ADATA®
INDUSTRIAL

PRODUCT CATALOG

GLOBAL LEADER IN INDUSTRIAL STORAGE

ABOUT ADATA

- Founded May 4, 2001
- Founder, Chairman,and CEO: Simon Chen
- TOP 2 Branded SSD Module Manufacturer
- TOP 2 Branded DRAM Module Manufacturer
- More than 500 patents owned

ADATA Industrial, the world's leading brand for industrial-grade embedded storage, upholds the belief of "Infinite Innovation, Intelligent Future" - consistently delivering industry-leading products and solutions, garnering global recognition.

Echoing the infinity "∞" spirit and signature colors Intelligent Green and Energy Orange, the brand embodies reliability, stability, and innovative vitality for the AI era. With professional expertise and technical excellence, ADATA Industrial integrates AI hardware and software to deliver optimal solutions, accelerating industrial intelligence and edge computing - leading industries into a bold new chapter in AI-driven innovation. For more information on our brand and products, visit industrial.adata.com

Leading of the Edge

- TOP 2 Global Branded SSD Module Manufacturer (TrendForce, 2025)
- TOP 2 Global Branded DRAM Module Manufacturer (TrendForce, 2025)

Interbrand 2025 BRAND VALUATION LEAGUE TABLE BEST TAIWAN GLOBAL BRANDS

Best Workplaces™ Great Place To Work. TAIWAN 2025

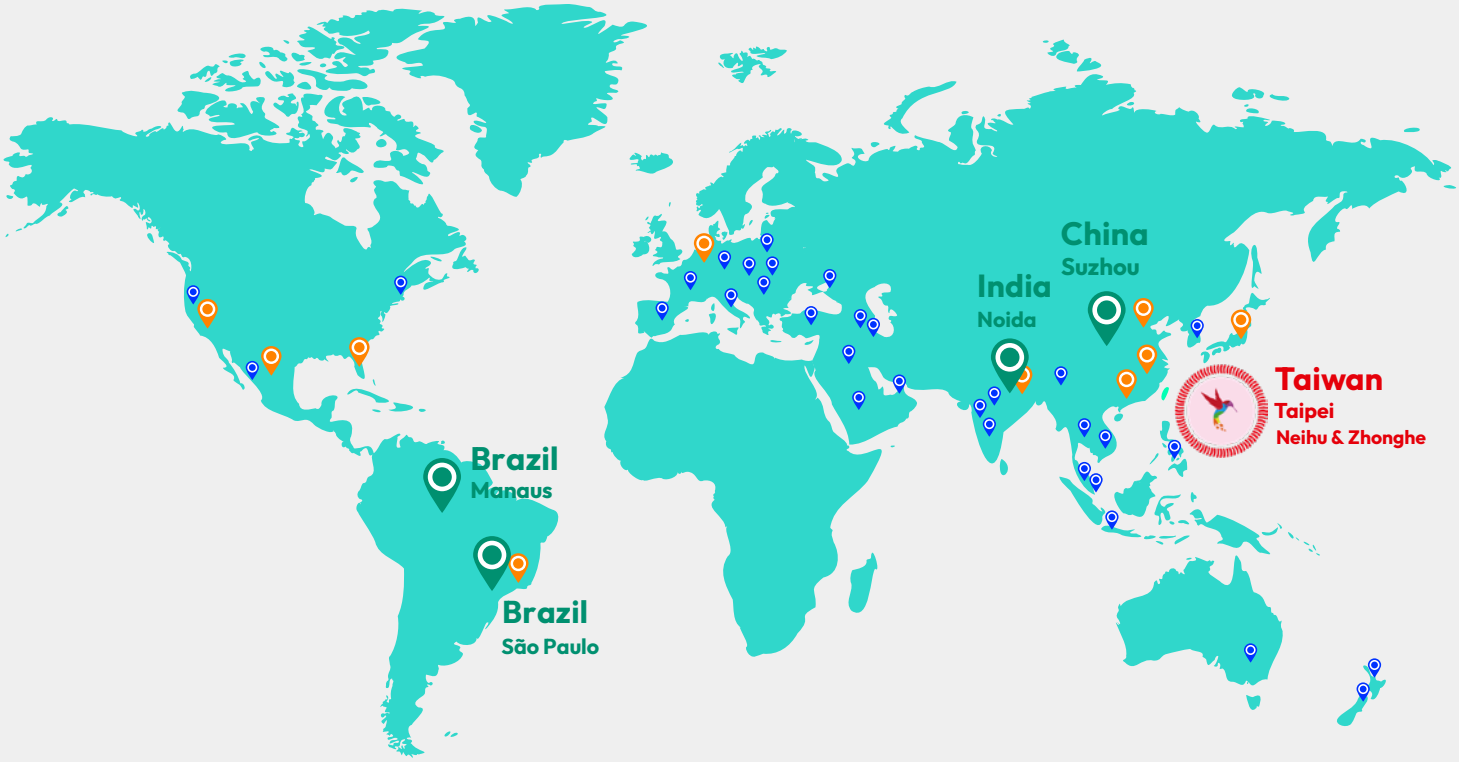
Best Workplaces™ Great Place To Work. GREATER CHINA 2025

AREA ASIA RESPONSIBLE ENTERPRISE AWARDS® 2025

HR Asia BEST COMPANIES TO WORK FOR IN ASIA 2025

Worldwide Service and Presence

We offer direct and instant technical support to customers and end users by the solid global FAE and sales teams.



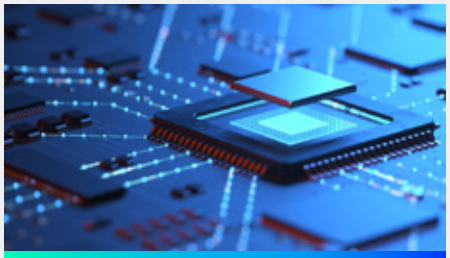
Quality and Environmental Certifications

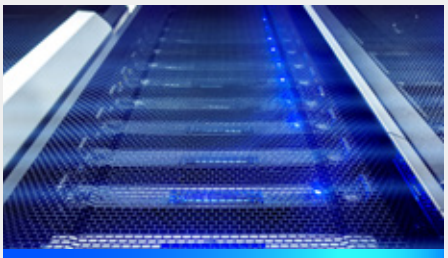
It's our commitment to provide the finest quality and service for complete customer satisfaction.

Quality Management	Hazardous Substance Process Management	Electrostatic Protection Management	Occupational Health & Safety	Environmental Management	Informational Security
• ISO 9001 • IATF 16949	• IECQ QC 080000 • B2B Green Partner	• ANSI/ESD S20.20	• ISO 45001 • CNS 45001	• ISO14001 • ISO 14064-1	• ISO 27001

Target Applications


AUTOMATION


EMBEDDED/ IPC


EDGE AI


HEALTHCARE


NETWORKING


RETAIL (POS/ DIGITAL SIGNAGE/ MFP)

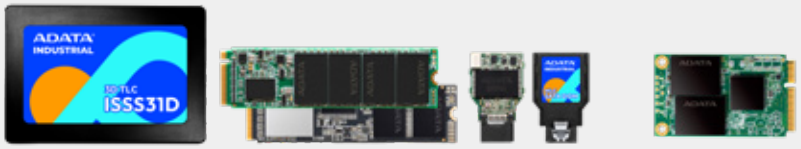

ENTERTAINMENT


SURVEILLANCE

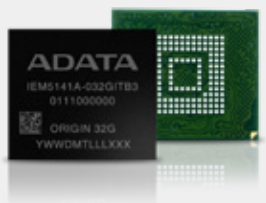

TRANSPORTATION

Product Portfolio


DRAM Modules



Solid State Drives



eMMC

Memory Cards

USB Flash Drive

Product Dimensions Comparison

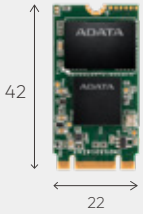
Flash Storage

Unit: mm

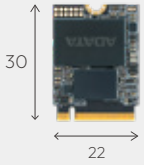
2.5" SSD

M.2 2280 SSD

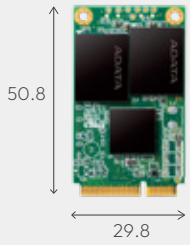
M.2 2242 SSD



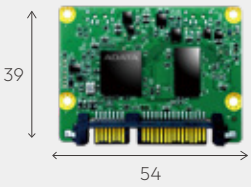
M.2 2230 SSD



mSATA SSD (MO-300)

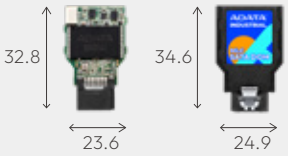


Half-Slim SSD (MO-297)

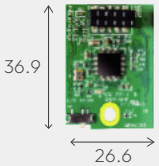


UFD

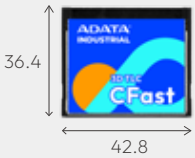
SATA DOM



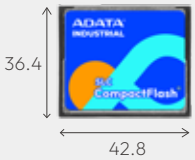
USB DOM



CFast Card

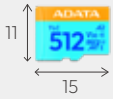


CF Card



SD Card

microSD Card

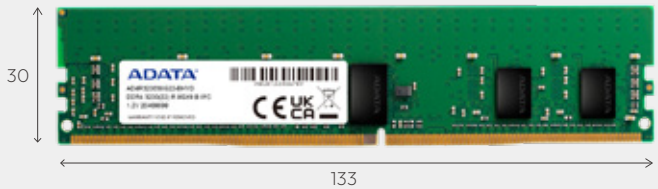


eMMC

DRAM Module

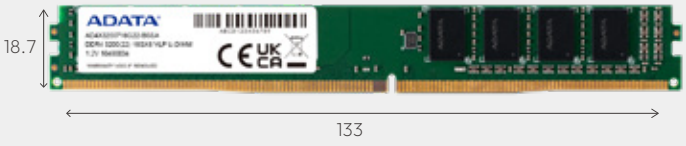
Unit: mm

R-DIMM



U-DIMM

VLP -DIMM



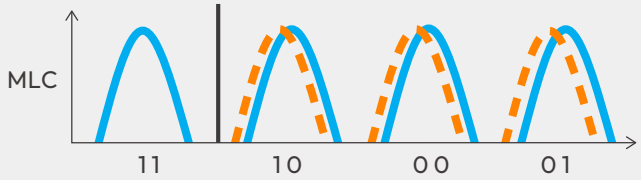
SO-DIMM

A⁺ SLC

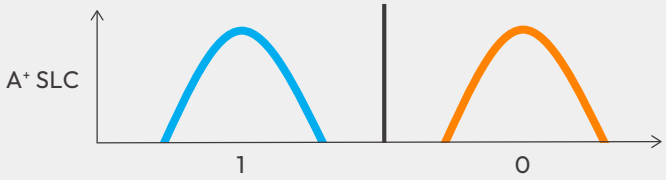
ADATA's proprietary A+ SLC technology combines reliability and cost efficiency. It uses customized NAND Flash firmware to simulate SLC performance on MLC and 3D TLC NAND Flash, effectively improving reliability and extending product life. A+ SLC provides more competitive advantages for MLC and 3D TLC NAND flash storage products and is widely used in various industrial applications.

