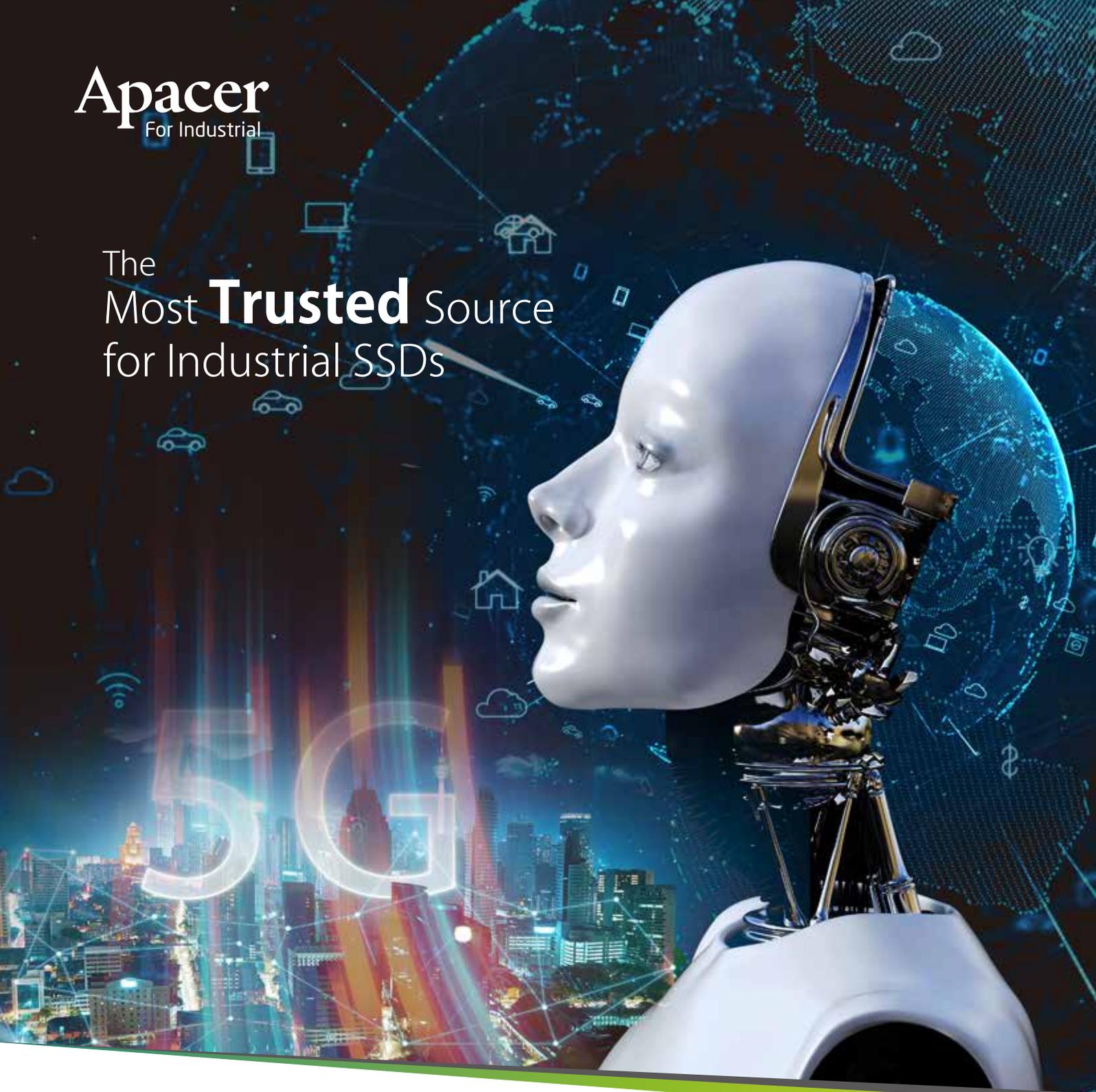


**Apacer**  
For Industrial

The  
Most **Trusted** Source  
for Industrial SSDs



## SSD Selection Guide

[industrial.apacer.com](http://industrial.apacer.com)



Benefit from our  
**Double-barreled Solution.**  
Details on pg.13

# Index

<b>What Sets Apacer Apart?</b>	02	<b>Nand Flash Products</b>	
<b>Industrial-grade 3D NAND Flash</b>	03	<b>PCIe</b>	
<b>Emergent Technologies</b>	04	M.2	17
<b>Apacer's Premium Packages:</b>		CFexpress	17
For Server and Networking: CloudPro™	05	<b>SATA</b>	
For IoT, IIoT and AIoT: IoTPro™	06	2.5" SSD	18
For Healthcare: WellnessPro™	07	M.2	19
For Transportation: VehiclePro™	08	SATA MO-276 / MO-297 / MO-300	20
For Gaming: CasinoPro™	09	SATA 7-pin Module	21
For Defense: DefensePro™	10	<b>Card</b>	
<b>Featured Technologies:</b>		Industrial CF Card	23
DataDefender™	12	Industrial CFAST Card	24
SMART Read Refresh™	12	Industrial SD Card	25
Over-provisioning	13	Industrial microSD Card	26
Double-barreled Solution	13	<b>USB</b>	
<b>Value-added Technologies:</b>		Industrial USB Drive	27
Security	14	Industrial USB Disk Module	28
Data Integrity	15	<b>PATA</b>	
Reliability & Endurance	15	PATA SSD/ Disk Module	29
Extreme Environments	16	<b>About Apacer</b>	30



# What sets Apacer apart?

## Why Multinational Leaders Depend On Apacer

For over 20 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 20 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**

## A Premium Package for Each Vertical Market

- **CloudPro™**
- **IoTPro™**
- **WellnessPro™**
- **SSDs for Embedded and IPC Applications**
- **VehiclePro™**
- **CasinoPro™**
- **DefensePro™**



# Industrial Storage 3D NAND Solutions



## Benefits of Apacer's Industrial 3D NAND Flash Memory

- Greater reliability thanks to an advanced LDPC ECC engine
- Larger density in a single die
- Higher performance
- Lower power consumption
- Made with original ICs sourced directly from our long-term partners such as Toshiba
- P/E cycles can reach 3,000, much more than commercial 3D NAND
- Operating ranges can be as wide as -40°C to 85°C

# Emergent Technologies

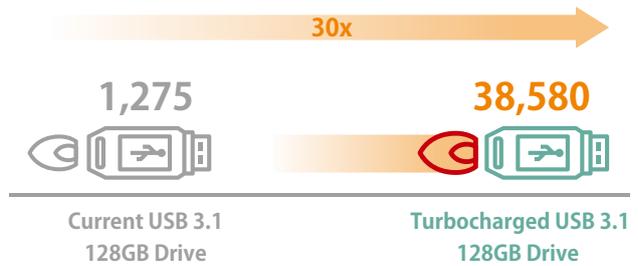
Contact us for more details on the availability of these latest innovations

## Turbocharged USB



We're proud to introduce our Turbocharged USB Disk Module/Drive. In addition to extremely high IOPS, this device will not compromise hardware capabilities by taking up a SATA or PCIe port. This innovative USB drive is fully compatible with Windows/Ubuntu/VMware OS drives and is ideal for log storage applications.

