



panram®

provides customized design
OEM and ODM service
strong R&D technology
solid manufacturing capabilities.

panram®

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About Panram

Founded in 1994, Panram International Corporation. Provides customized design, OEM and ODM services to meet customers' needs with its strong R&D technology and solid manufacturing capabilities.

In terms of production facilities, we currently have 19 SMT lines and self-developed automatic assembly and testing equipment, and have built an intelligent manufacturing system. In addition to the design and manufacture of memory modules and flash memory related products, Panram has expanded its electronic manufacturing services to include mechanical keyboards, display cards, medical and aesthetic electronics, industrial control memory modules, touch control panels and card readers.

In terms of manufacturing processes and capabilities, Panram provides hardware design, mold development, DIP, SMT, IC testing and sorting, laser soldering, spot soldering, laser engraving, and global transportation services.



Our Strengths

Panram's embedded storage solution include SSD, DRAM module, memory card, USB flash drives, and more, all designed to deliver advanced memory and storage technology

In addition to the design and manufacturing of memory modules and flash memory-related products, , and has expanded to electronic manufacturing services for many products such as mechanical keyboards, graphics cards, medical and aesthetic electronic products, industrial control memory modules, touch control panels, and card readers.

Professional Technique

with a variety of memory solutions
Branded chips to ensure the highest quality

Reliable Service

technical support and failure analysis reports
Fixed BOM management



Conformal Coating

Conformal Coating technology increases protection for embedded flash modules and DRAM, the thickness of the coating ranges between 25um and 300um. It can be used to enhance the moisture, dust, anti-fouling, anti-chemical pollution, insulation, etc



Quality Assurance

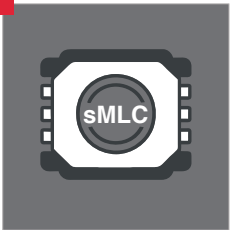
Rigorous reliability and environmental testing
Stringent quality control: IQC, IPaQC, FQC, OQC

Extensive Experience

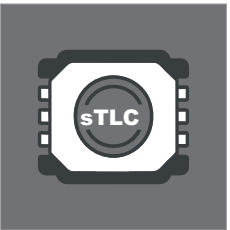
Extensive product development experience



Solution & Technologies



sMLC-super MLC, single bit per cell MLC support
Enhance the performance and product endurance



sTLC-super 3D TLC, single bit per cell 3D TLC support
Enhance the performance and product endurance



Write Protect
Support hardware switch
Support software GPIO control



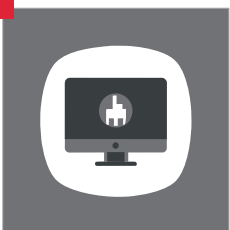
Wide Temperature
All the components are designed and tested under -40~85°C



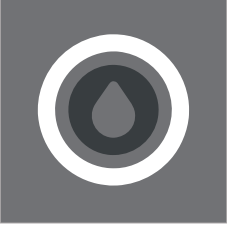
S.M.A.R.T.
Self-Monitoring and Analysis Reporting Technology
Support Customized Windows AP
Show the health of the devices



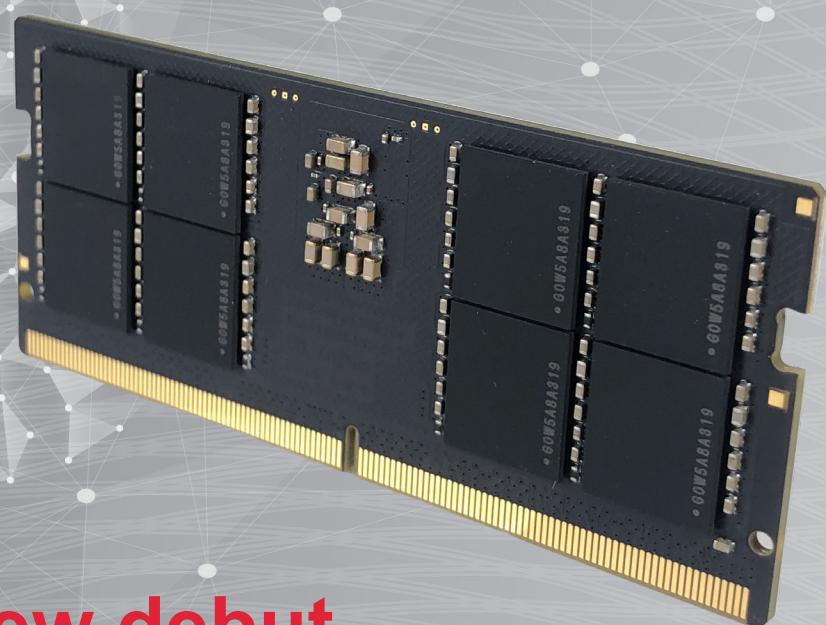
AES-Advanced Encryption Standard
An advanced standard method for data encryption/decryption used to secure customer data