MLC can store 2 bits of data, represented by 00, 01, 10 or 11 respectively, and TLC can store 3 bits of data, represented by 000, 001, 010, 011, 100, 101, 110, 111, while SLC only stores 1 bit of data, namely 0 or 1. ADATA's A+ SLC simulates the storage of 2 bits of MLC and 3 bits of 3D TLC into a storage method of storing 1 bit of data by customized firmware and algorithm. Compared to SLC NAND Flash, A+ SLC can greatly optimize the product reliability and longevity.

MLC :
Higher risk of data error due to charge drift



A+ SLC mode :
Better proformance on error tolerance

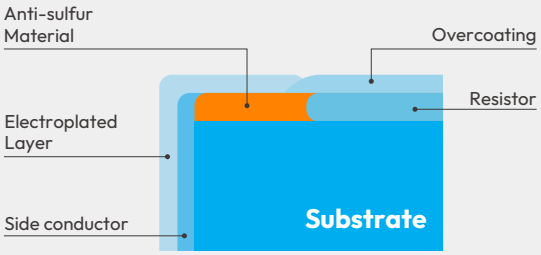


Type	P/E Cycle (times)	Features
SLC	60K	High cost, Ultra high endurance
A⁺ SLC	30K-100K	Better performance, High enduance and error tolerance
MLC/3D TLC	3K	Moderate cost, Good performance

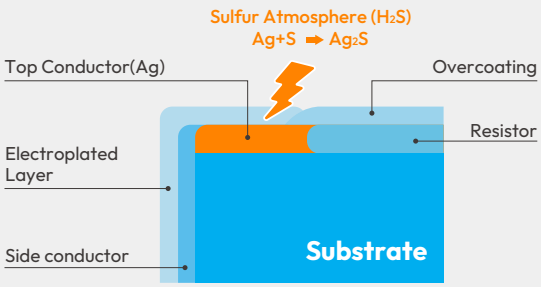
Anti-Sulfuration

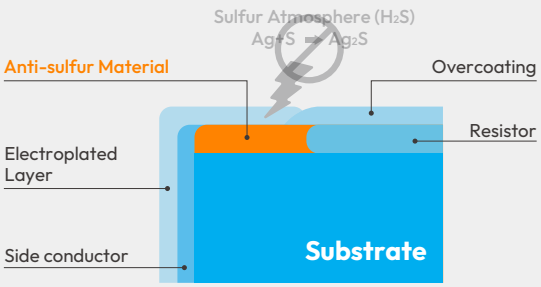
ADATA applies the anti-sulfuration technology to its industrial-grade SSDs and DRAM modules to counter corrosion and enhance the stability and longevity of these products. It can effectively prevents the negtive impact of silver sulfide on NAND flash and DRAM products, making them more durable when used in environments with excessive sulfur.

Components with anti-sulfuration technology are screened for reliability and resilience to sulfuration:



When normal resistor is under sulfur atmosphere(H2S), silver sulfide(Ag2S), which is a kind of insulator, will be generated at top conductor (Ag), resulting in open circuit fail. By using anti-sulfur material as top conductor, sulfuration is prevented. By using anti-sulfur material as top conductor, sulfuration is prevented.

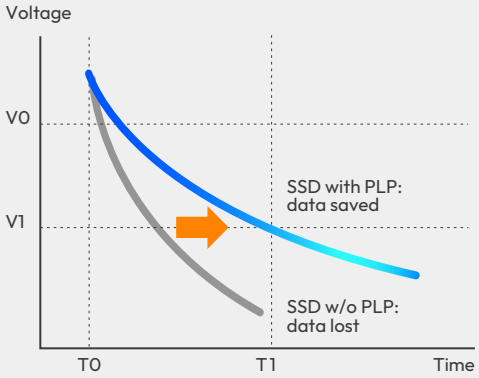




Power Loss Protection

PLP (Power Loss Protection) is a key technology associated with SSD reliability and is becoming widely adopted for improving overall system reliability. It leverages firmware and hardware to protect important data when encountering abnormal power spikes or outages.

ADATA PLP technology integrates sensitive voltage detectors with banks of power-retaining Tantalum polymer capacitors, supplying SSDs with enough power to continue buffered read-write operations until completion. Should power loss occur, the monitoring circuit detects the power drop and instructs the controller to back up all data in the buffer before power drains from capacitor banks. Through this method, all important data can be saved and free from data corruption.



- V0 : SSD normal voltage
- V1 : Spec. of minimum voltage limit for flash IC
- T0 : Controller detects voltage drop
- T1 : Controller finishes data backup
- T1-T0 : Time to do data backup

Applications

Edge computing | Healthcare | Networking | Surveillance | Transportation

A+ Security

ADATA's proprietary A+ Security data protection technologies are implemented in ADATA industrial-grade flash storage products, including data erase, data encryption, and write protect. These can be widely used in various industrial applications to elevate data security. With A+ Security, confidential data can be effectively protected from being leaked or tampered with.

1 Secure Erase

It's effective for erasing data from every corner of an SSD. There are two approaches to erase: a short pin circuit for Secure Erase or giving the ATA/NVMe command to conduct data erasing.

2 Data Encryption

We offer AES 256-bit encryption technology and meet the TCG Opal 2.0 protocol to enhance the security level of confidential data.

3 Write Protect

The Write Protect function is enabled by hardware or software settings. It can prevent data from being tampered with and written on the SSD improperly.

Applications

Edge computing | Gaming | Healthcare | Surveillance

Proprietary Software

A+ IntelliManager

ADATA's "A+ IntelliManager" is a cloud management platform for industrial-grade SSDs. Users can install it on private clouds or public clouds and access the platform anytime, anywhere to centrally manage and monitor SSD temperature, usage capacity, lifespan, status, system parameters, etc. on multiple devices.

Centralized control across multiple devices

Regularly updates S.M.A.R.T. data across multiple devices to the user end

Remote management and real-time monitoring

The user terminal can remotely observe the real-time S.M.A.R.T. data of any device at any time.

Advanced deployment provides accurate warning

Set different warning thresholds for each device and receive timely warning notifications

Multi-dimensional comprehensive analysis

Not only monitors SSD data, but also checks CPU MEMORY, OS version, and managed device information

Smart grouping and precise management

Set up management groups to distinguish between different users and monitor different devices

A+ Duplicator

ADATA's A+ Duplicator is a software and hardware integration technology designed for enterprises to reduce the risk of data loss and restore data quickly. Users can backup important data in advance with the software to prevent unexpected data loss. It also helps users quickly clone the current system to a new ADATA SSD.

DATA RECOVERY	FREE & RELIABLE
Backup and recover unexpected data loss immediately	Supports all ADATA SSDs and customers
SYSTEM CLONE	**EASY ACCESS**
Clone the current system to a new ADATA SSD	Easy to install Flexible disk selection

A+ SSDTOOL

ADATA's A+ SSDTOOL is a powerful tool that help our customers monitor and manage any status of each ADATA SSD inside customers' systems. It facilitates the monitoring and managing of the drives with SSD S.M.A.R.T. and lifespan information.

The A+ SSDTOOL provides various features, including drive information, S.M.A.R.T. attributes, utilities, Alert email and system information.

Drive Info	Get assigned drive information.
S.M.A.R.T. Attributes	Analyze usable blocks, remaining lifespan, system temperature, and more.
System Info	Displays current system information.
Utilities	Includes secure erase and export log.
Alert	When abnormal conditions occur, the system will send a pre-alert email .

A+ OPAL

With ADATA's proprietary A+ OPAL software, users can easily execute TCG OPAL SED (self-encryption drive) for all ADATA's industrial-grade NVMe and SATA III SSDs, which support TCG OPAL. It activates the encrypted features of an SSD's controller. Thanks to intuitive A+ OPAL management, it can be widely used in diverse applications which require high-level data security, such as defense, networking, server, healthcare, surveillance and more.

- Fully compliant with the TCG OPAL 2.0 specification
- Equipped with H/W based AES 256-bit key
- Deletes data immediately when destroying the AES key

1	Initial setup to activate A+ OPAL
2	Set the SID/Admin passwords
3	Pre-boot Authentication (PBA)
4	Locking Range Setting
5	Reset the disk to factory default status
6	Show the locking information & TCG OPAL support features
7	Unlock USB external TCG OPAL SSD

Rigorous Manufacturing and Testing

Strict NAND Flash IC Sorting

ADATA uses proprietary methods to test NAND Flash and sort out the best ICs for industrial-grade SSDs by an automatic testing process. To ensure the consistent high quality and yield rate, all ADATA's industrial-grade SSDs have to pass both electrical and function tests.