## Performance Comparison – By IOPS



## CoreGlacier™ Technology

In many applications, SSDs are subject to challenging conditions. If the working environment is already hot, and the SSD's operation causes it to increase in temperature as well, the result could be damage to the hardware or corrupted data. In cases like this, leading industrial manufacturers know to turn to Apacer.

By choosing SSDs which have the value-adding technology of CoreGlacier™, they can take advantage of an extra layer of cooling protection.

## NPLink Storage Solutions

Apacer introduces OCuLink-compatible SSDs, known as the NPLink series. This series is led by the NPLink SSD, which fits the 2.5" form factor and offers PCIe Gen3x 4 compatibility. Next is the NPLink Module, which offers PCIe Gen3x 2 as well as USB 3.1 connections, and finally the NPLink Nano-Module, which offers PCIe Gen3x 2 as well as SATA connections.



## EDSFF and NGSFF(M.3) SSD

When SSDs first arrived on the market, they adapted to the form factors of HDDs. But one of the advantages of SSDs is that they aren't restricted to circular forms like HDDs. So, as the market matures, the EDSFF and NGSFF SSDs are now available. With their long, slim form factors, they are more suitable for certain applications such as blade servers.

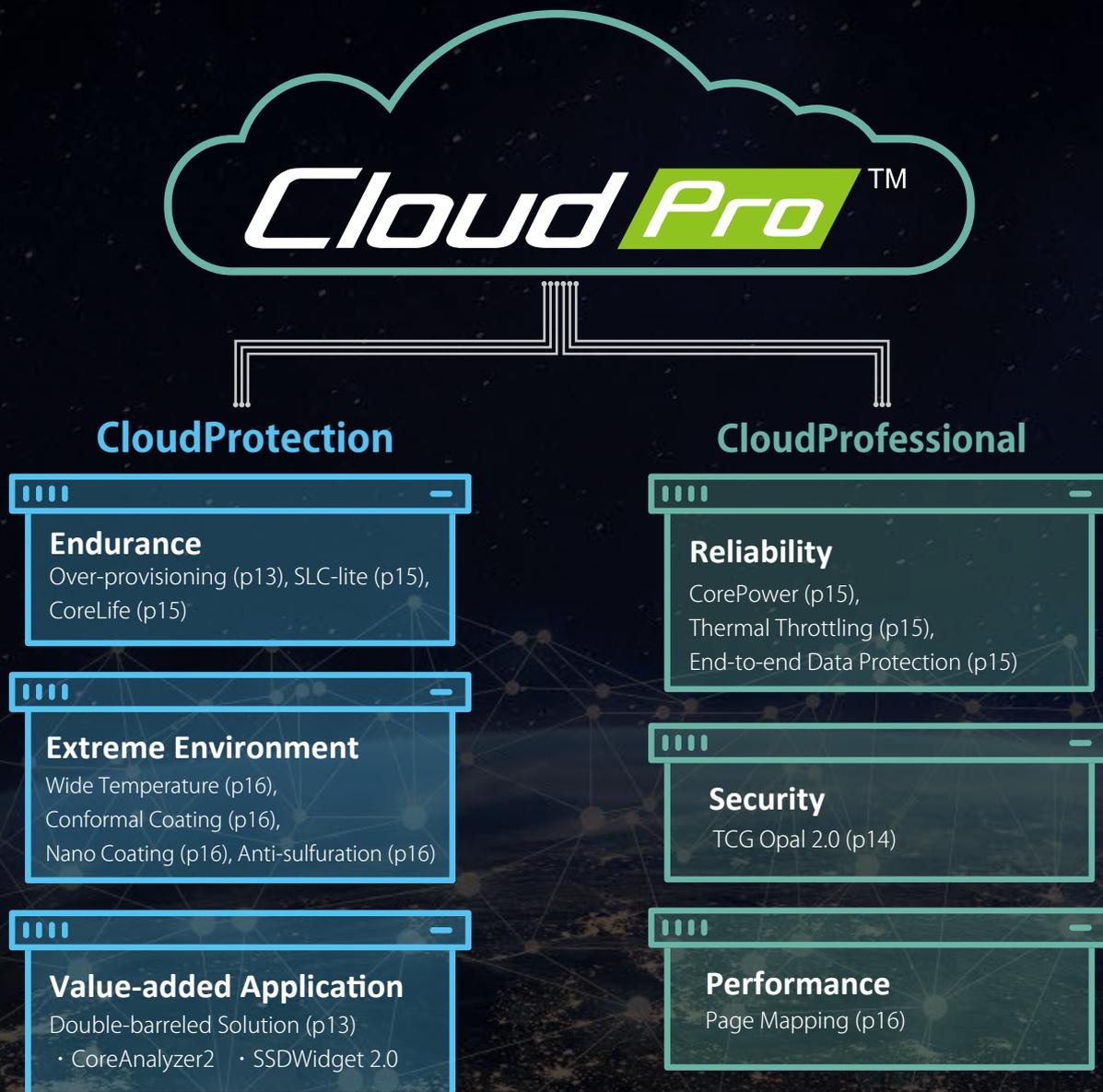
# Apacer's Premium Package: CloudPro™

## SSDs Built To Survive, Even In The Toughest Conditions

In the world of servers and networking, manufacturers are looking for components with increased endurance, which will be able to withstand challenging environments. Apacer's CloudPro™ package offers value-adding features which deliver these advantages, and is divided into two levels: CloudProtection and CloudProfessional.

Applications:

- Routers/gateways/servers
- Smart industrial facilities
- Optical networks
- Surveillance and security



Please note that although we've packaged these technologies together to cater to the needs of buyers in this vertical market, any combination of technologies can be made available upon request.

