Innodisk Selection Guide

Flash Storage, DRAM Modules, Embedded Peripherals, and Software Solutions

innodisk

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ABOUT US

Innodisk is a service-driven provider of flash memory, DRAM modules, embedded peripherals, and software solutions for industrial and enterprise applications. With satisfied customers across the embedded, server, in-vehicle, cloud storage markets, and more, we have set ourselves apart from the competition with a commitment to dependable products and unparalleled service quality. The result is solutions designed to supplement existing industrial solutions and high IOPS flash arrays for industrial and enterprise applications. The expanded business lines lead our next steps as a comprehensive solutions and service provider in the industrial storage industry.

Founded in 2005 and headquartered in Taipei, Taiwan, Innodisk services clients globally with engineering experts and sales teams in China, Japan, the Netherlands, and the United States. With abundant experience and unrivaled knowledge of the memory industry, Innodisk develops products with excellent quality, remarkable performance, and the highest reliability.

For more information about Innodisk, please visit https://www.innodisk.com.

Our Advantages

Technical Aptitude by Design

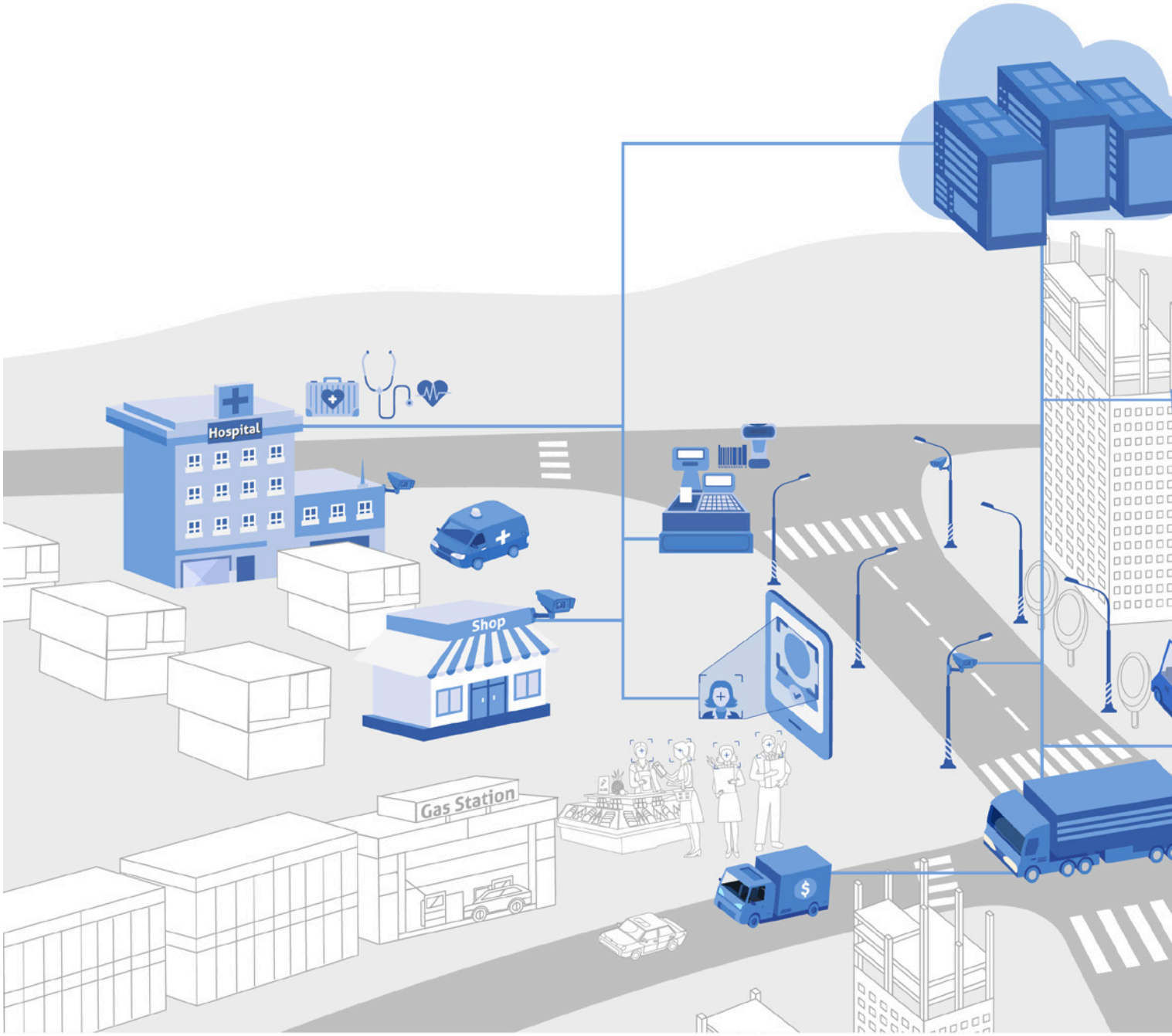
Our advantage lies in our portfolio of hardware, software, and firmware technology and how we arrange these basic building blocks into new works of innovation.

Deeply Rooted in the Market

Our awareness of the pitfalls and opportunities in vertical markets allows us to see the full picture when crafting the optimal solution.

We Are in It Together

To reach the optimal solution, working together with our partner from day one is paramount. The best possible outcome is always managed by developing solutions jointly.



Application

Surveillance in the AIoT Era

Comprehensive Memory, Storage, and Communication Solutions for the Surveillance Sector

Surveillance and video recording will play a major role in the markets at the intersection of AI and IoT. AI requires more computational power, which puts a bigger toll on IoT devices. Combined with the environmental challenges of IoT applications, these requirements can be difficult to meet. However, with robust and optimized components, you can easily overcome these challenges.

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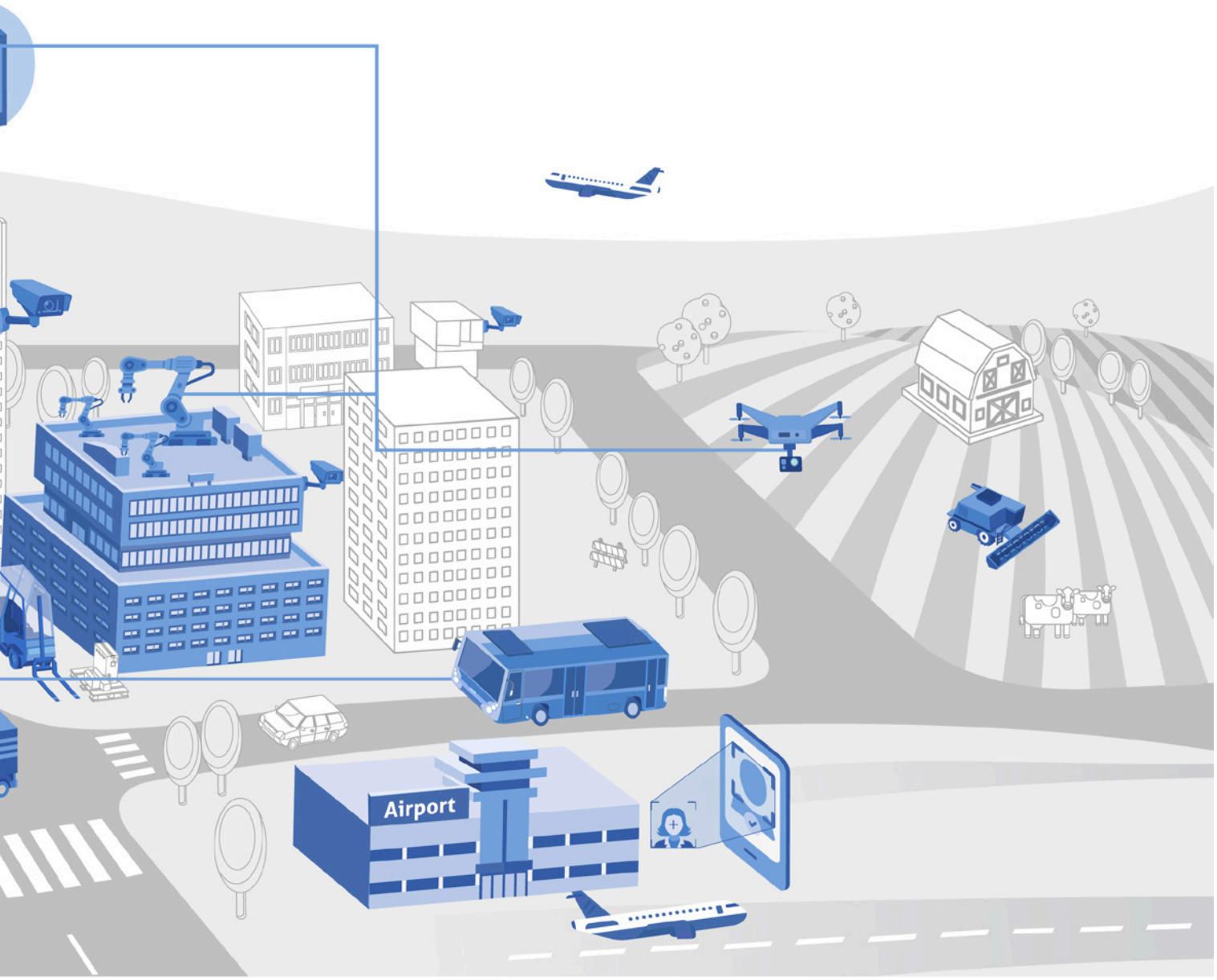
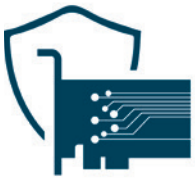


Storage Optimized for Video Recording

RECLine™ is Innodisk's proprietary firmware algorithm for video recording that ensures steady performance without any frame loss.

Compact Memory That Doesn't Waver

Our Very Low-Profile (VLP) and Mini DIMM modules combine small form factors with high performance to make sure data recording proceeds without a hitch.



Rugged Power and Signal Transmission

Innodisk's PoE extension cards provide ruggedness and galvanic isolation, ensuring uncompromised signal strength and power to your devices.

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Flash Storage

Bring Unbeatable Convenience and Speed to Recovery

Innodisk's Exclusive Recovery Technology

From out-of-band management, on-site recovery to autonomous self-recovery, Innodisk's InnoAGE and InnoOSR series provide full recovery portfolio to IoT edge devices

Innodisk Full Recovery Portfolio - All Problems Solved

Recovery Portfolio	Remote Recovery	On Site Recovery
Product	InnoAGE	InnoOSR
Technology	Remote OS recovery	One-click recovery
	Out-of-band Management Capability	Autonomous Recovery (InnoOSR+)
	Patented firmware-level recovery technology	Patented firmware-level recovery technology
Compatibility	Private and Public Cloud (Azure Cloud Integrted)	No Internet connection needed
Scenarios	Smart factory, Edge-computing systems, AIoT Systems	Kiosks, No-man Retail, Smart factory

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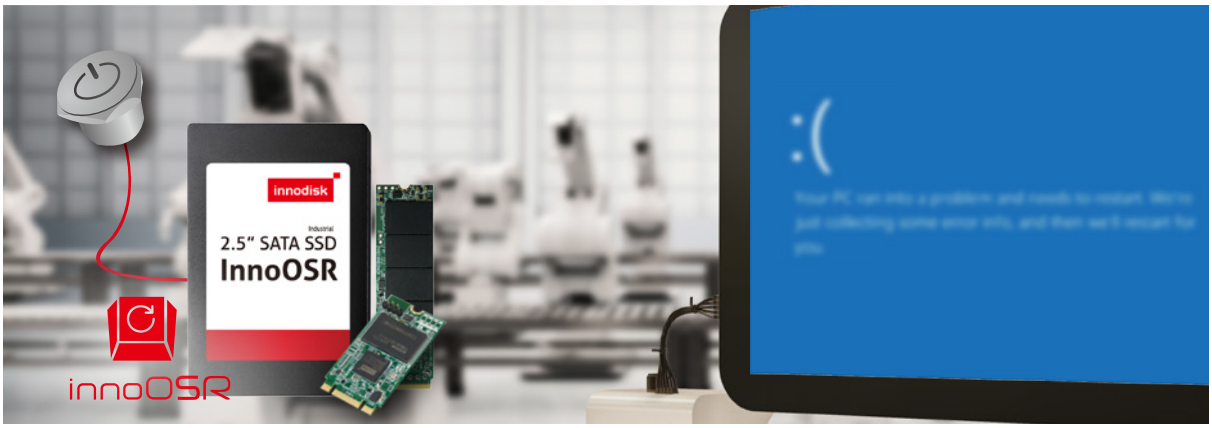
InnoOSR – Recovery is Just One Click Away

Utilizing standard form factors with pin headers, on-site personnel can effortlessly implement InnoOSR's powerful functionality in any application.



Quick and Easy

With a single click, on-site personnel can trigger a full firmware-level recovery – avoiding all pitfalls with software-level recovery – and bring the system back online in no time.

Save Money

InnoOSR's patented firmware technology enables truly next-level recovery ideal for applications that can afford little downtime.

High Compatibility

Available in all key form factors and featuring Innodisk's trademark hardware and firmware technologies, the InnoOSR series is ready to upgrade any application to the future of one-click recovery.

InnoAGE – with Microsoft Azure Sphere inside

Enabling AIoT possibilities from edge to cloud through Innodisk's intelligent storage, and designed for easy and secure connectivity.

No time for downtime

InnoAGE is designed for efficient remote management and features revolutionary out-of-band signaling technology, allowing even malfunctioning devices to be recovered remotely.

Edge-optimized security

The InnoAGE SSD is fortified with Innodisk's advanced security technologies on the hardware, firmware, and software levels – providing total security from edge to cloud.

Industrial-grade everuthing

Packed with industrial-grade components and technologies carefully designed to meet the strictest of industrial requirements, the InnoAGE is always ready for action.

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Flash Storage

4TE and 4TG-P Series

High-capacity flash storage for applications emanding extreme performance and unbeatable security

The 4TE and 4TG-P flash storage solutions combine groundbreaking new flash storage technologies with Innodisk's security features and signature ruggedness, resulting in a high-performance package ready for action in various applications. Available in M.2 form factors and featuring end-to-end data protection, including iData Guard, iPower Guard, and iCell technologies, the 4TE and 4TG-P series provide exceptional flexibility and data security. Further enhanced by AES-256 military-grade encryption, data is secure with the 4TE and 4TG-P series flash storage solutions in wide applications.

Features

- PCIe Gen 4x4 with 7.88 GB/s bandwidth
- Flexible capacity options up to 2 TB
- iData Guard, iPower Guard, and iCell for power failure data protection
- AES-256 encryption engine
- Supports -40° to 85° C wide temperature environments

Model Name	M.2 2280 4TG-P	M.2 2280 4TE
Interface	PCIe Gen 4x4	
Protocol	NVMe 1.4	
Flash Type	112-layer TLC	
Capacity	512GB~2TB	256GB~2TB
Max Channels	4	
Bandwidth	7.88 GB/s	
Thermal Sensor	√	
External DRAM Buffer	√	N/A
HMB	N/A	√
H/W Write Protect	Supported (optional)	
AES-256bit	√	
iSMART	√	
Dimension (WxHxL/mm)	22.0 x 80.0 x 3.5	
Operation Temperature	Standard Temp. (0°C ~ +70°C) / Wide Temp. (-40°C ~ +85°C)	
Environment		

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DRAM Modules

The Unparalleled Performance of DDR5 is Driving the World towards the Next Generation

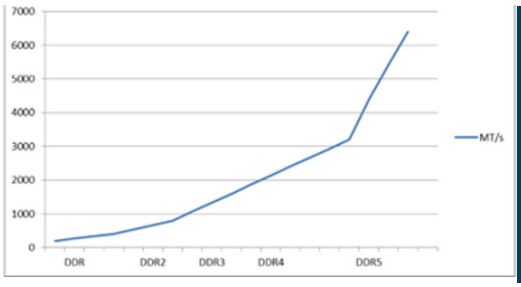
Innodisk is actively developing DDR5 solutions in 2020. In 2021, Innodisk will release the latest DDR5 product series for the next era of networking, edge-computing, and AIOT.

With extraordinary speed from 4800 to 6400 MT/s and the capacities from 16GB to 128 GB, DDR5 can easily deal with ample and complex data workloads, enhancing the performance of big data processing. DDR5 also has a built-in thermal sensor to ensure data reliability and to prevent failures due to overheating. Furthermore, DDR5 has better power management ability and power-saving support.

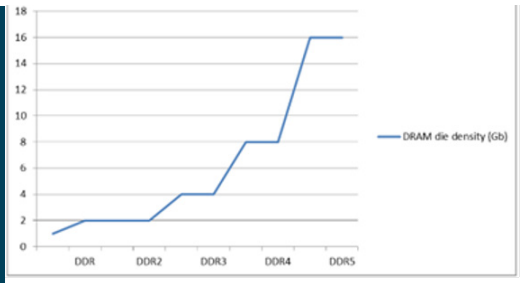
Innodisk is launching a range of product series for DDR5, providing industry-leading value-added features and customized services in order to fully meet the requirements of all industrial applications.

Some of the key feature differences between DDR4 and DDR5 are shown as below:

Spec	DDR5	DDR4
Max IC Density	64Gbit	16Gbit
Max UDIMM Capacity	128GB	32GB
Max Data rate	6400MT/s	3200MT/s
Voltage	1.1v	1.2v



Memory Interface Improvement



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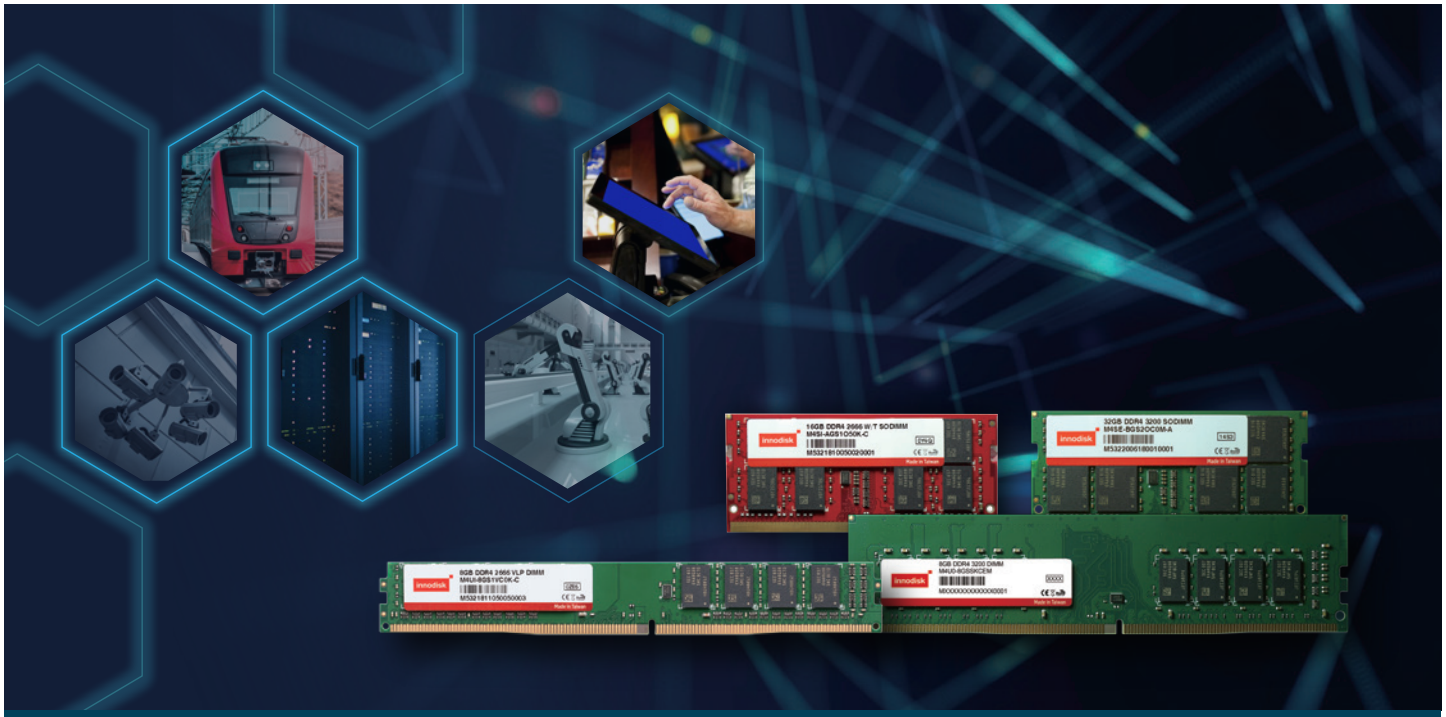

DRAM Modules

Global Trend of AIOT and the DDR4 3200 Product Line

A memory module built for the new era

The combination of Artificial Intelligence & the Internet of Things (AIoT) is the latest technology making society-changing ripples in a variety of fields. Innodisk is on the forefront of industrial-grade products with the most innovative and advanced technology. The industrial-grade DDR4 3200 wide temperature product uses Innodisk's exclusive and rigorous testing process and high quality production condition. DDR4 3200 wide temperature is commonly used in factory automation due to the long-time operation requirements. Meanwhile, transportation, retail and surveillance also require wide temperature DDR4 to meet the requirements outdoor and severe environment conditions.

Innodisk's DDR4 3200 RDIMM wide temperature is also widely applied in networking environments as well.

DDR4 3200 WT

- Transportation
- Retail
- Surveillance

DDR4 3200 RDIMM WT

- Server
- Networking

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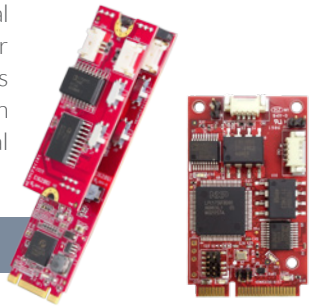
Embedded Peripherals

CAN Bus - Driving the Future of Automation

CAN Bus has been widely used in a multitude of industries, especially for in-vehicle, industrial automation, smart agriculture, and logistics. Innodisk CAN Bus solutions are designed for industrial use and we design multi-form factor modules for harsh environment applications. It is ideal for various vertical markets applications with its high layer protocols J1939 and CANopen support. Furthermore, a key feature of Innodisk CAN Bus solution is our excellent technical support, which helps users easily integrate their tools.



The Innodisk CAN Bus suite of expansion cards is suitable for different vertical applications.

Unmanned transportation such as unmanned helicopters and drones are used for anything from carrying materials and extinguishing fires. CAN Bus is an essential communication interface for connecting cameras, and important units such as GPS, ESC due to its high speed, high reliability, high flexibility, and low cost

AGVs, such as tractors or automatic forklifts, need to be equipped with a variety of sensors: CAN Bus is used as the communication interface of the infrared distance measuring device to detect pallets, avoid collisions during navigation, and position the fork

Modern agricultural machinery heavily relies on CAN Bus to communicate between various micro control units and sensor for data collection

Embedded Peripherals

Innodisk LAN Solutions for Industrial Environments

Industrial applications are especially demanding for connectors and cables. Liquids, oil, lubricants, and heavy mechanical contamination demands tailor-made connectors. The M12 connector is the most used in special environments. Innodisk has launched a series of LAN expansion modules that are especially suitable for M12 connectors. These are the no-daughterboard series LAN modules.

Automation

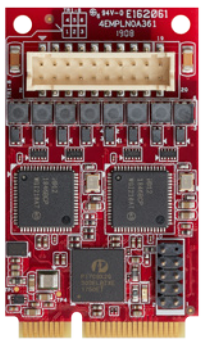
Outdoor Environments

Transportation

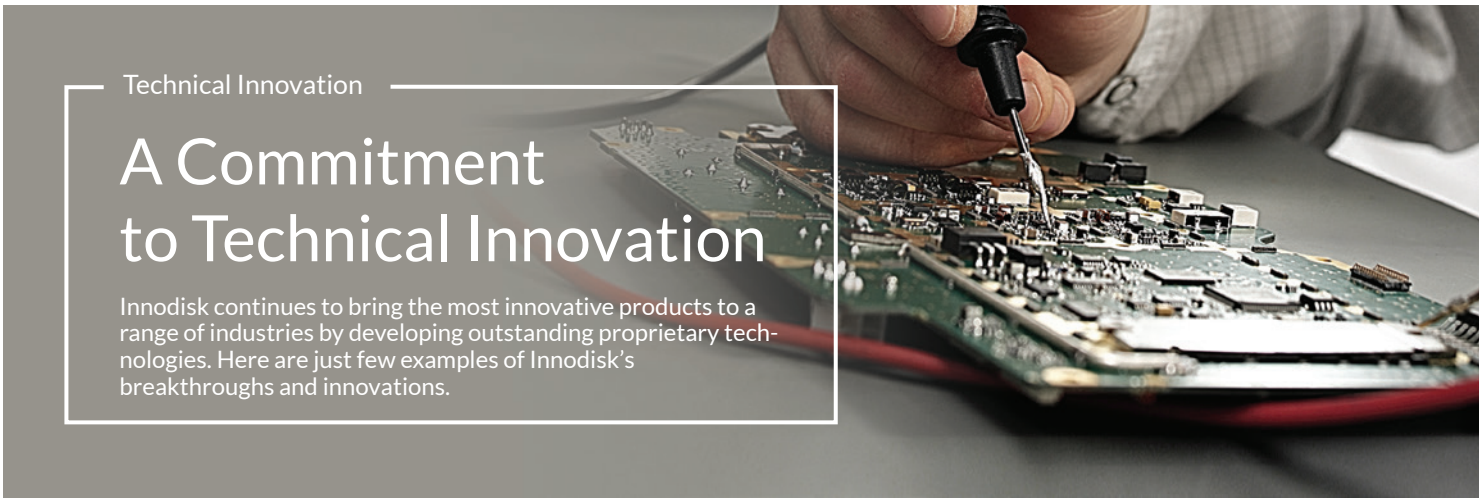
Missional Critical

- Wide Temp. Support
- Complies with ESD, EMC

Flexible Cable Design



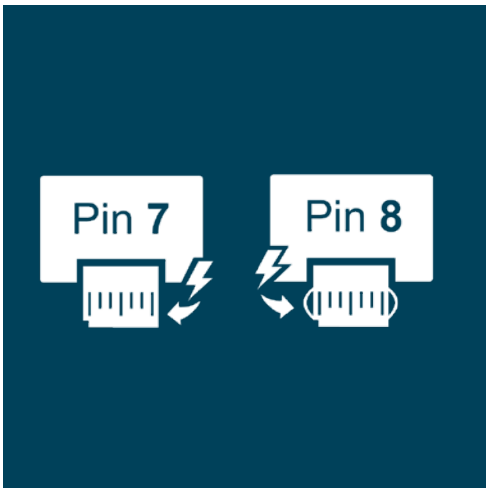
As more and more IPCs choose adds M.2 slots, there is an increasing demand for M.2 expansion cards in the industrial market. Our new product, EGPL-G2N3 is an M.2 2280 to dual GbE LAN no-daughterboard module, based on the Intel LAN controller, which



Technical Innovation

A Commitment to Technical Innovation

Innodisk continues to bring the most innovative products to a range of industries by developing outstanding proprietary technologies. Here are just few examples of Innodisk's breakthroughs and innovations.



