2023
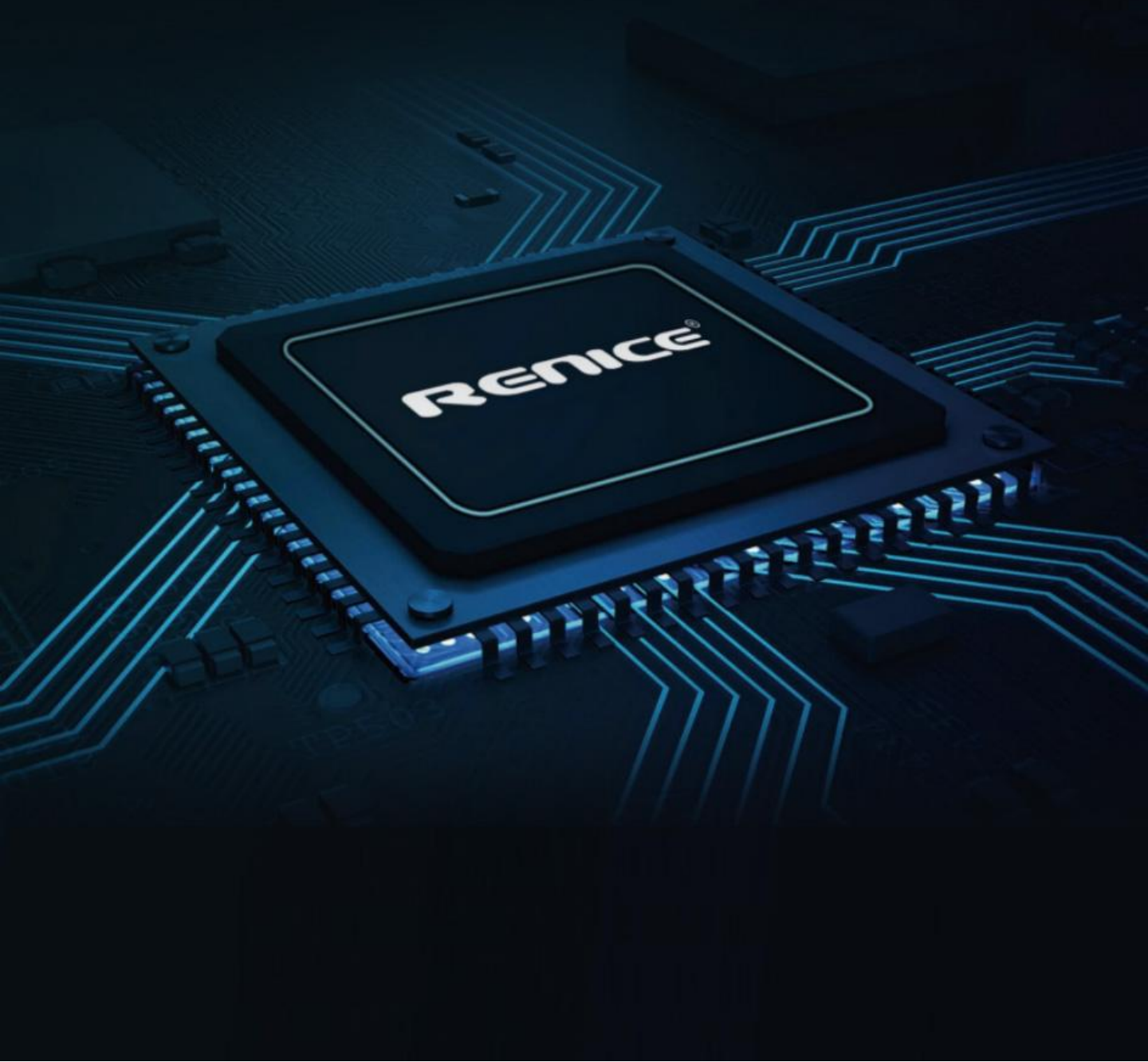
RENICE Flash Storage Solution
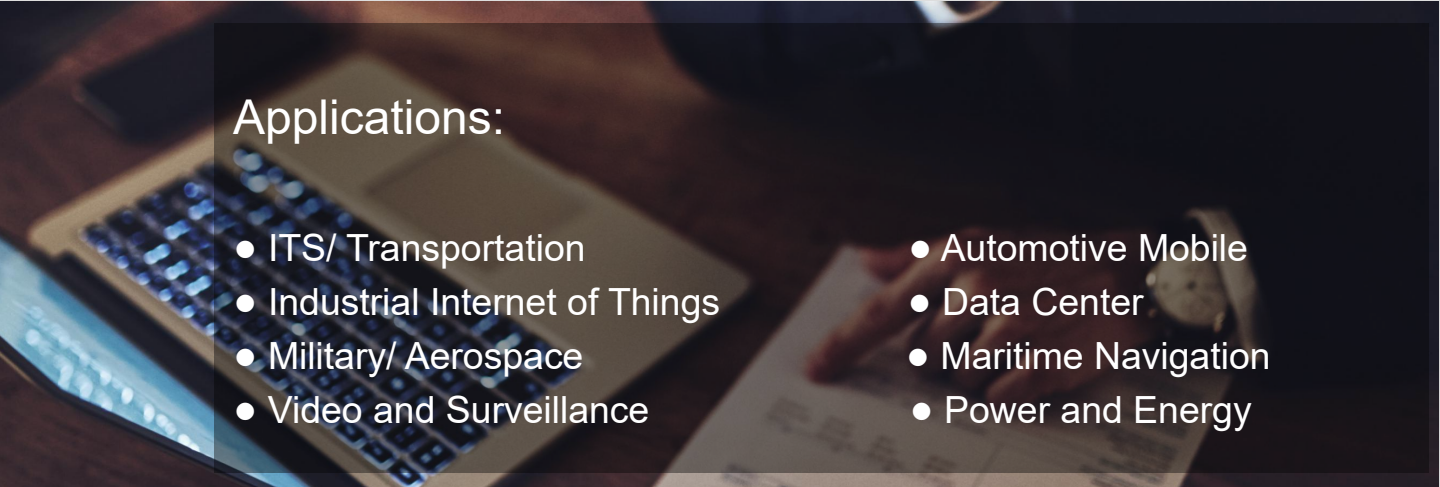
About Renice Technology