# Apacer's Premium Package: IoTPro™

## Helping a Growing Industry Thrive and Develop

IoT is growing rapidly, and spawning new subcategories like Artificial Intelligence of Things (AIoT) and Industrial Internet of Things (IIoT). To support these ongoing developments, Apacer has created the IoTPro™ package, which is divided into three levels.

### Applications:

- Edge computing devices
- Cloud computing devices
- Sensors and controllers

## IoTPro™

**Supreme**

Double-barreled Solution (p13)  
CorePower (p15)

**Upgrade**

TCG Opal 2.0 (p14)  
Underfill / Nano Coating (IP 57) (p16)  
End-to-end Data Protection (p15)

**Select**

Thermal Throttling (p15)  
Wide Temperature (p16)  
Conformal Coating (p16)

We pride ourselves on developing customized solutions to precisely meet customers' demands.

# Apacer's Premium Package: WellnessPro™

## Upholding Patient Privacy is Paramount

The modern healthcare industry has many pressing concerns, but one of the most central is patient privacy. Apacer's SSDs deliver superior protection in this area by incorporating the latest encryption technology into their designs, and the WellnessPro™ package contains many other value-adding features.

### Applications:

- Patient monitoring systems
- Diagnostic machines
- Imaging systems
- Pain management devices
- Mobile health equipment



Please note that although we've packaged these technologies together to cater to the needs of buyers in this vertical market, any combination of technologies can be made available upon request.

# Apacer's Premium Package: VehiclePro™

## SSDs Built For The Long, Hard Road

When building computing devices that will end up in vehicles, manufacturers look for rugged solutions. That's exactly what Apacer offers with its three-level VehiclePro™ series. Value-adding features include nano coating to keep grime out, power stabilization for when current flow is unreliable, and wide-temperature operation for when conditions get tough.

### Applications:

- In-vehicle entertainment systems
- Navigation systems
- Surveillance systems
- Drive logging recorders

## VehiclePro™

### Supreme

Nano Coating (IP57) (p16)  
CoreVolt (p16) / CorePower (p15)  
Customized power stabilization

### Upgrade

Underfill / Conformal coating (p16)  
Anti-sulfuration (p16)  
Smart Read Refresh™ (p12)

### Select

Page Mapping (p16)  
Wide Temperature (p16)

We pride ourselves on developing customized solutions to precisely meet customers' demands.

# Apacer's Premium Package: CasinoPro™

## Adapting To The Demands Of A Unique Industry

Apacer has supplied leading makers of gaming products for decades. We know the features these manufacturers are looking for, such as SMART Read Refresh™ to make read-intensive operations more efficient, as well as technologies that protect SSDs from sudden power cuts.

### Applications:

- Slot machines
- Lottery machines
- Online gaming
- Casino/amusement gaming

## CasinoPro™

CorePower (p15)  
Signed Firmware (p14)  
SLC-lite (p15)

Over-provisioning (p13)  
TCG Opal 2.0 (p14)  
Wide Temperature (p16)

SMART Read Refresh™  
(p12)  
Write Protect (p14)  
SSD Widget 2.0 (p13)

Please note that although we've packaged these technologies together to cater to the needs of buyers in this vertical market, any combination of technologies can be made available upon request.

# Apacer's Premium Package: DefensePro™

## Rugged Technologies With Advanced Security Features

Defense applications require products that meet or exceed military standards. Apacer's DefensePro™ package is divided into three levels, and contains many sophisticated security features.

### Applications:

- **Communications, computers, intelligence, surveillance and reconnaissance (C4ISR)**
- **Unmanned system payloads**
- **Combat management systems**
- **Sensor systems**

## DefensePro™

### Supreme

CoreDestroyer (p14)  
CorePower (p15)

### Upgrade

AES/ TCG Opal 2.0 (p14)  
Underfill, Nano Coating (IP 57) (p16)  
End-to-end Data Protection (p15)  
Instant Keychange™ (p14)  
Anti-sulfuration (p16)

### Select

Wide Temperature (p16)  
Conformal Coating (p16)  
DataDefender™ (p12)  
Thermal Shock 10°C/min (p16)

We pride ourselves on developing customized solutions to precisely meet customers' demands.

# Defense SSD Series



Apacer knows that defense manufacturers have to meet some of the toughest standards for reliability in any industry. That's why we created our Defense SSD series. By default, all products in this series are tested to ensure they comply with humidity, altitude, thermal shock and thermal cycling tests. Our engineers carry out these tests at our factory in Taiwan using the latest equipment.

A good example of our Defense SSDs is the SM23D-25. For the ultimate in security, it supports AES 256-bit encryption as well as CoreEraser technology to prevent data falling into enemy hands. And it also features a wide operating temperature range, continuing to deliver efficient performance even in climates as cold as -40°C or as hot as 85°C.

Defense SSD						
Form Factor	2.5"	2.5"	2.5"	M.2 2280	M.2 2242	MO-300
Model Name	SS13D-25	SM13D-25	SM23D-25	SM23D-M280	SM23D-M242	SM23D-300
Key Feature	High capacity, AES -256	High capacity	TCG Opal 2.0	TCG Opal 2.0	TCG Opal 2.0	TCG Opal 2.0
NAND Flash Type	SLC	MLC	MLC	MLC	MLC	MLC
Capacity	32GB to 512GB	512GB to 2TB	32GB to 1TB	32GB to 1TB	32GB to 256GB	32GB to 512GB
EST. Seq. R/W Performance (MB/sec)	520/515	530/355	560/510	560/510	555/470	560/510
EST. IOPS R/W	90K	69K	65K	63K	41K	58K
AES-256	Yes	Yes	Yes	Yes	Yes	Yes
Write Protect	HW: Pin header, GPIO	HW: Pin header, GPIO	HW: Pin header, GPIO; SW	HW: GPIO; SW	HW: GPIO; SW	HW: WP switch, GPIO; SW
Instant Keychange™	Optional	Optional	Optional	Optional	Optional	Optional
Standard Operating Temperature (°C)	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
Storage Temperature (°C)	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100