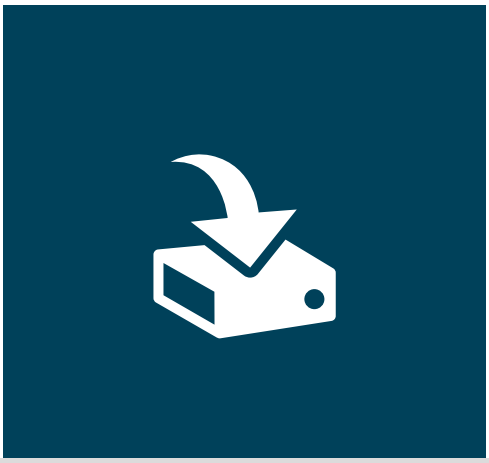
Cable-less Power

Pin 7/ Pin 8

Innodisk's patented Pin 7 and Pin 8 SATA power technologies take the cable-less concept to the next level by eliminating the need for power cables. The result is a 100% cable-less, shock-resistant, space-saving, and plug-and-play storage solution. Innodisk's cable-less power solutions mean optimized airflow and optimal use of the limited space in embedded and rackmount server systems.

iSMART™

iSMART is a powerful and easy-to-use flash storage and DRAM health monitoring tool. It allows system integrators to track important storage and memory information, including temperature, storage space, bad blocks, lifespan and firmware—all on one platform. With iSMART, system integrators can easily manage storage use and know exactly when to replace devices in time before the end of their life cycles.



iCell™

iCell is a smart data protection technology that is built into Innodisk's SSDs. iCell is crucial for applications where working under extreme conditions and without backup power is unavoidable. Our iCell technology provides a mechanism to instantaneously discharge data stored in temporary volatile DRAM buffers to the flash storage, ensuring data security during power failures.

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Passive Cooling

SSDs are always at risk of losing data due to overheating. Innodisk addresses this concern with a redesigned cable layout that uses copper to separate the controller and flash. This solution reduces the thermal conductivity rate and enhances data retention.

iPower Guard™

Innodisk's Power-on Protection is a new circuit protection feature that is designed to allow uninterrupted SSD functionality in an inconsistent power supply situation, as well as provide accelerated boot-up for emergency startups or system shutdowns.

Stable Power Control

Innodisk's stable power control is used to optimize power circuits and establish OCP/OVP mechanisms to prevent electronic components from burning out due to voltage or current surges.

iSLC

iSLC is our exclusive technology designed to ensure longer-lasting and more reliable performance than conventional TLC NAND flash. Through the use of flash management algorithms, iSLC improves SSD endurance by up to 30,000 cycles, increasing the lifespan to at least 10 times longer than TLC-based solutions.

Technical Innovation

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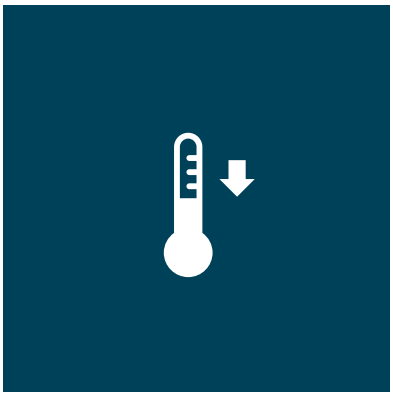
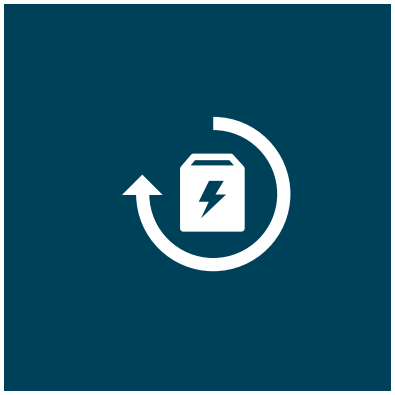


Thermal Sensor

Innodisk's Thermal Sensor is a robust heat and workload management technology that is built into our DRAM modules and flash storage devices. It is a crucial solution for industrial and aerospace applications, which are often susceptible to extreme heat and performance stress. Innodisk's thermal sensors enable thermal throttling to lower the working temperature while distributing workloads, which prevents modules from overheating, and greatly enhances system performance and stability.

iData Guard™

Innodisk's iData Guard is a comprehensive data protection mechanism that functions before and after a sudden power outage suffered by the SSD. Low-power detection terminates data writing before an abnormal shutdown, while table-remapping after startup deletes corrupt data and maintains data integrity. Innodisk's iData Guard provides effective power cycling management, preventing data stored in the flash from degrading with use.



Garbage Collection/TRIM

Innodisk's Garbage Collection/TRIM technology is used to maintain data consistency and perform continual data cleansing on SSDs. It runs as a background process, freeing up valuable controller resources while sorting good data into available blocks, and deleting bad blocks. It also significantly reduces write operations to the drive, thereby increasing the SSD's speed and lifespan. In short, Innodisk's Garbage Collection/TRIM technology brings optimized health and performance to industrial SSDs.

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L^3 Architecture

Innodisk's exclusive L^3 architecture firmware, which combines *Long-Life* with *LDPC ECC*, yields a prolonged lifespan, exceptional reliability, and high performance. Innodisk's exclusive industry-oriented firmware also provides a flexible customization service, making it perfect for a variety of industrial applications.

iRetention™

iRetention is an intelligent technology created by Innodisk. This agile SSD firmware feature maintains data retention in the face of aging NAND flash and high temperature variations. iRetention significantly extends the standard NAND flash specifications for SSD retention time.

InnoRobust™ Data Security

The InnoRobust™ Data Security suite includes Security Erase, Destroy, Physical Destroy and Quick Erase. These sophisticated technologies quickly and efficiently erase and destroy data that is in danger of being compromised.

AES Hardware Encryption

Advanced Encryption Standard (AES) is the standard cipher used by the U.S. government to protect confidential data on storage devices. By integrating the encryption engine in the SSD controller, the encryption/decryption process does not affect CPU performance. The encryption key is safely stored away in the SSD and can be destroyed in less than a second, rendering all stored data useless as it cannot be decrypted.

InnoOSR Recovery with a Single Click

InnoOSR's unique architecture allows operators to restore operating system to a working state with a single click of a (physical) button – or through other innovative ways depending on how the operator integrates InnoOSR in their application.

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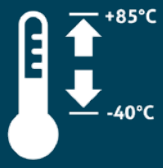
Our Industrial-grade DRAM

iRAM

iRAM is Innodisk's exclusive and highly sophisticated DRAM testing tool, with its testing quality and strictness far surpassing that of other testing software used for ECC and RDIMM modules. iRAM quickly identifies any underperforming components and weeds them out – all while taking every aspect of the DRAM IC and ECC IC status into account. In its testing, iRAM also simulates multipoint server and workstation computing scenarios to ensure the best possible real-world performance. The result is that iRAM can guarantee the highest quality, best reliability, and greatest performance in the industry – ultimately reducing your maintenance costs.

Wide Temperature



Innodisk's *Wide Temperature* DRAM modules extend the standard JEDEC temperature range to handle extreme temperatures from -40 to 85 °C. Innodisk's wide temperature DRAM modules are designed to excel in extreme environments and in the most demanding applications – guaranteeing sustained industrial-grade performance and unwavering reliability.

Anti-sulfuration

Hydrogen sulfide gas is a common challenge in many industries and applications, for example in the mining, petroleum, and chemical industries, as well as in installations in areas with volcanic activity. In such environments, hydrogen sulfide reacts with the silver in DRAM ICs, resulting in declining conductivity and eventual device failure. *Anti-sulfuration* technology mitigates this problem by covering DRAM modules' resistors with a sulfur-resistant material – allowing the device to remain unaffected by exposure to this common gas.

Maximum Ruggedness

Innodisk's products are designed with the best components and undergo the most stringent testing procedures to ensure industry-leading ruggedness. Innodisk continuously develops new rugged DRAM technologies and solutions that exceed JEDEC standards and push the boundaries of DRAM ruggedness in applications like aerospace and robotics. For example, Innodisk's offers extra mounting holes for DIMM modules to ensure a secure connection to the motherboard that withstands extreme shocks and vibrations.

Our Value-added Features

Conformal Coating

Innodisk Conformal Coating refers to chemical materials that are applied in layers to cover components. The thickness of the coating ranges between 0.03 mm and 0.13 mm. Conformal coating protects against moisture, contaminants, and dust. The automatic conformal coating system maintains consistent quality and enhances the production process.

Side Fill

Side Fill is a value-added technology that can improve device reliability and extend product life. With side fill, a resin is applied on three sides of the DRAM IC, which in turn reinforces the joints between the BGA and the PCB. Tests show that when using side fill, DRAM ICs can tolerate 1.5 times the amount of tension compared to regular DRAM ICs. If the device needs to remain operational during strong tremors or stringent thermal cycling – common in applications such as automation, aerospace, and renewable energy – we highly recommend taking advantage of our side fill DRAM.

Heat Spreader

Adding a *Heat Spreader* enhances the DRAM module's ability to quickly disperse heat in high-temperature and heavy workload environments. Innodisk's heat spreaders are compatible with all form factors and help ensure that temperatures stay below the critical limit where module failures start occurring. By reducing thermal stress, heat spreaders also extend the lifespan of DRAM modules.

30μ" Golden Finger

The 30μ" Golden Finger plating ensures solid DRAM module protection and excels in environments that require high stability. It efficiently counters corrosion and oxidation due to its durable nature and it ensures a stable connection with the DRAM socket.

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Different Applications

Innodisk focuses on providing reliable memory and expansion solutions for the most demanding applications. We understand the importance of quality in industrial and embedded flash, DRAM, expansion cards, and software products. Therefore, our solutions are all crafted to meet the individual needs of each vertical market. Our experienced in-house firmware development team delivers fast turnaround times and knowledgeable support whenever customization is required.

Medical

Using iCAP™, your medical devices can be gathered under a single platform regardless of physical location. This includes flash-based solutions that are varied and easily customizable to fit the requirements of each medical application, as well as DRAM which is an essential component in every smart medical device. Furthermore, there is no need for concern about future component availability. These hardware solutions are all ensured to have long-time supply and a fixed BOM.

Networking & Telecom

Innodisk provides solutions that bring out the true performance of next-generation networking standards such as 5G and Wi-Fi 6. With optional rugged designs and unique technologies for optimal stability in any environment, our products are ideal for demanding networking edge equipment as well as backend applications that demand the highest performance.

Surveillance

The number-one concern for modern day surveillance applications is stable data recording. With our InnoREC™ feature set, the firmware is optimized to ensure lasting and stable writing performance—ensuring zero loss of data quality. With restricted space and simultaneous read/write operations, high-speed and compact memory solutions are also an imperative. Our Very Low-Profile (VLP) and Mini DIMM modules combine small form factors with high performance to make sure data recording proceeds without a hitch.

New Flash Product Naming Rules

PCIe M.2 2280 3TG6-P

Form Factor

SSD
U.2
Slim SSD
SATADOM
SATA Slim
mSATA
mini PCIeDOM
M.2(SATA/PCIE)
CFast
CF Card
CF Express
EDC
SD
microSD
USB
nanoSSD
OCuLinkDOM

Interface

4: Generation IV
3: Generation III
2: Generation II
1: Generation I

Flash Type

S: SLC
We offer a series of products with SLC-based flash, boasting faster write speeds, lower power consumption, and higher cell endurance. SLC-based flash is more reliable and suitable for critical applications.

M: MLC
The primary benefit of MLC-based flash is its lower cost per unit of storage due to the higher data density. This benefit makes MLC-based flash a perfect replacement for traditional HDDs.

I: iSLC
iSLC is Innodisk's exclusive firmware technology, which improves the performance and data quality and boasts a similar write performance to that of SLC-based solutions. Through the use of flash management algorithms, iSLC improves SSD endurance by up to 30,000 times.

T: TLC
TLC-based 3D NAND flash is a new technology with a novel architecture. The more concentrated die size provides higher density and lower cost.

Application & Series

E: Embedded
G: EverGreen
H: H series(iSLC)
R: InnoRobust
S: Server
T: InnoAGE
U: InnoOSR
V: InnoREC

Product Series

SSD with DRAM Cache

G: EverGreen
The EverGreen series is designed with an integrated external DRAM cache which significantly improves the SSD random data transfer rate and extends its lifespan.

E: Embedded
The embedded series is the best solution for the industrial embedded system because it offers reliability, high performance, and long endurance. We offer multiple form factors to fulfill customer and business needs, including 2.5" SSD, 1.8" SSD, SAT.ADOM, mSATA, SATA Slim, SATADOM, iCF & CFast, EDC, and SD.

R: InnoRobust
The InnoRobust series meets all of today's aerospace requirements. InnoRobust storage products are fully compliant with aerospace and defense standards, including MIL-STD-810G and MIL-I-46058C. InnoRobust products are fully protected against heat, dust, extreme temperatures, shock, vibration, and other environmental stresses. We also deliver industry-leading data protection technologies to keep sensitive information secure.

V: InnoREC
InnoREC SSDs are specifically designed for surveillance applications and boasts smart firmware algorithms that guarantee a continuous, stable data recording.

S: Server
The SATADOM® server boot-up devices are designed for easy server integrations and reliable performance. The devices are certified for Windows Server 2016 Hyper V and VMware hypervisors.

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Flash Storage

Innodisk's flash Storage products are designed to be highly reliable and stable, providing longer life cycles for the embedded and industrial systems in which they are used. Innodisk offers the industry's widest selection of flash memory form factors, including standard 1.8" and 2.5" Industrial SSDs, M.2, SATA-DOM®—the smallest high-speed SATA storage in the market, CompactFlash Cards, mSATA, SATA Slim, and USB flash drives. Our products are available in 3D NAND triple-level cell (TLC), single-level cell (SLC), and multi-level cell (MLC) flash types, as well as iSLC—our own proprietary technology that merges the best features from MLC and SLC.

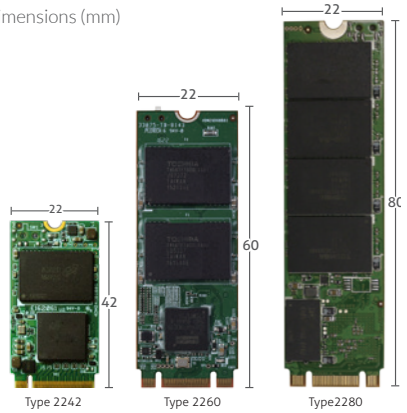
M.2

The Innodisk M.2 series pack a lot of performance into a thin, industrial-grade form factor. The M.2 series includes both Non-Volatile Memory Express (NVMe) and SATA devices. The NVMe specification is designed specifically for flash devices and can deliver the fastest speeds in the industry.

M.2 (NVMe) Highlights

- Truly industrial-grade PCIe NVMe SSD
- Wide range of form factors and dimensions available, including type 2242 and 2280
- Supports industrial-grade wide temperature -40°C~85°C
- iData Guard, iPower Guard, and iCell technology for data protection and integrity during abnormal power failure
- Supports iSMART™ disk health monitoring
- Supports end-to-end data path protection (ETEP)

Dimensions (mm)



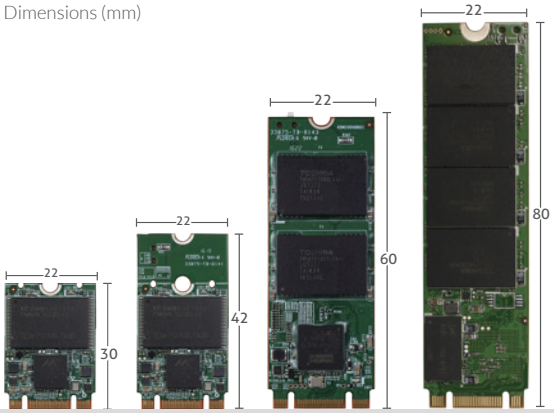
Model Name	M.2 (P42) 3TE6	M.2 (P42) 3TE6 B+M Key	M.2 (P42) 3IE6 B+M Key	M.2 (P80) 3TE6	M.2 (P80) 3TE6 B+M Key
Key Features	1. DRAM-less Solution 2. Supports NVMe 1.3 3. Anti-Vibration mechanical design 4. Hybrid Write Mode 5. LDPC ECC engine supported 6. iPowerGuard Protection	1. DRAM-less Solution 2. Supports NVMe 1.3 3. Anti-Vibration mechanical design 4. Hybrid Write Mode 5. LDPC ECC engine supported 6. iPowerGuard Protection	1. DRAM-less Solution 2. Supports NVMe 1.3 3. Anti-Vibration mechanical design 4. LDPC ECC engine supported 5. iPowerGuard Protection	1. DRAM-less Solution 2. Supports NVMe 1.3 3. Anti-Vibration mechanical design 4. Hybrid Write Mode 5. LDPC ECC engine supported 6. iPowerGuard Protection	1. DRAM-less Solution 2. Supports NVMe 1.3 3. Anti-Vibration mechanical design 4. Hybrid Write Mode 5. LDPC ECC engine supported 6. iPowerGuard Protection
connector	M Key	B+M Key	B+M Key	M Key	B+M Key
Interface	PCIe Gen3×4	PCIe Gen3×4	PCIe Gen3×4	PCIe Gen3×4	PCIe Gen3×4
Flash Type	3D TLC	3D TLC	iSLC (3D TLC)	3D TLC	3D TLC
Capacity	64GB~1TB	64GB~1TB	20GB~160GB	64GB~2TB	64GB~2TB
Max. Channel	4	4	4	4	4
Sequential R/W (MB/sec, max.)	2000/1200	1,650/1,480	1,650/1,450	2000/1500	1,650/1,650
Max. Power Consumption	3.3W (3.3V x 1000mA)	3.5W	3.5W	3.5W (3.3 x 1050mA)	5.3W
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	N	N	N	N	N
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	N	N
TRIM	Y	Y	Y	Y	Y
ATA Security	N	N	N	N	N
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	22.0 x 42.0 x 3.5	22.0 x 42.0 x 3.5	22.0 x 42.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours				
Standard Temp. OP (0°C~+70°C)	DEM24-XXXDD1EC***	DEM24-XXXDD1ECC**	DHM24-XXXDD1ECC**	DEM28-XXXDD1EC***	DEM28-XXXDD1ECC**
Wide Temp. OP (-40°C~+85°C)	DEM24-XXXDD1EW***	DEM24-XXXDD1EWC**	DHM24-XXXDD1EWC**	DEM28-XXXDD1EW***	DEM28-XXXDD1EWC**
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T, 2TB=02T, 20GB=20G, 40GB=40G, 80GB=80G,160GB=A60), ***= flash configuration (internal control code) %=Flash Type				

Model Name	M.2 (P80) 3IE6 B+M Key	M.2 (P80) 4TE	M.2 (P80) 3TG3-P	M.2 (P80) 3TG6-P	M.2 (P80) 4TG-P
Key Features	1. DRAM-less Solution 2. Supports NVMe 1.3 3. Anti-Vibration mechanical design 4. LDPC ECC engine supported 5. iPowerGuard Protection	1. DRAM-less Solution 2. Supports NVMe 1.3 3. iData Guard Data Protection 4. End-to-End Data Path Protection 5. HMB Feature 6. AES Encryption 7. Supports WT	1. Type-2280-D2-M 2. Ultra-high performance 3. Supports NVMe 1.3 4. iData Guard data protection 5. End-to-end data path protection	1. With-DRAM Solution 2. Supports NVMe 1.3 3. iData Guard Data Protection 4. End-to-End Data Path Protection	1. With-DRAM Solution 2. Supports NVMe 1.3 3. iData Guard Data Protection 4. End-to-End Data Path Protection 5. AES Encryption 6. Support WT
connector	B+M Key	M Key	M Key	M Key	M Key
Interface	PCIe Gen3×4	PCIe Gen4x4	PCIe Gen3x4	PCIe Gen3×4	PCIe Gen4×4
Flash Type	iSLC (3D TLC)	3D TLC	3D TLC	3D TLC	3D TLC
Capacity	20GB~320GB	128GB~2TB	128GB~2TB	64GB~2TB	128GB~2TB
Max. Channel	4	4	8	8	4
Sequential R/W (MB/sec, max.)	1650/1,500	2800/1800	3400/2800	3400/2700	2800/1800
Max. Power Consumption	5W	TBD	6.27W (3.3 x 1900mA)	5.6W (3.3V x 1700mA)	TBD
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	N	N	Y	Y	Y
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	TBC	N
TRIM	Y	Y	Y	Y	Y
ATA Security	N	N	N	N	N
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours				
Standard Temp. OP (0°C~+70°C)	DHM28-XXXDD1ECC**	DEM28-XXXMB1GC***	DGM28-XXXDA1EC***	DGM28-XXXDC1EC*** DGM28-XXXDC1GC***	DGM28-XXXMA1GC***
Wide Temp. OP (-40°C~+85°C)	DHM28-XXXDD1EWC**	DEM28-XXXMB1GW***	DGM28-XXXDA1HW***H	DGM28-XXXDC1EW***	DGM28-XXXMA1GW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T, 2TB=02T, 20GB=20G, 40GB=40G, 80GB=80G,160GB=A60), ***= flash configuration (internal control code) %=Flash Type				

M.2 (SATA) Highlights

- Wide range of form factors and dimensions available, including type 2230, 2242, 2260, and 2280.
- iData Guard™, iPower Guard™, and iCell™ technology for data protection and integrity in case of abnormal power failure.
- Supports iSMART™ disk health monitoring.

Dimensions (mm)



Model Name	M.2 (S42) 3IE7	M.2 (S42) 3TE7
Key Features	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. Lifespan 10 times longer than MLC	1. Type=2242-D2-B-M 2. Industrial-grade firmware with 3D NAND 3. Advanced LDPC ECC engine 4. Internal RAID Technology 5. DRAM-less, high-level data integrity 6. Excellent data transfer speed
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC (3D TLC)	3D TLC
Capacity	20GB~160GB	32GB~512GB
Max. Channel	4	4
Sequential R/W (MB/sec, max.)	560/530	560/330
Max. Power Consumption	2.8W(850mA x 3.3V)	1.6W (3.3V x 475mA)
Thermal Sensor	Y	Y
External DRAM Buffer	N	N
iData Guard	Y	Y
iCell	N	N
TRIM	Y	Y
ATA Security	Y	Y
S.M.A.R.T.	Y	Y
Dimension (WxLxH/mm)	22.0 x 42.0 x 3.5	22.0 x 42.0 x 3.5
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C /MTBF: >3 million hours	
Standard Temp. OP (0°C~+70°C)	DHM24-XXXDK1%C***	DEM24-XXXDK1%C***
Wide Temp. OP (-40°C~+85°C)	DHM24-XXXDK1%W***	DEM24-XXXDK1%W***
Notes	XXX = density (08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 20GB=20G, 40GB=40G, 80GB=80G,160GB=A60) ***= flash configuration (internal control code)	

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Model Name	M.2 (S42) 3TG6-P	M.2 (S30) 3ME4	M.2 (S42) 3SE4	M.2 (S42) 3IE4	M.2 (S42) 3ME4
Key Features	1. Type=2242-D2-B-M 2. Extreme seq. and random performance with 3D NAND solution 3. Advanced LDPC ECC engine 4. RAID engine offers an additional level of data protection	1. Type 2230-D2-B-M 2. Exclusive L^3 architecture 3. Designed with LDPC ECC engine 4. Budget-friendly MLC-based solution	1. Type 2242-D2-B-M 2. High-quality SLC-based solution 3. DRAM-less, high-level data integrity 4. LDPC technology secures SSD reliability 5. Excellent data transfer speed	1. Type 2242-D2-B-M 2. Designed with LDPC ECC engine 3. Lifespan 7 times longer than MLC 4. Cost-effective industrial flash with iSLC	1. Type 2242-D2-B-M 2. Exclusive L^3 architecture 3. Designed with LDPC ECC engine 4. Budget-friendly MLC-based solution
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	3D TLC	MLC	SLC	iSLC (MLC)	MLC
Capacity	128GB~512GB	8GB~128GB	8GB~64GB	8GB~128GB	8GB~256GB
Max. Channel	4	2	2	2	2
Sequential R/W (MB/sec, max.)	560/510	520/120	520/360	530/380	530/210
Max. Power Consumption	2.4W (3.3V x 739mA)	1.6W (3.3V x 505mA)	0.6W (3.3V x 185mA)	1.5W (3.3V x 460mA)	1.4W (3.3V x 422mA)
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	Y	N	N	N	N
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	N	N
TRIM	Y	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	22.0 x 42.0 x 3.5	22.0 x 42.0 x 3.2	22.0 x 42.0 x 3.5	22.0 x 42.0 x 3.2	22.0 x 42.0 x 3.2
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours				
Standard Temp. OP (0°C~+70°C)	DGM24-XXXM71%C***	DEM23-XXXM41BC***	DEM24-XXXM41SC***	DHM24-XXXM41BC***	DEM24-XXXM41BC***
Wide Temp. OP (-40°C~+85°C)	DGM24-XXXM71%W***	DEM23-XXXM41BW***	DEM24-XXXM41SW***	DHM24-XXXM41BW***	DEM24-XXXM41BW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type				

Model Name	M.2 (S42) 3MG2-P	M.2 (S42) 3SE2-P	InnoOSR M.2 (S42) 3TO7	M.2 (S60) 3ME3
Key Features	1. Type 2242-D2-B-M 2. High sequential/IOPS performance 3. Supports DEVSLP 4. iData Guard data protection	1. Type 2242-D2-B-M 2. High-quality SLC-based solution 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed 5. Support AES function	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed 6. OS and data backup and recovery	1. Type 2260-D2-B-M 2. High IOPS 3. iData Guard data protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	MLC	SLC	3D TLC	MLC
Capacity	32GB~256GB	8GB~64GB	32GB~512GB	32GB~512GB
Max. Channel	4	4	4	4
Sequential R/W (MB/sec, max.)	560/360	520/330	560/330	380/200
Max. Power Consumption	1.09W (3.3V x 330mA)	1.55W (3.3V x 0.47mA)	1.6W (3.3V x 475mA)	1.3W (3.3V x 370mA)
Thermal Sensor	Y	Y	Y	STD: N, W/T: Y
External DRAM Buffer	Y	Y	N	N
iData Guard	Y	Y	Y	Y
iCell	N	N	N	N
TRIM	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	22.0 x 42.0 x 3.5	22.0 x 42.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 60.0 x 3.5
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DGM24-XXX-D81%C***	DEM28-XXXD82SCAXB***	DUM24-XXXDK1EC***	DEM26-XXXD08%C***
Wide Temp. OP (-40°C~+85°C)	DGM24-XXX-D81%W***	DEM28-XXXD82SWAXB***	DUM24-XXXDK1EW***	DEM26-XXXD08%W***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type			

Model Name	M.2 (S80) 3IE7	M.2 (S80) 3TE7	M.2 (S80) 3SE4	M.2 (S80) 3IE4	M.2 (S80) 3ME4
Key Features	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. Lifespan 10 times longer than MLC	1. Truly industrial designed firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID Technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed	1. Type 2280-S2-B-M (single side) 2. High-quality SLC-based solution 3. DRAM-less, high-level data integrity 4. LDPC technology secures SSD reliability 5. Excellent data transfer speed	1. Type 2280-D2-B-M 2. Designed with LDPC ECC engine 3. Lifespan 7 times longer than MLC 4. Cost-effective industrial flash with iSLC	1. Type 2280-D2-B-M 2. Exclusive L^3 architecture 3. Designed with LDPC ECC engine 4. Budget-friendly MLC-based solution
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC (3D TLC)	3D TLC	SLC	iSLC (MLC)	MLC
Capacity	20GB~320GB	32GB~1TB	8GB~64GB	8GB~128GB	8GB~256GB
Max. Channel	4	4	2	2	2
Sequential R/W (MB/sec, max.)	550/490	550/370	520/360	530/360	530/210
Max. Power Consumption	1.98W(3.3V x 600mA)	2.0W (3.3V x 614mA)	1.6W (3.3V x 500 mA)	0.9 W (3.3V x 270mA)	0.9 W (3.3V x 270mA)
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	N	N	N	N	N
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	N	N
TRIM	Y	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.2	22.0 x 80.0 x 3.2	22.0 x 80.0 x 3.2
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours				
Standard Temp. OP (0°C~+70°C)	DHM28-XXXDK1%C***	DEM28-XXXDK1%C***	DEM28-XXXM41SC***	DHM28-XXXM41BC***	DEM28-XXXM41BC***
Wide Temp. OP (-40°C~+85°C)	DHM28-XXXDK1%W***	DEM28-XXXDK1%W***	DEM28-XXXM41SW***	DHM28-XXXM41BW***	DEM28-XXXM41BW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 20GB=20G, 40GB=40G, 80GB=80G,160GB=A60, 320GB=D2G) ***= flash configuration (internal control code) %=Flash Type				

Model Name	M.2 (S80) 3MG2-P	M.2 (S80) 3SE2-P	M.2 (S80) 3TG6-P	InnoAGE M.2 (S80) 3TI7
Key Features	1. Type 2280-D2-B-M 2. High sequential/IOPS performance 3. Supports DEVSL P 4. iData Guard data protection	1. Type 2280-D2-B-M 2. High-quality SLC-based solution 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed 5. Support AES function	1. Extreme seq. and random performance with 3D NAND solution 2. Advanced LDPC ECC engine 3. RAID engine offers an additional level of data protection 4. AES 256-key end-to-end data path protection 5. Type-2280-D2-B-M	1. Remote management 2. Data security 3. Scalability
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	MLC	SLC	3D TLC	3D TLC
Capacity	16GB~1TB	8GB~256GB	128GB~1TB	32GB~512GB
Max. Channel	4	4	4	4
Sequential R/W (MB/sec, max.)	530/450	520/340	560/510	560/330
Max. Power Consumption	3.63W (3.3V x 1.1A)	2.2W (3.3V x 0.67mA)	2.6W (3.3V x 799mA)	1.6W (3.3V x 475mA)
Thermal Sensor	Y	Y	Y	Y
External DRAM Buffer	Y	Y	Y	N
iData Guard	Y	Y	Y	Y
iCell	Optional	N	Optional	N
TRIM	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5	22.0 x 80.0 x 3.5
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DGM28-XXXD81%C***	DEM28-XXXD82SCAXB***	DGM28-XXXM71%C***	DTM28-XXXDK1EC***
Wide Temp. OP (-40°C~+85°C)	DGM28-XXXD81%W***	DEM28-XXXD82SWAXB***	DGM28-XXXM71%W***	DTM28-XXXDK1EW***
Notes	XX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type			

SSD

Innodisk's SSDs bring a whole new level of performance to flash storage. Our wide selection of SSDs is designed for different applications, including industrial/embedded, enterprise server, aviation, aerospace, as well as other semi-industrial applications, such as thin clients, POS systems, and kiosks. Our SSDs come in 3D TLC, iSLC, SLC, and MLC types, and support PATA/IDE 44-pin, SATA II (3.0Gb/s), and SATA III (6.0Gb/s).

