

MINIS FORUM

GN31

Introduction Presentation

Rev 1.0, May 2019

- Founded in 2015, MinisForum is a group of electronics enthusiasts and computer engineers, aiming to become one of the leading computer companies in the world.
- To achieve this goal, MinisForum has been designing and developing interesting products, delivering them to customers at a reasonable price, providing consumers with unparalleled satisfaction and reliability through these products.
- GN31 MINI PC with Intel Celeron J3160(1.6GHz) is designed and released by MinisForum, targeting the use of small business, industrial automatic control, home theater and living room. It's very low power consumption and a great savings on electric bill.

- Small size, beautiful appearance
- TDP Unlocker
- Superb heatpipe cooling system
- Equipped with PCI-E M.2 2280 SSD for faster and more stable storage.
- HDMI / VGA output display
- Input/Output strong scalability

Small size, beautiful appearance

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Measures 120 x 120 x 36 mm
Weighs less than a kilogram.

Ventilation grilles on the sides
and bottom

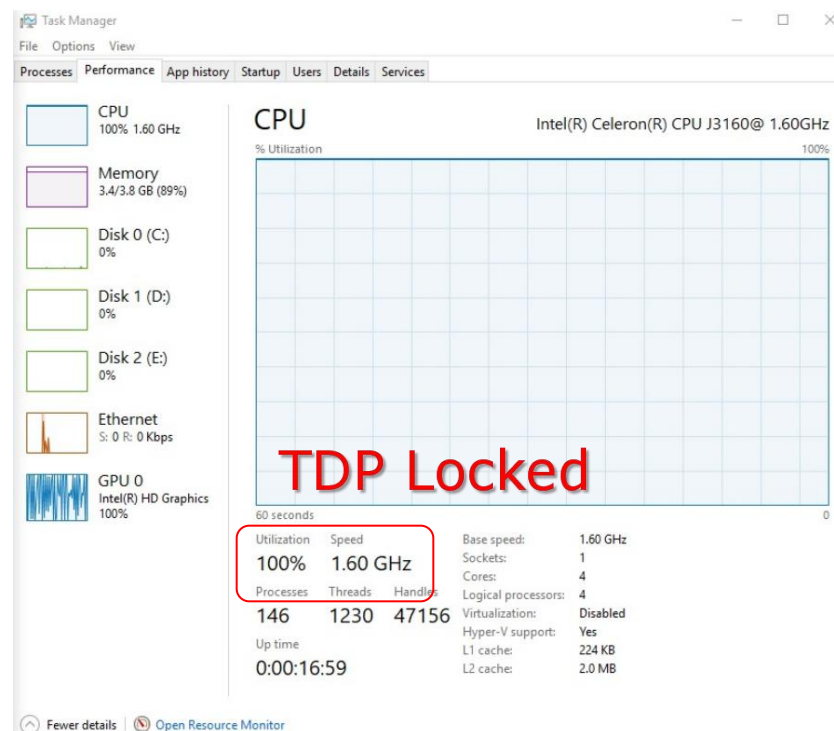
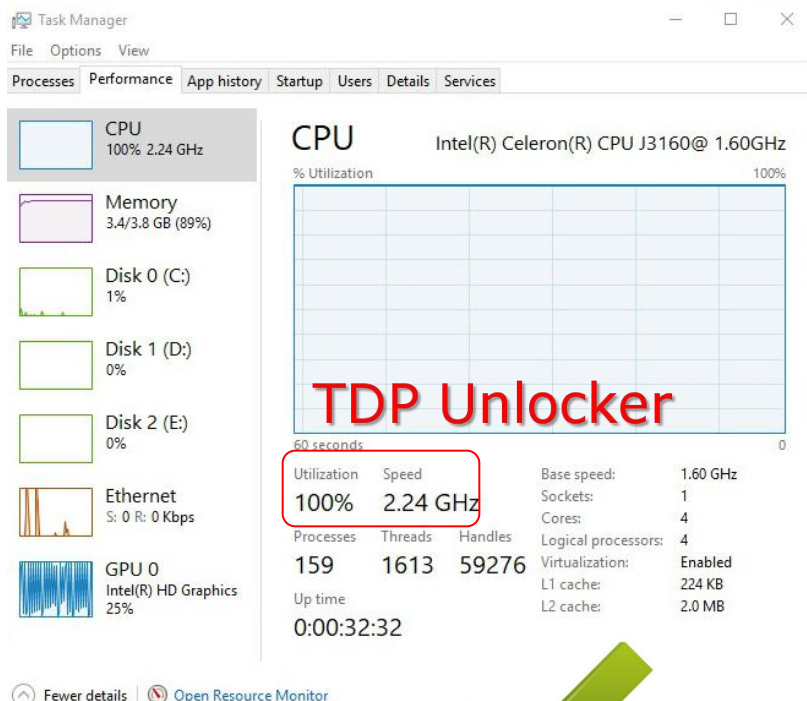


- 6W TDP limits the performance of Intel Celeron J3160 processors
- Frequencies (CPU/GPU) drop whenever TDP reaches 6W
- TDP unlocker increases the TDP threshold
- TDP unlocker enhances system performances by avoiding under-clocking instead of over-clocking, thus 100% safe
- Performance can be +60% better than competitions with the same processor which
- Pre-requisite :GOOD COOLING is required to handle the extra power
- Minisform team designed a cooling system to solve this problem.
(Please refer to page 8-9 for system operating temperature test results.)