Electrical Tests

- Open/ Short Circuit
- Leakage / Standby Current
- NAND Flash ID Check

Function Tests

- Async./ sync. Interface check
- ECC 20bit/1KB
- Random Read/ Write
- Bad block numbers
- User capacity > 99.5%
- Validate quality of Block 0-3

SSD Manufacturing Process

SMT Process				Inspection & Labeling	
Solder Paste Printing	SPI	Pick & Place	Reflow	PCBA Inspection	Labeling De-Panel
Have Solder Paste printed on PCB	Inspect shape and thickness of solder paste on PCB	Have correct components placed on PCB	Attach components on PCBs by high temperature	Check if the appreance of PCBA is qualified	Give a unique serial number for each product

SSD Testing Process

SMT Process					Inspection	Packing
MST F/W Initialization	MST	MP F/W Initialization	Integration Test	Assembly & Labeling	FQC	Packing
Program MST F/W	Run MST Test	Program MP F/W	F/W Capacity Check Speed Test Burn-in Test GDN Check	Cover Assembly & Auto Labeling	Sampling check to satisfy customers' quality criteria	Product packing & storage

F/W Initialization

MST Test

Integration Test

Assembly & Labeling

Packing

NAND FLASH STORAGE PRODUCTS

- 2.5” SSD
- M.2 SSD
- mSATA SSD
- USB / SATA DOM

BiCS8

218-LAYER 3D TLC SERIES

For increasing demands of big data analysis, machine learning, AI, IoT applications, high-performance storage devices are required to process even more data. ADATA provides a full lineup of 218-layer 3D NAND (BiCS8) solid state drives and memory cards in various form factors, featuring higher capacity up to 8TB, greater realibility, as well as wide temperature support from -40°C to 85°C for stable operation in harsh environment. The BiCS8 series are designed to be energy efficient, feature high capacities, and are well suited for high-load industrial systems relating to industrial computing, embedded devices, automation, networking, transportation, and other fields.

RELIABLE DURABILITY
3K
P/E CYCLE

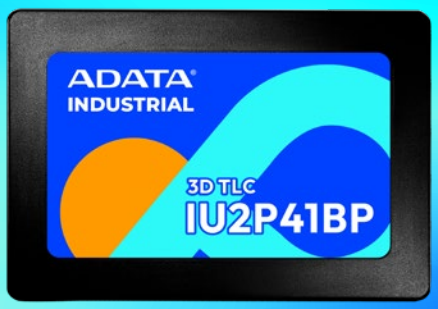
ORIGINAL IC
SANDISK / KIOXIA

WIDE-TEMP.
(-40°C to 85°C)

HIGH
CAPACITY

U.2 SSD

- NVMe™ 1.4 Compliant
- 3K-100K P/E cycles for high endurance
- S.M.A.R.T. Monitor, Wear Leveling, NCQ and TRIM Command

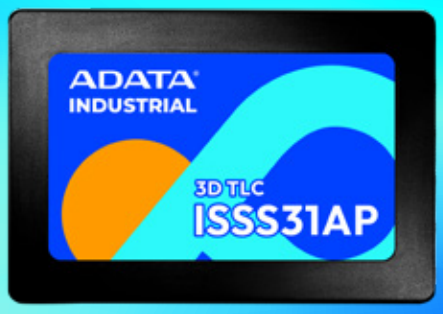


Model Name	IU2P41BP
Features	1. Supports LDPC ECC, RAID Engine, and SLC Cache 2. End-to-End (E2E) Data Path Protection 3. Host Memory Buffer (HMB) 4. ESD Support IEC/EN61000-4-2 5. A+ power protect 6. H/W PLP Function
Interface	PCIe Gen4x4
Flash Type	112L 3D TLC
Capacity	512GB~8TB
Max. Seq. R/W Speed (MB/s)	7000/6500
Operating Voltage	12V
Max. Power Consumption	9W
Operating Temp. (Standard)	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C
DRAM Cache	Supported
P/E Cycle (times)	3K
ECC Engine	LDPC ECC
A+ SLC Mode	-
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours
Dimensions (L x W x H)	100 x 70 x 7mm

Product specifications are subject to change without prior notice

2.5” SSD

- 112-layer (BiCS5)/ 3D TLC NAND Flash
- Original IC Implement
- High capacity up to 8TB
- Wide-Temperature Support: -40°C to 85°C
- S.M.A.R.T. Monitor, Wear Leveling, NCQ and TRIM Command

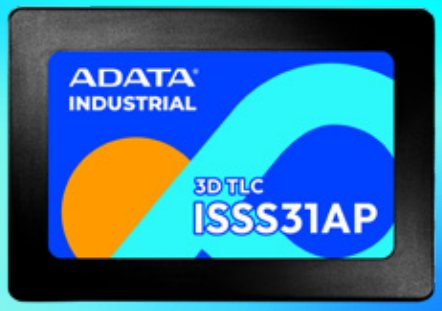


Model Name	ISSS31I(P)	ISSS31AP eTLC	ISSS31AP
Features	1. A+ power protect 2. Support RAID Engine, SLC Cache and Thermal Throttling 3. ESD Support IEC/EN61000-4-2 level 4 4. H/W PLP Function (Optional)	1. A+ Power Protect 2. Supports RAID Engine, SLC Cache and Thermal Throttling 3. End-to-End (E2E) Data Path Protection 4. ESD Support (IEC/EN 61000-4-2 Level 4) 5. Supports AES 256-bit Data Encryption and TCG OPAL 2.0 6. DWPD 1.7 7. HW PLP function	1. HW PLP function 2. Supports RAID Engine, SLC Cache and Thermal Throttling 3. End-to-End (E2E) Data Path Protection 4. ESD Support (IEC/EN 61000-4-2 Level 4) 5. Supports AES 256-bit Data Encryption and TCG OPAL 2.0
Interface	SATA III 6.0Gbps	SATA III 6.0Gbps	SATA III 6.0Gbps
Flash Type	218L 3D TLC	112L 3D eTLC	112L 3D TLC
Capacity	256GB~2TB	3.84TB-7.68TB	4TB-8TB
Max. Seq. R/W Speed (MB/s)	560/500	560/520	550/520
Operating Voltage	5V	5V	5V
Max. Power Consumption	2.5W	3.3W	3.3W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C	-	-40°C to 85°C
DRAM Cache	-	Supported	Supported
P/E Cycle (times)	3K	7K	3K
ECC Engine	LDPC ECC	LDPC ECC	LDPC ECC
A+ SLC Mode	-	-	-
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours		
Dimensions (L x W x H)	100 x 70 x 7mm		

Model Name	ISSS31CP eTLC	ISSS31CP
Features	1. A+ Power Protect 2. Supports RAID Engine, SLC Cache and Thermal Throttling 3. End-to-End (E2E) Data Path Protection 4. ESD Support (IEC/EN 61000-4-2 Level 4) 5. Supports AES 256-bit Data Encryption and TCG OPAL 2.0 6. DWPD 1.6 7. HW PLP function	1. A+ Power Protect 2. Supports RAID Engine, SLC Cache and Thermal Throttling 3. End-to-End (E2E) Data Path Protection 4. ESD Support (IEC/EN 61000-4-2 Level 4 5. HW PLP function
Interface	SATA III 6.0Gbps	SATA III 6.0Gbps
Flash Type	112L 3D eTLC	112L 3D TLC
Capacity	480GB-1.92TB	128GB-2TB
Max. Seq. R/W Speed (MB/s)	550/380	560/490
Operating Voltage	5V	5V
Max. Power Consumption	2.2W	2.5W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-	-
DRAM Cache	Supported	Supported
P/E Cycle (times)	7K	3K
ECC Engine	LDPC ECC	LDPC ECC
A+ SLC Mode	-	-
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours	
Dimensions (L x W x H)	100 x 70 x 7mm	

2.5” SSD

- 112-layer (BiCS5)/ 3D TLC NAND Flash
- Original IC Implement
- High capacity up to 8TB
- Wide-Temperature Support: -40°C to 85°C
- S.M.A.R.T. Monitor, Wear Leveling, NCQ and TRIM Command

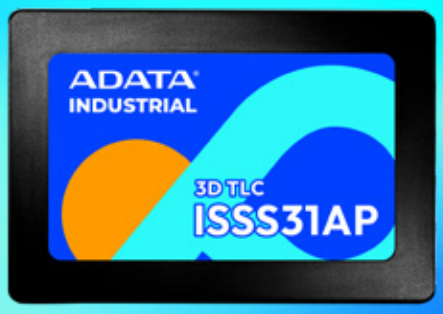


Model Name	ISSS31C	ISSS316	ISSS31D
Features	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. ESD Support (IEC/EN 61000-4-2 Level 4) 4. Supports Extended Temp.(-20°C to 75°C) 5. Supports AES 256-bit Data Encryption and TCG OPAL 2.0	1. Supports RAID Engine, SLC Cache, and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Wear Leveling, Bad Block Management	1. Supports RAID Engine, SLC Cache, and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Wear Leveling, Bad Block Management
Interface	SATA III 6.0Gbps	SATA III 6.0Gbps	SATA III 6.0Gbps
Flash Type	218L / 112L 3D TLC	112L 3D TLC	112L 3D TLC
Capacity	128GB - 4TB	128GB - 2TB	128GB - 2TB
Max. Seq. R/W Speed (MB/s)	560/490	560/520	560/490
Operating Voltage	5V	5V	5V
Max. Power Consumption	2.6W	1.55W	1.1W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
DRAM Cache	Supported	-	-
P/E Cycle (times)	3K/100K(A+SLC)	3K/100K(A+SLC)	3K
ECC Engine	LDPC ECC	LDPC ECC	LDPC ECC
A+ SLC Mode	Available by request	Available by request	-
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours		
Dimensions (L x W x H)	100 x 70 x 7mm		