Model Name	InnoOSR 2.5" SATA SSD 3TO7	InnoAGE 2.5" SATA SSD 3TI7	2.5"SATA SSD 3IE7	2.5" SATA SSD 3TE7
Key Features	1. OS and data backup and recovery 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed	1. Remote management 2. Data security 3. Scalability	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. Lifespan 10 times longer than MLC	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	3D TLC	3D TLC	iSLC (3D TLC)	3D TLC
Capacity	32GB~1TB	64GB-1TB	20GB~320GB	32GB~1TB
Max. Channel	4	4	4	4
Sequential R/W (MB/sec, max.)	560/525	560/525	560/525	560/340
Max. Power Consumption	3.6W (5V x 722mA)	3.6W (5V x 722mA)	3.6W (5V x 722mA)	3. 6W (5V x 722mA)
Thermal Sensor	Y	Y	Y	Y
External DRAM Buffer	N	N	N	N
iData Guard	Y	Y	Y	Y
iCell	N	N	N	N
TRIM	Y	Y	Y	Optional
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	69.8 x 100.1 x 6.9	69.8 x 100.1 x 6.9	69.8 X 100.1 X 6.9	69.85 x 100.1 x 6.9
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp.OP(0°C~+70°C)	DOS25-XXXDK1EC***	DTS25-XXXDK1EC***	DHS25-XXXDK1%C***	DES25-XXXDK1%C***
Wide Temp.OP(-40°C~+85°C)	DOS25-XXXDK1EW***	DTS25-XXXDK1EW***	DHS25-XXXDK1%W***	DES25-XXXDK1% W***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T, 2TB=02T, 4TB=04T, 20GB=20G, 40GB=40G, 80GB=80G, 160GB=A60, 320GB=D2G, 640GB=F4G) ***= flash configuration (internal control code) %=Flash Type			

Model Name	2.5"SATA SSD 3IE6-P	2.5" SATA SSD 3TG6-P	2.5" SATA SSD 3IE4	2.5" SATA SSD 3SE4
Key Features	1. Extreme seq. and random performance with 3D NAND solution 2. Advanced LDPC ECC engine 3. RAID engine offers an additional level of data protection 4. Lifespan 10 times longer than MLC	1. Extreme seq. and random performance with 3D NAND solution 2. Advanced LDPC ECC engine 3. RAID engine offers an additional level of data protection	1. Exclusive L^3 architecture 2. Designed with LDPC ECC engine 3. Cost-effective industrial flash with iSLC 4. Lifespan 7 times longer than MLC	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC (3D TLC)	3D TLC	iSLC (MLC)	SLC
Capacity	80GB~640GB	128GB~4TB	8GB~128GB	8GB~64GB *For128GB, please check 2.5"SATA SSD 3SE3
Max. Channel	4	4	2	2
Sequential R/W (MB/sec, max.)	540 /470	540 /470	530/380	520/360
Max. Power Consumption	80GB ~ 320GB 3.1W (5V x 620 mA) 640GB 6W (5Vx 1200mA)	128GB~1TB 3.1W (5V x 620 mA) 2TB~4TB 6W (5V x 1.2 A)	0.8W (5V x 160 mA)	1.1W (5V x 220 mA)
Thermal Sensor	Y	Y	Y	Y
External DRAM Buffer	Y	Y	N	N
iData Guard	Y	Y	Y	Y
iCell	Optional	Optional	N	N
TRIM	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	69.8 x 100.1 x 6.9	69.8 x 100.1 x 6.9	69.8 x 100.1 x 6.9	69.85 x 100.1 x 6.9
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp.OP(0°C~+70°C)	DHS25-XXXM71%C***	DGS25-XXXM71%C***(P)	DHS25-XXXM41%C***	DES25-XXXM41SC***
Wide Temp.OP(-40°C~+85°C)	DHS25-XXXM71%W***	DGS25-XXXM71%W***(P)	DHS25-XXXM41%W***	DES25-XXXM41SW***
	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T, 2TB=02T, 4TB=04T			

Model Name	2.5" SATA SSD 3SE2-P	2.5" SATA SSD 3SR3-P	2.5" SATA SSD 3ME4	2.5" SATA SSD 3MG2-P	2,5" SATA SSD 3MR2-P
Key Features	1. High IOPS performance with DRAM solution 2. High-quality SLC-based solution 3. Supports AES function	1. Compliant with MIL-STD-810G 2. H/W & S/W Data Security (Quick Erase/Destroy/ Security Erase/Write Protect) 3. iCell supported, 100% data protection	1. Exclusive L^3 architecture 2. Designed with LDPC ECC engine 3. Excellent IOPS performance	1. EverGreen L^2 architecture 2. High sequential/IOPS performance 3. Support DEVSLP 4. iData Guard data protection	1. Compliant with MIL-STD-810G 2. H/W & S/W Data Security (Quick Erase/Destroy/ Security Erase/Write Protect) 3. High random performance 4. iCell supported, 100% data protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	SLC	SLC	MLC	MLC	MLC
Capacity	8GB~512GB	8GB~256GB	8GB~256GB	8GB~2TB	8GB~2TB
Max. Channel	4	4	2	4	4
Sequential R/W (MB/sec, max.)	520/420	490/240	530/210	520/480	520/450
Max. Power Consumption	2.15W (5V x 430mA)	2.65W (5V x 530mA)	0.8W (5V x 160mA)	6W (5V x 1.2A)	6W (5V x 1.2A)
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	Y	Y	N	Y	Y
iData Guard	Y	Y	Y	Y	Y
iCell	Optional	Y	N	Optional	Y
TRIM	Y	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	69.8 x 99.8 x 9.2	69.8 x 99.8 x 9.2	69.8 x 100.1 x 6.9	69.8 x 100.1 x 6.9 69.8 x 100.0 x 9.5 (2TB)	69.8 x 99.8 x 9.2
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours				
Standard Temp.OP(0°C~+70°C)	DES25-XXXD82SC***(P)	DRS25-XXXD70SC***(P)	DES25-XXXM41%C***	DGS25-XXXD81%C***(P)	DRS25-XXXD82%C***(P)
Wide Temp.OP(-40°C~+85°C)	DES25-XXXD82SW***(P)	DRS25-XXXD70SW***(P)	DES25-XXXM41%W***	DGS25-XXXD81%W***(P)	DRS25-XXXD82%W***(P)
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T, 2TB=02T) ***= flash configuration (internal control code) %=Flash Type				

Model Name	1.8 " SATA SSD 3TG6-P	1.8" SATA SSD 3MG2-P	Slim SSD 3ME4	PATA 1MG3-P
Key Features	1. Extreme seq. and random performance with 3D NAND solution 2. Advanced LDPC ECC engine 3. RAID engine offers an additional level of data protection 4. AES 256-key end-to-end data path protection	1. Built-in DRAM buffer 2. Intelligent error recovery system 3. Excellent data transfer speed and high IOPS performance 4. iData Guard for abnormal power failure	1. 1.8" housing, 50% space saving 2. Exclusive L^3 architecture 3. Designed with LDPC ECC engine	1. Built-in DRAM buffer 2. Intelligent error recovery system 3. Excellent data transfer speed 4. iData Guard data protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	PIO Mode 0~4 Ultra DMA 0~5
Flash Type	3D TLC	MLC	MLC	MLC
Capacity	32GB~1TB	32GB~1TB	8GB~256GB	8GB~512GB
Max. Channel	4	4	2	4
Sequential R/W (MB/sec, max.)	540 /470	520/450	530/210	90/90
Max. Power Consumption	0.8W (5V x 160mA)	6W (5V x 1.2A)	0.8W (5V x 160mA)	2W (5V x 400mA)
Thermal Sensor	Y	Y	Y	STD : N , W/T : Y
External DRAM Buffer	Y	Y	Y	Y
iData Guard	Y	Y	Y	Y
iCell	Optional	N	N	N
TRIM	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	54.0 x 78.5 x 5.0	54.0 x 78.5 x 5.0	69.85 x 50.0 x 9.0	69.85 x 99.85 x 9.2
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp.OP(0°C~+70°C)	DGS18-XXXM71EC***(P)	DGS18-XXXD81SC***	DEMLM-XXXM41BC***	DGP25-XXXD70%C***
Wide Temp.OP(-40°C~+85°C)	DGS18-XXXM71EW***(P)	DGS18-XXXD82%W***	DEMLM-XXXM41BW***	N/A
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T, 2TB=02T) ***= flash configuration (internal control code) %=Flash Type			

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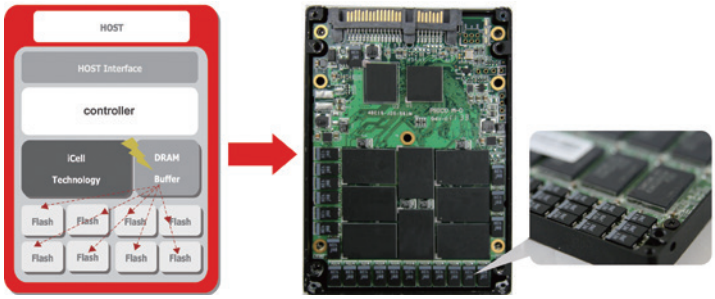
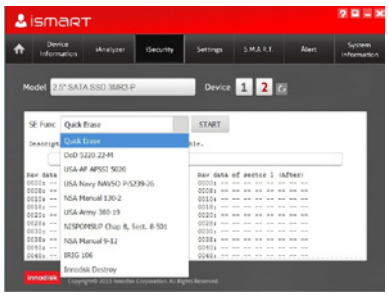
What is iCell?



iCell technology gives the SSD a power boost in the event of an abnormal power failure and ensures reliable and accurate data transfer from DRAM cache to NAND flash.

What is iSecurity?



The iSecurity function under iSMART allows the user to easily operate the data erase command. The user may select the data erase function, monitor the erase progress and also compare data before and after the erasure.

What is TRIM?

SSDs are made up of millions of NAND flash cells. They can be written into groups called pages (generally 4KB in size) but can only be erased in larger groups called blocks (generally 128 pages or 512KB). The addresses of the deleted files are sent along with the TRIM command to the SSD's controller so the drive can function optimally. The TRIM commands allow the SSD to delete data more expediently, thus increasing overall performance. The TRIM command is generally sent from the OS when the system is idle. This cleans up invalid data from the blocks so the drive can continue performing like new.

U.2 SSD

Innodisk U.2 SSD is an NVM Express SSD designed as PCIe SFF-8639 module with PCIe interface and 3D TLC NAND Flash. Supports PCIe Gen III x4, and it is compliant with NVMe 1.3 providing excellent performance. With sophisticated error detection and correction (ECC) functions, the module can ensure full End-to-end Data Path Protection that secures the data transmission between host system and NAND Flash.

Model name	U.2 SSD 3TG3-P
Key Features	1. PCIe Gen. III x4, NVMe 1.3 2. Excellent data transfer speed 3. Heat-spreading design 4. LDPC ECC engine supported. 5. End-to-end Data Path Protection
Interface	PCIe Gen3×4
Flash Type	3D TLC
Capacity	128GB~2TB
Max. Channel	8
Sequential R/W (MB/sec, max.)	3300/3000
Max. Power consumption	7.92W(12Vx 0.66A)
Thermal Sensor	Y
External DRAM Buffer	Y
iData Guard	Y
iCell	N
TRIM	Y
ATA Security	Y
S.M.A.R.T	Y
Dimension (WxLxH/mm)	100.0 x 69.85 x 6.9 mm;
Environment	Shock: 1500G@0.5ms / Storage Temperature: -55°C ~ +95°C / MTBF: >3 million hours
Standard Temp. OP (0°C~+70°C)	DGEU2-XXXDA1%C***
Wide Temp. OP (-40°C~+85°C)	DGEU2-XXXDA1%W***
Notes	XXX = density (128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T, 2TB=02T) ***= flash configuration (internal control code) %=Flash Type

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SATADOM®

Innodisk's Serial ATA Disk on Module (SATADOM®) is the world's smallest form factor with exclusive built-in Pin 7 and Pin 8 VCC, which simplifies motherboard design. Since it has no external cables, it is more robust and enhances the disk functions of various industrial and enterprise applications. Innodisk's SATADOM® also supports the SATA II and SATA III interfaces with faster data transfer rates and is available in capacities ranging from 512MB up to 256GB.

SATADOM-SL 3ME4

Innodisk's SATADOM-SL 3ME4 features our patented Pin 7 and Pin 8 cable-less SATA power combined with our exclusive L^3 architecture. Thanks to these innovative features, the SATADOM-SL 3ME4 offers exceptional performance and reliability with a prolonged lifespan—making it the industry's best storage design for industrial computers and server boot drives. In 2017, the Innodisk SATADOM-SL 3ME4 won the Taiwan Excellence Award in the highly competitive category of "Computer Hardware and Peripheral Equipment," further highlighting the strength of its groundbreaking industrial design.

3ME4 series

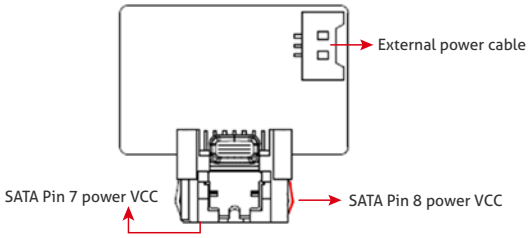
- High performance
- LDPC
- Low WAI
- Supports S.M.A.R.T.

SATADOM-SL

- Tiny size
- Cable-less (Pin 8/ Pin 7 supported)
- OS boot drive
- Durable

Flexible power supply design

- External power cable
- SATA Pin 8 VCC
- SATA Pin 7 VCC



Form Factor	SATADOM-SV/SH				
Model Name	**SATADOM 3IE7**	**SATADOM 3TE7**	**SATADOM 3SE4**	**SATADOM 3IE4**	**SATADOM 3ME4**
Key Features	1. Industrial-grade firm ware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. Lifespan 10 times longer than MLC	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed	1. Cost-effective indus trial flash with iSLC 2. Exclusive L^3 architecture 3. Latest LDPC ECC engine 4. Pin 8/Pin 7 supported	1. Vertical and low-profile horizontal design 2. Exclusive L^3 architecture 3. Latest LDPC ECC engine 4. High IOPS 5. Pin 8/Pin 7 supported
Interface	SATA III 6.0Gb/s	SATA III 6Gb/s	SATA III 6Gb/s	SATA III 6Gb/s	SATA III 6Gb/s
Flash Type	iSLC (3D TLC)	3D TLC	SLC	iSLC (MLC)	MLC
Capacity	20GB~80GB	32GB~256GB	8GB~32GB	8GB~64GB	8GB~128GB
Max. Channel	2	2	2	2	2
Sequential R/W (MB/sec, max.)	550/485	510/300	520/260	530/350	530/120
Max. Power Consumption	1.3W(5V x 260mA)	1.55W (5V x 309mA)	1.58W (5V x 315mA)	0.95W (5V x 189mA)	1.27W (5V x 254mA)
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	N	N	N	N	N
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	N	N
TRIM	Y	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	SV: 40.4 x 21.03 x 10.4 SH: 32.7 x 18 x 14.15	SV: 40.4 x 21.03 x 10.4 SH: 32.7 x 18 x 14.15	SV: 40.4 x 21.03 x 10.4 SH: 32.7 x 18 x 14.15	SV:40.4 x 21.03 x 10.4	SV: 40.4 x 21.03 x 10.4 SH: 32.7 x 18 x 15.15
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours				
Standard Temp. OP (0°C~+70°C)	SV:DHSSV-XXXDK1EC***# SH: DHSSH-XXXDK1EC***#	SV: DESSV-XXXDK1EC***# SH: DESSH-XXXDK1EC***#	SV: DESSV-XXXM41SC***# SH: DESSH-XXXM41SC***#	SV: DHSSV-XXXM41BC***#	SV: DESSV-XXXM41BC***# SH: DESSH-XXXM41BC***#
Wide Temp. OP (-40°C~+85°C)	SV:DHSSV-XXXDK1EW***# SH: DHSSH-XXXDK1EW***#	SV: DESSV-XXXDK1EW***# SH: DESSH-XXXDK1EW***#	SV: DESSV-XXXM41SW***# SH: DESSH-XXXM41SW***#	SV: DHSSV-XXXM41BW***#	SV: DESSV-XXXM41BW***# SH: DESSH-XXXM41BW***#
Notes	xxx = density (08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 20GB=20G, 40GB=40G, 80GB=80G) ***= flash configuration (internal control code) #=power supply method(A=pin 8+ external power cable / B=Pin 7+ Pin 8)				

Form Factor	SATADOM-SL/SH type D				
Model Name	**SATADOM 3IE7**	**SATADOM 3TE7**	**SATADOM 3SE4**	**SATADOM 3IE4**	**SATADOM 3ME4**
Key Features	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. Lifespan 10 times longer than MLC	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transferspeed	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed	1. The best boot solution under 1U 2. Cost-effective industrial flash with iSLC 3. Exclusive L^3 architecture 4. Latest LDPC ECC engine 5. Pin 8/Pin 7 supported	1. The best boot solution under 1U 2. Exclusive L^3 architecture 3. Latest LDPC ECC engine 4. High IOPS 5. Pin 8/Pin 7 supported
Interface	SATA III 6.0Gb/s	SATA III 6Gb/s	SATA III 6Gb/s	SATA III 6Gb/s	SATA III 6Gb/s
Flash Type	iSLC (3D TLC)	3D TLC	SLC	iSLC (MLC)	MLC
Capacity	20GB~80GB	32GB~256GB	8GB~32GB	8GB~64GB	8GB~128GB
Max. Channel	2	2	2	2	2
Sequential R/W (MB/sec, max.)	550/485	510/300	520/260	530/350	530/120
Max. Power Consumption	1.85W(5V x 370mA)	1.5W (5V x 300mA)	0.95W (5V x 186mA)	1.02W (5V x 204mA)	1.02W (5V x 204mA)
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	N	N	N	N	N
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	N	N
TRIM	Y	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	SL: 29.6 x 33.06 x 10.5 SH(D): 30 x 20.79 x 15.20	SL: 29.6 x 33.06 x 10.5 SH(D):30 x 20.79 x 15.20	SL: 29.6 x 33.06 x 10.5 SH(D):30 x 20.79 x 15.15	SL: 29.6 x 33.06 x 10.5	SL: 29.6 x 33.06 x 10.5 SH(D): 30 x 20.79 x 15.15
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours				
Standard Temp.OP(0°C~+70°C)	SL:DHSSL-XXXDK1EC***#	SL: DESSL-XXXDK1EC***# SH(D): DESSF-XXXDK1EC***#	SL: DESSL-XXXM41SC***# SH(D): DESSF-XXXM41SC***#	SL: DHSSL-XXXM41BC***#	SL: DESSL-XXXM41BC***# SH(D): DESSF-XXXM41BC***#
Wide Temp.OP (-40°C~+85°C)	SL:DHSSL-XXXDK1EW***#	SL: DESSL-XXXDK1EW***# SH(D): DESSF-XXXDK1EW***#	SL: DESSL-XXXM41SW***# SH(D): DESSF-XXXM41SW***#	SL: DHSSL-XXXM41BW***#	SL: DESSL-XXXM41BW***# SH(D): DESSF-XXXM41BW***#
Notes	xxx = density (08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) #=power supply method(A=pin 8+ external power cable / B=Pin 7+ Pin 8)				

Form Factor	SATADOM-ML/MH				
Model Name	**SATADOM 3SE4**	**SATADOM 3IE4**	**SATADOM 3ME4**	**SATADOM 3TG6-P**	**SATADOM 3MG2-P**
Key Features	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transferspeed	1. Supports hardware write protection 2. Cost-effective industrial flash with iSLC 3. Exclusive L^3 architecture 4. Latest LDPC ECC engine 5. High IOPS 6. Pin 8/Pin 7 supported	1. Supports hardware write protection 2. Exclusive L^3 architecture 3. Latest LDPC ECC engine 4. High IOPS 5. Pin 8/Pin 7 supported	1. Extreme seq. and random performance with 3D NAND solution 2. Advanced LDPC ECC engine 3. RAID engine offers an additional level of data protection 4. AES 256-key end-to-end data path protection	1. Supports hardware write protection 2. High IOPS 3. High performance SATADOM
Interface	SATA III 6.0Gb/s	SATA III 6Gb/s	SATA III 6Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	SLC	iSLC (MLC)	MLC	3D TLC	MLC
Capacity	8GB~64GB	16GB~128GB	32GB~256GB	128GB~256GB	32GB-256GB
Max. Channel	2	2	2	4	4
Sequential R/W (MB/sec, max.)	520/360	530/360	530/210	560/290	560/180
Max. Power Consumption	1.58W(5V x 315mA)	0.815W(5V x 163mA)	0.815W(5V x 163mA)	2.14W(5V x 428mA)	2.68W(5V x 535mA)
Thermal Sensor	Y	Y	Y	Y	Y
External DRAM Buffer	N	N	N	Y	Y
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	N	N
TRIM	Y	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	ML: 36.7 x 31.2 x 10.7	ML: 31.2 x 36.7 x 10.7 MH: 23.5 x 33.6 x 14.8	ML: 31.2 x 36.7 x 10.7 MH: 23.5 x 33.6 x 14.8	ML: 37.17 x 31.5 x 12.6	ML: 37.17 x 31.5 x 12.6
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours				
Standard Temp.OP(0°C~+70°C)	ML: DESML-XXXM41SC***# MH: DESMH-XXXM41SC***#	ML: DHSML-XXXM41BC***# MH: DHSMH-XXXM41BC***#	ML: DESML-XXXM41BC***# MH: DESMH-XXXM41BC***#	ML: DGSML-XXXM71EC***#	ML: DGSML-XXXD81BC***#
Wide Temp.OP (-40°C~+85°C)	ML: DESML-XXXM41SW***# MH: DESMH-XXXM41SW***#	ML: DHSML-XXXM41BW***# MH: DHSMH-XXXM41BW***#	ML: DESML-XXXM41BW***# MH: DESMH-XXXM41BW***#	ML: DGSML-XXXM71EW***#	ML: DGSML-XXXD81BW***#
Notes	xxx = density (08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12)				

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Form Factor	SATADOM-SH type C		SATADOM-MV	
Model Name	**SATADOM 3SE4**	**SATADOM 3ME4**	**SATADOM 3IE4**	**SATADOM 3ME4**
Key Features	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed	1. Low-profile horizontal design. 2. Exclusive L^3 architecture 3. Latest LDPC ECC engine 4. High IOPS 5. Pin 8/Pin 7 supported	1. Supports hardware write protection 2. Cost-effective industrial flash with iSLC 3. Exclusive L^3 architecture 4. Latest LDPC ECC engine 5. High IOPS 6. Pin 8/Pin 7 supported	1. Supports hardware write protection 2. Exclusive L^3 architecture 3. Latest LDPC ECC engine 4. High IOPS 5. Pin 8/Pin 7 supported
Interface	SATA III 6.0Gb/s	SATA III 6Gb/s	SATA III 6Gb/s	SATA III 6Gb/s
Flash Type	SLC	MLC	iSLC (MLC)	MLC
Capacity	8GB~32GB	8GB~128GB	8GB~64GB	8GB~128GB
Max. Channel	2	2	2	2
Sequential R/W (MB/sec, max.)	520/260	530/120	530/340	530/120
Max. Power Consumption	1.49W(5V x 297mA)	1.02W(5V x 204mA)	1.72W(5V x 343mA)	1.08W(5V x 216mA)
Thermal Sensor	Y	Y	Y	Y
External DRAM Buffer	N	N	N	N
iData Guard	Y	Y	Y	Y
iCell	N	N	N	N
TRIM	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	32.7 x 18 x 14.5 mm	32.7 x 18 x 14.5 mm	41.55 x 25.26 x 10.4 mm	41.55 x 25.26 x 10.4 mm
Environment	Vibration: 20G@7~2000Hz Shock: 1500G@0.5ms Storage Temperature: -55°C ~ +95°C MTBF: >3 million hours			
Standard Temp.OP(0°C~+70°C)	DESSC-XXXM41SC***#	DESSC-XXXM41BC***#	DHSMV-XXXM41BC***#	DESMV-XXXM41BC***#
Wide Temp.OP (-40°C~+85°C)	DESSC-XXXM41SW***#	DESSC-XXXM41BW***#	DHSMV-XXXM41BW***#	DESMV-XXXM41BW***#
Notes	xxx = density (08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) #=power supply method(A=pin 8+ external power cable / B=Pin 7+ Pin 8)			

mSATA

mSATA, which is compliant with the JEDEC MO300/MO300B standard, was announced by the Serial ATA International Organization on September 21, 2009. Applications include netbooks, portable devices and other devices that require a smaller solid-state drive. The connector is similar in appearance to a PCI Express Mini Card interface and is electrically compatible; however, the data signals need a connection to the SATA host controller instead of the PCI Express host controller. Innodisk's mSATA supports high-performance data transfer rates of 1.5 Gb/s, 3.0 Gb/s, and 6.0 Gb/s.

