Western Digital.

A Global Leader in Flash Storage Solutions

Industrial and IoT Family Brochure

Driving IoT and Industrial Innovation

The convergence of ubiquitous connectivity and compute capability is driving an exponential growth in connected devices and connected sensors, generating incredible volumes of data and enabling vast new types of transformative applications and business models. In addition to capturing this data locally as primary or backup storage, edge storage devices, such as Western Digital embedded storage and industrial cards, will maximize network efficiency and enable systems to analyze the data and act on the results in real-time.

Meeting Industrial and IoT Endurance and Reliability Requirements

Leveraging close to 30 years of expertise in NAND flash memory and storage systems, Western Digital Industrial Grade products deliver edge storage solutions for industrial and IoT applications requiring durability, high reliability, and high intensity recording across a wide range of operational requirements. Designed and tested to withstand the most demanding conditions, and featuring an advanced memory management firmware, which includes power immunity, auto/manual read refresh, Error-correcting code (ECC), and wear leveling, data (write)-intensive applications can rely on Western Digital Industrial products to capture every critical moment, log each event, and to ensure quality of service to end-users. These high endurance solutions offer extended product life cycles which can reduce total cost of ownership (TCO) per system by eliminating costly redesigns and minimizing unnecessary maintenance calls.

Serving Industrial and IoT Applications

- Surveillance
- Networking
- Industrial PC
- Transportation
- Digital Signage
- SoM and SBC
- Factory Automation
- Medical and Agriculture
- POS and Ultra-thin Devices

Western Digital®

- Decades of innovation in the flash memory industry
- Full portfolio of NAND flash products for industrial and IoT applications
- Expertise in system-level architecture
- World-class fabs
- Full vertical integration of controller, firmware, assembly, and test capabilities
- Partnership with leading chipset vendors
- Lower system TCO
- Faster time to market with quick system integration
- Real-time analytics at the edge
- System performance optimization
- Reduction in network traffic
- Timely preventive maintenance features

IoT

Industrial

e.MMC Embedded Flash Drive
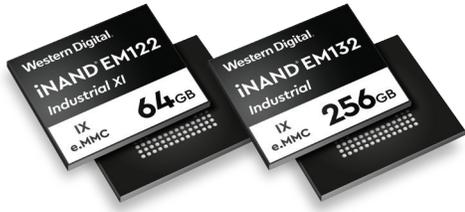
iNAND IX EM122 and EM132 are based on e.MMC 5.1 standards and are available with 2D and 3D NAND technology. The EM122 is already qualified and in production for industrial designs. The EM132 is the first 256GB and 3D NAND-based e.MMC in the Industrial and IoT market.

Features and Benefits

- Auto and manual refresh, enhanced health status, smart partitioning
- e.MMC 5.1 interface
- 8GB to 256GB in small form factor
- Wide temperature range: −25°C to 85°C (I) and −40°C to 85°C(XI)

UFS Embedded Flash Drive

iNAND® IX EU312, the world's first industrial grades 2/3 UFS version 2.1 based on 3D NAND technology, delivers higher capacities and up to 2.5 times the performance of previous e.MMC-based products.

Features and Benefits

- 16GB to 256GB in small form factor
- Fast boot, auto refresh, manual refresh, enhanced health status
- UFS 2.1 interface for high data speeds
- Wide temperature range: −25°C to 85°C (I) and −40°C to 85°C(XI)

SD Cards

Industrial SD Card IX LD332 and LD342 are ideal for Industrial and IoT applications that require a removable storage media like drones, drive recorder, digital signage, aviation, body and dash cams.

Features and Benefits

- 8GB – 512GB
- High Endurance (3K P/E Cycle)
- Longevity
- BOM Locked
- Wide temperature range: −25°C to 85°C (I) and −40°C to 85°C(XI)

microSD Cards
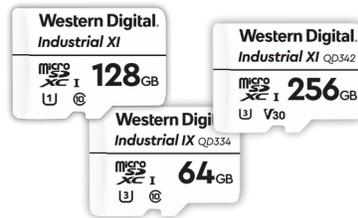
Industrial microSD Card IX QD332, QD334 and QD342 offer industrial-grade extended temperature to support customers that not only want a removable solution but also a small form factor with extreme endurance. SLC, MLC, and TLC solutions are available.

Features and Benefits

- Auto/manual refresh, health status, host lock
- 8GB to 256GB
- Extreme Endurance (Up to 30K P/E Cycle)
- Longevity
- BOM Locked
- Wide temperature range: −25°C to 85°C (I) and −40°C to 85°C(XI)

PCIe SSD

Western Digital CL SN720 and CL SN520 NVMe SSDs are designed to Capture and analyze all of the massive amounts of data from sensors and videos from POS, smart meters, surveillance, factory automation, which takes terabytes a day.

Features and Benefits

- PCIe Gen3×4 and PCIe Gen3×2 NVMe
- M.2 2280 and M.2 2242 form factors
- High capacities up to 2TB
- Up to 1600 TBW endurance
- SED TCG OPAL 2.01 (in CL SN720)
- Temperature range: 0°C to 85°C

SATA SSD

Western Digital PC SA530 and SanDisk X600 SATA SSDs deliver leading-edge performance, high capacity, and enhanced endurance. In capacities of up to 1TB, the PC SA530 3D NAND SATA SSD is optimized for the demanding power management requirements of ultra-thin and small form factor products.

