

PC892A Slimline SAS(SFF-8654)8i to M.2/M.3 Dual ports converter

### Performance & Burn In Test Rev 1.0

### **Table of Contents**

- 1. Overview
- 2. Performance Measurement Tools and Results
  - 2.1 Test Platform
  - 2.2 Test target and M.3 NF1 & M.2 NVMe SSD
  - 2.3 Install Hardware
  - 2.4 BIOS & Windows 10 OS environment setup
  - 2.5 CrystalDiskMark 6.02 x64 performance test
  - 2.6 AS SSD Benchmark 2.0.6 performance test
  - 2.7 ATTO Disk Benchamrk 3.05 performance test
  - 2.8 AnvilBenchmark\_V110\_B337 Benchmark performance test

#### 3. Burn In Tests and Results

- 3.1 BurnInTestv8.1 Pro burn in test
- 4. Summary

#### 1. Overview

This riser card has built-in Slimline SAS(SFF-8654) 8i connector and M.2 M-key connector dual ports, which can be inserted into M.2 or M.3 NVMe SSD. It is designed for use by supporting bifurcation AIC and SFF-9402 pinout RAID Card.

### 2. Tools and Results of Performance Measurement

#### 2.1 Test Platform

M/B :	GIGABYTE X570 AORUS MASTER
CPU :	AMD Ryzen 7, 3700X 8-Core
Memory :	Kingston KVR26N19D8/16, DDR4-2666MHz, 32GB(16GB DIMM*2)
ATX Power :	COOLER MASTER G750M, <b>750W ATX</b> , 12V V2.2 Power Supply
Add in Card:	PE0804 PCIe x8 to Slimline SAS 8i Adapter
Cable:	SFF-8654(Slimline SAS 8i) to SFF-8654(Slimline SAS 8i)Cable
Adapter:	PC892A SFF-8643 4X to M.2/M.3 Adapter dual ports
OS :	Microsoft Windows 10 64bit OS

Test target: PC892A adapter and M.3 NF1 4TB & M.2 960GB NVMe SSD 2.2



#### **PC892A**

Slimline SAS 8-Lane to M.2/M.3 NVMe SSDx2 Adapter

#### 2.3 Install Hardware

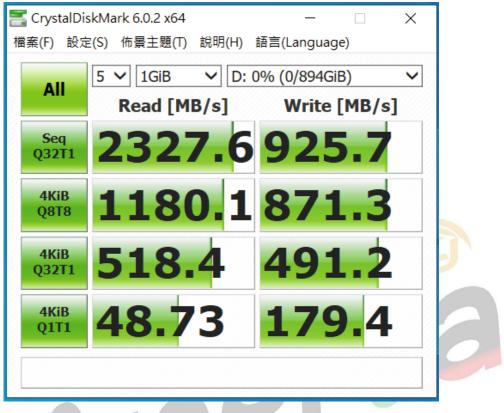
First inserts the M.3 and M.2 SSD into the PC892A riser card M.2 connector, then with copper nuts, and screws to fix SSDs. (Please refer to the Installation Notes). To connect the PC892A adapter to the PCIe to SFF-8654 8i AIC card using the MIC74-8801 Cable, and Plugs PE0804 AIC card into GIGABYTE X570 AORUS MASTER.

#### 2.4 BIOS & Windows 10 OS environment setup

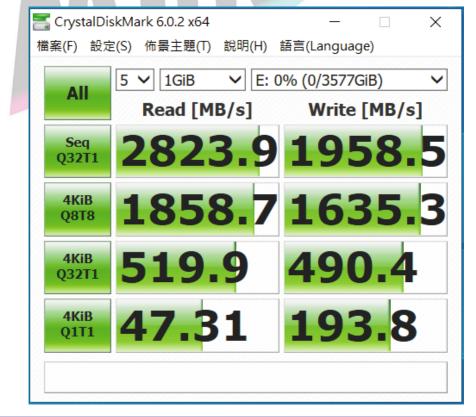
- 2.4.1 Primary NVMe SSD install Windows 10 OS.
- 2.4.2 M.3 and M.2 NVMe SSD , formatted to NTFS Mode. Don't install any program.