Product specifications are subject to change without prior notice

2.5” SSD

- 112-layer (BiCS5)/ 3D TLC NAND Flash
- Original IC Implement
- High capacity up to 8TB
- Wide-Temperature Support: -40°C to 85°C
- S.M.A.R.T. Monitor, Wear Leveling, NCQ and TRIM Command

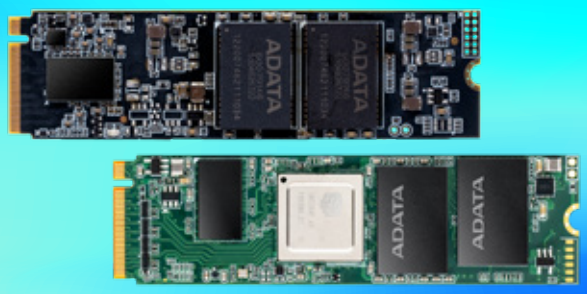


Model Name	ISSS332
Features	1. Supports S.M.A.R.T. Monitor 2. Power Loss Protection(Optional) 3. With DRAM Buffer
Interface	SATA III 6.0Gbps
Flash Type	MLC
Capacity	16GB – 1TB
Max. Seq. R/W Speed (MB/s)	540/450
Operating Voltage	5V
Max. Power Consumption	3.2W
Operating Temp. (Standard)	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C
DRAM Cache	Supported
P/E Cycle (times)	3K
ECC Engine	BCH ECC
A+ SLC Mode	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours
Dimensions (L x W x H)	100 x 70 x 7mm

Product specifications are subject to change without prior notice

M.2 NVMe SSD

- NVMe™ 1.4/ 1.3 Compliant
- Original IC Implement
- 3K-100K P/E cycles for high endurance
- S.M.A.R.T. Monitor, Wear Leveling, NCQ,and TRIM Command



Model Name	IM2P41F8	IM2P41B8 eTLC	IM2P41B8P	IM2P41B8
Features	1. Supports LDPC ECC, RAID Engine, and SLC Cache 2. End-to-End (E2E) Data Path Protection 3. Host Memory Buffer(HMB) 4. A+ power protect	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Supports AES 256-bit Data Encryption and TCG OPAL 2.0 4. ESD Support (IEC/EN 61000-4-2 Level 4) 5. DWPD 1.8	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. HW PLP function	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Supports AES 256-bit Data Encryption and TCG OPAL 2.0 4. ESD Support (IEC/EN 61000-4-2 Level 4)
Interface	PCIe Gen4x4 (NVMe 2.0)	PCIe Gen4x4 (NVMe 1.4)	PCIe Gen4x4 (NVMe 1.4)	PCIe Gen4x4 (NVMe 1.4)
Form Factor	M.2 2280 (M Key)	M.2 2280 (M Key)	M.2 2280 (M Key)	M.2 2280 (M Key)
Flash Type	218L 3D TLC	112L 3D eTLC	112L 3D TLC	112L 3D TLC
Capacity	256GB - 4TB	480GB - 1.92TB	256GB - 4TB	256GB - 4TB
Max. Seq. R/W Speed (MB/s)	7400/6800	7000/6200	7400/6800	7000/6500
Operating Voltage	3.3V	3.3V	3.3V	3.3V
Max. Power Consumption	4.5W	8W	8.6W	6.8W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C	-	-	-40°C to 85°C
DRAM Cache	-	Supported	Supported	Supported
P/E Cycle (times)	3K	7K	3K	3K
ECC Engine	LDPC ECC	LDPC ECC	LDPC ECC	LDPC ECC
A+ SLC Mode	-	-	-	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours			
Dimensions (L x W x H)	80 x 22 x 2.25mm			

Model Name	IM2P41E8	IM2P32A8	IM2P33F8
Features	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. ESD Support (IEC/EN 61000-4-2 level 4)	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. ESD Support (IEC/EN 61000-4-2 Level 4) 4. Host Memory Buffer (HMB)	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Host Memory Buffer (HMB)
Interface	PCIe Gen4x4 (NVMe 1.4)	PCIe Gen3x4 (NVMe 1.4)	PCIe Gen3x4 (NVMe 1.3)
Form Factor	M.2 2280 (M Key)	M.2 2280 (M Key)	M.2 2280 (M Key)
Flash Type	112L 3D TLC	112L 3D TLC	112L 3D TLC
Capacity	128GB - 2TB	128GB - 2TB	128GB - 1TB
Max. Seq. R/W Speed (MB/s)	4900/4200	3300/2900	2100/1600
Operating Voltage	3.3V	3.3V	3.3V
Max. Power Consumption	6.3W	3.76W	3.8W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-	-40°C to 85°C	-
P/E Cycle (times)	3K	3K	3K
ECC Engine	LDPC ECC	LDPC ECC	LDPC ECC
A+ SLC Mode	-	Available by request	-
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours		
Dimensions (L x W x H)	80 x 22 x 2.25mm		

M.2 NVMe SSD

- NVMe™ 2.0/1.4 Compliance
- Original IC Implement
- 3K-100K P/E cycles for high endurance
- S.M.A.R.T. Monitor, Wear Leveling, NCQ,and TRIM Command

Model Name	IM2P51G8	IM2P42B8(P)
Features	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Supports AES 256-bit Data Encryption and TCG OPAL 2.0 4. Host Memory Buffer (HMB)	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. HW PLP function (optional)
Interface	PCIe Gen5x4 (NVMe 2.0)	PCIe Gen4x4 (NVMe 1.4)
Form Factor	M.2 2280 (M Key)	M.2 2280 (M Key)
Flash Type	218L 3D TLC	218L / 112 3D TLC
Capacity	1TB - 4TB	256GB - 4TB
Max. Seq. R/W Speed (MB/s)	14000/12000	7000/6500
Operating Voltage	3.3V	3.3V
Max. Power Consumption	8.5W	4.8W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-	-40°C to 85°C
DRAM Cache	Supported	-
P/E Cycle (times)	3K	3K
ECC Engine	LDPC ECC	LDPC ECC
A+ SLC Mode	-	-
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours	
Dimensions (L x W x H)	80 x 22 x 2.25mm	

Model Name	IM2P41F3
Features	1. Supports LDPC ECC, RAID Engine, and SLC Cache 2. End-to-End (E2E) Data Path Protection 3. Host Memory Buffer (HMB)
Interface	PCIe Gen4x4 (NVMe 2.0)
Form Factor	M.2 2230 (M Key)
Flash Type	218L 3D eTLC
Capacity	256GB - 1TB
Max. Seq. R/W Speed (MB/s)	7000/6500
Operating Voltage	3.3V
Max. Power Consumption	4.5W
Operating Temp. (Standard)	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C
DRAM Cache	-
P/E Cycle (times)	3K
ECC Engine	LDPC ECC
A+ SLC Mode	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours
Dimensions (L x W x H)	30 x 22 x 3.6mm

Product specifications are subject to change without prior notice

M.2 NVMe SSD

- NVMe 1.4/ 1.3 Compliant
- Original IC Implement
- 3K-100K P/E cycles for high endurance
- S.M.A.R.T. Monitor, Wear Leveling, NCQ,and TRIM Command

Model Name	IM2P41E4	IM2P32A4
Features	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Host Memory Buffer (HMB)	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Supports AES 256-bit Data Encryption and TCG OPAL 2.0 4. ESD Support (IEC/EN 61000-4-2 Level 4) 5. Host Memory Buffer (HMB)
Interface	PCIe Gen4x4 (NVMe 1.4)	PCIe Gen3x4 (NVMe 1.4)
Form Factor	M.2 2242 (M Key)	M.2 2242 (M Key)
Flash Type	112L 3D TLC	112L 3D TLC
Capacity	128GB - 2TB	128GB - 1TB
Max. Seq. R/W Speed (MB/s)	5000/ 4200	3000/ 2000
Operating Voltage	3.3V	3.3V
Max. Power Consumption	6.3W	3.03W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-	-40°C to 85°C
DRAM Cache	-	-
P/E Cycle (times)	3K/100K(A+SLC)	3K/100K(A+SLC)
ECC Engine	LDPC ECC	LDPC ECC
A+ SLC Mode	Available by request	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours	
Dimensions (L x W x H)	100 x 70 x 7mm	

M.2 SATA SSD

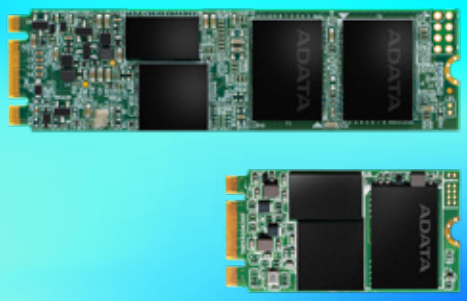
- Original IC Implement
- 3K-100K P/E cycles for high endurance
- S.M.A.R.T. Monitor, Wear Leveling, NCQ and TRIM Command

