Technical Specifications

		970 PRO		970 EVO Plus			
Model Code		MZ-V7P1T0	MZ-V7P512	MZ-V7S2T0	MZ-V7S1T0	MZ-V7S500	MZ-V7S250
General Feature	Application	Client PCs					
	Capacity	1TB	512GB	2TB	1TB	500GB	250GB
	Form Factor	M.2 (2280)					
	Interface	PCIe Gen 3.0 x4, NVMe 1.3					
	Dimension (WxHxD)	80.15 x 22.15 x 2.38 (mm)					
	Weight	Max 8.0 g					
	Storage Memory	Samsung V-NAND 2-bit MLC		Samsung V-NAND 3-bit MLC			
	Controller	Samsung Phoenix Controller					
	Cache Memory	1GB LPDDR4	512MB LPDDR4	2GB LPDDR4	1GB LPDDR4	512MB LPDDR4	
Performance	Sequential Read	up to 3,500 MB/s		TBD	up to 3,500 MB/s		
	Sequential Write	up to 2,700 MB/s	up to 2,300 MB/s	TBD	up to 3,300 MB/s	up to 3,200 MB/s	up to 2,300 MB/s
	Random Read (4KB, QD32)	up to 500K IOPS	up to 370K IOPS	up to 620K IOPS	up to 600K IOPS	up to 480K IOPS	up to 250K IOPS
	Random Write (4KB, QD32)	up to 500K IOPS		up to 560K IOPS	up to 550K IOPS		
	Random Read (4KB, QD1)	up to 15K IOPS		up to 19K IOPS	up to 19K IOPS	up to 19K IOPS	up to 17K IOPS
	Random Write (4KB, QD1)	up to 55K IOPS		up to 62K IOPS	up to 60K IOPS		
Special Features	TRIM	Supported					
	S.M.A.R.T						
	GC (Garbage Collection)	Auto Garbage Collection Algorithm					
	Encryption Support	AES 256-bit Encryption (Class 0) TCG/Opal IEEE1667 (Encrypted drive)					
	WWN Support	Not supported					
	Device Sleep Mode	Yes					
Environment	Average Power Consumption (system level)	Average: 5.7 W / Maximum: 8.5 W	Average: 5.2 W / Maximum: 8.5 W	TBD	Average: 6 W / Maximum: 9 W	Average: 5.8 W / Maximum: 9 W	Average: 5W / Maximum: 8W
	Power Consumption (Idle)	Max. 30 mW					
	Power Consumption (Device Sleep)	Max. 5 mW					
	Allowable Voltage	3.3 V ± 5 % Allowable voltage					
	Reliability (MTBF)	1.5 Million Hours Reliability (MTBF)					
	Operating Temperature	0 - 70 °C Operating Temperature					
	Shock	1,500 G & 0.5 ms (Half sine)					
Accessories	Installation Kit	Not Available					
Software	Management SW	Magician Software for SSD management					
Warranty (Total Bytes Written)		5-Year Limited Warranty or TBW Limited Warranty					
		1,200TB	600TB	1,200TB	600TB	300TB	150TB

Actual power consumption may vary depending on system hardware & configuration.
· 1GB=1,000,000,000 bytes by IDEMA. A certain portion of capacity may be used for system file and maintenance use, so the actual capacity may differ from what is indicated on the product label.
· 970 PRO and EVO Plus performance may vary based on SSD's firmware version, system hardware and configuration. Performance measurements are based on IOmeter1.1.0.
· Test system configuration: Intel Core i7-7700K CPU @4.2GHz, DDR4 2400MHz 32GB, OS-Windows 10 Built 10240, Chipset–ASUS PRIME Z270-A.
· 970 EVO Plus Intelligent TurboWrite buffer size varies based on the capacity of the SSD: 13GB for 250GB model, 22GB for 500GB model, 42GB for1TB model and 78GB for 2TB model.
For more information on the Intelligent TurboWrite, please visit: www.samsungssd.com

For more information about the Samsung SSD, visit **samsung.com/ssd** or **samsungssd.com**.

Unreal Performance, Realized.

