

Performance test & Burn in test	
Tested riser card	AD963FA9 -- mSATA to SATA 6Gb/s Adapter
mSATA SSD	Crucial mSATA 64GB/ M4-CT064M4SSD3 (SATA III -- 6Gb/s)
Test Environment	
M/B	Asus P8P67 (Intel P67 Chipsets)
CPU	Intel I5-2500 , 3.3MHz/ 6G Cache/ 5GT
RAM	Kingston KVR1333D3N9K2/4G , DDR3-1333MHz,4GB(2GB DIMM* 2)
Power	TC START W500 , 500W ATX, 12V V2.2 Power Supplier
VGA	MSI R6700 , AMD HD6700 Series
Operate System:	WIN 7 64bit OS

Suggestion:

Please use the motherboard containing native SATA 6Gb/s Port to test, which can provide more correct I/O performance. (such as Intel 6 Series chipsets or AMD 9 Series Chipsets).

If you are using a motherboard plus SATA III host bus adapter which is non-native 6Gb/s Port or SATA to PCI-e adapter to provide 6Gb/s Port, the I/O performance testing result will be very much lower than the native SATA III Port or maybe not match the mSATA SSD.

Notice:

1. mSATA SSD I/O performance -- depends on the Controller IC.
2. mSATA SSD I/O performance - -depends on the NAND Flash IC.
 - a. Toggle DDR mode or ONFI synchronous NAND Flash IC, will show good performance
 - b. Traditional asynchronous or SDR NAND Flash IC, will show poor performance

Install:

M4-CT064M4SSD3 mSATA SSD inserts to AD963FA9 adapter and fixes it with M3*3 screws, and then connected to the P68 chipset native SATA III Ports (use the Asus P8P67 M/B).

SATA III Host Controller IC : Marvell [88SS9174-BLD2](#) / NAND Flash IC : Micron [MT29F128G08CFAAB](#)

[Explain]

MT29F128G08CFAAB NAND FLASH Features:

·support [ONFI 2.2 synchronous mode](#)

·-12 = [166 MT/s \(MT/s is MegaTransfer/Sec, 166MHz\)](#)

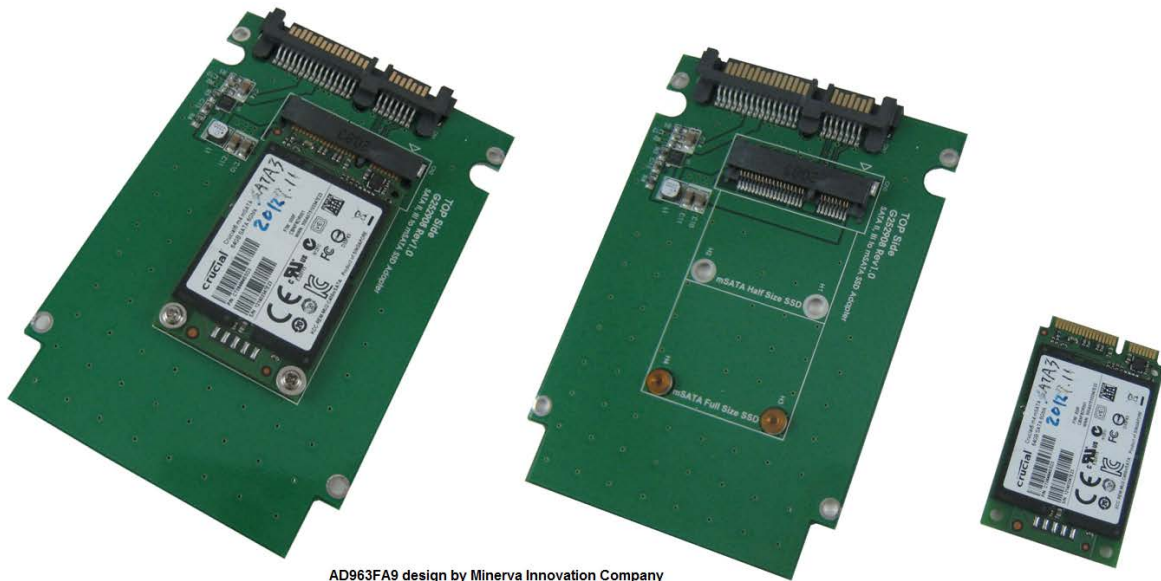
Reference to Micron 64Gb, 128Gb, 256Gb, 512Gb Asynchronous/Synchronous NAND Features datasheet

SSD I/O performance measurements

Block sizes

Data transfer always takes place in blocks during access to a SSD. The size of the transferred data blocks depends on features of the operating system and/or the application.