Drive Partition
The device can be set ad multiple partitions
Independent password for each partition



Water Proof and Dust Proof
Passed the IEC/EN 60529 standardcustomer data



DDR5 New debut, great leap forward in performance.

PANRAM DDR5 provides next-level speed, capacity, reliability, and power savings optimal for exponential data growth. DDR5 will offer up to 2x the effective bandwidth, helping relieve this bandwidth per core crunch. This memory innovation opens new possibilities for industry advancement and better life experiences.

DDR5

Features of DDR5 SDRAM

1. Higher speed, lower voltage
2. Higher memory density
3. Updated power supply and channel architecture
4. Higher frequency and refresh
5. Major-Grade DRAM Components
6. JEDEC Compliant



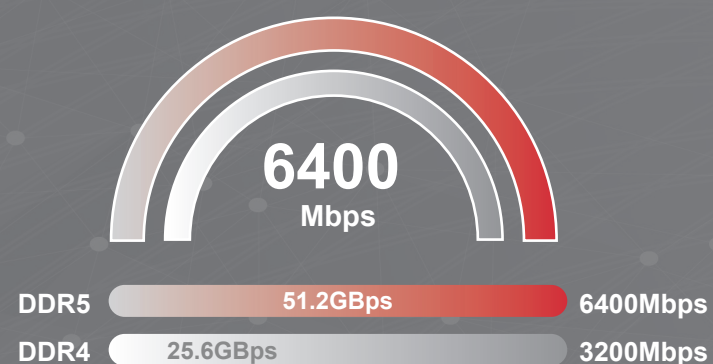
Module Type	Long-DIMM	SO-DIMM
Speed	5600 / 4800	
Capacity	8GB / 16GB / 32GB	
Voltage	DIMM power in 5V / DRAM IC VDD = 1.1V	
PCB Height	1.23 inches	1.18 inches
Operating Temperature	0°C~95°C / -40°C~95°C	

DDR5 Unbuffered DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C~95°C)	8GB	(1Gx16)x4	1Rx16	●	
	16GB	(2Gx8)x8	1Rx8	●	●
	32GB	(2Gx8)x16	2Rx8	●	●
Wide Temp. (-40°C~95°C)	8GB	(1Gx16)x4	1Rx16	●	
	16GB	(2Gx8)x8	1Rx8	●	●
	32GB	(2Gx8)x16	2Rx8	●	●

DDR5 ECC DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C~95°C)	16GB	(2Gx8)x10	1Rx8	●	●
	32GB	(2Gx8)x20	2Rx8	●	●
Wide Temp. (-40°C~95°C)	16GB	(2Gx8)x10	1Rx8	●	●
	32GB	(2Gx8)x20	2Rx8	●	●

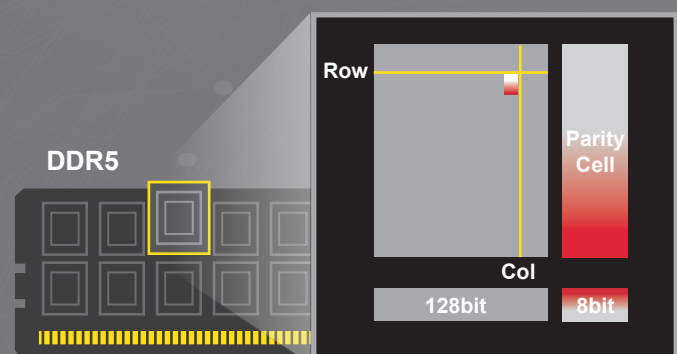


Increased bandwidth and faster transmission.

Transfer data 1.5x faster at a 38% higher bandwidth than DDR4

Integrate functions and increase stability.

