

Product Fact Sheet

Industrial M.2 PCIe SSD

N2000 Series

PCIe 3.1, 3D TLC

Industrial Temperature Grade

Date: December 5, 2023
Revision: 1.00



1 Product Summary

- **Capacities:** 60 GBytes, 120 GBytes, 240 GBytes, 480 GBytes
- **Form Factor:** PCI Express® M.2 (2230/2242/2280, S4) (30/42/80 mm x 22 mm x 2.63 mm)
- **Compliance¹:** PCI Express (PCIe) Specification Revision 3.1
- **Interface:** Gen3 x 4 Lanes
 - Drive operates in x1 mode in x1 M.2 PCIe slots
 - Drive operates in x2 mode in x2 M.2 PCIe slots
 - Drive operates in x4 mode in x4 M.2 PCIe slots
- **Command Sets:** Supports NVMe 1.3
- **Performance:**
 - Read Performance: Sequential Read up to 1,753 MBytes/s, Random Read 4K up to 140,000 IOPS
 - Write Performance: Sequential Write up to 864 MBytes/s, Random Write 4K up to 134,000 IOPS
- **Host Memory Buffer (HMB):** Support for increased random performance
- **Operating Temperature Range²:**
 - Industrial: -40 °C to 85 °C
- **Storage Temperature Range:** -40 °C to 85 °C
- **Operating Voltage:** 3.3, 1.8 and 0.9V supply voltages
- **Low Power Consumption**
- **Power:**
 - Power States PS0, PS1, PS2, PS3 and PS4
 - Thermal Throttling supported
- **Data Retention³:** 10 Years @ Life Begin; 1 Year @ Life End, @40°C
- **Endurance in TeraBytes Written (TBW) @ 480GB capacity:**
 - Client \geq 964
- **Shock/Vibration:** 1,500 g / 50 g
- **High-Performance Processor with Integrated, Parallel Flash Interface Engines:**
 - Triple-Level Cell (TLC) 3D NAND Flash
 - LDPC Code ECC with up to 120 bit correction per 1 KByte page
- **High Reliability:**
 - Mean Time Between Failure (MTBF): > 2,000,000 hours
 - Data Reliability: < 1 non-recoverable error per 10^{16} bits read

¹ To check the compatibility of the customer system and the storage device is part of the customer's responsibility. Swissbit can provide guidance and support on request.

² Adequate airflow is required to ensure the drive temperature, as reported in the S.M.A.R.T. data, does not exceed CCTEMP (Critical Composite Temperature Threshold) reported in the "Identify Controller Data Structure"

³ NAND Flash suppliers refer to JEDEC JESD47 and JESD22 for Data Retention testing. Based on the information provided by the NAND Flash suppliers, Data Retention is targeted as shown in the table for reference.

2 Product Features

- Dynamic and Static Wear Leveling
- Subpage Mode Flash Translation Layer (FTL)
- Data Care Management
 - Active: Adaptive Read Refresh
 - Passive: Background Media Scan
- Lifetime Enhancements
 - Dynamic Bad Block Remapping
 - Write Amplification Reduction
- Power Fail Data Loss Protection
- Data set management support (TRIM)
- Active State Power Management (ASPM) Support
- In-Field Firmware Update⁴
- Enterprise-Grade Self-Monitoring, Analysis, and Reporting Technology (S.M.A.R.T.)
- 30 µinch Gold-Plated Connector (IPC-6012B Class 2 Compliant)
- End-to-End (E2E) Data Protection
- AES256 Encryption (on request, for 480GB enabled)
- TCG Opal 2.0
- Life Cycle Management
- Controlled "Locked" BOM
- RoHS / REACH Compliant
- Swissbit Life Time Monitoring (SBLTM) Tool and SDK for SBLTM (on request)

Why Swissbit?

Swissbit is focused on the design, development, manufacture, and support of leading edge memory and storage solutions for the worldwide OEM/ODM marketplace. As a global supplier, Swissbit recognizes and addressees the higher level of application requirements of today's industrial, Netcom, and automotive customers by providing best-in-class products and services, with uncompromised attention to driving overall value and quality.

⁴ The support of In-Field FW update capabilities on host systems is recommended.

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