TDP Unlocker

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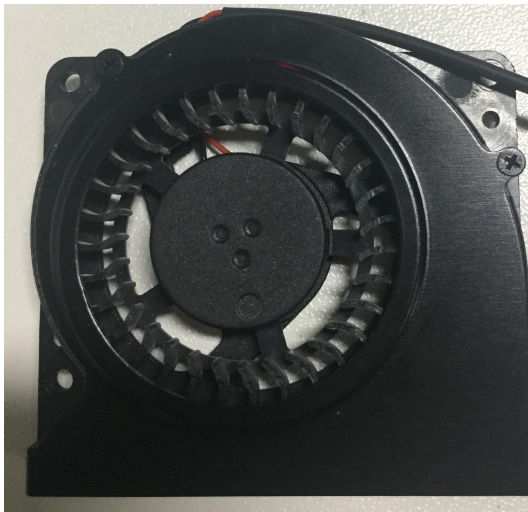
- TDP Locked CPU max speed 1.6GHz
- TDP Unlocker CPU max speed 2.24GHz



Superb heatpipe cooling system

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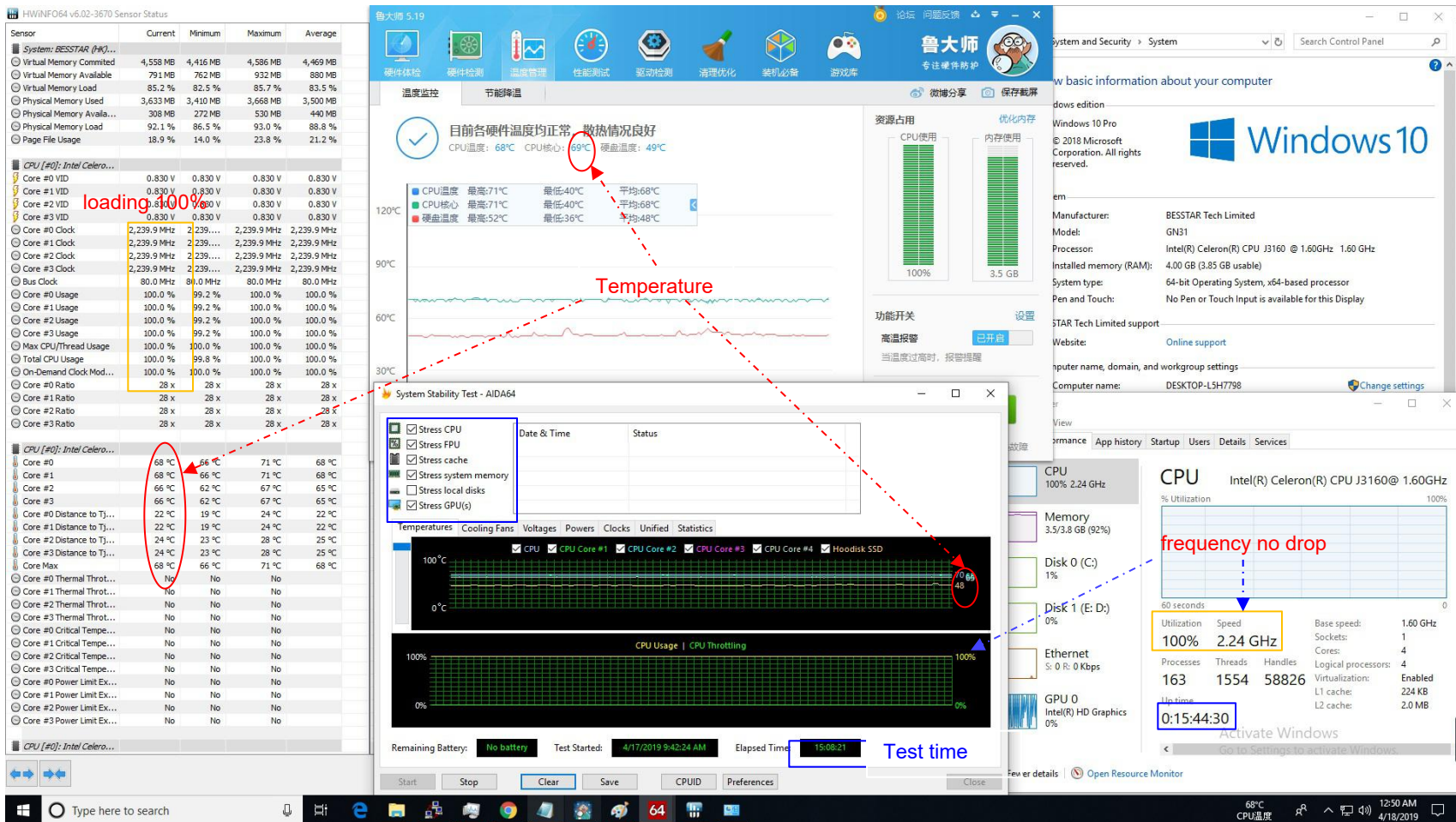
- Extreme silent operation at 100% CPU load
- Effectively dissipates heat out of the casing
- Design ready to handle 9W TDP CPU
- Heat sink with Centrifugal(Blower) Fan



