

# Samsung V-NAND SSD

## 970 EVO Plus

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### 2021 Data Sheet

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Revision 3.0



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## TECHNICAL SPECIFICATIONS

### Samsung SSD 970 EVO Plus

Usage Application	Client PCs						
Interface	PCIe® Gen 3.0 x4, NVMe™ 1.3						
Hardware Information	Capacity <sup>1)</sup>		250GB	500GB	1TB	2TB	
	Controller		Samsung in-house Controller				
	NAND Flash Memory		Samsung V-NAND 3bit MLC				
	DRAM Cache Memory		512MB LPDDR4		1GB LPDDR4	2GB LPDDR4	
	Dimension		Max 80.15 x Max 22.15 x Max 2.38 (mm)				
	Form Factor		M.2 (2280) <sup>2)</sup>				
Performance (Up to.) <sup>3) 4)</sup>	Sequential Read		3500 MB/s				
	Sequential Write		2300 MB/s	3200 MB/s	3300 MB/s		
	QD 1 Thread 1	Ran. Read	17K IOPS	19K IOPS			
		Ran. Write	60K IOPS				62K IOPS
	QD 32 Thread 4	Ran. Read	250K IOPS	480K IOPS	600K IOPS	620K IOPS	
		Ran. Write	550K IOPS				560K IOPS
Power Consumption <sup>5)</sup>	Idle (ASPT on)		30mW				
	Active (Avg.)	Read	5 W	5.5 W			
		Write	4.2 W	5.8 W	6 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	-45°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 <sup>9)</sup>	TBW <sup>6) 7)</sup>		150TB	300TB	600TB	1200TB
Period		5 years limited <sup>8)</sup>					
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 use, thus the actual available capacity may differ from the labeled capacity.
- M.2 is the specification of a form factor for ultra-thin PCs. The M.2 standard allows widths of 12, 16, 22 and 30mm and lengths of 16, 26, 30, 38, 42, 69, 80 and 110mm. Commercially popular M.2 are those with a width of 22mm and lengths of 30, 42, 60, 80 and 110mm. Samsung provides the most popular form factor, which is 22mm x 80mm (i.e., 2280), for the convenience of customers.
- 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 configuration: Intel Core i7-7700K @ 4.2GHz, SAMSUNG DDR4 32GB, OS-Windows 10 Build 10240, Chipset-ASUS PRIME Z270-A.
- Sequential and random write performance was measured with Intelligent TurboWrite technology being activated. Intelligent TurboWrite operates only within a specific data transfer size. Performance may vary depending on SSD's firmware, system hardware & configuration and other factors. For detailed information, please contact your local service center.
- Power consumption is measured with Iometer1.1.0 version with Intel Core i7-7700K @ 4.2GHz, SAMSUNG DDR4 16GB, Gigabyte GA-Z270X, OS – Windows 10 PRO K x64.
- All documented endurance test results are in compliance with JESD218 Standards. Please visit [www.jedec.org](http://www.jedec.org) for detailed information on JESD218 Standards
- TBW means Terabytes Written.
- Please refer to the detailed warranty statement here at <http://www.samsung.com/samsungssd>
- Warranty provides coverage for the stated time period or the TBW, whichever comes first.

## PRODUCT LINEUP

Density	Model Name	Box Contents	Model Code
250GB*	MZ-V7S250	Samsung SSD 970 EVO Plus 250GB Warranty Statement	MZ-V7S250BW MZ-V7S250B/AM
500GB*	MZ-V7S500	Samsung SSD 970 EVO Plus 500GB Warranty Statement	MZ-V7S500BW MZ-V7S500B/AM
1TB (1,000GB*)	MZ-V7S1T0	Samsung SSD 970 EVO Plus 1TB Warranty Statement	MZ-V7S1T0BW MZ-V7S1T0B/AM
2TB (2,000GB*)	MZ-V7S2T0	Samsung SSD 970 EVO Plus 2TB Warranty Statement	MZ-V7S2T0BW MZ-V7S2T0B/AM

\* GB: 1GB = 1,000,000,000 bytes. The actual usable capacity may be less than the labeled capacity.

For more information, including but not limited to the warranty provided for this product, and to download the latest software & manuals, please visit [www.samsung.com/ssd](http://www.samsung.com/ssd) and [www.samsungssd.com](http://www.samsungssd.com).

## Testing Configuration and notes

Below you will find a list of system configurations Samsung used to obtain the results reported in this Data Sheet.

	Read/Write Performance	Power Consumption
Interface	PCIe® Gen 3.0 x4	PCIe® Gen 3.0 x4
OS	Windows 10 Build 10240	Windows 10 PRO K x64
CPU	Intel Core i7™ -7700K @ 4.2GHz	Intel Core i7™ -7700K @ 4.2GHz
Memory	Samsung DDR4 2,400MHz 32GB (16GB x 2ea)	Samsung DDR4 2,133MHz 16GB (8GB x 2ea)
Chipset	ASUS PRIME Z270-A	Gigabyte GA-Z270X
Test Program	IOmeter 1.1.0	IOmeter 1.1.0

## Revision History

Revision Number	Description	Revision Date
1.0	Initial Release	January, 2019
2.0	Added 2TB Specification	March, 2019
3.0	The footnote 4 is fixed, the controller name is deleted	June, 2021