



Apacer

The
Most **Reliable** Solutions
For Industries

Industrial SSD Solutions

www.apacer.com

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What Sets Apacer Apart?

Why Multinational Leaders Depend On Apacer

For over 25 years, the world's top digital device manufacturers have trusted Apacer to supply them with industrial-grade SSDs and DRAM. We supply some of the world's top manufacturers: everyone from established industry giants in defense and healthcare to fast-growing newcomers in IoT and networking. Why do all these top makers turn to us?

- **They know we have one of the strongest firmware development teams in the world**
- **They know we only use brand-name ICs sourced directly from the original manufacturers**
- **They know we have been dedicated to SSD manufacturing and testing for over 25 years**
- **They love the advanced value-adding features we developed and tested in-house**
- **They trust our fixed BOM policy to ensure components remain uniform over time**

We're ready to add your name to the list of our satisfied and successful customers. Browse on to read more about our latest cutting-edge SSDs.

Industrial-grade 3D NAND Flash

- **A summary of the key advantages**

Emergent Technologies

- **Proof of our commitment to innovation**

Specialty

Tailor-made for specific applications

- **Transformed Series SSD**
- **TCG SSD SV240 Series (FIPS 140-2)**
- **Cloud Series SSD**
- **Defense Series SSD**



SLC-liteX

Optimizes 3D NAND SSDs
to Reach the Industry's Highest 100K P/E Cycles

Maximizing Digital Storage Endurance and Cost-effectiveness



Benefits of Apacer's Industrial 3D NAND Flash Memory with Optimization Solutions

- Greater reliability
- P/E cycle up to 100,000 when TLC adopted SLC-liteX
- Higher performance
- Lower power consumption
- Made with original ICs sourced directly from our long-term partners.
- Operating temperature range is as wide as -40°C~+85 °C

Emergent Technologies

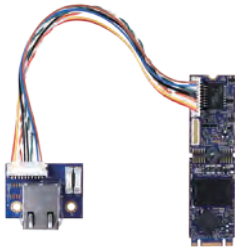


FIPS 140-2

FIPS, which stands for Federal Information Processing Standard, is a computer security standard that was created by the US government. It is considered the benchmark for security, and is the most important standard of the government market. Apacer maintains a diverse product line that covers many capacities and form factors, have earned FIPS 140-2 Level 2 Certification (Certificate #4386). It takes security to the next level with a diverse array of extremely secure SSDs.



Transformed SSD



Following the sustainable spirit of ESG as the core concept of product design, Apacer Transformed SSDs comprising an M.2 2242 SSD and specially designed robust connector, it can be customized to meet various value-added function requirements of different customers by adding an extended PCB at the end to make it fit the dimensions of an M.2 2280 SSD.



CoreSnapshot 2



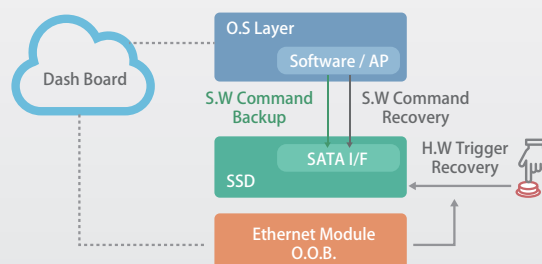
Apacer CoreSnapshot 2 is an advanced firmware-based backup and recovery technology that allows users to solve unexpected data loss or OS crash with the implementation of the incremental backup mechanism.

Recover an SSD's data and OS in just one second

Full backup and recovery of SSD data can be performed in one second, which can instantly eliminate catastrophic system issues and prevent data damage or downtime translating into operational risks and losses.

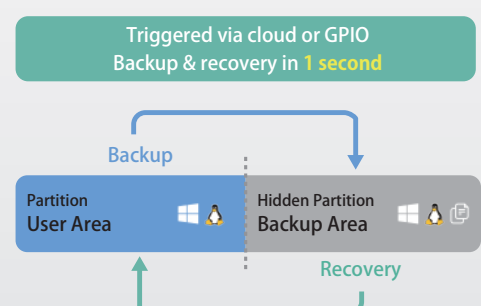
CoreSnapshot 2 Operation Flow

Backup & Recovery via SSD



CoreSnapshot 2 Technology

How Do Backup and Recovery Work?



Specialty

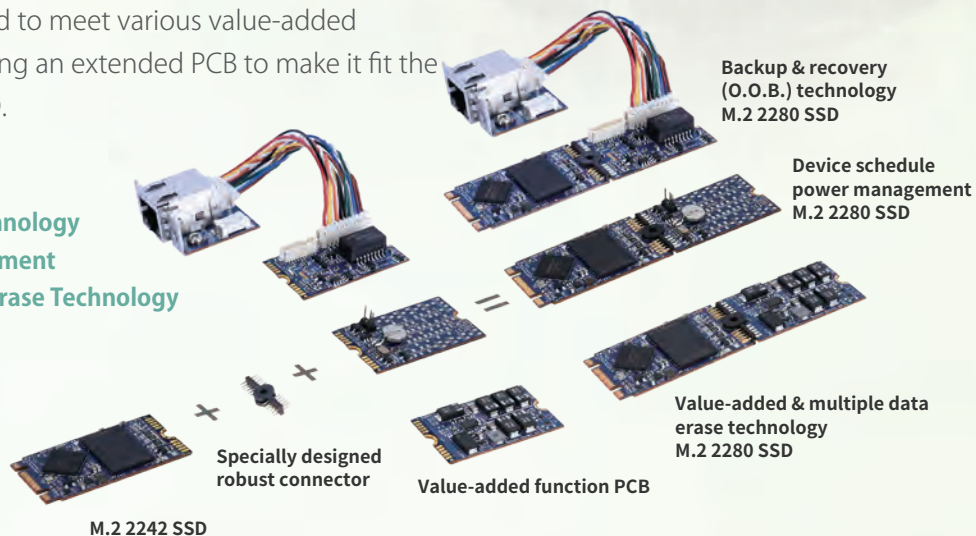
Transformed Series SSD

Environmentally friendly design and expanded flexibility with minimal resources




Following the sustainable spirit of ESG as the core concept of product design, Apacer's patented Transformed SSDs provide higher product scalability and flexibility, meaning enterprises do not need to modify and re-validate all products, which can greatly save resources and reduce manpower.

Comprising an M.2 2242 SSD and specially designed robust connector, it can be customized to meet various value-added function requirements, by adding an extended PCB to make it fit the dimensions of an M.2 2280 SSD.

- Backup & Recovery (O.O.B.) Technology
- Device Schedule Power Management
- Valued-added & multiple Data Erase Technology



SV25T Series SSD

Model Name	SV25T-M280 OOB	SV25T-M280 SPM	SV25T-M280 VA
			
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)
Connector	75-pin SATA-based M.2 module pinout 10-pin OOB connector	75-pin SATA-based M.2 module pinout	75-pin SATA-based M.2 module pinout
Form Factor	Double-sided: M.2 2280-D5-B-M	Double-sided: M.2 2280-D5-B-M	Double-sided: M.2 2280-D5-B-M
Capacity	60GB~960GB	120GB~960GB	120GB~960GB
NAND Support	3D TLC	3D TLC	3D TLC
External DRAM	No	No	No
R/W Speed (MB/sec)	560/470	560/470	560/470
IOPS (4K Random Read)	50K	50K	50K
IOPS (4K Random Write)	68K	68K	68K
Wide Temp. (-40°C~85°C)	Yes	Yes	Yes
Features	<ul style="list-style-type: none">• Support Allxon Cloud management• Support LDPC ECC• Global Wear Leveling technology• S.M.A.R.T. and SSDWidget• End-to-End Data Protection• Double-barreled Solution• TRIM Support• AES256 support• DataDefender™• Over-Provisioning• Out-of-Band device power management• Out-of-Band schedule power management• CoreSnapshot 2 (optional)	<ul style="list-style-type: none">• Support LDPC ECC• Global Wear Leveling technology• S.M.A.R.T. and SSDWidget• End-to-End Data Protection• Double-barreled Solution• TRIM Support• AES256 support• DataDefender™• Over-Provisioning• Device power management• Schedule power management	<ul style="list-style-type: none">• Support LDPC ECC• Global Wear Leveling technology• S.M.A.R.T. and SSDWidget• End-to-End Data Protection• Double-barreled Solution• TRIM Support• AES256 support• DataDefender™• Over-Provisioning• Instant KeyChange (optional)• Core Power(optional)• Write Protect(optional)• TCG Opal2.0(optional)• DataDefender plus(optional)• Physical Destroy (optional)
Applications	Factory Automation, Transportation, Smart Poles , Digital Signage	Factory Automation, Transportation, Digital Signage, Gaming, Healthcare	Factory Automation, Gaming , Healthcare, IoT, Server & Networking, Transportation, Defense

Specialty



FIPS 140-2 Validated

TCG SSD SV240 Series

Apacer TCG SSD SV240 Series take security to the next level. It has earned FIPS 140-2 Level 2 certification. For enterprises planning to work with US federal agencies, and requiring higher security, such as the fields of healthcare, financial services, 5G infrastructure and defense, FIPS certification validated products are the best solution.



Certificate
#4386

Why Choose Apacer's



FIPS Validated
Certificate #4386



Various Form Factors
& R-SATA Support



Wide Temperature
Support



Form Factor	2.5	M.2 2280	MO-300	MO-297
Model Name	SV240-25 FIPS140-2	SV240-M280 FIPS140-2	SV240-300 FIPS140-2	SV240-297 FIPS140-2
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)
Capacity	240GB~1920GB	240GB~1920GB	240GB~1920GB	240GB~960GB
Connector	(7+15) pin	M.2 B & M key	52-pin mSATA	(7+15) Pin
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC
External DRAM	Yes	Yes	Yes	Yes
R/W Speed (MB/sec)	560/500	560/500	560/500	560/500
IOPS (4K Random Write)	84K	84K	84K	84K
Standard Operating Temperature (°C)	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
Extended Operating Temperature (°C)	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
Storage Temperature (°C)	-55 ~ +100	-55 ~ +100	-55 ~ +100	-55 ~ +100
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000

Featured Technology

Supports TCG Opal 2.0 / AES 256-bit Encryption
SMART Read Refresh™
S.M.A.R.T. Function

Specialty Cloud Series SSD

Apacer Cloud Series SSDs are designed to monitor and remotely manage the typical pain points of an IoT edge device network. In addition, they also support optional CoreSnapshot technology which can provide a full SSD backup and recovery mechanism in one second when key data is lost or system crashes occur. Cloud Series SSDs are greatly reducing the waiting time for troubleshooting and system downtime.



