

2021

RENICE Flash Storage Solution



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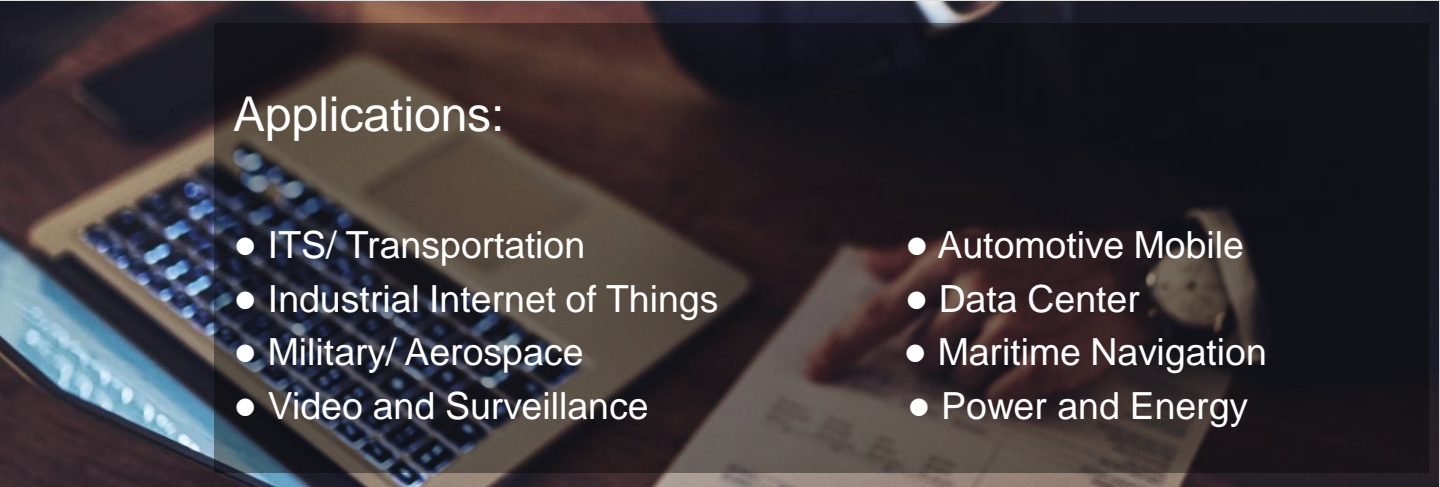
A 3D rendering of a square integrated circuit chip, likely a flash storage device, is shown in the foreground. The chip is dark with the word "RENICE" printed in white on its top surface. It is surrounded by a complex network of glowing blue circuit traces on a dark background, suggesting a high-tech or data storage environment.

About Renice Technology

Renice is one professional provider of storage solutions, computing service and data security systems. We devoted on developing and manufacturing premium quality and high-performance military embeded storage solutions for aerospace, automotive, maritime, rail transit and defense applications.

Renice is adhering to the customer first, focus on delivering customized storage solutions based on practical applications, such as 3-times lifespan improvement technology for heavy workload industry, rapid secure erase and physical destruction technology for super confidential data security, and Fix-BOM long term supply.

Our own SSD factory is equipped with advanced manufacturing facilities SMT line and strict quality control systems. All Renice products are produced and tested in accordance with highest industry standard MIL-STD-810 specifications. 100% of Renice SSDs are put through high-low temperature testing from -50°C to $+90^{\circ}\text{C}$ and verified by 3,000 times power on/off testing before delviering to customers.



Applications:

- ITS/ Transportation
- Industrial Internet of Things
- Military/ Aerospace
- Video and Surveillance
- Automotive Mobile
- Data Center
- Maritime Navigation
- Power and Energy

