

MVP-5100-MXM Series

*Value Family 9th Gen Intel® Core™ i7/i5/i3® Processor-Based
Embedded GPU/AI Platforms*

Features

- 9th Gen Intel® Core™ i7/i5/i3 LGA processor
- Dual SODIMMs sockets for up to 32GB DDR4
- Abundant I/O:
 - Up to 4x additional DP 1.4 from MXM
 - 2x DP++, DVI, VGA, 3x GbE, 3x COM, TPM2.0
 - 3x USB 3.1 Gen 1, 3x USB 2.0
- Rich storage options: 2x 2.5" SATA, M.2 2280
- Front accessible I/O and adaptive Function Module 2.0 options
- Embedded slots for Mini PCIe, M.2 3042, 2x USIM
- World leading embedded GP/GPU computing options built-in



Software Support

- Windows 10 IoT Enterprise CBB/LTSB 64-bit
- Linux Ubuntu18.04 LTS

Optional Accessories

- **Factory Installed 2.5" SSD/HDD/M.2 Storage**
- **Wireless Mini PCIe/M.2 Module**
Wi-Fi/ BT/ 3G/ 4G LTE/ LoRa wireless kit (w/ antenna)
- **AC/DC Adapter**
220W (P/N: 31-62149-0000)
280W (P/N: 31-62162-1010-A0)

Ordering Information

Model	CPU	Memory
MVP-510A-MXM/M4G/[GPU]	Intel® Core™ i7-9700E	4GB non-ECC DDR4
MVP-5101-MXM/M4G/[GPU]	Intel® Core™ i7-9700TE	4GB non-ECC DDR4
MVP-5102-MXM/M4G/[GPU]	Intel® Core™ i5-9500TE	4GB non-ECC DDR4
MVP-5103-MXM/M4G/[GPU]	Intel® Core™ i3-9100TE	4GB non-ECC DDR4

GPU Options

Model	GPU	Power	CUDA® Cores	Graphics Memory
EGX-MXM-P1000	NVIDIA® Quadro® Embedded P1000	47W	512	GDDR5 4GB
EGX-MXM-P2000	NVIDIA® Quadro® Embedded P2000	58W	768	GDDR5 4GB
EGX-MXM-P3000	NVIDIA® Quadro® Embedded P3000	75W	1280	GDDR5 6GB
EGX-MXM-P5000	NVIDIA® Quadro® Embedded P5000	100W	2048	GDDR5 16GB

Specifications

Model Name	MVP-510A-MXM	MVP-5101-MXM	MVP-5102-MXM	MVP-5103-MXM
System Core				
Processor	Intel® Core™ i7-9700E	Intel® Core™ i7-9700TE	Intel® Core™ i5-9500TE	Intel® Core™ i3-9100TE
TDP	65 W	35 W	35 W	35 W
# of Cores	8	8	6	4
Base Frequency	2.6 GHz	1.8 GHz	2.2 GHz	2.2 GHz
Max Turbo Frequency	4.4 GHz	3.8 GHz	3.6 GHz	3.2 GHz
Chipset	Intel® H310 (Optional: C246)			
Memory	4GB DDR4 non-ECC 2400 MHz, dual SODIMMs, up to 32GB (Optional: 8/16/32GB ECC, only for Intel Core i3 w/ C246)			
I/O Interface				
Graphics	Dual independent displays: 2x DP++ 1.2/ 1x DVI-D/VGA (3 independent ones w/ C246) Extra 4x DP 1.4 powered by MXM P1000/P2000 or 3x DP 1.4 powered by MXM P3000/P5000			
Ethernet	3x Intel® GbE: i219 + 2x i211AT (support Intel AMT/vPro w/ C246)			
Serial Ports	COM1/2: RS-232/422/485, COM3: RS-232			
USB	3x USB 3.1 Gen 1, 3x USB 2.0, 1x internal USB2.0 dongle (2x USB 3.1 up to Gen 2 w/ C246)			
M.2	1x socket 2, key B+M or B, 2280/3042 (USB3.1 + SATA III + PCIe1. Up to PCIe2 w/ C246)			
Mini PCIe	1x Full size (USB 2.0, PCIe)			
USIM	2			
I²C	2 (3.3V/5V)			
TPM	TPM 2.0			
Storage Device				
2.5" SATA	2x internal (support RAID 0/1 w/ C246)			
Mechanical				
Dimensions	125 (W) x 240 (D) x 210 (H) mm (4.92" x 9.45" x 8.27")			
Cooling	Fanless passive cooling			
Weight	6.5 kg (14.4 lbs)			
Mounting	Wall mount			
Power Supply				
DC Input	12 to 24V			
AC Input	Optional 220W or 280W AC/DC adapter			
Environmental				
Operating* Temperature	Standard: w/ air flow 0.6 m/s			
	0°C to 45°C	0°C to 50°C		
	Extended: w/ air flow 0.6 m/s & Ind. storage			
	-20°C to 45°C	-20°C to 60°C		
Storage Temperature	-40°C to 85°C (-40°F to 185°F) (excl. storage)			
Humidity	~95% @ 40°C (non-condensing)			
Vibration	Operating: 3 Grms, random, 5-500 Hz, 3 axes (w/ 2.5" SSD/CFast))			
Shock	Operating: 50 G, half sine 11ms duration (w/ 2.5" SSD)			
ESD	Contact 4kV, Air 8kV			
EMC	EN61000-6-4/-2, CE, FCC Class A			
Safety	UL/cUL, CB			

