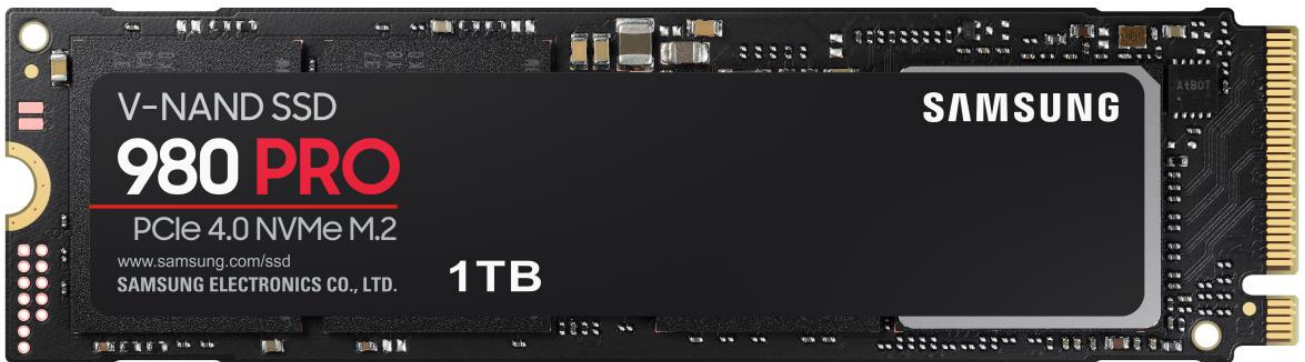


Samsung V-NAND SSD 980 PRO

2020 Data Sheet

Revision 1.0



LEGAL DISCLAIMER

SAMSUNG ELECTRONICS CO., LTD. RESERVES THE RIGHT TO CHANGE PRODUCTS, INFORMATION AND SPECIFICATIONS WITHOUT NOTICE.

Products and specifications discussed herein are provided for reference purposes only. All information discussed herein may change without notice and is provided on an "AS IS" basis, without warranties of any kind. This document and all information discussed herein remain the sole and exclusive property of Samsung Electronics Co., Ltd. No license of any patent, copyright, mask work, trademark or any other intellectual property right is granted under this document, by implication, estoppels or otherwise. Samsung products are not intended for use in life support, critical care, medical, safety equipment, or similar applications where product failure could result in loss of life or personal or physical harm, or any military or defense application, or any governmental procurement to which special terms or provisions may apply. For updates or additional information about Samsung products, contact your nearest Samsung representative. All brand names, trademarks and registered trademarks belong to their respective owners.

COPYRIGHT © 2020

This material is copyrighted by Samsung Electronics Co., Ltd. Any unauthorized reproductions, use or disclosure of this material, or any part thereof, is strictly prohibited and is a violation under copyright law.

TRADEMARKS & SERVICE MARKS

The Samsung logo is the trademark of Samsung Electronics Co., Ltd. All other company and product names may be trademarks of the respective companies with which they are associated.

For more information, please visit www.samsung.com/ssd and www.samsungssd.com.

To download the latest software & manuals, please visit www.samsung.com/samsungssd