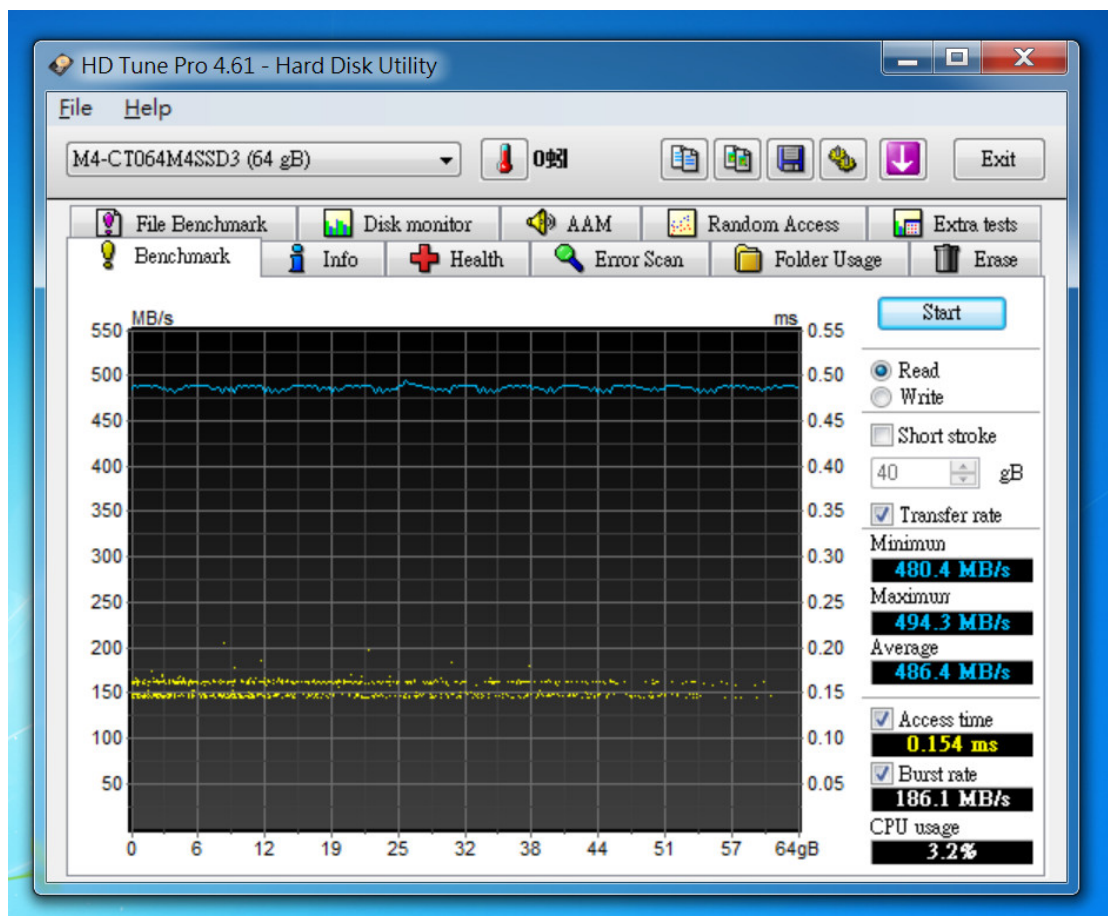
AD963FA9, and Micron M4-CT064M4SSD3 mSATA SSD assembly completed as below:



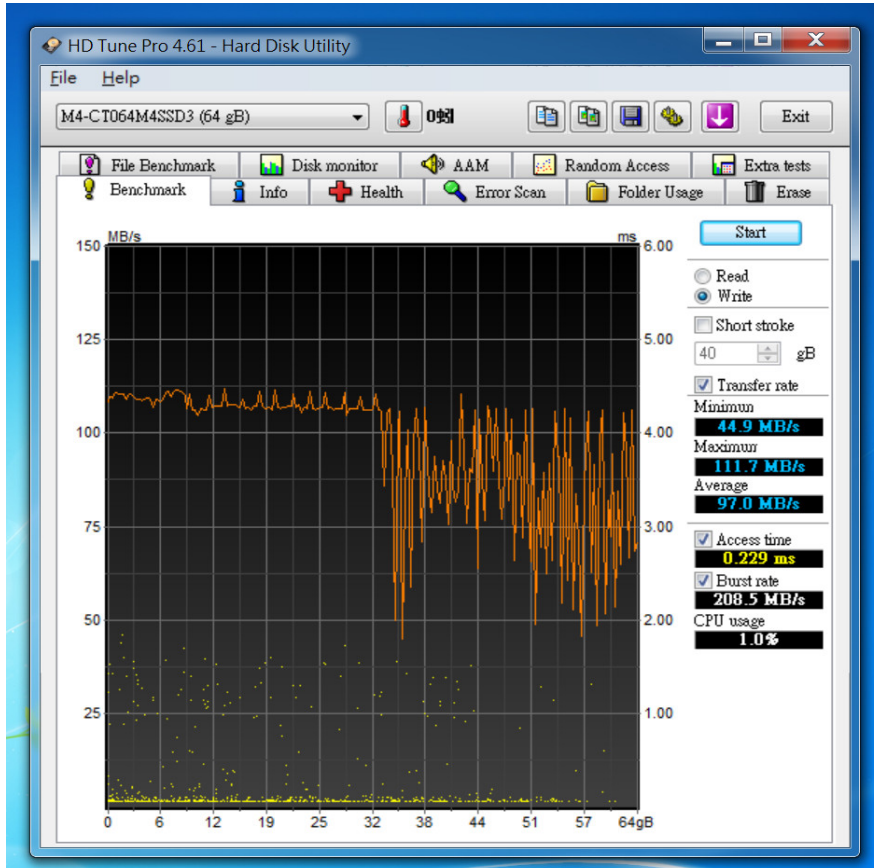
AD963FA9 design by Minerva Innovation Company
Website: <http://www.minerva.com.tw/>

The following performance test use HD Tune pro 4.61 original software(no partition)

✳️Benchmark (Sequential **Read** / default block size= 64KB)



※Benchmark (Sequential Write / default block size= 64KB)



The following performance test uses HD Tune pro 4.61(partition and formatted by win 7 NTFS Type)

※show M4-CT064M4SSD364/ 64GB mSATA SSD **SATA Supported features**

HD Tune Pro 4.61 - Hard Disk Utility

M4-CT064M4SSD3 (64 gB)

File | Help

File Benchmark | Disk monitor | AAM | Random Access | Extra tests

Benchmark | Info | Health | Error Scan | Folder Usage | Erase

Volume	Capacity	Free	Usage	File system	Serial	Alignment
新增磁碟區 (D:)	61054 MB	60963 MB	0%	NTFS	9613-FB12	1 MB

Supported features:

- S.M.A.R.T
- 48-bit Address
- Read Look-Ahead
- Write Cache
- Host Protected Area
- Device Configuration Overlay
- Firmware Upgradable
- Security Mode
- Automatic Acoustic Management
- Power Management
- Advanced Power Management
- Interface Power Management
- Power-up in Standby
- SCT Tables
- Native Command Queuing (NCQ)
- TRIM

