



MINERVA

U.3 Male to U.3 Female for PCIe 4.0, 16GT/s adapter

Performance & Burn In Test Rev. 1. 0

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GD1406A Converter Card

1. Overview

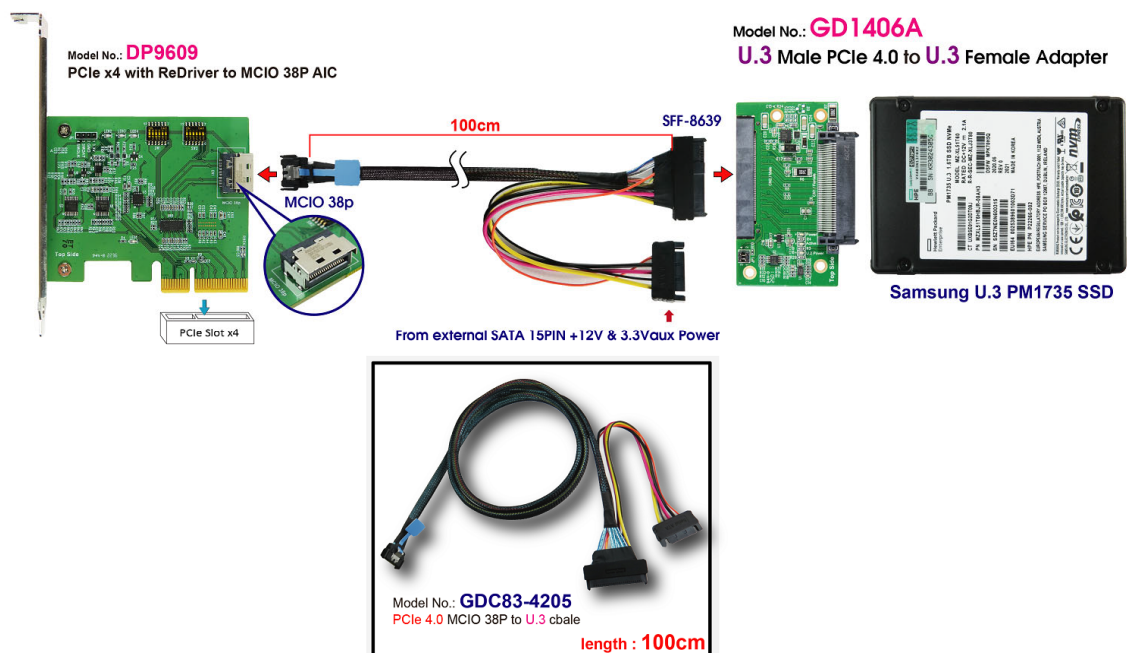
The GD1406A adapter supports PCIe 4.0, 16GT/s high-speed transmission, and provides U.3 Male to U.3 Female conversion.

2. Tools and Results of Performance Measurement

2.1 Test Platform:

M/B : ASUS **PRIME X570-PRO**
CPU : AMD **Ryzen 7, 3700X 8-Core**
Memory : Kingston **KVR26N19D8/16, DDR4-2666MHz, 32GB**(16GB DIMM*2)
ATX Power : COOLER MASTER G750M, **750W ATX**, 12V V2.2 Power Supply
AIC: DP9609 PCIe x4 Gen 4 with Redriver to MCIO 38P Add-in Card
Adapter: GD1406A U.3 to U.3 adapter
DUT: PCIe 4.0 U.3 NVMe SSD Adapter
Cable: MCIO 38P PCIe 4.0 to U.3(SFF-8639), **100cm** Cable
OS : Microsoft **Windows 10 64bit OS**

2.2 Test target: GD1406A adapter and U.3 NVMe 1.6TB SSD



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2.3 Install Hardware

Inserts U.3 SSD into GD1406A converter's U.3 female connector. Connects GD1406A to DP9609 AIC(PCIe x4 Gen 4 to MCIO 38P), then using MC1O 38P to U.3(SFF-8639) cable, plugs DP9609 adapter into **PCIe x16 slot of ASUS PRIME X570-PRO**.

2.4 BIOS & Windows 10 OS environment setup

- 2.4.1 Primary SATA SSD installed Windows 10 OS.
- 2.4.2 U.3 NVMe SSD, formatted to NTFS Mode. Don't install any program.