Model Name	IM2S3118(P)	IM2S31C8(P)	IM2S31D8	IM2S3168
Features	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. ESD Support (IEC/EN 61000-4-2 Level 4) 4. HW PLP function (Optional)	1. Supports RAID Engine, SLC Cache and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. ESD Support (IEC/EN 61000-4-2 Level 4) 4. Supports Extended Temp.(-20°C to 75°C) 5. HW PLP function (Optioanl)	1. Supports RAID Engine, SLC Cache, and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Wear Leveling, Bad Block Management	1. 112L (BiCS5) 3D TLC Implement 2. Supports RAID Engine, SLC Cache and Thermal Throttling
Interface	SATA III 6.0Gbps	SATA III 6.0Gbps	SATA III 6.0Gbps	SATA III 6.0Gbps
Form Factor	M.2 2280 (B+M Key)	M.2 2280 (B+M Key)	M.2 2280 (B+M Key)	M.2 2280 (B+M Key)
Flash Type	218L 3D TLC	112L 3D TLC	112L 3D TLC	112L 3D TLC
Capacity	256GB - 2TB	128GB - 4TB	128GB - 2TB	128GB - 2TB
Max. Seq. R/W Speed (MB/s)	560/500	560/500	560/480	560/520
Operating Voltage	3.3V	3.3V	3.3V	3.3V
Max. Power Consumption	1.5W	2.4W	1.5W	1.49W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
DRAM Cache	-	Supported	-	-
P/E Cycle (times)	3K	3K/100K(A+SLC)	3K	3K/100K(A+SLC)
ECC Engine	LDPC ECC	LDPC ECC	LDPC ECC	LDPC ECC
A+ SLC Mode	-	Available by request	-	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours			
Dimensions (L x W x H)	80 x 22 x 2.25mm			

Model Name	IM2S31C4	IM2S31D4	IM2S3164
Features	1. 112L (BiCS5) 3D TLC Implement 2. Supports RAID Engine, SLC Cache and Thermal Throttling 3. End-to-End (E2E) Data Path Protection	1. Supports RAID Engine, SLC Cache, and Thermal Throttling 2. End-to-End (E2E) Data Path Protection 3. Wear Leveling, Bad Block Management	1. 112L (BiCS5) 3D TLC Implement 2. Supports RAID Engine, SLC Cache and Thermal Throttling 3. End-to-End (E2E) Data Path Protection
Interface	SATA III 6.0Gbps	SATA III 6.0Gbps	SATA III 6.0Gbps
Form Factor	M.2 2242 (B+M Key)	M.2 2242 (B+M Key)	M.2 2242 (B+M Key)
Flash Type	112L 3D TLC	112L 3D TLC	112L 3D TLC
Capacity	128GB - 1TB	128GB - 1TB	128GB - 1TB
Max. Seq. R/W Speed (MB/s)	560/490	560/480	560/480
Operating Voltage	3.3V	3.3V	3.3V
Max. Power Consumption	2.2W	1.6W	1.37W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
DRAM Cache	Supported	-	-
P/E Cycle (times)	3K/100K(A+SLC)	3K	3K/100K(A+SLC)
ECC Engine	LDPC ECC	LDPC ECC	LDPC ECC
A+ SLC Mode	Available by request	-	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours		
Dimensions (L x W x H)	42 x 22 x 3.6mm		

Product specifications are subject to change without prior notice

M.2 SATA SSD



Original IC Implement

3K-30K P/E cycles for high endurance

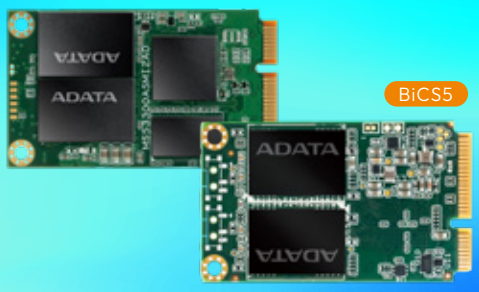
S.M.A.R.T. Monitor, Wear Leveling, NCQ and TRIM Command

Model Name	IM2S3328E
Features	1. Supports S.M.A.R.T. Monitor 2. Power Loss Protection(Optional) 3. With DRAM Buffer
Interface	SATA III 6.0Gbps
Form Factor	M.2 2280 (B+M Key)
Flash Type	MLC
Capacity	32GB-256GB
Max. Seq. R/W Speed (MB/s)	550/450
Operating Voltage	3.3V
Max. Power Consumption	3.5W
Operating Temp. (Standard)	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C
DRAM Cache	Supported
P/E Cycle (times)	3K
ECC Engine	BCH ECC
A+ SLC Mode	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours
Dimensions (L x W x H)	80 x 22 x 3.6mm

Model Name	IM2S3134N
Features	1. Supports S.M.A.R.T. Monitor 2. Wear Leveling, Bad Block Management, Garbage Collection 3. BCH ECC Engine
Interface	SATA III 6.0Gbps
Form Factor	M.2 2242 (B+M Key)
Flash Type	MLC
Capacity	64GB - 128GB
Max. Seq. R/W Speed (MB/s)	500/320
Operating Voltage	3.3V
Max. Power Consumption	2.5W
Operating Temp. (Standard)	0°C to 70°C
Operating Temp. (Industrial)	-
DRAM Cache	Supported
P/E Cycle (times)	3K
ECC Engine	BCH ECC
A+ SLC Mode	-
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 2 million hours
Dimensions (L x W x H)	42 x 22 x 3.5mm

mSATA SSD

- Original IC Implement
- 3K-100K P/E cycles for high endurance
- Wide-Temp. Support (-40°C to 85°C)
- S.M.A.R.T. Monitor, Wear Leveling, NCQ and TRIM Command



Model Name	IMSS31C	IMSS31D	IMSS316	IMSS332
Features	1. Supports SLC Cache, RAID Engine, and Thermal Throttling	1. Supports SLC Cache, RAID Engine, and Thermal Throttling	1. Supports SLC Cache, RAID Engine, and Thermal Throttling	1. Supports Wear Leveling, TRIM and NCQ Command, and S.M.A.R.T. Monitor
Interface	SATA III 6.0Gbps	SATA III 6.0Gbps	SATA III 6.0Gbps	SATA III 6.0Gbps
Form Factor	mSATA (MO-300A)	mSATA (MO-300A)	mSATA (MO-300A)	mSATA (MO-300A)
Flash Type	112L 3D TLC	112L 3D TLC	112L 3D TLC	MLC
Capacity	128GB - 2TB	128GB - 2TB	128GB - 2TB	16GB - 256GB
Max. Seq. R/W Speed (MB/s)	560/490	560/490	560/510	550/450
Operating Voltage	3.3V	3.3V	3.3V	3.3V
Max. Power Consumption	2.6W	1.1W	1.46W	3.4W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C	-	-40°C to 85°C	-40°C to 85°C
DRAM Cache	Supported	-	-	Supported
P/E Cycle (times)	3K	3K	3K	3K
ECC Engine	LDPC ECC	LDPC ECC	LDPC ECC	BCH ECC
H/W PLP Function	Available by request	-	-	Available by request
A+ SLC Mode	Available by request	-	Available by request	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours			
Dimensions (L x W x H)	50.80 x 29.85 x 4.5mm			

Product specifications are subject to change without prior notice

DOM (Disk-On-Module)

- Error Correcting Code
- H/W Write Protect
- Wear Leveling

Model Name	IUMU211		ISMS331	
Features	1. BCH ECC Engine 2. Wear Leveling, Bad Block Management, Garbage Collection		1. BCH ECC Engine 2. H/W Write Protect 3. Wear Leveling, Bad Block Management, Garbage Collection	
Interface	USB 2.0		SATA III 6.0Gbps	
Form Factor	USB 10 Pin		SATA DOM	
Flash Type	MLC		MLC	
Capacity	8GB - 32GB		8GB - 128GB	
Max. Seq. R/W Speed (MB/s)	43/32		340/200	
Operating Voltage	5V		5V	
Max. Power Consumption	0.5W		1.6W	
Operating Temp. (Standard)	0°C to 70°C		0°C to 70°C	
Operating Temp. (Industrial)	-		-40°C to 85°C	
P/E Cycle (times)	3K		3K	
ECC Engine	BCH ECC		BCH ECC	
A+ SLC Mode	-		Available by request	
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours			
Dimensions (L x W x H)	(2.54mm): 36.9 x 26.6 x 8.5mm (2.0mm): 36.9 x 26.6 x 5.75mm	(2.54mm): 36.9 x 26.6 x 8.5mm (2.0mm): 36.9 x 26.6 x 5.75mm	(Vertical) w/o Housing: 38.4 x 23.4 x 8.45mm	(Horizontal) w/ Housing: 34.63 x 24.94 x 18.51mm w/o Housing: 32.56 x 23.4 x 17.33mm (Vertical) w/ Housing: 40.47 x 24.94 x 6.8mm w/o Housing: 38.4 x 23.4 x 8.45mm

Product specifications are subject to change without prior notice

INDUSTRIAL-GRADE MEMORY CARDS and EMBEDDED MEMORY

- CFAST
- COMPACT FLASH
- SD / microSD
- EMMC
- UFS

CFast Card

- Error Correcting Code
- Wide-Temp. Support (-40°C to 85°C)
- S.M.A.R.T., Wear Leveling, NCQ and TRIM Command

Model Name	ISC3E	ICFS31C
Interface	SATA III 6.0Gbps	SATA III 6.0Gbps
Form Factor	CFast 2.0	CFast 2.0
Flash Type	MLC	112L 3D TLC
Capacity	8GB - 256GB	80GB - 1TB
Max. Seq. R/W Speed (MB/s)	540/400	560/490
Operating Voltage	3.3V	3.3V
Max. Power Consumption	2W	2W
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C	-40°C to 85°C
P/E Cycle (times)	3K - 60K	3K - 100K(A+SLC)
ECC Engine	BCH ECC	LDPC ECC
A+ SLC Mode	Ready	Ready
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours	
Dimensions (L x W x H)	36.55x42.9x3.6mm	36.55x42.9x4.0mm

CF Card

- Error Correcting Code
- Wide-Temp. Support (-40°C to 85°C)
- Wear Leveling, Bad Block Management