Firmware version: **000F** Standard: **ACS-2 - SATA III**

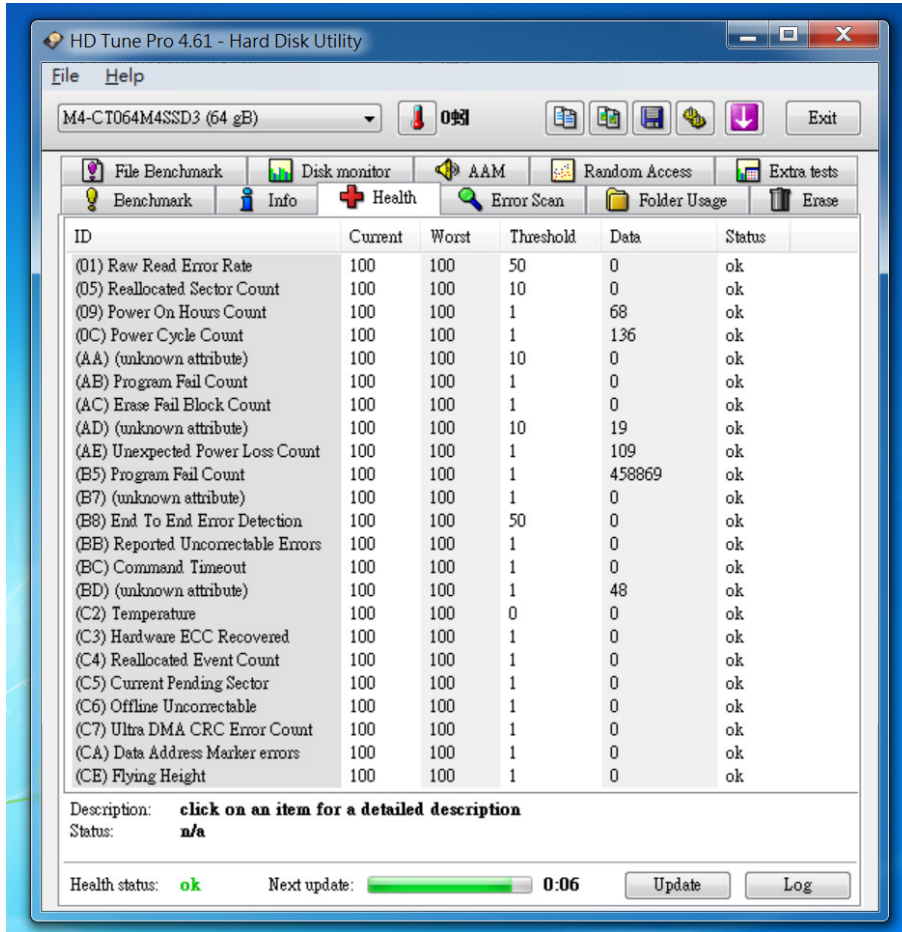
Serial number: **00000000121403347E23** Supported: **UDMA Mode 5**

Capacity: **64.0 gB (59.6 GB)** Active: **UDMA Mode 5**

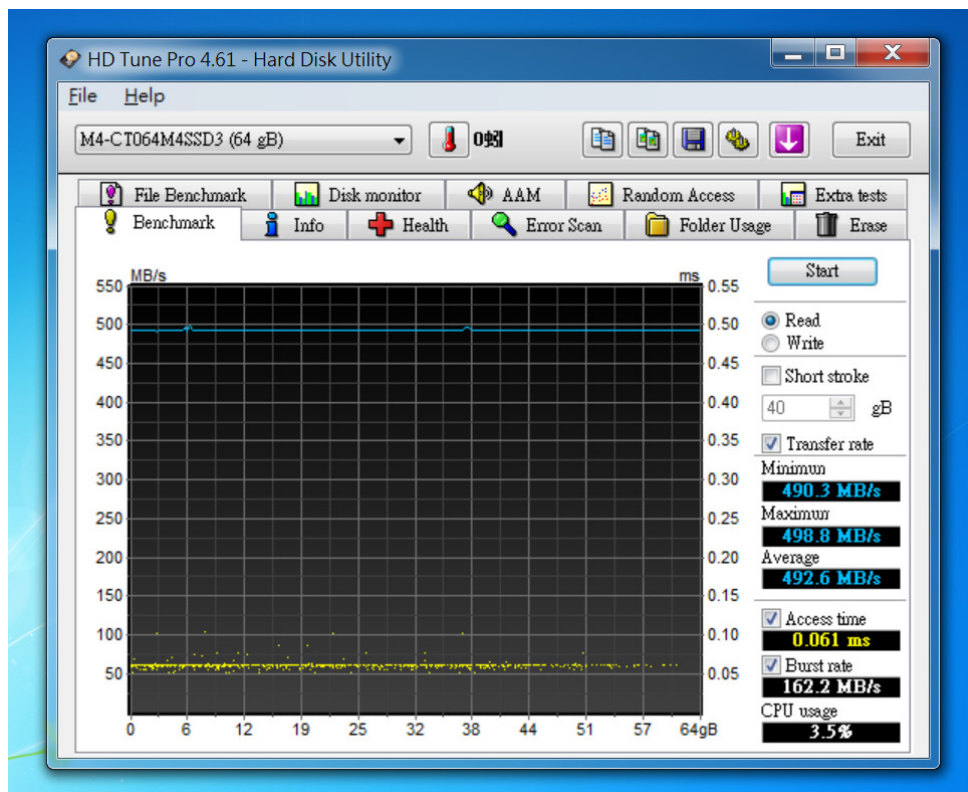
Buffer: **n/a** Average speed: **508 MB/s**

