Goldkey Technology Corporation
6F-2, No. 716, Chung-Cheng Road, Chung-Ho Dist.,
New Taipei City 235, Taiwan, R. O. C.
Tel : **+886-2-7731-8808** ;   Fax : **+886-2-7731-6606**
凌航科技股份有限公司
235 新北市中和區中正路 716 號 6 樓之 2
電話: **+886-2-7731-8808** ; 傳真 : **+886-2-7731-6606**

產 品 規 格 書
(Specification)

產 品 類 別　(ITEM)	SSD / STORAGE
品 名 規 格　(DESCRIPTION)	2.5 inch SATA3 SSD
凌 航 型 號　(Goldkey Model)	NFS12 Retail Series
規 格 書 版 本 (Specification Rev.)	00

Prepared by	Approved by
Peter	Willy

Total Pages	Product Rev.	Date
11	00	2023/09/12

Revision History

Product Rev.	Date	Reason/Issue	Revised Description	Author
00	2023/09/12	Initial	Initial	Peter

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Specifications Overview:

Summary	Solution	YS9082 ＋3D NAND FLASH			
	Interface	SATA 6.0Gbps Compliance with SATA Revision 3.1 (Compatible with SATA 1.5/3Gbps interface)			
Connector Type	SATA 7+15 pin				
Form Factor	2.5 inch				
Characteristic	Capacity	120/128GB	240/256GB	480/512GB	960/1024GB
	Sequence read *1（MB/s）(Min.)	520	520	520	520
	Sequence write *1（MB/s）(Min.)	400	420	440	440
Storage medium	3D NAND FLASH				
Electrical Specifications	Input voltage	5V ± 5%			
	Idle mode (W) (Max.)	0.9			
	Sequential Read (W) *1 (Max.)	1.95			
	Sequential Write (W) *1 (Max.)	1.95			
FLASH Management	TRIM command、Global Wear leveling、S.M.A.R.T.、Bad block management、NCQ				
Reliability	MTBF (hours)	1,600,000			
	Endurance (TBW)	76	153	307	614
Temperature Range	Working temperature	0～+70°C			
	Storage temperature	-40～85°C			
Mechanical Characteristics	Thickness (mm)	6.9±0.5			
	Width (mm)	69.8±0.5			
	Length (mm)	99.8±0.5			
	Weight	46g (Max.)			

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Note:

*1 Measured by CrystalDiskMark V8.0.4 (x64) at empty disk with SATA 6Gbps host.

*2 Performance may differ according to flash configuration, SDR configuration, and platform.

*3 The table above is for reference only. The criteria for MP (mass production) and for accepting goods shall be

discussed based on different flash configuration.

Ordering Information for Compliant Products

Part Number	Description	Capacity
NFS121SA312-6007200	2.5 inch SATA3 SSD	120GB
NFS121SA328-6007200	2.5 inch SATA3 SSD	128GB
NFS121SA324-6007200	2.5 inch SATA3 SSD	240GB
NFS121SA356-6007200	2.5 inch SATA3 SSD	256GB
NFS121SA348-6007200	2.5 inch SATA3 SSD	480GB
NFS121SA351-6007200	2.5 inch SATA3 SSD	512GB
NFS121SA396-6007200	2.5 inch SATA3 SSD	960GB
NFS121SA31T-6007200	2.5 inch SATA3 SSD	1024GB

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1. **General Descriptions**

1.1. Introduction

Neo Forza's 2.5 inch SSD (Solid State Drive) is a high performance and high reliability storage device based on New 3D NAND Flash technology that is designed to solve the bottleneck of computing system by traditional hard disk drives (HDD). Neo Forza's 2.5 inch SSD is fully compliant with the standard 2.5 inch form factor. With a high performance and low power consumption, Neo Forza's 2.5 inch SSD is a great choice of storage device for NB and Tablet PC.

1.2. Performance

Table 1-1 Performance Specifications

Capacity	Sequence *1	
	Read (MB/s) min.	Write (MB/s) min.
120GB/128GB	520	400
240GB/256GB	520	420
480GB/512GB	520	440
960GB/1024GB	520	440

Note:
*1 Measured by CrystalDiskMark 8.0.4 (x64) at empty disk with SATA 6Gbps host.
*2 Performance may differ according to flash configuration, SDR configuration, and platform.

