2020
Jan

aetina

Industrial Embedded
GPGPU Solution

- Industrial Graphics Cards
- Nvidia Jetson Edge AI Computing Platform

CONTENTS

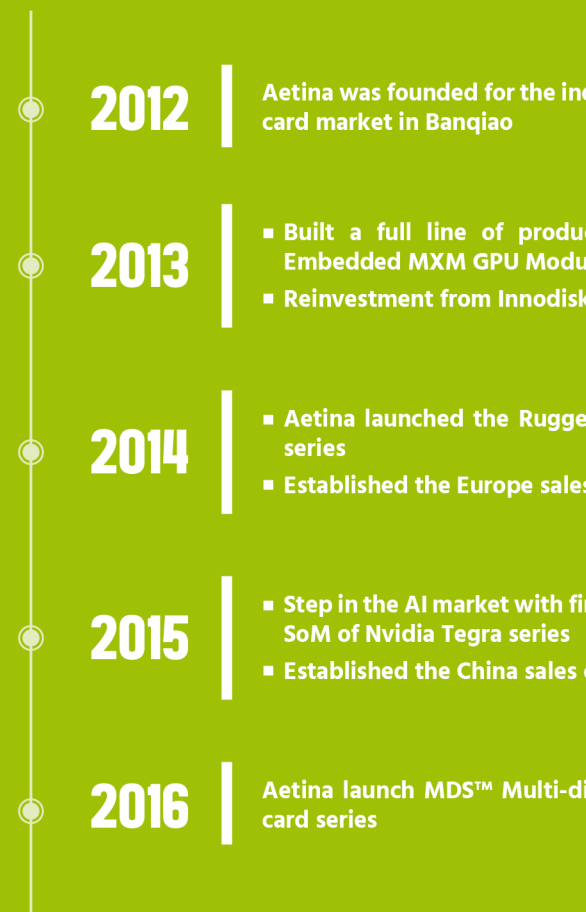# About Aetin

2012
Aetina was founded for the ind
card market in Banqiao

2013
- Built a full line of produc
  Embedded MXM GPU Modu
- Reinvestment from Innodisk

2014
- Aetina launched the Rugge
  series
- Established the Europe sales

2015
- Step in the AI market with fi
  SoM of Nvidia Tegra series
- Established the China sales

2016
Aetina launch MDS™ Multi-di
card series

na

Founded in Taiwan from 2012, and reinvestment from Innodisk Corporation in 2013. Aetina is dedicated to high-performance GPGPU and Nvidia Jetson edge AI computing solutions for industrial embedded applications. With continuous focus and development on the industry-specific form factors and high reputable GPU-accelerated computing products for a wide range of image-critical applications in medical, defense & aerospace, factory automation, gaming, machine learning, surveillance, and more edge computing markets.

Besides, in the era of AI+IoT, Aetina set its position at the edge, acting its role providing edge computing solution and integration, help the group from data acceleration, collection, analysis, and other AI functions.

At the same time, with a stable connection with the Innodisk group, Aetina's solution got full supports, help the customers for stronger service.

At Aetina, long-term support is our core commitment. We stand together with customers through the close technical partnership, as well as our trusted hardware and firmware customization services.

Everything we do is dedicated to helping our customers to release their products on time, on budget, and with the anticipated competitiveness.

dustrial graphics

ct presence for
ule
Corporation

d GPGPU board

office

rst COM-Express

office

isplay graphics

2017 | Announced the smallest Intelligent Jetson TX2 platform

2018
- Built Certificated and approval with ISO 9001:2015
- Unveiled the AI Surveillance solution for Smart City

2019 | Built and unveiled AIoT ecosystem partnerships with various reputed companies

2020 | Keep constructing Edge AI Starter Packages (EASP) for customers and partners a quick way to get into edge AI surroundings

BUSINESS
COMMITMENT

Vision

The technology nowadays got their way to keep developing the AI, and what the edge computing is to make the AI closer to humans. Since the edge had sat on a critical position in the AIoT market, Aetina is sure with their vision during the time. Is to be atop of embedded Edge AI computing solution provider in the new era of AIoT igniting by the edge computing.

Mission

Connecting to the partners make oneself stronger in the AIoT market. To enlarge the possibility for everyone to get into edge AI industrials in the meanwhile to empower everyone's application as reliable as possible. Aetina not only being a solution provider but also make a robust ecosystem at the edge to strengthen an integral whole's AI capability.

◀◀◀ your **IDEAL** choice ◀◀◀

I
Integration knowhow

Integrate relevant hardware, firmware and software by thoroughly evaluation.

D
Diversity solution

Provide diversity product and solution and keep innovations on customization.

E
Ensure quality

Implementation a set of R&D capability to build assured product reliability.

A
Agile experts

Our skilled and experienced team is ready to help your projects with dedicated and timely supporting.

