



# MINERVA

## AS403A / Rev1.0 Converter Card

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### Performance & Burn In Test Rev. 2.0

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## 1. Overview

AS403A adapter, built-in mini SAS HD(SFF-8643) connector, SATA 7+15pin connector, provide a port **M.2 M-key** connector. First M.2 (PCI-e) SSD inserts M.2 M-key connector, use Mini SAS HD cable, connected to the PCI-e to Mini SAS HD(SFF-8643) adapter, then M.2 (PCI-e) SSD can be work.

## 2. Tools and Results of Performance Measurement

### 2.1 Test Platform

M/B : GIGABYTE **Z170X UD5 TH**  
CPU : Intel **i5-6500**, 3.2GHz/ 6M Cache/ LGA1150  
Memory : Kingston **KVR21N15D8/8**, **DDR4-2133MHz**, 16GB(8GB DIMM\*2)  
ATX Power : FSP RAIDER 550, **550W ATX**, 12V V2.2 Power Supply  
Graphic : Z170 Chipsets built-in **HD Graphics 530**  
Adapter: PE0404 PCIe to SFF-8643 Mini SAS HD Adapter  
CABLE: Amphenol U.2(SFF-8639) to SFF-8463 Mini SAS HD Cable  
OS : Microsoft **Windows 10 64bit OS**

### 2.2 Test target: AS403A adapter and **Samsung SM961 512GB NVMe SSD**



AS403A Adapter



Samsung SM961 512GB NVMe SSD

### Install Hardware

Insert M.2 (PCIe Interface)SSD into AS403A converter's M.2 connector, and then with coppers, and screws to fix SSDs. (Please refer to the Installation Notes). Connect AS403A converter to PE0404 adapter(PCI-e to Mini SAS HD SFF-86437), Plug PE0404 into **PCI-e slot of Z170X UD5 TH**.

### 2.3 BIOS & Windows 10 OS environment setup

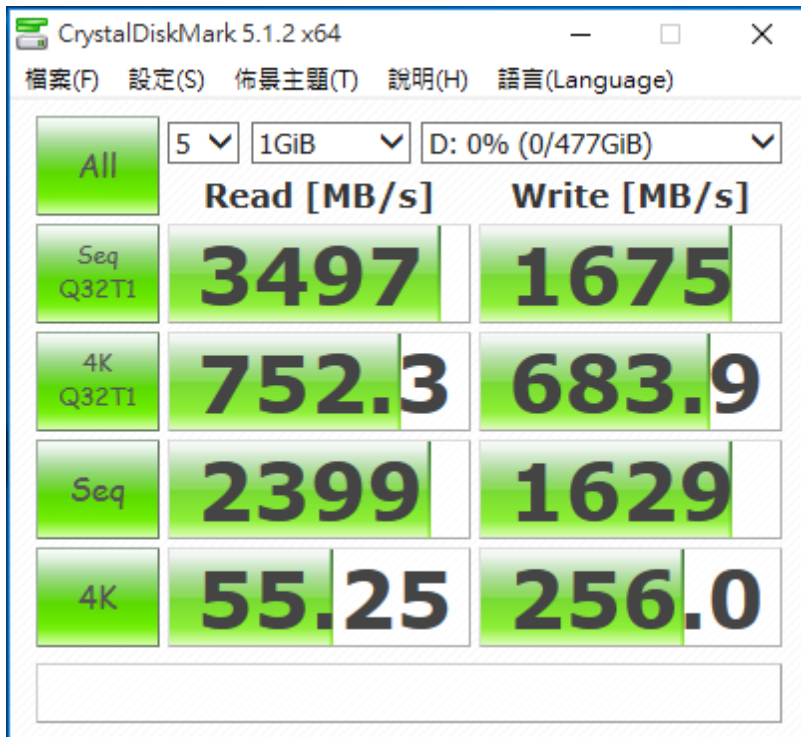
- 2.3.1.1 Install Windows 10 OS. Don't install any program.
- 2.3.1.2 AS403A+SM961 SSD Formatted NTFS

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## 2.4 CrystalDiskMark 5.1.2 x64 performance test

