

SSD M.2 Module Specification

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1 General Description

The M.2 SSD Module 128GB/256GB/512GB/1TB which provide high reliability, high stability and high performance for a storage media. The SSD doesn't have any moving parts such as platter (disk) and head media, which provides a better solution in a notebook PC and Tablet PC as a storage device providing higher performance, reduced latencies, and a low power consumption in a small form factor. The SSD could also provide rugged features in industrial PC with an extreme environment with a high MTBF.

1.1 Feature

- ✓ Capacity: 128GB/256GB/512GB/1TB
- ✓ Sequential Data Read/Write Performance (Up to):
128GB & 256GB: 500/400MB/s, 512GB & 1TB: 500/450MB/s
- ✓ Form factor: M.2 SSD
- ✓ Interface: SATA 3.0 / 6.0Gb/s
- ✓ Fully compliant with SATA revision3.1, compatible with SATA 1.5/ 3.0/ 6.0Gb/s interface rates
- ✓ Support ATA-8 Command Set
- ✓ PIO, DMA, UDMA (up to 6, dependent on host) supported
- ✓ Asynchronous Signal Recovery
- ✓ Flash management algorithm: global static and dynamic wear-leveling, bad block management algorithm
- ✓ Supports ATA and SATA Interface power management and SMART (Self-Monitoring, Analysis and Reporting Technology)

1.2 Test Equipment

Platform List	CPU Type	South Bridge	OS
PRIME Z270-P	Intel i5-7400	Intel Z270-P	Windows 10

1.3 Capacity characteristic parameters

Real Capacity	
MKM280-660A0000022-128G-001	119GB
MKM280-660A0000017-256G-001	238GB
MKM280-660A0000019-512G-001	476GB
MKM280-660A0000019-1024G-001	952GB

1.4 Supply Voltage

Item	Requirements
Allowable voltage	3V ± 5%
Allowable noise/ripple	100mV p-p or less

1.5 Environmental Specifications

Features	Operating	Non-Operating
Temperature	0°C to +70°C	-40°C to +85°C
Humidity	5% to 95%, non-condensing	

2 Performance characteristic parameters

2.1 ATTO Disk Benchmark

Part No.	Capacity	Flash Structure	Read/Write Speed(Mbytes/second)			
			AS SSD Benchmark			
			Sequential	Sequential	4KB Random	4KB Random
			Read	Write	Read	Write
MKM280-660A0000022-128G-001	128GB	128GBx1	453.27	389.58	32.15	87.23
MKM280-660A0000017-256G-001	256GB	128GBx2	466.32	396.39	33.36	88.89
MKM280-660A0000019-512G-001	512GB	128GBx4	473.65	417.82	23.47	91.44
MKM280-660A0000019-1024G-001	1TB	256GBx4	485.17	449.61	31.5	92.41

NOTES:

- 1) The performance was measured using AS SSD Benchmark with SATA 6Gbps host.
- 2) Power Consumption may differ according to flash configuration, SDR configuration, and platform.

2.2 Crystal Disk Mark

Part No.	Capacity	Flash Structure	Read/Write Speed(Mbytes/second)	
			Crystal Disk Mark	
			Read Speed	Write Speed
MKM280-660A0000022-128G-001	128GB	128GB x1	507.95	401.40
MKM280-660A0000017-256G-001	256GB	128GB x2	517.80	411.68
MKM280-660A0000019-512G-001	512GB	128GB x4	534.76	454.19
MKM280-660A0000019-1024G-001	1TB	256GB x4	553.02	488.58

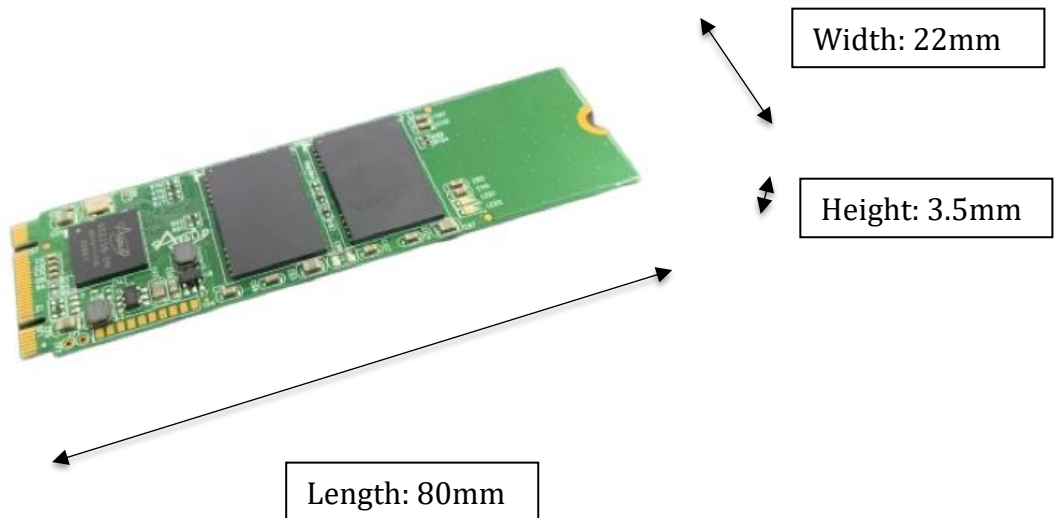
NOTES:

- 1) The performance was measured using Crystal Disk Mark with SATA 6Gbps host.
- 2) Power Consumption may differ according to flash configuration, SDR configuration, and platform.

3 Product appearance and dimensions

3.1 Physical Specifications

Part No.	Length (mm)	Width (mm)	Height (mm)
M.2 Module	80.00 ± 0.25	22.00 ± 0.25	3.5.0 ± 0.25



4 Test Plan

Test Plan			
Test Item	Customer	Combination	Cycles
S3 & S4		+BIT	1500 cycles
Power Cycle		+SDStress @Temp 25°C	1000 cycles
Reboot		Warm boot	1000 cycles
Burn-In test (ver 7.1 64bit)		@Temp 70°C	72hrs
		@Temp 25°C	72hrs
Performance		CDM	ver 6.0
		ASSSD	ver 2.0
		ATTO	Test range:0.5KB~8192KB Test length:256MB
		AJA	File size: 1GB
		Anvil's storage utilities	File size: 1GB
		PCMark 8	File size: 1GB
		TxBench	File size: 1GB
		IOMeter	File size : 4K~1024k
SDStress		-	24hrs
Install OS		@Win7 & Win 10	-

5 Special Note

- ✓ Capacity calculation rule is, 1GB is equivalent to 1000000000 bytes. In Windows operating system, 1GB capacity is defined as 1,073,741,824 bytes, so when the Windows operating system is running, the capacity recognized by the system is smaller than the actual capacity, and the actual available capacity may be different with the different operating systems;
- ✓ Product pictures and size refer to the actual product; power, read and write speed data is for reference only;
- ✓ Data such as power consumption, read and write speed is based on a specific Flash type, capacity, channel number, specific software and hardware conditions tested, and should not be used for business or contract making;
- ✓ We are doing our best to provide you with comprehensive and accurate information as we can, but we are not responsible for errors or omissions in the report that may cause any loss.