▶▶▶ and the most **Beneficial** business buddy

| INNOVATION | SERVICES LEADERSHIP | VALUE-ADDED PRODUCTS | GLOBAL TEAMWORK | LONG-TERM PARTNERSHIP |

Industrial / Embedded Focus

Aetina works closely with industrial computing and embedded customers to ensure that we develop and implement technical innovations that best suit their target markets. Our products are compatible with a wide range of applications, from the defense, aerospace, medical, security, automation, gaming, retail, and transportation. We also offer tailored products to suit demanding working conditions and temperatures.

With this result, Aetina targets mission-critical applications by offering a wide temperature range, conformal coating, and ESD/isolation protection in specific form factors, including MXM, XMC, VPX, and Compact PCI Express, and Jetson module carriers. Aetina aims to provide vendors a splendid choice for building rugged embedded systems with reliable GPGPU and edge AI computing solutions.

L

Longevity service

Expanding your device lifespan through long-term supply, service and partnership.

▶▶▶

ECOSYSTEM INTEGRATION

Wide Temperature

85°C

-40°C

Compared with commercial GPGPU solutions, Aetina's products provide the temperature from -40°C to +85°C or -20°C to +70°C, and it is optional depends on the needs of the customers. With Aetina's in-house designed interposer module and stringent testing model, offering extended operating temperature stand up to harsh environments.
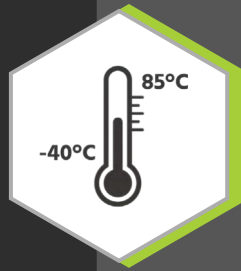
Conformal Coating

Aetina's conformal coating technology refers to protective chemical materials applied in layers as thin as 0.13mm thick onto the circuit board to create a protective film for components. In line with IPC-A-610, apply the protective chemical material onto the products to create a thin protective film preventing moisture, dust, and rust corrosion.

ESD / Isolation Protection

ESD/isolation protection is an essential technology to guarantee the lifespan of electronic products. It can prevent dust adsorption, damage of electrostatic discharge, and the ruin from the heat released by the electric field. To start from circuit board layout design and specific resistant components chosen, Aetina ensures products resist instant high voltage electrostatic discharge or interference.

CUSTOMIZATION
SERVICE

Aetina recognizes that each client requires unique application requirements for their end products, especial claims for GPGPU solution for the critical application in UAV, radar center, surveillance system, factory machine vision equipment, medical, defense, aerospace, and transportation. The service supported by Aetina R&D team with over decade experience and knowledge in VGA/GPU fields and industrial computing. Aetina got the ability to provide the customization services ranging from concept to mass production and till after services.

Three-Level Services to Reach the Requirement

100%
Customized design

50%
Customized & Standard

100%
Standard Specifications

Pure-Custom Level

From concept to finished product until manufacturing and after services, providing complete customized design supporting into every phase of the product life cycle. Design covering specification initial, domain documents supporting, researching, schematic review, circuit layout, BIOS tailored, debug & analysis, validation & testing, manufacturing management, schedule control and warranty service.

Semi-Custom Level

Based on Aetina's various form factors of graphics modules and boards, customers can have customized I/O, tailor-made BIOS and schematic customized service from Aetina. We will keep providing all necessary information and supporting to customers in order to make sure products are in line with their needs and vertical applications.

Minor-Custom Level

To gain most flexibility and productivity, customers can easily and quickly suffice their systems from our standard-based products with minor configuration change without redesign. It is the way to save total cost and development time, speed up products time to market.

ODM Project Procedure

1 CD
Concept Designand

> Specification initial
> Domain documents supporting
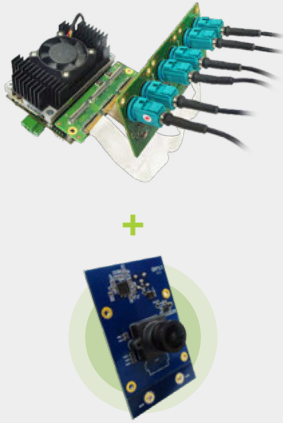> Researching

2 DRM
Design Review Meeting

> Schematic review
> Circuit layout
> BIOS tailored

3 PT
Prototype Run

> Prototype
> Debug & analysis
> Validation & testing

VALUE-ADDED
SERVICE
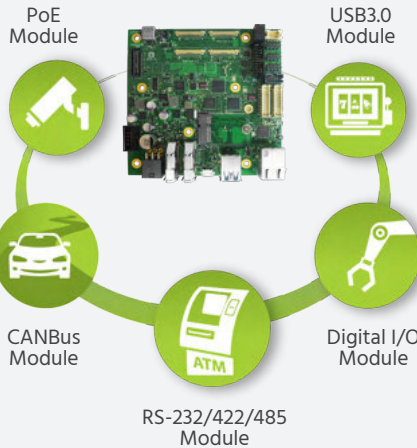
Accelerate Jetson Project Development

