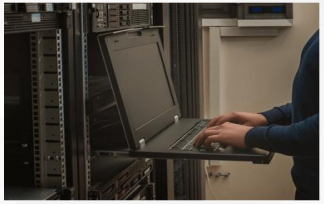
RENICE

WHO WE ARE

RENICE is a professional manufacturer and solution provider on computing, storage, encryption, and data security system services for the military, defence, aerospace industry. Till now, our products be highly recognized by SIMENS, ALSTOM, VW, BOEING, GE etc

OUR BUSINESS

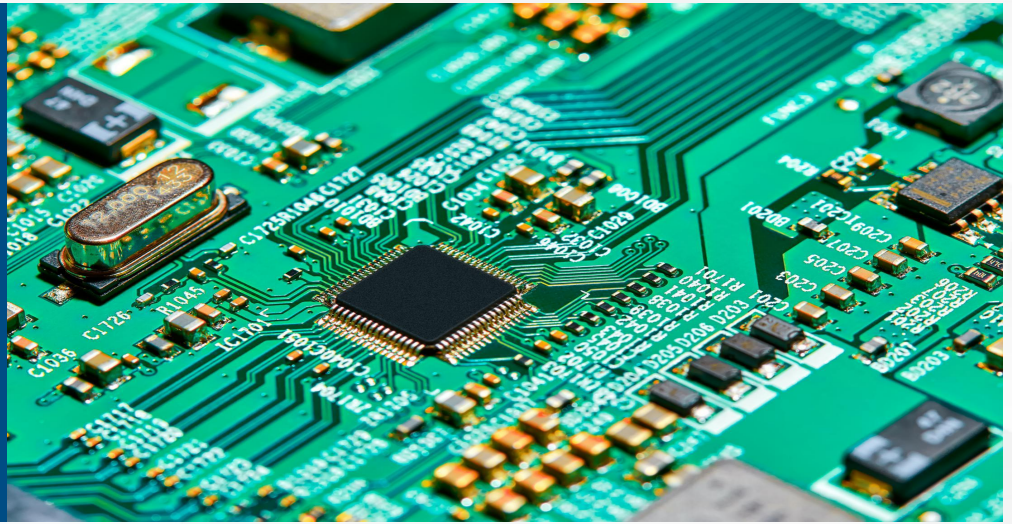


VPX Computer, I7 Rugged Computer, Server and customization based on X86 and POWERPC argriculture

SSD Customization and OEM Service

MILITARY COMPUTER

ADVANTAGE



1 Renice computer design with open architecture and customize the military computer based on customer's needs. The computer complies with the design principle of modularization,standardization and universalization that make the APP software to utilize the underlying hardware resources.

2 Our R&D Team have rich experience on the development and production of computer application.

3 Customized the Firmware and BSP according by customer's needs

4 Different BMC solutions: it can be designed with IPMC module and also can be CHMC; IPMC&CHMC complies with IPMI 1.5/2.0 protocol specification and it can be designed based on VITA 46.11 standard or OEM commands from customers in the VPX computer system.

Rugged I7 3U VPX Computer

Items	Description
Processor	Intel® Core™ i7-2655LE processor 4M cache，2.2G (can reach at 2.9GHz through Turbo Boost)Dual Core four thread, 25W,FCBGA1023
Processor （Optional）	Intel® Core™ i7-2610UE processor, 4MCache 1.5G (can reach at 2.4GHz through Turbo Boost) Dual Core four thread 17W, FCBGA1023
Chipset	Intel® BD82QM67 (PCH)
Memory	DDR3 4GB support 1333/1600 frequency with ECC function
Graphics	Intel® Core™ i7 processor integrated Intel HD Graphics 3000 controller
Storage	SATAII 32GB SSD (Optional)
Operation System	winodws7，windows8
SATA	1x SATAII 32GB SSD on board;connect with 2nd SATAIII(6Gbps) through P1 connector
PCT-E	8 lane PCI Express 1x, or 2 lane PCIe 4x
VGA	Support 2048 x 1536 at 75 Hz and independent dual display
XMC	XMC support PCIe 2.0 8x signal
Serial Port	Support 1 lane RS232 interface through vpx system interface
GPIO	Support 3 lane GPIO interface through VPX system interface
USB	2 lane USB2.0 interface

Rugged I7 6U VPX Computer

Items	Description
Processor	Intel i7-6820EQ processor,4 core , 8 threads, 2.8 GHz, Up to 3.5 GHz, BGA1440
Memory	On board 16GB dual channel ; DDR4
Storage	SATAII 32GB SSD (Optional)
I/O Interface	1 x SATA3.0 front interface; 2 x SATA3.0 back interface 2 lanes Gigabit Ethernet adaptive interface;support dual redundancy or single network working mode;Supports uploading BIT information through the SNMP V2C protocol ; 2 lanes Gigabit Ethernet; 2 lanes DVI-D; 8 lanes USB2.0; 2 lanes USB3.0; 4 lanes RS232; 12 lanes RS422; 2 lanes differential audio input; 1 lane audio output; 12 lanes discrete input;6 lanes spare discrete input; 1 lane fan; 1 lane PS/2 keyboard, 1 lane PS/2 mouse
Extended Interface	2 lane PCIe 3.0 x8; 1 PCIe 3.0 x4;4 lane PCIe 3.0 x1
Working Enviroment	Operation Temp.:-40 to +85°C Storage Temp.:-50 to +100°C
Power Consumption	≤50W
Operation System	winodws7，windows8
Dimention	6U VPX：Complies with OpenVPX Vita65-2010 specification
Heat Dissipation	Conduction and Air Cooled