CoreAnalyzer2

Tool for analyzing usage behavior

By collecting data from an emulation of the client's host system, it analyzes usage behavior and helps with recommending the most suitable SSD for the system.



SSDWidget 2.0

Comprehensive SSD monitoring and maintenance software

Monitor SSD-related information and its health status, and provide SSD lifespan estimation and workload analysis.



CoreSnapshot Lite

Apacer CoreSnapshot Lite is a firmware-based technology that offers a one-time instant whole disk backup and recovery mechanism for SSDs to solve unexpected data loss or OS crash immediately.



CoreSnapshot 2

Apacer CoreSnapshot 2 is an advanced firmware-based backup and recovery technology that allows users to solve unexpected data loss or OS crash with the implementation of the incremental backup mechanism.



Out-Of-Band Management

Alternative device control

Provides a separate channel or communication path to transmit data outside the main data channel, which can be used for various purposes such as monitoring, troubleshooting, or emergency recovery.

Cloud Series SSDs

Form Factor	2.5"	M.2 2280	M.2 2242	MO-300
Model Name	SV25C-25	SV25C-M280	SV25C-M242	SV25C-300
NAND Flash Type	3D-TLC	3D-TLC	3D-TLC	3D-TLC
Capacity	120GB to 1920GB	120GB to 1920GB	120GB to 960GB	120GB to 1920GB
R/W Speed (MB/sec)	560/500	560/470	560/470	560/470
IOPS (4K Random Read)	52K	52K	50K	52K
IOPS (4K Random Write)	68K	68K	68K	68K
AES256 Support	Yes	Yes	Yes	Yes
Smart Read Refresh™	Yes	Yes	Yes	Yes
Double-barreled Solution Cloud Edition	Yes	Yes	Yes	Yes
Cloud Vender Support	Advantech DeviceOn, Allxon	Allxon	Allxon	Advantech DeviceOn
CoreSnapshot Lite Support	Yes	Yes	Yes	No
CoreSnapshot 2 Support	Yes	Yes	Yes	No
OOB Hardware Connection	Yes	Yes	Yes	No
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Standard Operating Temperature (°C)	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
Extended Operating Temperature (°C)	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
Storage Temperature (°C)	-55 ~ +100	-55 ~ +100	-55 ~ +100	-55 ~ +100

* Note: More detail specification, please refer to industrial.apacer.com

Specialty Enterprise Series SSD

- Adopts the latest eTLC/TLC 3D NAND Flash memory technology
- Optimized QoS to improve latency and stability
- Supports CoreGlacier™, DataDefender™ and End-to-End Data Protection technologies
- Supports AES 256-bit hardware encryption and Signed Firmware technology
- Supports advanced power protection technology to ensure data integrity under abnormal power supply conditions



Model Name	PV19E		PV16E		PV93E		PV25E	ST18E		SV24E	
Interface	Gen4 x4		Gen4 x4		Gen4 x4		Gen4 x4	SATA III		SATA III	
NAND Flash Type	Hynix V6 eTLC		Kioxia BiCS5 eTLC		Kioxia BiCS5		Kioxia BiCS5	Kioxia BiCS5		Kioxia BiCS5	
Form Factor	U.3		2280		22110	E1.S	2280	2.5"		2.5"	2280
Workload	Mixed Workload	Write-intensive	Mixed Workload		Mixed Workload		Mixed Workload	Mixed Workload		Mixed Workload	
Capacity	1.92TB~30.72TB	1.6TB~25.60TB	480GB~1.92TB		480GB~1.92TB	480GB~3.84TB	480GB~3.84TB	480GB~7.68TB		240GB~1.92TB	
Seq. Read / Write Performance (MB/sec)	7400 / 6800		5700 / 2200		7420/6540	7460/6415	3700/3485	530 / 500		555 / 510	
Sustain Rnd.Read/Write(IOPS)	1600k/200k	1700k/480k	774K / 59K		908K / 30K	926K/85K	116K/22K	97K/83K		96K/10K	
DWPD	1 / 5y	3 / 5y	1 / 5y		1 / 5y		1 / 5y	1 / 5y		1.32 / 5y	
Standard / Extended Operating Temperature (°C)	0°C ~ 70°C		0°C ~ 70°C		0°C ~ 70°C		0°C ~ 70°C	0°C ~ 70°C		0°C ~ 70°C	
Latency (QD1)	Read: 90 µs Write: 15 µs		Read: 84 µs Write: 29 µs		Read: 65 µs Write: 25 µs	Read: 65 µs Write: 9 µs	Read: 91 µs Write: 93 µs	Read: 145µs Write: 25 µs		Read: 110 µs Write: 24 µs	
Power Consumption	Idle: 8.5W Active: 25W		Idle: 3.36W Active: 11.55W		Idle: 1.96 W Active: 9.55 W	Idle: 2.01W Active: 10.96W	Idle: 1.07W Active: 6.16W	Idle: 1.3W Active: 3.3W		Idle: 0.5W Active: 2.0W	
Features	AES, TCG Opal, CorePower		AES, CorePower		AES, CorePower		AES, CorePower	AES, CorePower		AES, TCG Opal, CorePower	
Sidefill	NO		Yes		Yes		Yes	No		Optional	Yes



Specialty Industrial SSD & DRAM Solutions for Defense Applications



Defense applications are doubtlessly mission-critical operations, requiring hence the most demanding, reliable and robust systems. Without protective technologies, defense applications can't survive hostile environments where temperature, altitude and humidity conditions are punishing. Moreover, anti-vibration and shock resistance are vital system requirements too.

Featured Technologies for Defense applications



FIPS 140-2 Level 2

FIPS, which stands for Federal Information Processing Standard, is a computer security standard that was created by the US government. It accredits the design of cryptographic modules and the implementations of these modules.



Security

- AES Encryption
- ATA Secure Erase
- CoreEraser
- CoreDestroyer
- TCG Opal 2.0
- Write Protect
- Instant Keychange
- FIPS 140-2 Level 2



Reliability

- DataDefender™
- Thermal Throttling
- 30μ Gold Finger



Extreme Environments

- Anti-Sulfuration
- Conformal Coating
- Wide Temperature
- Sidefill



Value-added Applications








- SSDWidget 2.0







R-SATA connector

















An R-SATA connector is designed to be tougher and more resilient than a standard SATA connector – the R stands for Ruggedized. It supports the SATA 3.0 protocol, mating cycles up to 5,000.

Recommended Industrial SSD Solutions

							
Model Name	PV22D-M280	SH24D-25	SH24D-M280	SH24D-300	SV24D-25	SV24D-M280	SV24D-300
Interface	PCIe Gen3 x4	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)
Capacity	•M.2 2280 Single side, M key: 120 GB •M.2 2280 Double side, M key: 240/480/960/1920 GB	160GB~640GB	160GB~640GB	160GB~640GB	120GB~1920GB	120GB~1920GB	120GB~1920GB
Connector	M.2 M Key	(7+15) pin	M.2 B & M key	52-pin	(7+15) pin	M.2 B & M key	52-pin
NAND Flash Type	3D TLC	3D TLC (w/3D NAND SLC-liteX for 100,000 P/E Cycles)				3D TLC	
External DRAM	No	Yes	Yes	Yes	Yes	Yes	Yes
R/W Speed (MB/sec)	2390 / 2200	560 / 500	560 / 500	560 / 500	560 / 500	560 / 500	560 / 500
IOPS (4K Random Write)	311K	84K	84K	84K	84K	84K	84K
Wide Temp. (-40°C~85°C)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Storage Temp. (°C)	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100
MTBF (hours)	>5,000,000	>5,000,000	>5,000,000	>5,000,000	>5,000,000	>5,000,000	>5,000,000
Value-added Technologies (Optional)	MIL Erase TCG Opal2.0/SED Instant Keychange™ Digital Destruction Conformal Coating Sidefill 30u Gold Finger	•MIL Erase •TCG Opal2.0 / SED •Instant Keychange™ •Digital Destruction •Physical Destruction* •Thermal Throttling •Conformal Coating •Sidefill •30u Gold Finger				•MIL Erase •TCG Opal2.0 / SED •Instant Keychange™ •Thermal Throttling •Digital Destruction •Physical Destruction •Conformal Coating •Sidefill •30u Gold Finger	
R-SATA connector support (Optional)	No	Yes	No	No	Yes	No	No

				
Model Name	SV240-25 FIPS140-2	SV240-M280 FIPS140-2	SV240-300 FIPS140-2	SV240-297 FIPS140-2
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)
Capacity	240GB~1920GB	240GB~1920GB	240GB~1920GB	240GB~960GB
Connector	(7+15) pin	M.2 B & M key	52-pin mSATA	(7+15) Pin
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC
External DRAM	Yes	Yes	Yes	Yes
R/W Speed (MB/sec)	560/500	560/500	560/500	560/500
IOPS (4K Random Write)	84K	84K	84K	84K
Wide Temp. (-40°C~85°C)	Yes	Yes	Yes	Yes
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Featured Technology	•FIPS 140-2 Validated •Supports TCG Opal 2.0 / AES 256-bit Encryption •Wide Temperature •SMART Read Refresh™ •S.M.A.R.T. Function			
R-SATA connector support (Optional)	Yes	No	No	No

Recommended Industrial DRAM Solutions

				
Module Type	Rugged Memory Modules XR-DIMM	Rugged Memory Modules Rugged SODIMM	Wide Temperature Memory Modules SODIMM	Anti-Sulfuration Memory Modules SODIMM
Memory Technology	DDR4		DDR5	
Frequency	2133/2400	2133/2400/2666/2933/3200	4800/5600	4800/5600
Density	8GB/16GB	8GB/16GB/32GB	8GB/16GB/32GB	8GB/16GB/32GB
Voltage	1.2v	1.2v	1.1v	1.1v
Pin Count	300-Pin	260-Pin	262-Pin	262-Pin
Width	64-Bit / 72-Bit	64-Bit / 72-Bit	64-Bit	64-Bit
PCB Height	1.466"	1.377"	1.18"	1.18"
Operating Temperature (°C)	TC = 0 ~ + 85 / - 40 ~ + 85	TC = 0 ~ + 85 / - 40 ~ + 85	TC = -40 ~ + 85	TC = 0 ~ + 85
Value-added Technology	           			


Specialty

If Your Data is too Precious to Put at Risk

Choose a WORM Drive for Peace of Mind

Write Once Read Many Function Ensures High Data Protection

Apacer's industrial WORM (Write Once Read Many) drives and cards provide data storage protection by allowing data to be written only once, preventing it from later being erased, modified, or overwritten. **This write protection function ensures that the data cannot be tampered with once it is written to the device.**



- Only Can Be Written Once**
Prevent important data from being deleted, modified, overwritten, tampered with or erased.
- The Highest Level of Data Security**
Can be used to store data with higher confidentiality, such as financial and tax data, legally authorized verification, and backup of important information.
- Data Retention 100 Years**
Drives should remain readable for up to 100 years.