Superb heatpipe cooling system

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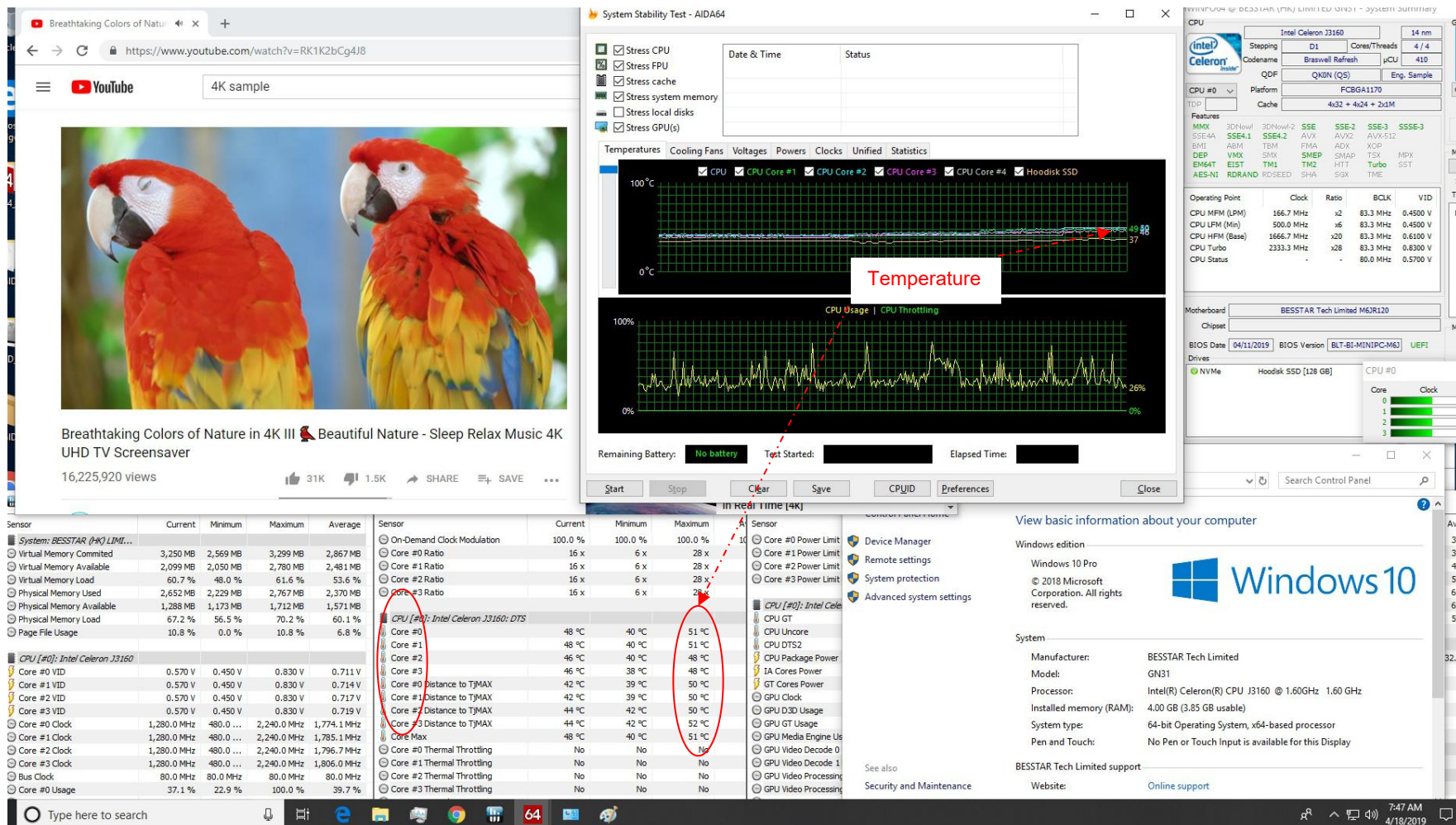
- AIDA64 test : **Stress CPU/GPU/Mem.....** load 100% monitoring for 15 hours, temperature is maintained at about 70 degrees.
In this case the frequency (CPU / GPU) still performs best, no drop.



Superb heatpipe cooling system

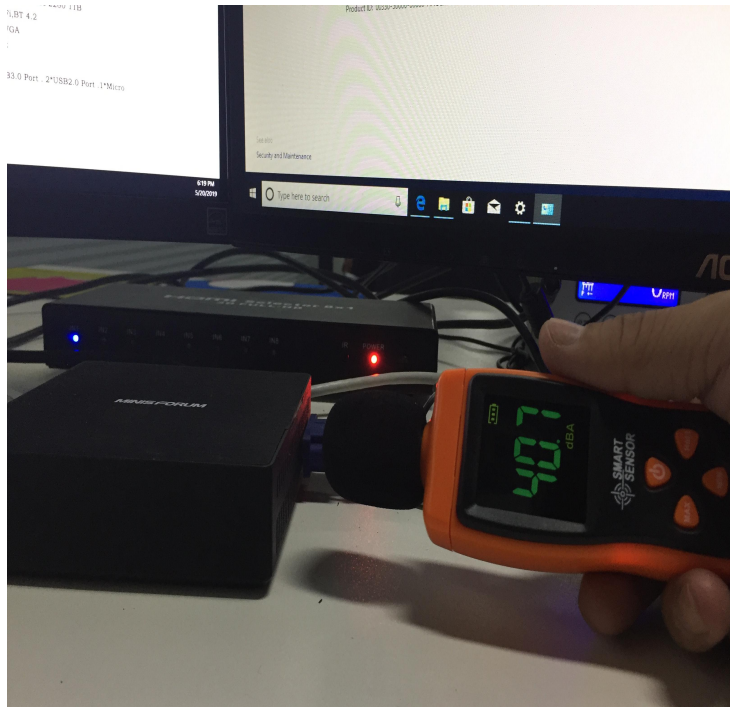
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Online 4K video play CPU temperature is about 50 degrees



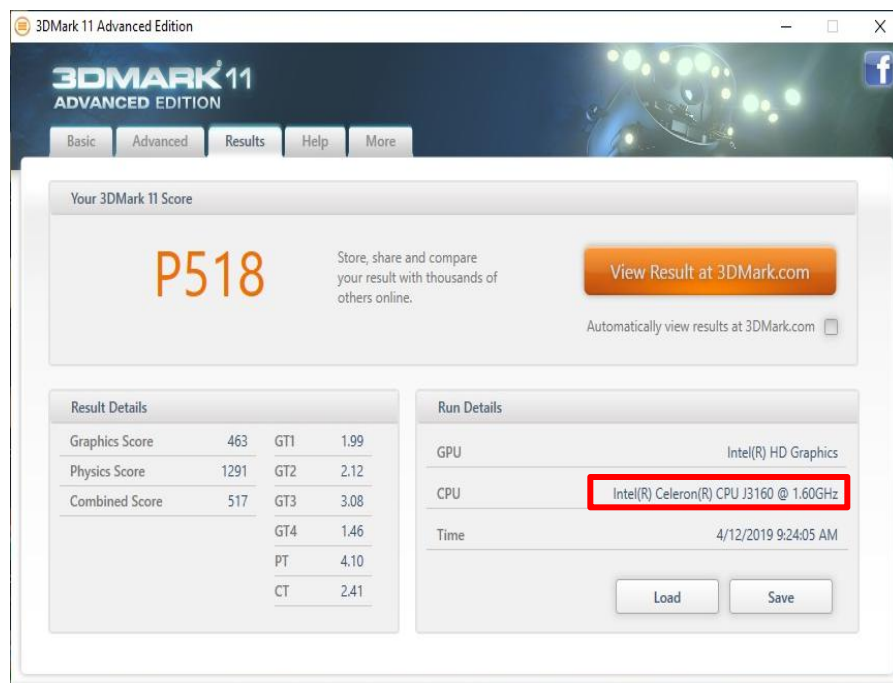
Superb heatpipe cooling system

- The noise in the free air is about 40 dba.
Noise meter test vents, show : "40.7" dba
The quiet voice does not feel the presence of a fan.