XEON E5-2648L High Performance 6U VPX Computing Blade

Items	Description
Processor	Intel XEON E5 V4 processor, multi-core high performance processor based on X86 architecture and theoretical floating-point peak computing ability is ≥ 690 GFLOPS
Chipset	Intel C612
Storage	Renie 64GB MLC mSATA SSD
Front I/O	1 x 1000M BASE-T debug interface, 1 VGA interface
Back I/O	1 x RS232, 1 x RS422 4 x SATA3.0, 4 x USB2.0 1 x VGA, Slot address Mark[0:7]single input 2 x SRIO X4, max speed 5G 4 x Gigabit Ethernet 2 x 40GbE Ethernet
Extended Interface	PCIe 3.0 x16
IPMI	Support information monitoring and managing function on hardware status such as current, voltage, controller temperature , OS version, fault report, self-inspection etc function
Working Enviroment	Operation Temp.:-40 to +85°C
Power Consumption	no more than 150W
Operation System	Windows, Linus
Dimention	6U VPX：Complies with OpenVPX Vita65 specification
Heat Dissipation	Air cooling and liquid cooling

Airborne Reinforcement-
ASAAC Storage Control Module

Items	Description
Processor	INTEL XEON-D 1539 Processor
Memory	INTEL XEON-D 1539 Processor
Storage	On board 2 lane RAID chip and support 8 lane 2.5”SATA 3.0 SSD; Renice 32GB MLC mSATA
I/O Interface	1 x Physical Destruction interface 4 x 10G fibre-optical interface 2 x 10/100/1000M MDI network interface 2 x PCIe 3.0 x 8; 2 x PICe 3.0 x4 1 x USB 3.0 1 x VGA Slot address Mark[0:7] single side inpult interface
Power Consumption	≤105W
Power Supply	Current + 28V power supply
Working Enviroment	Operation Temp.:-40 to +85°C; Vibration:5HZ-2000HZ, 1.5rms (work), 2Grms 20-2000Hz(non-work) Shock:20G, 11ms(work); 30G, 11ms(non-work) Complies with CE102,RE102 Electromagnetic compatibility test and ESD test
Operation System	Winodws7，Windows8, Reworks
Dimention	Standard 6U ASAAC (233.35mm*160mm)
Heat Dissipation	Conduction and liquid cooling