Model Name	**InnoAGE mSATA 3TI7**	**mSATA 3IE7**	**mSATA 3TE7**	**mSATA 3TG6-P**
Key Features	1. Remote Management 2. Data Security 3. Scalability	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. Lifespan 10 times longer than MLC	1. Industrial-grade firmware with 3D NAND 2. Designed with LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed	1. Extreme seq. and random performance with 3D NAND solution 2. Designed with LDPC ECC engine 3. RAID engine offers an additional level of data protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	3D TLC	iSLC (3D TLC)	3D TLC	3D TLC
Capacity	64GB-256GB	20GB~640GB	32GB~1TB	128GB~1TB
Max. Channel	4	4	4	4
Sequential R/W (MB/sec, max.)	535/260	550 / 490	560/330	560/510
Max. Power Consumption	2.2 W (3.3V x 674 mA)	2.7 W	2.2 W (3.3V x 674mA)	2.8 W (3.3V x 850mA)
Thermal Sensor	Y	Y	Y	Y
External DRAM Buffer	N	N	N	Y
iData Guard	Y	Y	Y	Y
iCell	N	N	Optional (64GB-512GB)	N
TRIM	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	29.8 x 50.8 x 3.7	29.8 x 50.8 x 3.7	29.8 x 50.8 x 3.7	29.8 x 50.8 x 3.7
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours***			
Standard Temp. OP (0°C~+70°C)	DTMSR-XXXDK1EC***	DHMSR-XXXDK1%C***	DEMSR-XXXDK1%C***(P)	DGMSR-XXXM71%C***
Wide Temp. OP (-40°C~+85°C)	NA	DHMSR-XXXDK1%W***	DEMSR-XXXDK1%W***(P)	DGMSR-XXXM71%W***
	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G			

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Model Name	mSATA 3SE4	mSATA 3SE-P	mSATA 3IE4	mSATA 3MG2-P	mSATA 3ME4
Key Features	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed	1. Excellent data transfer speed and IOPS 2. Supports TRIM command 3. Built-in DRAM buffer	1. Cost-effective industrial flash with iSLC 2. Lifespan 7 times longer than MLC 3. Performance and data quality congruent to SLC 4. Excellent data transfer speed 5. LDPC technology secures SSD reliability	1. High IOPS with on-board DRAM design 2. Featuring L^2 architecture, expanding the lifespan 3. Supports DEVSLP	1. LDPC technology secures SSD reliability 2. DRAM-less, high-level data integrity
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	SLC	SLC	iSLC (MLC)	MLC	MLC
Capacity	8GB~64GB	8GB~64GB	8GB~128GB	8GB~512GB	8GB~256GB
Max. Channel	2	4	2	4	2
Sequential R/W (MB/sec, max.)	525/350	490/260	530/365	520/450	535/210
Max. Power Consumption	1.32W (3.3V x 400mA)	1.2 W (3.3V x 360mA)	0.6W (3.3V x 200mA)	2.2 W (3.3 V x 660mA)	0.6W (3.3V x 205mA)
Thermal Sensor	Y	STD : N, W/T : Y	Y	Y	Y
External DRAM Buffer	N	Y	N	Y	N
iData Guard	Y	Y	Y	Y	Y
iCell	N	N	N	N	N
TRIM	Y	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y	Y
Dimension (WxLxH/mm)	29.8 x 50.8 x 3.7	29.8 x 50.8 x 3.7	29.8 x 50.8 x 3.7	29.8 x 50.8 x 3.7	29.8 x 50.8 x 3.7
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours***				
Standard Temp. OP (0°C~+70°C)	DEMSR-XXXM41SC***	DEMSR-XXXD67SC***	DHMSR-XXXM41BC***	DGMSR-XXXD81SC***	DEMSR-XXXM41BC***
Wide Temp. OP (-40°C~+85°C)	DEMSR-XXXM41SW***	DEMSR-XXXD67SW***	DHMSR-XXXM41BW***	DGMSR-XXXD81SW***	DEMSR-XXXM41BW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G), ***= flash configuration (internal control code)%=Flash Type				

Model Name	mSATA mini 3TE7	mSATA mini 3SE4	mSATA mini 3IE4	mSATA mini 3ME4
Key Features	1. Industrial-grade firmware with 3D NAND 2. Designed with LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed	1. Cost-effective industrial flash with iSLC 2. Lifespan 7 times longer than MLC 3. Performance and data quality congruent to SLC 4. Excellent data transfer speed 5. LDPC technology secures SSD reliability	1. LDPC technology secures SSD reliability 2. DRAM-less, high-level data integrity
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	3D TLC	SLC	iSLC (MLC)	MLC
Capacity	32GB~512GB	8GB~64GB *For 4GB, please check mSATA mini 3SE3	8GB~64GB	8GB~128GB
Max. Channel	4	2	2	2
Sequential R/W (MB/sec, max.)	560/330	525/360	530/340	430/125
Max. Power Consumption	0.6W (3.3V x 190mA)	1.3W (3.3 V x 400mA)	0.6W (3.3V x 200mA)	0.6W (3.3V x 190mA)
Thermal Sensor	Y	Y	Y	Y
External DRAM Buffer	N	N	N	N
iData Guard	Y	Y	Y	Y
iCell	N	N	N	N
TRIM	Y	Y	Y	Y
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	30 x 26.8 x 3.6	30 x 26.8 x 3.4	30 x 26.8 x 3.4	30 x 26.8 x 3.4
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours***			
Standard Temp. OP (0°C~+70°C)	DEMSM-XXXDK1EC***	DEMSM-XXXM41SC***	DHMSM-XXXM41BC***	DEMSM-XXXM41BC***
Wide Temp. OP (-40°C~+85°C)	DEMSM-XXXDK1EW***	DEMSM-XXXM41SW***	DHMSM-XXXM41BW**	DEMSM-XXXM41BW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G), ***= flash configuration (internal control code)%=Flash Type			

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SATA Slim

The Innodisk SATA Slim is compliant with the JEDEC SFF-8156 standard form factor and ATA protocol. It does not require drivers, and can be configured as a boot device or a data storage device. It is also suitable for portable/hand-held devices, thin clients, and industrial applications that require the effective reduction of operation system boot time and power consumption. With a 7 + 15-pin SATA interface, the Innodisk SATA Slim supports most platforms with a standard SATA port.

Model Name	SATA Slim 3TE7	SATA Slim 3TG6-P	SATA Slim 3SE4
Key Features	1. Industrial-grade firmware with 3D NAND 2. Designed with LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed	1. Extreme seq. and random performance with 3D NAND solution 2. Designed with LDPC ECC engine 3. RAID engine offers additional level of data protection	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	3D TLC	3D TLC	SLC
Capacity	32GB~1TB	128GB~512GB	8GB~64GB *For128GB, please check SATA Slim 3SE3
Max. Channel	4	4	2
Sequential R/W (MB/sec, max.)	560/340	540/470	530/360
Max. Power Consumption	0.8W (5V x 160mA)	3.1W (5V x 620mA)	1.1 W (5V x 220mA)
Thermal Sensor	Y	Y	Y
External DRAM Buffer	N	Y	N
iData Guard	Y	Y	Y
iCell	N	N	N
TRIM	Y	Y	Y
ATA Security	Y	Y	Y
S.M.A.R.T.	Y	Y	Y
Dimension (WxLxH/mm)	54.0 x 39.0 x 4.0	54.0 x 39.0 x 4.0	54.0 x 39.0 x 4.0
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million		
Standard Temp.OP (0°C~+70°C)	DESLM-XXXDK1EC***	DGSLM-XXXM71EC***	DESLM-XXXM41SC***
Wide Temp.OP (-40°C~+85°C)	DESLM-XXXDK1EW***	DGSLM-XXXM71EW***	DESLM-XXXM41SW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type		

Model Name	SATA Slim 3IE4	SATA Slim 3ME4	SATA Slim 3MG2-P
Key Features	1. Exclusive L^3 architecture 2. Designed with LDPC ECC engine 3. Cost-effective industrial flash with iSLC	1. Exclusive L^3 architecture 2. Designed with LDPC ECC engine 3. Compatible with JEDEC MO-297	1. EverGreen L^2 architecture 2. High Sequential/IOPS performance 3. Supports DEVSLP 4. iData Guard data protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Flash Type	iSLC (MLC)	MLC	MLC
Capacity	8GB~128GB	8GB~128GB	8GB~256GB
Max. Channel	2	2	4
Sequential R/W (MB/sec, max.)	530/360	530/210	520/290
Max. Power Consumption	0.8W (5V x 160mA)	0.8W (5V x 160mA)	2.6W (5V x 520mA)
Thermal Sensor	Y	Y	STD : N, W/T : Y
External DRAM Buffer	N	N	Y
iData Guard	Y	Y	Y
iCell	N	N	N
TRIM	Y	Y	Y
ATA Security	Y	Y	Y
S.M.A.R.T.	Y	Y	Y
Dimension (WxLxH/mm)	54.0 x 39.0 x 4.0	54.0 x 39.0 x 4.0	54.0 x 39.0 x 4.0
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million		
Standard Temp.OP (0°C~+70°C)	DHSLM-XXXM41BC***	DESLM-XXXM41BC***	DGSLM-XXXD81%C***
Wide Temp.OP (-40°C~+85°C)	DHSLM-XXXM41BW***	DESLM-XXXM41BW***	DGSLM-XXXD81%W***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type		

CF Card

Innodisk's Industrial CompactFlash Memory Card (iCF) complies with the PCMCIA ATA standard. Designed to replace traditional rotating disk drives, Innodisk iCFs are embedded solid-state data storage systems that are designed for mobile computing and the industrial workplace.

Model Name	iCF 9000	iCF 1SE
Key Features	1. High sustained data transfer speed 2. Enhanced power cycling management	High-quality SLC-based solution
Interface	PATA	PATA
Connector	50-pin CF connector	50-pin CF connector
Flash Type	SLC	SLC
Capacity	1GB~64GB	512MB~8GB
Max. Channel	4	2
Sequential R/W (MB/sec, max.)	110/100	40/30
Max. Power Consumption	0.95W (5V x 190mA) 0.63W (3.3V x 190mA)	0.75W (5V x 150mA) 0.5W (3.3V x 150mA)
Thermal Sensor	N	N
ATA Security	Y	Y
S.M.A.R.T.	Y	Y
Dimension (WxLxH/mm)	42.8 x 36.4 x 3.3	42.8 x 36.4 x 3.3
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours	
Standard Temp. OP (0°C~+70°C)	DC1M-XXXD71AC***	DC1M-XXXD41AC***
Wide Temp. OP (-40°C~+85°C)	DC1M-XXXD71AW***	DC1M-XXXD41AW***
Notes	PIO mode 0-6 UDMA mode 0-7	PIO mode 0-6 UDMA mode 0-4
	XXX = density (512MB=512, 01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56), ***= flash configuration (internal control code) % =Flash Type	

Model Name	iCF 1ME	iCF 1ME2	iCF 1SE2	iCF 1SE3
Key Features	1. Budget-friendly MLC-based solution 2. Enhanced power cycling management	1. Budget friendly MLC-based solution 2. Support iPowerGuard 3. Support iDataGuard	1. High-quality SLC-based solution 2. Enhanced power cycling management	1. Write protection security 2. Read disturb management 3. Support Secure Erase 4. Support iPowerGuard& iDataGuard
Interface	PATA	PATA	PATA	PATA
Connector	50-pin CF connector	50pin CF connector	50-pin CF connector	50pin CF connector
Flash Type	MLC	MLC	SLC	SLC
Capacity	8GB~256GB	8GB~256GB	1GB~64GB	128MB~64GB
Max. Channel	2	2	2	2
Sequential R/W (MB/sec, max.)	110/110	85/55	75/65	63/55
Max. Power Consumption	0.76W (5V x 155mA) 0.52W (3.3V x 155 mA)	0.85W(5V x 170mA)	1.4W (5V x 280mA)	0.7W (5V x 140mA)
Thermal Sensor	N	N	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	42.8 x 36.4 x 3.3	42.8 x 36.4 x 3.3	42.8 x 36.4 x 3.3	42.8 x 36.4 x 3.3
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DECFC-XXXD53BC***	DECFC-XXXYA2BC***	DECFC-XXXD53AC***	DECFC-XXXYA2AC***
Wide Temp. OP (-40°C~+85°C)	DECFC-XXXD53BW***	DECFC-XXXYA2BW***	DECFC-XXXD53AW***	DECFC-XXXYA2AW***
Notes	PIO mode 0-6 UDMA mode 0-7	PIO mode 0-6 UDMA mode 0-7	PIO mode 0-6 UDMA mode 0-7	PIO mode 0-6 UDMA mode 0-7
	XXX = density (512MB=512, 01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56), ***= flash configuration (internal control code) % =Flash Type			

CFast

The Innodisk CFast is a small form factor card standard with high data storage capacity. It is particularly suitable for semi-industrial applications. Compliant with the CFast 2.0 standard, it is designed with a 7 + 17-pin connector and is SATA compatible. The Innodisk CFast offers data transfer rates of sequential read up to 560MB/sec and of sequential write up to 520MB/sec.

Model Name	CFast 3IE7	CFast 3TE7	CFast 3SE4
Key Features	1. Industrial-grade firmware with 3D NAND 2. Advanced LDPC ECC engine 3. Internal RAID technology 4. Lifespan 10 times longer than MLC	1. Industrial-grade firmware with 3D NAND 2. Designed with LDPC ECC engine 3. Internal RAID technology 4. DRAM-less, high-level data integrity 5. Excellent data transfer speed	1. High-quality SLC-based solution 2. DRAM-less, high-level data integrity 3. LDPC technology secures SSD reliability 4. Excellent data transfer speed
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Connector	7pin+17pin	7-pin + 17-pin	7-pin + 17-pin
Flash Type	iSLC (3D TLC)	3D TLC	SLC
Capacity	20GB~160GB	32GB~512GB	8GB~64GB
Max. Channel	4	4	2
Sequential R/W (MB/sec, max.)	560/520	560/330	530/360
Max. Power Consumption	1.81W (3.3V x 550mA)	1.81W (3.3V x 550mA)	1.59W (3.3V x 480mA)
Thermal Sensor	Y	Y	Y
External DRAM Buffer	N	N	N
iData Guard	Y	Y	Y
iCell	N	N	N
TRIM	Y	Y	Y
ATA Security	Y	Y	Y
S.M.A.R.T.	Y	Y	Y
Dimension (WxLxH/mm)	42.8 x 36.4 x 3.6	42.8 x 36.4 x 3.6	42.8 x 36.4 x 3.6
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DHCFA-XXXDK1%C***	DECFA-XXXDK1EC***	DHCFA-XXXM41SC***
Wide Temp. OP (-40°C~+85°C)	DHCFA-XXXDK1%W***	DECFA-XXXDK1EW***	DECFA-XXXM41SW***
Notes	xxx = density (08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 20GB=20G, 40GB=40G, 80GB=80G,160GB=A60) ***= flash configuration (internal control code) %=Flash Type		

Model Name	CFast 3IE4	CFast 3ME4	CFast 3MG2-P
Key Features	1. Cost-effective industrial flash with iSLC 2. Lifespan 7 times longer than MLC 3. Excellent IOPS performance 4. Designed with LDPC ECC engine 5. Supports hardware write protection	1. Exclusive L^3 architecture 2. Designed with LDPC ECC engine 3. Excellent IOPS performance 4. Supports hardware write protection	1. Compliant with CFast 2.0 standard 2. EverGreen L^2 architecture 3. High sequential/IOPS performance 4. Supports DEVSLP 5. iData Guard data protection
Interface	SATA III 6.0Gb/s	SATA III 6.0Gb/s	SATA III 6.0Gb/s
Connector	7-pin + 17-pin	7-pin + 17-pin	7-pin + 17-pin
Flash Type	iSLC (MLC)	MLC	MLC
Capacity	8GB~128GB	8GB~256GB	32GB~256GB
Max. Channel	2	2	4
Sequential R/W (MB/sec, max.)	530/360	530/210	560/350
Max. Power Consumption	0.76W (3.3V x 230mA)	0.86W (3.3V x 260mA)	2.51W (3.3V x 760mA)
Thermal Sensor	Y	Y	Y
External DRAM Buffer	N	N	Y
iData Guard	Y	Y	Y
iCell	N	N	N
TRIM	Y	Y	Y
ATA Security	Y	Y	Y
S.M.A.R.T.	Y	Y	Y
Dimension (WxLxH/mm)	42.8 x 36.4 x 3.6	42.8 x 36.4 x 3.6	42.8 x 36.4 x 3.6
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DHCFA-XXXM41BC***	DECFA-XXXM41BC***	DGCFA-XXXD81BC***
Wide Temp. OP (-40°C~+85°C)	DHCFA-XXXM41BW***	DECFA-XXXM41BW***	DGCFA-XXXD81BW***
Notes	xxx = density (08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56) ***= flash configuration (internal control code) %=Flash Type		

ES France - Département Modules & Systèmes Informatiques - 127 rue de Buzenval BP 26 - 92380 Garches
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CFexpress

Innodisk CFexpress is compliant with CFexpress 1.0 type B specification. Supporting PCIe Gen III x2 interface and complies with NVM 1.3, provides excellent performance and industrial-grade endurance with industrial NAND Flash. With sophisticated error detection and correction (ECC) functions, the module can ensure full End-to-end Data Path Protection that secures the data transmission between host system and NAND Flash.

Model name	CFexpress 3TE6
Key Features	1. PCIe Gen. III x2, NVMe 1.3 2. Excellent data transfer speed 3. Zero mechanical interference 4. LDPC ECC engine supported. 5. End-to-end Data Path Protection 6. Support Write Protect Function
Interface	PCIe Gen3×2
Connector	21pin
Flash Type	3D TLC
Capacity	64GB~1TB
Max. Channel	4
Sequential R/W (MB/sec, max.)	1650/1600
Max. Power consumption	3.3 W(3.3Vx1000mA)
Thermal Sensor	Y
ATA Security	Y
S.M.A.R.T	Y
H/W Write Protect	Y(Optional)
Dimension (WxLxH/mm)	29.6 x 38.5 x 3.8
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours
Standard Temp. OP (0°C~+70°C)	DECFX-XXXDD1EC***
Wide Temp. OP (-40°C~+85°C)	DECFX-XXXDD1EW***
Notes	xxx = density (32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12, 1TB=01T) ***= flash configuration (internal control code)

SD/microSD

Innodisk's SD and microSD cards are single-level flash devices built for rugged applications in the embedded field. As industrial-grade SD and microSD cards, these products deliver excellent endurance and reliability, especially compared to cards used in the mobile market. Innodisk SD and microSD cards are compatible with SD 2.0 /SD 3.0 standards and support SDHC Class 10 (UHS-I). They also feature S.M.A.R.T. technology, which monitors the reliability of these SD cards.

Model Name	Micro SD 3IE4	Micro SD 3TE4	Micro SD 3ME3
Key Features	1. High performance 2. High endrance 3. LDPC Engine	1. High performance 2. LDPC Engine	1. Support Class 10 with UHS-I 2. High performance
Interface	SD 3.0	SD 3.0	SD 3.0
Flash Type	iSLC (3D TLC)	3D TLC	MLC
Capacity	8GB~128GB	32GB~512GB	8GB~64GB
Max. Channel	1	1	1
Sequential R/W (MB/sec, max.)	95/85	95/85	76/52
Max. Power Consumption	0.41W (3.3V x 124mA)	0.53W (3.3V x 161mA)	0.49W (3.3V x 149mA)
S.M.A.R.T.	Y	Y	Y
Dimension (WxLxH/mm)	11.0 x 15.0 x 1.0	11.0 x 15.0 x 1.0	11.0 x 15.0 x 1.0
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours		
Standard Temp. OP (-25°C~+85°C)	DHSDM-XXXS06%E**L	DESDM-XXXS06%E**L	DESDM-XXXS02SE***
Wide emp. OP (-40°C~+85°C)	DHSDM-XXXS06%W**L	DESDM-XXXS06%W**L	DESDM-XXXS02SW***
Notes	XXX = density (01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) *** = flash configuration (internal control code) %=Flash Type		

Model Name	microSD 3SE3	Industrial microSD Card	microSD 3ME2	microSD 3IE2
Key Features	Enhanced power cycling management	Enhanced power cycling management	1. Supports Class 10 with UHS-I 2. High performance 3. SPI mode supported	1. Supports Class 10 with UHS-I 2. High performance 3. SPI mode supported
Interface	SD 3.0	SD 2.0	SD 3.0	SD 3.0
Flash Type	SLC	SLC	MLC	iSLC (MLC)
Capacity	4GB~8GB	1GB~4GB	8GB~64GB	4GB~32GB
Max. Channel	1	1	1	1
Sequential R/W (MB/sec, max.)	30/23	20/16	75/31	79/45
Max. Power Consumption	01.2W (3.3V x 387mA)	0.17W (3.3V x 50mA)	0.7W (3.3V x 219mA)	0.7W (3.3V x 219mA)
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	11.0 x 15.0 x 1.0	11.0 x 15.0 x 1.0	11.0 x 15.0 x 1.0	11.0 x 15.0 x 1.0
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp. OP (-25°C~+85°C)	DESDM-XXXS02AE***	DS2M-XXXI81AC***	DESDM-XXXE21SEASK	DHSDM-XXXE21SEASK
Wide emp. OP (-40°C~+85°C)	DESDM-XXXS02AW***	DS2M-XXXI81AW***	DESDM-XXXE21SWASK	NA
Notes	XXX = density (01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G) *** = flash configuration (internal control code) %=Flash Type			

Model Name	SD Card 3ME3	SD Card 3IE3	SD Card 3IE4
Key Features	1. High performance 2. Power failure management 3. BCH ECC implementation	1. Support Class 10 with UHS-I 2. High performance 3. High endurance	1. High performance 2. High endrance 3. LDPC Engine
Interface	SD 3.0	SD 3.0	SD 3.0
Flash Type	MLC	iSLC (MLC)	iSLC (3D TLC)
Capacity	8GB~128GB	4GB~64GB	8GB~64GB
Max. Channel	1	1	1
Sequential R/W (MB/sec, max.)	80/46	79/70	95/85
Max. Power Consumption	0.52W (3.3V x 158mA)	0.47W (3.3V x 143mA)	0.41W (3.3V x 124mA)
S.M.A.R.T.	Y	Y	Y
Dimension (WxLxH/mm)	24.0 x 32.0 x 2.1	24.0 x 32.0 x 2.1	24.0 x 32.0 x 2.1
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours		
Standard Temp. OP (-25°C~+85°C)	DESDC-XXXS02BC***	DHSDC-XXXS02BE***	DHSDC-XXXS06%E**L
Wide emp. OP (-40°C~+85°C)	DESDC-XXXS02BW***	DHSDC-XXXS02BW***	DHSDC-XXXS06%W**L
Notes	XXX = density (01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56) *** = flash configuration (internal control code) %=Flash Type		

Model Name	SD Card 3TE4	SD Card 3SE3
Key Features	1. High performance 2. LDPC Engine	Power cycling enhancement
Interface	SD 3.0	SD 3.0
Flash Type	3D TLC	SLC
Capacity	32GB~256GB	4GB~32GB
Max. Channel	1	1
Sequential R/W (MB/sec, max.)	95/85	37/31
Max. Power Consumption	0.47W (3.3V x 144mA)	0.41W (3.3V x 123mA)
S.M.A.R.T.	Y	Y
Dimension (WxLxH/mm)	24.0 x 32.0 x 2.1	24.0 x 32.0 x 2.1
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours	
Standard Temp. OP (-25°C~+85°C)	DESDC-XXXS06%E**L	DESDC-XXXS02AE***
Wide emp. OP (-40°C~+85°C)	DESDC-XXXS06%W**L	DESDC-XXXS02AW***
Notes	XXX = density (01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56)	

EDC

The Innodisk Embedded Disk Card (EDC) complies with PCMCIA ATA standards and fits into all platforms with an IDE connector. The Innodisk Embedded Disk Card comes in capacities ranging from 512MB to 256GB and is available in 40-pin and 44-pin connector packages.

Model Name	EDC 1SE Vertical Type	EDC 1SE Horizontal Type	EDC 1ME Vertical Type	EDC 1ME Horizontal Type
Key Features	1. Dust prevention 2. High-quality SLC-based solution	1. High-quality SLC-based solution 2. Supports mounting hole	1. Budget-friendly MLC-based solution 2. High-performance PATA solution	1. Budget-friendly MLC-based solution 2. High-performance PATA solution
Connector	40/44-pin	40/44-pin	44-pin	44-pin
Interface	PATA	PATA	PATA	PATA
Flash Type	SLC	SLC	MLC	MLC
Capacity	512MB~4GB	512MB~8GB	8GB~128GB	8GB~256GB
Max. Channel	2	2	2	2
Sequential R/W (MB/sec, max.)	40/28	40/28	110/75	110/75
Max. Power Consumption	0.75W (5V x 150mA) 0.5W (3.3V x 150mA)	0.75W (5V x 150mA) 0.5W (3.3V x 150mA)	1.05W (5V x 150mA) 0.69W (3.3V x 150mA)	1.05W (5V x 150mA) 0.69W (3.3V x 150mA)
Thermal Sensor	N	N	N	N
External DRAM Buffer	N	N	N	N
ATA Security	Y	Y	Y	Y
S.M.A.R.T.	Y	Y	Y	Y
Dimension (WxLxH/mm)	40-pin: 60.2 x 27.3 x 6.4 44-pin: 50.3 x 27.3 x 5.8	40-pin (A,B type): 55 x 32.4 x 12.9 40-pin (C,D type): 55 x 32.4 x 14.6 40-pin (E,F type): 55 x 32.4 x 18.3 44-pin (A,B type): 48 x 32.6 x 6.7 44-pin (C,D type): 48 x 32.6 x 12.8 44-pin (E,F type): 48 x 32.6 x 12.9	50.3 x 27.3 x 7.5	A,B type: 48 x 32.6 x 7.3
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	40PIN DE0H-XXXD41AC*** 44PIN DE4H-XXXD41AC***	40PIN DE0P%-XXXD41AC*** 44PIN DE4P%-XXXD41AC***	DEE4H-XXXD53BC***	DEE4%-XXXD53BC***
Wide Temp. OP (-40°C~+85°C)	40PIN DE0H-XXXD41AW*** 44PIN DE4H-XXXD41AW***	40PIN DE0P%-XXXD41AW*** 44PIN DE4P%-XXXD41AW***	DEE4H-XXXD53BW***	DEE4%-XXXD53BW***
Notes	xxx = density (512MB=512, 01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A2, 256GB=B56) ***= flash configuration (internal control code), %=Horizonyal type(A,B,C,D,E,F)			

Mini PCIeDOM

The Innodisk Mini PCIeDOM is a flash-based disk module with standard Mini PCIe form factor and PCIe Gen1 interface. It supports multiple operating systems with no driver needed, including Windows XP, Windows 7, and Windows 10, as well as Linux-based operating systems.