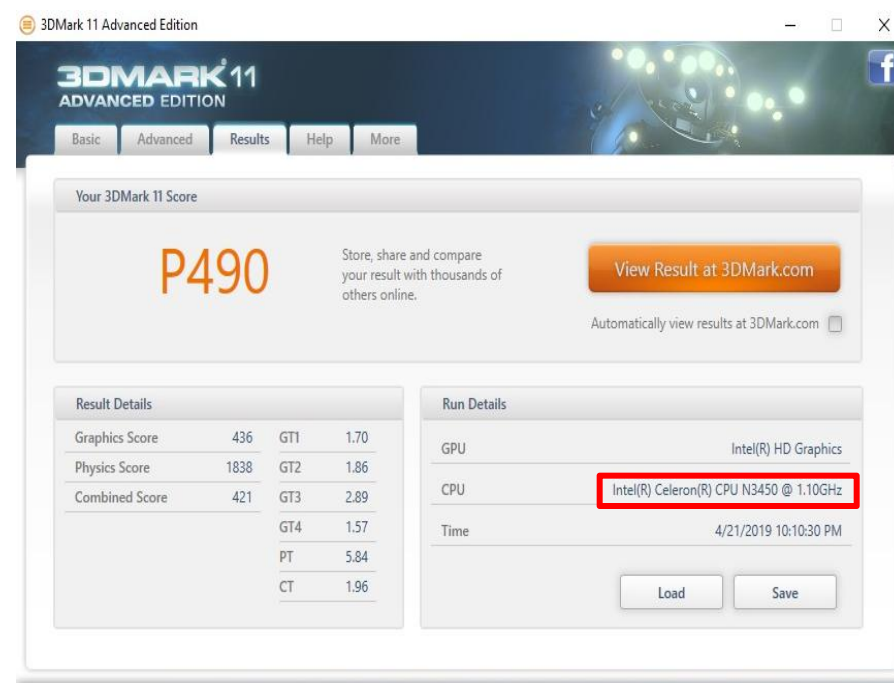


CPU Performance

- 3DMARK11 overall performance test results;
Intel Celeron J3160 (P518) Better than Intel Celeron N3450(P490)



GN31 @Intel Celeron J3160



Intel Celeron N3450

CPU Performance

- Ludashi v5.19 overall performance test result;
J3160 (53944) than N3450(34987) 1.5 times.



GN31 @Intel Celeron J3160



Intel Celeron N3450

CINEBENCH R15

CPU:117cb Open GL:12.90 fps

CINEBENCH R15.0

File Help

CINEBENCH R15
by MAXON

OpenGL 12.90 fps **Run**

CPU 117 cb **Run**

Your System

Processor Intel Celeron CPU J3160

Cores x GHz 4 Cores, 4 Threads @ 1.60 GHz

OS Windows 8, 64 Bit, Professional Edition

CB Version 64 Bit

GFX Board Intel(R) HD Graphics 400

Info

Ranking

OpenGL Details

1. 4C/8T @ 2.79 GHz, Quadro K4000M/PCIe/S	67.71
2. 4C/8T @ 4.40 GHz, Quadro 4000/PCIe/SSE2	65.33
3. 6C/12T @ 3.30 GHz, GeForce GTX 460/PCIe	59.86
4. 12C/24T @ 2.66 GHz, ATI Radeon HD 5770	57.08
5. 4C/8T @ 2.60 GHz, NVIDIA GeForce GT 650	52.75
6. 4C/8T @ 3.40 GHz, GeForce GT 620/PCIe/S	19.04
7. 4C/4T @ 1.60 GHz, Intel(R) HD Graphics 40	12.90
8. 2C/4T @ 1.70 GHz, Intel(R) HD Graphics 400	9.00

OpenGL performance J3160 than N3450 1.8 times

BESSTAR (HK) LIMITED GN31

Geekbench Browser

OpenCL Score 7765

Geekbench 4.3.3 Tryout for Windows x86 (64-bit)

Result Information

User minisforum

Upload Date April 18 2019 11:16 AM

Views 2

System Information

System Information

Operating System	Microsoft Windows 10 Pro (64-bit)
Model	BESSTAR (HK) LIMITED GN31
Motherboard	BESSTAR Tech Limited M6JR120
Memory	3942 MB DDR3 SDRAM 1067MHz
Northbridge	Intel Braswell Host Bridge 35
Southbridge	Intel Braswell LPC Bridge 35
BIOS	American Megatrends Inc. BLT-BI-MINIPC-M6JR120-BB80B-10

Processor Information

Name	Intel Celeron J3160
Topology	1 Processor, 4 Cores
Identifier	GenuineIntel Family 6 Model 76 Stepping 4
Base Frequency	1.60 GHz
Maximum Frequency	2.24 GHz
Package	Socket 1170 BGA
Codename	Braswell
L1 Instruction Cache	32.0 KB x 4
L1 Data Cache	24.0 KB x 4
L2 Cache	1.00 MB x 1

OpenCL Information

Platform Vendor	Intel(R) Corporation
Platform Name	Intel(R) OpenCL
Device Vendor	Intel(R) Corporation
Device Name	Intel(R) HD Graphics 400
Compute Units	12
Maximum Frequency	700 MHz
Device Memory	1.53 GB

OpenCL Performance

Geekbench Browser

OpenCL Score 4806

Geekbench 4.3.3 Tryout for Windows x86 (64-bit)

Result Information

User

Upload Date April 22 2019 05:24 AM

Views 3

System Information

System Information

Operating System	Microsoft Windows 10 Pro (64-bit)
Model	
Motherboard	
Memory	3946 MB 797MHz
Northbridge	Intel Apollo Lake Host Bridge 0B
Southbridge	Intel Apollo Lake LPC Bridge 0B
BIOS	American Megatrends Inc. 0.18

Processor Information

Name	Intel Celeron N3450
Topology	1 Processor, 4 Cores
Identifier	GenuineIntel Family 6 Model 92 Stepping 9
Base Frequency	1.10 GHz
Maximum Frequency	2.09 GHz
Package	Socket 1296 FCBGA
Codename	Apollo Lake
L1 Instruction Cache	32.0 KB x 4
L1 Data Cache	24.0 KB x 4
L2 Cache	1.00 MB x 1