WORM Drive and WORM Card Specification



Model Name	AH322-M	SD-WORM	MSD-WORM
Interface	USB2.0 Type-A	SD 6.1	SD 6.1
Capacity	8GB~32GB	8GB~128GB	8GB~128GB
NAND Flash Type	MLC	MLC	MLC
R/W Speed (MB/sec)	Up to 38/19	Up to 75/65	Up to 70/65
Operating Temperature (°C)	-40~85°C	-25~85°C	-25~85°C
Dimension (L x W x H)	55.29 x 18.00 x 8.50 mm	32.00 x 24.00 x 2.10 mm	15.00 x 11.00 x 1.00 mm
Product Features	<ul style="list-style-type: none">•Write Once Read Many•Ensure data integrity with non-rewritable storage function•Data retention: 100 years•S.M.A.R.T.•SMART Read Refresh•Inherent characteristics:<ul style="list-style-type: none">- File System Support: FAT32 only- Files must be written "one by one" and sequentially		

* Supports wide temperature only

Featured Technologies



Anti-Sulfuration

Apacer anti-sulfuration technology not only uses special alloy materials but also achieves a complete air barrier through rigorously inspected special materials and technologies to ensure the best protection for electronic products. After two complete accelerated verification tests of MFG (Mixed Fluid Gas and FoS (Flower of Sulfur), it has passed the American National Standards Institute/International Society of Automation 71.04 G3 air corrosion certification.



Truly **DEEP** Security



CoreSecurity2

CoreSecurity2 is a proprietary data protection technology built into Apacer SSD products. It is crucial for mission-critical applications, where data erasure, drive sanitization, and reliability of storage are essential requirements. CoreSecurity2 provides four technologies, including: Destroying, Erasing, Encrypting and Protecting. It is designed with exclusive software commands to meet clients' requirements of a high level of data protection.



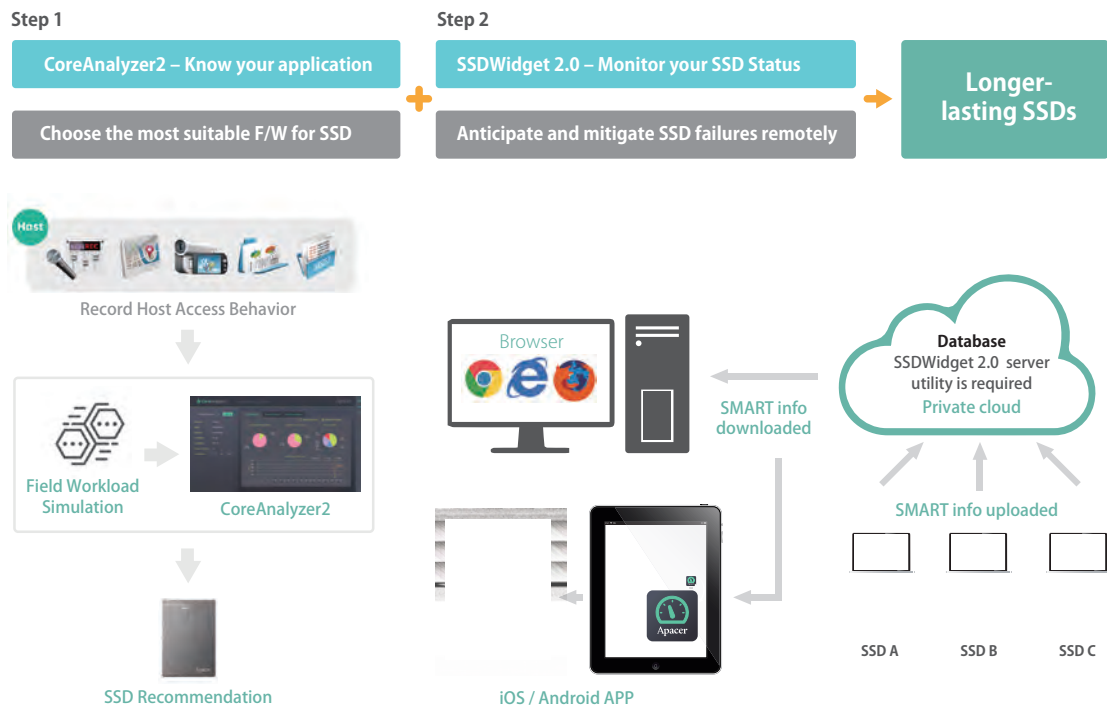


DBS Cloud Edition

Apacer's Double-barreled Solution Cloud Edition is a solution designed to monitor the typical pain points of an IoT edge device network. DBS Cloud Edition automatically collects data related to SSD temperatures, unexpected power outages, remaining lifespan, and operating status, and instantly transmits the data to the back-end management platform. Users can then observe this data as it comes in, thanks to the intuitive dashboard interface.

Advantages:

- Seamless integration with existing RDM platforms
- Alerts can be sent to administrators via eMail, SMS, or apps such as WhatsApp, Line or Wechat
- Anticipating the end of an SSD's lifespan means flawless data integrity
- Unexpected power cycling can be tracked easily
- OS recovery and firmware updating over the air
- Reduces maintenance costs and downtime
- Combats industrial pain points such as reputation damage, security vulnerabilities, and business losses



Existing Integrated Remote Device Management Systems

Apacer has also collaborated with Advantech, Allxon and ASUS Cloud to develop the DBS Cloud Edition. It offers customers greater choice in deploying and remote device management system and adds flexibility while retaining seamless integration to significantly reduce customer deployment time and costs.

Apacer
For Industrial
DBS Cloud Edition



ADVANTECH
WISE-PaaS

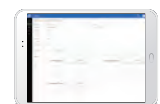
WISE-DeviceOn



Apacer
For Industrial
DBS Cloud Edition



ALLXON



Value-added Technology

Data Integrity



DataRAID™

Using this algorithm, a certain amount of space is given over to aggregating and resaving the existing parity data used for error checking. So, in the event that data becomes corrupted, the parity data can be compared to the existing uncorrupted data and the content of the corrupted data can be rebuilt.



End-to-end Data Protection

This technology ensures that whenever data moves from the host to the controller or from the controller to DRAM or NAND flash, error checking is applied. In some cases, error correction will also be part of the circuit.



Smart Read Refresh™

Apacer's Smart Read Refresh™ helps avoid read disturb errors from occurring. It ensures that during read operations, when the read operation threshold is reached, the data is refreshed by re-writing it to a different block for future use.

Longevity



Page Mapping

This is an advanced flash management technology and can increase random access speeds, extend SSD lifespans, reduce block erase frequency, and achieve optimal performance.



Over-provisioning

Apacer's SSDs support over-provisioning, which sets aside a certain portion of the physical capacity of the memory to carry out garbage collection, wear-leveling and bad block management. The result is a longer operating lifetime.



SLC-liteX

Apacer's 3D NAND SLC-liteX technology breaks through the limitations of existing technology and provides up to 100,000 P/E cycles, which is over 33 times more than MLC or industrial 3D TLC.



S.M.A.R.T.

S.M.A.R.T. is a self-monitoring system that provides indicators of drive health as well as potential disk problems. It serves as a warning for users from unscheduled downtime by monitoring and displaying critical drive information.

Power Stability



CorePower

This is a hardware-based technology designed to prevent data loss and ensure the stability of data transmission during a power outage using a backup power supply to allow sufficient time to move all cached data to NAND flash.



DEVSLP

Device Sleep is a feature that allows SATA devices to enter a low power mode by designating pin P3 as DEVSLP signal with an aim to reducing power consumption.



DataDefender™

Apacer's DataDefender™ combines both firmware and hardware mechanisms to ensure data integrity. Together, they allow more time for volatile data to be stored in the event of power loss.



DataDefender™ Plus

Apacer's DataDefender™ Plus is a technological innovation technology combining hardware, software and firmware. It can intelligently monitor the power supply voltage of connected SSDs in real time and warn administrators when the voltage supply is abnormal to improve data protection.



Multi-PowerPath

Apacer's Multi-PowerPath technology not only meets the input requirements for power sources of multiple platforms, but also implements an exclusive, innovative power circuit mechanism which protects miniature SSD from being damaged by overheating even when power is concurrently supplied via the three methods.



Power Cable-less

Power cable-less is a simplified, innovative design that provides a patented 7-pin SATA connector equipped with a built-in power circuit design to replace an external power cable, thus eliminating the concern over sudden disconnection of power cords.

Security



AES 256-bit Encryption

The security standard trusted by the US government and many international security agencies. It's an efficient and highly secure way of encrypting data to keep it safe from hackers and other bad actors.



ATA Secure Erase

When this command is given, an SSD will reset all its storage cells to empty, releasing trapped electrons and restoring the drive to its original state. This operation completely wipes data from the drive.



Bidirectional Security Identification

A security verification mechanism is implanted between the device and the platform to prevent the data in the device from being stolen if it is subjected to a hacker's invasion.



CoreDestroyer

This functionality is a hardware/software function that renders the entire SSD unusable. This option is chosen in cases where the SSD is about to fall into the hands of a bad actor.