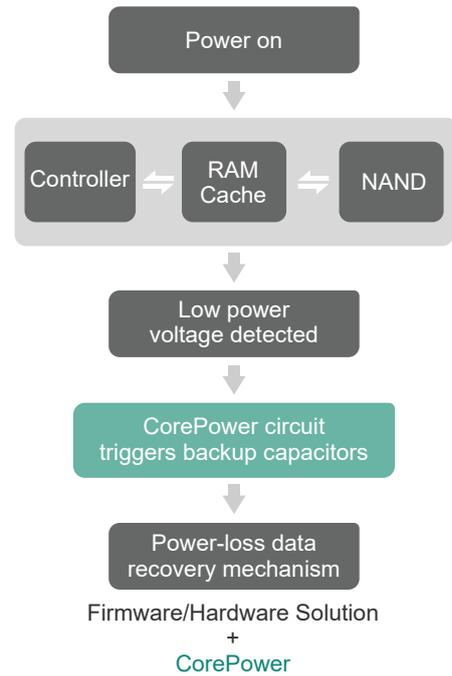
# Featured Technologies



## *Data Defender*™

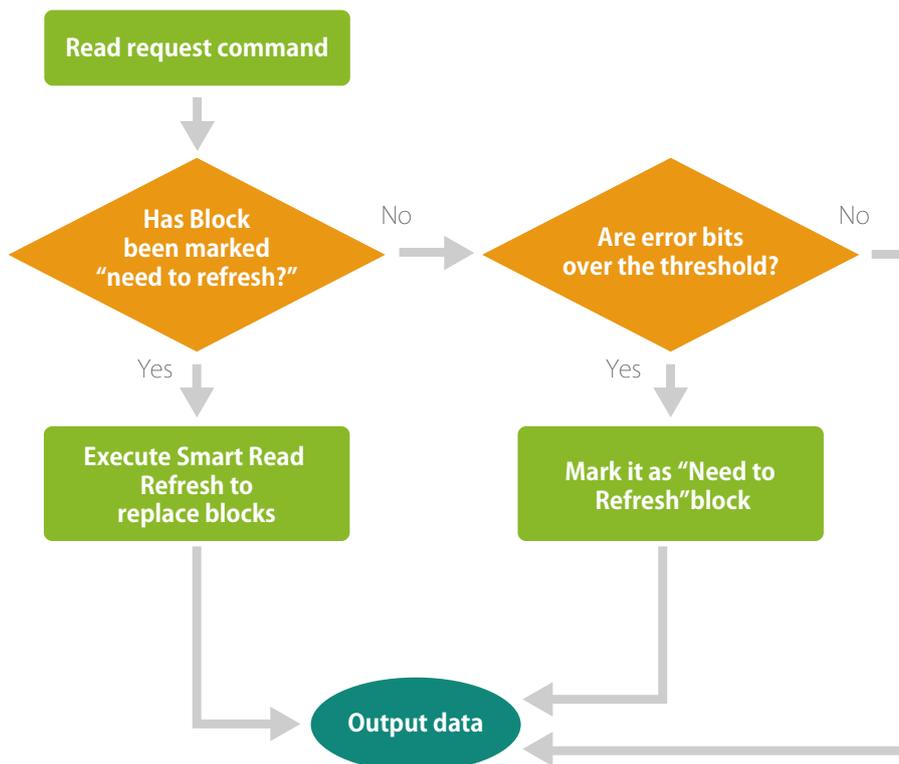
Apacer DataDefender™ combines both firmware and hardware mechanisms to ensure data integrity.

When power disruption occurs, the hardware mechanism will notice and trigger the controller to run multiple write-to-flash cycles to store data. Then the firmware will check that the data was correctly written to the NAND flash after the power disruption, preventing data loss.



## *SMART Read Refresh*™

Apacer Smart Read Refresh™ plays a proactive role in avoiding read disturb errors from occurring to ensure health status of all blocks of NAND flash. Developed for read-intensive applications in particular, Smart Read Refresh™ is employed to make sure that during read operations, when the read operation threshold is reached, the data is refreshed by re-writing it to a different block for subsequent use.





## Over-provisioning

To reduce write amplification and increase endurance and performance, Apacer's SSDs support over-provisioning. The SSDs set aside a certain portion of the physical capacity of the memory to carry out garbage collection, wear-leveling and bad block mapping operations. The end result is a longer operating lifetime for our SSD products.

### Write amplifications are significantly improved!

	Capacity	Data Cache	Write Amplification Indicator	
Non-OP	128GB (full capacity)	128KB	1.68	14% less
★ OP	120GB	128KB	1.47	
Non-OP	256GB (full capacity)	128KB	1.70	25% less
★ OP	240GB	128KB	1.36	



## Double-barreled Solution

- A two-stage approach to SSD selection and monitoring
- API and SDK available for customization
- Supports remote applications and also 24-hour control over data storage security and parameters
- **CoreAnalyzer2** analyzes usage behavior and then recommends the most suitable SSD and firmware for a given application
- **SSDWidget 2.0** reminds user when drive is nearing the end of its lifespan, preventing unwanted downtime

### Step 1

CoreAnalyzer2 – Know your application

Choose the most suitable F/W for SSD

### Step 2

SSDWidget 2.0 – Monitor your SSD Status

Anticipate and mitigate SSD failures remotely

Longer-lasting SSDs



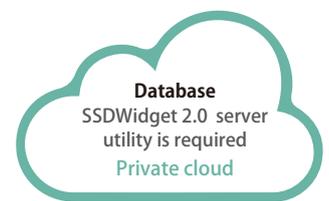
Record Host Access Behavior



SMART info downloaded



iOS / Android APP



SMART info uploaded



# Security



## 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.



## 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.



## CoreSecurity

This is a proprietary data protection technology developed to elevate the data security level through customized firmware and prevent data leakage for higher reliability of storage devices.



## 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.



## Signed Firmware

Certain hackers have demonstrated the ability to gain control over digital devices by disguising corrupted firmware as a legitimate firmware update. By using digital signature technology, Apacer can update an SSD's firmware securely and verify that the process is carried out correctly.



## Write Protect

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



## 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.

## 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.



### Data Retention

Data retention refers to how long stored data can be maintained while a storage device is powered down. Apacer offers a number of optimization strategies to help customers achieve the ideal balance of data retention with P/E cycles for industrial applications.



### 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.

## Reliability & Endurance



### Thermal Throttling

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.



### CoreLife

This extends the service life of SSDs up to eight times, through its firmware optimized for gaming and health-care applications that often require small random writes to storage.



### 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.



### SLC-lite

This strikes a cost-performance balance between MLC and SLC flash types, making it an ideal alternative solution for mission-critical embedded or industrial applications.



## 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.



## CoreVolt

When voltage instability occurs, Apacer's proprietary CoreVolt technology uses its special hardware circuit design to prevent SSDs from being affected by input power changes, and further enhances data protection.