OpenCL Information

Platform Vendor	Intel(R) Corporation
Platform Name	Intel(R) OpenCL
Device Vendor	Intel(R) Corporation
Device Name	Intel(R) HD Graphics 500
Compute Units	12
Maximum Frequency	700 MHz
Device Memory	1.54 GB

Memory Test

PassMark MemTest86 v7.5 test memory Address (Write/Read)

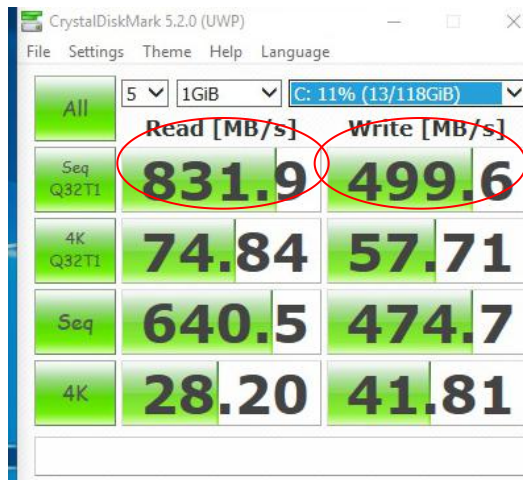
→ All passed, NO error.

```
PassMark MemTest86 V7.5 Free Intel Celeron J3160 @ 1.60GHz
Clk/Temp : 1600 MHz / 44C | Pass 100% #####
L1 Cache : 56K 20.62 GB/s | Test 100% #####
L2 Cache : 1024K 16.41 GB/s | Test 13 [Hammer test] - Verifying pattern
L3 Cache : N/A | Address : 0x160000000 - 0x17FF00000
Memory : 3496M 3104 MB/s | Pattern : 0x2023365A
RAM Info : PC3-8500 DDR3 1067MHz / A1_Manufacturer0 Array1_PartNumber0
-----
CPU: 0123 | CPUs Found: 4
State: \WWW | CPUs Started: 4 CPUs Active: 1
-----
Time: 4:39: Test complete, press any key to display summary errors: 0
-----
Finished pass #1 (of 4) (Cumulative error count: 0)
Finished pass #2 (of 4) (Cumulative error count: 0)
Finished pass #3 (of 4) (Cumulative error count: 0)
Finished pass #4 (of 4) (Cumulative error count: 0)
>Test Complete
```


M.2 2280(NVME) 128G Test

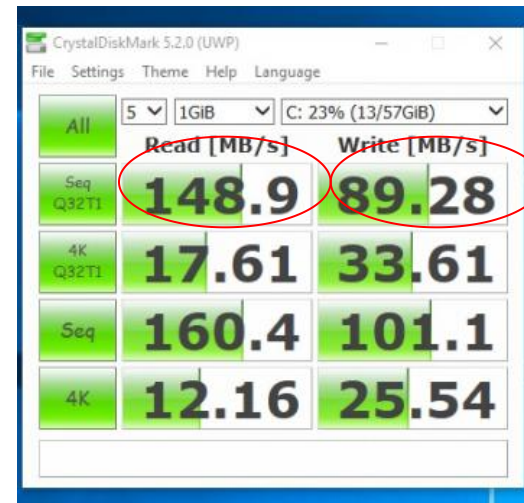
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- CrystalDiskMark5.2.0 test Result:
NVMe M.2 2280 128G than EMMC5.1 64G **5.6 times**
- The computer starts up only 14 seconds, no need to wait patiently



	Read [MB/s]	Write [MB/s]
All	831.9	499.6
Seq Q32T1	831.9	499.6
4K Q32T1	74.84	57.71
Seq	640.5	474.7
4K	28.20	41.81

Intel Celeron J3160
NVME M.2 2280 128G



	Read [MB/s]	Write [MB/s]
All	148.9	89.28
Seq Q32T1	148.9	89.28
4K Q32T1	17.61	33.61
Seq	160.4	101.1
4K	12.16	25.54

Intel Celeron J3160
EMMC5.1 64G

Burn in Test(PASSED)

Setting parameters:

Test time:720minute (12H)

Test Item: 2D/3D Graphics ;CPU;Memory(RAM);Network ;Sound

Test loading:100%

The screenshot displays the BurnInTest V6.0 Pro interface. The main window shows the 'Results for DESKTOP-JEUVB7B' with a status of 'PASS' circled in red. The test configuration file is 'LastUsed.bitcfg'. The test results table is as follows:

Test Name	Cycle	Operations	Errors	Last Error Description
2D Graphics	1285	1.285 Million	0	No errors
3D Graphics	2956	5.912 Million	0	No errors
CPU	9369	27.489 Trillion	0	No errors
Memory (RAM)	271	1.695 Trillion	0	No errors
Network 1	2384	19.074 Million	0	No errors
Sound	249	792 Million	0	No errors

The 'BurnInTest test result' dialog box shows a large green 'PASSED' message. The 'Test configuration and duty cycles' dialog box shows the test duration set to 720 minutes and the following test items and duty cycles:

