swissbit®

Product Fact Sheet

Industrial USB Flash Drive

U-500k Series

USB 3.1 SuperSpeed, SLC

Commercial and Industrial Temperature Grade

Date: January 26, 2023
Revision: 1.02



Made in Germany

Product Summary

- **Capacities:** 2 GBytes, 4 GBytes, 8 GBytes, 16 GBytes, 32 GBytes
- **Form Factor:** USB3.1 solid state flash drive with USB Type-A connector (68 mm x 18 mm x 8.3 mm)
- **Compliance:** USB 3.1 Gen 1 SuperSpeed specification compatible (backward compliance with USB 2.0/1.1)
- **Performance:**
  - Read performance: sequential read up to 180 MBytes/s, random read IOPS up to 3,700
  - Write performance: sequential write up to 100 MBytes/s, random write IOPS up to 1,980
- **Operating Temperature Range:**
  - Commercial: 0 °C to 70 °C
  - Industrial: -40 °C to 85 °C
- **Storage Temperature Range:** -40 °C to 85 °C
- **Operating Voltage:** 5.0 V ± 10%
- **Data Retention:** 10 years @ life begin; 1 year @ life end
- **Endurance in TeraBytes Written (TBW) @ Max Capacity:** 3380 (seq. write 128KB); 198 (random write 4KB)
- **High-Performance 32-Bit Processor with Integrated, Parallel Flash Interface Engines:**
  - Single-Level Cell (SLC) NAND Flash
  - Hardware BCH Code ECC (up to 60bit correction per 1 KByte page)
- **High Reliability:**
  - Mean Time Between Failure (MTBF): > 3,000,000 hours
- Data Reliability: < 1 non-recoverable error per 10^{17} bits read

Product Features

- Page based Flash management for increased endurance and random performance
- Optimized FW algorithms especially for high read access and long data retention applications
  - Patented power-off reliability technology
  - Near Miss ECC technology
    Minimize the risk of uncorrectable bit failure over the product life time. Each read command analyzes the ECC margin level and refreshes data if necessary.
  - Read Disturb Management
    The read commands are monitored and the content is refreshed when critical levels have occurred.
  - Wear Leveling technology
    Equal wear leveling of static and dynamic data. The wear leveling assures that dynamic data as well as static data is balanced evenly across the memory. This guarantees the maximum write endurance of the device.
  - Data Care Management
    The interruptible background process controls the user data for read disturb effects or high temperature related retention degradation and refreshes data if necessary.
- Detailed S.M.A.R.T. support and extended vendor information
- LED for operation indication
- In-field firmware update
- 30 µinch gold-plated USB 3.0 Type-A connector
- Swissbit Life Time Monitoring (SBLTM) tool and SDK for SBLTM (on request)
- Customized options like removable or fixed drive configuration, customer specified strings and IDs, FAT16, FAT32 or customer file system, preload service or customized logo 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.