# Extreme Environments



## 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.



## Thermal Shock

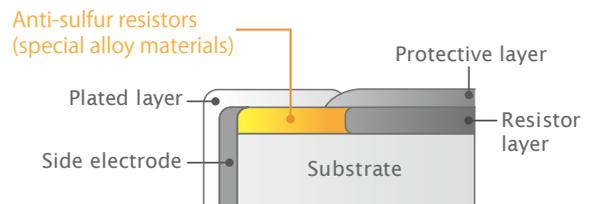
This protection technology prevents damage to components when wild temperature swings take place. Apacer's in-house testing facility can check to ensure thermal shock resistance and modify a standard product if needed.



## Anti-sulfuration

Anti-sulfuration storage modules are mainly used in equipment exposed in highly contaminated environment.

- World's first anti-sulfuration storage modules
- Solves corrosion problems effectively and increases overall system lifespan
- Ensures product reliability and durability



## Conformal Coating

Dust, moisture, fungus, corrosion

\$

14 Working-days

vs.

Protection

Cost

Additional LT



## Nano Coating

Dust, moisture, fungus, corrosion, IP57

\$\$\$

14 Working-days

# PCIe SSD

- Superb performance and low latency
- Compliant with the NVMe™ specification
- Transmission speed up to 3,200 MB/sec
- Thermal Throttling support
- End-to-end data protection support



Model	PV130-M242	PV310-M280	PV120-M280	PT120-M280	PM610-M280	PV130-CFX
<b>Form Factor</b>	M.2 2242	M.2 2280	M.2 2280	M.2 2280	M.2 2280	CFX Type B
<b>Interface</b>	PCIe Gen3 x2	PCIe Gen3 x4	PCIe Gen3 x2	PCIe Gen3 x2	PCIe Gen3 x2	PCIe Gen3 x2
<b>Connector</b>	M.2 B & M key	M.2 M key	M.2 B & M key	M.2 B & M key	M.2 B & M key	21-pin male
<b>NAND Flash Type</b>	3D TLC	3D TLC	3D TLC	3D TLC	MLC	3D TLC
<b>Capacity</b>	60GB~480GB	120GB~960GB	120GB~960GB	120GB~480GB	64GB~512GB	120GB~480GB
<b>External DRAM</b>	No	Yes	Yes	Yes	Yes	No
<b>Max. R/W Performance (MB/sec)</b>	1600/1000	3290/2470	1700/1000	1600/1000	1350/1005	1550/950
<b>Standard Operating Temperature (°C)</b>	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
<b>Wide Temperature (°C)</b>	-40 ~ +85	-40 ~ +85	-40 ~ +85	-	-40 ~ +85	-40 ~ +85
<b>Shock</b>	Operation: 50G/11ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)					
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)					
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>1,000,000
<b>Dimension (mm)</b>	Single side: 42.00 x 22.00 x 2.38 Double side: 42.00 x 22.00 x 3.88	Double side: 80.00 x 22.00 x 3.88	Single side: 80.00 x 22.00 x 2.38 Double side: 80.00 x 22.00 x 3.88	Single side: 80.00 x 22.00 x 2.38 Double side: 80.00 x 22.00 x 3.88	Single side: 80.00 x 22.00 x 2.38 Double side: 80.00 x 22.00 x 3.88	29.6 x 38.5 x 3.8

# SATA 2.5" SSD

- 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 support
- Power Failure Management



Model	SV250-25	SV170-25	SM210-25 SM21P-25	SM130-25	SU210-25	SS210-25
<b>Interface</b>	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)
<b>Connector</b>	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male	(7+15) pin male
<b>NAND Flash Type</b>	3D TLC	3D TLC	MLC	MLC	MLC	SLC
<b>Capacity</b>	30GB~480GB	60GB~960GB	16GB~512GB	512GB~2TB	16GB~256GB	8GB~240GB
<b>Max. R/W Performance (MB/sec)</b>	560/520	560/510	510/470 545/475	530/510	545/450	530/445
<b>IOPs (4K Random Write)</b>	74K	85K	79K	89K	80K	76K
<b>Standard Operating Temperature (°C)</b>	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
<b>Wide Temperature (°C)</b>	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature (°C)</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>Shock</b>	Operation: 50G/11ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)					
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)					
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>2,000,000
<b>Dimension (mm)</b>	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	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	7mm:100.00 x 69.85 x 6.90 9.5mm: 100.00 x 69.85 x 9.30

\*All product specifications are subject to change without notice.

# 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	SV250-M242	SM230-M242	SS220-M242	SV250-M280	SM230-M280	SM210-M280
<b>Form Factor</b>	M.2 2242	M.2 2242	M.2 2242	M.2 2280	M.2 2280	M.2 2280
<b>Interface</b>	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)
<b>Connector</b>	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
<b>NAND Flash Type</b>	3D TLC	MLC	SLC	3D TLC	MLC	MLC
<b>Capacity</b>	30GB~480GB	8GB~256GB	1GB~64GB	30-960GB	32GB ~ 1TB	32GB~512GB
<b>External DRAM</b>	No	No	Yes	No	No	Yes
<b>Max. R/W Performance (MB/sec)</b>	560/520	555/470	555/450	560/525	560/510	540/490
<b>Standard Operating Temperature (°C)</b>	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
<b>Wide Temperature (°C)</b>	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature (°C)</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>Shock</b>	Operation: 50G/11 ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)					
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)					
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>2,000,000	>1,000,000	>1,000,000	>1,000,000
<b>Dimension (mm)</b>	42 x 22 x 3.80	42 x 22 x 3.80	42 x 22 x 3.60	Single side: 80.00 x 22.00 x 2.38 Double side: 80.00 x 22.00 x 3.88	Single side: 80.00 x 22.00 x 2.23 Double side: 80.00 x 22.00 x 3.58	Single side: 80.00 x 22.00 x 2.23 Double side: 80.00 x 22.00 x 3.58