Value-added and Advantages

Self-developed SSD Controller	Independent research and developed SSD Controller, focus on industrial & military fields.
r-Backup Power Failure Protection (Patent technology)	Renice r-Backup technology can shorten the time of data from DDR to NAND Flash by 50%-70%, guarantee the data zero loss even if the capacitor is aging to 30% of its original designed power.
Non-balance wear leveling Technology	Non-balance algorithm fully utilize every block of the NAND chips on SSD, to extend SSD lifetime by 3 folds.
Extrem Temperature	72 hours high low temperature test: -40°C ~ +85°C is standard request on the operation temperature on each of SSD.
High Reliability	Military material: Nand Flash, Controller, PCBA are guaranteed with wide temperature. PCB material are made from military-level TUC type that ensure its durability in the harsh environment.
Enhance Data Security	Renice SSD delivered HW and SW AES-256bit encryption, fully compliant with TCG OPAL 2.0.
Secure Erase	Renice provides various secure erase methods, including customized solution based on the particular application scenario, such as spatial displacement, unique authorized connection, acceleration induction, etc.
Physical Destruction	Renice time-sharing shut technology guarantee burn down flash chips on SSD one by one through high voltage, thoroughly avoid the possibility of data been recovered.
Resistance to Shock & Vibration	Renice rugged SSD design solves the problem of damage caused by severe shock and vibration.
Conformal Coating	Renice provides special conformal coating treatment to ensure the specific thickness and uniformity for all the components, to ensure the disk can work normally in water and maintain good heat dissipation.
Chips Reinforcement	Renice has nature filling of the bottom of all chips with German imported filler. After heating to 125 °C till its completely cured, which can prevent the chips from loosening or soldering under the vibration environment, also can be waterproof, dustproof, and salt-spray resistant, etc.
Customized Service	With professional RD team and FW team, Renice industrial/ rugged SSDs are tailored to fit the requirements of each application from customers.

2.5" SATA SSD

Renice industrial 2.5" SSD design with SATA 6Gbps performance, adopt best-in-class endurance SLC, planar MLC and latest 3D-TLC NAND chips make they are ideal solutions for embedded applications requiring reliable and long service life storage. All products feature Renice proven power failure protection, data management, SMART monitoring, NCQ, TRIM, advanced wear leveling, bad block management, and data secured AES encryption, fast secure erase and physical destruction functionality.



Specification		X5A	X7	X10B
Interface		SATAIII		
Form Factor		2.5"		
Max. R/W		520/440MB/s	550/520MB/s	520/500MB/s
Capacity		16GB-2TB	512GB-8TB	2TB-8TB
NAND Flash		SLC, MLC	pSLC, MLC	3D TLC
DRAM		✓	✓	✓
Data Integrity	Power-off Protect	✓	✓	✓
	Advanced Error Detection & Correction	✓	✓	✓
Security	AES 256 Encryption	Optional	✓	✓
	TCG OPAL 2.0	Optional	✓	Optional
	Secure Erase	Optional	Optional	Optional
	Physical Destruction	Optional	Optional	-
Reliability	Shock	1500G, 0.5ms (half-sine wave, ±X,±Y,±Z axis, 1 time/axis)		
	Vibration	16.4G,10-2000Hz	16.3G, 10-2000Hz	10G, 20-2000Hz
	Operating Temperature	-40°C~+85°C		
Durability	Thermal Adaptive	-	✓	✓
	Wear-leveling/ GC/ TRIM/ NCQ	✓	✓	✓
	MTBF	>3,000,000 hours	>1,500,000 hours	>2,000,000 hours
FIX BOM Supply		More than 5 years		

Recommand Applications

- Rugged server systems
- Military and Defense
- Aerospace avionics
- Unmanned vehicles
- Radar/ Guidance Systems
- Rail transit systems

mSATA/ Half-slim SSD

The mSATA disk is fully MO-300 compliant and Half-slim SATA disk is MO-297 compliant. Renice mSATA and Half-slim SSDs provide stable SATA 6Gbps performance, high density and readily operation in wide temperature from -40°C to 85°C. Combined power-failure protection and data secure erase function, they are fully suitable for embedded storage devices and industrial computings.



Specification		X5A
Interface		SATAIII 6.0Gbps
Form Factor		mSATA Half-slim
Max. R/W		500/440MB/s 500/440MB/s
Capacity		16GB-1TB 16GB-1TB
NAND Flash		SLC, MLC
DRAM		✓
Data Integrity	Power-off Protect	✓
	Advanced Error Detection & Correction	✓
Security	AES 256 Encryption	Optional
	TCG OPAL 2.0	Optional
	Secure Erase	Optional
Reliability	Shock	1500G, 0.5ms (half-sine wave, ±X,±Y,±Z axis, 1 time/axis)
	Vibration	16.4G,10-2000Hz
	Operating Temperature	-40°C~+85°C
Durability	Wear-leveling/ GC	✓
	TRIM/ NCQ	✓
	MTBF	>3,000,000 hours
FIX BOM Supply		More than 5 years

Recommand Applications

- Embedded storage system
- Industrial computing
- Marine navigation

NGFF M.2 SATA SSD

M.2 SSD is designed for applications required reliable SSD but small footprint. Renice industrial M.2 SSD with SATA3 interface, and is available in sizes of 2242, 2260 and 2280. Delivering excellent sequential and random read/write performance, with high densities and can withstand harsh working environment like vibration, shock and wide temperature rating of -40°C to 85°C. The power-off protection technology safeguard data against corruption during abnormal power loss.