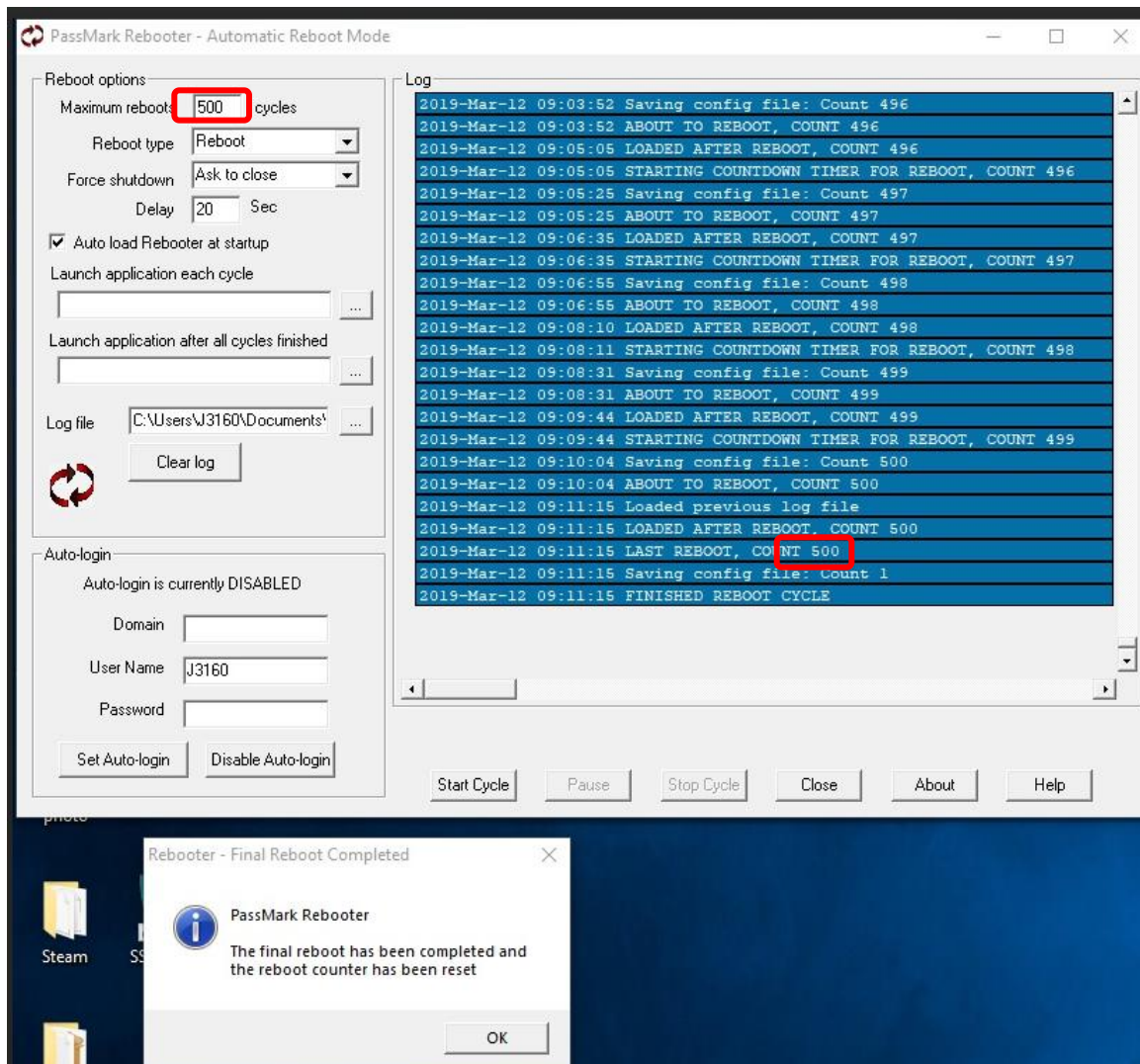
Test Item	Duty Cycle (%)
CPU	100
2D Graphics	100
3D Graphics	100
Optical Drive(s)	50
Printer	50
Disk(s)	50
RAM	100
Sound	100
Com Port(s)	50
Network	100
Tape	50
Parallel Port	50
Video	50
USB	50
Plug-in	50

The CPU-Z window shows the processor details for the Intel Celeron J3160:

Property	Value
Name	Intel Celeron J3160
Code Name	Braswell
Package	Socket 1170 BGA
Technology	14 nm
Core VID	0.450 V
Specification	Intel® Celeron® CPU J3160 @ 1.60GHz (ES)
Family	6
Ext. Family	6
Ext. Model	4C
Revision	D1
Instructions	MMX, SSE, SSE2, SSE3, SSSE3, SSE4.1, SSE4.2, EM64T, VT-x, AES
Clocks (Core #0)	
Core Speed	479.80 MHz
Multiplier	x 6.0
Bus Speed	79.97 MHz
Rated FSB	
Cache	
L1 Data	4 x 24 KBytes
L1 Inst.	4 x 32 KBytes
Level 2	2 x 1 MBytes
Level 3	