* Our Service support both CSI-II 4K/2M Camera and FPD-LINKIII 2M Camera

EVID
Extension Video Image Detection

EIOA
Extension I/O Access

iNAVI
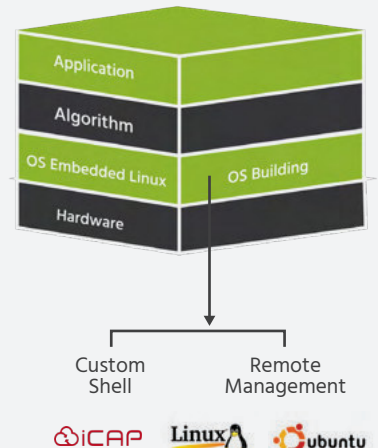### Customized Operating System

Aetina provides a thorough service of extension video image detection that helps the developer deploy multiple external camera modules for applications with machine vision. To meet up the customers' requirement, we are now providing CSI-II 4K/2M camera, FPD-LINKIII 2M camera for their choice.

To make an easy deployment to applications, Aetina provides a wide range of driver ready peripheral I/O modules, such as M.2 devices, mPCIe device, and USB connectors. We assist developers flexibly expand the connectivity of the Jetson module series through various I/O connector on Aetina's specific carrier board.

iNAVI optimization service helps our clients with built-in their embedded OS based on Linux, including Secure Boot and System Recovery; in the meanwhile, we support remote management custom shell to meet up clients' requirements. Aetina pre-integrated the necessary driver porting and request OS specifications.

4 EP
Engineer Pilot Run

> Critical function check
> QVL starts
> EMI certificate by request

5 PP
Production Pilot Run

> ECR
> QVL ready
> MP tooling readiness

6 MP
Mass Production

> Manufacturing management
> QTC
> Shipment control

Edge AI
Ecosystem

Stepping into AI generation, all industries are trying to intellectualize their application into AI applications. However, it always costs money and time to do so. In the meanwhile, there may be a massive amount of difficulties waiting out there. Not only strong support from the AI computing platform provider but also partners who can work for the same goal with you to reach your destination. Moreover, Aetina delivery some examples of AI applications, which helping the AI starters to explore more ideas to upgrade the equipment for their own. As a pusher in the AIoT market, Aetina is willing to set an easy start also widen the AI entrance for all.

EASP | Edge AI Starter Package

Edge computing nowadays is no doubt to be a potential market. Also, it is useful and helpful to the business to accelerate their AI product/service procedure from scratch. However, it always starts with an idea, Aetina here provides EASP, got in-depth to various industries, describe the industry situation circumstantially and sent the starter recommendation, helping the developers to get more idea in the meanwhile to build their applications.

Factory	Transportation	Gaming	Security	Retail	Medical

Meet our Ecosystem Partners

Instead of finding those professional partners by own, Aetina has already prepared a bunch partner for you! The following is the detail of the AIoT service from Aetina's Edge AI computing platform.

HW

APPRO.PHO
antzer YUAN
EDOM TECHNOLOGY CO., LTD. innodisk
MILLITRONIC

SW

accelstor
LIPS Sense The World IRONYUN
VisionLabs MACHINES CAN SEE
SMA SOFT TCIT

Embedded MXM **GPU** Modules

Aetina's Embedded MXM GPU Modules are the most compact, thinnest COTs solutions, leverage the parallel processing performance of Nvidia GPUs, delivering unmatched power-efficient, advanced graphics features, and GPU technology with MXM 3.0/3.1 standards-based. Its superior graphics and high-level compute capability and ideal solution for performance demanding and SWaP constrained embedded systems in applications such as defense. Aerospace, medical imaging, ground vehicles, portable VR device, and more.

Based software nature of CUDA programming, Aetina provides a vast array of Embedded MXM GPU Modules with the most scalability and upgradability for GPGPU computing performance and rigorous data processing capabilities. Dedicating customers' specific requirements for critical missions, we offer rugged level MXM GPU modules with wide operating temperatures (-40 $^{\circ}$C to +85 $^{\circ}$C) to sustain the reliable operation. Also, giving option conformal coating services for resistance against dust, moisture, chemicals, and physical stress.

p.11

p.12

		M3P1000-LN	M3P2000-LN
Model Number		**M3P1000-LN**	**M3P2000-LN**
Form Factor		MXM 3.1	MXM 3.1
GPU Engine	GPU Architecture	Nvidia Pascal	Nvidia Pascal
	Graphics Processing Unit	Quadro P1000	Quadro P2000
	Nvidia CUDA Cores	512	768
	Graphics Clock	1354 / 1392 MHz	1455 / 1480 MHz
	Floating Point	1.8 TFLOPS	2.3 TFLOPS
Memory	Memory Size	4GB GDDR5	4GB GDDR5
	Memory Clock	6.0 Gbps	6.0 Gbps
	Memory Interface Width	128-bit	128-bit
	Memory Bandwidth	96 GB/sec	96 GB/sec
API	DirectX	12 API	12 API
	OpenGL	4.5	4.5
	OpenCL	1.2	1.2
	CUDA Compute Capability	6.1	6.1
Operation System	Support OS	Windows 7-10 Linux	Windows 7-10 Linux
Display	Max. Displays per Board	4	4
	Max. Digital Display	up to 7680x4320	up to 7680x4320
	Max. Analog Display	Not Support	Not Support
	Outputs	Dual Link DVI-D DisplayPort ++ HDMI 2.0b	Dual Link DVI-D DisplayPort ++ HDMI 2.0b
Power	Max. Board Power Consumption	47 W	58 W
Mechanical	Dimensions	70x82 mm	70x82 mm
Environment	Standard Temp. (0 ~ 55℃)	M3P1000-LN	M3P2000-LN
	Wide Temp. (-40 ~ 85℃)	M3P1000-LN-A	M3P2000-LN-A
	Extended Temp. (-20 ~ 70℃)	N/A	N/A
	Coating	M3Nxxxx-xx-xC (C=with conformal coating service)	