Renice is a professional provider of storage solutions, computing services and data security systems. We are committed to develop and manufacture premium quality and high-performance military embedded storage solutions for aerospace, automotive, maritime, rail transit and defence applications.

For Renice, the customer comes on the first place, with a focus on delivering standard or customized solutions based on customer requirements and practical applications such as heavy-duty industry, rapid secure erase and physical destruction technology for extreme confidential data security. In order to maintain long term supply, Renice is able to fix the BOM on request of the customer.

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 the specifications of the high military standard MIL-STD-810. All Renice SSDs are going through high-low temperature testing from -50°C to +90°C and verified by 3,000 times power on/off testing before delivering 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.

Extreme Temperature
72 hours high-low temperature test: -40°C ~ +85°C is the standard request on the operation temperature of each SSD.

High Reliability
Military material: Nand Flash, Controller, PCBA are guaranteed with wide temperature. PCB materials 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 solutions 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 the 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-1TB	512GB-8TB	480GB-8TB
NAND Flash		SLC, MLC	pSLC, MLC	pSLC, 3D TLC
DRAM		√	√	√
Data Integrity	Power-off Protect	√	√	√
	Advanced Error Detection & Correction	√	√	√
Security	AES 256 Encryption	Optional	√	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
	Opeating 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
- Unmanned vehicles
- Military and Defence
- Radar/ Guidance Systems
- Aerospace avionics
- 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 computing.

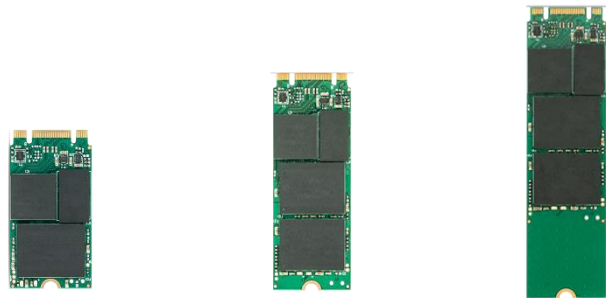| Specification		X5A	
Interface		SATAIII 6.0Gbps	
Form Factor		mSATA	Half-slim
Max. R/W		500/440MB/s	500/440MB/s
Capacity		16GB-1TB	16GB-1TB
NAND Flash		SLC, MLC	
DRAM		√	
Data Integrity	Power-off Protect	√	
	Advanced Error Detection & Correction	√	
Security	AES 256 Encryption	Optional	
	TCG OPAL 2.0	Optional	
	Secure Erase	Optional	
Reliability	Shock	1500G, 0.5ms (half-sine wave, ±X,±Y,±Z axis, 1 time/axis)	
	Vibration	16.4G,10-2000Hz	
	Opeating 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

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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 the harsh working environment like vibration, shock and wide temperature rating of -40°C to 85°C. The power-off protection technology safeguards data against corruption during abnormal power loss.