Reliability Improvement with On-die ECC





Module Type	Long-DIMM	SO-DIMM
Speed	3200 / 2933 / 2666 / 2400	
Capacity	2GB / 4GB / 8GB / 16GB / 32GB	
Voltage	1.2V	
PCB Height	Standard: 1.25 inches Very Low Profile: 0.74 inches	1.18 inches
Operating Temperature	0°C~95°C / -40°C~95°C	

DDR4 Unbuffered DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C~95°C)	2GB	(256Mx16)x4	1Rx16	●	
	4GB	(512Mx8)x8	1Rx8	●	●
	8GB	(1Gx8)x8	1Rx8	●	●
	16GB	(2Gx8)x8	1Rx8	●	●
		(1Gx8)x16	2Rx8	●	●
	32GB	(2Gx8)x8	2Rx8	●	●
Wide Temp. (-40°C~95°C)	4GB	(512Mx8)x8	1Rx8	●	●
	8GB	(1Gx8)x8	1Rx8	●	●
	16GB	(2Gx8)x8	1Rx8	●	●
		(1Gx8)x16	2Rx8	●	●

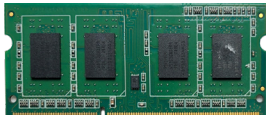
DDR4 ECC DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C~95°C)	4GB	(512Mx8)x9	1Rx8	●	●
	8GB	(1Gx8)x9	1Rx8	●	●
	16GB	(2Gx8)x9	1Rx8	●	●
		(1Gx8)x18	2Rx8	●	●
	32GB	(2Gx8)x18	2Rx8	●	●
Wide Temp. (-40°C~95°C)	4GB	(512Mx8)x9	1Rx8	●	●
	8GB	(1Gx8)x9	1Rx8	●	●
	16GB	(2Gx8)x9	1Rx8	●	●
		(1Gx8)x18	2Rx8	●	●
	32GB	(2Gx8)x18	2Rx8	●	●
Very Low Profile (0 C ~ 95 C)	4GB	(512Mx8)x9	1Rx8	●	
	8GB	(1Gx8)x9	1Rx8	●	
	16GB	(1Gx8)x18	2Rx8	●	

DDR4 Registered DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C~95°C)	4GB	(512Mx8)x9	1Rx8	●	
	8GB	(1Gx8)x9	1Rx8	●	
	16GB	(1Gx8)x18	2Rx8	●	
	32GB	(2Gx8)x18	2Rx8	●	
	64GB	(2Gx8)x36	2Rx8	●	
Wide Temp. (-40°C~95°C)	4GB	(512Mx8)x9	1Rx8	●	
	8GB	(1Gx8)x9	1Rx8	●	
	16GB	(1Gx8)x18	2Rx8	●	
Very Low Profile (0 C ~ 95 C)	8GB	(1Gx8)x9	1Rx8	●	
	16GB	(1Gx8)x18	2Rx8	●	

DDR3



Module Type	Long-DIMM	SO-DIMM
Speed	1333 / 1600 / 1866	
Capacity	1GB / 2GB / 4GB / 8GB	
Voltage	1.5V / 1.35V	
PCB Height	Standard: 1.18 inches Very Low Profile: 0.74 inches	1.18 inches
Operating Temperature	0°C~95°C / -40°C~95°C	

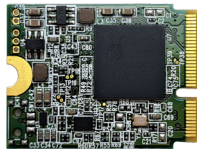
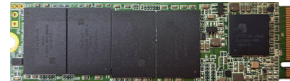
DDR3 Unbuffered DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C~95°C)	2GB	(256Mx8)x8	1Rx8	●	●
	4GB	(512Mx8)x8	1Rx8	●	●
	8GB	(512Mx8)x8	2Rx8	●	●
Wide Temp. (-40°C~95°C)	2GB	(256Mx8)x8	1Rx8	●	●
	4GB	(512Mx8)x8	1Rx8	●	●
	8GB	(512Mx8)x8	2Rx8	●	●

DDR3 ECC DIMM

	Capacity	Component Composition	Rank x Org.	Long-DIMM	SO-DIMM
Standard Temp. (0°C~95°C)	2GB	(256Mx8)x8	1Rx8	●	●
	4GB	(512Mx8)x8	1Rx8	●	●
	8GB	(512Mx8)x8	2Rx8	●	●
Wide Temp. (-40°C~95°C)	2GB	(256Mx8)x8	1Rx8	●	●
	4GB	(512Mx8)x8	1Rx8	●	●
	8GB	(512Mx8)x8	2Rx8	●	●