# SATA MO-276 / 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
- DEVSLP support (optional)



Model	SV170-μSSD	SV170-297	SM210-297	SS210-297	SV250-300	SU210-300	SS210-300
<b>Form Factor</b>	JEDEC MO-276	JEDEC MO-297	JEDEC MO-297	JEDEC MO-297	JEDEC MO-300	JEDEC MO-300	JEDEC MO-300
<b>Interface</b>	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)
<b>Connector</b>	BGA 156 Ball	(7+15) pin male	(7+15) pin male	(7+15) pin male	52 pin male	52 pin male	52 pin male
<b>NAND Flash Type</b>	3D TLC	3D TLC	MLC	SLC	3D TLC	MLC	SLC
<b>Capacity</b>	30GB~120GB	30GB~480GB	32GB~512GB	4GB~128GB	30GB~480GB	8GB~256GB	2GB~128GB
<b>External DRAM</b>	No	No	Yes	Yes	No	Yes	Yes
<b>Max. R/W Performance (MB/sec)</b>	560/460	560/500	510/475	525/440	560/515	555/465	525/445
<b>Standard Operating Temperature (°C)</b>	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
<b>Wide Temperature (°C)</b>	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
<b>Storage Temperature (°C)</b>	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100
<b>Shock</b>	Operation: 50G/11ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)						
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)						
<b>Dimension (mm)</b>	16 x 20 x 1.4	54 x 39.8 x 4	54 x 39.8 x 4	54 x 39.8 x 4	50.8 x 29.85 x 4.85	50.8 x 29.85 x 3.8	50.8 x 29.85 x 3.8
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>1,000,000	>2,000,000	>1,000,000	>1,000,000	>2,000,000

\*All product specifications are subject to change without notice.

# 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	SV250-7LP2	SDM7-M 7P/180D DP	SDM7-M 7P 180D LP2(H)	SDM5A-M 7P/180D LP(H)	SDM5A-M 7P/90D LP(H)	SDM5A-M 7P/180D LP5(H)
<b>Interface</b>	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)
<b>Connector</b>	7-pin	7-pin	7-pin	7-pin	7-pin	7-pin
<b>NAND Flash Type</b>	3D TLC	MLC	MLC	MLC	MLC	MLC
<b>Capacity</b>	60GB~240GB	32GB ~ 256GB	8GB ~ 64GB	4GB~64GB	4GB~32GB	16GB ~ 64GB
<b>Max. R/W Performance (MB/sec)</b>	560/510	525/355	130/90	425/80	120/40	435/80
<b>Standard Operating Temperature ( °C )</b>	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
<b>Wide Temperature ( °C )</b>	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
<b>Storage Temperature ( °C )</b>	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100
<b>Housing</b>	No	No	Optional	Optional	Optional	Optional
<b>H/W Write Protect</b>	Optional	Optional	Optional	No	No	Optional
<b>Cable-less Solution</b>	Multi-PowerPath	Multi-PowerPath	Multi-PowerPath	Optional (7+2 pin)	Optional (7+2 pin)	Multi-PowerPath
<b>Shock</b>	Operation: 50G/11ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)					
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)					
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>1,000,000
<b>Dimension (mm)</b>	33.00 x 29.30 x 8.85	30.0 x 32.5 x 7.80	Without housing: 35.2 x 30.4 x 9.25 With housing: 33.0 x 29.3 x 88.5	Without housing: 30.0 x 27.8 x 8.2 With housing: 32.5 x 29.4 x 8.53	Without housing: 30.0 x 20 x 15.2 With housing: 32.5 x 23.13 x 17.8	Without housing: 35.2 x 30.4 x 9.25 With housing: 33.0 x 29.3 x 88.5



Model	SDM5A-M 7P/180D Slim2(H)	SDM5A 7P/180D Slim2(H)	SDM5A 7P/180D LP(H)	SDM5A 7P/180D LP2	SDM5A 7P/90D LP(H)
<b>Interface</b>	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)
<b>Connector</b>	7-pin	7-pin	7-pin	7-pin	7-pin
<b>NAND Flash Type</b>	MLC	SLC	SLC	SLC	SLC
<b>Capacity</b>	4GB~32GB	1GB~16GB	1GB~32GB	8GB~32GB	1GB~16GB
<b>40Max. R/W Performance (MB/sec)</b>	120/40	44/40	435/215	435/215	44/40
<b>Standard Operating Temperature ( °C )</b>	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
<b>Wide Temperature ( °C )</b>	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature ( °C )</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>Housing</b>	Optional	Optional	Optional	No	Optional
<b>H/W Write Protect</b>	No	No	No	Optional	No
<b>Cable-less Solution</b>	Optional (7+2 pin)	Optional (7+2 pin)	Optional (7+2 pin)	Optional (7+2 pin)	Optional (7+2 pin)
<b>Shock</b>	Operation: 50G/11ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)				
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)				
<b>MTBF (hours)</b>	>1,000,000	>2,000,000	>2,000,000	>2,000,000	>2,000,000
<b>Dimension (mm )</b>	Without housing: 17 x 40 x 6.1 With housing: 19.8 x 41.4 x 7.5	Without housing: 17 x 40 x 6.1 With housing: 19.8 x 41.4 x 7.5	Without housing: 30.0 x 27.8 x 8.2 With housing: 32.5 x 29.4 x 8.53	33.00 x 29.30 x 8.85	Without housing: 30.0 x 20.0 x 15.2 With housing: 32.5 x 23.1 x 17.8

\*All product specifications are subject to change without notice.

# Industrial CF Card

- Compliant with CFA 6.0 specification
- Global wear-leveling and block management
- Built-in ATA secure erase and S.M.A.R.T. functions
- Intelligent power failure recovery
- MLC extended temperature support
- Lock switch design for write-protection (optional)



Model	Industrial CF6-M	Industrial CM710-CF	Industrial CF6A-M	Industrial CF6A-SL	Industrial CF6	Industrial CS710-CF	Industrial CF6A
<b>Interface</b>	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	PC Card Memory Mode; PC Card I/O Mode; True IDE Mode	PC Card Memory Mode; PC Card I/O Mode; True IDE Mode
<b>Connector</b>	50-pin	50-pin	50-pin	50-pin	50-pin	50-pin	50-pin
<b>Transfer Mode</b>	PIO Mode-6, MWDMA Mode-4, UDMA Mode-7	PIO Mode-6, MWDMA Mode-4, UDMA Mode-6	PIO Mode-6, MWDMA Mode-4, UDMA Mode-7	PIO Mode-6, MWDMA Mode-4, UDMA Mode-7	PIO Mode-6, MWDMA Mode-4, UDMA Mode-7	PIO Mode-6, MWDMA Mode-4, UDMA Mode-6	PIO Mode-6, MWDMA Mode-4, UDMA Mode-7
<b>NAND Flash Type</b>	MLC	MLC	MLC	MLC	SLC	SLC	SLC
<b>Capacity</b>	8GB~128GB	8GB~128GB	8GB~64GB	4GB~32GB	512MB~64GB	128MB~64GB	256MB~32GB
<b>Max. R/W Performance (MB/sec)</b>	105/65	90/55	115/75	115/80	110/80	55/55	60/65
<b>Standard Operating Temperature (°C)</b>	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
<b>Wide Temperature (°C)</b>	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85	-40 ~ +85
<b>Storage Temperature (°C)</b>	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100
<b>H/W Write Protect</b>	Optional	No	Optional	Optional	Optional	No	Optional
<b>Shock</b>	Operation: 50G/11ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)						
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G) *Non-operation: 15 G, 10 ~ 2000 Hz/sine_for CF6 and CF6-M only						
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>2,000,000	>2,000,000	>2,000,000
<b>Dimension (mm)</b>	36.4 x 42.8 x 3.3	36.4 x 42.8 x 3.3	36.4 x 42.8 x 3.3	36.4 x 42.8 x 3.3	36.4 x 42.8 x 3.3	36.4 x 42.8 x 3.3	36.4 x 42.8 x 3.3