Model Name	Mini PCIeDOM 1SE	Mini PCIeDOM 1ME3
Key Features	1. Standard Mini PCIe form factor 2. Driver-less 3. PCIe Gen1x1	1. Standard Mini PCIe form factor 2. Driver-less 3. PCIe Gen1x1
Interface	PCIe Gen1x1	PCIe Gen1x1
Flash Type	SLC	MLC
Capacity	4GB~64GB	16GB~256GB
Max. Channel	4	2
Sequential R/W (MB/sec, max.)	85/85	130/100
Max. Power Consumption	2.3 W (3.3V x 700mA)	2 W (3.3V x 620mA)
Thermal Sensor	STD : N, W/T : Y	
External DRAM Buffer	N	N
iData Guard	Y	Y
iCell	N	N
TRIM	N	N
ATA Security	Y	Y
S.M.A.R.T.	Y	Y
Dimension (WxLxH/mm)	30.0 x 50.95 x 5.0	30.0 x 50.9 x 5.0
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours	
Standard Temp. OP (0°C~+70°C)	DEEDM-XXXJ30AC***	DEEDM-XXXD09BC***
Wide Temp. OP (-40°C~+85°C)	DEEDM-XXXJ30AW***	DEEDM-XXXD09BW***
Notes	XXX = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code) %=Flash Type	

USB

The Innodisk industrial-grade USB series is built using SLC NAND flash and features an attractive small form factor. It provides high-capacity flash memory storage while delivering faster data transmission with high reliability. It also complies with the high-speed USB 3.0 interface and is backward compatible with USB 1.1. The Innodisk USB series has a variety of special features, from plastic and metal housing to secure mounting holes and EDC choices.

Model Name	USB Drive 3SE	USB Drive 3ME	USB Drive 2SE
Key Features	1. Metal housing to enhance ESD protection 2. 30µ" golden finger for highly reliable data transfer quality		1. Metal housing to enhance ESD protection 2. 30µ" golden finger for highly reliable data transfer quality
Interface	USB 3.0		USB 2.0
Connector	Type A		Type A
Flash Type	SLC	MLC	SLC
Capacity	4GB~32GB	8GB~64GB	512MB~16GB
Max. Channel	1	1	1
Sequential R/W (MB/sec, max.)	100/85	100/50	28/24
Max. Power Consumption	0.70W (5V x 140mA)		0.85W (5V x 170mA)
Dimension (WxLxH/mm)	16.5 x 45.8 x 7.6		16.5 x 45.8 x 7.4
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours		
Standard Temp. OP (0°C~+70°C)	DEUA1-XXXI61SC***	DEUA1-XXXI61BC***	DEUA1-XXXI72AC***
Wide Temp. OP (-40°C~+85°C)	DEUA1-XXXI61SW***	DEUA1-XXXI61BW***	DEUA1-XXXI72AW***
Notes	XXX = density (512MB=512, 01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56, 512GB=C12) ***= flash configuration (internal control code)		

Model Name	USB EDC Vertical 3SE	USB EDC Vertical 3ME	USB EDC Horizontal 2SE	USB EDC Horizontal 2ME	USB EDC Vertical 2SE	USB EDC Vertical 2ME
Key Features	1. High performance with USB 3.0 interface 2. Low power consumption 3. Wear-leveling supported		1. Supports mounting holes 2. 2.0/2.54-pin pitch		1. Very low profile 2. Low power consumption	
Interface	USB 3.0		USB 2.0		USB 2.0	
Connector	Standard, 20-pin, 2.00mm		Standard 9-pin, 2.54mm Low profile 9-pin 2.00mm		Standard, 9-pin, 2.54mm	
Flash Type	SLC	MLC	SLC	MLC	SLC	MLC
Capacity	4GB~32GB	8GB~64GB	512MB~32GB	8GB~128GB	512MB~16GB	8GB~64GB
Max. Channel	1	1	1	1	1	1
Sequential R/W (MB/sec, max.)	110/85	100/50	28/24	27/18	28/24	26/18
Max. Power Consumption	0.79W (5V x 158mA)		0.85W (5V x 170mA)		0.85W (5V x 170mA)	
Dimension (WxLxH/mm)	24.0 x 22.0 x 5.0		26.6 x 36.9 x 9.6 (Pin Pitch2.54) 26.6 x 36.9 x 6.6 (Pin Pitch2.00)		15.2 x 34.1 x 6.4	
Environment	Vibration: 20G@7~2000Hz/Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours					
Standard Temp. OP (0°C~+70°C)	DEUV1-XXXI61SC***	DEUV1-XXXI61BC***	DEUH1-XXXI72AC*** DEUH2-XXXI72AC***	DEUH1-XXXI72BC*** DEUH2-XXXI72BC***	DEUV1-XXXI72AC***	DEUV1-XXXI72BC***
Wide Temp. OP (-40°C~+85°C)	DEUV1-XXXI61SW***	DEUV1-XXXI61BW***	DEUH1-XXXI72AW*** DEUH2-XXXI72AW***	DEUH1-XXXI72BW*** DEUH2-XXXI72BW***	DEUV1-XXXI72AW***	DEUV1-XXXI72BW***
Notes	XXX = density (512MB=512, 01GB=01G, 02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28, 256GB=B56,) ***= flash configuration (internal control code)					

nanoSSD

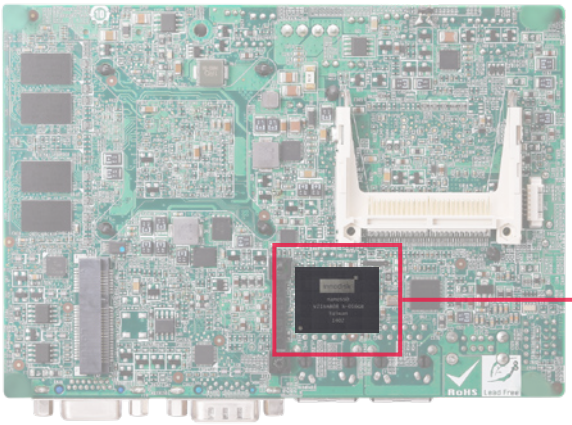
The Innodisk nanoSSD is an integrated SATA storage device. It combines Innodisk's ID106/ID108 NAND flash controller and the latest NAND flash in a JEDEC MO-276 (SATA µSSD) form factor with one single ball grid array (BGA) package, giving the nanoSSD a compact size and making it very easy to integrate. The Innodisk nanoSSD, supporting SATA III 6.0Gb/s, offers excellent data transfer rates along with lower power consumption. It is an ideal solution for any kind of limited-space application.

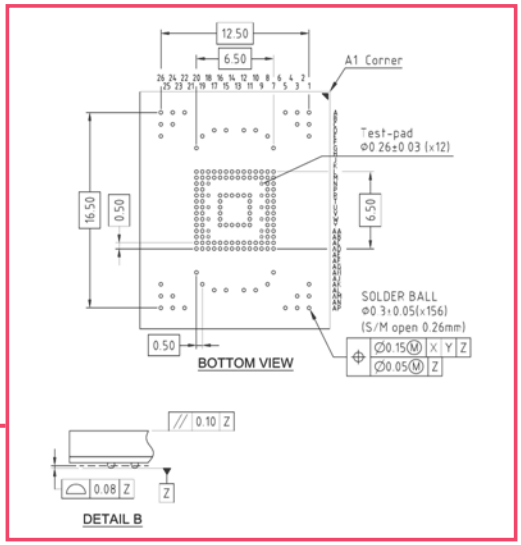
Features

- Integrated NAND flash controller with flash in a single chip
- Compliant with JEDEC MO-276 (SATA µSSD) specifications
- SATA III interface with BGA package
- Intelligent flash management and real-time garbage collection

Benefits of nanoSSD

- Chip type, easy to integrate without mechanical interference
- SATA interface, highly compatible with x86 systems
- Excellent data transfer rates
- Fully compliant with industrial standards
- Suitable for ultra-thin and compact systems
- Zero peripheral circuits





The Innodisk nanoSSD mechanical drawing

Model Name	nanoSSD 3IE3	nanoSSD 3ME3	nanoSSD SATA 3TE7	nanoSSD PCIe 3TE7
Key Features	1. Using BGA package to make controller and flash into a single chip 2. Excellent compatibility thanks to its SATA III interface 3. Compliant with JEDEC MO-276 SPEC		1. Highly integrated IC-type SSD with system in a package (SiP). 2. Supports wide-temperature with Original IC 3. End-to-End Data Path Protection 4. Good shock and vibration-proofing 5. AES encryption 6. TCG Opal 2.0	1. Highly integrated IC-type SSD with system in a package (SiP) 2. DRAM-less Solution with HMB Feature 3. Supports NVMe 1.3 4. Supports wide-temperature with Original IC 5. End-to-End Data Path Protection 6. Good shock and vibration-proofing
Interface	SATA III 6.0Gb/s			PCIe Gen3×2
Flash Type	iSLC (MLC)	MLC	3D TLC	3D TLC
Capacity	16GB~64GB	16GB~128GB	32GB~256GB	32GB~512GB
Max. Channel	4			
Sequential R/W (MB/sec, max.)	440/260	410/140	540 / 260	1700/1400
Max. Power Consumption	2.3W		1.86 W	1.75 W
Thermal Sensor	N		Y	Y
External DRAM Buffer	N		N	N
iData Guard	Y		N	N
iCell	N		N	N
TRIM	Y		Y	Y
ATA Security	Y		Y	Y
S.M.A.R.T.	Y		Y	Y
Dimension (WxLxH/mm)	16.0 x 20.0 x 1.7			11.5 x 13.0 x 1.4
Environment	Shock: 1500G@0.5ms/Storage Temperature: -55°C ~ +95°C/MTBF: >3 million hours			
Standard Temp. OP (0°C~+70°C)	DENSD-XXXD06SC***	DHNSD-XXXD08BC***	DENSD-XXXDK1EC***	DENSD-XXXIG1EC***
Wide Temp. OP (-40°C~+85°C)	DENSD-XXXD06SW***	DHNSD-XXXD08BW***	NA	DENSD-XXXIG1EW***
Notes	xxx = density (02GB=02G, 04GB=04G, 08GB=08G, 16GB=16G, 32GB=32G, 64GB=64G, 128GB=A28) ***= flash configuration (internal control code)			

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Software Solutions

With our newest Innodisk Cloud Administration Platform (iCAP™), we offer complete storage monitoring services for IoT applications. In addition, our extensive software portfolio is designed to meet the growing needs of edge integration in the embedded and industrial markets.

Software portfolio:

Cloud Solutions
- iCAP™ – Cloud Administration Platform

Edge Solutions
- iSMART™ – Flash Device Management
- iTracker™ – SD Card and USB Management
- iCover™ – System Recovery
- iOpal™ – Self-encrypting Drive Management

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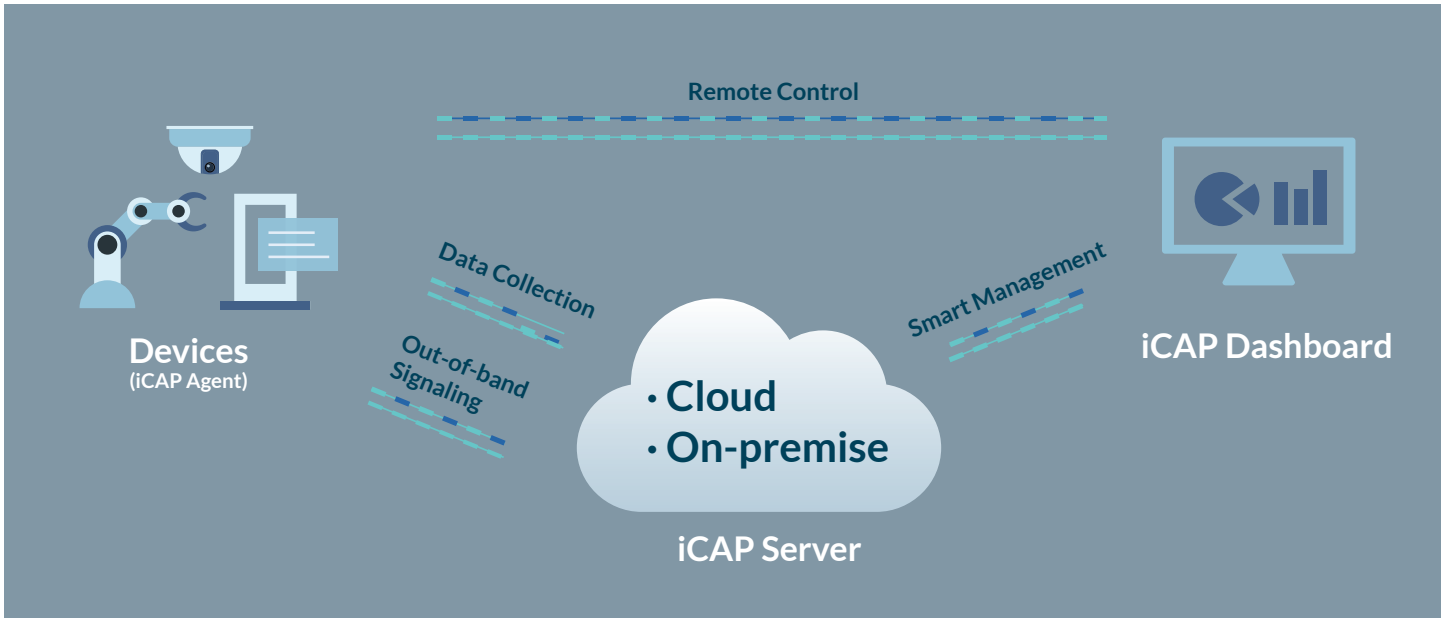
Cloud Solutions

iCAP™ is a browser-accessed management and maintenance platform that allows you to manage solid-state drives (SSDs), memory, and other components in edge devices. With iCAP, accessing device data and controlling devices is possible from anywhere, for example from your internet-connected cell phone, tablet, or laptop. Moreover, iCAP fully supports in-band and out-of-band management, making it easy to restore severely malfunctioning edge devices in no time.

System Architecture



iCAP Dashboard Management Interface

1 The web page dashboard enables the user to easily manage connected devices through supported browsers

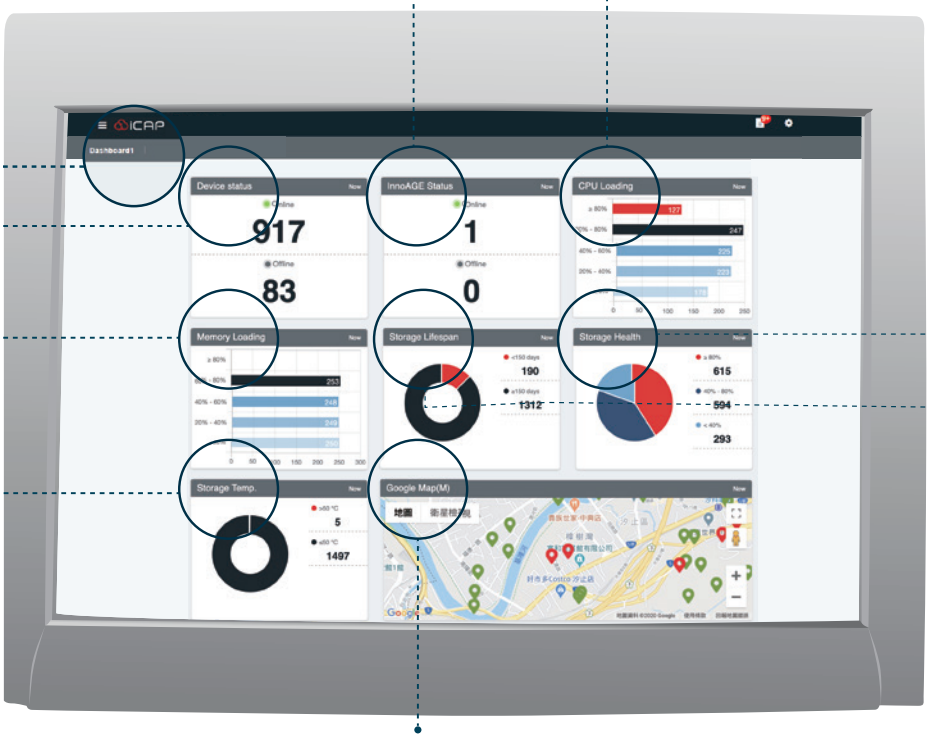
2 Keep track of out-of-band-enabled devices' operating status

3 Keep tabs on current CPU and Memory loading

4 Effectively monitor remote device status

Same as 3

Same as 5



5 User-friendly monitoring function allowing the user to manage and analyze storage information in detail

6 By analyzing the read/ write behavior of connected storage devices, iCAP can accurately predict remaining storage device lifetime

7 Customizable widgets including gauges, Google Maps, and various tables presenting device data

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iCAP Advantages

Extensive Compatibility
The iCAP agent is supported on both Windows and Linux platforms and can be seamlessly accessed through a wide range of browsers.

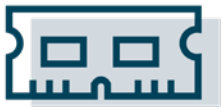
Flexible Dashboard
The user can freely alter the dashboard through a dynamic UI and device grouping and choose the parameters and widgets relevant to their application.

Remote Disaster Recovery
iCAP fully supports in-band and out-of-band management with one-key recovery, bringing malfunctioning devices back to normal in no time.

Effective Event Tracker
The event notification tracker will log all changes and keep the user up-to-speed, enabling swift resolutions to any issues that may occur.

Secondary Development
iCAP provides an SDK to system integrators and customers to develop a website UI to satisfy end-user application requirements.

3rd-party Support
iCAP can also monitor devices of other brands as long as it runs Innodisk storage components.



DRAM Monitoring
iCAP supports DRAM monitoring, providing the user remote access to iSMART DRAM information and module prediction.

System Requirements

Web Service
Web browsers that supports HTML5, CSS3, JavaScript:
Microsoft Edge | Google Chrome:9.0+ | Firefox:15.0+ | Safari:5.1+

Server
Hardware Minimum Requirements:
IntelR Core™ i3 2.3 Ghz CPU or above | 4 GB RAM | 20 GB root partition for the system | 100 GB data storage
Operating System:
Ubuntu 16.04+ | Docker 17.03+

Agent
Hardware:
Bundled with Innodisk Storage products
Operating System:
Windows 10/8.1/7 kernel 32/64-bits | Ubuntu 16.04 64-bits | Debian 8 64-bits | Others by request

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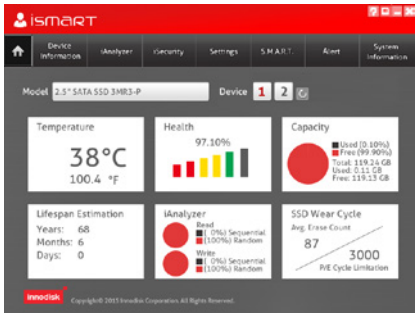
Edge Solutions

iSMART

Easy-to-use tool to access S.M.A.R.T. information.

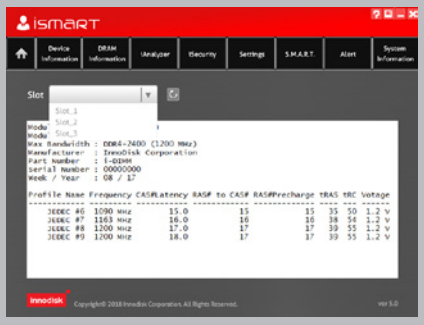
The iSMART tool monitors the health and lifespan of Innodisk's SSDs and DRAM modules while also providing details on usage patterns. Alerts are easily configured to issue warnings before any critical errors can occur. With iSMART, the user is able to properly integrate Innodisk's SSDs and DRAM modules into their solutions by carefully monitoring behavior and lifespan during development, integration, and mass production.

S.M.A.R.T. Dashboard



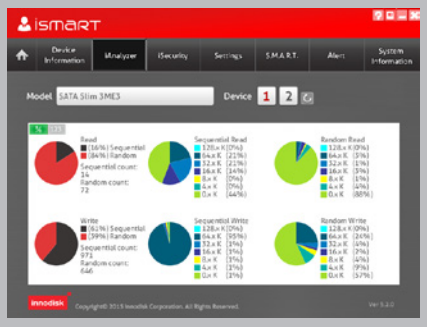
The Dashboard's home provides a quick snapshot of each installed device in the system. This page offers accurate data information regarding Temperature, Health, Capacity, Lifespan, iAnalyzer, and Notifications. Further device information such as S/N, firmware version, interface, etc. is also available.

DRAM Information



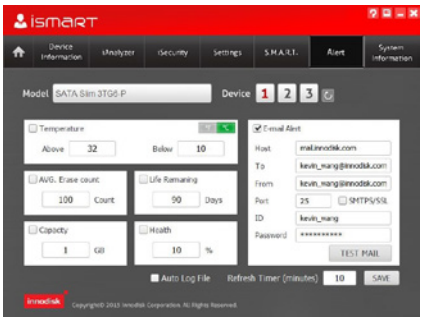
iSMART eliminates the need to physically access the DRAM module to ascertain device info. The DRAM will provide all information to iSMART, making it easily available to the user. The DRAM information section will show P/N, data transfer rate, capacity, data code, etc.

iAnalyzer



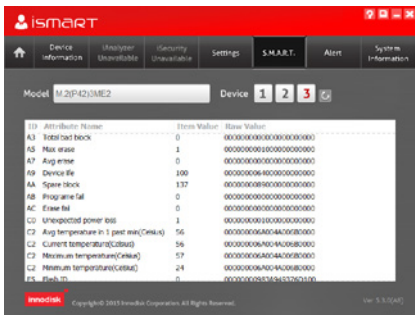
When activated, the iAnalyzer tab displays the read/write behaviors of the SSD in real time. This allows the user to understand their application usage of the SSD. Sequential and Random I/Os are easily broken down into percentages making them easy to read.

Alert



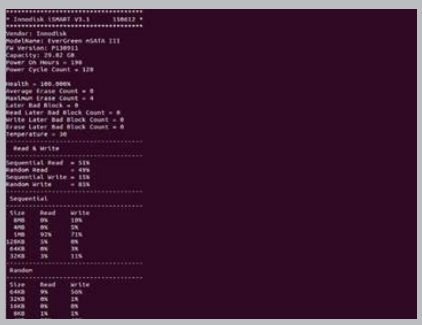
The Alert tab helps the user set trigger points with Temperature, Health Percentage, Remaining Capacity or Life Remaining. If these trigger points exceed their boundaries, the iSMART utility can send a warning and email to the user, notifying them that something is at risk of failing.

PCIe NVMe Support



iSMART supports logging for PCIe NVMe devices. The user can easily check the PCIe storage devices' health status.

iSMART for Linux



The iSMART Linux version provides every storage device's S.M.A.R.T. values by vendor command, and also fully supports the iAnalyzer function.

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iTracker

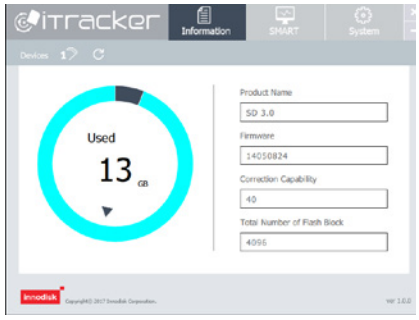
Easy access to USB and SD SMART information

iTracker is Innodisk's dedicated software tool for SD 3.0 cards and USB products. It offers a customizable approach to accessing flash card S.M.A.R.T. values. Compatibility with both Windows and Linux systems and an intuitive user interface ensure easy system integration and a user-friendly experience.

Features:

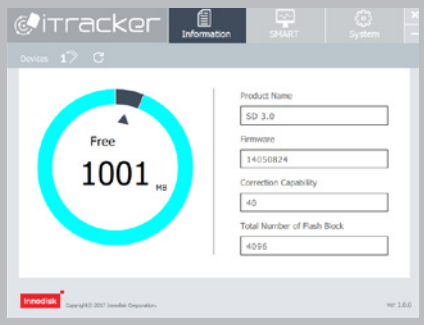
- Dedicated Innodisk industrial SD card and USB management software
- Intuitive visualized S.M.A.R.T. information
- Flexible widgets according to individual requirements
- Support for both Windows and Linux systems

SD Information



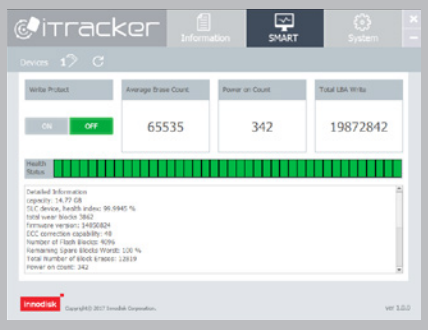
- iTracker enables easy access to SD card and USB series information
- SD 3.0 (Hyperstone)
  - Product name
  - F/W version
  - Correction capability for flash
  - Total number of flash blocks
- SD 3ME3 (SM2702)
  - Product name
  - Bus width
  - Speed class
  - Speed grade

USB Information



- USB series product (SM3268)
  - Product name
  - Manufacturer
  - Serial number
  - Firmware version
  - Package version
  - P/E cycles

S.M.A.R.T.



- The iTracker S.M.A.R.T. page shows more details about the device's status and helps the user predict the remaining lifespan
- The write protection feature can also easily be enabled and disabled

System Page

- The iTracker system page enables the user to easily check system information

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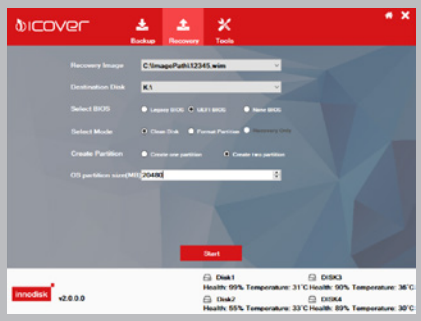
Reliable one-key backup and recovery

iCover is an easy-to-use, highly-customized backup and recovery software tool designed for industrial computers. iCover will not only recover the operating system, but also all of the applications, drivers, and personal data by using the recovery image. Even if the system should become unresponsive, this quick recovery tool will restore it to its original state.