NVMe (PCIe) TLC/ sTLC SSD

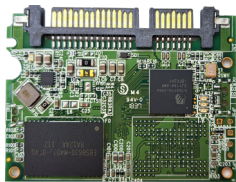


Module Type	M.2-2280 M-Key (Single-sided)		M.2-2242 M-Key (Double-sided)		M.2-2230 E-Key (Double-sided)	
Bus Interface	NVMe PCIe Gen3x4		NVMe PCIe Gen3x4		NVMe PCIe Gen3x1	
Flash Type	3D TLC	sTLC (3D TLC)	3D TLC	sTLC (3D TLC)	3D TLC	sTLC (3D TLC)
Capacity	60GB-1920GB	16GB-512GB	60GB-960GB	16GB-256GB	60GB-480GB	16GB-128GB
P/E Cycle	3K	30K	3K	30K	3K	30K
Seq. R/W*	2400/1600 MB/s		2400/1600 MB/s		800/600 MB/s	
Dimension	80 x 22 mm		42 x 22 mm		30 x 22 mm	
Flash Type	Western Digital BiCS4/BiCS4.5/BiCS5					
Op Temp.	C.Temp (0°C ~ 70°C) / W.Temp (-40°C~ 85°C)					

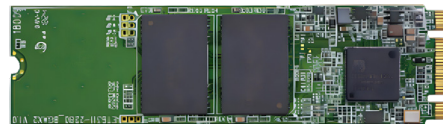
SATAIII SSD



Module Type	2.5" SSD				
Bus Interface	SATA III 6Gb/s, 7+15 pin SATA connector				
Flash Type	SLC	MLC	sMLC	3D TLC	sTLC (3D TLC)
Capacity	4GB~128GB	16GB~512GB	8GB~256GB	30GB~960GB	8GB~256GB
P/E Cycle	30K	3K	30K	3K	30K
Seq. R/W*	250/200 MB/s	500/400 MB/s		500/400 MB/s	
Flash Type	KIOXIA 24nm	Western Digita 1znm		Western Digital BiCS4/BiCS4.5/ BiCS5	
Dimension	100 x 69.85 x 6.8 mm				
Op Temp.	C.Temp (0°C~ 70°C) / W.Temp (-40°C~ 85°C)				



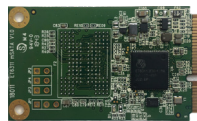
Module Type	Half-Slim (MO-297)				
Bus Interface	SATA III 6Gb/s, 7+15 pin SATA connector				
Flash Type	SLC	MLC	sMLC	3D TLC	sTLC (3D TLC)
Capacity	4GB~128GB	16GB~512GB	8GB~256GB	30GB~960GB	8GB~256GB
P/E Cycle	30K	3K	30K	3K	30K
Seq. R/W*	250/200 MB/s	500/400 MB/s		500/400 MB/s	
Flash Type	KIOXIA 24nm	Western Digita 1znm		Western Digital BiCS4/BiCS4.5/ BiCS5	
Dimension	39 x 54 x 4 mm				
Op Temp.	C.Temp (0°C~ 70°C) / W.Temp (-40°C~ 85°C)				



Module Type	M.2-2280-S2-B-M (Single-sided)				
Bus Interface	SATA III 6Gb/s				
Flash Type	SLC	MLC	sMLC	3D TLC	sTLC (3D TLC)
Capacity	4GB~64GB	16GB~256GB	8GB~128GB	30GB~960GB	8GB~256GB
P/E Cycle	30K	3K	30K	3K	30K
Seq. R/W*	250/200 MB/s	500/400 MB/s		500/400 MB/s	
Flash Type	KIOXIA 24nm	Western Digita 1znm		Western Digital BiCS4/BiCS4.5/BiCS5	
Dimension	80 x 22 x 2.2 mm				
Op Temp.	C.Temp (0°C~ 70°C) / W.Temp (-40°C~ 85°C)				



Module Type	M.2-2242-D2-B-M (Double-sided)				
Bus Interface	SATA III 6Gb/s				
Flash Type	SLC	MLC	sMLC	3D TLC	sTLC (3D TLC)
Capacity	4GB~64GB	16GB~256GB	8GB~128GB	30GB~960GB	8GB~256GB
P/E Cycle	30K	3K	30K	3K	30K
Seq. R/W*	250/200 MB/s	500/400 MB/s		500/400 MB/s	
Flash Type	KIOXIA 24nm	Western Digita 1znm		Western Digital BiCS4/BiCS4.5/BiCS5	
Dimension	42 x 22 x 3.6 mm				
Op Temp.	C.Temp (0℃ ~ 70℃) / W.Temp (-40℃ ~ 85℃)				