# 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	SM22P-CFast	SU220-CFast	SM230-CFast	SU230-CFast	SS220-CFast
<b>Interface</b>	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)	SATA 3.0 (6Gb/s)
<b>Connector</b>	(7+17) pin male	(7+17) pin male	(7+17) pin male	(7+17) pin male	(7+17) pin male	(7+17) pin male
<b>Form Factor</b>	CFast	CFast	CFast	CFast	CFast	CFast
<b>NAND Flash Type</b>	3D TLC	MLC	MLC	MLC	MLC	SLC
<b>SLC-lite</b>	–	–	Yes	–	Yes	–
<b>Capacity</b>	30GB~480GB	8GB~128GB	8GB~128GB	8GB~256GB	8GB~128GB	8GB~64GB
<b>External DRAM</b>	No	Yes	Yes	No	No	Yes
<b>Max. R/W Performance (MB/sec)</b>	560/520	475/85	535/480	560/465	555/475	520/455
<b>Standard Operating Temperature (°C)</b>	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70	0 ~ +70
<b>Storage Temperature (°C)</b>	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100	-40 ~ +100
<b>H/W Write Protect</b>	Optional	–	Optional	Optional	Optional	Optional
<b>Shock</b>	Operation: 50G/11ms (compliant with MIL-STD-202G) Non-operation: 1500G/0.5ms (compliant with MIL-STD-883K)					
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 15 Grms, 10 ~ 2000 Hz/sine (compliant with MIL-STD-810G)					
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>1,000,000	>2,000,000
<b>Dimension (mm)</b>	36.4 x 42.8 x 3.6	36.4 x 42.8 x 3.6	36.4 x 42.8 x 3.6	36.4 x 42.8 x 3.6	36.4 x 42.8 x 3.6	36.4 x 42.8 x 3.6

\*All product specifications are subject to change without notice.

# Industrial SD Card

- Compliant with SD 3.0 and 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
- Page mapping (R1 Only)



Model	CV110-SD	Industrial SD H1-SL	Industrial SD H1-M	Industrial SD	IndustrialSD R1
<b>Interface</b>	SD3.0	SD3.0	SD3.0	SD2.0	SD3.0
<b>NAND Flash Type</b>	3D TLC	MLC	MLC	SLC	SLC
<b>SLC-lite</b>	–	Yes	–	–	–
<b>Capacity</b>	32GB~256GB	SDHC:4GB~64GB	SDHC:4GB~128GB	SD:256MB~2GB; SDHC:4GB~32GB	SD:1GB~2GB; SDHC:4GB~16GB
<b>Max. R/W Performance (MB/sec)</b>	90/34	43/40	43/30	23/17	43/41
<b>Standard Operating Temperature (°C)</b>	-25 ~ + 85	-25 ~ + 85	-25 ~ + 85	0 ~ + 70	-25 ~ + 85
<b>Wide Temperature (°C)</b>	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature (°C)</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>H/W Write Protect</b>	Yes	Yes	Yes	Yes	Yes
<b>Shock</b>	Operating:50G/11ms,(compliant with MIL-STD-202G) Non-operating: 1500G/0.5ms,(compliant with MIL-STD-883K)				
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)				
<b>Dimension (mm)</b>	32 x 24 x 2.1	32 x 24 x 2.1	32 x 24 x 2.1	24x32x2.1	32x24x2.1
<b>MTBF (hours)</b>	>3,000,000	>3,000,000	>3,000,000	>1,500,000	>3,000,000

# Industrial microSD Card

- Compliant with SD 3.0 and SD2.0 specification
- S.M.A.R.T supported
- Supports SD mode and SPI mode
- Global wear-leveling and block management
- Low power consumption
- Page mapping (R1 Only)
- Supports Extended Temperature



Model	CV110-MSD	Industrial microSD H1-SL	Industrial microSD H1-M	Industrial microSD	Industrial microSD R1
<b>Interface</b>	SD3.0	SD3.0	SD3.0	SD2.0	SD3.0
<b>NAND Flash Type</b>	3D TLC	MLC	MLC	SLC	SLC
<b>SLC-lite</b>	–	Yes	–	–	–
<b>Capacity</b>	32GB~256GB	4GB~32GB	4GB~128GB	SD:256MB~2GB; SDHC:4GB	SD:1GB~2GB; SDHC:4GB~8GB
<b>Max. R/W Performance (MB/sec)</b>	90/34	43/40	75/65	20/16	34/28
<b>Standard Operating Temperature (°C)</b>	-25 ~ + 85	-25 ~ + 85	-25 ~ + 85	-25 ~ + 85	-25 ~ + 85
<b>Extended Operating Temperature (°C)</b>	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature (°C)</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>Shock</b>	Operating:50G/11ms,(compliant with MIL-STD-202G) Non-operating: 1500G/0.5ms,(compliant with MIL-STD-883K)				
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)				
<b>Dimension (mm)</b>	15 x 11 x 1	15x11x1	15x11x1	15x11x1	15x11x1
<b>MTBF (hours)</b>	>3,000,000	>3,000,000	>3,000,000	>2,000,000	>3,000,000

\*All product specifications are subject to change without notice.