CoreEraser

CoreEraser's functionality is divided into three levels: Quick Erase, Full Erase and MIL Erase. The first option is most useful when speed is the most important factor. Full Erase is more thorough, although also more time consuming, and MIL Erase offers overwriting features that ensure data is deeply and thoroughly scrubbed from the drive.



Instant Keychange™

This function is based on AES encryption, and it can be triggered either via hardware or software. The encrypted data can never be accessed once the original key is destroyed. And destroying the original key and creating a new one takes less than a second – much faster than traditional forms of drive erasure.



NVMe Secure Erase

When this command is given, NVMe Secure Erase can securely wipe out the user data in the drive and protects it from malicious attack.



Signed Firmware

Apacer's Signed Firmware technology is a secure way to update firmware. By including a digital signature, a firmware update will be authenticated by the Apacer SSD before a firmware update is performed. This extra layer of protection keeps drives secure.



TCG Opal 2.0

Apacer offers TCG Opal 2.0-compliant self-encrypting drives (SEDs) which incorporate AES encryption for rock-solid data protection. Buyers love TCG Opal 2.0's Instant Keychange™ technology, which uses cryptographic erasure to scramble a drive in less than a second. This technology is also available independently upon request.



Write Protect

Write protect can prevent drives from unauthorized data writing via a hardware switch/pin or vendor software command.

Survivability



CoreGlacier™

CoreGlacier™ helps keep an SSD cool and functioning correctly, thanks to a proprietary Apacer technology that transfers heat to a fluid medium and enhances an SSD's heat dissipation ability, especially for NAND Flash components.



ESD Protection

Excellent electrostatic protection which has passed the IEC 61000-4-2: air discharge $\pm 15\text{KV}$ and contact discharge $\pm 8\text{KV}$. Provides protection for electromagnetic susceptibility (EMS) that meets the medical equipment standard EN60601-1-2.



Sidefill

Apacer's Sidefill technology strengthens the connections between solder joints and their board, making them more robust and vibration-resistant. It also allows for heat dissipation to offset thermal damage.



Thermal Sensor

Thermal sensor monitors the temperature of SSD devices via S.M.A.R.T. commands. When a device's operating temperature becomes too high, a thermal sensor will notice and a signal will be sent to reduce operating speed until the temperature declines to a safe level.



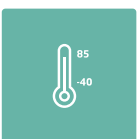
Thermal Cycling

This protection technology prevents damage to components when wild temperature swings take place. Apacer's in-house testing facility can check to ensure thermal cycling resistance and modify a standard product if needed.



Thermal Throttling

Thermal throttling mechanism dynamically adjusts frequency scaling to enhance data reliability and provides sustained performance while overheating.



Wide Temperature

Products rated for wide temperature operation are designed with wide temperature support to ensure reliable operation in extreme temperatures ranging from -40°C to 85°C .



30μ Gold Finger

With the 30μ gold plating, the connector interface is more reliable and can withstand the potential damages in industrial applications.



Conformal Coating



Nano Coating

Protection	Dust, moisture, solvent, chemicals, fungus and corrosion	
Main material used	Acrylic	Parylene
Thickness	0.03 ~ 0.13 mm	0.01 ~ 0.05 mm
Advantages	<ul style="list-style-type: none"> · Simple application and drying process · Can be detected under UV illumination · Compliant with the IP53 rating and MIL-STD-810G 	<ul style="list-style-type: none"> · Produces a highly thin, dense and scratch-resistant film with no pinholes · Compliant with the IP57 rating · Invisible to human eyes
Cost	\$	\$\$\$
Applications	Industrial applications that run in harsh environments	High-end applications such as defense, aerospace, automotive and healthcare
Applicable products	Module type w/o housing *	

Value-added Software



CoreAnalyzer2

CoreAnalyzer2 is an exclusive, analytic data-behavior technology implemented on our SSD products. Featuring collecting and analyzing data of customers' host system, it can help our customers analyze their usage behavior so they can choose the best-suited.



Double-barreled Solution

Apacer's Double-barreled Solution is comprised of CoreAnalyzer2 and SSDWidget2.0. CoreAnalyzer2 helps determine which SSD and firmware are most suitable for a customer, and SSDWidget2.0 lets customers remotely monitor SSD status in real-time.



SSDWidget 2.0

Apacer SSDWidget 2.0 is a comprehensive disk monitoring and maintaining utility. Designed with the concepts of S.M.A.R.T., SSDWidget2.0 can monitor SSD's health-related information and provide SSD status for SSD lifetime monitoring and workload analysis.



Opaque

Apacer has developed the Opaque software as a custom implementation of the TCG Opal 2.0 standard. Its accessible interface allows users to control useful security functions, such as pre-boot authorization and drive revert.



Out-Of-Band Management


Based on a hardware module, it provides a separate channel or communication path to transmit data outside the main data channel, which can be used for various purposes such as monitoring, troubleshooting, or emergency recovery.



Applications

Transportation

Engage with Intelligent Transportation System,
Exploit the Internet of Vehicles



Internet of Things

Grow the Ecosystem of IoT Devices



Gaming

Protect Your Data
with Our Security Solutions



Server & Networking

Expand the Boundaries Beyond Limits



Healthcare

Security, Safety and Reliability



Defense

Extremely Rugged Design and
Incomparable Reliability



Factory Automation

The Cutting Edge of Remote
Device Management

- Superb performance and low latency
- Compliant with the NVMe™ specification
- Transmission speed up to 7,130 MB/sec
- Thermal Throttling support
- End-to-end data protection support



Model	PV930-M280	PV250(P)-M280	PV210-M280	PV220-M280	PV220-M280	PV920-M280	PV910-M280
Form Factor	M.2 2280	M.2 2280	M.2 2280	M.2 2280	M.2 2280	M.2 2280	M.2 2280
Interface	PCIe Gen4 x4	PCIe Gen4 x4	PCIe Gen3 x4	PCIe Gen3 x4	PCIe Gen3 x2	PCIe Gen3 x4	PCIe Gen3 x2
Connector	M.2 M key	M.2 M key	M.2 M key	M.2 M key	M.2 B & M key	M.2 M key	M.2 B & M key
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	480GB~1920GB	Core power 240GB-3840GB STD 120GB-3840GB	120GB~1920GB	120GB~1920GB	120GB~1920GB	240GB~1920GB	120GB~1920GB
External DRAM	Yes	No	Yes	No	No	No	No
Max. R/W Performance (MB/sec)	7130 / 6105	3325/3020	3545/2640	2400/2230	1760/1700	3535 / 2745	1775 / 1295
IOPS (4K Random Write)	914K	600K	531K	331K	267K	276K	130K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	Not support	-40 ~ + 85 3840GB Not support	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)						
Vibration	Operating:7.69 GRMS, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operating:4.02 GRMS, 15~2000 Hz/random (compliant with MIL-STD-810G)						
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	Double side: 22.00 x 80.00 x 4.08	22.00 x 80.00 x 4.08(max.)	22.00 x 80.00 x 4.08 (max)	Single side: 22.00 x 80.00 x 2.58 Double side: 22.00 x 80.00 x 4.08	Single side: 22.00 x 80.00 x 2.58 Double side: 22.00 x 80.00 x 4.08	Single side: 22.00 x 80.00 x 2.58 Double side: 22.00 x 80.00 x 4.08	Single side: 22.00 x 80.00 x 2.38 Double side: 22.00 x 80.00 x 3.88
Features	DataDefender™, Signed Firmware	DataDefender™, CorePower	DataDefender™, TCG Opal 2.0	DataDefender™, TCG Opal 2.0	DataDefender™, TCG Opal 2.0	DataDefender™, Signed Firmware	Signed Firmware
Recommended Applications	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC

PCIe



Model	PV250(P)-M242	PV220-M242	PV220-M242	PV910-M242	PV910-M230	PV250(P)-CFX	PV910-CFX
Form Factor	M.2 2242	M.2 2242	M.2 2242	M.2 2242	M.2 2230	CFexpress 2.0	CFexpress 2.0
Interface	PCIe Gen4 x4	PCIe Gen3 x4	PCIe Gen3 x2	PCIe Gen3 x2	PCIe Gen3 x2	PCIe Gen4 x2	PCIe Gen3 x2
Connector	M.2 M key	M.2 M key	M.2 B & M key	M.2 B & M key	M.2 B-M key	Type B	Type B
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	CorePower 240GB~960GB STD 120GB-3840GB	120Gb~960GB	120GB~960GB	120Gb~960GB	120GB~480GB	240GB~960GB	120GB~960GB
External DRAM	No	No	No	No	No	No	No
Max. R/W Performance (MB/sec)	3675/3215	2405/2230	1770/1700	1775 / 1255	890 / 745	3740/2940	1660/ 1350
IOPS (4K Random Write)	565K	329K	267K	131K	574K	484K	132K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85 3840GB not support	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)						
Vibration	Operation:7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation:4.02 Grms, 15~2000 Hz/random (compliant with MIL-STD-810G)						
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	22.00 x 42.00 x 4.08 (max)	22.00 x 42.00 x 4.08 (max)	22.00 x 42.00 x 4.08 (max)	42.00 x 22.00 x 3.88	30.00 x 22.00 x 3.88	42.00 x 22.00 x 3.88	29.60 x 38.50 x 3.80
Features	DataDefender™, CorePower	DataDefender™, TCG Opal 2.0	DataDefender™, TCG Opal 2.0	Signed Firmware	Signed Firmware	TCG Opal 2.0, CorePower	Write protect, Signed Firmware
Recommended Applications	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC

PCIe



Model	PH250-M280	PH920-M280	PH250-M242	PH250-CFX	PV140-25	PV180-μSSD
Form Factor	M.2 2280	M.2 2280	M.2 2242	CFexpress 2.0	2.5"	BGA SSD 16X20
Interface	PCIe Gen4 x4	PCIe Gen3 x4	PCIe Gen4 x4	PCIe Gen4 x2	PCIe Gen3 x4	PCIe Gen4 x4
Connector	M.2 M key	M.2 M key	M.2 M key	TypeB	U.2 (SFF-8639)	BGA 291 Ball
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	160GB~640GB	160GB~640GB	160GB~320GB	160GB~320GB	960GB ~ 7680GB	240GB~960GB
External DRAM	No	No	No	No	Yes	No
Max. R/W Performance (MB/sec)	3740/3240	1740 / 1530	3740/2855	3740/2770	3340 / 1175	3745 / 3015
IOPS (4K Random Write)	627K	265K	544K	573K	254K	710K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	-	-
Extended Operating Temperature (°C)	-40 ~ + 85 640GB not support	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40~+85
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)					-
Vibration	Operation:7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation:4.02 Grms, 15~2000 Hz/random (compliant with MIL-STD-810G)					-
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>1,500,000
Dimension (mm)	Single side: 22.00 x 80.00 x 2.58 (max) Double side: 22.00 x 80.00 x 4.08 (max)	Single side: 22.00 x 80.00 x 2.58 (max) Double side: 22.00 x 80.00 x 4.08 (max)	42.00 x 22.00 x 3.88	29.60 x 38.50 x 3.80	100.00 x 69.85 x 7.00	16.00 x 20.00 x 1.65 (max.)
Features	SLC-liteX, Signed Firmware	SLC-liteX, Signed Firmware	SLC-liteX, TCG Opal 2.0	SLC-liteX, TCG Opal 2.0	AES 256-bit Encryption, End-to-End Data Protection	Thermal Throttling™, DataRAID™
Recommended Applications	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Sever & Networking, Industrial PC	Industrial, Military, Automation	Sever & Networking, Industrial PC

*All product specifications are subject to change without notice.