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2. **Product Specifications**

- **Capacity**

    128GB/256GB/512GB/1024GB;120GB/240GB/480GB/960GB

- **Compatibility**
    - ◆ SATA Revision 3.1
    - ◆ Compliant with Standard ATA/ATA Pl-8 and ACS-2 command compliant
    - ◆ Compatible with SATA 1.5Gbps, 3Gbps and 6Gbps interface
    - ◆ Supports 28-bit and 48-bit LBA (Logical Block Addressing) mode commands

- **Additional Capabilities**
    - ◆ S.M.A.R.T. (Self-Monitoring, analysis and reporting Technology) feature set support
    - ◆ Data Set Management command (TRIM)
    - ◆ Static wear-leveling algorithm
    - ◆ Native Command Queuing (NCQ) up to 32 commands support
    - ◆ Support Global Wear Leveling extends SSD lifespan
    - ◆ Intelligent SLC caching algorithm for high endurance and performance improvement
    - ◆ RoHS Compliant
    - ◆ Power Consumption (Maximum): <1.95W
    - ◆ Operating Temperature Range: 0°C ~ 70°C
    - ◆ Storage Temperature Range: -40°C ~ 85°C

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3. Interface Description

3.1. Pin Assignment and Descriptions

SATA Interface (7+15 Pin)

Table 4-1: SATA 7+15 pin

Signals	S1	GND	System Ground
	S2	RX+	Differential signals pair Receive
	S3	RX-	
	S4	GND	System Ground
	S5	TX-	Differential signals pair Transmit
	S6	TX+	
	S7	GND	System Ground
Power	P1	V33	+3.3V Power supply
	P2	V33	
	P3	DEVSLP	Device Sleep Signal Pin
	P4	GND	System Ground
	P5	GND	
	P6	GND	
	P7	V5/PC	+5V Power supply, 2nd Pre-charge
	P8	V5	+5V Power supply
	P9	V5	
	P10	GND	System Ground
	P11	DAS	Reserved
	P12	GND	System Ground
	P13	V12/PC	+12V Power supply, 2nd Pre-Charge
	P14	V12	+12V Power supply
	P15	V12	

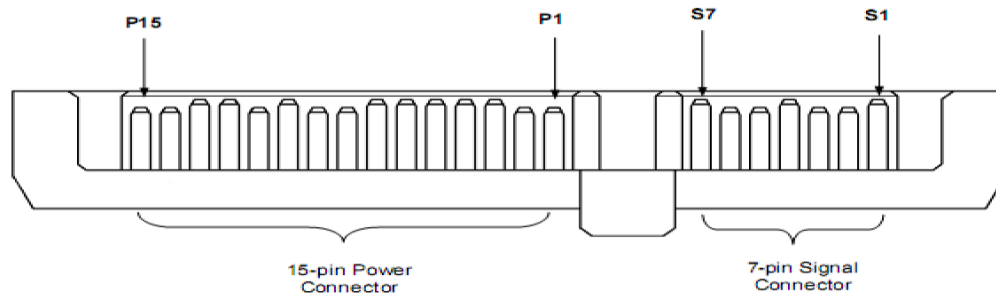|			
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4. **Electrical Specification**

4.1. Operating Voltage

Table 5-1 List of the supply voltage

● Table 5-1 Operating Voltage

Item	Range
Supply Voltage	5.0V ± 5%

4.2. Power Consumption

Table 5-2 List of the power consumption

● Table 5-2 Power Consumption

Mode		Unit
Idle (Max.)	0.9	W
Sequential Read (Max.)	1.95	W
Sequential Write (Max.)	1.95	W

Note:

1. All values are typical and may vary depending on flash configurations or host system setting.

2. Active power is an average power measurement performed using CrystalDiskMark with 128KB sequential read/write transfer.

5. **Performance Testing**

SSD Review Test System Specifications:

Chipset:	MSI B250 GAMING PRO CARBON / Intel i5-7400
System OS:	Microsoft Windows 10 (64Bit)

5.1. Crystal Disk Mark

Rev: 8.0.4(x64)

Empty Disk

Test Item	Crystal Disk Mark			
Capacity	120GB/128GB	240GB/256GB	480GB/512GB	960GB/1024GB
Sequential Q32 Read (MB/s) (Min.)	520	520	520	520
Sequential Q32 Write (MB/s) (Min.)	400	420	440	440

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6. Reliability Specifications

6.1. Environmental

Environmental specifications are shown in Table 7-1

Table 7-1 Environmental Specifications

Environmental	Specifications
Temperature	0℃ to 70℃ (Working)
	-40℃ to 85℃ (Storage)

Result: No any abnormality is detected when power on

6.2. Mean Time Between Failures (MTBF)

Mean Time Between Failures (MTBF) is predicted based on reliability data for the individual components in SSD is more than 1,600,000 hours (Predicted data)

6.3. Endurance

The endurance of a storage device is predicted by TeraBytes Written based on several factors related to usage, such as the amount of data written into the drive, block management conditions, and daily workload for the drive. Thus, key factors, such as Write Amplifications (WAF) and the number of P/E cycles, can influence the lifespan of the drive.

Table 7-2 Endurance Specifications

Total Byte Written (TBW)	120/128GB	240/256GB	480/512GB	960/1024GB
	76	153	307	614

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