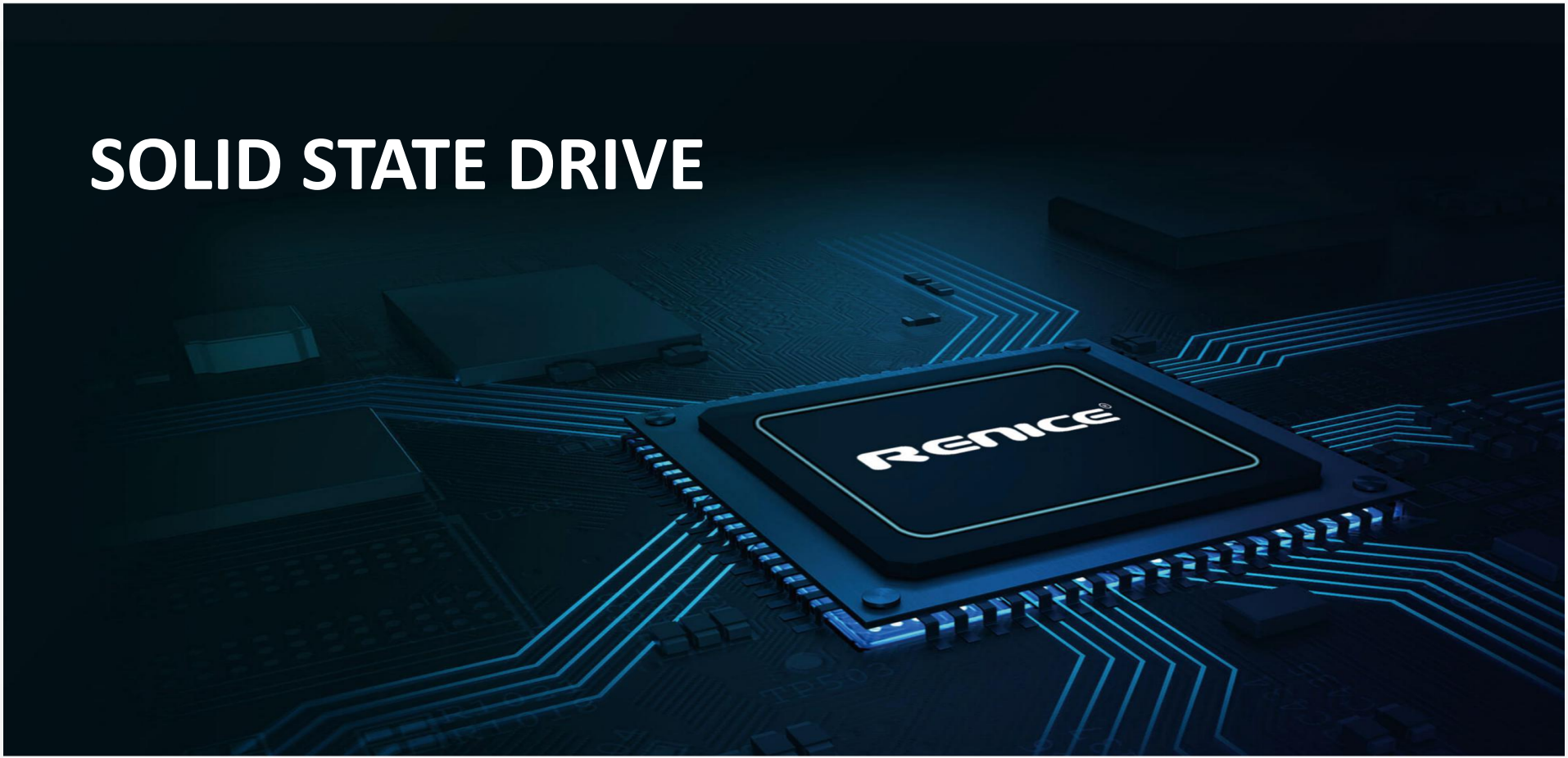
2U- 8 SSDs Storage Server

Items	Description
Processor	PHYTIUM 16 Core, 1.5GHz~2.0GHz
Chipset	PCI-E 2.0 Switch PEX8632
Storage	8 x 3.5 inch/2.5 inch SAS2.0/SATA 3.0 SSD, Renice 1TB MLC SATA
Display	1 x Integrated Graphics, support for external independent graphics
I/O	4 x 10/100/1000M adaptive Ethernet interface 1 x 10/100/1000M adaptive Ethernet managment interface 1 x USB 3.0; 2 x USB 2.0 1 x RS232 1 x mSATA 1 x VGA
Extended Interface	5 x PCIe;PCIe 2.0 x16
IPMI	Support voltage,current collection and management function; Support fan control and mangement function;
Working Enviroment	Operation Temp.:0 to +40°C Storage Temp.:-10 to +50°C
Power Consumption	≤200W
Power Supply	110-240Vac, 50Hz,1+1 fully redundant power supply
Dimention	19 inch 2U rackmounted
Heat Dissipation	Air cooling

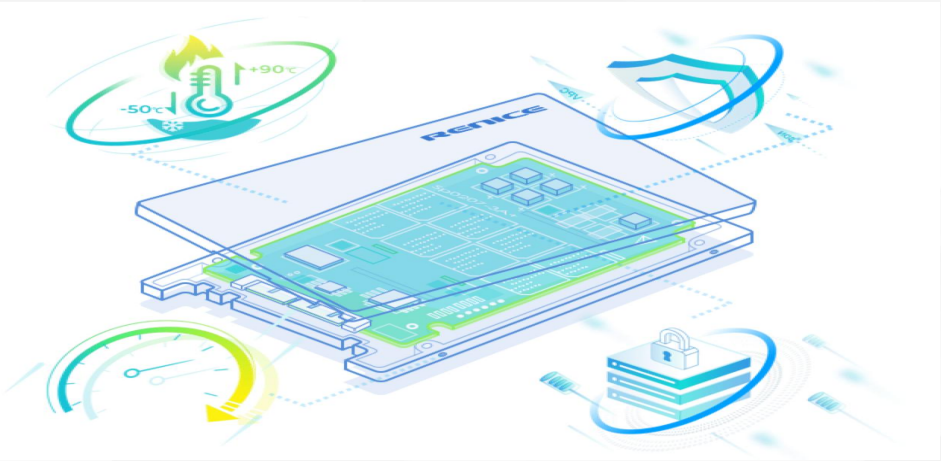
2U- 12 SSDs Storage Server

Items	Description
Processor	PHYTIUM 16 Core, 1.5GHz~2.0GHz
Chipset	PCI-E 2.0 Switch PEX8632
Storage	12 x 3.5 inch/2.5 inch SAS2.0/SATA 3.0 SSD, Renice 1TB MLC SATA
Display	1 x Integrated Graphics, support for external independent graphics
I/O	4 x 10/100/1000M adaptive Ethernet interface 1 x 10/100/1000M adaptive Ethernet managment interface 1 x USB 3.0; 2 x USB 2.0 1 x RS232 1 x mSATA 1 x VGA
Extended Interface	5 x PCIe;PCIe 2.0 x16
IPMI	Support board temperature,voltage,current collection and other management function; Support fan control and mangement function;
Working Enviroment	Operation Temp.:0 to +40°C Storage Temp.:-10 to +50°C
Power Consumption	≤200W
Power Supply	110-240Vac, 50Hz,1+1 fully redundant power supply
Dimention	19 inch 2U rackmounted
Heat Dissipation	Air cooling

SOLID STATE DRIVE



ADVANTAGE



1 With our own developed SSD controller, it makes Renice SSD with highest reliability and customized service.

2 Powerfull ECC and exclusive Non-Balance Wear Leveling Technology prolong the lifespan of SSD.

3 Unique No Trim-Full speed technology ensures the stable performance of Renice SSD.

4 All of Renice SSDs design, material selection,production and test based on military standard.

Controller&Firmware

64 CE

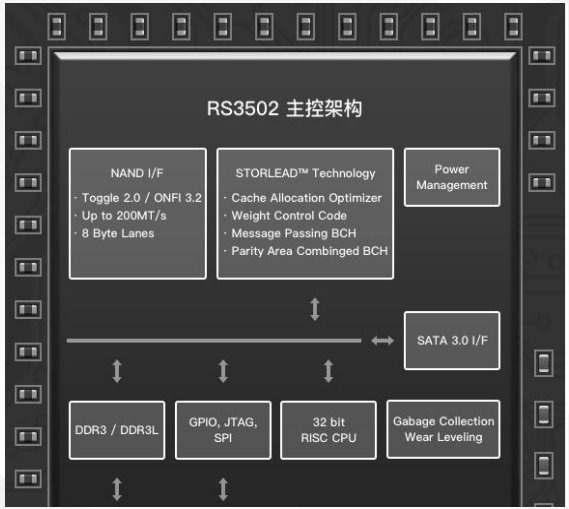
Dual 32 bit processor,
8 channel 64 CE flash design