PCIe STD



Model	PT160-M280	PT250-M280	PT180-M280	PT250-M242	PT220-M280	PT220-M242
Form Factor	M.2 2280	M.2 2280	M.2 2280	M.2 2242	M.2 2280	M.2 2242
Interface	PCIe Gen4 x4	PCIe Gen4 x4	PCIe Gen4 x4	PCIe Gen4 x4	PCIe Gen3 x4	PCIe Gen3 x4
Connector	Double-sided M.2 2280-M	M.2 M key	M.2 M Key	M.2 M Key	M.2 M Key	M.2 M Key
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	4TB ~ 8TB	64GB~2TB	256GB~4TB	64GB~1TB	128GB ~ 2TB	128GB~1TB
External DRAM	Yes	No	No	No	No	No
Max. R/W Performance (MB/sec)	6970/2310	3700/3485	5055/3915	3700/3200	2400 / 2240	2400/2100
IOPS (4K Random Write)	517K	677K	929K	604K	327K	303K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ +85 (8TB not support)	-	-	-	-	-
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)					
Vibration	Operation:7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation:4.02 Grms, 15~2000 Hz/random (compliant with MIL-STD-810G)					
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	22.00 x 80.00 x 4.08	22.00 x 80.00 x 4.08	Single side: 22.00 x 80.00 x 2.43	22.00 x 80.00 x 4.08	Single side: 22.00 x 80.00 x 2.58 Double side: 22.00 x 80.00 x 4.08	22.00 x 42.00 x 4.08
Features	DataDefender™, AES 256-bit Encryption, CoreGlacier™	DataDefender™, AES 256-bit Encryption, CoreGlacier™	AES 256-bit Encryption, End-to-End Data Protection, HMB	DataDefender™, AES 256-bit Encryption, CoreGlacier™	DataDefender™, AES 256-bit Encryption, CoreGlacier™	DataDefender™, AES 256-bit Encryption, CoreGlacier™
Recommended Applications	NB, POS, Digital Signage	NB, POS, Digital Signage	NB, POS, Digital Signage	NB, POS, Digital Signage	NB, POS, Digital Signage	NB, POS, Digital Signage

SATA 2.5"

- Perfect replacement for 2.5" SATA HDDs
- Supports LDPC ECC
- Global wear-leveling technology
- Flash Bad-block Management
- S.M.A.R.T. and SSDWidget 2.0 support
- Power Failure Management



Model	ST180-25	SV240-25	SV24P-25	SV250-25	SV25P-25
Form Factor	2.5"	2.5"	2.5"	2.5"	2.5"
Interface	SATA 3.1 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)
Connector	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	1TB~16TB	120GB~1920GB	240GB~1920GB	120GB~1920GB	120GB~1920GB
External DRAM	Yes	Yes	Yes	No	No
Max. R/W Performance (MB/sec)	555/520	560/500	560/510	560/500	560/510
IOPS (4K Random Write)	82K	84K	80K	68K	71K
Standard Operating Temperature (°C)	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
Extended Operating Temperature (°C)	-40 ~ +85 16TB not support	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
Shock	Operating: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operating: 1500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)				
Vibration	Operating: 7.69 GRMS, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operating: 4.02 GRMS, 15~2000 Hz/random (compliant with MIL-STD-810G)				
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	100.00 x 69.85 x 7.00	7mm: 100.00 x 69.85 x 6.90 9.5mm: 100.00 x 69.85 x 9.30	7mm: 100.00 x 69.85 x 6.90	7mm: 100.00 x 69.85 x 6.90 9.5mm: 100.00 x 69.85 x 9.30	100.00 x 69.85 x 6.90
Features	TCG Opal 2.0 (Optional), End-to-End Data Protection, DataRAID™	DataDefender™, DataRAID™	DataRAID™, CorePower	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	DataRAID™, CorePower
Recommended Applications	Digital Signage, POS, Transportation	Server, Industrial, Defense	Server, Industrial, Defense	Server, Industrial, Defense	Server, Industrial, Defense

SATA 2.5"



Model	SH250-25	SH25P-25	ST250-25	SM230-25	SS210-25
Form Factor	2.5"	2.5"	2.5"	2.5"	2.5"
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.0 (6Gb/s)
Connector	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male
NAND Flash Type	3D TLC	3D TLC	3D TLC	MLC	SLC
Capacity	40GB~640GB	40GB~640GB	64GB~2TB	32GB~1TB	8GB~240GB
External DRAM	No	No	No	No	Yes
Max. R/W Performance (MB/sec)	550/495	560/550	560/510	560/495	530/445
IOPS (4K Random Write)	63K	63K	70k	71K	76K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-	-40 ~ + 85	-40 ~ + 85
Shock	Operating: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operating: 1500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)				
Vibration	Operating: 7.69 GRMS, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operating: 4.02 GRMS, 15~2000 Hz/random (compliant with MIL-STD-810G)				
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	7mm: 100.00 x 69.85 x 6.90	100.00 x 69.85 x 6.90	7mm: 100.00 x 69.85 x 7.00	7mm: 100.00 x 69.85 x 6.90 9.5mm: 100.00 x 69.85 x 9.30	7mm: 100.00 x 69.85 x 6.90 9.5mm: 100.00 x 69.85 x 9.30
Features	DataDefender™, SLC-liteX	DataRAID™, CorePower	DataDefender™, DEVSLP	Hyper Cache Technology, TCG Opal 2.0 (Optional)	Power Failure Management, Device Sleep
Recommended Applications	Server, Industrial, Defense	Server, Industrial, Defense	Server, Industrial, Defense	Server, Industrial, Defense	Server, Industrial, Defense

SATA M.2

- M.2 (NGFF) Connector
- Global wear-leveling and block management
- Built-in ATA secure erase and S.M.A.R.T. functions
- TRIM support
- Thermal Throttling (optional)



Model	SV240-M280	SV24P-M280	SV250-M280	SV25P-M280	ST250-M280	SH25P-M280	ST250-M280
Form Factor	M.2 2280	M.2 2280	M.2 2280	M.2 2280	M.2 2280	M.2 2280	M.2 2280
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)
Connector	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	120GB~1920GB	240GB~1920GB	120GB~1920GB	120GB~1920GB	128GB~2TB	40GB~640GB	64GB~2TB
External DRAM	Yes	Yes	No	No	No	No	No
Max. R/W Performance (MB/sec)	560/500	560/510	560/470	560/510	560/510	560/505	560/510
IOPS (4K Random Write)	84K	80K	68K	72K	70K	69K	70K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40~+85	-40~+85	-40~+85	-40~+85	-	-40 ~ + 85	-
Shock	Operation: 50G/11ms/half sine (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms/half sine (compliant with MIL-STD-883K)						
Vibration	Operating:7.69 GRMS, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operating:4.02 GRMS, 15~2000 Hz/random (compliant with MIL-STD-810G)						
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	22.00 x 80.00 x 3.88	22.00 x 80.00 x 3.88	Single side: 22.00 x 80.00 x 2.38 Double side: 22.00 x 80.00 x 3.88	22.00 x 80.00 x 3.88	Single side: 22.00 x 80.00 x 2.38 Double side: 22.00 x 80.00 x 3.88	22.00 x 80.00 x 3.88	Single side: 22.00 x 80.00 x 2.38 Double side: 22.00 x 80.00 x 3.88
Features	DataDefender™, DataRAID™	DataRAID™, Core Power	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	DataRAID™, CorePower	DataDefender™, DEVSLP	"DataRAID™, SLC-liteX, CorePower"	DataDefender™, DEVSLP
Recommended Applications	IOT,Surveillance, POS	IOT,Surveillance, POS	IOT,Surveillance, POS	IOT,Surveillance, POS	IOT,Surveillance, POS	IOT,Surveillance, POS"	IOT,Surveillance, POS

*All product specifications are subject to change without notice.

