with ORANGE Series U.2/PCIe models validated under FIPS 140-2, Level 2 program. The encryption management are either based on 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 BLUE Series SSDs provide the highest level of reliability, durability and endurance.

CLIENT or ENTERPRISE CLASS OPERATIONS

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

SUMMARY

- Rugged U.2/2.5"
- Increased capacity through increased height
- 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 BLUE SERIES ADDED VALUE

- All models FIPS 197 validated
- FIPS 140-2 compliant architecture and build
- Optional TCG OPAL
- Faster write performance at extreme temperatures than other PCIe SSDs
- 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

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ABOUT BLUE SERIES

Memkor's 3rd generation BLUE Series SSDs aim to maximize storage capacity by tailoring standard form factor dimensions or by using proprietary form factors. Memkor builds the BLUE Series SSD using 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 product line supports SATA, PCIe/NVMe, USB or Ethernet 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 BLUE SERIES SSD SPECIFICATION[3]

Standard Form Factor	• Standard U.2/2.5" (SFF-8201), increased height, special form factors • SFF-8369 Connector
Interface	• PCIe V2.0/NVMe 1.1a
Data throughput	• PCIe: up to 1200/1200 Write/Read
Maximum Capacity	• up to 16 TB MLC NAND in 2.5" 15 mm H or 24 TB in 24 mm • up to 8 TB SLC NAND in 2.5" 15 mm H
Temperature Range	• -40°C to 85°C Industrial/Military • 0°C to 70°C Commercial
Vibration/shock	• 16.3 GRMS 10-2000Hz / 50G 11 ms
Data Reliability	• 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	• 1 year at 30°C when power off and TBW reached[4]
Endurance[1]	• 25,000 TBW (16 TB MLC NAND) • 120,000 TBW (8 TB SLC NAND)
Data Security	• FIPS 197 AES 256 • FIPS 140-2 compliant architecture • 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	• MTBF: >1,000,000[2]
Health monitoring	• 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.

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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