Product specifications are subject to change without prior notice

M3P1000-LN

MXM 3.1 Type A GPU Module
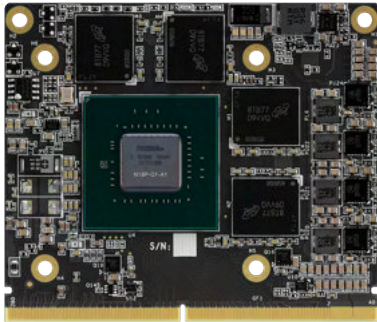
Features

- Type A and small footprint design
- 4GB on board memory and 96 GB/sec memory bandwidth
- Up to 4 independent displays at the same time
- OpenCL 1.2, OpenGL 4.5, DirectX 12, Vulkan compatible
- Gold finger 30μ" enhanced high stability and quality signals
- 5 years longevity support

GPU Engine Specs

GPU	Nvidia Quadro P1000
Nvidia CUDA Cores	512
Graphics Clock (Base / Boost)	1354 / 1392 MHz
Floating Point Performance	1.8 TFLOPS

Memory Specs

Memory Size	4GB GDDR5
Memory Clock	6.0 Gbps
Memory Interface Width	128-bit
Memory Bandwidth	96 GB/sec

Feature Support

Bus Type	MXM 3.1 (PCI Express 3.0 support)
OpenGL	4.5
OpenCL	1.2
DirectX	12 API
CUDA Compute Capability	6.1
Support Technologies	NVIDIA CUDA, GPU Boost, Battery Boost, OpenCL, PhysX, Direct Compute
Operation System	Windows 7-10[1] Linux

Display Support

Max. Displays per Board	4
Max. Analog Display Support	Not Support
Max. Digital Display support[2]	up to 7680x4320
LCD-eDP 1.4	Not Support
DisplayPort Multimode[3]	up to 7680x4320
HDMI 2.0b	support
H.264, HEVC, MPEG2 1080p video decoder	support

Thermal and Power Specs

Thermal	None
Max.Board Power Consumption	47 W
Supplementary Power Connectors	None

Dimensions

|	
Length	70 mm
Width	82 mm
Form Factor	MXM graphics module version 3.1 Type A

Ordering Information

Model Number	Description
M3P1000-LN	Standard 0 °C ~ +55 °C
M3P1000-LN-C	Standard 0 °C ~ +55 °C with coating
M3P1000-LN-A	Wide Temp. -40 °C ~ +85 °C
M3P1000-LN-AC	Wide Temp. -40 °C ~ +85 °C with coating

1. Windows10 requires November 2015 update or newer
2. 7680x4320 60Hz RGB 8-bit with dual-DisplayPort connector
   7680x4320 60Hz YUV420 8-bit with one DisplayPort1.3 connector
3. DisplayPort 1.2 Certified and DisplayPort 1.3/1.4 Ready
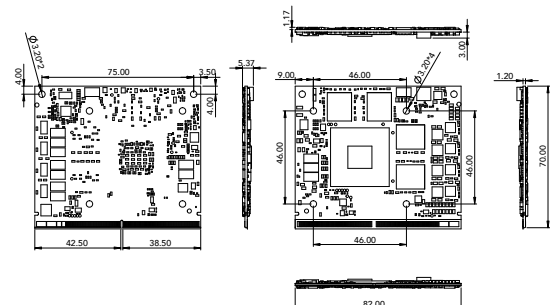
M3P2000-LN

MXM 3.1 Type A GPU Module
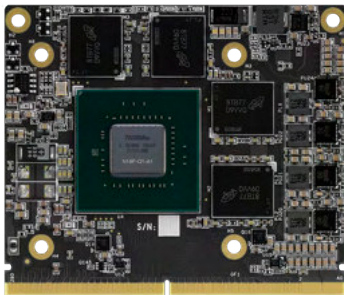
Features

- Type A and small footprint design
- 4GB on board memory and 96 GB/sec memory bandwidth
- Up to 4 independent displays at the same time
- OpenCL 1.2, OpenGL 4.5, DirectX 12, Vulkan compatible
- Gold finger 30µ" enhanced high stability and quality signals
- 5 years longevity support

