Samsung V-NAND SSD 860 EVO

2018 Data Sheet

Revision 1.0



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Revision History

Revision Number	Description	Revision Date
001	Initial Release	December 2017

THE SAMSUNG SSD 860 EVO

The Samsung SSD 860 EVO is the newest of Samsung's Client-PC SATA SSDs, specially designed for mainstream desktops and laptops. Building on the reputation of the Samsung SSD 850 EVO, the world's first line of consumer SSDs with V-NAND 3bit MLC technology, the new Samsung SSD 860 EVO drives achieve industry-leading performance for SATA SSDs, offering improvements in speed, reliability, compatibility and capacity. The 860 EVO comes equipped with Samsung's newly designed MJX controller along with the latest V-NAND architecture.

Enhanced Computing Experiences

The legacy Serial-ATA (SATA) interface faces the theoretical bandwidth limitation of 600MB/s which many SSD manufacturers have tried to reach over the years. Among them, Samsung, which first brought V-NAND technology to the market, continuously strives to improve product reliability and performance, even with the SATA interface limitations. Powered by Samsung's latest V-NAND technology, the 860 EVO delivers top-notch sequential read (up to 550 MB/s) and write (up to 520 MB/s) speeds and along with high sustainable performance for everyday computing experiences.

As the amount of data processing continuously increases, the need for faster data transfers and sustainable high performance over longer periods of time has become paramount in importance for users. To address this need, Samsung has newly introduced Intelligent TurboWrite technology. With this, the 860 EVO provides significantly accelerated write performance which is up to 6 times longer than that of the previous 850 EVO. Intelligent TurboWrite automatically decides how much space to allocate to the TurboWrite region in accordance with your system workload. So in a heavy workload situation, TurboWrite region will expand by up to 6 times versus that of the previous version of TurboWrite. helping to avoid sudden write performance drops which sometimes occur when performing large file transfer and ensuring that consumers enjoy the best write performance for longer than ever.

Worry-Free Reliability

The 860 EVO offers guaranteed endurance and unmatched reliability, with up to 6 times higher Total Bytes Written (TBW) than the previous 850 EVO and an industry-leading 5 year limited warranty. Up to 2,400 TBW powered by the latest V-NAND technology will give you absolute confidence in your SSD.*

*All documented endurance test results are obtained in compliance with JESD218 standards. Please visit www.jedec.org for detailed standard information.

Furthermore, the 860 EVO assures long-term dependable performance with minimal performance degradation. The 860 EVO provides up to 51% better sustained performance compare to that of its predecessor. This means you can fully experience the performance of the SSD even with heavy daily workload.

Expanded Compatibility with a Refined Controller

The 860 EVO delivers expanded system compatibility. The refined ECC algorithm and revamped controller generate strong sustainable performance near SATA's limits, and the improved queued trim provides for better Linux compatibility. Also the 860 EVO is available in 2.5-inch, mSATA, and M.2 form factors for a broad range of computing device.

Advanced Data Encryption

The 860 EVO provides multiple advanced data encryption features. Self-Encrypting Drive (SED) security technology will help keep data safe at all times. The 860 EVO includes an AES 256-bit hardware-based encryption engine to ensure that your personal files remain secure. Being hardware-based, the encryption engine secures your data without the performance degradation that you may experience with software-based encryption. Also, the 860 EVO is compliant with various advanced security management solutions (TCG Opal and Encrypted Drive-IEEE1667).

Samsung Data Migration and Magician Software

The 860 EVO comes with Samsung Data Migration and Magician Software, which is easy to install and makes management of you SSD simple.* Samsung Data Migration software is uncomplicated to use – yet provides a very powerful "Custom Cloning" feature that makes migration effortless even when the source data is greater than the SSD's capacity. Magician provides personalized firmware checks and additional functions tailored for individual users' drives. It even updates the firmware automatically to make sure that the drives' performance stays up to date.