SATA M.2



Model	SV250-M242	SV25P-M242	SH250-M242	SH25P-M242	ST250-M242	SM230-M280	SU210-M280	SM230-M242	SS220-M242
Form Factor	M.2 2242	M.2 2242	M.2 2242	M.2 2242	M.2 2242	M.2 2280	M.2 2280	M.2 2242	M.2 2242
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.1 (6Gb/s)
Connector	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	M.2 B & M key
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	MLC	MLC	MLC	SLC
Capacity	120GB~960GB	120GB~480GB	40GB~320GB	40GB~160GB	64GB~1TB	32GB~1TB	32GB~256GB	8GB~256GB	1GB~64GB
External DRAM	No	No	No	No	No	No	Yes	No	Yes
Max. R/W Performance (MB/sec)	560/470	560/510	550/485	560/505	560/510	560/500	555/465	560/445	555/450
IOPS (4K Random Write)	68K	71K	63K	69K	70K	71K	76K	65K	77K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Shock	Operation: 50G/11ms/half sine (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms/half sine (compliant with MIL-STD-883K)								
Vibration	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15~2000 Hz/random (compliant with MIL-STD-810G)								
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	22.00 x 42.00 x 3.88	42.00 x 22.00 x 3.88	22.00 x 42.00 x 3.88	42.00 x 22.00 x 3.88	22.00 x 42.00 x 3.88	Single side: 22.00 x 80.00 x 2.23 Double side: 22.00 x 80.00 x 3.58	Single side: 22.00 x 80.00 x 2.23 Double side: 22.00 x 80.00 x 3.58	22.00 x 42.00 x 3.88	22.00 x 42.00 x 3.88
Features	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	"DataRAID™, CorePower"	DataDefender™, SLC-liteX	"DataRAID™, SLC-liteX, CorePower"	DataDefender™, DEVSLP	Hyper Cache Technology, TCG Opal 2.0 (Optional)	Power Failure Management, Device Sleep, SLC-lite	Hyper Cache Technology, TCG Opal 2.0 (Optional)	Power Failure Management, Device Sleep
Recommended Applications	IOT, Surveillance, POS	IOT, Surveillance, POS"	IOT, Surveillance, POS	IOT, Surveillance, POS"	IOT, Surveillance, POS	IOT, Surveillance, POS	IOT, Surveillance, POS	IOT, Surveillance, POS	IOT, Surveillance, POS

SATA BGA MO-297 MO-300

- Compliant with JEDEC MO-276/MO-297/MO-300 standard
- Global wear-leveling and block management
- Built-in ATA secure erase and S.M.A.R.T. functions
- TRIM support



Model	SV240-300	SV250-300	SV25P-300	SH250-300	SH25P-300	ST250-300	SM230-300	SS210-300	SV170-μSSD
Form Factor	JEDEC MO-300	JEDEC MO-300	JEDEC MO-300	JEDEC MO-300	JEDEC MO-300	JEDEC MO-300	JEDEC MO-300	JEDEC MO-300	JEDEC MO-276
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.1 (6Gb/s)
Connector	52-pin mSATA	52-pin mSATA	52-pin mSATA	52-pin mSATA	52-pin mSATA	52-pin mSATA	52-pin mSATA	52-pin mSATA	BGA 156 Ball
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	MLC	SLC	3D TLC
Capacity	120GB~1920GB	120GB~1920GB	120GB~1920GB	40GB~640GB	40GB~640GB	64GB~2TB	32GB~512GB	2GB~128GB	60GB~240GB
External DRAM	Yes	No	No	No	No	No	No	Yes	No
Max. R/W Performance (MB/sec)	560/500	560/470	560/515	550/485	560/505	560/510	560/485	555/450	560/470
IOPS (4K Random Write)	84K	68k	71K	63K	69K	70K	70K	74K	83K
Standard Operating Temperature (°C)	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
Extended Operating Temperature (°C)	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-	-40 ~ +85	-40 ~ +85	-40 ~ +85
Shock	Operating: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operating: 1500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)								-
Vibration	Operating: 7.69 GRMS, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operating: 4.02 GRMS, 15~2000 Hz/random (compliant with MIL-STD-810G)								-
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>1,000,000
Dimension (mm)	50.80 x 29.85 x 4.85	50.80 x 29.85 x 4.85	50.80 x 29.85 x 4.85	50.80 x 29.85 x 4.85	50.80 x 29.85 x 4.85	50.80 x 29.85 x 4.85	50.80 x 29.85 x 3.80	50.80 x 29.85 x 3.80	16.00 x 20.00 x 1.70
Features	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	DataRAID™, CorePower	DataDefender™, SLC-liteX	DataRAID™, SLC-liteX, CorePower	DataDefender™, DEVSLP	Hyper Cache Technology, TCG Opal 2.0 (Optional)	Power Failure Management, Device Sleep	Power Failure Management, Device Sleep
Recommended Applications	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage

*All product specifications are subject to change without notice.

SATA BGA MO-297 MO-300



Model	SV240-297	ST250-297	SM230-297	SS210-297	SV250-300B	SH250-300B	SS220-300B
Form Factor	JEDEC MO-297	JEDEC MO-297	JEDEC MO-297	JEDEC MO-297	mSATA mini, JEDEC MO-300B	mSATA mini, JEDEC MO-300B	mSATA mini, JEDEC MO-300B
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.1 (6Gb/s)
Connector	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male	52-pin mSATA	52-pin mSATA	52-pin mSATA
NAND Flash Type	3D TLC	3D TLC	MLC	SLC	3D TLC	3D TLC	SLC
Capacity	120GB~1920GB	128GB~2TB	32GB~512GB	4GB~128GB	120GB~960GB	40GB~320GB	2GB~32GB
External DRAM	Yes	No	No	Yes	No	No	Yes
Max. R/W Performance (MB/ sec)	560/520	560/510	560/485	555/450	560/470	550/485	65/65
IOPS (4K Random Write)	85K	70K	70K	76K	68K	63K	16K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ +85	-	-40 ~ + 85	-40 ~ + 85	-40 ~ +85	-40 ~ + 85	-40 ~ + 85
Shock	Operating: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operating: 1500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)						
Vibration	Operating: 7.69 GRMS, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operating: 4.02 GRMS, 15~2000 Hz/random (compliant with MIL-STD-810G)						
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	54.0 x 39.8 x 4.00	54.00 x 39.80 x 4.00	54.0 x 39.80 x 4.00	54.0 x 39.80 x 4.00	29.85 x 26.80 x 3.85	29.85 x 26.80 x 3.85	29.85 x 26.80 x 3.95
Features	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	DataDefender™, DEVSLP	Hyper Cache Technology, TCG Opal 2.0 (Optional)	Power Failure Management, Device Sleep	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	DataDefender™, SLC-liteX	Power Failure Management, Device Sleep
Recommended Applications	Surveillance, Digital Signag	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage	Surveillance, Digital Signage

SATA 7-pin Module

- 7-pin SATA connector
- Write protect by hardware switch (optional)
- TRIM command support
- Built-in ATA secure erase and S.M.A.R.T. functions
- Global wear-leveling and block management
- Unique hook design
- Thermal Throttling (optional)



Model	SV250-7LP3	SH250-7LP3	SV250 7LP2/180D	SH250-7LP2/90D	SH250 7LP2/180D	SDM7-M 7P/180D LP2(H)	SDM5A-M 7P LP2/180D	SDM5A-M 7P/180D Slim3(H)
Form Factor	SATA Disk Module	SATA Disk Module	SATA Disk Module	SATA Disk Module	SATA Disk Module	SATA Disk Module	SATA Disk Module	SATA Disk Module
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.1 (6Gb/s)
Connector	7-pin	7-pin	7-pin	7-pin	7-pin	7-pin	7-pin	7-pin
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	MLC	MLC	MLC
Capacity	120GB~480GB	40GB~160GB	120GB~480GB	10GB~40GB	40GB~160GB	8GB~64GB	16GB~64GB	16GB~64GB
External DRAM	No	No	No	No	No	Yes	No	No
Max. R/W Performance (MB/sec)	560/480	555/490	560/480	310/305	555/490	135/90	425/80	435/80
IOPS (4K Random Write)	68K	65K	68K	69K	65K	22K	-	-
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-	-40 ~ + 85	-40 ~ + 85
Housing	Optional	Optional	Optional	Optional	Optional	Optional	Optional	Optional
H/W Write Protect	Optional	Optional	Optional	Optional	Optional	Optional	Optional	No
Shock	Operation: 50G/11ms/half sine (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms/half sine (compliant with MIL-STD-883K)							
Vibration	Operation: 7.69 GRMS, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 GRMS, 15~2000 Hz/random (compliant with MIL-STD-810G)							
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	30.00 x 29.50 x 9.50	30.00 x 29.50 x 9.50	33.00 x 29.30 x 9.45	33.00 x 29.30 x 8.85	33.00 x 29.30 x 8.85	Without housing: Standard type: 30.00 x 27.80 x 8.20 With housing: 35.20 x 30.40 x 9.25	Without housing: Standard type: 33.00 x 29.30 x 8.85 With housing: 35.20 x 30.40 x 9.25	Without housing: Standard type: 17.00 x 40.00 x 6.10 With housing: 19.80 x 41.40 x 7.50
Features	Multi-PowerPath, DataRAID™, TCG Opal 2.0 (Optional)	SLC-liteX, Multi-PowerPath, DataRAID™, TCG Opal 2.0 (Optional)	Multi-PowerPath, DataRAID™, TCG Opal 2.0 (Optional)	SLC-liteX, Multi-PowerPath, DataRAID™, TCG Opal 2.0 (Optional)	SLC-liteX, Multi-PowerPath, DataRAID™	Multi-PowerPath, DataRAID™	DataRAID™	Multi-PowerPath, DataRAID™
Recommended Applications	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS

SATA 7-pin Module



Model	SDM5A-M 7P/90D LP(H)	SDM5A-M 7P/270D N1	SDM5A-M 7P/90D MP2	SDM5A 7P/180D LP2	SDM5A 7P/270D N1
Form Factor	SATA Disk Module	SATA Disk Module	SATA Disk Module	SATA Disk Module	SATA Disk Module
Interface	SATA 3.1 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.1 (6Gb/s)
Connector	7-pin	7-pin	7-pin	7-pin	7-pin
NAND Flash Type	MLC	MLC	MLC	SLC	SLC
Capacity	4GB~32GB	8GB~64GB	8GB~64GB	8GB~32GB	2GB~32GB
External DRAM	No	No	No	No	No
Max. R/W Performance (MB/sec)	120/40	245/75	245/75	435/215	90/75
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Housing	Optional	No	No	No	No
H/W Write Protect	No	Optional	Optional	Optional	Optional
Shock	Operation: 50G/11ms/half sine (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms/half sine (compliant with MIL-STD-883K)				
Vibration	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/random (compliant with MIL-STD-810G)				
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	Without housing: 30.00 x 20.00 x 15.20 With housing: 32.50 x 23.13 x 17.80	52.50 x 23.00 x 15.20	52.25 x 24.00 x 15.20	33.00 x 29.30 x 9.05	52.50 x 23.00 x 15.20
Features	Multi-PowerPath, DataRAID™	Multi-PowerPath, DataRAID™	DataRAID™	DataRAID™	DataRAID™
Recommended Applications	Industrial, Digital Signage, POS	Industrial, Digital Signage, POS	Industrial, igital Signage, POS	Industrial, Digital Signage, POS	Industrial ,Digital Signage, POS