GPU Engine Specs

GPU	NVIDIA Quadro P2000
Nvidia CUDA Cores	768
Graphics Clock (Base / Boost)	1455 / 1480 MHz
Floating Point Performance	2.3 TFLOPS

Memory Specs

Memory Size	4GB GDDR5
Memory Clock	6.0 Gbps
Memory Interface Width	128-bit
Memory Bandwidth	96 GB/sec

Feature Support

Bus Type	MXM 3.1 (PCI Express 3.0 support)
OpenGL	4.5
OpenCL	1.2
DirectX	12 API
CUDA Compute Capability	6.1
Support Technologies	NVIDIA CUDA, GPU Boost, Battery Boost, OpenCL, PhysX, Direct Compute
Operation System	Windows 7-10[1] Linux

Display Support

Max. Displays per Board	4
Max. Analog Display Support	Not Support
Max. Digital Display support[2]	up to 7680x4320
LCD-eDP 1.4	Not Support
DisplayPort Multimode[3]	up to 7680x4320
HDMI 2.0b	support
H.264, HEVC, MPEG2 1080p video decoder	support

Thermal and Power Specs

Thermal	None
Max.Board Power Consumption	58 W
Supplementary Power Connectors	None

Dimensions

|	
Length	70 mm
Width	82 mm
Form Factor	MXM graphics module version 3.1 Type A

Ordering Information

Model Number	Description
M3P2000-LN	Standard 0 °C ~ +55 °C
M3P2000-LN-C	Standard 0 °C ~ +55 °C with coating
M3P2000-LN-A	Wide Temp. -40 °C ~ +85 °C
M3P2000-LN-AC	Wide Temp. -40 °C ~ +85 °C with coating

1. Windows10 requires November 2015 update or newer
2. 7680x4320 60Hz RGB 8-bit with dual-DisplayPort connector
   7680x4320 60Hz YUV420 8-bit with one DisplayPort1.3 connector
3. DisplayPort 1.2 Certified and DisplayPort 1.3/1.4 Ready
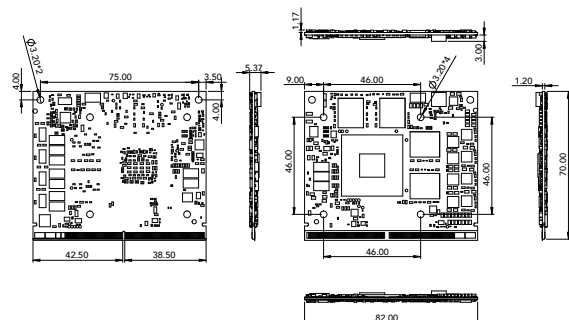
RTM-M3C-6DP

MXM GPU Module Carrier Board
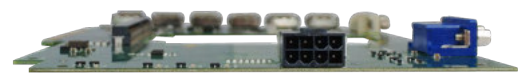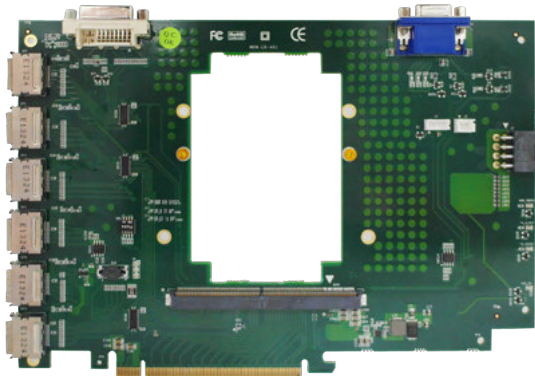
Features

- MXM modules carrier board for evaluation purpose
- Support PCI Express x16 Gen 3.0
- 8 pin 12V DC-in power connector
- 6x DisplayPort, 1x DVI, 1x D-SUB, 1x eDP

Specification

Bus Type	PCI Express 3.0 x16
Video Output	eDP x1 / DVI x1 D-SUB x1 / DisplayPort x6
Supplementary Power Connectors	One 8-pin
Support Form Factor	MXM graphics module
Max Output Resolution	Depend on MXM module
Dimension	164.8mm x 236mm

Ordering Information

Model Number	Description
RTM-M3C-6DP	MXM module evaluation carrier board with 6x DisplayPort, 1x DVI, 1x D-SUB, 1x eDP, 0 °C ~ +55 °C