Windows Reboot cycle test

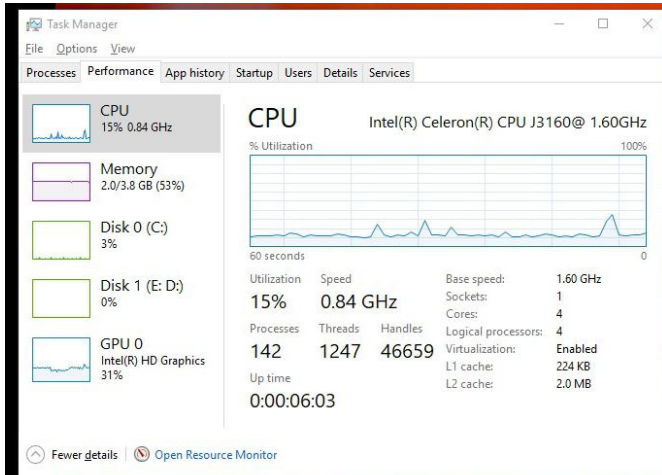
Windows reboot 500 cycles test passed



HDMI / VGA output display

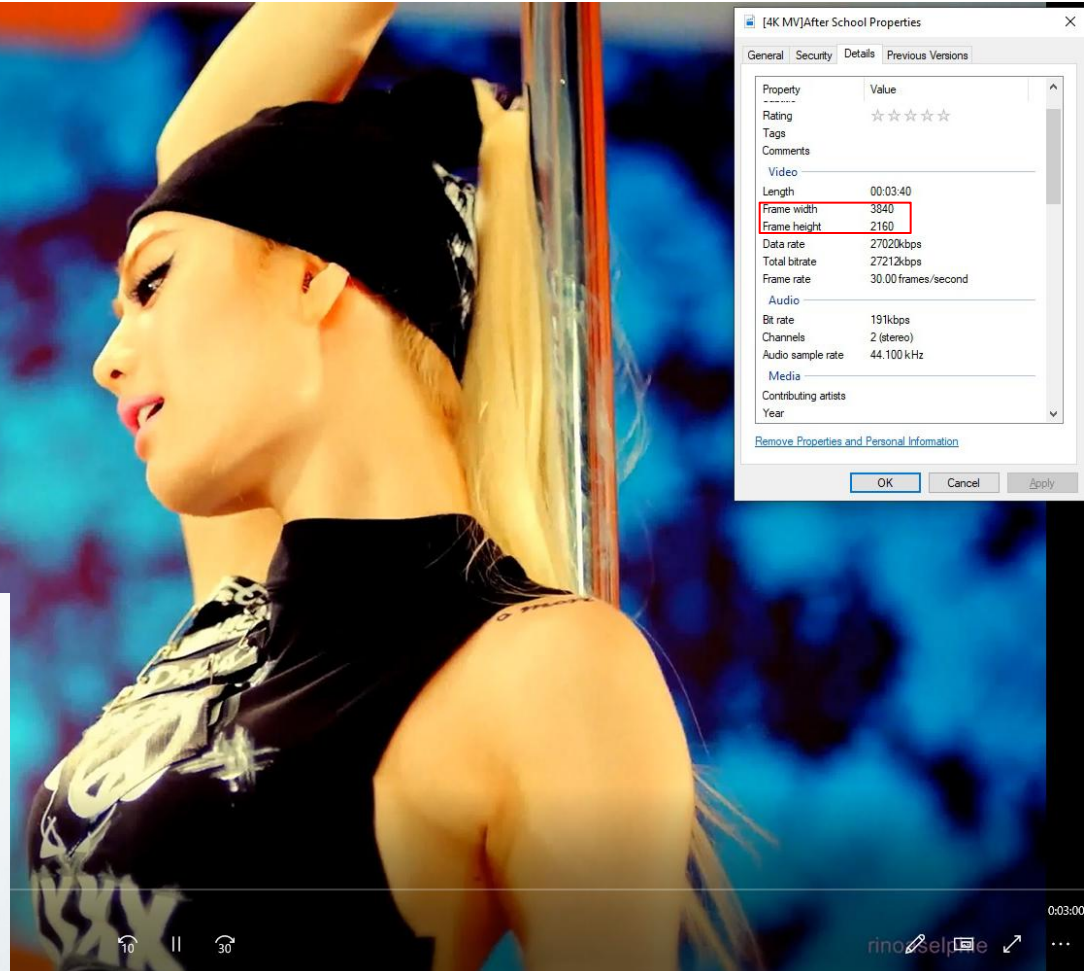
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- Smooth 4K test video playback, support 4K@30Hz



Intel(R) HD Graphics 400

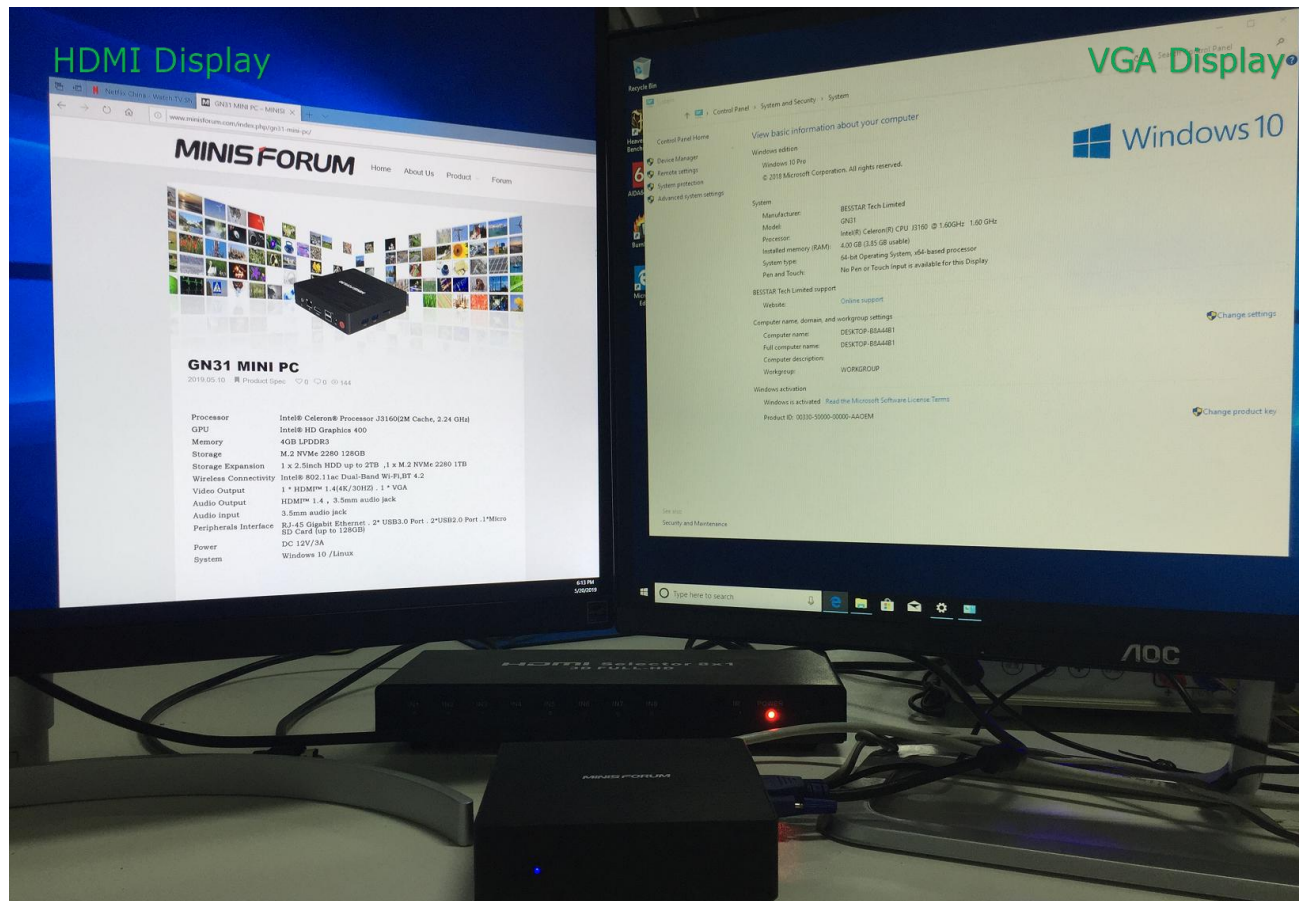
Report Date:	Thursday, January 24, 2019	Processor:	Intel(R) Celeron(R) CPU J3160 @ 1.60GHz
Report Time [hh:mm:ss]:	10:11:22 PM	Processor Speed:	1600 MHz
Driver Version:	20.19.15.4835	Processor Graphics in Use:	Intel(R) HD Graphics 400
Operating System:	Windows* 10 Home (10.0.17134)	Shader Version:	5.0
Default Language:	English (United States)	OpenGL* Version:	4.4
Physical Memory:	3493 MB	OpenCL* Version:	1.2
Vendor ID:	8086	Microsoft DirectX*	11.1
Device ID:	22B1	Runtime Version:	12.0
Device Revision:	35	Hardware-Supported Version:	11.1
Video BIOS:	1008.0		
Current Resolution:	3840 x 2160		



