

aetina



# AI Accelerator & GPU



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# AI Accelerator & GPU

Aetina's "AI Accelerator & GPU" can be easily and quickly plugged into existing edge systems to improve AI computing performance. Aetina offers a variety of modules with different form factors, including M.2, Mobile PCIe Module (MXM), Enterprise and Data Center Standard Form Factor (EDSFF), and expansion kits that all deliver unmatched efficiency, flexibility, and expandability.

## M.2

With low-power deep neural network inference, Aetina's M.2 is suitable for a broad range of market segments.

## MXM

Aetina's MXM leverages parallel processing performance, delivering unmatched power efficiency. With high-level compute capability, it's ideal for embedded system that is demanding performance, size, weight and power (SWaP) constrained.

## EDSFF

EDSFF is designed for data center tier systems. The form factor can boost the computer performance of disparate systems.

## Expansion Kits

In the early stages of most projects that involve deep learning (DL), developers may spend a huge amount of time and funds to establish a test process for the performance of computing hardware and peripheral devices. Therefore, Aetina provides expansion kit paired with proper AI accelerators or GPUs that are ideal for DL progress.

### Longevity Product Life Cycle

- Five-year product longevity
- Dedicated technical supporting
- Save total cost of ownership (TCO)

### Value-added Services

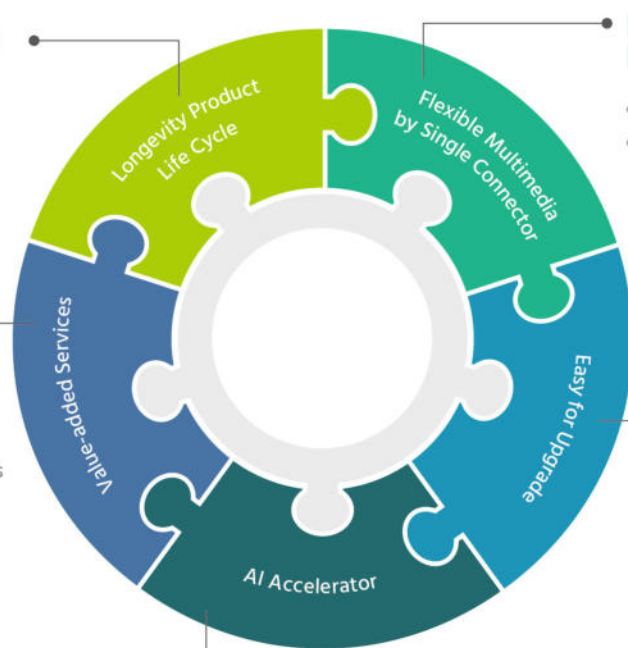
- Wide operating temperature
- Conformal coating providing
- Firmware customization
- Evaluation kit of carriers and thermals

### Flexible Multimedia by Single Connector

- Consistent with 16-lane PCI express
- Up to 4 independent displays

### Easy for Upgrade

- Modular design
- Ready-to-use drivers



### AI Accelerator

- Available with diversified ASIC-based products



AI-MXM-H84A



AI-MXM-S41A



M3A500-PP



M3A1000-PP



M3A2000-VY



M3A4500-WP

## Key Features



### Slim and Space-saving

- Small footprint and light weight
- Mounted flat to save mechanism space



### Golden Finger 30μm

- Extra protection from scratch and damage
- Ensure stable and quality signals



### Extended Temperature

- Option temperature support : -20~70°C, -40~85°C
- Individual validation before shipping