- 2.5 CrystalDiskMark 6.0.2 x64 performance test
  ※Benchmark (Sequential Read & Write / default = 1MB)
  - 2.5.1 M.2 NF1 NVMe LITEON / 960GB in Drive D: performance as below:



2.5.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: 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 M.2 NF1 NVMe LITEON / 960GB in Drive D: performance as below:

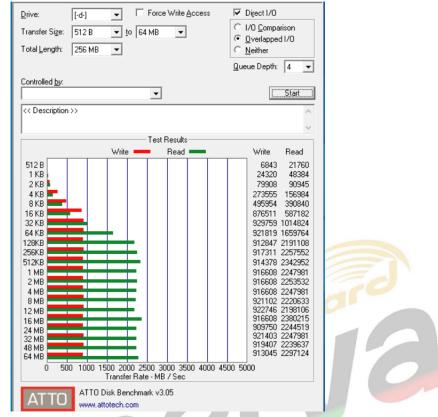
LITEON EP2-KB960 9KW28P7 stornyme - OK 1024 K - OK 894.25 GB	Read:	Write:			
⊴ Seq	2148.37 MB/s	868.43 MB/s			
⊠ 4K	45.57 MB/s	162.80 MB/s			
☑ 4K-64Thrd	1107.86 MB/s	760.82 MB/s			
Acc.time	0.020 ms	0.024 ms			
Score:	1368	1010			
	3022				

#### 2.6.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:

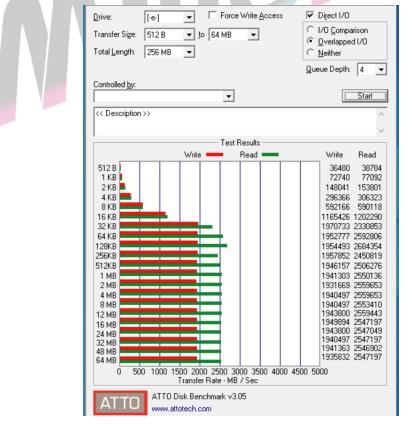
MZ4LB3T8HALS-0000 EFA80010 stornvme - OK 16384 K - OK 3576.98 GB	Read:	Write:			
⊠ Seq	2334.65 MB/s	1968.49 MB/s			
⊠ 4K	46.23 MB/s	180.69 MB/s			
☑ 4K-64Thrd	1689.46 MB/s	1406.04 MB/s			
Acc.time	0.031 ms	0.021 ms			
Score:	1969	1784			
	4742				