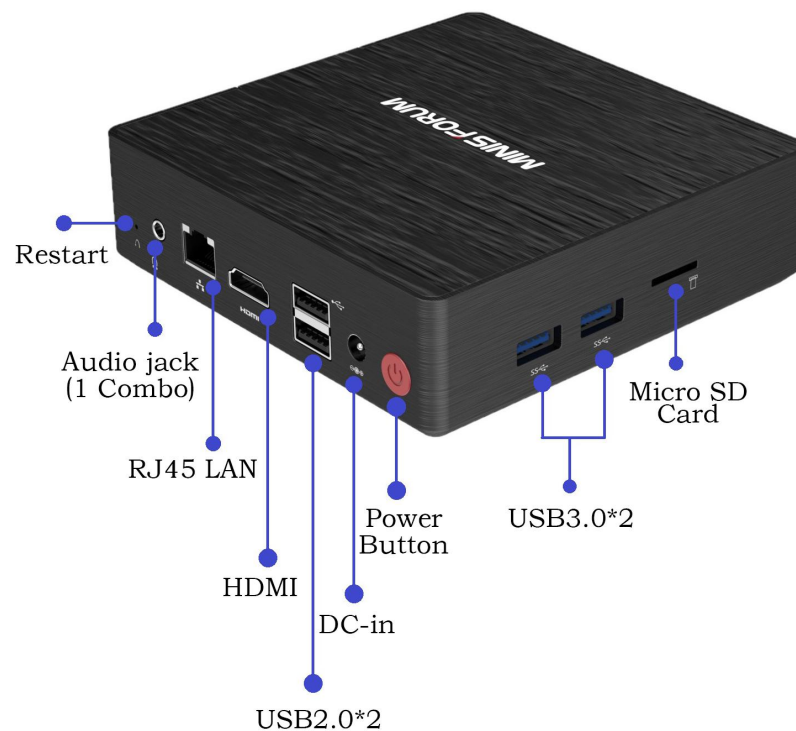
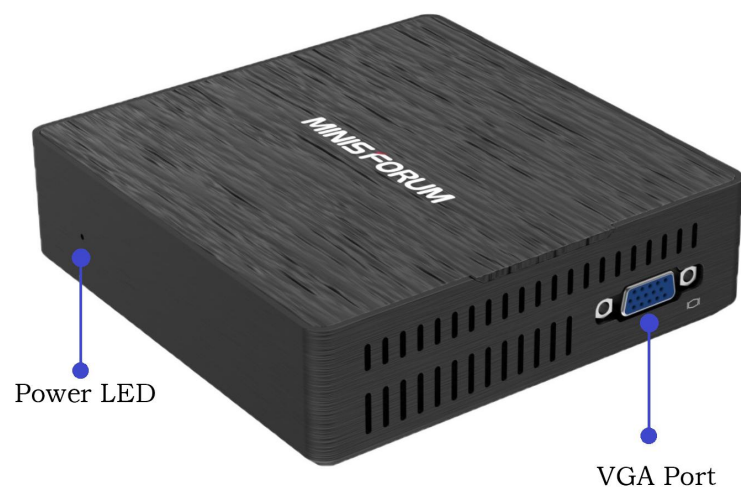
HDMI / VGA output display

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- Support multi-tasking operation, you can work while watching the home theater.
- The price of one GN31 is equivalent to the function of two MINI PCs.

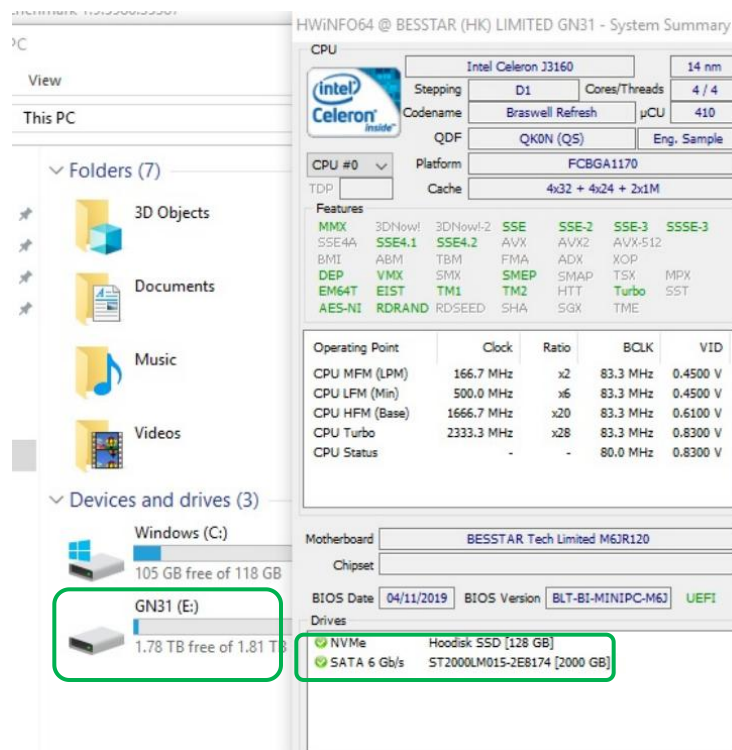


- With 2*USB 3.0 Ports (Left and Right)
- With 2*USB 2.0 Ports (Up and Down)
- With 1*TF Slot (Micro-SD Slot)



- Easy DIY Upgradability
- DIY 2.5 inch HDD (Supports up to 2TB, SATA3.0 6Gb/S)
- DIY NVME M.2 2280 (Support up to 512GB, PCIe3.0 x2 16Gb/S)

(Note: 2TB and 512GB are our test capacity and can actually support larger than this.)



Thank you !