※Benchmark (Sequential **Read & Write** / default = **1MB**)

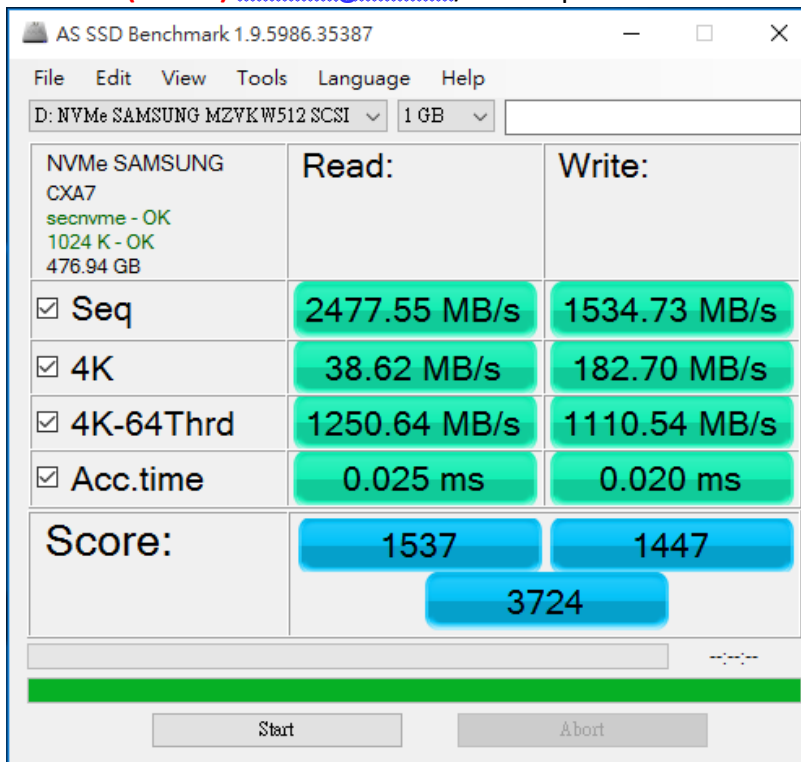
2.5.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:



## 2.6 AS SSD Benchmark 1.9 performance test

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

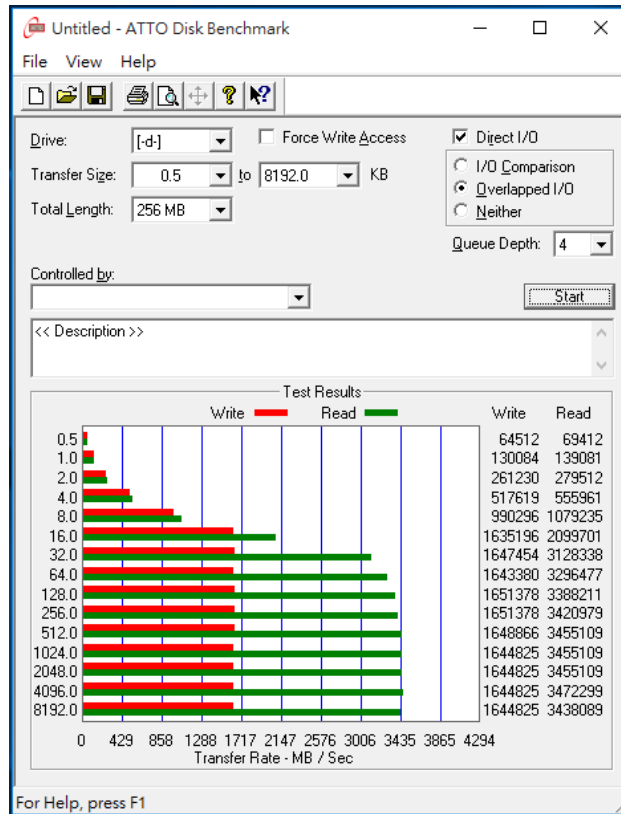
2.6.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:



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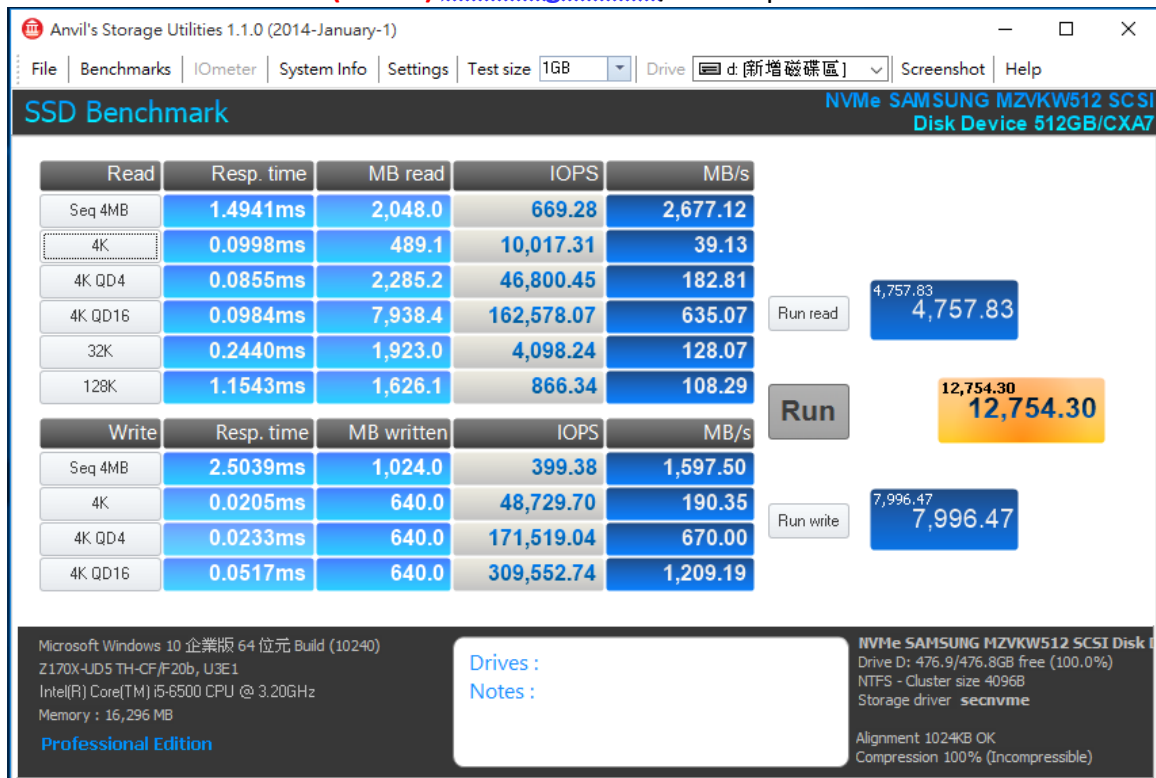
## 2.7 ATTO Disk Benchmark 2.47 performance test

2.7.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:



## 2.8 AnvilBenchmark\_V110\_B337

2.8.1 Show **M.2(NVMe) Samsung SM961/512GB** performance as below:

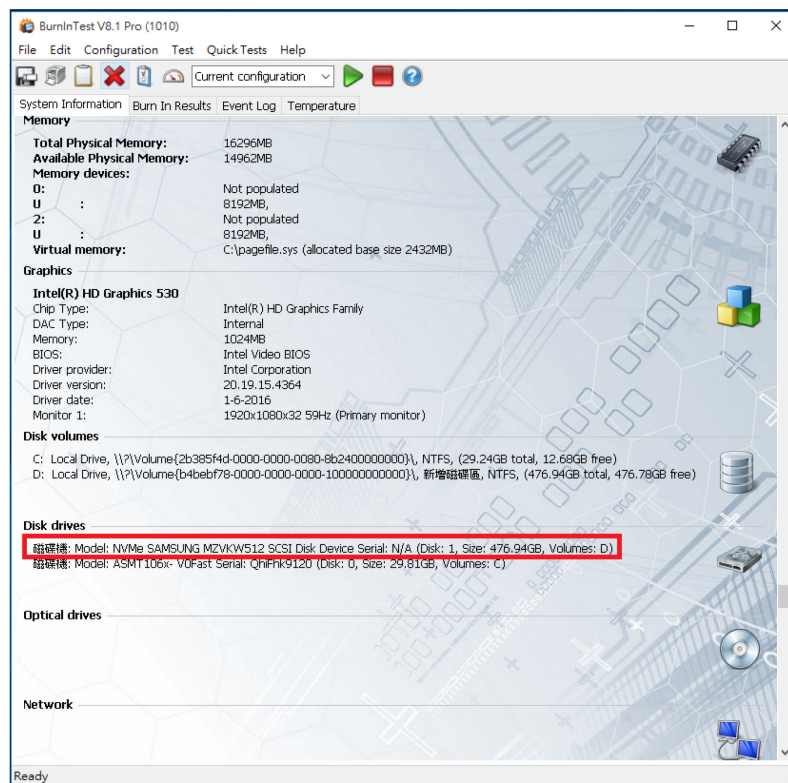
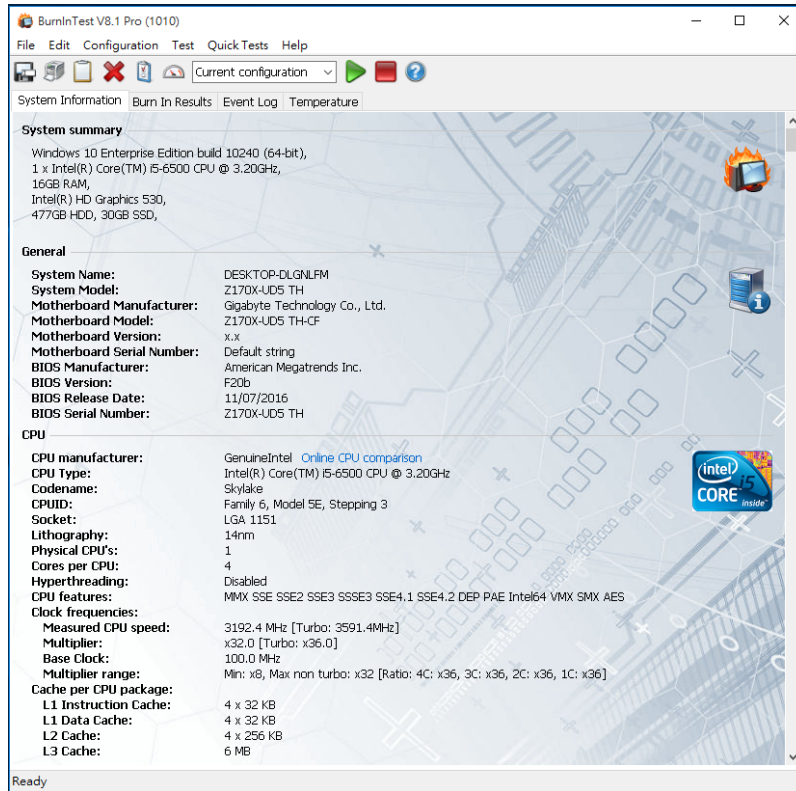


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## 3. Burn In Tests and Results