80 Bits/1KB

8CE and up to 80 bits/1KB ECC correction capability per channel

500MB/s

Up to 500MB/s sequential speed
75000 IOPS



DDR

Support external DDR

AES Encryption

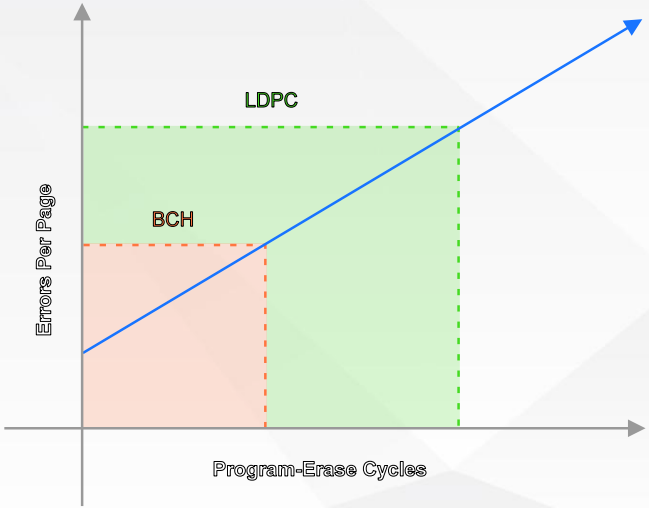
Built-in AES 256 encryption and

supportmutiple encrytion and secure erase

Customized FW

Customized FW is used for flash management optimization in the industrial and military scenarios

ECC Exclusive Technology



High-Radix LDPC™ Core

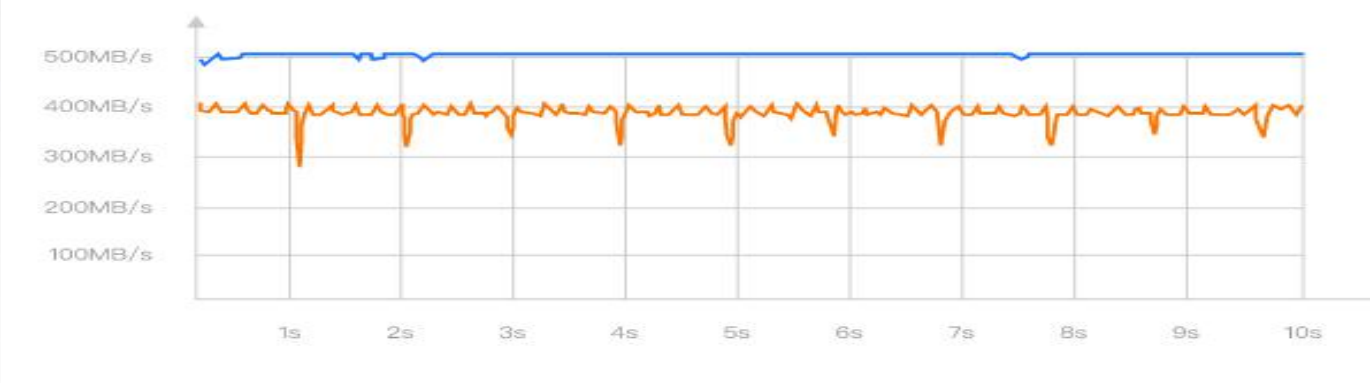
Renice adapt a new self-developed ECC architecture,high-Radix LDPC core and cascade decoding method which could achieve up to 80bits/1KB ECC capability of all 8 channels that able to correct more errores in each page, which greatly improves the decoding ability compare with the traditional BCH under the premise of equal redundancy length. Thus, it improve effectively the lifespan and data protection period of nand flash.

Super ECC correction capability prolong the nand flash lifespan

No Trim-Full Speed read/write

Renice SSD

Other SSD



It is the only one SATA 6Gbps controller that support No trim: the read/write performance remains closely to its initial value even without Trim support. The read/write performance will not drop suddenly when the drive is full to start GC.

No Balance Wear Level Technology

The current wafer technology can't ensure the life cycle on each block is completely the same, to keep erasing time on each block is the same by algorithm artificially deesn't extend the overall lifespan but damage the optimal use of nand flash.