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Always Evolving SSD

The top level 970 PRO | EVO Plus NVMe SSDs achieve unmatched performance with Samsung's latest V-NAND technology and proven Phoenix controller for tech enthusiasts, hardcore gamers, and professionals. Accelerate your computing with superior reliability, and best-in-class capacity for intensive workloads on PCs and workstations. The pinnacle of SSD performance is here.
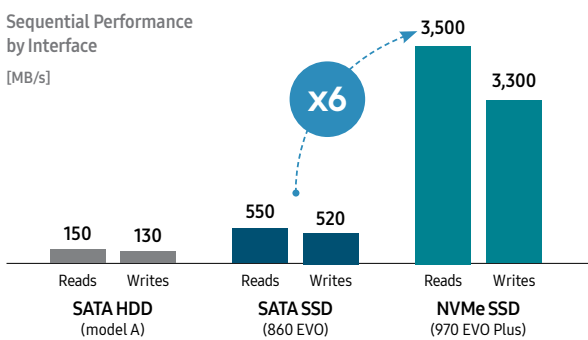
The NVMe Difference

The Non-Volatile Memory express (NVMe) interface is specifically engineered to overcome constraints of previous interfaces by increasing NAND flash storage transfer speeds. Sequential speeds are approximately 6 times faster than SATA SSDs as NVMe enables your drive to reach its full potential.

Sequential Performance by Interface [MB/s]

x6

	Reads	Writes	Reads	Writes	Reads	Writes
	150	130	550	520	3,500	3,300
	SATA HDD (model A)		SATA SSD (860 EVO)		NVMe SSD (970 EVO Plus)	

* Performance may vary based on drive's firmware version, system hardware and configuration.

970 PRO
· Sequential read/write speeds up to 3,500/2,700 MB/s respectively
· Industry-leading endurance up to 1,200 TBW
· Available in 512GB, 1TB capacities

970 EVO Plus
· Sequential read/write speeds up to 3,500/3,300 MB/s respectively
· Available in 250GB, 500GB, 1TB, and 2TB
· Intelligent TurboWrite technology for faster write speeds

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* The NVM Express® design mark is a registered trademark of NVM Express, Inc.

Fearless Performance

The 970 PRO | EVO Plus utilize the proven Phoenix controller and Samsung's latest V-NAND. The 970 EVO Plus also has firmware optimization to reach sequential read/write speeds up to 3,500/3,300 MB/s, up to 53% faster than the 970 EVO. The 970 EVO Plus is boosted by Intelligent TurboWrite which uses a large buffer size up to 78GB to increase write speeds.

* Up to 53 percent performance increase in sequential write speed for 250GB version.

Sequential Reads / Writes
up to 3,500 / 3,300 MB/s

Random Reads / Writes
up to 620K / 560K IOPS

Unparalleled Reliability

Minimize performance drops, while maintaining high performance. The Dynamic Thermal Guard effectively manages overheating, while the nickel-coated controller and thin copper-film layered heat spreader work together to dissipate heat during heavy workloads, ensuring optimal reliability.

Nickel - Coated Controller   Heat Spreader

22 mm

80 mm
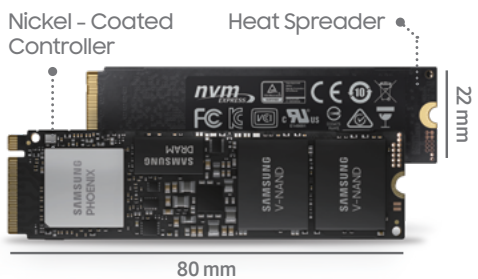
Flexible System Design

Build the ultimate high-end system. The 970 series comes in a wide range of capacity options, from 250GB to 2TB on a single-sided SSD in the compact M.2 (2280) form factor. The faster 970 EVO Plus speeds bring improved power efficiency.

2TB
High Capacity up to 2TB

High Power Efficiency

Exceptional Endurance

Gain the advantage of industry-leading sustained performance through Samsung's pioneering innovations. Up to 1,200 TBW* and a 5-year limited warranty bring you the ultimate in endurance.

* TBW: Terabytes Written
* Samsung's warranty does not cover any costs and expenses related to SSDs' overhaul/assembly and data recovery for repairs or replacements.
  For more information on warranty statements, please visit: www.samsungssd.com

5 years
5-year Warranty

TBW
1,200TB

Magician Software

The Samsung Magician software equips you with a user-friendly yet powerful suite of tools. Manage your drive with easy firmware updates, drive health and speed monitoring, and accelerate performance with RAPID mode.

Firmware Update

Data Security

Performance Benchmark