Module Type	mSATA / MO-300 (Double-sided)				
Bus Interface	SATA III 6Gb/s				
Flash Type	SLC	MLC	sMLC	3D TLC	sTLC (3D TLC)
Capacity	4GB~64GB	16GB~256GB	8GB~128GB	30GB~960GB	8GB~256GB
P/E Cycle	30K	3K	30K	3K	30K
Seq. R/W*	250/200 MB/s	500/400 MB/s		500/400 MB/s	
Flash Type	KIOXIA 24nm	Western Digita 1znm		Western Digital BiCS4/BiCS4.5/BiCS5	
Dimension	51 x 30 x 3.9 mm				
Op Temp.	C.Temp (0°C~ 70°C) / W.Temp (-40°C~ 85°C)				

CF Cards



Module Type	CF Card Type I	
Bus Interface	CF 4.1 / 50-pin CF connector	
Flash Type	SLC	MLC
Capacity	256MB ~ 16GB	8GB ~ 64GB
P/E Cycle	30K	3K
Seq. R/W*	90/70 MB/s	
Flash Type	KIOXIA 24nm	Western Digita 1znm
Dimension	42.8 x 36.4 x 3.3 mm	
Op Temp.	C.Temp (0°C~ 70°C) / W.Temp (-40°C~ 85°C)	



Module Type	CFast 2.0 Type I				
Bus Interface	SATA III 6Gb/s				
Flash Type	SLC	MLC	sMLC	3D TLC	sTLC (3D TLC)
Capacity	4GB~32GB	8GB~128GB	4GB~64GB	60GB~480GB	16GB~128GB
P/E Cycle	30K	3K	30K	3K	30K
Seq. R/W*	500/400 MB/s				
Flash Type	KIOXIA 24nm	Western Digita 1znm		Western Digital BiCS4/BiCS4.5/ BiCS5	
Dimension	42.8 x 36.4 x 3.6 mm				
Op Temp.	C.Temp (0°C~ 70°C) / W.Temp (-40°C~ 85°C)				



Module Type	SDHC				
Bus Interface	SD3.0				
Flash Type	SLC	MLC	sMLC	3D TLC	sTLC (3D TLC)
Capacity	4GB~8GB	8GB~32GB	4GB~32GB	32GB	8GB~32GB
P/E Cycle	30K	3K	30K	3K	30K
Seq. R/W*	90/70 MB/s				
Flash Type	KIOXIA 24nm	Western Digita 1znm		Western Digital BiCS3/BiCS4/ BiCS4.5/BiCS5	
Dimension	(SD: 24.0 x 32.0 x 2.1 mm) / (micro SD: 11.0 x 15.0 x 1.0 mm)				
Op Temp.	C.Temp (0°C~ 70°C) / W.Temp (-40°C~ 85°C)				



Module Type	SDXC				SD
Bus Interface	SD3.0				SD2.0
Flash Type	MLC	sMLC	3D TLC	sTLC (3D TLC)	SLC
Capacity	64GB~256GB	64GB~128GB	64GB~512GB	64GB~256GB	256MB ~ 2GB
P/E Cycle	3K	30K	3K	30K	30K
Seq. R/W*	90/70 MB/s				20/17 MB/s
Flash Type	Western Digita 1znm		Western Digital BiCS3/BiCS4/ BiCS4.5/BiCS5		KIOXIA 24nm
Dimension	(SD: 24.0 x 32.0 x 2.1 mm) / (micro SD: 11.0 x 15.0 x 1.0 mm)				
Op Temp.	C.Temp (0℃ ~ 70℃) / W.Temp (-40℃~ 85℃)				

SD Cards Extra features (options)



sMLC-super MLC, single bit per cell MLC support

- Enhance the performance and product endurance
- sMLC: called "Super MLC", which utilizes 2D MLC NAND in Single bit per cell.
- Performance: same level as 2D SLC NAND.
- P/E cycle time: around 10 times of 2D MLC NAND.
- Density: ½ Capacity of 2D MLC NAND.



sTLC-super 3D TLC, single bit per cell 3D TLC support

- Enhance the performance and product endurance
- sTLC: called "Super TLC", which utilizes 3D TLC NAND in single bit per cell.
- Performance: around the level as SLC
- P/E cycle time: around 10 times of 3D TLC
- Density: Capacity of 3D TLC NAND

Security Feature Card

• Digital ID Key:

Can be used as digital signature to provide the users' identity certification and the accessing authority authentication.