Sector size **512 bytes** Rotation speed: **0 RPM**

※showM4-CT064M4SSD3/ 64GB mSATA SSD Health Status OK

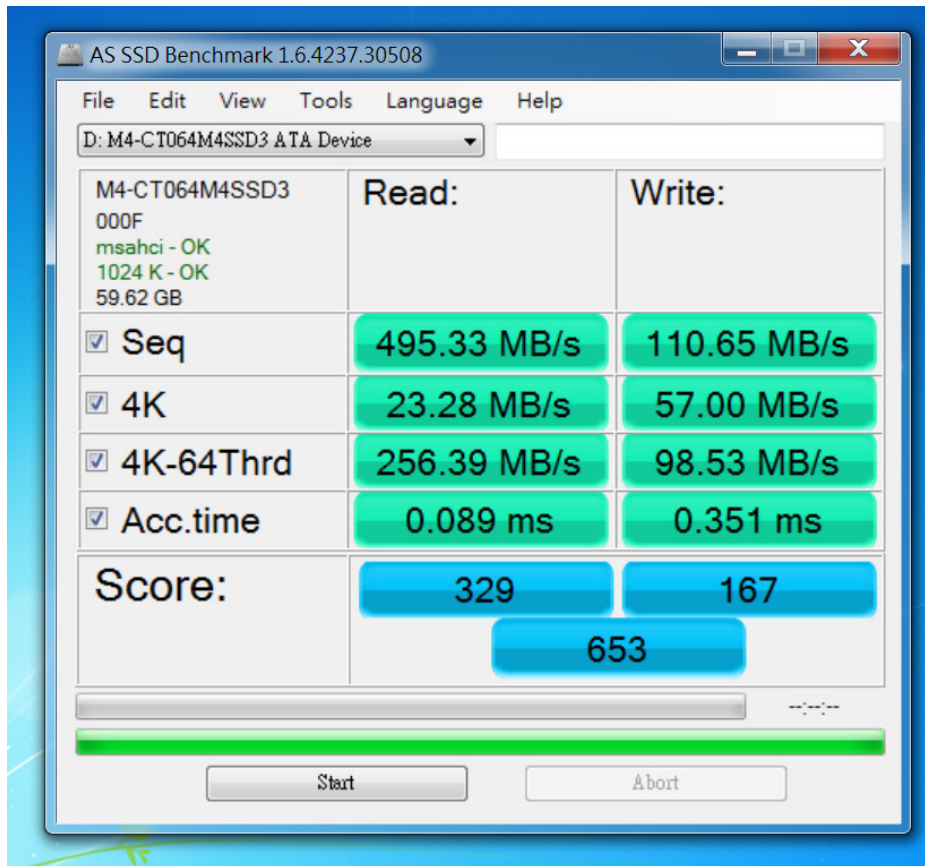


※Benchmark (Sequential Read / default block size= 64KB)