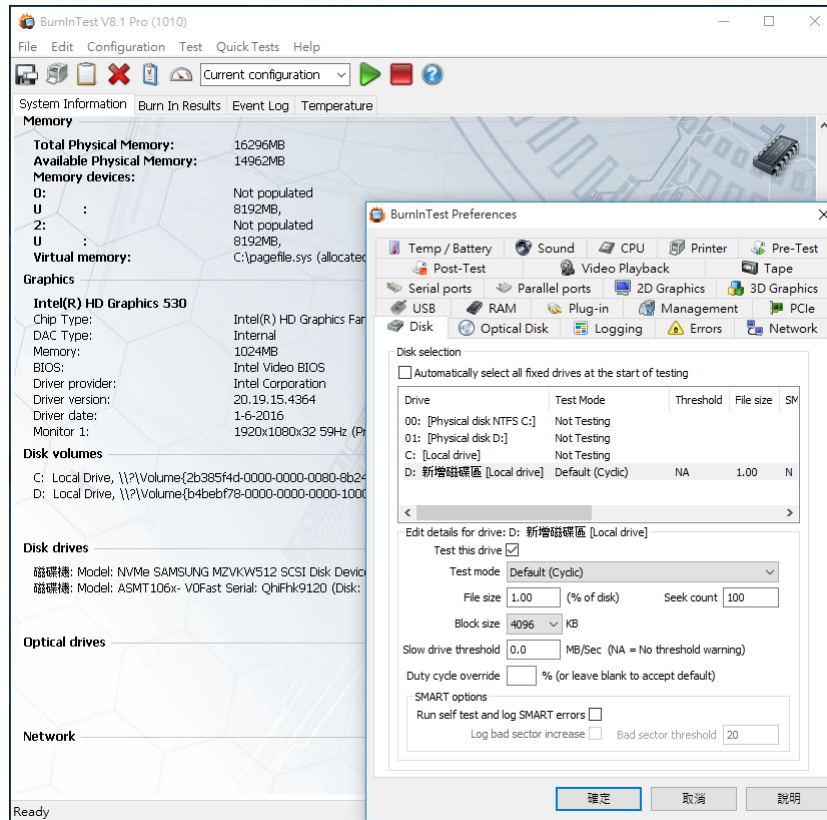
### 3.1 BurnInTest v8.1 Pro

#### 3.1.1 **system information** as below:

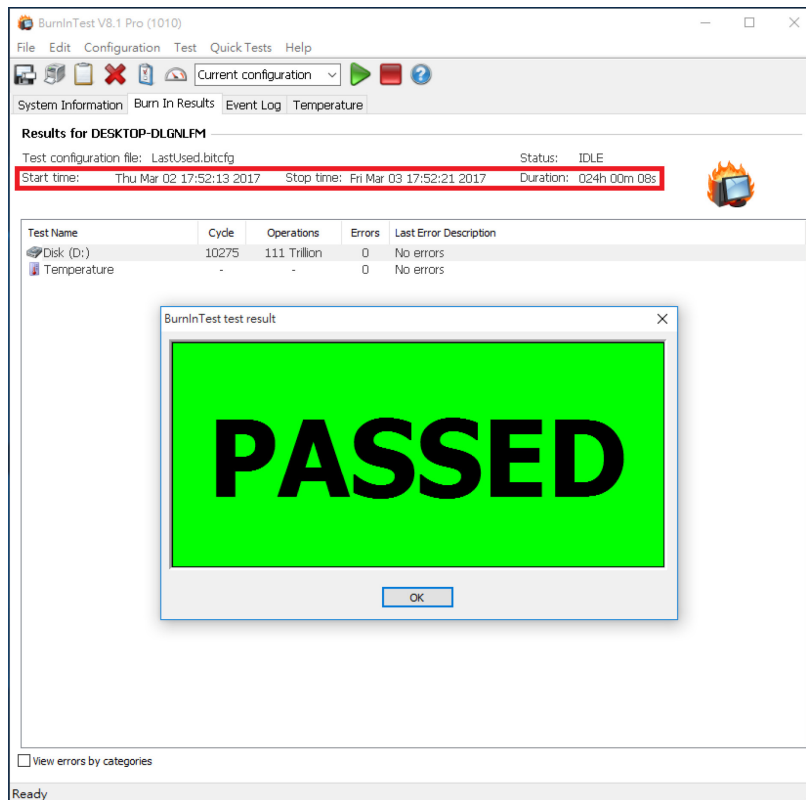


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## 3.1.2 show Disk test mode (10 ways cycle test)



## 3.1.3 show 24-hour Burn-in test PASSED



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## 4. Summary

- 4.1 M.2(PCI-e I/F) SSD is PCI-e Gen 3 / 4 Lane Interface, I/O speed, max. to 4GB/s.
- 4.2 AS403A adapter I/O performance is based on M.2 NVMe SSD.