swissbit®

Product Fact Sheet

Industrial CFexpress Card

G2000 Series

CFexpress v2.0, Type B, 3D TLC

Industrial Temperature Grade

Date: February 20, 2024
Revision: 1.03

Made in Germany

Product Summary

- **Capacities:** 60 GBytes, 120 GBytes, 240 GBytes, 480 GBytes, 960 GBytes
- **Form Factor:** CFexpress™ Type B card (38.5mm x 29.6mm x 3.8mm)
- **Compliance[1]:** CFexpress v2.00
- **Interface:** Gen3 x2 Lanes
  - Drive operates in x1 mode in x1 CFexpress Type B slots
  - Drive operates in x2 mode in x2 CFexpress Type B slots
- **Command Sets:** Supports NVMe 1.3
- **Performance**:
  - Read Performance: Sequential Read up to 1,610 MBytes/s, Random Read 4K up to 139,700 IOPS
  - Write Performance: Sequential Write up to 927 MBytes/s, Random Write 4K up to 144,775 IOPS
- **Host Memory Buffer (HMB):** Support for increased random performance
- **Operating Temperature Range[2]:**
  - Industrial: -40 °C to 85 °C
- **Storage Temperature Range:** -40 °C to 85 °C
- **Operating Voltage:** 3.3V supply voltage
- **Low Power Consumption**
- **Power:**
  - Power States PS0, PS1, PS2, PS3 and PS4
  - Thermal Throttling supported
- **Data Retention:** 10 Years @ Life Begin; 1 Year @ Life End, @40°C
- **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:**
  - Designed for Industrial and Automotive market
  - Ideal for applications like automation, embedded computing, gaming, IIoT and NetCom
  - Optimized for long life cycle that requires superior data retention as well as power fail safety
  - Mean Time Between Failure (MTBF): > 3,000,000 hours
  - Data Reliability: < 1 non-recoverable error per 10^{16} bits read
  - Number of insertion/removal cycles: up to 12,000

[1] The verification of host system and storage device compatibility is in 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"

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 Update[3]
- 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
- TCG Opal 2.0
- Optional Hardware Features
  - Hardware-Write-Protect
  - Secure-Erase
  - DASP/DEVACT
- Life Cycle Management, Controlled "Locked" BOM
- RoHS / REACH Compliant
- Swissbit Life Time Monitoring (SBLTM) Tool and SDK for SBLTM (on request)

[3] The support of In-Field FW update capabilities on host systems is recommended.

Table 1: Order Information for G2000

Density	Part Number	Temp. Range	Flash Technology
60 GBytes	SG2000CE060GI-1TB1-1DB-STD	-40°C to 85°C	3D NAND Flash TLC-mode
120 GBytes	SG2000CE120GI-1TB1-1DB-STD		
240 GBytes	SG2000CE240GI-1TB2-1DB-STD		
480 GBytes	SG2000CE480GI-1TB2-1DB-STD		
960 GBytes	SG2000CE960GI-1TB2-1DB-STD		

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.