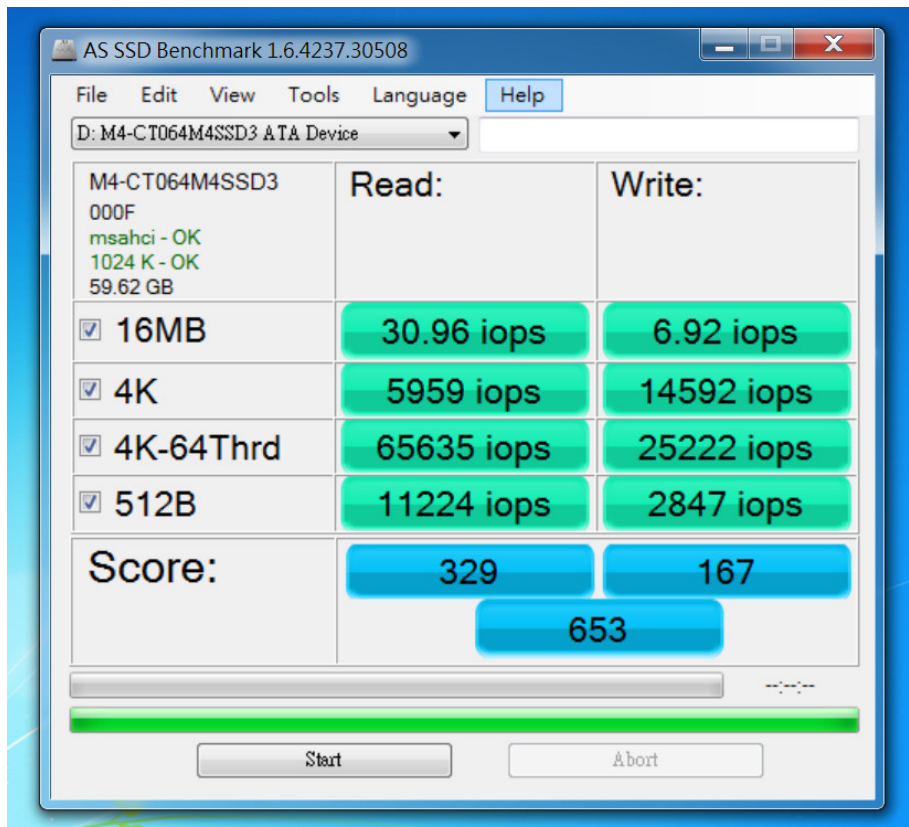


The following performance test uses AS SSD Benchmark 1.6 (partition and formatted by win 7 NTFS Type)

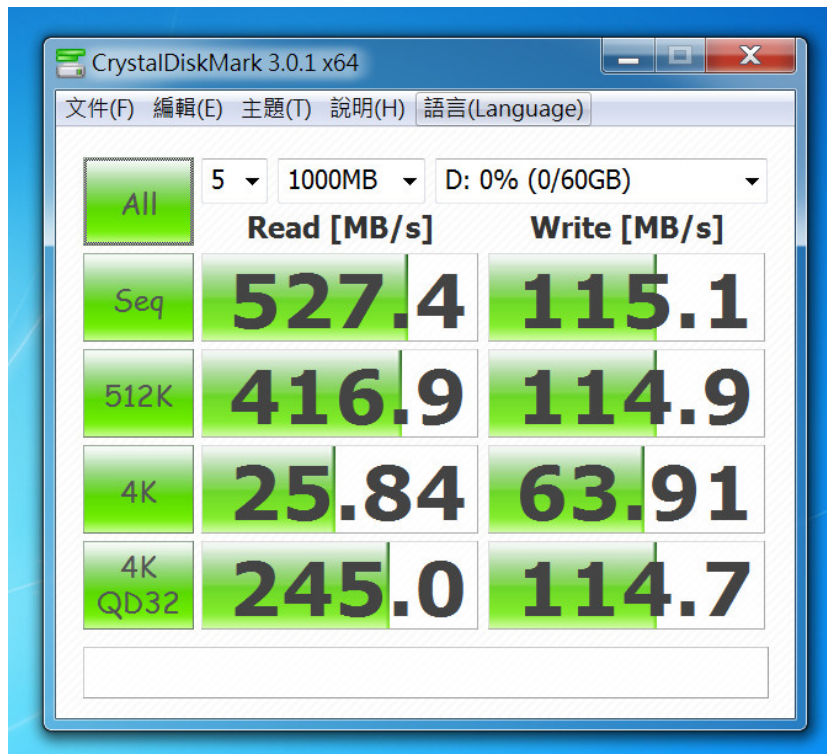
※Benchmark (Read & Write by MB/s / default block size= 16MB)