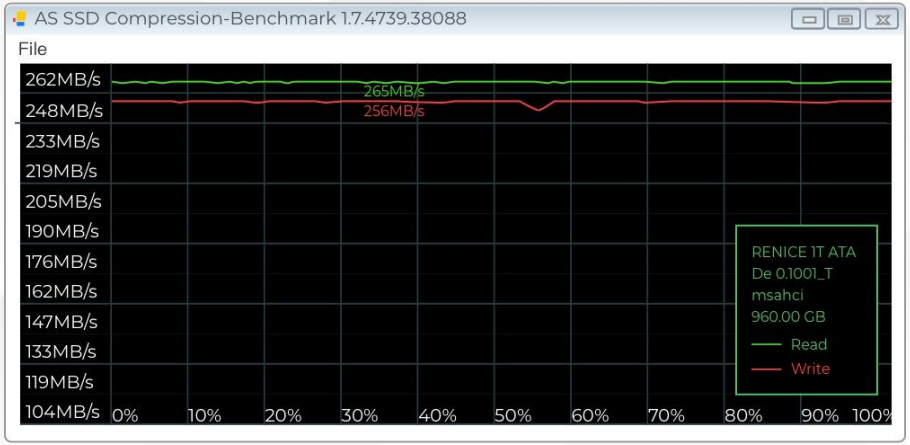
Renice breaks the predecessor's balance algorithm based on the assumption of “The lifecylce of each block is the same". With using Renice self-developed nand flash testing technology, to evaluate the true wear resistance of each page and block of flash. The block with strong wear resistance gets more erasing times while the poor wear resistance is protected correspondingly. To make each block not become the bad block, then it can minimize at great extent the erasing times on each block to prolong the using life of nand flash.

To judge the ture wear level of nand flash and achieve "an able man is always busy" by Renice exclusive lifespan prediction technology of nand flash.

PR-Latency Garbage Collection Technology

Performance not less than 80%

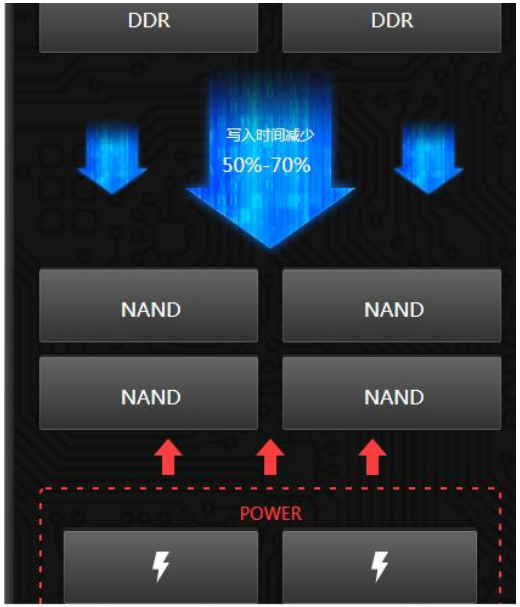
Renice adopts the exclusive PR-Latency algorithm in active Garbage Collection strategy, and cooperate with adjustable Over-provisioning according to different applications, making the performance reliability for SSD not less than 80% even under the status of 100% read and write load.



*Above graph, we set 2MB pattern in IOMeter, do 100% writing tests for 7 days, still keeps stable performance.

Product Highlights

r-Back Up Power Failure Protection



Shoten Writting time by 50%~70%

Renice r-Backup patent technology reduce 50%-70% time of writting DDR to nand flash. This technology protect the data 100% is not lost when the capacitor is aging to remaining 30% of initial design.

30,000 times Abnormal Power-off Test
0 Defect

Renice use military-grade tantalum capacitor to support back-up power that ensure the capacitor works steady under the extremely harsh enviroments. With the Renice r-Backup patent technology, it provides enough time for SSD to support data be written completely.

Physical Self-destruction in 100ms

Time-sharing Shunt

Burndown flash chips one by one by means of time-sharing shunt design, ensure all flash chips are destroyed.

Burn-down in 100ms

Ensure to burn down the flash chips completely within 100ms. The burning time of entire SSD is adjustable

High Voltage Breakdown

Breakdown the flash chips through high voltage thoroughly to avoid data been recovered

Real-time Feedback

Unique circuit to achieve real-time monitoring of burning status.

5s False Triggering

Default with 5s false trigger time after power on. The time is adjustable.

False Trigger Prom

There will be warning lights when pressing destruct button in state of power-off

Physical Destruction Vedio

High Reliable Rugged SATA Connector

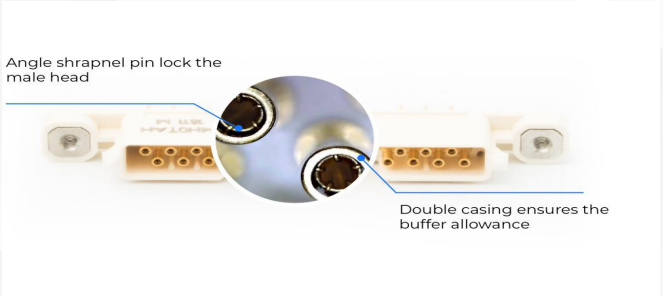
Adopts ruggedized connector, Renice R-SATA SSD supports 360° fully connected even in strong vibration environment.
Perfectly solved the reliable problem caused by transient poor contact of goldfingers in application fields of high vibration and strong shock.

Strong Buffer Design

The rugged connector with special buffer structure between connector and PCB. Each Pin is designed with spherical at the bottom, to ensure rotation at the same angle and maximize the buffer effect in face of strong shock and vibration, therefore to avoid damage of connectors.