• Security Write Protect:

Prevent the data be erased, modified or overwritten by unauthorized user through Security Key stored in the card itself.

• Security Hidden:

Allow authorized user to access the data through Security Key authentication.

• Security Hidden Read-Only:

Allow authorized user to read the data through Security Key authentication.

SD WORM Card / UFD WORM

- i-TF & i-SD WORM card and UFD WORM support the Write Once, Read Many applications.

- Applications: Fiscal/Tax data, Legal evidences / statements, e-Certificate, Medical records, Important data backup, etc.

- Providing the native data block-chained as the data recorded.



SD Card

Host Systems



Add-on Cards (I/O Products)



Module PN.	EMU1321	EMU1311	EM10021
Module type	MiniPCIe USB3.2 Gen 1 Module	MiniPCIe USB3.2 Gen 1 Module	MiniPCIe 1394 Module
Key Features	USB 3.0 Rev. 1.0 PCI Express Rev. 2.0	USB 3.0 Rev. 1.0 PCI Express Base, Revision 1.1	IEEE-1394/1394A/1394B OHCI PCI Express 1.1
Form Factor	miniPCIe	miniPCIe	miniPCIe
Bus Interface	PCI Express 2.0 x 1	PCI Express 1.1 x 1	PCI Express 1.1 x 1
Connector Type	Type A	Type C	1-port 6 pin, IEEE 1394a Female 2-port 9 pin, IEEE 1394b Female
No. of Ports	2-PORT USB 3.2 GEN 1x1	1-PORT USB 3.2 GEN 1x1	1-port FireWire 400 2-port FireWire 800
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)



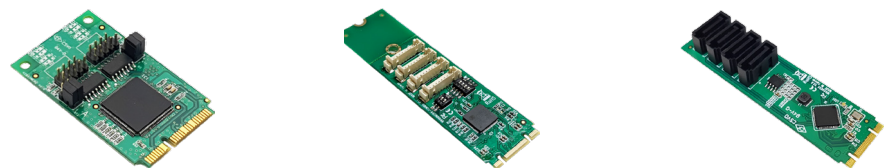
Module PN.	EMS0021	EHS0R21	EML0012
Module type	MiniPCIe SATA III Module	Half MiniPCIe SATA III Module	MiniPCIe Giga LAN Module
Key Features	Serial ATA Rev. 3.0	USB 3.0 Rev. 1.0 PCI Express Base, Revision 1.1	IEEE-1394/1394A/1394B OHCI PCI Express 1.1
Form Factor	miniPCIe	Half miniPCIe	miniPCIe
Bus Interface	PCI Express 2.0 x 1	PCI Express 2.0 x 1	PCI Express 1.1 x 1
Connector Type	SATA 7-pin data Plug	SATA 7-pin data Plug	RJ45 (Gigabit Ethernet)
No. of Ports	2-PORT SATA III	2-PORT SATA III	1-port RJ45
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)



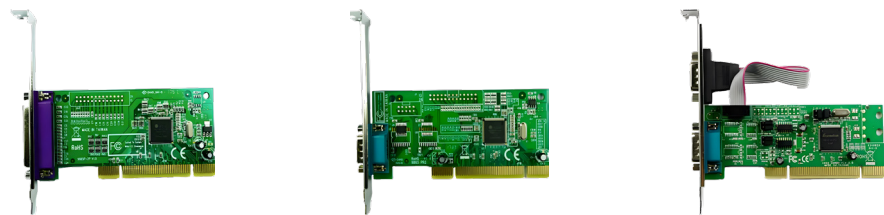
Module PN.	EHL0011	EML0021	EMU0241
Module type	Half MiniPCIe Giga LAN Module	MiniPCIe Giga LAN Module	MiniPCIe USB2.0 Module
Key Features	IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3ab	IEEE 802.3, IEEE 802.3u, IEEE 802.3x, IEEE 802.3ab	USB 2.0 PCI Express Rev. 1.1
Form Factor	Half miniPCIe	miniPCIe	miniPCIe
Bus Interface	PCI Express 1.1 x 1	PCI Express 1.1 x 1	PCI Express 1.1 x 1
Connector Type	RJ45 (Gigabit Ethernet)	RJ45 (Gigabit Ethernet)	Type A
No. of Ports	1-port RJ45	2-port RJ45	2-PORT USB 2.0
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)