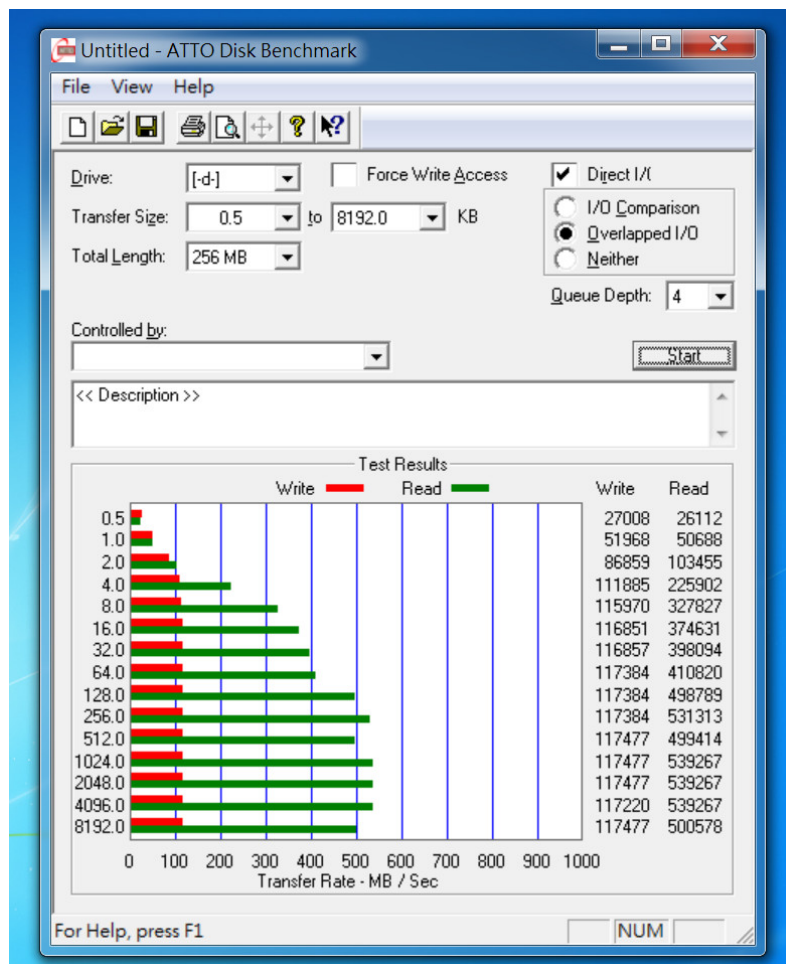
※Benchmark (Read & Write by IOPS / default block size= 16MB)



The following performance test uses CrystalDiskMark 3.0.1 x64 (partition and formatted by win 7 NTFS Type)
 ※Benchmark (Sequential Read & Write / default block size= 1MB)