### Conformal Coating

- Protection against dust, moisture and corrosion
- Improve MTBF



### CUDA Computing

- Up to thousands of CUDA cores
- Optimized parallel computing



### Visual Computing

- Dedicated for AI acceleration
- Real-time image processing



### Multi Displays

- 3840x2160 resolution
- DP++, HDMI outputs



### Configurable TDP

- Power cap customization
- Meet specific usage scenario



# Industries



Medical



Defense



Logistics



Retail



Transportation



Factory



Security



Telecommunication



Gaming



City

# ASIC-Based MXM

## Accelerates Neural Network and Deep Learning Process

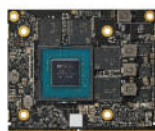


Model Number	AI-MXM-H84A	AI-MXM-S41A
Engine Specs	4x Hailo-8 AI processor with up to 26 TOPS and best-in-class power efficiency	1x Sophgo BM1684 AI processor
AI Performance	104 TOPS	17.6 TOPS
Memory Specs	N/A	8GB LPDDR4
Feature Support	PCI Express 3.0 x16 Support TensorFlow and ONNX	PCI Express 3.0 x16
Display	N/A	N/A
Power Consumption	25W (Typical power consumption)	30W (Typical power consumption)
Form Factor	MXM graphics module version 3.1, Type B	MXM graphics module version 3.1, Type A
Dimensions (WxD)	82 x 105mm (3.22" x 4.13")	82 x 70mm (3.22" x 2.75")
Net Weight	0.048 kg	0.037 kg
Vibration	2.4Grms @5~500 Hz, Sine, 0.5Hr/axis	2.4Grms @5~500 Hz, Sine, 0.5Hr/axis (Est.)
Temperature	Standard: Operating Temp. :0 to + 70°C Storage Temperature: -40 to + 85°C	Standard Operating Temp. : 0 to + 55°C Extended Operating Temp. : -40 to + 85°C Storage Temperature: -40 to + 85°C
Humidity	90% @ 40°C Related Humidity, Non-condensing	90% @ 40°C Related Humidity, Non-condensing
OS Support	Windows 10/11 64-bit Linux 64-bit	Windows 10, Linux
Certification	CE, FCC	CE, FCC



# MXM based on NVIDIA Ampere

## Realizes Data-Center Level Embedded Applications



Model Number	M3A500-PP	M3A1000-PP	M3A2000-VY	M3A4500-WP
GPU Engine Specs	NVIDIA RTX A500 Architecture: NVIDIA Ampere CUDA Cores: 2048 Tensor Cores: 64 RT Cores: 16 Floating Point Performance: 6.54 TFLOPS	NVIDIA RTX A1000 Architecture: NVIDIA Ampere CUDA Cores: 2048 Tensor Cores: 64 RT Cores: 16 Floating Point Performance: 6.66 TFLOPS	NVIDIA RTX A2000 Architecture: NVIDIA Ampere CUDA Cores: 2560 Tensor Cores: 80 RT Cores: 20 Floating Point Performance: 8.25 TFLOPS	NVIDIA RTX A4500 Architecture: NVIDIA Ampere CUDA Cores: 5888 Tensor Cores: 184 RT Cores: 80 Floating Point Performance: 18.55 TFLOPS
Memory Specs	Size: 4GB GDDR6 Clock: 12 Gbps Interface Width: 64-bit Bandwidth (GB/sec): 96	Size: 4GB GDDR6 Clock: 12 Gbps Interface Width: 128-bit Bandwidth (GB/sec): 192	Size: 8GB GDDR6 Clock: 14 Gbps Interface Width: 128-bit Bandwidth (GB/sec): 224	Size: 16GB GDDR6 Clock: 16 Gbps Interface Width: 256-bit Bandwidth (GB/sec): 512
Feature Support	PCI Express 4.0 x4 DirectX: 12 Ultimate Open GL 4.6 Vulkan 1.2	PCI Express 4.0 x8 DirectX: 12 Ultimate Open GL 4.6 Vulkan 1.2	PCI Express 4.0 x8 DirectX: 12 Ultimate Open GL 4.6 Vulkan 1.2	PCI Express 4.0 x16 Support ECC DirectX: 12 Ultimate Open GL 4.6 Vulkan 1.2
Display	N/A	Resolution: 7680x4320 Max: 4x DisplayPort	Resolution: 7680x4320 Max: 4x DisplayPort	Resolution: 7680x4320 Max: 4x DisplayPort
Power Consumption	Total Graphics Power (TGP): 35W	Total Graphics Power (TGP): 35W / 60 W	Total Graphics Power (TGP): 60 W	Total Graphics Power (TGP): 125 W
Form Factor	MXM Graphics Module Version 3.1, Type A	MXM Graphics Module Version 3.1, Type A	MXM Graphics Module Version 3.1, Type A	MXM Graphics Module Version 3.1, Type B
Dimensions (WxD)	82 x 70mm	82 x 70mm	82 x 70 mm	82 x 105 mm
Net Weight	0.037 kg	0.037 kg	0.037 kg	0.0616 kg
Vibration	2.4Grms, @5~500 Hz, Sine, 0.5Hr/axis	2.4Grms, @5~500 Hz, Sine, 0.5Hr/axis	2.4Grms, @5~500 Hz, Sine, 0.5Hr/axis	2.4Grms, @5~500 Hz, Sine, 0.5Hr/axis
Temperature	Standard Operating Temp. : 0 to + 55°C Extended Operating Temp. : -40 to + 85°C Storage Temperature: -40 to + 85°C	Standard Operating Temp. : 0 to + 55°C Extended Operating Temp. : -40 to + 85°C Storage Temperature: -40 to + 85°C	Standard Operating Temp. : 0 to + 55°C Extended Operating Temp. : -40 to + 85°C Storage Temperature: -40 to + 85°C	Standard Operating Temp. : 0 to + 55°C Storage Temperature: -40 to + 85°C
Humidity	95% @ 40°C Related Humidity, Non-condensing	95% @ 40°C Related Humidity, Non-condensing	95% @ 40°C Related Humidity, Non-condensing	90% @ 40°C Related Humidity, Non-condensing
OS Support	Windows 10/11 64-bit	Windows 10/11 64-bit	Windows 10/11 64-bit	Windows 10/11 64-bit Linux 64-bit
Certification	CE/FCC	CE/FCC	CE/FCC	CE/FCC