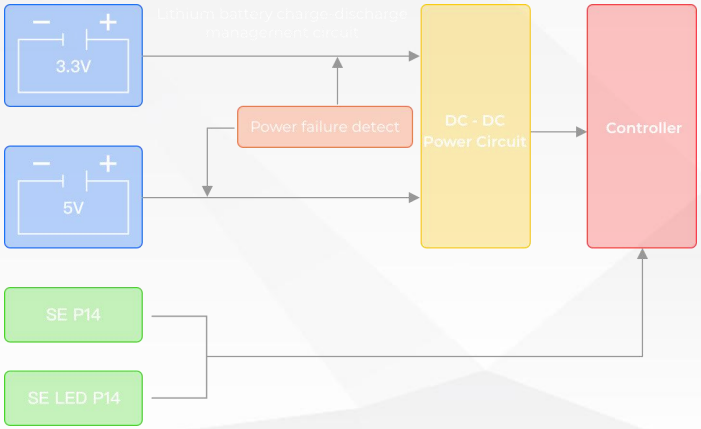
Mother Connector designed with Double Casing

Take into account of simple-swap, no poor contact and not damage the Pin, the mother-connector is designed with double casing to provide enough buffer. And the inner 5 spring strip guarantee full contact with male connector perfectly.



Data Erase at power off

If the external power supply be cut off suddenly in the process of performing the secure erase, the solid state drives usually unable to excute the data erase completely which cause two consequences: the data can still be found partly or completely; or SSD can't be identified but still can recover some data by reading the nand flash.

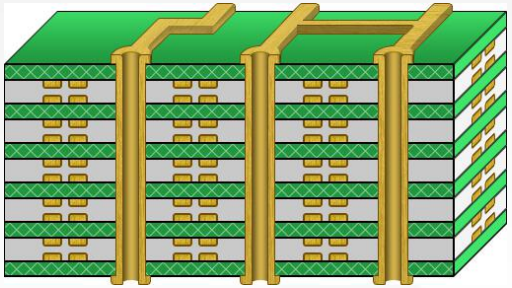


Renice SSD adopt lithium cobalt battery wiht high capacity, stable structure and outstanding comprehensive performance as backup power supply and redesign for the power supply Lithium cobalt batter charges through 3.3V to manage the circuit by the way of charge and discharge and main circuit 5V supply for system when works in normal.
The external power supply is cut off suddenly that cause the voltage dropped at 4.2V when excute the secure erase, the SSD will start lithium cobalt battery to supply power to system automatically and Lithuium cobalt battery support SSD to finish the secure erase.

Production Process

Military Material/ Strict Production

Military PCB



The PCB adopts by Renice SSD is based on the cascading design and deeply combined with the requirement of military applications, while ensuring good heat dissipation, strict control of impedance and noise prevention. The material of PCB are made of military specific TUC high-speed board to guarantee durability even in extreme environment

- Military-specific TUC board
- Independent Cascading Design

Production Process

Military Material/ Strict Production

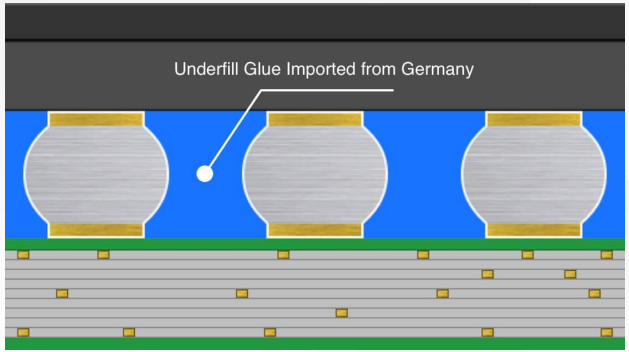
Conformal Coating Technology

Renice have special Conformal Coating Treatment to ensure the specific thickness and uniformity for all the components, bare board with Renice Conformal Coating can work normally in water and maintain good heat dissipation

Production Process

Military Material/ Strict Production

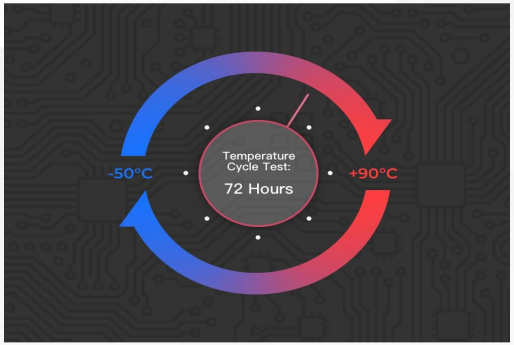
Chips Reinforcement Technology



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.

Production Process

Military Material/ Strict Production



Temperature Cycle Test:

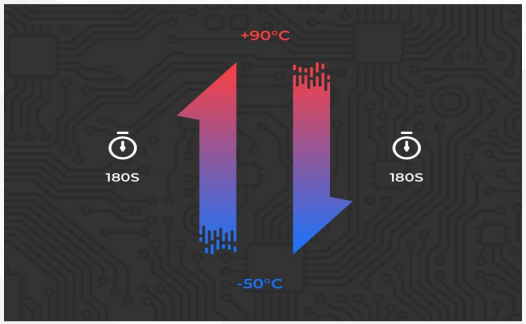
72 Hours

Temperature Test Cycles last 72 hours in following orders. Keep running4 hours at -50°C temperature, then rising to +90°C and keeping for 4 hours, next lower the temperature to -50°C to finish a cycle

Thermal Shock Test:

180 Seconds

The thermal shock test starts from low temperature, and keep the time interval of temperature change from -50°C to +90°C no more than 3 minutes. And then start from high temperature with samemethods.