#### 2.7 ATTO Disk Benchamrk 3.05 performance test

2.7.1 M.2 NF1 NVMe LITEON / 960GB in Drive D: performance as below:



#### 2.7.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:



#### 2.8 AnvilBenchmark\_V110\_B337

2.8.1 M.2 NF1 NVMe LITEON / 960GB in Drive D: performance as below:

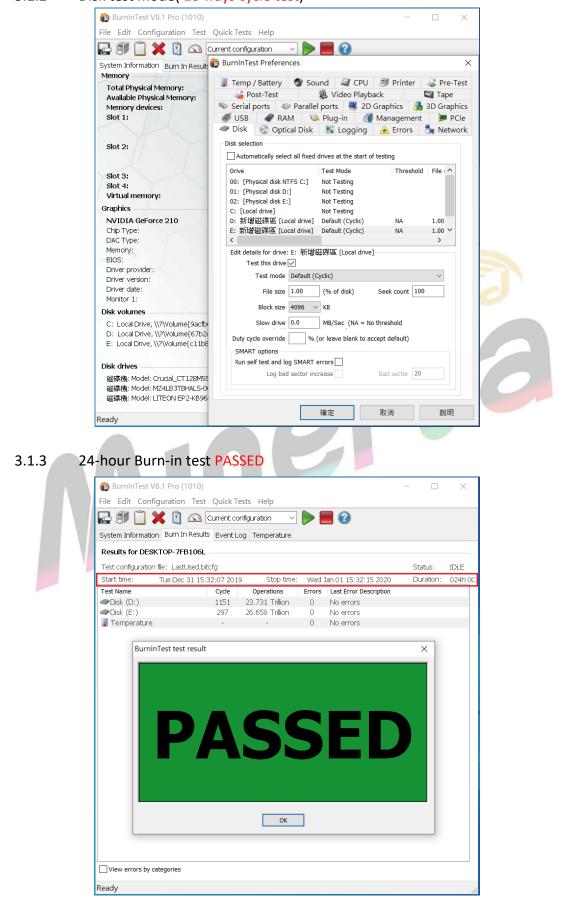
Benchmarks	IOmeter System	initio   settings	Test size 1GB 💌	Drive 🔳 d: (新	~ B 462 475 (BL ]	✓ Screenshot Help
D Benchm	nark				LITEC	ON EP2-KB960 960GB/9KW
			iopol			
Read	Resp. time	MB read	IOPS	MB/s		
Seq 4MB	2.2578ms	2,048.0	442.91	1,771.63		
4K	0.0842ms	580.1	11,879.41	46.40		
4K QD4	0.0917ms	2,130.8	43,639.18	170.47		4,854.03
4K QD16	0.1074ms	7,272.4	148,936.98	581.79	Run read	4,854.03
32K	0.1248ms	3,759.4	8,011.45	250.36		
128K	0.1650ms	11,375.4	6,060.40	757.55		10,113.37
Write	Door time	MD surittan	IOPS	MB/s	Run	10,113.37
	Resp. time	MB written				
Seq 4MB	4.5156ms	1,024.0	221.45	885.81		
4K	0.0232ms	640.0	43,176.92	168.66	Run write	5,259.34 5,259.34
4K QD4	0.0354ms	640.0	113,158.92	442.03	THEFT	0,200.01
4K QD16	0.0790ms	640.0	202,479.39	790.94		
La Seren a						
rosoft Windows 10	企業版 64 位元 Build	(18362)				LITEON EP2-KB960 960GB/9KW28
0 AORUS MASTER		som itselent (	Drives :			Drive D: 894.3/894.1GB free (100.0%) NTFS - Cluster size 4096B
D Ryzen 7 3700X mory : 32,718 MB	8-Core Processor		Notes :			Storage driver stornvme

### 2.8.2 M.3 NF1 NVMe Samsung PM983/4TB in Drive E: performance as below:

5D Benchm	nark					MZ4LB3T8HALS-00003 3840GB/EFA8
Read	Resp. time	MB read	IOPS	MB/s		
Seq 4MB	1.7090ms	2,048.0	585.14	2,340.57		
4K	0.0820ms	595.7	12,199.18	47.65		
4K QD4	0.0886ms	2,203.6	45,130.48	176.29		5,497.42
4K QD16	0.0996ms	7,846.5	160,696.14	627.72	Run read	5,497.42
32K	0.1494ms	3,140.8	6,693.26	209.16		
128K	0.1631ms	11,510.9	6,133.00	766.63		14,168.81
Write	Resp. time	MB written	IOPS	MB/s	Run	14,168.81
Seq 4MB	2.0742ms	1,024.0	482.11	1,928.44		
4K	0.0215ms	640.0	46,415.37	181.31		8,671.39
4K QD4	0.0287ms	640.0	139,495.48	544.90	Run write	8,671.39
4K QD16	0.0428ms	640.0	374,016.35	1,461.00		
icrosoft Windows 10 570 AORUS MASTER	企業版 64 位元 Build /F5L AM4	(18362)	Drives :		0	<b>MZ4LB3T8HAL5-00003-001 3840</b> Drive E: 3,577.0/3,576.8GB free (100.
MD Ryzen 7 3700X			Notes :			ITFS - Cluster size 4096B Storage driver <b>stornvme</b>