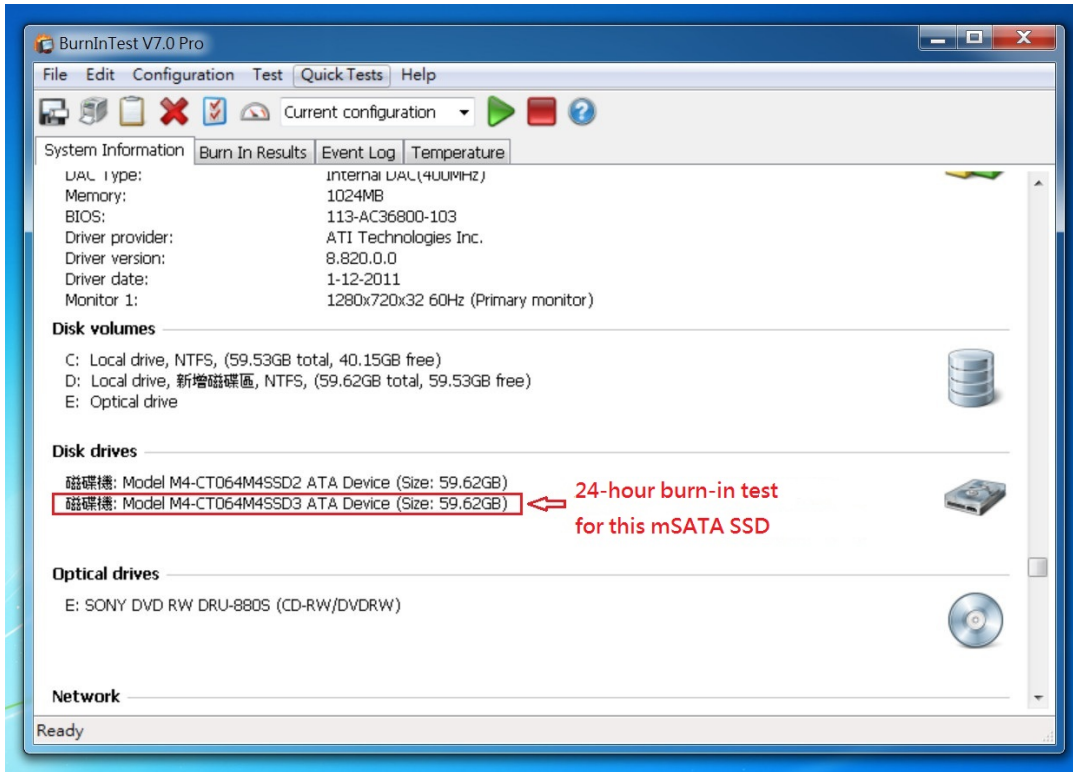


The following performance test uses ATTO Disk Benchmark (partition and formatted by win 7 NTFS Type)

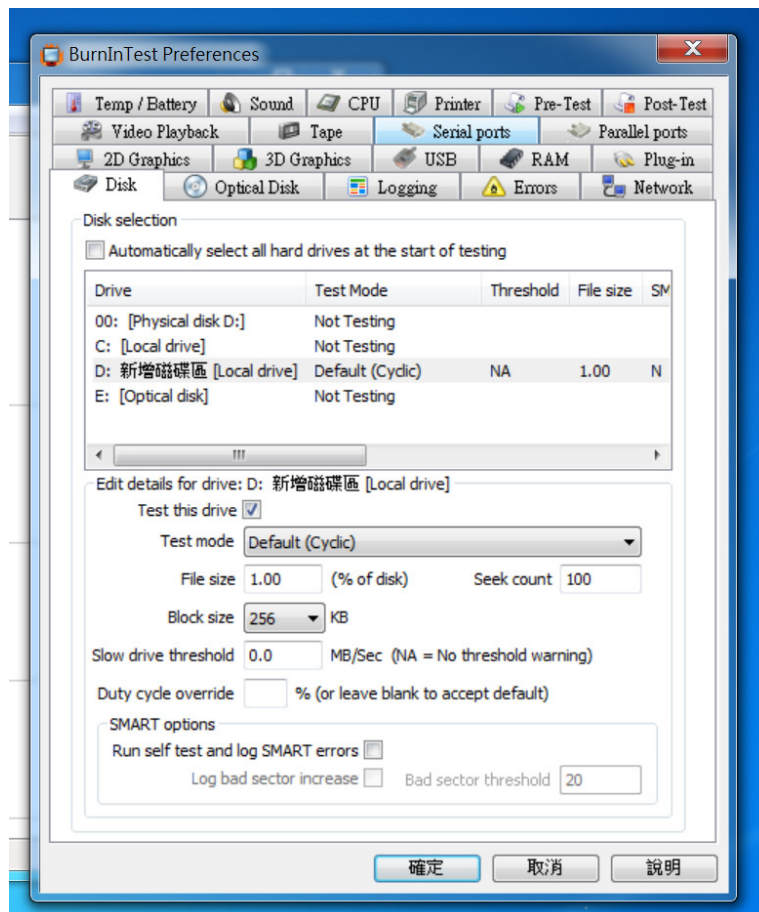


The following Burn in test uses BurnInTest v7.0 Pro (partition and formatted by win 7 NTFS Type)

※ show System information



※ show Disk test mode(default cyclic -- 10 ways cycle test)



※ show Crucial mSATA 64GB/ M4-CT064M4SSD3 24-hour Burn in test **PASSED**