Products Series

3U VPX Solid State Drives

Renice 3U Open VPX SATA memory card adapt dual-channel SATAIII protocal, built-in military SSD, the single SATA sequential Read/Write is more than 500MB/s and the maximum capaicty able to support 10TB. It is suitable for the data storage in the application of industry and military, especially for high impact and high vibration enviroment.

Basic Information:

- Host Interface:SATAIII 6.0Gbps
- Dimension:3U (170.6mmX100.0mmX20.83mm) L×W×H
- Max Capacity:8TB (Up to10TB)
- Operating voltage:12V

Flash Memory Management:

-Support Static and Dynamic Wear-leveling technology, Bad Block management algorithm
-Support SMART (Self-Monitoring, Analysis and Reporting Technology)
-BCH ECC:120bits /1KBytes

Functions:

-Built-in power protection monitoring, over-voltage protection

Environment

-Operating Temperature：-40℃ to +85℃
-Storage Temperature：-50℃ to +90℃
-Humidity：95%
-Operating Vibration：16.4 G (10Hz-2000Hz)
-Shock：Non-operating:1500G(@0.5ms ,Half-sine wave, ±X,±Y,±Z axis, 1 time/axis))
Operating:50G(@11ms ,Half-sine wave, ±X,±Y,±Z axis, 3 times/axis))

6U VPX Solid State Drives

The Renice 6U Open VPX storage adopts Renice industrial grade SSD technology. Its maximum capacity up to 32TB. VPX interface support 1 x SATA, 2 x SATA and 4 x SATA. Single SATA sequential Read and Write exceed than 500MB/s. It also support customized function such as AES 256 Bits, one-key physical and logical destruction.

Basic Information:

- VPX Host Interface: 1/2/4 SATA6 Gbps
- Dimention:6U (233.35mmX160.0mmX25.1mm)
- Connector:VPX P0,P1,P2,P3,P4,P5,P6
- Capacity: 32TB
-Single SATA SSD Sequential R/W: 500/500MB/s
-Single SATA SSD R/W IOPS:100,000/90,000
-Input Voltage:5V(±5%) or 12V(±5%)

Enviroment:

- Operation Temp:-40 ~ +85℃;
- Storage Temp:-50~ +95℃
- Humidity:5~95%
- Vibration:16.4G(10Hz~2000Hz)
- Shocking:50G @11ms (work);1500G@0.5ms(non-work)

Functions:

- Bulit-in over voltage and incurrent protection
- Support AES128 and AES 256 bits Encryption (Optional)
- Support Secure Erase on both hardware and software (Optional)
- Support one-key self-destruction(Optional)

2.5 Rugged SATA Solid State Drive

Renice 2.5 RSATA SSD is designed with buffer structure between the connector and PCB. The bottom of each pin is designed with spherical rotation body, all the pins are ensured rotatable in the same angle. The rotatable pins can take buffer function to the greatest extent when facing strong vibration, this avoids connector damage caused by violent drag. In additionally, the common goldfingel only support 500 insertions while RSATA has 100,000 insertions.

Basic Information:

- SATA 6.0Gbps
- Dimention:2.5 inch (100.0mmX70.0mm9.5mm)
- Connector:R-SATAIII 7+15 pin
- Capacity: MLC：512GB~ 1TB SLC：256GB~1TB
- Max Sequential Read/Write:: 500/500MB/s
- R/W IOPS:75,000 / 65,000
-Input Voltage:5V(±5%)

Enviroment:

- Operation Temp:-40 ~ +85℃;
- Storage Temp:-50~ +95℃
- Humidity:5~95%
- Vibration:16.4G(10Hz~2000Hz)
- Shocking:50G @11ms (work);1500G@0.5ms(non-work)

Functions:

- Support Power-off Protection
- Support AES128 and AES 256 bits Encryption (Optional)
- Support Secure Erase on both hardware and software (Optional)
- Support one-key self-destruction(Optional)

2.5 U.2 NVMe Solid State Drive

Renice released 2.5" U.2 SSD industrial NVMe SSD that support PCIe 2.0 x4 and supports excellent read/write performance 1200MB/1000MB/s. With highest stability and error managment capacity, it suitable for storage scenarios requiring large amounts of data input and output as well as industrial and military equipment in high shock and vibration enviroments.

Basic Information:

- PCIE 2.0(5Gbps Interface),PCIe2.0 x 4
- Dimention:2.5 inch (100.0mmX70.0mm9.5mm/15mm)
- Connector:2.5-inch U.2 (SFF-8639)
- Capacity: MLC：2TB/4TB (9.5mm) MLC：8TB (15mm)
- Max Sequential Read/Write:1200/1000MB/s
- R/W IOPS:100,000 / 90,000

-Input Voltage:12V (±8%)

Functions:

- Built-in power failure protection and temperature monitor, overvoltage and overcurrent protection
- Support AES128 and AES 256 bits Encryption (Optional)
- Support write protection
- Support Hot Plug

Enviroment:

- Operation Temp:-40 ~ +85℃;
- Storage Temp:-50~ +95℃
- Humidity:5~95%
- Vibration:16.4G(10Hz~2000Hz)
- Shocking:50G @11ms (work);1500G@0.5ms(non-work)