Model Name	IPC39
Interface	PATA
Form Factor	CF50 pin type 1
Flash Type	MLC
Capacity	8GB-128GB
Max. Seq. R/W Speed (MB/s)	125/125
Operating Voltage	3.3V
Max. Power Consumption	1W
Operating Temp. (Standard)	0°C to 70°C
Operating Temp. (Industrial)	-40°C to 85°C
P/E Cycle (times)	3K - 60K
ECC Engine	BCH ECC
A+ SLC Mode	available by request (For MLC Model)
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours
Dimensions (L x W x H)	36.4 x 42.8 x 3.3mm

SD Card

- Error Correcting Code
- Wide-Temp. Support (-40°C to 85°C)
- Wear Leveling, S.M.A.R.T. Monitor

Model Name	ISDD33K	IDC3B
Interface	SD 6.1	SD 3.0
Flash Type	3D TLC	MLC
Capacity	64GB - 512GB	8GB - 256GB
Max. Seq. R/W Speed (MB/s)	93/84	95/69
Operating Voltage	2.7V~3.6V	2.7V~3.6V
Max. Power Consumption	1.12W	0.72W
Operating Temp. (Standard)	-25°C to 85°C	-25°C to 85°C
Operating Temp. (Industrial)	-40°C to 85°C	-40°C to 85°C
P/E Cycle (times)	3K	3K
ECC Engine	LDPC ECC	BCH ECC
A+ SLC Mode	Ready	available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours	
Dimensions (L x W x H)	32 x 24 x 2.1mm	

microSD Card

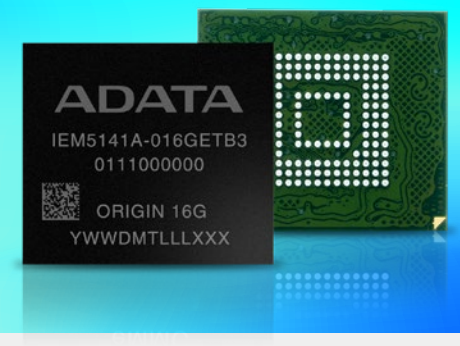
- Error Correcting Code
- Wide-Temp. Support (-40°C to 85°C)
- Wear Leveling, Bad Block Management

Model Name	IUDD33K	IDU3A
Interface	SD 6.1	SD 3.0
Flash Type	218L / 112L 3D TLC	MLC
Capacity	16GB - 512GB	8GB - 64GB
Max. Seq. R/W Speed (MB/s)	97/80	96/67
Operating Voltage	2.7V~3.6V	2.7V~3.6V
Max. Power Consumption	0.71W	0.63W
Operating Temp. (Standard)	-25°C to 85°C	-25°C to 85°C
Operating Temp. (Industrial)	-40°C to 85°C	-40°C to 85°C
P/E Cycle (times)	3K - 100K	3K
ECC Engine	LDPC ECC	BCH ECC
A+ SLC Mode	Ready	Available by request
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours	
Dimensions (L x W x H)	11 x 15 x 1mm	

Product specifications are subject to change without prior notice

eMMC

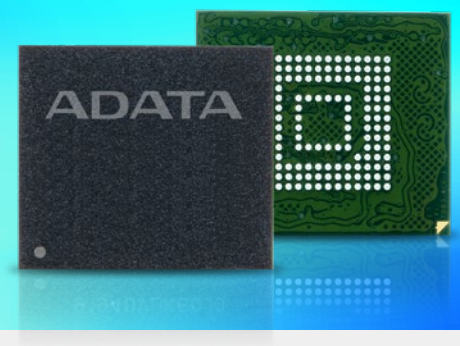
- 3K P/E Cycle Rating
- Auto Sleep on/off Mode
- Partitioning Management
- Wide-Temp. Support (-40°C to 85°C)



Model Name	EMMC51C (3D TLC)
Interface	eMMC 5.1
Flash Type	3D TLC
Capacity	64GB – 128GB
Max. Seq. R/W Speed (MB/s)	300/260
Core Voltage	2.7V - 3.6V
Support three data bus widths	1.7V – 1.95V
Operating Temp. (Standard)	-25°C to 85°C
Operating Temp. (Industrial)	-
P/E Cycle (times)	3K
Data Retention	10 years (at +40°C for fresh device)
ECC Engine	LDPC ECC
Thermal Throttling	X
TBW (Max.)	40TB
Dimensions (L x W x H)	11.5 x 13 x 0.8mm (153 balls)

UFS

- Fit for a wide variety of portable devices
- Dynamic power management
- multiple NAND technology transitions



Model Name	UFS100
Interface	UFS3.1
Flash Type	112L 3D TLC
Capacity	128GB-256GB
Max. Seq. R/W Speed(MB/s)	2000/900
Max. Voltage VCC	2.70 ~ 3.6V
Operating Temp.	-25°C ~ 85°C
P/E Cycles	3K
ECC Engine	LDPC ECC
Signaling Mode	PWM G1~G4 HS-G1~G4
Dimensions(LxWxH)	11.5x13.0x1.0mm(153ball)

Product specifications are subject to change without prior notice

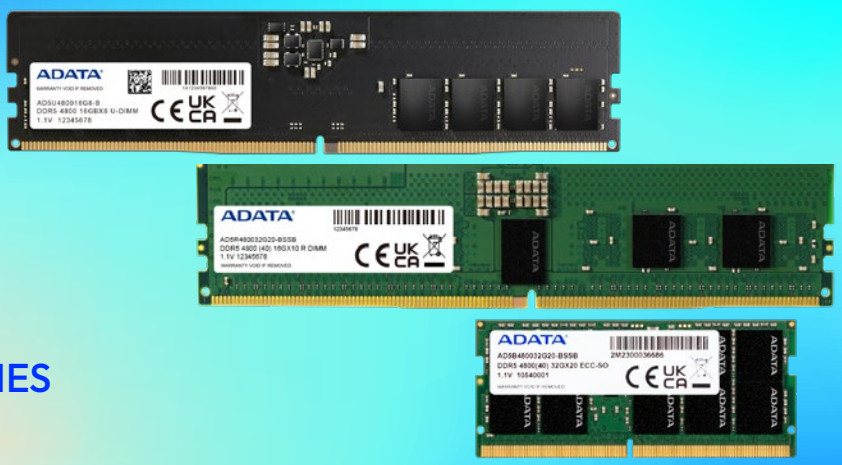
USB Flash Drive

- 3K P/E Cycle Rating
- USB 3.2 Interface
- Metallic Enclosure
- Wear Leveling
- Error Correcting Code

Model Name	UV131	IUFU315C
Interface	USB 3.2 Gen 1	USB 3.2 Gen 1
Flash Type	MLC	TLC
Capacity	8GB - 64GB	64GB - 512GB
Max. Seq. R/W Speed (MB/s)	116/79	245/25
Operating Voltage	5V	5V
Max. Power Consumption	1.02W	1.02W
Dimensions (L x W x H)	44.2 x 16.8 x 8.0mm	59.3 x 16.8 x 7.0mm
Weight	8g	8g
Operating Temp. (Standard)	0°C to 70°C	0°C to 70°C
P/E Cycle (times)	3K	3K
ECC Engine	BCH ECC	BCH ECC
Environment	Vibration: 20G (20 - 2000Hz), Shock: 1500G/0.5ms, Half Sine Wave, MTBF: > 3 million hours	
Operating System Requirements	Windows XP or later, Mac OS X 10.6 or later, Linux Kemel 2.6 or later	

Product specifications are subject to change without prior notice

DRAM MODULES



EMBEDDED SERIES

SERVER SERIES

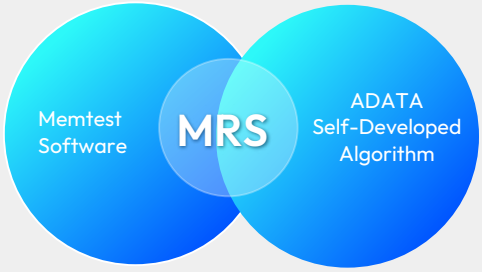
WIDE-TEMPERATURE SERIES

Stringent Validation and Tests

ADATA's Proprietary MRS Test

What is MRS?

ADATA has developed proprietary software to test DRAM modules – MRS. MRS integrates the advantages of a self-developed algorithm and Memtest software, simulating system behaviors, including heavy loading, random read/write operation, and multi-cores operation.



The Advantages of MRS

With MRS we can:

- Collect data on motherboards and DRAM modules for management control during manufacturing
- Record the speed, capacity, timing, and voltage of modules
- Easily identify defective DRAM module components via a graphic interface

Multiple Reliability Tests

With large chambers, we are able to conduct various reliability tests, including dynamic environment tests by batches and systems and ensure the consistent quality of our products. Meanwhile we can also conduct MTBF, HTOL, LTOL tests per customers' requests or by different products.

Dynamic Environment Tests	Product Reliability Tests	Consistant Quality
By batches and systems	Simulate various extreme environment conditions	Ensures the consistent product quality at design and MP stages

Wide-Temperature Testing

Testing Process of Wide-Temperature Modules

Low Temp. (-40°C)	High Temp. (85°C)	ICT Test	ATE Test (65°C)	SLT Test (60°C)
DC Timing Speed Function Data Retention	DC Timing Speed Function Data Retention	Open-Short Circuit VREF SPD Programming and Verification	Speed Read & Write Voltage & Current	Read & Write

Wide-Temp. IC Sorting via Automatic Test Equipment (ATE)

Stringent Validation and Tests

Fully Automated Production

SMT Line

Chip Mounter

AOI
(Automated Optical Inspection)

Auto Labeling

ATE (Automatic Test Equipment)

ATE (Automatic Test Equipment) is used for DRAM specification testing. Testing capability equals that of semiconductor industry-level machinery. This guarantees ADATA's modules meet DRAM specifications, including function, DC, AC, timing, and frequency. ADATA has industry-leading ATE test equipment and has achieved digital and networked control for test programs, data collection, and analysis.