Evaluation Thermal

Description	MXM Type B Thermal	MXM Type B Thermal	MXM Type A Thermal

113mm — 82mm

105mm — 82mm

60mm — 73mm
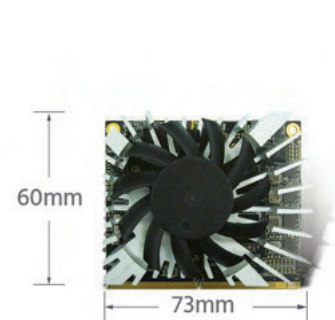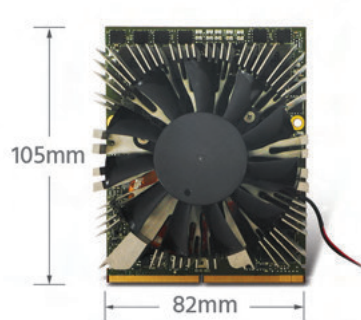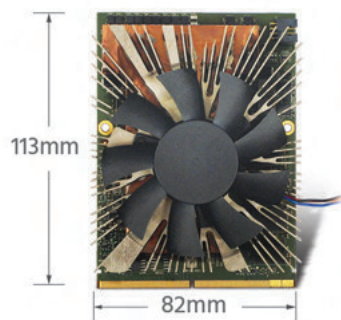
MH110

MXM GPU Modules Supported Dev. Kit
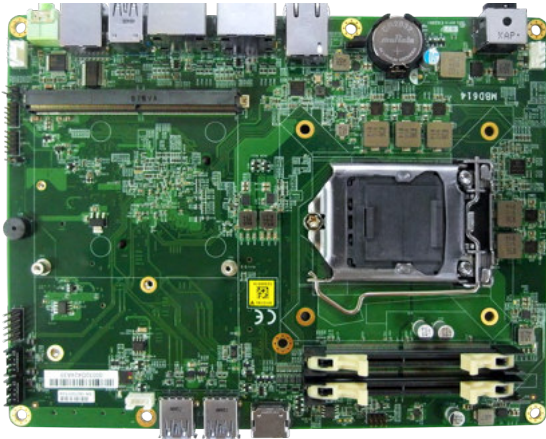

Features

- Support Intel 7th Gen. Core i7/i5/i3/Pentium/Celeron processors
- Support Nvidia MXM graphics card (Type B, up to 150W)
- 2x DDR4 SO-DIMM 2133 MHz, dural channel, expandable up to 32GB
- Display via a console HDMI1.4 and four DisplayPorts
- 1x Mini-PCIe slot for Wi-Fi, Bluetooth, 4G LTE or capture card options

Supported System

|	
Processor	Support Intel 7th Gen. Core i7/i5/i3/ Pentium / Celeron
GPU Architecture	Support MXM 3.0/3.1 Type A/B
Memory Size	2x DDR4 SO-DIMM 2133 MHz Max. up to 32GB

I/O

Mass Storage	2x 2.5" SATA III SSD drive bay (via cable)
Video Interfaces	1x HDMI 1.4 for console 4x DisplayPort from MXM Graphics Card
LAN	1x RJ45 GbE LAN Intel 219V GbE LAN Controller
Expansion Slots	1x Mini-PCIe (full-size)
USB	4x USB3.0 2x USB2.0 via pin-header
Audio	1x Line-Out Realtek ALC662 codec
Serial	1x RS-232 port
Others	1x M.2 M2280 slot 1x M.2 B3042 1x SIM card slot

Mechanical and Environmental

Dimension	220 mm x 167 mm
Power Supply	DC-in 19V power jack
Thermal	Active Fan
Operating Temperature	0˚C ~ +45˚C
Operating Humidity	5% ~ 90% at 45˚C (non-condensing)
Storage Temperature	20˚C ~ +80 ˚C

Ordering Information

Model Number	Description
MH110-NN02-P1000	LGA1151 H110 motherboard M3P1000-LN MXM, 270W power adaptor 0°C to +45°C
MH110-NN02-P2000	LGA1151 H110 motherboard M3P2000-LN MXM 270W power adaptor 0°C to +45°C
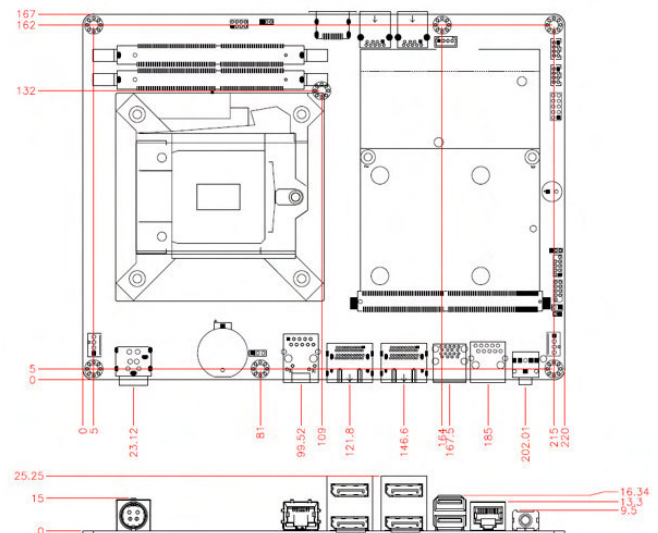
Multi-Display Graphics Cards

Aetina Multi-Display Savant (MDS) series stride the monitor boundaries; enlarge the insight with an expanded display. Delivering a high-resolution quality image and seamless multimedia experience across up to 12 displays based a graphics card with single GPU, the MDS series are ideal solutions with flexibility, productivity and reliability for digital signage, display walls and any of multiple monitors deployment in business, industry, enterprise and mission-critical environments.