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2.5 CrystalDiskMark 8.0.0 x64 performance test

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

2.5.1 Samsung **U.3 PCIe 4.0 NVMe/ 1.6TB** performance as below:

| | Read (MB/s) | Write (MB/s) |
|-------------|-------------|--------------|
| SEQ1M Q8T1 | 7428.05 | 2587.27 |
| SEQ1M Q1T1 | 2791.02 | 2603.19 |
| RND4K Q32T1 | 549.39 | 464.72 |
| RND4K Q1T1 | 53.56 | 195.73 |

2.6 AS SSD Benchmark 2.0.7 performance test

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

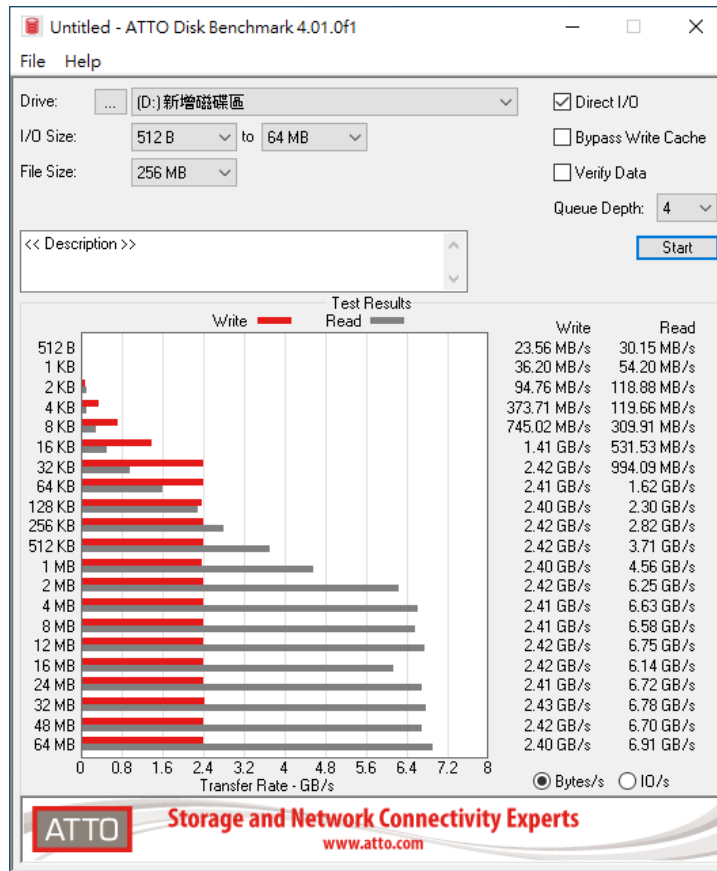
2.6.1 Samsung **U.3 PCIe 4.0 NVMe/ 1.6TB** performance as below:

| | Read: | Write: |
|-----------|--------------|--------------|
| Seq | 5192.92 MB/s | 2506.81 MB/s |
| 4K | 50.49 MB/s | 178.15 MB/s |
| 4K-64Thrd | 2016.91 MB/s | 2186.26 MB/s |
| Acc.time | 0.027 ms | 0.026 ms |
| Score: | 2587 | 2615 |
| | 6386 | |

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2.7 ATTO Disk Benchmark 4.0.1 performance test

