

# Samsung V-NAND SSD 860 PRO

---

2018 Data Sheet

---

Revision 1.1



## DISCLAIMER

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

Products and specifications discussed herein are 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. No license of any patent, copyright, mask work, trademark or any other intellectual property right is granted by one party to the other party 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 office.

## COPYRIGHT © 2018

This material is copyrighted by Samsung Electronics. 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. Adobe is a trademark and Adobe Acrobat is a registered trademark of Adobe Systems Incorporated. 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](http://www.samsung.com/ssd) and [www.samsungssd.com](http://www.samsungssd.com).  
To download the latest software & manuals, please visit [www.samsung.com/samsungssd](http://www.samsung.com/samsungssd)

## Revision History

Revision Number	Description	Revision Date
001	Initial Release	December 2017
002	Fix MTBF rating to 1.5 million hours	March 2018

## THE SAMSUNG SSD 860 PRO

The Samsung SSD 860 PRO is the new Samsung's Client-PC SATA SSDs, specially designed for high-end computing devices. Building on the reputation of the Samsung SSD 850 PRO, the world's first V-NAND SSD for Client PCs, the new Samsung SSD 860 PRO drives achieve top class performance for SATA SSDs, offering improvements in speed, reliability, and compatibility. The 860 PRO comes equipped with Samsung's newly designed MJX controller along with the latest 2bit MLC V-NAND architecture.

### Professional Performance

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 through the 850 PRO, continuously strives to improve product reliability and performance, even with the SATA interface limitations. Powered by Samsung's latest 64-layer 2bit MLC V-NAND technology, the 860 PRO, the successor of the 850 PRO, delivers best-in-class sequential read (up to 560 MB/s) and write (up to 530 MB/s) speeds and along with high sustainable performance for the professionals who always pursue best achievement

### Ultimate Reliability

The 860 PRO offers guaranteed endurance and ultimate reliability, with up to approximately 8 times higher Total Bytes Written (TBW) than the 850 PRO and an industry-leading 5-year limited warranty. Up to 4,800 TBW powered by the latest V-NAND technology, which is the highest TBW rating industry-wide, 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](http://www.jedec.org) for detailed information on the standard.

Furthermore, the 860 PRO assures long-term dependable performance with minimal performance degradation. The 860 PRO provides up to 25% better sustained performance compare to that of its predecessor. This means you can experience the high performance of the SSD even with heavy daily workload.

### Smart Compatibility with a Refined Controller

The 860 PRO 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. The 860 PRO is uniquely designed for not only Client-PCs but also NASs (Network Attached Storages) and workstations thanks to its Samsung 2bit MLC V-NAND composition.

### Advanced Data Encryption

The 860 PRO provides multiple advanced data encryption features. Self-Encrypting Drive (SED) security technology will help keep data safe at all times. The 860 PRO 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 PRO is compliant with various advanced security management solutions (TCG Opal and Encrypted Drive-IEEE1667).

### Samsung Data Migration and Magician Software

The 860 PRO 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 easy 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](http://www.samsung.com/samsungssd)

## TECHINCAL SPECIFICATIONS

## Samsung SSD 860 PRO

Usage Application	Client PCs						
Interface	SATA 6 Gb/s Interface, compatible with SATA 3 Gb/s & 1.5 interfaces						
Hardware Information	Capacity <sup>1)</sup>	256GB	512GB	1TB	2TB	4TB	
	Controller	Samsung MJX Controller					
	NAND Flash Memory	Samsung V-NAND 2bit MLC					
	DRAM Cache Memory	512MB LPDDR4		1GB LPDDR4	2GB LPDDR4	4GB LPDDR4	
	Dimension	100x 69.85x 6.8(mm)					
	Form Factor	2.5 inch					
Performance (Up to.) <sup>2)</sup>	Sequential Read	560 MB/s					
	Sequential Write <sup>3)</sup>	530 MB/s					
	4KB Ran. Read (QD1)	11,000 IOPS					
	4KB Ran. Write (QD1)	43,000 IOPS					
	4KB Ran. Read (QD32)	100,000 IOPS					
	4KB Ran. Write (QD32)	90,000 IOPS					
Power Consumption <sup>4)</sup>	Idle	DIPM On	40 mW	40 mW	40 mW	40 mW	40 mW
	Active (Avg.)	Read/Write	2 W	2 W	2.2 W	2.2 W	2.2 W
	Device Sleep		2 mW	2 mW	2.5 mW	4.5 mW	7 mW
Reliability	Temp.	Reliability	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 <sup>8)</sup>	TBW <sup>5) 6)</sup>	300TB	600TB	1,200TB	2,400TB	4,800TB	
	Period	5 years, Limited <sup>7)</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)						

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) 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

4) All documented endurance test results are obtained in compliance with JESD218 Standards. Please visit [www.jedec.org](http://www.jedec.org) for detailed information on JESD218 Standards

5) TBW means Total Bytes Written.

6) Please refer to the detailed warranty statement here at <http://samsung.com/samsungssd>.

7) Warranty provides coverage for the stated time period or the TBW, whichever comes first.

## PRODUCT LINEUP

Density	Model Name	Box Contents	Model Name
256GB*	MZ-76P256	Samsung SSD 860 PRO 256GB Warranty Statement	MZ-76P256BW MZ-76P256B/EU MZ-76P256B/CN MZ-76P256B/KR
512GB*	MZ-76P512	Samsung SSD 860 PRO 512GB Warranty Statement	MZ-76P512BW MZ-76P512B/EU MZ-76P512B/CN MZ-76P512B/KR
1TB (1,024GB*)	MZ-76P1T0	Samsung SSD 860 PRO 1TB Warranty Statement	MZ-76P1T0BW MZ-76P1T0B/EU MZ-76P1T0B/CN MZ-76P1T0B/KR
2TB* (2,048GB*)	MZ-76P2T0	Samsung SSD 860 PRO 2TB Warranty Statement	MZ-76P2T0BW MZ-76P2T0B/EU MZ-76P2T0B/CN MZ-76P2T0B/KR
4TB (4,096GB*)	MZ-76P4T0	Samsung SSD 860 PRO 4TB Warranty Statement	MZ-76P4T0BW MZ-76P4T0B/EU MZ-76P4T0B/CN MZ-76P4T0B/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](http://www.samsung.com/ssd) and [www.samsungssd.com](http://www.samsungssd.com).