- Open, short, and continuous tests
- DC Test (leakage, IDD, VREF)
- Speed Test (timing parameter check, data BGR check
- Function Test (H/L CDD, Refresh, Self-refresh, Read/Write Opertion, Data Mask, OTF)

Product Features

			30μ Gold Finger	Wide Temperature Support	Temperature Sensor	Conformal Coating	Anti-sulfuration
Embedded	DDR3L	U-DIMM	▲	▲	▲	▲	▲
		SO-DIMM	▲	▲	▲	▲	▲
	DDR4	U-DIMM	▲	▲	▲	▲	▲
		VLP U-DIMM	▲	▲	▲	▲	▲
		SO-DIMM	▲	▲	▲	▲	▲
	DDR5	U-DIMM	▲	▲	●	▲	▲
		SO-DIMM	▲	▲	●	▲	▲
Server	DDR3L	R-DIMM	●	▲	●	▲	▲
		ECC U-DIMM	●	▲	●	▲	▲
		ECC SO-DIMM	●	▲	●	▲	▲
	DDR4	R-DIMM	●	▲	●	▲	▲
		ECC U-DIMM	●	▲	●	▲	▲
		ECC SO-DIMM	●	▲	●	▲	▲
		VLP ECC U-DIMM	●	▲	●	▲	▲
		VLP R-DIMM	●	▲	●	▲	▲
	DDR5	R-DIMM	●	▲	●	▲	▲
		ECC U-DIMM	●	▲	●	▲	▲
		ECC SO-DIMM	●	▲	●	▲	▲

▲ By Request ● Supported

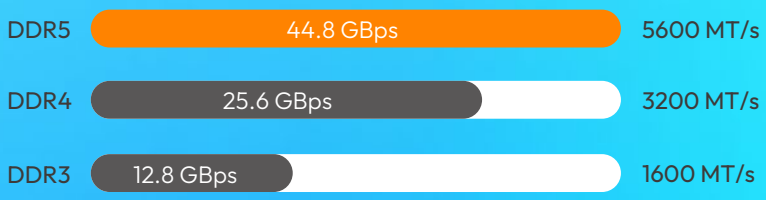
DDR5 MEMORY MODULES

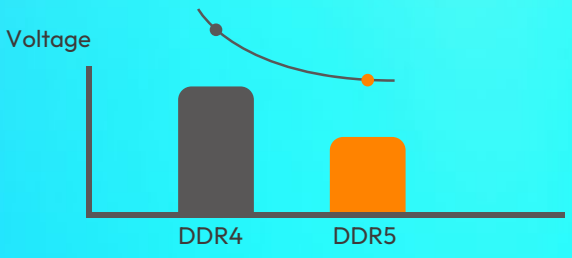
EMPOWERING HIGH SPEED COMPUTING AND 5G

To meet the emerging demands of 5G, AIoT, Edge Computing, HPC, and more, ADATA has unveiled new industrial-grade DDR5 memory modules. They are capable of reaching speeds of up to 5600 MT/s and yet only operates on 1.1V. In addition, the are equipped with a Power Management IC (PMIC) to enhance power supply stability.

Why DDR5

ADATA's industrial-grade DDR5 memory modules feature the advantages below, making them ideal for automation, networking, surveillance, IPCs, embedded systems, servers. At present, ADATA DDR5 series are being widely implemented for automation and servers.





5600 MT/s
1.5X Faster transfer rate compared to DDR4

1.1V
Consumes 9% less power compared to DDR4

OG IC
Original IC for great reliability

On-die ECC
For more reliable data transmissions

PMIC
Power Management IC for improved power supply stability

48GB
Ample storage capacity up to 48GB

Embedded

Unbuffered DIMM

DDR5

Interface	DDR5	DDR5	DDR4	DDR3L
Module Type	CU-DIMM	U-DIMM	U-DIMM	U-DIMM
Frequency (MT/s)	6400	4800/5600	2400 / 2666 / 3200	1600
Capacity	8GB, 16GB, 32GB	8GB, 16GB, 24GB, 32GB, 48GB	4GB, 8GB, 16GB, 32GB	2GB, 4GB, 8GB
Pin Count	288 Pin	288 Pin	288 Pin	240 Pin
PCB Height (inch/ mm)	1.23 inches/3.12cm	1.23 inches/3.12cm	1.23 inches/3.12cm	1.18 inches/3cm
Operating Voltage	1.1V	1.1V	1.2V	1.35V
Operating Temp.	0°C to 95°C (Tc)	0°C to 95°C (Tc)	0°C to 85°C	0°C to 85°C
Customized Services (Optional)	Anti-Sulfuration Protection, Conformal Coating, Wide-Temp. Support			

SO-DIMM

DDR5

Interface	DDR5	DDR5	DDR4	DDR3L
Module Type	CSO-DIMM	SO-DIMM	SO-DIMM	SO-DIMM
Frequency (MT/s)	6400	4800 / 5600	2400 / 2666 / 3200	1600
Capacity	8GB, 16GB, 32GB	8GB, 16GB, 24GB, 32GB, 48GB	4GB, 8GB, 16GB, 32GB	1GB, 2GB, 4GB, 8GB
Pin Count	262 Pin	262 Pin	260 Pin	204 Pin
PCB Height (inch/ mm)	1.23 inches/3.12cm	1.23 inches/ 3.12cm	1.23 inches/ 3.12cm	1.18 inches/3cm
Operating Voltage	1.1V	1.1V	1.2V	1.35V
Operating Temp.	0°C to 95°C (Tc)	0°C to 85°C	0°C to 85°C	0°C to 85°C
Customized Services (Optional)	Anti-Sulfuration Protection, Conformal Coating, Wide-Temp. Support			

Embedded VLP U-DIMM

Interface	DDR4
Module Type	VLP U-DIMM
Frequency (MT/s)	2400 / 2666
Capacity	2400MT/s: 2GB, 4GB, 8GB, 16GB 2666MT/s: 2GB, 4GB, 8GB, 16GB 3200MT/s: 8GB, 16GB
Pin Count	288 Pin
PCB Height (inch/ mm)	0.73 inches/ 1.85cm
Operating Voltage	1.2V
Operating Temp.	0°C to 85°C
Customized Services (Optional)	Anti-Sulfuration Protection, Conformal Coating, Wide-Temp. Support

Product specifications are subject to change without prior notice

Server

Registered DIMM

DDR5

Interface	DDR5	DDR4	DDR3L
Module Type	R-DIMM	R-DIMM	R-DIMM
Frequency (MT/s)	4800 / 5600	2666 / 3200	1600
Capacity	16GB, 32GB	2666MT/s: 4GB, 8GB, 16GB, 32GB 3200MT/s: 8GB, 16GB, 32GB	8GB
Pin Count	288 Pin	288 Pin	240 Pin
PCB Height (inch/ mm)	1.23 inches/ 3.12cm	1.23 inches/ 3.12cm	1.18 inches/3cm
Operating Voltage	1.1V	1.2V	1.35V
Operating Temp.	0°C to 95°C (Tc)	0°C to 85°C	0°C to 85°C
30μ PCB Gold Plating	V	V	V
Customized Services (Optional)	Anti-Sulfuration Protection, Conformal Coating, Wide-Temp. Support		

VLP ECC U-DIMM

Interface	DDR4	DDR3L
Module Type	VLP ECC U-DIMM	VLP ECC U-DIMM
Frequency (MT/s)	2400 / 2666 / 3200	1600
Capacity	2400MT/s: 4GB, 8GB, 16GB 2666MT/s: 4GB, 8GB, 16GB 3200MT/s: 8GB, 16GB	2GB, 4GB, 8GB
Pin Count	288 Pin	240 Pin
PCB Height (inch/ mm)	0.73 inches/ 1.85cm	0.73 inches/ 1.85cm
Operating Voltage	1.2V	1.35V
Operating Temp.	0°C to 85°C	0°C to 85°C
30μ PCB Gold Plating	V	V
Customized Services (Optional)	Anti-Sulfuration Protection, Conformal Coating, Wide-Temp. Support	

Product specifications are subject to change without prior notice

Server

ECC U-DIMM

DDR5

Interface	DDR5	DDR5	DDR4	DDR3L
Module Type	ECC CU-DIMM	ECC U-DIMM	ECC U-DIMM	ECC U-DIMM
Frequency (MT/s)	6400	4800 / 5600	2400 / 2666 / 3200	1600
Capacity	16GB, 32GB	16GB, 32GB	2400MT/s: 4GB, 8GB, 16GB 2666MT/s: 4GB, 8GB, 16GB, 32GB 3200MT/s: 8GB - 32GB	2GB, 4GB, 8GB
Pin Count	288 Pin	288 Pin	288 Pin	204 Pin
PCB Height (inch/ mm)	1.23 inches/ 3.12cm	1.23 inches/ 3.12cm	1.23 inches/ 3.12cm	1.18 inches/3cm
Operating Voltage	1.1V	1.1V	1.2V	1.35V
Operating Temp.	0°C to 95°C (Tc)	0°C to 95°C (Tc)	0°C to 85°C	0°C to 85°C
30µ PCB Gold Plating	V	V	V	V
Customized Services (Optional)	Anti-Sulfuration Protection, Conformal Coating, Wide-Temp. Support			

ECC SO-DIMM

DDR5

Interface	DDR5	DDR5	DDR4	DDR3L
Module Type	ECC CSO-DIMM	ECC SO-DIMM	ECC SO-DIMM	ECC SO-DIMM
Frequency (MT/s)	6400	4800 / 5600	2400 / 2666 / 3200	1600
Capacity	16GB, 32GB	16GB, 32GB	2400MT/s: 2GB, 4GB, 8GB, 16GB, 32GB 2666MT/s: 4GB, 8GB, 16GB, 32GB 3200MT/s: 8GB, 16GB, 32GB	2GB, 4GB, 8GB
Pin Count	262 Pin	262 Pin	260 Pin	204 Pin
PCB Height (inch/ mm)	1.23 inches/ 3.12cm	1.23 inches/ 3.12cm	1.23 inches/ 3.12cm	1.18 inches/3cm
Operating Voltage	1.1V	1.1V	1.2V	1.35V
Operating Temp.	0°C to 95°C (Tc)	0°C to 95°C (Tc)	0°C to 85°C	0°C to 85°C
30µ PCB Gold Plating	V	V	V	V
Customized Services (Optional)	Anti-Sulfuration Protection, Conformal Coating, Wide-Temp. Support			

TRUSTA

Product Catalog

Enterprise-grade DRAM & SSD Solutions

TRUSTA delivers enterprise-grade DRAM and SSD solutions—trusted for stability, designed for flexibility, empowering global businesses with tailored support and a future-ready mindset.