*To download Samsung Data Migration and Magician, please visit www.samsung.com/samsungssd

TECHINCAL SPECIFICATIONS

Samsung SSD 860 EVO							
Usage Application	Client PCs						
Interface	SATA 6 GB/s Interface, compatible with SATA 3 GB/s & 1.5 interfaces						
Hardware Information	Capacity[1]		250GB	500GB	1TB	2TB	4TB
	Controller		Samsung MJX Controller				
	NAND Flash Memory		Samsung V-NAND 3bit MLC				
	DRAM Cache Memory		512MB LPDDR4		1GB LPDDR4	2GB LPDDR4	4GB LPDDR4
	Dimensions		100x 69.85x 6.8(mm)				
	Form Factor		2.5 inch				
Performance (Up to.)[2]	Sequential Read		550 MB/s	550 MB/s	550 MB/s	550 MB/s	550 MB/s
	Sequential Write[3]		520 MB/s	520 MB/s	520 MB/s	520 MB/s	520 MB/s
	4KB Ran. Read (QD1)		10,000 IOPS	10,000 IOPS	10,000 IOPS	10,000 IOPS	10,000 IOPS
	4KB Ran. Write (QD1)		42,000 IOPS	42,000 IOPS	42,000 IOPS	42,000 IOPS	42,000 IOPS
	4KB Ran. Read (QD32)		98,000 IOPS	98,000 IOPS	98,000 IOPS	98,000 IOPS	98,000 IOPS
	4KB Ran. Write (QD32)		90,000 IOPS	90,000 IOPS	90,000 IOPS	90,000 IOPS	90,000 IOPS
Power Consumption[4]	Idle	DIPM on	50 mW	50 mW	50 mW	50 mW	50 mW
	Active (Avg.)	Read/Write	2.2 W	2.5 W	3 W	3 W	3 W
	Devslp		2 mW	2 mW	2.6 mW	5 mW	8 mW
Reliability[4]	Temp.	Operating	0°C to 70°C				
		Non-Operating	-45°C to 85°C				
	Humidity		5% to 95% non-condensing				
	Shock	Non-Operating	1,500G, duration: 0.5ms, 3 axis				
	Vibration	Non-Operating	20~2,000Hz, 20G				
	MTBF		1.5 million hours				
Warranty[7]	TBW[5] [6]		150TB	300TB	600TB	1,200TB	2,400TB
	Period		5 year limited[8]				
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)						

1) GB: 1GB = 1,000,000,000 bytes. A certain portion of capacity may be used for system file and maintenance use, thus the actual available capacity may differ from the labeled total capacity.
2) Sequential performance measurements are based on CrystalDiskMark v. 5.0.2. 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 i5-3550 CPU@3.3 GHz, DDR3 1333MHz 4GB, OS-Windows 7 Ultimate 64bit, Chipset-ASUS P8H77-V
3) Sequential Write performance measurements are based on Intelligent TurboWrite technology. The sequential performance measurements after Intelligent TurboWrite region are 300MB/s (250/500GB), or 500MB/s (1TB).
4) 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
5) All documented endurance test results are obtained in compliance with JESD218 Standards. Please visit www.jedec.org for detailed information on JESD218 Standards
6) TBW means Total Bytes Written.
7) Please refer to the detailed warranty statement here at http://samsung.com/samsungssd.
8) Warranty provides coverage for the stated time period or the TBW, whichever comes first.

PRODUCT LINEUP

Density	Model Name	Box Contents	Model Name
250GB*	MZ-76E250	Samsung SSD 860 EVO 250GB Warranty Statement	MZ-76E250BW MZ-76E250B/AM MZ-76E250B/EU MZ-76E250B/CN MZ-76E250B/KR
500GB*	MZ-76E500	Samsung SSD 860 EVO 500GB Warranty Statement	MZ-76E500BW MZ-76E500B/AM MZ-76E500B/EU MZ-76E500B/CN MZ-76E500B/KR
1TB (1,000GB*)	MZ-76E1T0	Samsung SSD 860 EVO 1TB Warranty Statement	MZ-76E1T0BW MZ-76E1T0B/AM MZ-76E1T0B/EU MZ-76E1T0B/CN MZ-76E1T0B/KR
2TB* (2,000GB*)	MZ-76E2T0	Samsung SSD 860 EVO 2TB Warranty Statement	MZ-76E2T0BW MZ-76E2T0B/AM MZ-76E2T0B/EU MZ-76E2T0B/CN MZ-76E2T0B/KR
4TB (4,000GB*)	MZ-76E4T0	Samsung SSD 860 EVO 4TB Warranty Statement	MZ-76E4T0BW MZ-76E4T0B/AM MZ-76E4T0B/EU MZ-76E4T0B/CN MZ-76E4T0B/KR

* GB: 1GB = 1,000,000,000 bytes by IDEMA. 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, please visit www.samsung.com/ssd and www.samsungssd.com.