Features and Benefits

- X600 – 128GB to 2TB
- PC SA530 – 256GB to 1TB
- 2.5" and M.2 2280 form factors
- Sequential R/W up to 560/530 MB/s
- Random R/W up to 95K/84K IOPS

Industrial Embedded Flash Drives

	iNAND® IX EM132	iNAND® IX EM122	iNAND® IX EU312
Interface	e.MMC 5.1	e.MMC 5.1	UFS 2.1
Capacity[1]	16GB–256GB[1]	8GB–64GB[1]	16GB–256GB[1]
Operating Temperature	−25°C - 85°C (I) −40°C-85°C (XI) 32GB - 256GB	−25°C - 85°C (I) −40°C - 85°C (XI)	−25°C - 85°C (I) −40°C - 85°C (XI)
NAND Flash Technology	3D TLC	2D MLC	3D TLC
Ordering Information	SDINBDA6-XXXG-I/XI	SDINBDG4-XXXG-I/XI	SDINDDH6-XXXG-I/XI

Industrial SD Cards

	Industrial IX LD342	Industrial IX LD332
Interface	SDA 6.0	UHS-1 104
Capacity[1]	16GB to 512GB	8GB to 64GB
Operating Temperature	−25°C - 85°C	−25°C - 85°C (I) −40°C - 85°C (XI)
NAND flash technology	3D TLC	2D MLC
Speed Class	C10, U1, U3, V10, V30	C10
Performance R/W[2]	Up to 100/50 MB/s	Up to 80/50 MB/s
Ordering Information	SDSDAF4-XXXG-I	SDSDAF3-XXXG-I/XI

Industrial microSD Cards

	Industrial IX QD342	Industrial IX QD332	Industrial IX QD334
Interface	SDA 6.0	UHS-1 104	UHS-1 104
Capacity[1]	16GB to 256GB	8GB to 128GB	8GB to 64GB
Operating Temperature	−25°C - 85°C	−25°C - 85°C (I) −40°C - 85°C (XI)	−40°C - 85°C (XI)
NAND flash technology	3D TLC	2D MLC	2D SLC
Speed Class	C10, U1, U3, V10, V30	C10, U1	C10, U3
Performance R/W[2]	Up to 100/50 MB/s	Up to 80/50 MB/s	Up to 90/50 MB/s
Ordering Information	SDSDQAF4-XXXG-I	SDSDQAF3-XXXG-I/XI	SDSDQED-XXXG-XI

Solid State Drives (PCIe/NVMe)

	Commercial CL SN720	Commercial CL SN520	Commercial CL SN520
Interface	PCIe Gen3×4 NVMe 1.3	PCIe Gen3×2 NVMe 1.3	PCIe Gen3×2 NVMe 1.3
Form factor	M.2 2280	M.2 2242	M.2 2280
Capacity[1]	256GB to 2TB	128GB to 512TB	128GB to 512TB
Operating Temperature	0°C - 85°C	0°C - 85°C	0°C - 85°C
NAND flash technology	3D TLC	3D TLC	3D TLC
Performance R/W[2]	Up to 3,470/3,000 MB/s	Up to 1,700/1,450 MB/s	Up to 1,700/1,450 MB/s
Endurance[3]	Up to 1600 TBW	Up to 400 TBW	Up to 400 TBW
Ordering Information			
128GB		SDAPMUW-128G-1022	SDAPNUW-128G-1022
256GB	SDAQNTW-256G-1022	SDAPMUW-256G-1022	SDAPNUW-256G-1022
512GB	SDAQNTW-512G-1022	SDAPMUW-512G-1022	SDAPNUW-512G-1022
1TB	SDAQNTW-1T00-1022		
2TB	SDAQNTX-2T00–1022		

SATA Drives for Industrial and IoT Applications

	Commercial X600	Commercial PC SA530
Interface	SATA III (Rev 3.2)	SATA III (Rev 3.2)
Form factor	2.5"/7 mm and M.2 2280	2.5"/7 mm and M.2 2280
Capacity[1]	128GB to 2TB	256GB to 1TB
Operating Temperature	0°C – 85°C	0°C – 70°C
NAND flash technology	3D TLC	3D TLC
Performance R/W[2]	Up to 560/530 MB/s	Up to 560/530 MB/s
Endurance[3]	Up to 500 TBW	Up to 400 TBW
2.5"/7 mm non-SED	SD9SB8WXXXG/1T00(1TB)/2T00 (2TB)	SDASB8Y-XXXG/1T00 (1TB)
2.5"/7 mm SED	SD9TB8WXXXG/1T00(1TB)/2T00 (2TB)	SDATB8Y-XXXG/1T00 (1TB)
M.2 2280 non-SED	SD9SN8WXXXG/1T00(1TB)/2T00(2TB)	SDASN8Y-XXXG/1T00(1TB)
M.2 2280 SED	SD9TN8WXXXG/1T00(1TB)/2T00(2TB)	SDATN8Y-XXXG/1T00(1TB)

[1] 1 gigabyte (GB) = 1 billion bytes. Actual user capacity less.
[2] Based on internal testing; performance may be lower depending on host device, usage and other factors. 1MB=1,000,000 bytes.
[3] TBW (terabytes written) values calculated using JEDEC client workload (JESD219) and vary by product capacity.

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