Backup

iCover allows the user to run any backup from any specific point in time.

Recovery



The recovery function allows for unstable systems to quickly return to a status of working operability thus reducing downtime to a minimum.

Remote Backup Recovery

With the remote backup recovery function, you can create backups remotely and restore the device to a previous state using a recovery image.

Tools

With iCover, you can also access additional features, allowing you to use basic command line tools and create partitions.

Advantage

Remote Backup and Recovery

Supports SMB/CIFS protocol to backup and recover system image

UEFI BIOS Support

Supports legacy/UEFI BIOS recovery

System Requirements

Items	iCover
Processor	1GHz or faster
RAM	2GB
Supported Devices	Innodisk Storage Devices
OS Support	Windows: Windows XP/7/8.1/10 I Windows Embedded Series
File System	Windows: NTFS/FAT32

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TCG Opal-compliant Software

The TCG-defined standard for self-encrypting drives (SEDs) emphasizes data security and ease of use. Innodisk's software conforms to this standard and can provide a simple and intuitive way to handle SED management. The software allows the user to easily define different ranges for different users—allowing for a system where data is shared on a strictly need-to-know basis.

Advantages

User-friendly

Provides an intuitive user interface to the TCG Opal 2.0 specifications and SED management while supporting up to 5 devices simultaneously.

Multi-function

iOpal's data storage management features are designed to enhance data security and communication with the host system.

Wide compatibility:

iOpal is available in both Windows and Linux versions, ensuring wide compatibility.

Form Factor	
3MG2-P with AES	2.5" SSD, M.2 (S42, S80), mSATA, SATA Slim
3SE2-P with AES	2.5" SSD, 1.8" SSD

Supported OS List

Windows 7 / Windows 10 / Linux Ubuntu / Linux Fedora

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DRAM Modules

Innodisk's industrial-grade DRAM series features high-quality memory modules that have been specifically designed and developed for industrial computers and similar applications. Our specialized SPD team is ready to provide system designers with a complete turn-key solution for any engineering requirements.

Innodisk's DRAM modules are categorized to meet various systems' needs, and supports DDR4, DDR3, DDR2, DDR, and SDRAM. Our DRAM modules are available in four product lines: Embedded, Server, Wide Temperature, and Special Customized.

Innodisk's comprehensive range of DRAM modules includes: Unbuffered DIMM, Unbuffered SODIMM, Unbuffered ECC DIMM, Unbuffered ECC SODIMM, Mini DIMM, and registered DIMM, Mini DIMM and VLP DIMM with three added-value selections: side fill, conformal coating, and heat spreader.

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Product Line

DRAM Module		UDIMM		SODIMM				Mini DIMM		
Function	I/F	Standard	VLP	Standard	VLP	ULP	XR-DIMM	Standard	VLP	ULP
Unbuffered	SDRAM			0.1|0.2|0.5						
	DDR1	0.5|1		0.2|0.5|1						
	DDR2	1|2|4		0.5|1|2|4						
	DDR3	2|4|8	2|4|8	1|2|4|8	2|4|8		4|8			
	DDR4	2|4|8|16|32	4|8|16	2|4|8|16|32	4|8					
ECC	DDR2	1|2								
	DDR3	2|4|8	2|4|8	2|4|8		2|4				2|4
	DDR4	4|8|16|32	4|8|16	4|8|16|32	4|8		8|16		4|8|16	
Register	DDR3	2|4|8	4|8					8	2|4	
	DDR4	4|8|16|32	4|8|16|32						4|8	

Red text means that *Wide Temperature* is included.

Product Overview - Added Values

▲: Optional

			Wide Temperature	Free Anti-sulfuration	30µ" Gold Finger	Heat Spreader	Mounting Holes	Connector	iRAM	iSMART / iCAP	Conformal Coating	Side Fill
Embedded	DDR1	UDIMM				▲				▲	▲	▲
		SODIMM				▲				▲	▲	▲
	DDR2	UDIMM				▲				▲	▲	▲
		UDIMM VLP				▲				▲	▲	▲
		SODIMM	●			▲				▲	▲	▲
	DDR3	UDIMM	●			▲				▲	▲	▲
		UDIMM VLP				▲				▲	▲	▲
		SODIMM	●			▲				▲	▲	▲
		SODIMM VLP				▲				▲	▲	▲
	DDR4	UDIMM	●	●		▲				▲	▲	▲
		UDIMM VLP	●	●		▲				▲	▲	▲
		SODIMM	●	●		▲				▲	▲	▲
		SODIMM VLP		●		▲				▲	▲	▲
Server	DDR2	ECC UDIMM			●	▲			●	▲	▲	▲
	DDR3	ECC UDIMM	●		●	▲			●	▲	▲	▲
		ECC UDIMM VLP			●	▲			●	▲	▲	▲
		ECC SODIMM	●		●	▲			●	▲	▲	▲
		ECC SODIMM VLP			●	▲			●	▲	▲	▲
		ECC SODIMM ULP			●				●	▲	▲	▲
		RDIMM			●				●	▲	▲	▲
		RDIMM VLP			●				●	▲	▲	▲
		Mini RDIMM			●				●	▲	▲	▲
		Mini RDIMM VLP			●				●	▲	▲	▲
		Mini ECC ULP			●				●	▲	▲	▲
	DDR4	ECC UDIMM	●	●	●	▲			●	▲	▲	▲
		ECC UDIMM VLP		●	●	▲			●	▲	▲	▲
		ECC SODIMM	●	●	●	▲			●	▲	▲	▲
		ECC SODIMM VLP		●	●	▲			●	▲	▲	▲
		RDIMM	●	●	●				●	▲	▲	▲
		RDIMM VLP	●	●	●				●	▲	▲	▲
		Mini ECC VLP		●	●				●	▲	▲	▲
		Mini RDIMM VLP		●	●				●	▲	▲	▲
Customization	DDR3	XR-DIMM	▲			▲	●	●		▲		▲
		ECC XR-DIMM	▲			▲	●	●	●	▲		▲
	DDR4	ECC XR-DIMM	▲	●		▲	●	●	●	▲		▲
		Rugged SODIMM		●		▲	●			▲		▲
		ECC Rugged SODIMM		●	●	▲	●		●	▲		▲

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Product Overview - Applications

			Gaming	Medical	Retail	Automation	Surveillance	Networking	In-vehicle	Digital Signage	Aerospace
Embedded	DDR1	UDIMM									
		SODIMM	●			●	●	●	●	●	
	DDR2	UDIMM		●	●	●		●	●		
		UDIMM VLP		●			●				
		SODIMM	●		●	●	●		●	●	
	DDR3	UDIMM	●	●	●	●		●	●	●	
		UDIMM VLP					●				
		SODIMM	●	●	●	●	●	●	●	●	
		SODIMM VLP					●	●			
	DDR4	UDIMM	●	●	●	●	●	●	●		●
		UDIMM VLP		●			●	●			
		SODIMM	●	●	●	●	●	●	●	●	●
		SODIMM VLP		●			●				●
Server	DDR2	ECC UDIMM									
	DDR3	ECC UDIMM		●			●	●			
		ECC UDIMM VLP					●				
		ECC SODIMM		●			●	●	●		
		ECC SODIMM ULP					●				
		RDIMM		●				●			●
		RDIMM VLP					●	●			●
		Mini RDIMM		●							
		Mini RDIMM VLP					●				
		Mini ECC ULP					●				
	DDR4	ECC UDIMM		●			●	●			
		ECC UDIMM VLP		●			●	●			
		ECC SODIMM		●				●	●		
		ECC SODIMM VLP		●			●		●		
		RDIMM		●		●		●			
		RDIMM VLP					●	●			
		Mini ECC VLP					●				
		Mini RDIMM VLP					●				
Wide Temperature	DDR2	SODIMM	●			●			●	●	
	DDR3	UDIMM		●					●	●	
		ECC UDIMM		●			●				
		SODIMM	●	●		●		●	●	●	●
		ECC SODIMM	●	●			●				●
	DDR4	UDIMM		●					●	●	
		UDIMM VLP					●				
		ECC UDIMM		●			●				
		SODIMM	●	●		●		●	●	●	●
		ECC SODIMM	●	●			●				●
		RDIMM		●			●				
		RDIMM VLP					●		●		
Customization	DDR3	XR-DIMM							●		●
		ECC XR-DIMM							●		●
	DDR4	ECC XR-DIMM							●		●
		Rugged SODIMM							●		●

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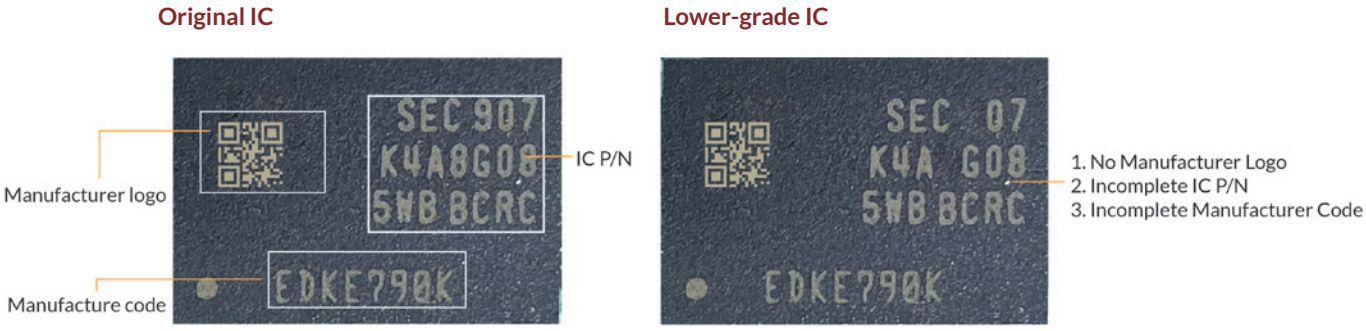
IC Grade

IC Hierarchy

Original IC	**Original IC (Innodisk)** - Fully tested by major IC suppliers
eTT	**Effectively Tested DRAM** - Effectively tested but test patterns can vary by suppliers - Logo unmarked or only marked with partial IC part number
uTT	**Untested DRAM** - Untested - Logo unmarked
Low Grade	**Low Grade** - DRAM IC with unknown quality confirmed as not having parts with full data sheets

Distinguishing Original from Lower-grade IC



Why do we only use "Original IC?"

1. Top Quality

Since Innodisk primarily operates in industrial markets where applications face significant environmental challenges, Innodisk products are required to be long-lasting and meet stringent quality requirements—which in turn necessitates the highest-quality components, and IC is no exception.

While the higher quality of original IC is a primary consideration, Innodisk also uses original IC for the international expertise and experience provided by the IC manufacturer. Together with the IC manufacturer, Innodisk can offer the most thorough guarantee, ensuring that customers are equipped to face any challenges in their way.

Further, only high-quality original ICs satisfy the strict requirements posed by applications in the growing 5G and AIoT markets. With heavy workloads and a need for high-performance components, such applications in the embedded and industrial markets only live up to their full potential with original IC.

2. Original Manufacturer Report

Any device operating under long periods of time will be susceptible to breakdowns and damage. The original manufacturer can not only help recycle faulty products and repair damaged ICs, but also provides a complete repair report. This will allow the customer to better understand the reason behind the malfunction and take the necessary steps to avoid future occurrences. However, the original manufacturer will not acknowledge lower-grade ICs (as these are third-party products) and will neither provide any repair reports.

Embedded

Embedded UDIMM

UDIMM modules are DRAM modules meant to be used as standard products for general embedded applications. These modules are compliant with JEDEC standards and available in DDR1, DDR2, DDR3, DDR3L, and DDR4.

Series	Standard Solution	
Module Type	DDR4 UDIMM	DDR3 UDIMM
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933 MT/s, 3200 MT/s	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s
Capacity	2GB/4GB/8GB/16GB/32GB*	2GB/4GB/8GB
Function	Non-ECC Unbuffered Memory	
Pin Number	288pin	240pin
Width	64Bits	64Bits
Voltage	1.2V	1.5V/1.35V
PCB Height	1.23 Inches	1.18 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C
Anti-sulfuration	√ (Included for Free)	–
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader	

32GB*: The schedule for the 32GB solution by 2Gbx8 IC is dependent on supplier status

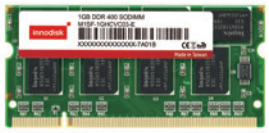
Series	Standard Solution	
Module Type	DDR2 UDIMM	DDR UDIMM
Data Rate	533 MT/s, 667 MT/s, 800 MT/s	333 MT/s, 400 MT/s
Capacity	1GB/2GB/4GB	512MB/1GB
Function	Non-ECC Unbuffered Memory	
Pin Number	240pin	184pin
Width	64Bits	64Bits
Voltage	1.8V	2.6V
PCB Height	1.18 Inches	1.16 Inches
Operating Temperature	0 ~ 85°C	0 ~ 70°C
Anti-sulfuration	–	–
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader	

Embedded SODIMM

Small-outline DIMMs (SODIMM) modules are general DRAM modules meant to be used as standard products for embedded applications with limited space. These modules are compliant with JEDEC standards and help in eliminating the need for changing designs due to limited space.

Series	Standard Solution		
Module Type	DDR4 SODIMM	DDR3 SODIMM	DDR2 SODIMM
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933 MT/s, 3200 MT/s	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s	533 MT/s, 667 MT/s, 800 MT/s
Capacity	2GB/4GB/8GB/16GB/32GB*	1GB/2GB/4GB/8GB	512MB/1GB/2GB/4GB
Function	Non-ECC Unbuffered Memory		
Pin Number	260pin	204pin	200pin
Width	64Bits	64Bits	64Bits
Voltage	1.2V	1.5V/1.35V	1.8V
PCB Height	1.18 Inches	1.18 Inches	1.18 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C	0 ~ 85°C
Anti-sulfuration	√ (Included for Free)	–	–
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader		

32GB*: The schedule for the 32GB solution by 2Gbx8 IC is dependent on supplier status



Series	Standard Solution	
Module Type	DDR SODIMM	SDRAM SODIMM
Data Rate	333 MT/s, 400 MT/s	100 MT/s, 133 MT/s
Capacity	256MB/512MB/1GB	128MB/256MB/512MB
Function	Non-ECC Unbuffered Memory	
Pin Number	200pin	144pin
Width	64Bits	64Bits
Voltage	2.6V	3.3V
PCB Height	1.25 Inches	1.25 Inches
Operating Temperature	0 ~ 70°C	0 ~ 70°C
Anti-sulfuration	–	–
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader	

Server

Registered DIMM

Registered DIMM (RDIMM) modules are designed to ensure data integrity at both the device and system level of the server. In addition, all Innodisk RDIMM modules are tested using our exclusive iRAM testing software to ensure stable performance.

Series	Server Solution	
Module Type	DDR4 RDIMM	DDR3 RDIMM
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s
Capacity	4GB/8GB/16GB/32GB	2GB/4GB/8GB
Function	Registered Memory with ECC	
Pin Number	288pin	240pin
Width	72Bits	72Bits
Voltage	1.2V	1.5V/1.35V
PCB Height	1.23 Inches	1.18 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C
Golden finger 30μ"	√	√
Anti-sulfuration	√ (Included for Free)	–

Wide Temperature

Wide Temperature Unbuffered DIMM

Designed for industrial systems, Innodisk's Wide Temperature DRAM modules are the best choice for applications operating in harsh conditions. Our wide temperature modules use industrial-grade SDRAM components with 30μ" gold fingers to ensure that the memory maintains its high-quality signal, even at temperatures as low as -40°C or as high as 85°C.

Series	Wide Temperature Solution		
Module Type	DDR4 WT UDIMM	DDR4 WT UDIMM VLP	DDR4 WT SODIMM
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s	2133 MT/s, 2400 MT/s, 2666MT/s, 2933MT/s, 3200MT/s	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s
Capacity	4GB/8GB/16GB/32GB*	8GB/16GB//32GB*(sorting WT) 32GB is only for 2666 MT/s	4GB/8GB/16GB/32GB*
Function	Non-ECC Unbuffered Memory		
Pin Number	288pin	288pin	260pin
Width	64Bits	64Bits	64Bits
Voltage	1.2V	1.2V	1.2V
PCB Height	1.23 Inches	0.738 Inches	1.18 Inches
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C
Golden finger 30μ"	√	√	√
Anti-sulfuration	√ (Included for Free)	√ (Included for Free)	√ (Included for Free)
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader		

32GB*: The schedule for the 32GB solution by 2Gbx8 IC is dependent on supplier status

Series	Wide Temperature Solution		
Module Type	DDR3 WT UDIMM	DDR3 WT SODIMM	DDR2 WT SODIMM
Data Rate	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s	533 MT/s, 667 MT/s, 800 MT/s
Capacity	2GB/4GB/8GB	2GB/4GB/8GB	1GB/2GB
Function	Non-ECC Unbuffered Memory		
Pin Number	240pin	204pin	200pin
Width	64Bits	64Bits	64Bits
Voltage	1.5V/1.35V	1.5V/1.35V	1.8V
PCB Height	1.18 Inches	1.18 Inches	1.18 Inches
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C
Golden finger 30μ"	√	√	√
Anti-sulfuration	–	–	–
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader		

Wide Temperature Unbuffered DIMM with ECC

Wide Temperature ECC DIMMs are designed for both industrial systems and servers, Innodisk's Wide Temperature DRAM modules are best suited for applications that must work in extreme temperatures. With the ECC function, the Wide Temperature DIMMs also ensure that data is corrected when corrupted data bits are found during data retrieval.

Series	Wide Temperature Solution			
Module Type	DDR4 WT ECC UDIMM	DDR4 WT ECC SODIMM	DDR3 WT ECC UDIMM	DDR3 WT ECC SODIMM
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s
Capacity	4GB/8GB/16GB/32GB*	4GB/8GB/16GB/32GB*	2GB/4GB/8GB	2GB/4GB/8GB
Function	ECC Unbuffered Memory			
Pin Number	288pin	260pin	240pin	204pin
Width	72Bits	72Bits	72Bits	72Bits
Voltage	1.2V	1.2V	1.5V/1.35V	1.5V/1.35V
PCB Height	1.23 Inches	1.18 Inches	1.18 Inches	1.18 Inches
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C	-40 ~ 85°C
Golden finger 30μ"	√	√	√	√
Anti-sulfuration	√ (Included for Free)	√ (Included for Free)	–	–
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader			

32GB*: The schedule for the 32GB solution by 2Gbx8 IC is dependent on supplier status

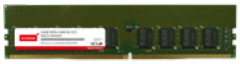
Wide Temperature Registered DIMM

Designed for industrial systems, Innodisk's Wide Temperature DRAM modules are best suited for applications that must work in extreme temperatures. These modules use industrial-grade SDRAM components with 30µ" gold fingers to ensure that the memory maintains its high-quality signal, even at temperatures as low as -40°C or as high as 85°C.

Series	Wide Temperature Solution	
Module Type	DDR4 WT RDIMM	DDR4 WT RDIMM VLP
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s , 2933MT/s, 3200MT/s	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s
Capacity	4GB/8GB/16GB/32GB	4GB*/8GB/16GB 4GB* is only for 2133MT/s and 2400MT/s
Function	Registered Memory with ECC	
Pin Number	288pin	288pin
Width	72Bits	72Bits
Voltage	1.2V	1.2V
PCB Height	1.23 Inches	0.738 Inches
Operating Temperature	-40 ~ 85°C	-40 ~ 85°C
Golden finger 30µ"	√	√
Anti-sulfuration	√ (Included for Free)	√ (Included for Free)
Value-added Service (Optional)	Conformal Coating, Side Fill	

ECC DIMM

ECC modules are designed to detect and correct single-bit errors that occur during data storage and transmission. ECC modules use Hamming Code or triple modular redundancy for error detection and correction, and manage error corrections on their own without requesting that the data source resend original data.



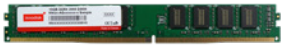
Series	ECC Unbuffered DIMM Solution	
Module Type	DDR4 ECC UDIMM	DDR4 ECC SODIMM
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s , 2933MT/s, 3200MT/s	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s
Capacity	4GB/8GB/16GB/32GB*	4GB/8GB/16GB/32GB*
Function	ECC Unbuffered Memory	
Pin Number	288pin	260pin
Width	72Bits	72Bits
Voltage	1.2V	1.2V
PCB Height	1.23 Inches	1.18 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C
Golden finger 30µ"	√	√
Anti-sulfuration	√ (Included for Free)	√ (Included for Free)
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader	

32GB*: The schedule for the 32GB solution by 2Gbx8 IC is dependent on supplier status

Series	ECC Unbuffered DIMM Solution		
Module Type	DDR3 ECC UDIMM	DDR3 ECC SODIMM	DDR2 ECC UDIMM
Data Rate	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT s	667 MT/s, 800 MT/s
Capacity	2GB/4GB/8GB	2GB/4GB/8GB	1GB/2GB
Function	ECC Unbuffered Memory		
Pin Number	240pin	204pin	204pin
Width	72Bits	72Bits	72Bits
Voltage	1.5V/1.35V	1.5V/1.35V	1.8V
PCB Height	1.18 Inches	1.18 Inches	1.18 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C	0 ~ 85°C
Golden finger 30µ"	√	√	√
Anti-sulfuration	—	—	—
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader		

Very Low-Profile (VLP) DIMM and Ultra Low-Profile (ULP) DIMM

Very Low-Profile (VLP) DIMM modules and **Ultra Low-Profile (ULP) DIMM** modules are specialized for use in 1U systems, such as blade server data centers, where the system height is lower than 1.18 inches (SODIMM PCB height). The design of these modules improves air flow inside compact systems and reduces the thermal impact.



Series	Very Low-Profile (VLP) Solution		
Module Type	DDR4 UDIMM VLP	DDR4 ECC UDIMM VLP	DDR4 SODIMM VLP
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s	2133 MT/s, 2400 MT/s, 2666 MT/s	2133 MT/s, 2400 MT/s, 2666 MT/s
Capacity	4GB/8GB/16GB/32GB* 32GB* is only for 2666MT/s	4GB/8GB/16GB/32GB* 32GB* is only for 2666MT/s	4GB/8GB
Function	Non-ECC Unbuffered Memory	ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	288pin	288pin	260pin
Width	64Bits	72Bits	64Bits
Voltage	1.2V	1.2V	1.2V
PCB Height	0.738 Inches	0.738 Inches	0.7 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C	0 ~ 85°C
Golden finger 30μ"	—	√	—
Anti-sulfuration	√ (Included for Free)	√ (Included for Free)	√ (Included for Free)
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader		

Series	Very Low-Profile (VLP) Solution	
Module Type	DDR4 ECC SODIMM VLP	DDR4 RDIMM VLP
Data Rate	2133 MT/s, 2400 MT/s, 2666 MT/s	2133 MT/s, 2400 MT/s, 2666 MT/s, 2933MT/s, 3200MT/s
Capacity	4GB/8GB	4GB/8GB/16GB/32GB*
Function	ECC Unbuffered Memory	Registered Memory with ECC
Pin Number	260pin	288pin
Width	72Bits	72Bits
Voltage	1.2V	1.2V
PCB Height	0.7 Inches	0.738 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C
Golden finger 30μ"	√	√
Anti-sulfuration	√ (Included for Free)	√ (Included for Free)
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader	

32GB*: The schedule for the 32GB solution by 2Gbx8 IC is dependent on supplier status

Series	Very Low-Profile (VLP) Solution		
Module Type	DDR3 UDIMM VLP	DDR3 ECC UDIMM VLP	DDR3 SODIMM VLP
Data Rate	1066 MT/s, 1333 MT/s, 1600 MT/s, 1866 MT/s	1333 MT/s, 1600 MT/s, 1866 MT/s	1333 MT/s, 1600 MT/s, 1866 MT/s
Capacity	2GB/4GB/8GB	2GB/4GB/8GB	2GB/4GB/ 8GB
Function	Non-ECC Unbuffered Memory	ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	240pin	240pin	204pin
Width	64Bits	72Bits	64Bits
Voltage	1.5V/1.35V	1.5V/1.35V	1.5V/1.35V
PCB Height	0.738 Inches	0.738 Inches	1.0 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C	0 ~ 85°C
Golden finger 30μ"	—	√	—
Anti-sulfuration	—	—	—
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader		

Series	Ultra Low-Profile (ULP) Solution	Very Low-Profile (VLP) Solution
Module Type	DDR3 ECC SODIMM ULP	DDR3 RDIMM VLP
Data Rate	1333 MT/s, 1600 MT/s	1333 MT/s, 1600 MT/s, 1866 MT/s
Capacity	2GB/4GB	4GB/8GB
Function	ECC Unbuffered Memory	Registered Memory with ECC
Pin Number	204pin	240pin
Width	72Bits	72Bits
Voltage	1.5V/1.35V	1.5V/1.35V
PCB Height	0.709 Inches	0.738 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C
Golden finger 30μ"	√	√
Anti-sulfuration	—	—
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader	

Mini DIMM

All Mini DIMMs offer high speed, high density, high performance for telecommunication and cloud systems. The 0.72 inch ULP Mini DIMM modules are specifically designed for networking applications. They are compliant with JEDEC standards and are designed to improve airflow and thermal resistance. With the ECC function, the Mini DIMMs also ensure that data is corrected when corrupted data bits are found during data retrieval.

Series	Mini DIMM Solution	
Module Type	DDR4 Mini DIMM ECC VLP	DDR4 Mini RDIMM VLP
Data Rate	2400 MT/s	
Capacity	4GB/8GB/16GB	4GB/8GB
Function	ECC Unbuffered Memory	Registered Memory with ECC
Pin Number	288pin	
Width	72Bits	
Voltage	1.2V	1.2V
PCB Height	0.738 Inches	0.738 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C
Golden finger 30μ"	√	√
Anti-sulfuration	√ (Included for Free)	√ (Included for Free)

Series	Mini DIMM Solution		
Module Type	DDR3 Mini DIMM ECC ULP	DDR3 Mini RDIMM	DDR3 Mini RDIMM VLP
Data Rate	1600 MT/s		
Capacity	2GB/4GB	8GB	2GB/4GB
Function	ECC Unbuffered Memory	Registered Memory with ECC	Registered Memory with ECC
Pin Number	244pin		
Width	72Bits		
Voltage	1.5V/1.35V	1.5V/1.35V	1.5V/1.35V
PCB Height	0.7 Inches	1.18 Inches	0.738 Inches
Operating Temperature	0 ~ 85°C	0 ~ 85°C	0 ~ 85°C
Golden finger 30μ"	√	√	√
Anti-sulfuration	—	—	—
Value-added Service (Optional)	Conformal Coating, Side Fill, Heat Spreader (only for Mini DIMM & VLP)		

Special / Customized

XR-DIMM

In order to meet the high standards of the aerospace industry, our XR-DIMM comes equipped with several advantages which will satisfy your expectations for robust DRAM modules. We offer two densities of DDR4 XR-DIMM, 8GB & 16GB, both with an integrated error checking and correction function. With their 300-pin socket connectors, Innodisk's XR-DIMM modules exceed the Small Form Factor Special Interest Group's (SFF-SIG) pin number standard, ensuring an even firmer connection between the CPU and DRAM module. This customized design makes Innodisk's XR-DIMM modules highly resistant to shocks and vibrations, making them a great choice for reliable performance in the aerospace industry.