Specification		X5A & X10B		
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-960GB	16GB-960GB	256GB-8TB
NAND Flash		SLC, MLC, 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)	√	√	√
Reliability	Shock	1500G, 0.5ms (half-sine wave, ±X,±Y,±Z axis, 1 time/axis)		
	Vibration	16.4G,10-2000Hz		
	Opeating 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 removing 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 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	
	Opeating 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

- Military and Aerospace data recording
- Rugged server system
- Video recording 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.
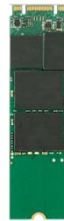
Specification		X10B		
Interface		PCIe 4.0x4		PCIe 4.0x4
Form Factor		M.2 2242	M.2 2280	U.2
Max. R/W		3,200/3,000MB/s		3,500/3,000MB/s
Capacity		960GB-2TB	960GB-8TB	960GB-8TB
NAND Flash		pSLC, 3D-TLC		pSLC, 3D-TLC
DRAM		√		
Data Integrity	Power-off Protect	√		
	Advanced Error Detection & Correction	√		
Security	AES 256 Encryption	Optional		
	TCG OPAL 2.0	Optional		
	Secure Erase (ATA)	√		
Opeating 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 the standard 1.8" form factor. Available capacity ranges from 8GB to max. 1TB. Featured 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
Capacity	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
Capacity	256GB-8TB
Max. R/W	500/460MB/s
Operation Temperature	-40°C~+85°C
Secure Erase	Optional
Physical Destruction	Optional
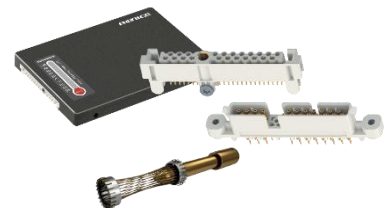
Recommand Applications

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

CF Card

Renice industrial CF Card designed with strong focus on quality, reliability, durability and longevity. Delivering the 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 device to next generation embedded applications and industrial systems.

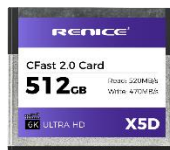| Specification	X5A
Interface	SATAIII 6.0Gbps
NAND Type	SLC, MLC
Capacity	4GB-512GB
Max. R/W	500/460MB/s
Operation Temperature	-40°C~+85°C

Recommand Applications

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

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CFast/ CFExpress Card

The photography and cinematography flash storage cards are designed with two form factors of CFast2.0 Card and CFExpress Type-B Card. The ultra-low power consumption design and sustainaed super-high write performance featuers make they are ideal storage solutions for high-end cinema, video and photography cameras.

Specification		CFast2.0	CFExpress Type-B
Interface		SATAIII 6.0Gbps	PCIe3.0*2
Form Factor		CFast Card	CFExpress Type-B
Sustained Speed		550/500MB/s	1,750/1,700MB/s
Capacity		320GB, 512GB, 640GB	325GB, 650GB, 960GB
NAND Flash		pSLC	
Video Support		6K RAW	8K RAW
Data Integrity	Power-off Protect	√	
	Advanced Error Detection & Correction	√	
Security	Fast Erase	√	
	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	
	Opeating Temperature	-10°C~+70°C	
Power Management	Operation	3.3V	3.3V
	Power Consumption	<1W	<2.3W

Recommand Applications

- Photographic Equipment
- Cinematographic Device

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 computers, 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	
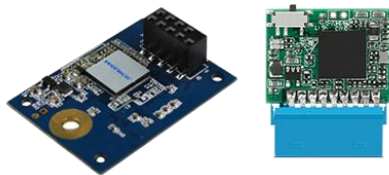
Recommand Applications

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

Why Renice

For more than 15 years, Renice has been the leading provider in developing and manufacturing 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 argriculture

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