Aetina MDS feature Surround technology, supporting the as high resolution as 7680x4320 for spectacular display wall. Regardless of the type of system (desktop, small form factor system, or workstation) or display connectivity (DisplayPort, HDMI, DVI, and VGA), Aetina MDS series enable the most efficiency and compatibility to fit customers' demanding multi-display installations.
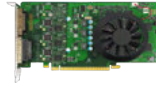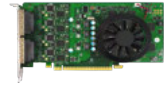
		p.17	p.18	p.19	p.20
Model Number		M4-K208VGA	M4-P107mDP	M9-P107	M12-P107
Bus Type		PCIe 2.0 x 8	PCIe 3.0 x 16	PCIe 3.0 x 16	PCIe 3.0 x 16
GPU Engine	Graphics Clock	954 MHz	1290 MHz	1290 MHz	1290 MHz
	Floating Point	366.05 GFLOPS	1.98 TFLOPS	1.98 TFLOPS	1.98 TFLOPS
Memory	Memory Size	1GB DDR3	4GB GDDR5	4GB GDDR5	4GB GDDR5
	Memory Clock	800 MHz (1.6 Gbps)	7.0 Gbps	7.0 Gbps	7.0 Gbps
	Memory Interface Width	64-bit	128-bit	128-bit	128-bit
	Memory Bandwidth	12.8 GB/sec	112 GB/sec	112 GB/sec	112 GB/sec
API	DirectX	12 API (feature level 11_0)	12 API	12 API	12 API
	OpenGL	4.4	4.5	4.5	4.5
	OpenCL	1.1	1.2	1.2	1.2
	CUDA Compute Capability	6.1	6.1	6.1	6.1
Operation System	Support OS	Windows XP Windows 7-10 Linux	Windows 7-10 Linux	Windows 7-10 Linux	Windows 7-10 Linux
Display	Max. Displays per Board	4	4	9	12
	Max. Digital Display	N/A	7680x4320	up to 5760x3240 (3x3 mode)	up to 5760x4320 (3x4 mode)
	Max. Analog Display	3840x2160(2x2 mode)	N/A	N/A	N/A
	Outputs	VHDCI to 4 VGA	4 mini DisplayPort 1.2	VHDCI to 9 DVI or VHDCI to 9 HDMI	VHDCI to 12 DVI or VHDCI to 12 HDMI
Power	Max. Board Power Consumption	21 W	75 W	75 W	75 W
Thermal	Cooling	Heat-sink	Two-ball-bearing Fan	Two-ball-bearing Fan	Two-ball-bearing Fan
	Slot Occupied	Single-slot	Single-slot	Two-slot	Two-slot
Mechanical	Dimensions	153.36x68.9 mm	169.57x68.9 mm	203.64x111.15 mm	203.64x111.15 mm
Environment	Operation Temperature	0 °C ~ +55 °C	0 °C ~ +55 °C	0 °C ~ +55 °C	0 °C ~ +55 °C

Product specifications are subject to change without prior notice

M4-K208VGA

MDS Multi-Display Graphics Card 4x VGA for Commercial, Gaming and Infotainment systems

Features
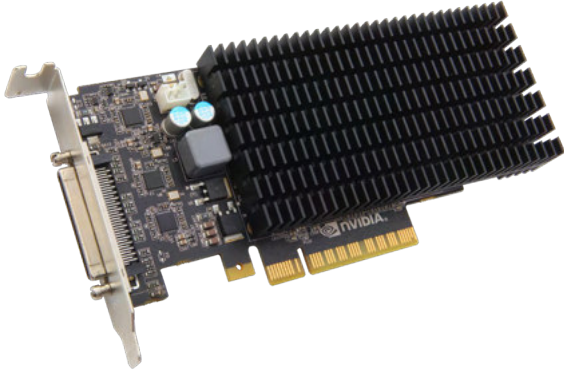
- 4 VGA displays simultaneously
- Up to 4Kx2K resolution
- Increase work productivity with multi-monitors
- Single slot fanless fit for SFF systems
- 1 GB dedicated on board memory
- Longevity, reliable and affordable multi-display graphics product
- Aim for upgrade market in industrial control, casino and digital signage

GPU Engine Specs

Graphics Clock (Base / Boost)	954 MHz
Floating Point Performance	366.05 GFLOPS

Memory Specs

Memory Size	1GB GDDR3
Memory Clock	800 MHz (1.6 Gbps)
Memory Interface Width	64-bit
Memory Bandwidth	12.8 GB/sec

Feature Support

Bus Type	PCI-Express 2.0 x8
OpenGL	4.4
DirectX	12 API (feature level 11_0)
Operation System	Windows XP Windows 7-10 Linu