Series	XR-DIMM Solutions			
Module Type	DDR4 XR-DIMM		DDR3 XR-DIMM	
Data Rate	2400 MT/s, 2666 MT/s		1600MT/s, 1866 MT/s	
Capacity	8GB/16GB		4GB/8GB	
Function	ECC Unbuffered Memory	Non-ECC Unbuffered Memory	ECC Unbuffered Memory	Non-ECC Unbuffered Memory
Pin Number	300pin		300pin	
Width	72Bits	64Bits	72Bits	64Bits
Voltage	1.2V		1.5V/1.35V	
PCB Height	1.18 Inches		1.49 Inches	
Anti-sulfuration	√ (Included for Free)		—	
Mounting Hole	2		2	
Value-added Service (Optional)	Side Fill			
Operating Temperature	Commercial 0 ~ 85°C		Wide Temperature -40 ~ 85°C	

Rugged SODIMM

Innodisk's rugged wide-temperature SODIMM modules are designed to continue operating at an optimal level even in extreme temperature conditions. With two mounting holes to ensure a shock and vibration-resistant connection to the motherboard, as well as error checking and correcting (ECC) functions, these SODIMM modules are the ideal choice for applications in extreme environments.

By using a standard SODIMM connector, these rugged wide-temperature DRAM modules can be used on regular motherboards without requiring any modifications to the board or its connectors. Moreover, with customizable PCB height, Innodisk's rugged wide-temperature SODIMM modules can guarantee a perfect fit in any application and environment.

Series	Rugged SODIMM Solutions	
Module Type	DDR4 Rugged SODIMM	
Data Rate	2133MT/s, 2400MT/s, 2666MT/s	
Capacity	8GB/16GB/32GB*(32GB* is only for ECC)	
Function	Non-ECC/ECC	
Pin Number	260 pin	
Width	72Bits	
Voltage	1.2V	
PCB Height	1.338 Inches	
Anti-sulfuration	√ (Included for Free)	
Value-added Service (Optional)	Side Fill, Heat Spreader	
Operating Temperature	Commercial 0 ~ 85°C	Wide Temperature -40 ~ 85°C

32GB*: The schedule for the 32GB solution by 2Gbx8 IC is dependent on supplier status

Embedded Peripherals

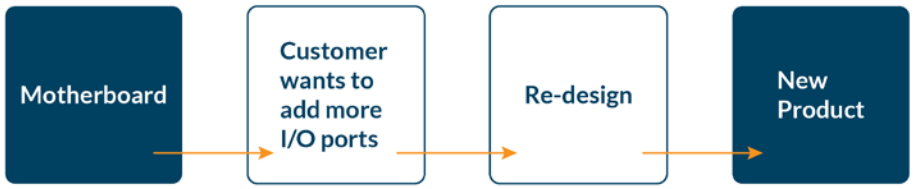
Embedded peripherals provide LAN, PoE, CAN bus, DIO, serial port, storage, RAID, AI module, and display functionality to embedded systems. In order to enrich industrial customers' embedded solutions with flexibility at the lowest Total Cost of Ownership (TCO), Innodisk is dedicated to creating expandable, space-efficient expansion modules.

Innodisk is experienced with the most common interfaces, including PCIe, USB, and SATA, and is able to provide the aforementioned functionalities in a wide range of space-saving form factors. Just like Innodisk's well-regarded memory solutions, our Standard PCIe, mPCIe, 2.5", and M.2 (NGFF) modules fit perfectly into any industrial system.

Innodisk Efficient Modular Expansion

When it comes to motherboards, adding additional input/output ports will often require costly re-design. Innodisk can offer solutions that allow for easily implemented expansions on already existing motherboards, helping the system integrator avoid unnecessary time and expenses required by a re-design. In other words, using a standard motherboard as a basis, Innodisk can assist you in creating various products according to different specifications.

Traditional scenario : standard motherboard with different fixed I/O



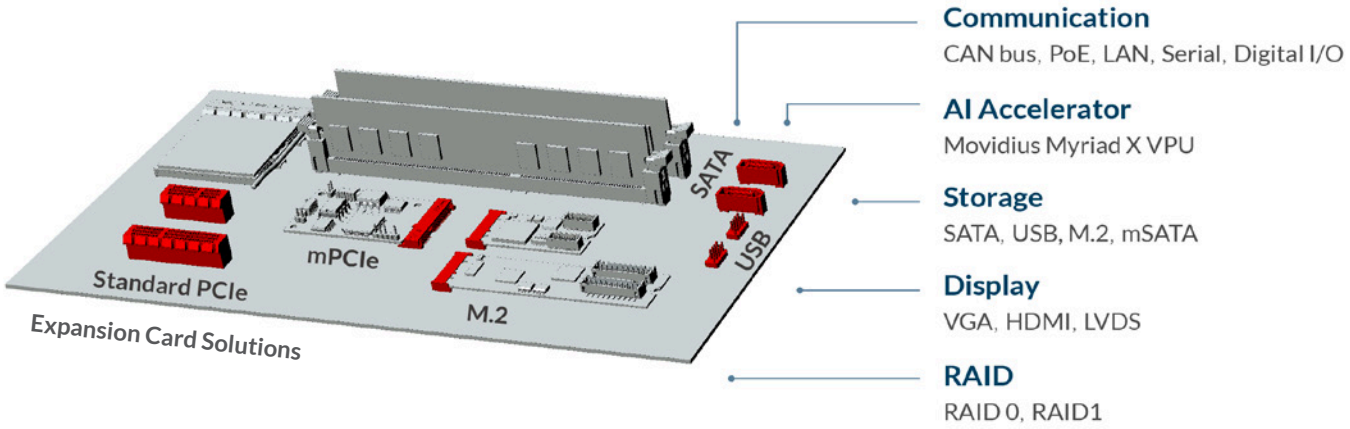
Innodisk solution: standard motherboard with Innodisk Efficient Modular Expansion

Benefits

1. One motherboard layout for multiple products
2. Efficient sharing of components
3. Accelerates the process of bringing new products to market
4. Significantly reduces development costs

Product Categories and I/O Descriptions

Through expansion slots such as PCIe, M.2, mPCIe, SATA and USB pin header, Innodisk modules can easily expand to various I/O devices.



Industrial design

Industrial temperature (-40 °C to 85 °C)

Up to ESD contact 8KV and air 15KV protection

Up to 2.5KV isolation to prevent damage to your system

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Take M.2 to the Next Level

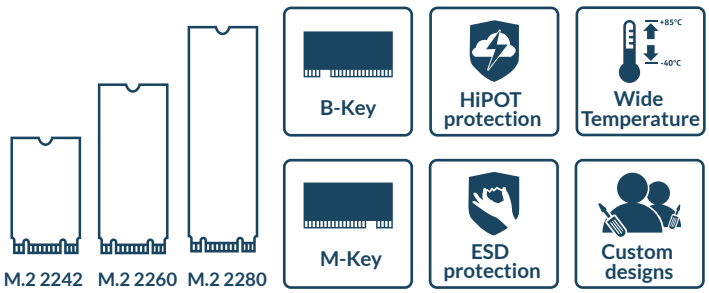
Comprehensive M.2 Solutions for Next-generation IoT Platforms

With Innodisk's unique embedded peripheral solutions, the space-efficient M.2 form factor is upgraded to reach its full potential as the Next Generation Form Factor. Innodisk's M.2 expansion cards allow you to add advanced functionality and unparalleled flexibility to any M.2 port-equipped platform. Be it adding new expansion slots, providing new networking options, or even adding state-of-the-art AI acceleration, Innodisk's M.2 solutions are a major upgrade to any system – on the edge, in the backend, or beyond.

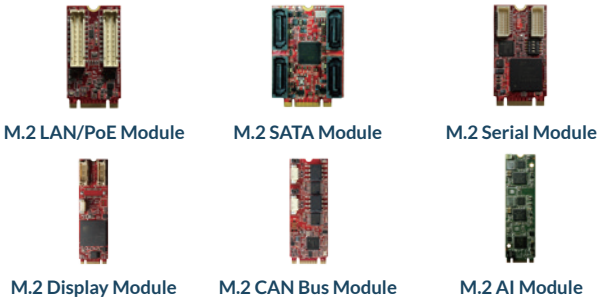
Designed for Life on the Edge

Innodisk's M.2 expansion cards are designed for demanding edge applications – providing ample ruggedness, security, and performance for any application.

Maximum Flexibility



Unlimited Expansion



Product Overview

Form Factor			Output							
			SATA	USB	POE	Display	LAN	CAN BUS DIO	Serial 232/422..	AI
mPCIe (mSATA)	Input	PCIe	EMPS-3401 EMPS-32R1	EMPU-3401 EMPU-3201	EMPL-G2P1 EMPL-G2P2	EMPV-1201 EMPV-1202	EMPL-G101 EMPL-G201 EMPL-G102 EMPL-G202 EMPL-G103 EMPL-G203		EMP2-X801 EMP2-X402 EMP2-X403 EMP2-X404 EMP2-X4S1 EMP2-X4S2 EMP2-X2S1	EMPA-I101
		USB						EMUI-0D01 EMUC-B202		
PCIe Standard	Input	PCIe			ESPL-G4P1					
M.2 (NGFF)	Input	PCIe	EGPS-3401		EGPL-G2P1	EGPV-1101	EGPL-G101 EGPL-G201 EGPL-G102 EGPL-G202 EGPL-G1N3 EGPL-G2N3	EGPC-B201 EGPC-B4S1 EGPC-B1S1	EGP2-X401	EGPA-I201
2.5"	Input	SATA	E2SS-32R1							

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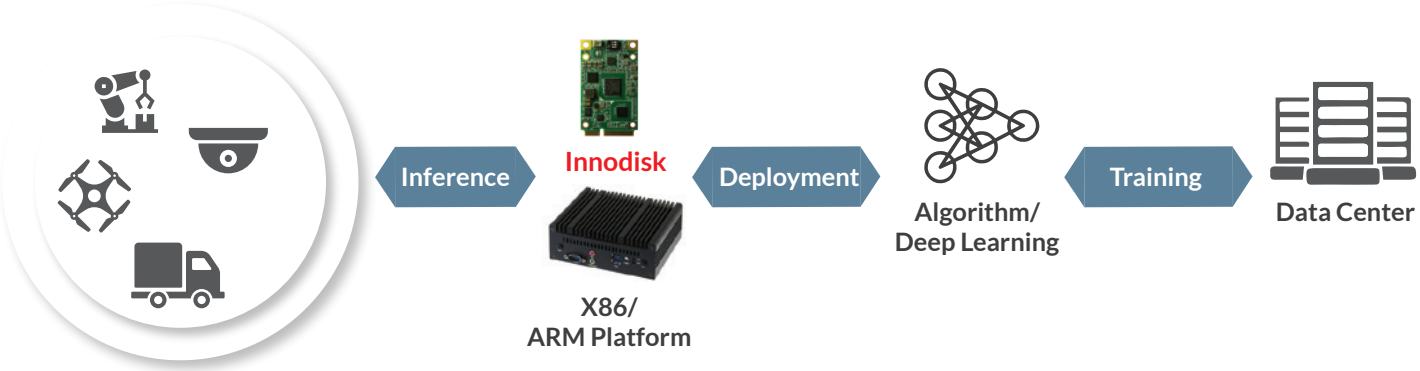
AI Accelerator

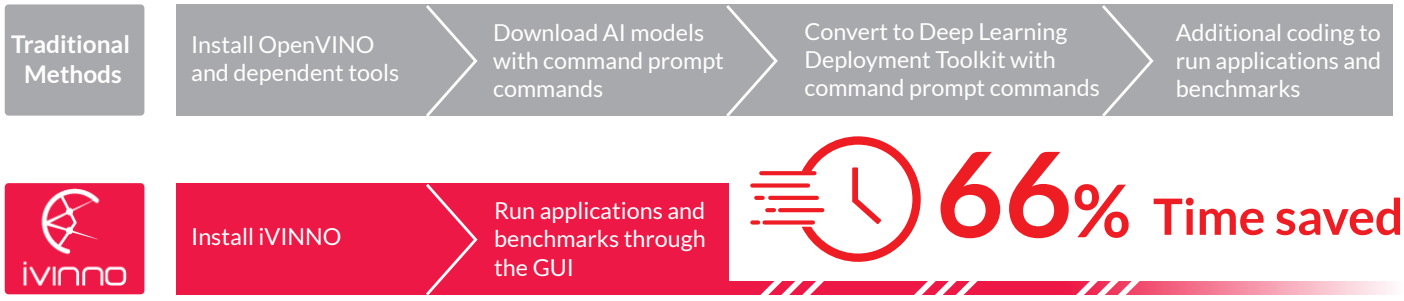
The rugged Innodisk AI accelerator module offers outstanding performance and efficiency with software support provided through the Intel® OpenVINO™ toolkit. Innodisk's AI modules enhance all vision inference applications, such as facial recognition, vehicle registration plate recognition, and many other machine vision applications.



iVINNO

Deploy the power of AI in no time with Innodisk's AI deployment utility

iVINNO is a web-based graphical user interface (GUI) tool designed for Innodisk's AI Accelerator series that integrates the Intel® OpenVINO™ toolkit and provides a graphical and intuitive way to manage and run trained models and do device benchmarking. With innovative features and a user-friendly interface, iVINNO makes AI deployment simple and provides advanced features within a click's reach—allowing users to focus on perfecting their AI applications.



Model Name	EMPA-I101	EGPA-I201
Module Type	mPCIe to Intel Movidius Myriad X AI module	M.2 2280 to dual Intel Movidius Myriad X AI module
Key Features	1. mPCIe to one Movidius Myriad X 2. Low-power design 3. Supports Intel OpenVINO toolkit 4. Supported frameworks: TensorFlow, Caffe, MXNET 5. Complies with CE/FCC Class A	1. M.2 2280 B+M-Key to two Movidius Myriad X 2. Low-power design 3. Supports Intel OpenVINO toolkit 4. Supported frameworks: TensorFlow, Caffe, MXNET 5. Complies with CE/FCC Class A
Form Factor	mPCIe	M.2 2280
Input I/F	PCI Express 2.0 x 1	PCI Express 2.0 x 1
Input connector	mPCIe	M.2 B-M
Dimensions (WxLxH/mm)	With heatsink: 30 x 50.9 x 35.15mm Without heatsink: 30 x 50.9 x 7.65mm	With heatsink: 22.8 x 80.0 x 22mm Without heatsink: 22.0 x 80.0 x 7.4mm
Temperature	0°C ~ +60°C	0°C ~ +60°C
Supported Frameworks	TensorFlow, Caffe, MXNET	TensorFlow, Caffe, MXNET
Order Information	EMPA-I101-C1	EGPA-I201-C1

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Communication

Innodisk expansion modules provide flexible connectivity and bandwidth to industrial systems. With our mPCIe GbE LAN, PoE, CAN bus, and serial communication modules, users can expand their existing systems to achieve the dynamic connectivity required by IoT.

1-1 CAN bus

CAN bus (Controller Area Network) is a type of serial communication that is widely used in automation, embedded systems, and the automotive industry. Innodisk has developed CAN bus expansion cards specifically to fulfill these needs. It provides dual-port CAN 2.0B/J1939/CANopen connectivity with an isolation design, and supports a wide temperature range in order to enhance system security and reliability.

Based on a built-in Linux CDC-ACM, Innodisk's CAN bus expansion cards use a custom-made SocketCAN network driver that allows two ports on a single card. Thus, it provides maximum compatibility for customers when developing programs. Other than SocketCAN, Innodisk also provides a complete Windows/Linux software API, test utility, and sample code for traditional character drivers.

Complete Software Support

API Sample Code

By using the GUI or Command base test utility, the user can easily verify modules.

Test Utility

Provides C/C++/C# sample code to speed up program integration.

Platform Support

The API can be used in Windows, Linux, and QNX. In addition to x86, a cross-compiler service for ARM systems is also available.

Model Name	EMUC-B202	EGPC-B201
Module Type	USB to dual isolated CAN bus 2.0B/J1939/CANopen module	M.2 to dual isolated CAN bus 2.0B/J1939 Module
Key Features	1. CAN bus 2.0B backward compatible with 2.0A 2. Supports baud rate 100/125/250/500(default)/800/1000K 3. Supports CAN message acceptance filter 4. Keeps configuration after hardware reboot 5. Up to 6000 CAN messages per second (receive data) 6. Supports listen-only mode 7. Additional driver to support Linux SocketCAN 8. Supports SAE J1939/CANopen high-layer protocol (optional) 9. Termination resistor enabled/disabled by jumper 10. Supports 3rd mounting hole and USB pin header for out-of-minicard installation 11. Complies with EN61000-4-5 2.5kV surge protection 12. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection 13. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV	1. Alternative M.2 2260 or 2280 B-M key 2. CAN bus 2.0B backward compatible with 2.0A 3. Supports baud rate 100/125/250/500(default)/800/1000K 4. Supports CAN message acceptance filter 5. Keeps configuration after hardware reboot 6. Up to 6000 CAN messages per second (receive data) 7. Supports listen-only mode 8. Additional driver to support Linux SocketCAN 9. Supports SAE J1939 high layer protocol (optional) 10. Termination resistor enabled/disabled by jumper 11. Complies with EN61000-4-5 2.5kV surge protection 12. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection 13. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
Form Factor	mPCIe	M.2 2260/2280
Input I/F	USB 2.0	PCI Express 2.0 x 1
Input Connector	mPCIe or 5-pin Header	M.2 B-M x 1
Output I/F	CAN bus 2.0B/J1939/CANopen x 2	CAN bus 2.0B/J1939 x 2
Output Connector	DB-9 x 2	DB-9 x 2
Dimension (WxLxH/mm)	30 x 50.9 x 6.1	22 x 60 x 6.1 22 x 80 x 6.1
Operating Temperature	Wide temp : -40°~85°C	Wide temp : -40°~85°C
Order Information	EMUC-B202-W1 (CAN 2.0B) EMUC-B202-W2 (J1939) EMUC-B202-W3 (CANopen)	EGPC-B201-W1 (2260, CAN2.0B) EGPC-B201-W2 (2280, CAN2.0B) EGPC-B201-W3 (2260, J1939) EGPC-B201-W4 (2280, J1939) EGPC-B201-W5 (2260, CANopen) EGPC-B201-W6 (2280, CANopen)

Model Name	EGPC-B4S1	EGPC-B1S1
Module Type	M.2 to four isolated CAN bus 2.0B Module	M.2 to single isolated CAN bus 2.0B Module
Key Features	1. Compliant with PCI Express 1.1 2. Meets the requirements of ISO 11898-1 3. CAN bus 2.0B backward compatible with 2.0A 4. Supports baud rate 10/20/50/100/250/500/800/1000K 5. Supports CAN message acceptance filter 6. Supports Linux SocketCAN 7. Compliant with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection 8. Compliant with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 9. Termination resistor enabled/disabled by switch	1. Compliant with PCI Express 1.1 2. Meet the Requirements of the ISO 11898-1 3. CAN bus 2.0B backward compatible with 2.0A 4. Support baud rate 10/20/50/100/250/500/800/1000K 5. Support CAN message acceptance filter 6. Support Linux SocketCAN 7. Compliant with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection 8. Compliant with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 9. Termination resistor enabled/disabled by switch
Form Factor	M.2 2280	M.2 2242
Input I/F	PCI Express 1.1 x 1	PCI Express 1.1 x 1
Input Connector	M.2 B-M	M.2 B-M
Output I/F	CAN bus 2.0B	CAN bus 2.0B
Output Connector	DB-9 x 4	DB-9 x 1
Dimension (WxLxH/mm)	22 x 80 x 12.9 mm	22 x 42 x 4.8 mm
Operating Temperature	Wide temp: -40°~85°C	Wide temp: -40°~85°C
Order Information	EGPC-B4S1-W1	EGPC-B1S1-W1

1-2 Power over Ethernet (PoE)

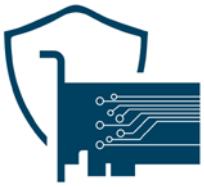
The industrial-grade Power over Ethernet (PoE) series complies with IEEE 802.3af and 802.3at, ensuring reliable power and data transfer. These expansion cards feature isolated, wide temperature design, and are certified to withstand HiPOT and surge occurrences, making them the optimal choice for operation in extreme conditions.

Complete form factors

• Compact and easily integrated form factors: PCIe / mPCIe / M.2 2280

Flexible expansion

• Supports 12~24V power input via internal 4-pin header or external DC jack
• Supports alternative fixed approach of mounting hole or bracket for daughter board



Industrial design

• Supports wide temperature -40° ~ 85°C
• Complies with EN61000-4-2 (ESD) air up to 15kV, contact up to 8kV
• Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 HiPOT protection
• Complies with EN61000-4-5 surge protection

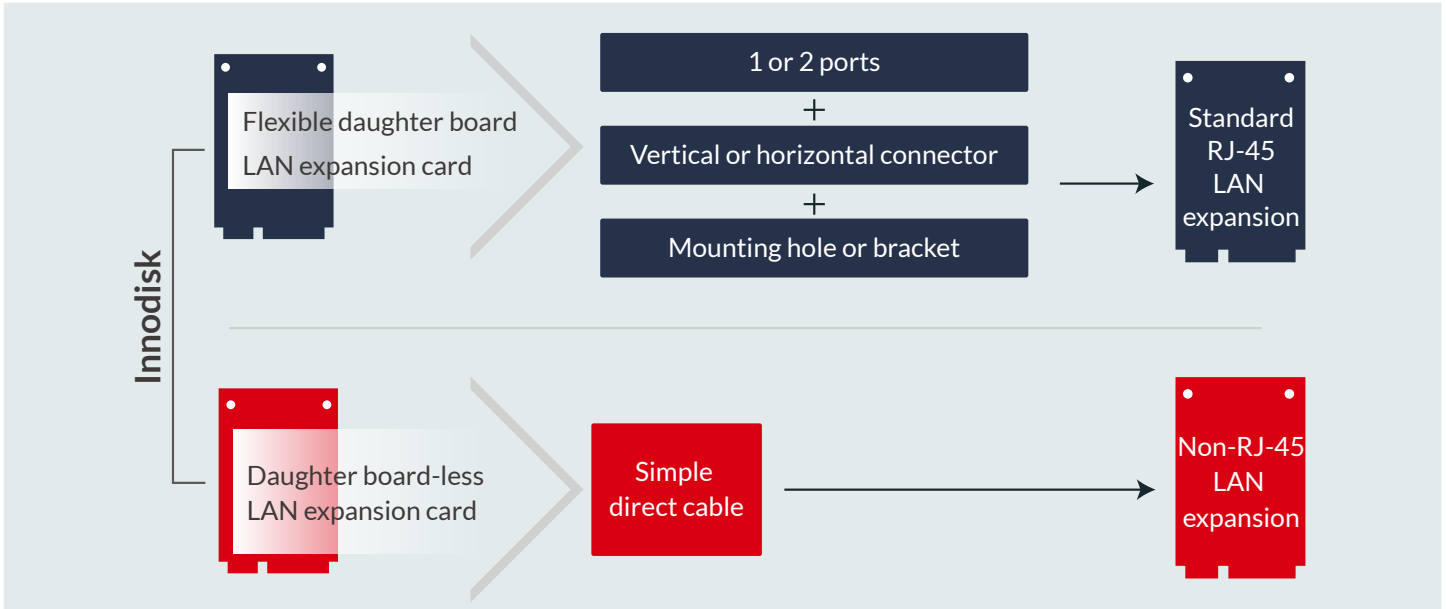
Model Name	EMPL-G2P1	EMPL-G2P2
Module Type	mPCIe to dual-isolated PoE module	mPCIe to dual-isolated PoE+ module
Key Features	1. Supports dual-isolated GbE LAN ports 2. Two independent PSE channels 3. Supports 12V~24V power input via 4-pin header or DC-Jack 4. Complies with IEEE 802.3af, up to 15.4W at 48V per PoE port 5. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 1.7KV HiPOT protection 6. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV	1. Supports dual-isolated GbE LAN ports 2. Two independent PSE channels 3. Supports 19V~24V power input via 4-pin header 4. Complies with IEEE 802.3at, up to 25.5W at 52V per PoE port 5. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 1.7KV HiPOT protection 6. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV
Form Factor	mPCIe	mPCIe
Input I/F	PCI Express 2.1	PCI Express 2.1
Input Connector	mPCIe	mPCIe
Output I/F	PoE x 2	PoE+ x 2
Output Connector	RJ45 x 2	RJ45 x 2
Dimension (WxLxH/mm)	30 x 50.9 x 7.6	30 x 50.9 x 7.6
Operating Temperature	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C
Order Infomation	EMPL-G2P1-C1 (Mounting hole, 4-pin header) EMPL-G2P1-W1 (Mounting hole, 4-pin header) EMPL-G2P1-C2(Bracket, 4-pin header) EMPL-G2P1-W2(Bracket, 4-pin header) EMPL-G2P1-C3 (Mounting hole, DC Jack) EMPL-G2P1-W3(Mounting hole, DC Jack) EMPL-G2P1-C4 (Bracket, DC Jack)	EMPL-G2P2-C1 (Mounting hole, 4-pin header) EMPL-G2P2-W1 (Mounting hole, 4-pin header) EMPL-G2P2-C2 (Bracket, 4-pin header) EMPL-G2P2-W2(Bracket, 4-pin header)

Model Name	EGPL-G2P1	ESPL-G4P1
Module Type	M.2 to dual-isolated PoE module	PCIe to four isolated PoE/PoE+ modules
Key Features	1. Supports dual-isolated GbE LAN ports 2. Two independent PSE channels 3. Supports 12V~24V power input via 4-pin header or DC-Jack 4. Complies with IEEE 802.3af, up to 15.4W at 48V per PoE port 5. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 1.7KV HiPOT protection 6. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV	1. Supports four isolated GbE LAN ports 2. Four independent PSE channels 3. Complies with IEEE 802.3af, up to 15.4W at 48V per PoE port 4. Complies with IEEE 802.3at, up to 25.5W at 54V per PoE port 5. Supports 12V~24V power input via 6-pin PCIE-ATX 6. Supplies total power up to 75W 7. Complies with EN61000-4-5 2kV surge protection 8. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection
Form Factor	M.2 2280	Standard PCIe
Input I/F	PCI Express 2.1 x 1	PCI Express 2.1 x 4
Input Connector	M.2 B-M	PCIe x 4
Output I/F	PoE x 2	PoE/PoE+ x 4
Output Connector	RJ45 x 2	RJ45 x 4
Dimension (WxLxH/mm)	22 x 80 x 7.1	169.55 x 111.15 x 19.6
Operating Temperature	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C
Order Infomation	EGPL-G2P1-C1 (Mounting hole, 4-pin header) EGPL-G2P1-W1 (Mounting hole, 4-pin heade) EGPL-G2P1-C2(Bracket, 4-pin heade) EGPL-G2P1-W2(Bracket, 4-pin header) EGPL-G2P1-C3 (Mounting hole) EGPL-G2P1-W3 (Mounting hole, DC Jack) EGPL-G2P1-C4 (Bracket, DC Jack) EGPL-G2P1-W4 (Bracket, DC Jack)	ESPL-G4P1-C1 ESPL-G4P1-W1

1-3 GbE LAN

Innodisk's mPCIe and M.2-based GbE LAN cards using Intel ethernet chips provide high performance 10/100/1000 Mbps network connectivity with an isolation design, and supports a wide temperature range in order to enhance system security and reliability. Small form factors with flexible daughter boards can be suitable for smaller industrial computers by using alternative terminal mounting holes of the bracket.