*: MXM module's performance depends on ambient temperature, software and devices

MVP-6100-MXM Series

*Value Family 9th Gen Intel® Xeon®/Core™ i7/i5/i3® Processor-Based
Expandable GPU Workstation Platforms*

Features

- 9th Gen Intel® Xeon®/Core™ i7/i5/i3 LGA processor
- Dual SODIMMs sockets for up to 32GB DDR4 non-ECC/ECC
- Abundant I/O:
 - Up to 4x additional DP 1.4 from MXM
 - 2x DP++, DVI, VGA, 3x GbE, 3x COM, TPM2.0
 - 2x USB 3.1 Gen 2, 1x USB 3.1 Gen 1, 3x USB 2.0
- Rich storage options: up to 4x 2.5" SATA, M.2 2280
- Front accessible I/O and adaptive Function Module 2.0 options
- Flexible functionality expansion:
 - Expansion slots for standard PCIe and PCI card
 - Embedded slots for Mini PCIe, M.2 3042, 2x USIM
- World leading embedded GP/GPU computing options built-in



Software Support

- Windows 10 IoT Enterprise CBB/LTSB 64-bit
- Linux Ubuntu 18.04 LTS

Optional Accessories

- **Factory Installed 2.5" SSD/HDD/M.2 Storage**
- **Optional 2x 2.5" SATA Kit**
Includes cables and bracket
- **Wireless Mini PCIe/M.2 Module**
Wi-Fi/ BT/ 3G/ 4G LTE/ LoRa wireless kit (w/ antenna)
- **AC/DC Adapter**
220W (P/N: 31-62149-0000)
280W (P/N: 31-62162-1010-A0)

Ordering Information

Model	CPU	Expansion Slots
MVP-612X-MXM-1E/M4G/[GPU]	Intel® Xeon® E-2278GE	1 PCIe x4
MVP-612A-MXM-1E/M4G/[GPU]	Intel® Core™ i7-9700E	1 PCIe x4
MVP-6121-MXM-1E/M4G/[GPU]	Intel® Core™ i7-9700TE	1 PCIe x4
MVP-6122-MXM-1E/M4G/[GPU]	Intel® Core™ i5-9500TE	1 PCIe x4
MVP-6123-MXM-1E/M4G/[GPU]	Intel® Core™ i3-9100TE	1 PCIe x4
MVP-614X-MXM-2E/M4G/[GPU]	Intel® Xeon® E-2278GE	2 PCIe x4, 1 PCI
MVP-614A-MXM-2E/M4G/[GPU]	Intel® Core™ i7-9700E	2 PCIe x4, 1 PCI
MVP-6141-MXM-2E/M4G/[GPU]	Intel® Core™ i7-9700TE	2 PCIe x4, 1 PCI
MVP-6142-MXM-2E/M4G/[GPU]	Intel® Core™ i5-9500TE	2 PCIe x4, 1 PCI
MVP-6143-MXM-2E/M4G/[GPU]	Intel® Core™ i3-9100TE	2 PCIe x4, 1 PCI