2.5 INCH SATA SSD

Items	X5A 2.5 SATA	X7 2.5 SATA
Interface	7 + 15 pin SATAIII (6Gbps)	
Flash	MLC/SLC	MLC
Capacity	MLC:32GB~1TB SLC:16GB~512GB	MLC:2TB~8TB
Performance	540MB/440MB/s	520MB/500MB/s
Dimention	100 x 70 x 9.5mm/7mm	100 x 70 x 7mm/15mm
Input Voltage	5V (±5%)	5V (±10%)
AES 256-bit	Optional	Optional
Power Failure Protection	Support	Support
Data Erase	Optional	Optional
Physical Destruction	Optional	Optional
Operation Temp.	-40 ~ +85℃	-40 ~ +85℃
ECC	66bits@1kbytes	120bits@1kbytes
Testing Enviroment	Vibration:16.4G(10Hz~2000Hz);Shocking:1500G@0.5ms	

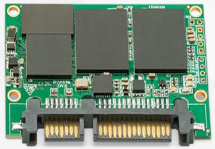
2.5 INCH PATA SSD

Items	X5 2.5 PATA
Interface	44 Pin PATA IDE
Flash	MLC/SLC
Capacity	MLC:32GB~1TB SLC:16GB~128GB
Performance	100MB/90MB/s
Dimention	100 x 70 x 9.5mm
Input Voltage	5V (±5%)
AES 256-bit	Optional
Power Failure Protection	Support
Data Erase	Optional
Write Protection	Support
Operation Temp.	-40 ~ +85℃
ECC	66bits@1kbytes
Testing Enviroment	Vibration:16.4G(10Hz~2000Hz);Shocking:1500G@0.5ms MTBF>3000,000 Hours

1.8 INCH Micro SATA SSD

Items	X5A 1.8 Micro SATA
Interface	7+ 7+2 Pin SATAIII 6Gbps
Flash	MLC/SLC
Capacity	MLC:32GB~1TB SLC:16GB~512GB
Performance	540MB/440MB/s
Dimention	78.5 x 54 x 5mm
Input Voltage	3.3V/5V (±5%)
AES 256-bit	Optional
Power Failure Protection	Support
Data Erase	Optional
Operation Temp	-40 ~ +85℃
ECC	66bits@1kbytes
Testing Enviroment	Vibration:16.4G(10Hz~2000Hz);Shocking:1500G@0.5ms MTBF>3000,000 Hours

mSATA/HalfSlim SATA SSD

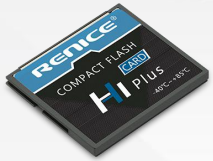


Items	X5A mSATA	X5A HalfSlim SATA
Interface	52 Pin SATAIII 6Gbps	SATAIII 6Gbps
Flash	MLC/SLC	
Capacity	MLC:32GB~1TB SLC:16GB~512GB	MLC:2TB~8TB
Performance	540MB/440MB/s	520MB/500MB/s
Dimention	100 x 70 x 9.5mm/7mm	100 x 70 x 7mm/15mm
Input Voltage	5V (±5%)	5V (±10%)
AES 256-bit	Optional	Optional
Power Failure Protection	Support	Support
Data Erase	Optional	Optional
Physical Destruction	Optional	Optional
Operation Temp.	-40 ~ +85℃	-40 ~ +85℃
ECC	66bits@1kbytes	120bits@1kbytes
Testing Enviroment	Vibration:16.4G(10Hz~2000Hz);Shocking:1500G@0.5ms	

M.2 SATA SSD

Items	M.2 2242	M.2 2260	M.2 2280
Interface	75 pin SATAIII 6Gbps		
Flash	MLC/SLC		
Capacity	MLC:16GB~256GB SLC:8GB~128GB	MLC:16GB~512GB SLC:8GB~256GB	MLC:16GB~512GB SLC:8GB~256GB
Performance	500MB/300MB/s	540MB/410MB/s	550MB/400MB/s
Dimention	42 x 22 x 3.65mm	60 x 22 x 3.65mm	80 x 22 x 3.65mm
Input Voltage	3.3V (±5%)		
AES 256-bit	Optional		
Power Failure Protection	Support		
Data Erase	Optional		
Physical Destruction	Optional		
Operation Temp.	-40 ~ +85℃		
ECC	66bits@1kbytes		
Testing Enviroment	Vibration:16.4G(10Hz~2000Hz);Shocking:1500G@0.5ms; MTBF>300,000 hours		

Compact Flash Card



Items	H1 Compact Flash Card
Interface	50 Pin IDE
Flash	MLC/SLC
Capacity	MLC:4GB~512GB SLC:1GB~128GB
Performance	90MB/75MB/s
Dimention	42.8 x 36.4 x 3.6mm
Input Voltage	3.3V (±5%)
AES 256-bit	Optional
Power Failure Protection	Support
Data Erase	Optional
Write Protection	Support
Operation Temp.	-40 ~ +85℃
ECC	96bits@1kbytes
Testing Enviroment	Vibration:16.4G(10Hz~2000Hz);Shocking:1500G@0.5ms MTBF>3000,000 Hours

CFast Card

Items	X5A CFast Card
Interface	7+17 pin SATAIII 6Gbps
Flash	MLC/SLC
Capacity	MLC:16GB~512GB SLC:8GB~256GB
Performance	520MB/450MB/s
Dimention	42.8 x 36.4 x 3.6mm
Input Voltage	3.3V (±5%)
AES 256-bit	Optional
Power Failure Protection	Support
Data Erase	Optional
Write Protection	Support
Operation Temp.	-40 ~ +85℃
ECC	66bits@1kbytes
Testing Enviroment	Vibration:16.4G(10Hz~2000Hz);Shocking:1500G@0.5ms MTBF>3000,000 Hours