#### 3. Burn In Tests and Results 3.1 BurnInTest v8.1 Pro 3.1.1 system information as below: BurnInTest V8.1 Pro (1010) × File Edit Configuration Test Quick Tests Help 🕞 🗊 📋 💥 🛐 态 Current configuration - 2 System Information Burn In Results Event Log Temperature System summary Windows 10 Enterprise Edition build 18362 (64-bit), 1 × AMD Ryzen 7 3700X 8-Core Processor [3601.1 MHz], 32GB RAM. NVIDIA GeForce 210, 119GB SSD, 3577GB HDD, 894GB HDD, General System Name: DESKTOP-7EB106L Motherboard Manufacturer: Gigabyte Technology Co., Ltd. Motherboard Model: X570 AORUS MASTER Motherboard Version: X.X Default string Motherboard Serial Number: **BIOS Manufacturer:** American Megatrends Inc. BIOS Version: F5I 08/02/2019 BIOS Release Date: BIOS Serial Number: Default string CPU -CPU manufacturer: AuthenticAMD Online CPU comparison AMD Ryzen 7 3700X 8-Core Processor CPU Type: CPUID: Family 17, Model 71, Stepping 0 Physical CPU's: Cores per CPU: Hyperthreading: Not capable CPU features: MMX SSE SSE2 SSE3 SSSE3 SSE4.1 SSE4.2 SSE4a DEP PAE AMD64 AES Turbo Clock frequencies: Measured CPU speed: 3601.1 MHz Cache per CPU package: L1 Instruction Cache: 16 × 32 KB L1 Data Cache: 16 × 32 KB 16 × 512 KB L2 Cache: L3 Cache: 32 MB Ready 🐞 BurnInTest V8.1 Pro (1010) × File Edit Configuration Test Quick Tests Help 🔜 🗊 📋 💥 🛐 🖎 Current configuration System Information Burn In Results Event Log Temperature Memory Total Physical Memory: 32558MB Available Physical Memory: 29639MB Memory devices: Slot 1: 16GB DDR4 SDRAM PC4-21300 1.2V, Ck: 1333.3MHz, Timings 19-19-19-43 (@ Max. freq.) Slot 2: 16GB DDR4 SDRAM PC4-21300 1.2V, Clk: 1333.3MHz, Timings 19-19-19-43 (@ Max. freq.) Slot 3: Not populated Slot 4: Not populated C:\pagefile.sys (allocated base size 4864MB) Virtual memory: Graphics NVIDIA GeForce 210 GeForce 210 Chip Type: DAC Type: Integrated RAMDAC Memory: 512MB BIOS: Version 70.18.64.0.5 Driver provider: NVIDIA 21.21.13.4201 Driver version: Driver date: 11-14-2016 1920×1080×32 59Hz (Primary monitor) Monitor 1: Disk volumes C: Local Drive, \\?\Volume{9acfb6ca-0000-0000-009e-b93e00000000}}, NTFS, (117.26GB total, 69.58GB free) D: Local Drive, \\?\Volume{67b2d8c9-0000-0000-0000-00000-00000}}, 新增磁碟區, NTFS, (894.25GB total, 566.13 E: Local Drive, \\?\Volume{c11b8394-fa3e-42fd-befe-c2bb09d1514f}\,新增磁碟區, NTFS, (3576.97GB total, 3576.76C Disk drives 磁漆橡。Model: Crucial\_CT128M550SSD3 Serial: 14230C32D185 (Disk: 0, Sze: 119.24GB, Volumes: C) 磁漆橡。Model: MZ4LB3TBHALS-00003-001 Serial: N/A (Disk: 2, Size: 3576.98GB, Volumes: E) EY 磁碟機: Model: LITEON EP2-KB960 Serial: N/A (Disk: 1, Size: 894.25GB, Volumes: D) Ready

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



#### 4. Summary

- 4.1 M.3 and M.2 NVMe SSD is PCI-e Gen 3 / 4 Lane Interface, I/O speed, max. to 32Gbps.
- 4.2 PC892A adapter I/O performance is based on NVMe SSD.