Specification		X5A		
Interface		SATAIII		
Form Factor		M.2 2242	M.2 2260	M.2 2280
Max. R/W		490/420MB/s	500/420MB/s	500/460MB/s
Capacity		16GB-256GB	16GB-512GB	16GB-1TB
NAND Flash		SLC, MLC		
DRAM		✓	✓	✓
Power-off Protect		✓	✓	✓
Data Integrity	Advanced Error Detection & Correction	✓	✓	✓
Security	AES 256 Encryption	Optional		
	TCG OPAL 2.0	Optional		
	Secure Erase (ATA)	✓	✓	✓
Reliability	Shock	1500G, 0.5ms (half-sine wave, ±X,±Y,±Z axis, 1 time/axis)		
	Vibration	16.4G,10-2000Hz		
	Operating Temperature	-40°C~+85°C		
Durability	Wear-leveling/ GC	✓		
	TRIM/ NCQ	✓		
	MTBF	>3,000,000 hours		
FIX BOM Supply		More than 5 years		

Recommand Applications

- Networking
- Industrial computing
- Communication
- POS

3U/6U VPX SSD

Renice 3U/ 6U open VITA65 VPX storage module is a network storage product based on SATAIII interface, which is mainly composed of VPX connector, SSD controller and flash memory array, without any removable components onboard. Delivers over 450MBps sequential read/write performance and extendable to maximum 32TB capacity. Features stable performance, reliability and power failure protection, making it an ideal solution for a variety of applications in military and aerospace field, including network storage server, data center and video recording that request transaction intensive applications.



Specification		VPX Storage	
Interface	SATAIII 6.0Gbps (PCIe on request)		
Form Factor	3U (170.6*100*20.83mm)	6U (233.35*160*25.1mm)	
Max. R/W	520/450MB/s	520/460MB/s	
Capacity	1TB-10TB	4TB-32TB	
NAND Flash	pSLC, MLC		
DRAM	✓		
Data Integrity	Power-off Protect	✓	
	Advanced Error Detection & Correction	✓	
Security	AES 256 Encryption	✓	
	TCG OPAL 2.0	✓	
	Secure Erase	Optional	
	Physical Destruction	Optional	
Reliability	Shock	Refer to GJB150.18A-2009	
	Vibration	Refer to GJB150.18A-2009	
	Cool Method	Conduction cooled	
	Operating Temperature	-40°C~ +85°C	
Durability	Wear-leveling/ GC	✓	
	TRIM/ NCQ	✓	
	MTBF	>3,000,000 hours	
FIX BOM Supply	More than 5 years		

Recommend Applications

- Military and Aerospace data recording
- Video recording system
- Rugged server system
- Radar system
- Mission computing

M.2/ U.2 PCIe SSD

Renice X10B high capacity SSD are designed for primary storage applications that require high reliability with sustainable low-latency and high IOPS performance. The PCIe SSD is using 1-bit-per-cell NAND configuration, making it well-suited for write intensive application used in wide temperature (-40°C to +85°C) and high stress environments, such as rail transportation, aerospace, storage accelerators and data communication applications.



Specification		X10B
Interface		PCIe 3.0x2 (PCIe 3.0x4 optional) PCIe 3.0x4
Form Factor		M.2 2280 U.2
Max. R/W		1800/1300MB/s 2600/1900MB/s
Capacity		512GB-2TB 1TB-8TB
NAND Flash		Pure SLC mode, 3D-TLC 3D-TLC
DRAM		✓
Data Integrity	Power-off Protect	✓
	Advanced Error Detection & Correction	✓
Security	AES 256 Encryption	Optional
	TCG OPAL 2.0	Optional
	Secure Erase (ATA)	✓
Operating Temperature		-40°C~+85°C
Durability	Wear-leveling/ GC	✓
	TRIM/ NCQ	✓
	MTBF	>2,000,000 hours

Recommand Applications

- Defense & Aerospace
- Enterprise datacenter
- Cloud computing
- Transportation
- High-performance database
- Big data analysis

1.8 micro-SATA SSD

Renice 1.8" micro-SATA SSD is SATAIII 6.0Gbps solid state drive, which delivers excellent performance, especially in random data transmission. It is fully compliant with standard 1.8" form factor. Available capacity ranges from 8GB to max. 1TB. Fetured power failure protection and data secure erase functionality, Renice 1.8 micro-SATA SSD is a suitable solution for embedded systems.