Module PN.	EMP0011	EM20041	EM30011
Module type	MiniPCIe PARALLEL Module	MiniPCIe RS232 Module	MiniPCIe RS232/PARALLEL Module
Key Features	Parallel IEEE 1284-compliant SPP/EPP/ECP	Serial Port Interface Quad RS-232 UARTs	Parallel IEEE 1284-compliant SPP/EPP/ECP Serial Port Interface RS-232 UARTs
Form Factor	Half miniPCIe	miniPCIe	miniPCIe
Bus Interface	PCI Express 1.1 x 1	PCI Express 1.1 x 1	PCI Express 1.1 x 1
Connector Type	DB-25 (25 pin, D-Sub) Female	DB-9 (9 pin, D-Sub) Male	DB-25 (25 pin, D-Sub) Female DB-9 (9 pin, D-Sub) Male
No. of Ports	1-port DB-25	4-port DB-9	1-port DB-25 1-port DB-9
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)



Module PN.	EM40021	EG2G041	EGS0041
Module type	MiniPCIe RS232/RS485 Module	M.2-2280 RS232 Module	M.2-2280 SATA III Module
Key Features	Serial Port Interface RS-232 / RS-485 UARTs	Serial Port Interface Quad RS-232 UARTs	Serial ATA Rev. 3.0 PCI Express Rev. 2.0
Form Factor	miniPCIe	M.2-2280	M.2-2280
Bus Interface	PCI Express 1.1 x 1	PCI Express 2.0 x 1	PCI Express 2.0 x 1
Connector Type	DB-9 (9 pin, D-Sub) Male	DB-9 (9 pin, D-Sub) Male	SATA 7-pin data Plug
No. of Ports	2-port DB-9	4-port DB-9	4-PORT SATA III
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)



Module PN.	EIP0011	EI20011	EI20021
Module type	PCI PARALLEL Card	PCI RS232 Card	PCI RS232 Card
Key Features	Parallel EPP,ECP,SPP and BPP	Serial Port Interface RS-232 UARTs	Serial Port Interface RS-232 UARTs
Form Factor	PCI add-on card	PCI add-on card	PCI add-on card
Bus Interface	PCI / PCI-X	PCI / PCI-X	PCI / PCI-X
Connector Type	DB-25 (25 pin, D-Sub) Femal	DB-9 (9 pin, D-Sub) Male	DB-9 (9 pin, D-Sub) Male
No. of Ports	1-port DB-25	1-port DB-9	2-port DB-9
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)



Module PN.	EE40021	EEP0011	EES0R21
Module type	PCIe RS232/RS485 Card	PCIe PARALLEL Card	PCIe SATA III Card
Key Features	Serial Port Interface RS-232 / RS-485 UARTs	Parallel EPP,ECP,SPP and BPP	Serial ATA Rev. 3.0 PCI Express Rev. 2.0
Form Factor	PCIe add-on card	PCIe add-on card	PCIe add-on card
Bus Interface	PCI Express 2.0 x 1	PCI Express 3.0 x 1	PCI Express 4.0 x 4
Connector Type	SATA 7-pin data Plug	Type A	M.2 NGFF M Key
No. of Ports	4-PORT SATA III	2-PORT USB 3.1	1-PORT
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	-40°C to 80°C (-40°F to 176°F)



Module PN.	EES0R41	EEU0021	EEG0013
Module type	PCIe SATA III Card	PCIe USB3.1 Card	PCIe M.2 NVMe SSD Adapter Card
Key Features	Serial ATA Rev. 3.0 PCI Express Rev. 2.0	USB 3.1 PCI Express Rev. 3.0	PCI Express Rev. 4.0
Form Factor	PCIe add-on card	PCIe add-on card	PCIe add-on card
Bus Interface	PCI Express 2.0 x 1	PCI Express 3.0 x 1	PCI Express 4.0 x 4
Connector Type	SATA 7-pin data Plug	Type A	M.2 NGFF M Key
No. of Ports	4-PORT SATA III	2-PORT USB 3.1	1-PORT
Op Temp.	0°C to 70°C (32°F to 158°F)	0°C to 70°C (32°F to 158°F)	-40°C to 80°C (-40°F to 176°F)