Industrial CFast Card

- Compliant with CFast 2.0 specification
- Global wear-leveling and block management
- Built-in ATA secure erase and S.M.A.R.T. functions
- Intelligent power failure recovery
- TRIM support
- DEVSLP Support
- Thermal Throttling (optional)



Model	SV250-CFast	SV25P-CFast	SH250-CFast	SH25P-CFast	SM230-CFast	SU220-CFast	SS220-CFast
Form Factor	CFast	CFast	CFast	CFast	CFast	CFast	CFast
Interface	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.2 (6Gb/s)	SATA 3.1 (6Gb/s)	SATA 3.0 (6Gb/s)
Connector	(7+17) pin female	(7+17) pin female	(7+17) pin female	(7+17) pin female	(7+17) pin female	(7+17) pin female	(7+17) pin female
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	MLC	MLC	SLC
Capacity	120GB~960GB	120GB~960GB	40GB~320GB	40GB~320GB	8GB~256GB	8GB~128GB	4GB~64GB
External DRAM	No	No	No	No	No	Yes	Yes
Max. R/W Performance (MB/sec)	560 / 470	560 / 505	550 / 485	560/505	560 / 455	555/485	560 / 445
IOPS (4K Random Write)	68K	71K	63K	69K	67K	61K	79K
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
H/W Write Protect	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Shock	Operation: 50G/11 ms/half sine (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms/half sine (compliant with MIL-STD-883K)						
Vibration	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/random (compliant with MIL-STD-810G)						
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	42.80 x 36.45 x 3.60	42.80 x 36.45 x 3.60	42.80 x 36.45 x 3.60	42.80 x 36.45 x 3.60	42.80 x 36.45 x 3.60	42.80 x 36.45 x 3.60	42.80 x 36.40 x 3.60
Features	DataDefender™, DataRAID™, TCG Opal 2.0 (Optional)	DataRAID™, CorePower	DataDefender™, SLC-liteX	DataRAID™, SLC-liteX, CorePower	Hyper Cache Technology, TCG Opal 2.0 (Optional)	SLC-lite, Power Failure Management, Device Sleep	Power Failure Management, Device Sleep
Recommended Applications	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare

*All product specifications are subject to change without notice.

Industrial CF Card

- Global wear-leveling
- Built-in ATA secure erase and S.M.A.R.T. functions
- Intelligent power failure recovery
- Extended temperature support
- Lock switch design for write-protection (optional)



Model	CompactFlash6	Industrial CF6A-M	Industrial CF6A-SL	Industrial CF6	Industrial CF6A
Form Factor	CompactFlash Type I	CompactFlash Type I	CompactFlash Type I	CompactFlash Type I	CompactFlash Type I
Interface	PC Card Memory Mode, PC Card I/O Mode, True IDE Mode	PC Card Memory Mode, PC Card I/O Mode, True IDE Mode	PC Card Memory Mode; PC Card I/O Mode; True IDE Mode	PC Card Memory Mode, PC Card I/O Mode, True IDE Mode	PC Card Memory Mode, PC Card I/O Mode, True IDE Mode
Connector	50-pin	50-pin	50-pin	50-pin	50-pin
NAND Flash Type	MLC	MLC	MLC	SLC	SLC
Capacity	8GB~128GB	8GB~64GB	4GB~32GB	512MB~64GB	256MB~32GB
Max. R/W Performance (MB/sec)	110/65	115/75	115/80	110/80	60/65
IOPS (4K Random Write)	-	231	157	-	188
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Storage Temperature (°C)	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
H/W Write Protect	Optional	Optional	Optional	Optional	Optional
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)				
Vibration	Operation: 7.69(Grms), 20~2000(Hz)/random (compliant with MIL-STD-810G) Non-operation: 4.02(Grms), 15~2000(Hz)/random (compliant with MIL-STD-810G) *Non-operation: 15 G, 10 ~ 2000 Hz/sine_for CF6 and CompactFlash6 only				
MTBF (hours)	>1,000,000	>1,000,000	>1,000,000	>2,000,000	>2,000,000
Dimension (mm)	36.40 x 42.80 x 3.30	36.40 x 42.80 x 3.30	36.4 x 42.8 x 3.3	36.40 x 42.80 x 3.30	36.40 x 42.80 x 3.30
Features	Write Protect, ATA Secure Erase	Write Protect, ATA Secure Erase	Write Protect ATA Secure Erase	Write Protect, ATA Secure Erase	Write Protect, ATA Secure Erase

Industrial SD Card

- Compliant with SD 3.0 and SD 2.0 specification
- S.M.A.R.T. supported
- Global wear-leveling and block management
- Supports class 10 with UHS-I
- Auto standby and sleep mode support
- Low power consumption (optional)



Model	SD-WORM	Industrial SD H1-M	Industrial SD R1-M	Industrial SD R1
Form Factor	SD	SD	SD	SD
Interface	SD 6.1	SD 3.0	SD 3.0	SD 3.0
NAND Flash Type	MLC	MLC	MLC	SLC
Capacity	8GB~128GB	4GB~128GB	8GB~16GB	512MB~16GB
Max. R/W Performance (MB/sec)	75/65	43/30	90/20	43/41
Standard Operating Temperature (°C)	-25 ~ + 85	-25 ~ + 85	-25 ~ + 85	-25 ~ + 85
Extended Operating Temperature (°C)	-	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
H/W Write Protect	Yes	Yes	Yes	Yes
Shock	1,500G, 0.5ms	1,500G, 0.5ms	1,500G, 0.5ms	1,500G, 0.5ms
Vibration		20Hz~80Hz/1.52mm (frequency/displacement) 80Hz~2000Hz/20G (frequency/displacement) X, Y, Z axis/60mins each		
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	32 x 24 x 2.1	32.00 x 24.00 x 2.10	32.00 x 24.00 x 2.10	32.00 x 24.00 x 2.10
Features	>Write Once Read Many	S.M.A.R.T., Wide Temp., Low Power Consumption	S.M.A.R.T., Wide Temp., Low Power Consumption	S.M.A.R.T., Wide Temp., Low Power Consumption
Recommended Applications	Police investigations, court evidence, tax information	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare	Gaming, Transportation, Healthcare

Industrial microSD Card

- Compliant with SD 3.0 and SD 2.0 specification
- S.M.A.R.T. supported
- Supports SD mode and SPI mode
- Global wear-leveling and block management
- Low power consumption (optional)
- Supports Extended Temperature



Model	MSD-WORM	CV120-MSD	CH120-MSD	Industrial microSD H1-M	Industrial microSD R1
Form Factor	microSD	microSD	microSD	microSD	microSD
Interface	SD 6.1	SD 6.1	SD 6.1	SD 3.0	SD 2.0 SD 3.0
NAND Flash Type	MLC	3D TLC	3D TLC	MLC	SLC
Capacity	8GB~128GB	64GB~256GB	16GB~128GB	8GB~128GB	1GB~8GB
Max. R/W Performance (MB/sec)	70/65	90/85	90/80	75/65	34/28
Standard Operating Temperature (°C)	-25 ~ +85	-25 ~ +85	-25 ~ +85	-25 ~ +85	-25 ~ +85
Extended Operating Temperature (°C)	-	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
Shock	1,500G, 0.5ms				
Vibration	20Hz~80Hz/1.52mm (frequency/displacement) 80Hz~2000Hz/20G (frequency/displacement) X, Y, Z axis/60mins each				Operating: 7.69(Grms), 20~2000(Hz)/random (comply with MIL-STD-810G) Non-operating: 4.02(Grms), 15~2000(Hz)/random (comply with MIL-STD-810G)
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	15.00 x 11.00 x 1.00	15.00 x 11.00 x 1.00	15.00 x 11.00 x 1.00	15.00 x 11.00 x 1.00	15.00 x 11.00 x 1.00
Features	Write Once Read Many	ESD Protection, Page Mapping, S.M.A.R.T.	Page Mapping, SLC-liteX, S.M.A.R.T.	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.
Recommended Applications	Police investigations, court evidence, tax information	Gaming, Surveillance, POS	Gaming, Surveillance, POS	Gaming, Surveillance, POS	Gaming, Defence, POS

Industrial USB Drive

- ECC engine
- Power saving implemented
- Implements advanced wear-leveling algorithms
- Optional industrial temp. range -40°C to 85°C
- TLC and SLC-liteX products support page mapping
- Lock switch design for write-protection (UH110-UFD4 only)
- Air 15KV ESD protection (UV110-UFD5)
- USB Type-C industry grade product



Model	UV110-UFD1	UV110-UFD5	UV110-UFD7	UH110-UFD1	UH110-UFD4	UH110-UFD5
Form Factor	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive
Interface	USB 3.2 gen 1	USB 3.2 gen 1	USB 3.2 gen 1	USB 3.2 gen 1	USB 3.1 gen 1	USB 3.2 gen 1
Connector	Type-A	Type-A	Type-C	Type-A	Type-A	Type-A
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	128GB~512GB	128GB~256GB	128GB~256GB	32GB~64GB	4GB~8GB	32GB~64GB
Max. R/W Performance (MB/sec)	275/195	270/185	270/190	270/140	265/50	270/140
IOPS (4K Random Write)	1000	900	1000	900	1100	900
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85 4GB not support	-40 ~ + 85
Storage Temperature (°C)	-55 ~ + 100	-40 ~ + 100	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100	-40 ~ + 100
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)					
Vibration	Operation: 7.69(Grms), 20~2000(Hz)/random (compliant with MIL-STD-810G) Non-operation: 4.02(Grms), 15~2000(Hz)/random (compliant with MIL-STD-810G)					
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	46.85x17.20x7.70	56.05x18.00x8.50	43.00x18.90x7.90	46.85x17.20x7.70	51.15x17.20x7.70	56.05x18.00x8.50
Features	Page Mapping, S.M.A.R.T, Wide Temp.	Air 15KV prevention, Page Mapping, S.M.A.R.T.	C Type plug, Page Mapping, S.M.A.R.T.	Page Mapping, S.M.A.R.T, SLC-liteX	Write Protect Switch, Page Mapping, SLC-liteX	Air 15KV prevention, Page Mapping, SLC-liteX
Recommended Applications	Gaming, IOT, Factory Automation	Gaming, IOT, Healthcare	Gaming, IOT, Healthcare	Gaming, IOT, Factory Automation	Gaming, IOT, Factory Automation	Gaming, IOT, Healthcare

*All product specifications are subject to change without notice.