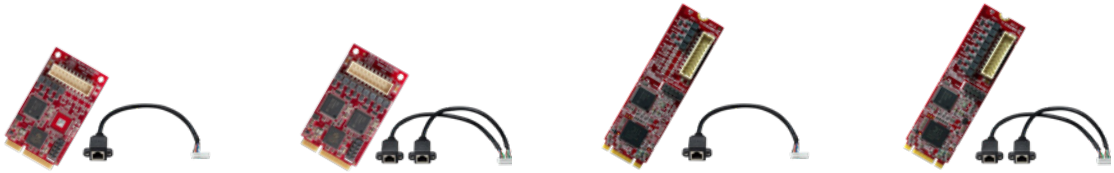
Innodisk's daughter board-less GbE LAN cards offer seamless connection through an RJ-45 cable as well as through customer-defined cable standards to satisfy specific applications. Innodisk's LAN cards also allow for easy integration with M12, which encompasses IP 65/67/68-rated waterproof designs.



Implementing a Flexible LAN Expansion Card in Your System

Model Name	EMPL-G101	EMPL-G201	EMPL-G102	EMPL-G202
Module Type	mPCIe to single-isolated GbE LAN module	mPCIe to dual-isolated GbE	mPCIe to single-isolated GbE LAN horizontal module	mPCIe to dual-isolated GbE LAN horizontal module
Key Features	1. Single-isolated GbE LAN ports 2. Complies with EN61000-4-5 2kV surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 \ (ESD) Air-15kV, Contact-8kV 5. Flexible daughter board with cable to fit into different systems 6. Supports mounting terminal or brackets for daughter board	1. Dual-isolated GbE LAN ports 2. Complies with EN61000-4-5 2kV surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Flexible daughter board with cable to fit into different systems 6. Supports mounting terminal or bracket for daughter board	1. Single-isolated GbE LAN port 2. Complies with EN61000-4-5 2kV surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Flexible daughter board with cable to fit into different system 6. Optional terminal mounting hole or bracket for daughter board	1. Dual-isolated GbE LAN port 2. Complies with EN61000-4-5 2kV Surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Flexible daughter board with cable to fit into different systems 6. Optional terminal mounting hole or bracket for daughter board
Form Factor	mPCIe	mPCIe	mPCIe	mPCIe
Input I/F	PCI Express 2.1	PCI Express 2.1	PCI Express 2.1	PCI Express 2.1
Input Connector	mPCIe	mPCIe	mPCIe	mPCIe
Output I/F	GbE LAN x 1	GbE LAN x 2	GbE LAN x 1	GbE LAN x 2
Output Connector	RJ45 x 1	RJ45 x 2	RJ45 x 1	RJ45 x 2
Dimension (WxLxH/mm)	30 x 50.9 x 7.6	30 x 50.9 x 7.6	30 x 50.9 x 5.8	30 x 50.9 x 5.8
Operating Temperature	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C
Order Infomation	EMPL-G101-C1 EMPL-G101-W1 EMPL-G101-C2 (with bracket) EMPL-G101-W2 (with bracket)	EMPL-G201-C1 EMPL-G201-W1 EMPL-G201-C2(with bracket) EMPL-G201-W2(with bracket)	EMPL-G102-C1 EMPL-G102-W1 EMPL-G102-C2 (with bracket) EMPL-G102-W2(with bracket)	EMPL-G202-C1 EMPL-G202-W1 EMPL-G202-C2 (with bracket) EMPL-G202-W2 (with bracket)

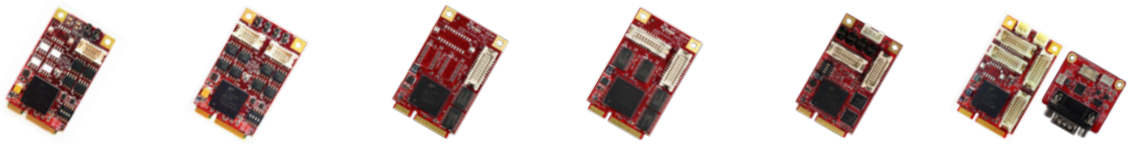
Model Name	EGPL-G101	EGPL-G201	EGPL-G102	EGPL-G202
Module Type	M.2 to single-isolated GbE LAN module	M.2 to dual-isolated GbE LAN module	M.2 to single-isolated GbE LAN module	M.2 to dual-isolated GbE LAN module
Key Features	1. Single-isolated LAN port 2. Complies with EN61000-4-5 2kV surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Flexible daughter board with cable to fit into different systems 6. Optional terminal mounting hole or bracket for daughter board	1. Dual-isolated GbE LAN ports 2. Complies with EN61000-4-5 2kV surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Flexible daughter board with cable to fit into different systems 6. Optional terminal mounting hole or bracket for daughter board	1. Single-isolated GbE LAN port 2. Complies with EN61000-4-5 2kV surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Flexible and small daughter board with cable to fit into different systems 6. Optional terminal mounting hole or bracket for daughter board	1. Dual-isolated GbE LAN ports 2. Complies with EN61000-4-5 2kV surge protection 3. Complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Flexible and small daughter board with cable to fit into different systems 6. Optional terminal mounting hole or bracket for daughter board
Form Factor	M.2 2280	M.2 2280	M.2 2242	M.2 2242
Input I/F	PCI Express 2.1 x 1	PCI Express 2.1 x 1	PCI Express 2.1 x 1	PCI Express 2.1 x 1
Input Connector	M.2 B-M	M.2 B-M	M.2 B-M	M.2 B-M
Output I/F	Gbe LAN x 1	GbE LAN x 2	Gbe LAN x 1	GbE LAN x 2
Output Connector	RJ45 x 1	RJ45 x 2	RJ45 x 1	RJ45 x 2
Dimension (WxLxH/mm)	22 x 80 x 7.1	22 x 80 x 7.1	22 x 42 x 9.15	22 x 42 x 9.15
Operating Temperature	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C
Order Infomation	EGPL-G101-C1 EGPL-G101-W1 EGPL-G101-C2 (with bracket) EGPL-G101-W2 (with bracket)	EGPL-G201-C1 EGPL-G201-W1 EGPL-G201-C2 (with bracket) EGPL-G201-W2 (with bracket)	EGPL-G102-C1 EGPL-G102-W1	EGPL-G202-C1 EGPL-G202-W1



Model Name	EMPL-G103	EMPL-G203	EGPL-G1N3	EGPL-G2N3
Module Type	mPCIe to single GbE LAN module	mPCIe to dual GbE LAN module	M.2 to single GbE LAN Module	M.2 to dual GbE LAN Module
Key Features	1. Single-isolated GbE LAN port 2. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 3. Transformer on PCB for flexible cable design 4. External LED indicator pin for speed 10/100/1000	1. Dual-isolated GbE LAN ports 2. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 3. Transformer on PCB for flexible cable design 4. External LED indicator pin for speed 10/100/1000	1. Single isolated GbE LAN port 2. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 3. Transformer on PCB for flexible cable design 4. External LED indicator pin for speed 10/100/1000	1. Dual isolated GbE LAN ports 2. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 3. Transformer on PCB for flexible cable design 4. External LED indicator pin for speed 10/100/1000
Form Factor	mPCIe	mPCIe	M.2 2280	M.2 2280
Input I/F	PCI Express 2.1	PCI Express 2.1	PCI Express 2.1 x 1	PCI Express 2.1 x 1
Input Connector	mPCIe	mPCIe	M.2 B-M	M.2 B-M
Output I/F	GbE LAN x 1	GbE LAN x 2	GbE LAN x 1	GbE LAN x 2
Output Connector	RJ45 x 1	RJ45 x 2	RJ45 x 1	RJ45 x 2
Dimension (WxLxH/mm)	30 x 50.9 x 7.6	30 x 50.9 x 7.6	22 x 80 x 9 mm	30 x 50.9 x 7.6 mm
Operating Temperature	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C
Order Infomation	EMPL-G103-C1 EMPL-G103-W1	EMPL-G203-C1 EMPL-G203-W1	EGPL-G1N3-C1 EGPL-G1N3-W1	EGPL-G2N3-C1 EGPL-G2N3-W1

1-4 Serial Port

Innodisk's range of mPCIe-expanded serial cards provide the combination of 2/4/8 ports RS232/RS422/RS485 with PCIe or USB input and ISOLATION/ESD provides efficient system expansions. Software switches that can help switch the serial port RS232/RS422/485 without the need to open the system chassis.



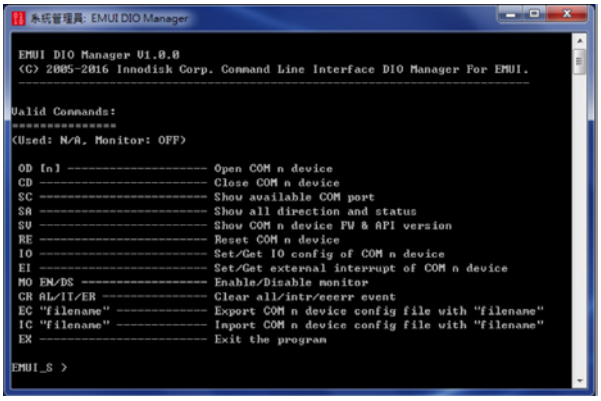
Model Name	EMP2-X202	EMP2-X402	EMP2-X203	EMP2-X403	EMP2-X404	EMP2-X801
Module Type	mPCIe to dual RS-422/485 module	mPCIe to four RS-422/485 module	mPCIe to dual RS-232 module	mPCIe to four RS-232 module	mPCIe to four RS-232/422/485 module	mPCIe to eight RS-232/422/485 module
Key Features	1. PCIe 2.0 compliant. RS-422/485 mode configurable by switch. Supports 485HD (half-duplex) and 485FD (full-duplex) 2. 4800 to 3Mbps serial data rate. 16C550-compatible. 256-byte FIFOs 3. Flexible design with DB-9 connectors and cable 4. Termination resistor by jumper setting. 5. Complies with EN6 1000-4-2 (ESD) Air-15kV, Contact-8kV	1. PCIe 2.0 compliant. RS-422/485 mode configurable by switch. Supports 485HD (half-duplex) and 485FD (full-duplex) 2. 4800 to 3Mbps serial data rate. 16C550-compatible. 256-byte FIFOs 3. Flexible design with DB-9 connectors and cable 4. Termination resistor by jumper setting 5. Complies with EN6 1000-4-2 (ESD) Air-15kV, Contact-8kV	1. PCI-Express specification Rev. 2.0 compliant 2. 4800 to 921.6Kbps serial data rate. 16550-compatible. 256-byte FIFOs 3. Flexible design with DB-9 connectors and cable 4. Supports CTS/RTS hardware flow control 5. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV	1. PCI-Express specification Rev. 2.0 compliant 2. 4800 to 921.6Kbps serial data rate. 16550-compatible. 256-byte FIFOs 3. Flexible design with DB-9 connectors and cable 4. Supports CTS/RTS hardware flow control 5. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV	1. PCIe 2.0 compliant. RS-232/422/485 mode configurable by software 2. 4800 to 3Mbps serial data rate (RS232921.6Kbps). 16C550-compatible. 256-byte FIFOs. 3. Full RS-232 functions with DB9 connector 4. Termination resistor enabled/disabled by DIP switch 5. RI/5V/12V output switched by Jumper 6. Complies with EN6 1000-4-2 (ESD) Air-15kV, Contact-8kV	1. PCIe 2.0 compliant. RS-232/422/485 mode configurable by software 2. 4800 to 3Mbps serial data rate (RS232921.6Kbps). 16C550-compatible. 256-byte FIFOs. 3. Flexible design with cable and daughter board x 8 (with DB-9 connectors) 4. Termination resistor and 5V/12V output by jumper setting on daughterboard 5. Complies with EN6 1000-4-2 (ESD) Air-15kV, Contact-8kV
Form Factor	mPCIe	mPCIe	mPCIe	mPCIe	mPCIe	mPCIe
Input I/F	PCI Express 2.0	PCI Express 2.0	PCI Express 2.0	PCI Express 2.0	PCI Express 2.0	PCI Express 2.0
Input Connector	mPCIe	mPCIe	mPCIe	mPCIe	mPCIe	mPCIe
Output I/F	RS-422/485 x 2	RS-422/485 x 4	RS-232 x 2	RS-232 x 4	RS-232/422/485 x 4	RS-232/422/485 x 8
Output Connector	DB-9 x 2	DB-9 x 4	DB-9 x 2	DB-9 x 4	DB-9 x 4	DB-9 x 8
Dimension (WxLxH/mm)	30 x 50.9 x 8.2	30 x 50.9 x 8.2	30 x 50.9 x 6.7	30 x 50.9 x 6.7	30 x 50.9 x 6.1	30 x 50.9 x 6.1
Operating Temperature	Wide temp : -40°~85°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C
Order Infomation	EMP2-X202-W1	EMP2-X402-W1	EMP2-X203-W1	EMP2-X403-W1	EMP2-X404-W1	EMP2-X801-W1

Model Name	EMP2-X2S1	EMP2-X4S1	EMP2-X4S2	EGP2-X401
Module Type	mPCIe to two Isolated RS-232 Module	mPCIe to four isolated RS-485 module	mPCIe to dual-isolated RS-422 & RS-485 module	M.2 to four RS-232/422/485 module
Key Features	1. PCI-Express specification Rev. 2.0 compliant 2. 4800 to 921.6Kbps serial data rate. 256-byte FIFOs 3. Full RS232 functions with DB9 connector 4. Support port-to-computer isolation, complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection 5. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 6. Industrial temperature -40 °C to 85 °C operation	1. PCI-Express specification Rev. 2.0 compliant 2. 4800 to 3Mbps serial data rate. 16C550-compatible. 256-byte FIFOs 3. Supports port-to-computer isolation, complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Termination resistor by switch setting 6. Industrial temperature -40 °C to 85 °C	1. PCI-Express specification Rev. 2.0 compliant 2. 4800 to 3Mbps serial data rate. 16C550-compatible. 256-byte FIFOs 3. Supports port-to-computer isolation, complies with IEC 60950-1:2005 + A1: 2009 + A2:2013 2.5kV HiPOT protection 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. Termination resistor by switch setting 6. Industrial temperature -40 °C to 85 °C	1. PCIe 2.0 compliant. RS-232/422/485 mode configurable by software 2. 4800 to 3Mbps serial data rate (RS-232 921.6Kbps). 16C550-compatible. 256-byte FIFOs 3. Alternative vertical or horizontal connector 4. Full RS-232 functions with DB9 connector 5. Termination resistor enabled/disabled by DIP switch 6. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 7. Industrial temperature -40 °C to 85 °C
Form Factor	mPCIe	mPCIe	mPCIe	M.2 2242
Input I/F	PCI Express 2.0	PCI Express 2.0	PCI Express 2.0	PCI Express 2.0 x 1
Input Connector	mPCIe	mPCIe	mPCIe	M.2 B-M
Output I/F	RS-232 x 2	RS-485 x 4	RS-422 x 2, RS-485 x 2	RS-232/422/485 x 4
Output Connector	DB-9 x 2	DB-9 x 4	DB-9 x 4	DB-9 x 4
Dimension (WxLxH/mm)	30 x 50.9 x 12.9	30 x 50.9 x 12.55	30 x 50.9 x 12.55	Vertical : 22 x 42 x 6.45 Horizontal : 22 x 42 x 7.65
Operating Temperature	Wide temp: -40°~85°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C
Order Infomation	EMP2-X2S1-W1	EMP2-X4S1-W1	EMP2-X4S2-W1	EGP2-x401-W1 (vertical connector) EGP2-x401-W2 (horizontal connector)

1-5 DIO

DIO (Digital Input and Output, or Digital I/O) allow a host system to detect logic states, and digital outputs allow a host system to output logic states. Innodisk's digital input/output expansion cards aim to fulfil the IoT communication needs of industrial systems. We provide an API, which supports Windows and Linux as well as test utilities and sample codes, enabling users to quickly verify the functionality of the card and easily integrate it into their applications.

The Utility Console



Model Name	EMUI-0D01
Module Type	USB to 32bit digital I/O module
Key Features	1. 32-bit digital I/O in four ports (each 8 bits) 2. Programmable I/O 3. Selectable VCCIO 3.3V or 5V by DIP switch 4. Buffered I/O (Output 5V, 32mA source, 32mA sink) (Output 3.3V, 24mA source, 24mA sink) 5. 4 external interrupts with rising/falling edge on port D 6. Keeps configuration after hardware reboot 7. Supports 3rd mounting hole and USB pin header for out-of-minicard installation 8. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 9. Industrial temperature (-40 °C to 85 °C) operation
Form Factor	mPCIe
Input I/F	USB 2.0
Input Connector	mPCIe or 5-pin header
Output I/F	32-bit Digital I/O
Output Connector	40-pin 1.25mm (40DP-1.25) with DB37 male cable
Dimension (WxLxH/mm)	30 x 50.9 x 8.2
Operating Temperature	Wide temp : -40°~85°C
Order Infomation	EMUI-0D01-W1

Programmable DIO

Configurable Input/Output

Status Setting

Supports External Interrupt

Input Status Change Notification

Storage & Disk Array

Innodisk provides RAID (Redundant Array of Independent Disks) modules to combine multiple types of embedded flash for the purposes of data redundancy or capacity aggregation.

Model Name	EMPS-3401	EGPS-3401	EMPU-3201	EMPU-3401
Module Type	mPCIe to four SATA III module	M.2 3042 to four SATA module	mPCIe to dual USB 3.0 module	mPCIe to four USB 3.0 module
Key Features	1. PCIe 2.0 to four SATA III ports 2. Supports AHCI, port multiplier 3. Low power consumption 4. Industrial temperature -40 °C to 85 °C	1. PCIe 2.0 to four SATAIII ports 2. Supports AHCI, port multiplier 3. Low power consumption	1. Compliant with PCI Express Base Specification Revision 2.0 2. Compliant with Universal Serial Bus 3.0 Specification Revision 1.0 3. Supports 2 downstream USB 3.0 ports 4. Complies with EN61000-4-2 (ESD) Air-15kV, Contact-8kV 5. 30µ" golden finger, 3 year warranty	1. PCIe 2.0 to 4 x USB ports with SuperSpeed (5Gbps) data rate 2. Independent 1.5A overcurrent protection (OCP) for each port 3. Compliant with xHCI 1.0, USB 3.0 Rev 1.0 4. Supports USB Battery Charging Specification Revision 1.2 5. Industrial temperature -40 °C to 85 °C
Form Factor	mPCIe	M.2 3042	mPCIe	mPCIe
Input I/F	PCI Express 2.0	PCI Express 2.0 x 1	PCI Express 2.0	PCI Express 2.0
Input Connector	mPCIe	M.2 B-M	mPCIe	mPCIe
Output I/F	SATA III	SATA III	USB 3.0	USB 3.0
Output Connector	SATA 7-pin x 4	SATA 7-pin x 4	19-pin box header x 1	19-pin box header x 2
Dimension (WxLxH/mm)	30.0 x 50.9 x 10.9	30 x 42 x 10.4	30.0 x 50.9 x 8.45	30.0 x 50.9 x 8.45
Operating Temperature	Wide temp: -40°~85°C	STD temp : 0°~70°C	STD temp : 0°~70°C Wide temp : -40°~85°C	STD temp : 0°~70°C Wide temp : -40°~85°C
Order Infomation	EMPS-3401-W1	EGPS-3401-C1	EMPU-3201-C1 EMPU-3201-W1	EMPU-3401-C1 EMPU-3401-W1

Model Name	EMPS-32R1	E2SS-32R1	E2SS-32R2
Module Type	mPCIe to dual SATA III RAID module	2.5" SSD to dual mSATA RAID module	2.5" SSD to dual M.2 RAID module
Key Features	1. PCIe to dual SATA III ports 2. Supports AHCI, Port-Multiplier 3. Supports Hardware RAID 0, RAID1	1. 2.5" SSD to dual mSATA slots 2. Supports SATA III to SATA III port multiplier 3. Supports H/W RAID 0/1 over SATA 4. Excellent data transfer speed	1. 2.5" SSD to dual M.2 slots. 2. Supports M.2 Key-B 2242/2260/2280 3. Supports SATA III to SATA III port multiplier 4. Supports H/W RAID 0/1 over SATA 5. Excellent data transfer speed
Form Factor	mPCIe	2.5" SSD	2.5" SSD
Input I/F	PCI Express 2.0	SATA III	SATA III
Input Connector	mPCIe	SATA 7 + 15-pin	SATA 7 + 15-pin
Output I/F	SATA III	SATA III	SATA III
Output Connector	SATA 7-pin x 2	mSATA x 2	M.2 Key-B x 2
Dimension (WxLxH/mm)	30.0 x 50.9 x 10.7	69.85 x 100.1 x 11.0	69.85 x 100.1 x 11.0
Operating Temperature	STD temp: 0°~70°C	STD temp : 0°~70°C	STD temp : 0°~70°C
Order Infomation	EMPS-32R1-C1	E2SS-32R1-C1	E2SS-32R2-C1

Display Card

Innodisk's embedded display card features a 2D graphics engine and supports resolutions up to 1920 x 1080. With a fanless design, our mPCIe display cards can operate at temperatures ranging from -40°C to 85°C. With support for both Windows and Linux drivers, Innodisk's display cards are suitable for a wide variety of industrial platforms.

Model Name	EMPV-1201	EMPV-1202	EGPV-1101
Module Type	mPCIe to dual VGA & HDMI (DVI) module	mPCIe to VGA & 18/24 bit LVDS module	M.2 to to HDMI or DVI & single/dual-channel LVDS module
Key Features	1. mPCIe to dual VGA & HDMI graphics card 2. VGA output: 1920x1080, up to 75Hz vertical rate. 3. HDMI/DVI up to 1080p, ultra low power consumption. 4. Optional VGA/HDMI/DVI cable 5. 90°, 180°, and 270° rotation of on-screen images	1. VGA output up to 1920x1080, up to 75Hz vertical rate 2. LVDS resolution supports up to 1600 x 1200 3. EMPV-1202-C1 supports 18/24 bit JEIDA LVDS 4. EMPV-1202-C2 supports 24 bit VESA LVDS 5. Allow for 90°, 180°, and 270° rotation of on-screen images.	1. Supports display output of HDMI 1.4 or DVI-D, single/dual 24bit LVDS channel 2. Single HDMI/DVI-D display resolution up to 4K UHD (3840x2160@30p) 3. Dual LVDS display resolution up to FHD (1920x1080@60p) 4. H/W video decoder supports multiple formats, i.e., H264\AVC\DIVX\XVID\MPEG-4\MPEG-2 5. Built-in 256MB DDR3 memory 6. Industrial temperature -40 °C to 85 °C
Form Factor	mPCIe	mPCIe	M.2 2280
Input I/F	PCI Express 1.0	PCI Express 1.0	PCI Express 2.0 x 2
Input Connector	mPCIe	mPCIe	M.2 B-M
Output I/F	VGA x 2, HDMI x 1 (optional DVI x 1)	VGA, 18/24 bit LVDS	HDMI or DVI-D x 1 , single & dual LVDS
Output Connector	40-pin 1.25mm x 2 (40DP-1.25)	40-pin 1.25mm x 1(40DP-1.25)	20-pin x 1(HDMI), 20-pin x 2 (LVDS)
Dimensions (WxLxH/mm)	31.5 x 50.9 x 8.2	30.0 x 50.9 x 8.2	30.0 x 50.9 x 8.2
Operating Temperature	STD temp: 0°~70°C	STD temp: 0°~70°C	STD temp : 0°~70°C Wide temp : -40°~85°C
Order Infomation	EMPV-1201-C1	EMPV-1202-C1 EMPV-1202-C2	EGPV-1101-C1(HDMI/DVI-D) EGPV-1101-W1(HDMI/DVI-D) EGPV-1101-C2(Single/Dual LVDS) EGPV-1101-W2(Single/Dual LVDS) EGPV-1101-C3(HDMI/DVI-D, with HDMI Cable) EGPV-1101-W3(HDMI/DVI-D, with HDMI Cable) EGPV-1101-C4(HDMI/DVI-D, with DVI Cable) EGPV-1101-W4(HDMI/DVI-D, with DVI Cable)

Testing Tool

Innodisk provides flash storage with different interfaces and form factors. In order to help customers, we also design signal converters for testing purposes. With these tools, you can test different types of embedded flash modules with one card.

Model Name	ELPP-0101	ELPP-0102	EMXX-0101	EMXX-0102
Module Type	PCIe x 1 to mPCIe module	PCIe to M.2 module	mPCIe to M.2 A-E key module	mPCIe to M.2 B key module
Key Features	1. PCI-Express specification Rev. 2.0 compliant 2. PCIe x1 to mPCIe passthrough design	1. PCI-Express specification Rev. 3.0 compliant 2. PCIe x4 to M.2 passthrough design 3. Supports M.2 Key-M 2221/2230/2242/2260/2280/22110 4. Low profile PCI Express form factor 5. Industrial temperature -40 °C to 85 °C	1. PCIe and USB signal passthrough design 2. Supports M.2 A-E key wireless module such as 3G, 4G, WLAN, WWAN, Bluetooth 3. Supports M.2 2230/2242 form factors 4. Supports M.2 PCIe Lane #0 & Lane 1 by pin header setting 5. Industrial temperature -40 °C to 85 °C	1. Support M.2 2230/2242 B key form factor 2. Compliant with PCI Express Base Specification 3. Compliant with Universal Serial Bus 2.0 Specification 4. Compliant with SATA III Specification 5. Industrial temperature -40 °C to 85 °C
Form Factor	Low-profile PCIe	Low-profile PCIe	mPCIe	mPCIe
Input I/F	PCI Express 2.0	PCI Express 3.0 x 4	PCI Express , USB 2.0	PCI Express, USB 2.0, SATA
Input Connector	PCIe x 1	PCIe x 4	mPCIe	mPCIe
Output I/F	PCI Express 2.0	PCI Express 3.0	PCI Express , USB 2.0	PCI Express , USB 2.0, SATA
Output Connector	mPCIe x 1	M.2 Key-M	M.2 Key-A-E	M.2 Key B
Dimensions (WxLxH/mm)	72.1 x 68.9 x 10.2	143.3 x 68.9 x 5.65	30 x 54.4 x 8.15	30 x 54.4 x 6.4
Operating Temperature	STD temp : 0°~70°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C	Wide temp : -40°~85°C
Order Information	ELPP-0101-C2	ELPP-0102-W1	EMXX-0101-W1 (M.2 Key-A)	EMXX-0102-W1

Our Vision

Absolute Integration™

Absolute Integration™ is our envisioned path that moves toward a more interconnected world.

"To us, integration is not merely the combination of hardware, software and firmware; it is a philosophy that assimilates all relevant elements to create an optimal solution."

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