Specification	1.8" micro-SATA SSD
Interface	SATAIII
Form Factor	1.8" micro-SATA
NAND Type	SLC, MLC
Capaity	8GB-1TB
Max. R/W	500/460MB/s
Power-off Protection	Yes
Secure Erase	Optional
Operation Temperature	-40°C~+85°C



2.5" R-SATA SSD

Different from the standard SATA interface, Renice R-SATA SSD deploys rugged SATA connector, provides 360° direction connection in the vibration environment, more than 100,000 insertion/extraction. It is a perfect solution for harsh environment and rugged storage applications within the aerospace, defence and maritime market segments.

Specification	Rugged Connector
Interface	SATAIII 6.0Gbps
NAND Type	SLC, MLC
Capaity	256GB-8TB
Max. R/W	500/460MB/s
Operation Temperature	-40°C~+85°C
Secure Erase	Optional
Physical Destruction	Optional



Recommand Applications

- Defense & Aerospace
- Armored vehicles
- Missile vehicles
- Radar systems

CF Card

Renice industrial CF Card designed with strong focus on quality, reliability, durability and longevity. Delivering highest write IOPS rate as well as outstanding endurance, make it ideally used as boot drive and data logging devices.

Specification	H1 Plus CF Card
Interface	CF 6.1
NAND Type	SLC, pSLC, MLC
Capacity	2GB-1TB
Max. R/W	96/80MB/s
Power-off Protection	Yes
Operation Temperature	-40°C~+85°C
FIX BOM Supply	More than 5 years



CFast Card

Renice industrial CFast Card is a compact memory card with SATAIII 6.0Gbps interface, compliant with the CFast 2.0 standard and ATA protocol. Designed with high performance, reliability and low power consumption, Renice CFast Card can be a good storage devices to next generation embedded applications and industrial systems.

Specification	X5A
Interface	SATAIII 6.0Gbps
NAND Type	SLC, MLC
Capacity	4GB-512GB
Max. R/W	500/460MB/s
Operation Temperature	-40°C~+85°C



Recommand Applications

- Industrial automation
- Telecommunication/ Networking
- Marine navigation
- Medical equipment

2.5" PATA SSD

Renice 2.5" PATA SSD complies with ATA7, offers high-speed UDMA Mode 6 in true-IDE mode, which delivers excellent performance and reliability making it the ideal solution for variety of applications, including reinforcement computer, industrial control computer, embedded computer and national defense fields.

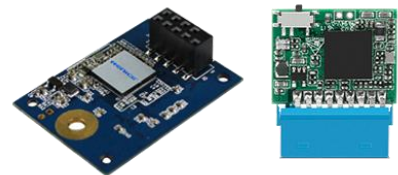
Specification	H1 2.5" PATA SSD
Interface	44Pin PATA IDE
NAND Type	SLC, pSLC, MLC
Capacity	4GB-1TB
Max. R/W	100/90MB/s
Power-off Protection	Yes
Operation Temperature	-40°C~+85°C
FIX BOM Supply	More than 5 years



eUSB DOM Disk

Renice eUSB DOM disk adopts standard USB2.0/ USB3.0 communication protocol. The highly advanced flash memory management algorithm (ECC and wear-leveling) and encryption algorithm, which can realize write protect, startup disk, safety partition, secure erase and other functions, to ensure higher performance of data integrity and security. It is an ideal storage solution for PC cache and boot drives for embedded systems, industrial computer, servers and network systems.

Specification	eUSB DOM Disk	
Interface	10 Pin-USB2.0	20 Pin-USB3.0
NAND Type	SLC, pSLC, MLC	
Capacity	4GB-128GB	4GB-256GB
Max. R/W	32/25MB/s	200/150MB/s
Operation Temperature	-40°C~+85°C	
Write Protection	Optional	



Recommand Applications

- Factory automation
- Embedded computer
- Rail transit
- Medical equipment

Why Renice

For more than 13 years, Renice has been the leading provider in developing and manufacturing in advanced rugged SSDs, VPX modules and military computers in most of challenging environments.



Military Computer

VPX Computer, I7 Rugged Computer, Server and customization based on X86 and POWERPC architecture



Storage Server/ Disk Array

Based on Intel I7/ XEON/ PHYTIUM processor, Conduction cool/ Air cool



VPX Module

3U/ 6U VPX Module, Open VITA65 Standard, up to 32TB



Flash Storage Devices

Flash-based storage solutions, SSD customization and OEM service

For more product details, please contact Parhelia B.V.



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