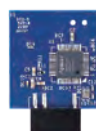
Industrial USB Drive



Model	UH110-UFD7	UM120-UFD5	EH353-M	US120-UFD5	EH353	USZ20-UFD5	AH322-M WORM
Form Factor	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB Flash Drive	USB flash drive
Interface	USB 3.2 gen 1	USB 3.0	USB 3.0	USB 3.0	USB 3.0	USB 2.0	USB 2.0
Connector	Type-C	Type-A	Type-A	Type-A	Type-A	Type-A	Type-A
NAND Flash Type	3D TLC	MLC	MLC	SLC	SLC	SLC	MLC
Capacity	32GB~64GB	8GB~128GB	8GB~128GB	256MB~32GB	256MB~32GB	256MB~32GB	8GB~32GB
Max. R/W Performance (MB/sec)	270/195	195/95	195/95	80/70	80/70	34/22	38/19
IOPS (4K Random Write)	1200	-	-	-	-	-	-
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	-
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Storage Temperature (°C)	-55 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-50 ~ + 95
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)						
Vibration	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15~2000 Hz/random (compliant with MIL-STD-810G)						
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	43.0x18.90x7.90	56.05x18.00x8.50	59.00x18.40x9.10	56.05x18.00x8.50	59.00x18.40x9.10	56.05x18.00x8.50	55.29 x 18.00 x 8.50
Features	SLC-ilteX, Page Mapping, S.M.A.R.T.	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.	Write Once Read Many
Recommended Applications	Gaming, IOT, Healthcare	Gaming, IOT, Healthcare	Gaming, IOT, Healthcare	Gaming, IOT, Healthcare	Gaming, IOT, Healthcare	Gaming, IOT, Healthcare	Gaming/IOT/Health Care

Industrial USB Disk Module

- Compact size and available in various form factors.
- Support Linux /Win7 /Win10 or later
- Shock resistance, anti-vibration and low power consumption
- Support page mapping (TLC/SLC-liteX products)
- Lock switch design for write-protection (optional)



Model	UV110-UFM1	UV110-UFM2	UV110-UFM3	UH110-UFM1	UH110-UFM2
Form Factor	USB Disk Module	USB Disk Module	USB Disk Module	USB Disk Module	USB Disk Module
Interface	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0
Connector/Pitch (mm)	10 pin 90D (Type C): 2.54	10 pin 90D (Type E): 2.00	10 pin 180D LP: 2.54	10 pin 90D (Type C): 2.54	10 pin 90D (Type E): 2.00
NAND Flash Type	3D TLC	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	128GB~256GB	128GB~256GB	128GB~256GB	32GB~64GB	32GB~64GB
Max. R/W Performance (MB/sec)	37/31	37/31	37/31	37/32	37/32
IOPS (4K Random Write)	400	400	400	400	400
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Storage Temperature (°C)	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100	-55 ~ + 100
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)				
Vibration	Operation: 7.69(Grms), 20~2000(Hz)/random (compliant with MIL-STD-810G) Non-operation: 4.02(Grms), 15~2000(Hz)/random (compliant with MIL-STD-810G)				
MTBF (hours)	>3,000,000	>3,000,000	>3,000,000	>3,000,000	>3,000,000
Dimension (mm)	37.80 x 26.65 x 10.91	37.80 x 26.65 x 8.01	32.50 x 24.00 x 5.00	37.80 x 26.65 x 10.91	37.80 x 26.65 x 8.01
Features	Page Mapping, S.M.A.R.T., Wide Temp.	Page Mapping, S.M.A.R.T., Wide Temp.	Page Mapping, S.M.A.R.T., Wide Temp.	Page Mapping, S.M.A.R.T., SLC-liteX	Page Mapping, S.M.A.R.T., SLC-liteX
Recommended Applications	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking

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Industrial USB Disk Module



Model	UH110-UFM3	UDM 1U-M	UDM2A-M	UDM 1U	UDM2A
Form Factor	USB Disk Module	USB Disk Module	USB Disk Module	USB Disk Module	USB Disk Module
Interface	USB 2.0	USB 3.0	USB 2.0	USB 3.0	USB 2.0
Connector/Pitch (mm)	10 pin 180D LP: 2.54	20 pin 180D 1U: 2.00	10 pin 90D (Type A, B, C): 2.54 10 pin 180D LP (Type D LP): 2.54 10 pin 90D LP (Type E): 2.00	20 pin 180D 1U: 2.00	10 pin 90D (Type A, B, C): 2.54 10 pin 180D LP (Type D LP): 2.54 10 pin 90D LP (Type E): 2.00
NAND Flash Type	3D TLC	MLC	MLC	SLC	SLC
Capacity	32GB~64GB	8GB~32GB	8GB~128GB	128MB~16GB	256MB~32GB
Max. R/W Performance (MB/sec)	37/32	90/48	44/43	40/35	44/41
IOPS (4K Random Write)	400	-	190	-	105
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
Storage Temperature (°C)	-55 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
Shock	Operation: 50(G)/11(ms)/half sine (compliant with MIL-STD-202G) Non-operation: 1,500(G)/0.5(ms)/half sine (compliant with MIL-STD-883K)				
Vibration	Operation: 7.69(Grms), 20~2000(Hz)/random (compliant with MIL-STD-810G) Non-operation: 4.02(Grms), 15~2000(Hz)/random (compliant with MIL-STD-810G)				
MTBF (hours)	>3,000,000	>1,000,000	>1,000,000	>2,000,000	>2,000,000
Dimension (mm)	32.50 x 24.00 x 5.00	22.40 x 24.00 x 5.00	90D (Type A): 28.80 x 26.65 x 10.76 90D (Type B): 37.80 x 26.65 x 10.76 90D (Type C): 37.80 x 26.65 x 10.76 LP 180D (Type D) with housing: 28.10 x 35.70 x 7.20 LP 90D (Type E): 36.80 x 26.50 x 7.10	22.40 x 24.00 x 5.00	90D (Type A): 28.80 x 26.65 x 10.76 90D (Type B): 37.80 x 26.65 x 10.76 90D (Type C): 37.80 x 26.65 x 10.76 LP 180D (Type D) with housing: 28.10 x 35.70 x 7.20 LP 90D (Type E): 36.80 x 26.50 x 7.10
Features	Page Mapping, S.M.A.R.T., SLC-ilteX	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.	S.M.A.R.T., Wide Temp.
Recommended Applications	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking	Factory Automation, IOT, Server & Networking

PATA SSD Disk Module

- Global wear-leveling and block management
- Built-in ATA secure erase and S.M.A.R.T. functions
- Intelligent power failure recovery
- Master/ Slave jumper setting



Model	AFD257-M	AFD257	ADM5S-M	ADM5S
Form Factor	2.5"	2.5"	PATA Disk Module	PATA Disk Module
Interface	PATA	PATA	PATA	PATA
Connector	44P/180D	44P/180D	40P/180D 44P/180D, 270D	40P/180D 44P/180D, 270D
NAND Flash Type	MLC	SLC	MLC	SLC
Capacity	32GB~256GB	8GB~128GB	180D MPH: 8GB~64GB 270D MPH: 8GB~128GB	180D MPH: 128MB~32GB 270D: 128MB~64GB
Max. R/W Performance (MB/sec)	100/90	100/95	105/100	75/65
Standard Operating Temperature (°C)	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
Extended Operating Temperature (°C)	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
Shock	1500G (complied with MIL-STD810)			
Vibration	15G (complied with MIL-STD810)			
MTBF (hours)	>1,000,000	>2,000,000	>1,000,000	>2,000,000
Dimension (mm)	100.00 x 69.80 x 9.30	100.00 x 69.80 x 9.30	40P/180D: 58.99 x 27.83 x 6.25 44P/180D: 49.39 x 27.10 x 6.00 44P/270D: 45.00 x 28.00 x 7.00	40P/180D: 49.39 x 27.10 x 6.00 44P/180D : 49.39 x 27.10 x 6.10 44P/270D: 45.00 x 28.00 x 6.85
Features	Wear-leveling and Block Management, ATA Secure Erase and S.M.A.R.T. Functions, Power Failure Recovery	Wear-leveling and Block Management, ATA Secure Erase and S.M.A.R.T. Functions, Power Failure Recovery	Wear-leveling and Block Management, ATA Secure Erase and S.M.A.R.T. Functions, Power Failure Recovery	Wear-leveling and Block Management, ATA Secure Erase and S.M.A.R.T. Functions, Power Failure Recovery
Recommended Applications	Healthcare, Server & Networking, Transportation	Healthcare, Server & Networking, Transportation	Healthcare, Server & Networking, Transportation	Healthcare, Server & Networking, Transportation

*All product specifications are subject to change without notice.



About Apacer

Apacer is a global leader in digital storage solutions, and is devoted to innovative storage technology and services. After more than 25 years in the industry, we remain dedicated to "Becoming Better Partners." Our core values, as always, continue to revolve around reliability and innovation.

The company focuses on embedded applications for a variety of vertical markets, including military, medical, gaming, and industrial, and has become an integration expert in digital storage, innovative applications, and value-added services. Apacer is known for its advanced technologies and product quality and was ranked by Gartner as the top industrial SSD supplier for five consecutive years, from 2012 to 2016. In addition, Apacer is committed to making a positive impact on societal issues and has joined the **Responsible Business Alliance (RBA)**, which is formerly known as Electronic Industry Citizenship Coalition (EICC), a coalition promoting **ESG (Environmental, Social, Governance)** within the global electronics supply chain. We believe that the success of a corporation is marked not by profit but by how we benefit others, whether by caring for the environment or making contributions to society.

Compliance and Associations



ISO 9001:2015



ISO 14001:2015



OHSAS 18001:2015



IECQ CQ80000



The Most Reliable Storage For Industries

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