2.7.1 Samsung U.3 PCIe 4.0 NVMe/ 1.6TB performance as below:



2.8 AnvilBenchmark_V110_B337

2.8.1 Samsung U.3 PCIe 4.0 NVMe/ 1.6TB performance as below:

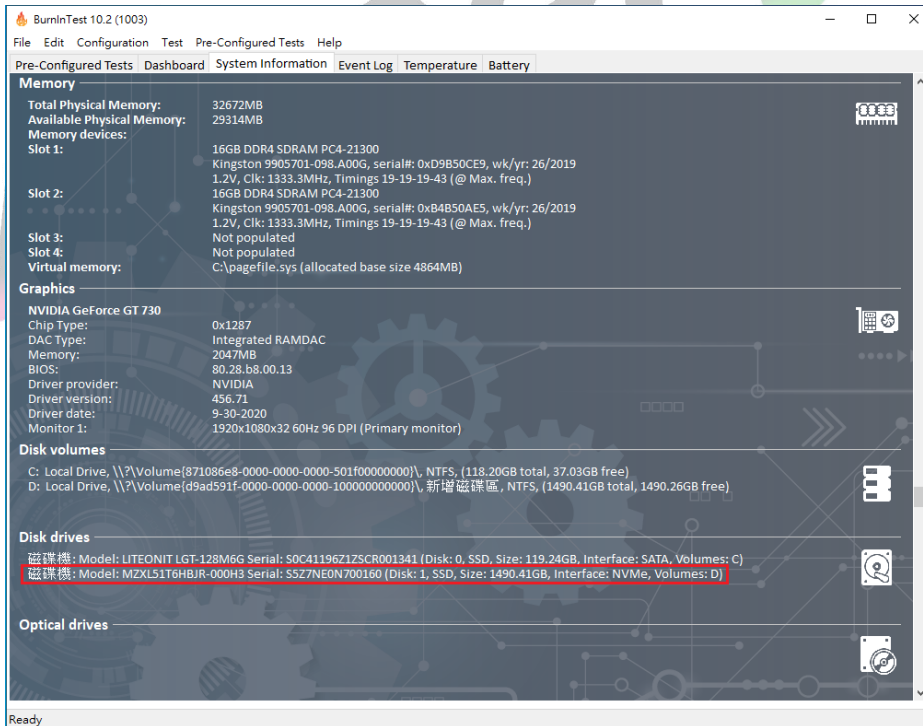
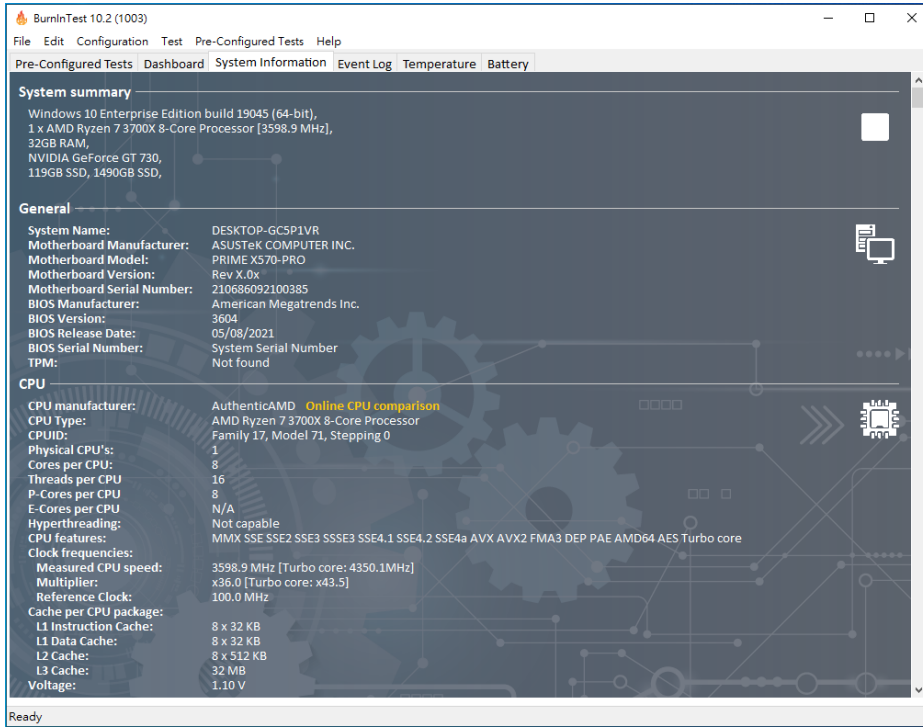


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3. Burn In Tests and Results

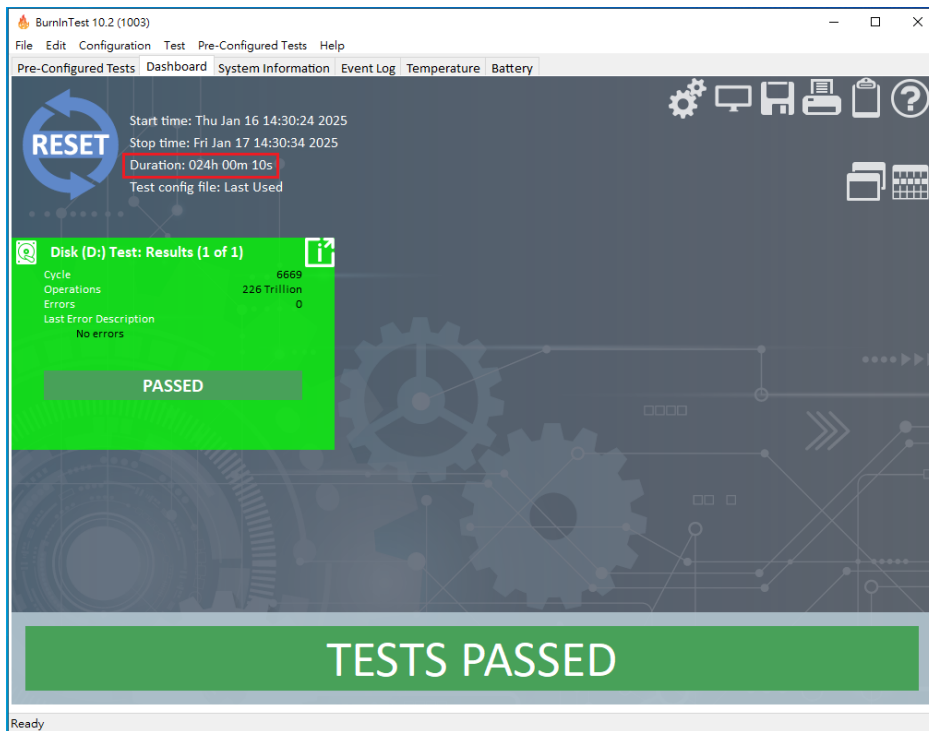
3.1 BurnInTest v8.1 Pro for Samsung U.3 PCIe 4.0 NVMe/ 1.6TB

3.1.1 system information as below:



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3.1.2 24-hour Burn-in test **PASSED**



4. Summary

- 4.1 U.3 SSD is PCIe 4.0 / 4 Lanes Interface, I/O speed, max. to 64Gbps.
- 4.2 GD1406A adapter I/O performance is based on U.3 NVMe SSD.