GPU Options

Model	GPU	Power	CUDA® Cores	Graphics Memory
EGX-MXM-P1000	NVIDIA® Quadro® Embedded P1000	47W	512	GDDR5 4GB
EGX-MXM-P2000	NVIDIA® Quadro® Embedded P2000	58W	768	GDDR5 4GB
EGX-MXM-P3000	NVIDIA® Quadro® Embedded P3000	75W	1280	GDDR5 6GB
EGX-MXM-P5000	NVIDIA® Quadro® Embedded P5000	100W	2048	GDDR5 16GB

Specifications

Model Name	MVP-610X-MXM	MVP-610A-MXM	MVP-6101-MXM	MVP-6102-MXM	MVP-6103-MXM
System Core					
Processor	Intel® Xeon® E-2278GE	Intel® Core™ i7-9700E	Intel® Core™ i7-9700TE	Intel® Core™ i5-9500TE	Intel® Core™ i3-9100TE
TDP	80 W	65 W	35 W	35 W	35 W
# of Cores	8	8	8	6	4
Base Frequency	3.3 GHz	2.6 GHz	1.8 GHz	2.2 GHz	2.2 GHz
Max Turbo Frequency	4.7 GHz	4.4 GHz	3.8 GHz	3.6 GHz	3.2 GHz
Chipset	Intel® C246				
Memory	4GB DDR4 non-ECC 2400 MHz, dual SODIMMs, up to 32GB (Optional: 8, 16, 32GB ECC, only for Intel® Xeon®/Core™ i3)				
I/O Interface					
Graphics	3 independent displays: 2x DP++ 1.2/ 1x DVI-D/VGA Extra 4x DP 1.4 powered by MXM P1000/P2000 or 3x DP 1.4 powered by MXM P3000/P5000				
Ethernet	3x Intel® GbE(2x i211AT, 1x i219) w/ iAMT/vPro support				
Serial Ports	COM1/2: RS-232/422/485, COM3: RS-232				
USB	2x USB 3.1 Gen 2, 1x USB 3.1 Gen 1, 3x USB 2.0, 1x internal USB2.0 dongle				
I²C	2 (3.3V/5V)				
TPM	TPM 2.0				
M.2	1x socket 2, key B+M or B, 2280/3042 (USB3.1 + SATA III + PCIe x2)				
Mini PCIe	1x Full size (USB 2.0, PCIe)				
USIM	2				
Expansion Slots	MVP-6120-MXM: 1 PCIe x4 MVP-6140-MXM: 2 PCIe x4, 1 PCI				
Storage Device					
2.5" SATA	2 (extra 2 by optional kit), support RAID 0/1/5/10				
Mechanical					
Dimensions	MVP-6120-MXM: 165 (W) x 240 (D) x 210 (H) mm (6.5" x 9.45" x 8.27") MVP-6140-MXM: 206 (W) x 240 (D) x 210 (H) mm (8.11" x 9.45" x 8.27")				
Cooling	System/MXM: Active fan cooling				
Weight	MVP-6120-MXM: 6.0 kg (13.2 lbs) MVP-6140-MXM: 6.4 kg (14.0 lbs)				
Mounting	Wall mount				
Power Supply					
DC Input	12 to 24V				
AC Input	220W or 280W AC/DC adapter (optional)				
Environmental					
Operating Temperature	Standard: (w/ air flow 0.6 m/s)				
	0°C to 40°C (35°C for P5000)	0°C to 50°C			
	Extended: (w/ air flow 0.6 m/s & ind. storage)				
	-20°C to 40°C (35°C for P5000)	-20°C to 50°C	-20°C to 60°C		
Storage Temperature	-40°C to 85°C (-40°F to 185°F) (excl. storage)				
Humidity	~95% @ 40°C (non-condensing)				
Vibration	Operating: 2 Grms, random, 5-500 Hz, 3 axes (w/ 2.5" SSD/CFast) Operating: 0.5 Grms, random, 5-500 Hz, 3 axes (w/ HDD)				
Shock	Operating: 50 G, half sine 11ms duration (w/ 2.5" SSD)				
ESD	Contact 4kV, Air 8kV				
EMC	EN61000-6-4/-2, CE, FCC Class A				
Safety	UL/cUL, CB				