ADVANTAGE

Trusted Quality
Enterprise-grade reliability you can trust

AI-Ready
Optimized for AI & enterprise workloads

Power Efficiency
Save energy, cut operating costs

Form Factor Variety
Multi-size form factor support

Scalable Design
Easy integration, flexible deployment

Optional Features
FDP, SR-IOV & more

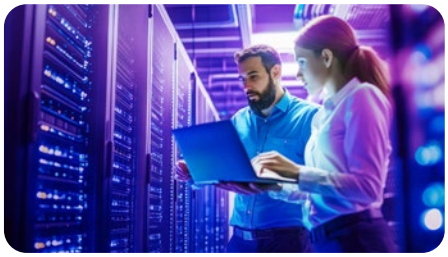
Global Agility
Flexible services with global reach

Strategic Alliance
Deep partnerships, seamless supply

Global Production
Flexible delivery, global coverage

TARGET APPLICATIONS

Server & Data center



AI & Data Science

Virtualization Environment

Object Storage (Hybrid Cloud)

Database & Real-Time Transactions

Boot Drives in Data Centers

AI Scaler Extended Memory Solution

TRUSTA introduces the AI Scaler Extended Memory Solution to address the high cost and limited availability of GPUs and HBM.

Supported Models

- Llama-3, Qwen3, Qwen3.5
- Mistral, Mixtral, GPT-OSS
- DeepSeek, Phi, Gemma3, Gemma4
- Continuously expanding model support

Supported AL Agent Applications

- OpenClaw, NemoClaw, Hermes Agentic
- Compatible with OpenAI endpoint
- Continuously expanding application support

Key Features

Smarter AI Deployment

- Extends AI model computation to DRAM and SSD.
- Builds a scalable memory configuration across GPU, DRAM, and SSD.

Greater Efficiency

- Dynamically allocates resources for inference and fine-tuning.
- Improves utilization of available DRAM and SSD resources for AI model computation.

Flexible Scaling

- Helps overcome GPU memory limitations.
- Enables practical on-premises AI adoption with lower infrastructure costs.

Free & Open Source

- Free to download, open-source ready, and hardware-flexible.
- Enables developers and enterprises to flexibly test AI configurations based on their computing needs.

AI SCALER TOOLKIT
FOR LOWER AI DEPLOYMENT COSTS

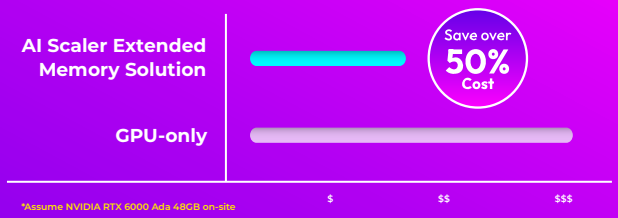
Inference

Enviroment

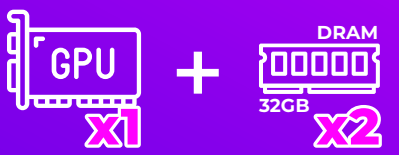
» At least **70GB** Memory Usage

TRUSTA AI Scaler Extended Memory Solution WIN

Cost Comparison

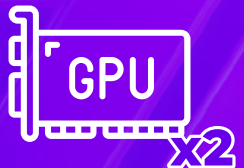


AI Scaler Extended Memory Solution



VS

GPU-only



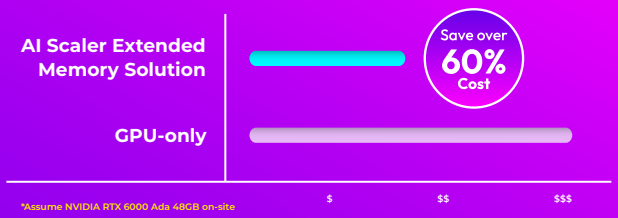
Fine-Tuning

Enviroment

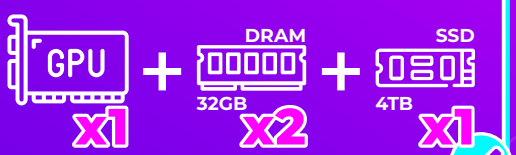
» At least **140GB** Memory Usage

TRUSTA AI Scaler Extended Memory Solution WIN

Cost Comparison



AI Scaler Extended Memory Solution



VS

GPU-only

The Pinnacle of Performance and Efficiency T7P5 PCIe 5.0 SSD Solution

High Performance

- 13.5GB/s Sequential Read
- 10.3GB/s Sequential Write
- 3.2M IOPS Random Read
- 470K IOPS Random Write

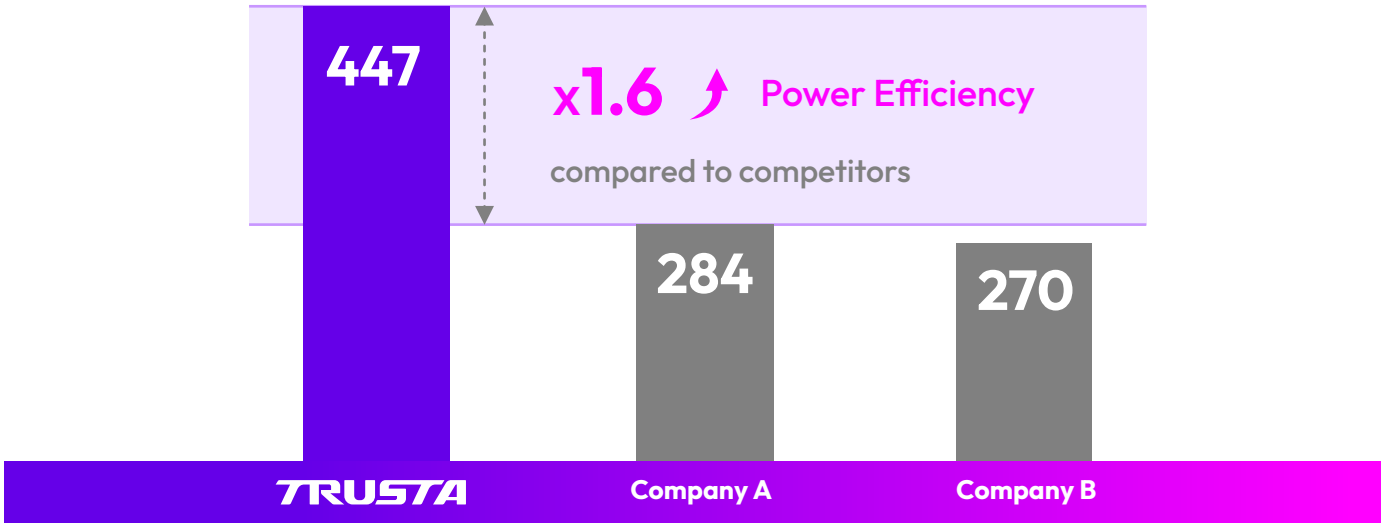
Power Efficiency

< 7W Controller at full performance

Global Service Coverage

Sequential Read	13,500 MB/s
Sequential Write	10,300 MB/s
Random Read	3,200K IOPS
Random Write 7% OP	470K IOPS
28% OP	870K IOPS
Active Power (Controller)	< 7 Watt
Active Power (SSD)	< 23 Watt

Sequential Write Performance per Power (MB/s per W)



T7P5 SSD — High power Efficiency Gen5 SSD

U.2 E3.S

E1.S

Interface	Form Factor	NAND	Sequential (MB/s)		4K Random (KIOPS)		Capacity
			Read	Write	Read	Write	
PCIe Gen5 x4	U.2	3D eTLC	13,500	10,300	3,200	470	1.6TB to 7.68TB
PCIe Gen5 x4	E1.S (9.5mm / 15mm / 25mm)	3D eTLC	13,500	10,300	3,200	470	1.6TB to 7.68TB
PCIe Gen5 x4	E3.S	3D eTLC	13,500	10,300	3,200	470	1.6TB to 7.68TB

TD7P40 SSD — Enterprise Gen4 Performance

Interface	Form Factor	NAND	Sequential(MB/s)		4K Random(KIOPS)		Capacity
			Read	Write	Read	Write	
PCIe Gen4 x4	U.2	3D eTLC	7,400	5,050	1,300	200	3.84TB to 7.68TB

TD5S30 SSD — Reliable SATA Workloads

Interface	Form Factor	NAND	Sequential(MB/s)		4K Random(KIOPS)		Capacity
			Read	Write	Read	Write	
SATA III	2.5”	3D eTLC	530	510	80	50	480GB to 7.68TB

DDR5 R-DIMM — Stable High-Load Performance

Performance Stability	Speed	Pin Count	PCB Height	Voltage	Operating Temp.	Capacity
Register Clock Driver	5,600MT/s, 6,400MT/s	288-Pin	1.23inches / 3.12cm	1.1V	Standard (0°~95°C)	16GB to 128GB

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