# Expansion Kits

## Saves Time and Cost of Test System to Confirm Performance Spec



DEV-MXM-4H

Model Number	DEV-MXM-4H
Display	4x HDMI
Power Connector	Supplementary Power Connectors: 8-pin
Dimension (W x D)	111.15 x 168mm (4.37" x 6.61")
Net Weight	71.5g
Temperature	Standard Operating Temp.: 0 to +55°C
Humidity	95% @ 40°C Related Humidity, Non-condensing
Certification	CE/FCC



AIB-SQ67

Model Number	AIB-SQ67
CPU	Support Intel 12th Gen Core™ i5/i7 processor in LGA1700 Socket, TDP under 65W
Memory	Support 2x DDR5 SO-DIMM sockets, Max. Capacity 32 GB
GPU	MXM T1000/A1000/A2000/RTX5000/A4500
Storage	2x SATAIII 6Gb/s Connector
I/O Interface	(Front) 5x RJ45 LAN connector(1+4)-4x RS232/RS485/RS422 (COM1~4), 3x USB3.2 Gen2 Dual connector 1x USB 3.2 Gen2 x2 (20G) Type-C Connector (Rear) 1x DCIN EURO Block (24VDC) 2x Can bus 2.0B 1x Audio jacks, support Line out/Mic 4x DP connector (From MXM Port A/B/C/D) 1x Display port(from CPU)
Internal I/O	(Front) 4x COM Port male, 1x DIO DB9 female (Rear) 2x USB 2.0, 1x OOB
Expansion	1x MXM Type B+ (19VDC@10A) 2 x M.2 M-Key, support PCIe Gen4x4+ SATA interface for NVMe, Size 2280 (1x M.2 M-Key supports InnoAGE)
Power Input	1 x DCIN Jack 24VDC (4 pin Phoenix header)
Dimension (W x D x H)	222x 248 x 45 mm (10 Layers)
Net Weight	0.6kg
Temperature	0 to 60°C
Humidity	5% ~ 90%
Certification	CE/FCC/BSMI/LVD

\* Product Specifications are subject to change without prior notice

# Application Note

## AI-Assisted Ultrasonic Imaging: Advancing Clinical Accuracy and Care



Investment in healthcare is sharply increasing, particularly AI in ultrasound. An AI-powered ultrasound solution can be implemented to improve patient outcomes by increasing the accuracy of diagnoses. One of Aetina partners, global manufacturers of diagnostic and prenatal ultrasound equipment, adopted Aetina ASIC-based MXM AI-MXM-H84A to speed up the auto-segmentation model to reduce image adjustment time and task operated manually.

AI-MXM-H84A drives unprecedented AI performance and provides the advanced image analytics deep learning model at a high-frame rate while in low latency. As a result, assessments become faster and more accurate.

### Challenges

- More AI performance needed for real-time inference tasks
- Hardware must be able to fit into medical devices in hospitals
- High hardware reliability required

### Solution

- Aetina provides its ASIC-based MXM module AI-MXM-H84A that provides high flexibility and scalability to compliant with existing X86 or ARM systems
- The AI-MXM-H84A module offers superior AI computability and low latency
- Comprehensive software toolchain and developer tools supported by AI ASIC chip vendor

### Conclusion

- Improves patient diagnosis outcomes through optimized accuracy
- Saves ultrasound AI system maintenance costs

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