# Industrial USB Drive

- ECC engine
- Power Saving implemented
- Implements advanced wear-leveling algorithms
- Optional Industrial temp. range -40°C to 85°C
- Chip-On-Board (COB) packaging technology, stored and protected against dust, water and shock (EH163-M only)



Model	EH163-M	EH353-M	AH321	AH322	EH353
<b>Interface</b>	USB3.0	USB3.0	USB2.0	USB2.0	USB3.0
<b>Connector</b>	USB3.0 A Type Plug	USB3.0 A Type Plug	USB2.0 A Type Plug	USB2.0 A Type Plug	USB3.0 A Type Plug
<b>NAND Flash Type</b>	MLC	MLC	SLC	SLC	SLC
<b>Capacity</b>	8GB~64GB	8GB~128GB	256MB~32GB	256MB~32GB	256MB~32GB
<b>Max. R/W Performance (MB/sec)</b>	225/80	205/95	34/22	34/22	80/70
<b>Standard Operating Temperature (°C)</b>	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
<b>Extended Operating Temperature (°C)</b>	-	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature (°C)</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>Shock</b>	Operating:50G/11ms,(compliant with MIL-STD-202G) Non-operating: 1500G/0.5ms,(compliant with MIL-STD-883K)				
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 15 G, 10 ~ 2000 Hz/sine *Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)_for EH163-M only				
<b>Dimension (mm)</b>	23.1 x 14.3 x 6.9	59 x 18.4 x 9.1	60.59 x 19 x 8	55.29 x 18.00 x 8.50	59 x 18.4 x 9.1
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>2,000,000	>2,000,000	>2,000,000

# Industrial USB Disk Module

- Compliant with the standard USB specification
- Compact size and available in various form factors
- Supports Linux/WinXP Embedded/Win7 Embedded/Win8 or later
- Shock resistance, anti-vibration and low power consumption



Model	UDM 1U-M	UDM2A-M	UDM 1U	UDM2A
<b>Interface</b>	USB 3.0	USB2.0	USB 3.0	USB2.0
<b>Connector</b>	20 pin	10 pin	20 pin	10 pin
<b>Connector Pitch (mm)</b>	2.00	90D (Type A, B, C): 2.54 LP 180D (Type D): 2.54 LP 90D (Type E): 2.00	2.00	90D (Type A, B, C): 2.54 LP 180D (Type D): 2.54 LP 90D (Type E): 2.00
<b>NAND Flash Type</b>	MLC	MLC	SLC	SLC
<b>Capacity</b>	8GB~32GB	8GB~128GB	128MB~16GB	256MB~32GB
<b>Max. R/W Performance (MB/sec)</b>	90/48	44/43	40/35	44/41
<b>Standard Operating Temperature (°C)</b>	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
<b>Extended Operating Temperature (°C)</b>	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature (°C)</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>Shock</b>	Operating:50G/11ms,(compliant with MIL-STD-202G) Non-operating: 1500G/0.5ms,(compliant with MIL-STD-883K)			
<b>Vibration</b>	Operation: 7.69 Grms, 20~2000 Hz/random (compliant with MIL-STD-810G) Non-operation: 4.02 Grms, 15 ~ 2000 Hz/sine (compliant with MIL-STD-810G)			
<b>MTBF (hours)</b>	>1,000,000	>1,000,000	>2,000,000	>2,000,000
<b>Dimension (mm)</b>	22.4 x 24 x 5	90D (Type A): 28.8 x 26.65 x 10.76 90D (Type B): 37.8 x 26.65 x 10.76 90D (Type C): 37.8 x 26.65 x 10.76 LP 180D (Type D): 28.1 x 35.7 x 7.2 LP 90D (Type E): 36.8 x 26.5 x 7.1	22.4 x 24 x 5	90D (Type A): 28.8 x 26.65 x 10.76 90D (Type B): 37.8 x 26.65 x 10.76 90D (Type C): 37.8 x 26.65 x 10.76 LP 180D (Type D): 28.1 x 35.7 x 7.2 LP 90D (Type E): 36.8 x 26.5 x 7.1

\*All product specifications are subject to change without notice.

# 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	ADM55-M	ADM55
<b>Interface</b>	PATA	PATA	PATA	PATA
<b>Connector</b>	44 pin	44 pin	40 pin/44 pin	40 pin/44 pin
<b>Product Type</b>	44P/180D	44P/180D	40P/180D 44P/90D, 180D, 270D	40P/180D 44P/90D, 180D, 270D
<b>NAND Flash Type</b>	MLC	SLC	MLC	SLC
<b>Capacity</b>	32GB~256GB	8GB~128GB	90D: 8GB~128GB 180D MPH: 8GB~64GB	90D: 128MB~64GB 180D MPH: 128MB~32GB
<b>Max. R/W Performance (MB/sec)</b>	100/90	100/95	105/100	75/65
<b>Standard Operating Temperature (°C)</b>	0 ~ + 70	0 ~ + 70	0 ~ + 70	0 ~ + 70
<b>Extended Operating Temperature (°C)</b>	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85	-40 ~ + 85
<b>Storage Temperature (°C)</b>	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100	-40 ~ + 100
<b>Shock</b>	1500G (complied with MIL-STD810)			
<b>Vibration</b>	15G (complied with MIL-STD810)			
<b>MTBF (hours)</b>	>1,000,000	>2,000,000	>1,000,000	>2,000,000
<b>Dimension (mm)</b>	100 x 69.8 x 9.3	100 x 69.8 x 9.3	44P/270D: 45.0 x 28.0 x 7.0 40P/180D: 58.99 x 27.83 x 6.25	44P/90D: 45 x 28 x 6.85 44P/180D: 49.39 x 27.10 x 6.10



## About Apacer

Apacer is a global leader in digital storage solutions devoted to innovative storage technology and services. After 20 years in the industry, we remain dedicated to our belief in “persistence in doing the right things.” 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 **corporate social responsibility (CSR)** 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





# The Most Reliable Storage For Industries

## Global Presence

### Taiwan (Headquarters)

Apacer Technology Inc.  
Tel: +886-2-2267-8000  
Fax: +886-2-2267-2261  
Industrial@apacer.com

### Japan

Apacer Technology Corp.  
Tel: +81-3-5419-2668  
Fax: +81-3-5419-0018  
jpservices@apacer.com

### U.S.A.

Apacer Memory America, Inc.  
Tel: +1-408-518-8699  
Fax: 1-510-249-9551  
ssdsales@apacerus.com

### Europe

Apacer Technology B.V.  
Tel: +31-40-267-0000  
Fax: +31-40-290-0686  
sales@apacer.nl

### India

Apacer Technologies Pvt. Ltd.  
Tel: +91-80-41529061~3  
Fax: +91-80-41700215  
sales\_India@apacer.com

### China

Apacer Electronic(Shanghai) Co., Ltd.  
Tel: +86-21-6228-9939  
Industrial@apacer.com