TECHNICAL SPECIFICATIONS

| Samsung SSD 980 PRO | | | | | |
|---|---|---------------------------------------|--|-------------|-------------|
| Usage Application | Client PCs | | | | |
| Interface | PCIe Gen 4.0 x4, NVMe 1.3c | | | | |
| Hardware Information | Capacity ¹⁾ | 250GB | 500GB | 1TB | |
| | Controller | Samsung Elpis Controller | | | |
| | NAND Flash Memory | Samsung V-NAND 3bit MLC | | | |
| | DRAM Cache Memory | 512MB LPDDR4 | 1GB LPDDR4 | | |
| | Dimension | Max 80.15 x Max 22.15 x Max 2.38 (mm) | | | |
| | Form Factor | M.2 (2280) | | | |
| Performance (Up to.) ^{2) 3) 4)} | Sequential Read | 6,400 MB/s | 6,900 MB/s | 7,000 MB/s | |
| | Sequential Write | 2,700 MB/s | 5,000 MB/s | 5,000 MB/s | |
| | QD 1 Thread 1 | Ran. Read | 22K IOPS | 22K IOPS | 22K IOPS |
| | | Ran. Write | 60K IOPS | 60K IOPS | 60K IOPS |
| | QD 32 Thread 16 | Ran. Read | 500K IOPS | 800K IOPS | 1,000K IOPS |
| | | Ran. Write | 600K IOPS | 1,000K IOPS | 1,000K IOPS |
| Power Consumption ⁵⁾ | Idle (ASPT on) | | 35mW | | |
| | Active (Avg.) | Read | 5.0 W | 5.9 W | 6.2 W |
| | | Write | 3.9 W | 5.4 W | 5.7 W |
| | L1.2 mode | | 5 mW | | |
| Reliability | Temp. | Operating | 0°C to 70°C (Measured by S.M.A.R.T. Temperature Proper airflow recommended) | | |
| | | Non-Operating | -40°C to 85°C | | |
| | Humidity | | 5% to 95% non-condensing | | |
| | Shock | Non-Operating | 1,500G(Gravity), duration: 0.5ms, 3 axis | | |
| | Vibration | Non-Operating | 20~2,000Hz, 20G | | |
| | MTBF | | 1.5 million hours | | |
| Warranty ^{6) 7)} | TBW | 150TB | 300TB | 600TB | |
| | Period | 5 years limited | | | |
| Supporting Features | TRIM (Required OS support), Garbage Collection, S.M.A.R.T | | | | |
| Data Security | AES 256-bit Full Disk Encryption, TCG/Opal V2.0, Encrypted Drive (IEEE1667) | | | | |

- 1GB = 1,000,000,000 bytes by IDEMA. A certain portion of capacity may be used for system file and maintenance uses, thus the actual available capacity may differ from the labeled capacity.
- 980 PRO is backward compatible with PCIe 3.0. In PCIe 3.0, sequential performances are 3,500 MB/s for reads, 2,700MB/s (250GB), 3,400MB/s (500GB), 3,450 MB/s (1TB) for writes. Random performances are 560K (250GB), 690K IOPS (500GB/1TB) for reads, 620K (250/500GB), 660K IOPS (1TB) for writes.
- Sequential and random performance measurements are based on Iometer1.1.0. Performance may vary based on SSD's firmware version, system hardware & configuration. Test System: AMD Ryzen 9 3900X 12-Core Processor CPU@3.79GHz, DDR4 2666MHz 16GBx2, OS-Windows 10 Pro 64bit, Chipset-ASUS-X570-ROG CROSSHAIR VIII FORMULA v
- Sequential and random write performance was measured with Intelligent TurboWrite technology being activated. The sequential write performances for the portion of data exceeding over Intelligent TurboWrite buffer size are: 500 MB/s for 250GB, 1,000 MB/s for 500GB, 2,000 MB/s for 1TB. The random write performances for the portion of data exceeding over Intelligent TurboWrite buffer size (tested with QD 32 Thread 16) are: 140,000 IOPS for 250GB, 270,000 IOPS for 500GB, 500,000 IOPS for 1TB. Performance may vary depending on SSD's firmware, system hardware & configuration and other factors.
- Power consumption is measured with Iometer1.1.0 version with AMD Ryzen 7 3700X 8 Core @3.6GHz, DDR4 8GBx2, OS-Windows 10 Pro 64bit, Chipset-GIGABYTE-X570-AORUS MASTER
- All documented endurance test results are in compliance with JESD218 Standards. Please visit www.jedec.org for detailed information on JESD218 Standards
- TBW means Terabytes Written, Warranty provides coverage for the stated time period or the TBW, whichever comes first. Please refer to the detailed warranty statement here at <http://www.samsung.com/samsungssd>.

Revision History

| Revision Number | Description | Revision Date |
|-----------------|-----------------|---------------|
| 1.0 | Initial Release | August, 2020 |