Display Support

Max. Displays per Board	4
Max. Output Resolution Support	1920x1200 *3, 2048x1536*1 3840x2160 (2x2 mode)
Display Outputs	VHDCI to 4 VGA

Thermal and Power Specs

Thermal	Heat-sink
Max. GPU Temperature	95 °C
Max. Board Power Consumption	21 W
Min. System Power Requirement	300 W

Dimensions

Slot Occupied	Single-slot
Width	153.36 mm
Length	68.9 mm
Form Factor	SFF=Small Form Factor (Low profile card)
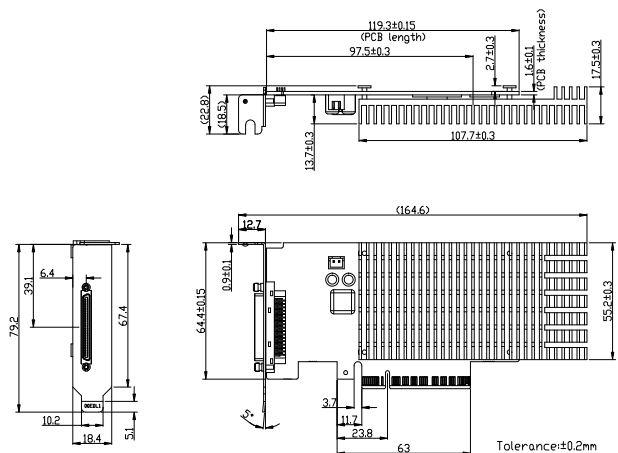
M4-P107mDP

MDS Multi-Display Graphics Card 4x mini DisplayPort for Commercial, Gaming and Infortainment systems

Features

- Natively 4 mini DisplayPort 1.2 for four displays simultaneously
- Flexible single-slot, low-profile for space and power-constrained chassis
- 4 displays; support optimal resolution 7680x4320 at 60Hz

GPU Engine Specs

Graphics Clock (Base / Boost)	1290 MHz
Floating Point Performance	1.98 TFLOPS

Memory Specs

Memory Size	4GB GDDR5
Memory Clock	7.0 Gbps
Memory Interface Width	128-bit
Memory Bandwidth	112 GB/sec

Feature Support

Bus Type	PCI Express 3.0 x16
OpenGL	4.5
DirectX	12 API
Operation System	Windows 7-10[1] Linux

Display Support

Max. Displays per Board	4
Max. Output Resolution Support[2]	7680x4320
Display Outputs	4 x mini DisplayPort 1.2[3]

1. Windows10 requires November 2015 update or newer
2. 7680x4320 60Hz RGB 8-bit with dual-DisplayPort connector
   7680x4320 60Hz YUV420 8-bit with one DisplayPort1.3 connector
3. DisplayPort 1.2 Certified and DisplayPort 1.3/1.4 Ready

Thermal and Power Specs

Thermal	Two Ball Bearing Fan
Max. GPU Temperature	97 °C
Max. Board Power Consumption	75 W
Min. System Power Requirement	300 W

Dimensions

Slot Occupied	Single-slot
Width	169.57 mm
Length	68.9 mm
Form Factor	SFF=Small Form Factor (Low profile card)

Ordering Information

Model Number	Description
M4-P107mDP	PCI-Express 16X, 4GB GDDR5, 0 °C ~ +55 °C Accessories: ATX bracket, mDP to DP cable x4 (Optional)
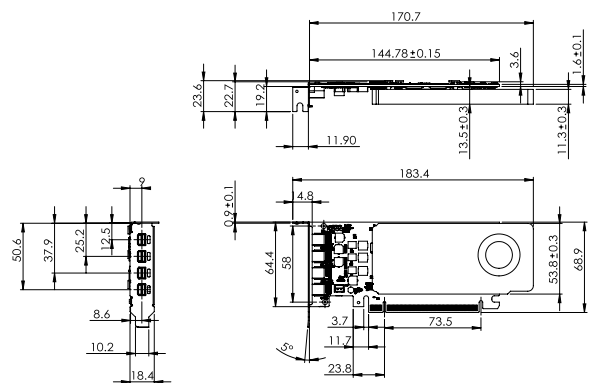
M9-P107

MDS Multi-Display Graphics Card 9x Displays for 3x3 mode 4K Video Wall and Wide Screen Displaying Systems

Features

- Single card, single GPU support up to 9 displays
- Semlesssly immersive imagery quality for 3x3 video wall
- Support 1920x1080 FHD per port through software
- Support EDID caching
- Ideal for wide screen advertising and digital signage

GPU Engine Specs

Graphics Clock (Base / Boost)	1290 MHz
Floating Point Performance	1.98 TFLOPS

Memory Specs

Memory Size	4GB GDDR5
Memory Clock	7.0 Gbps
Memory Interface Width	128-bit
Memory Bandwidth	112 GB/sec

Feature Support

Bus Type	PCI Express 3.0 x16
OpenGL	4.5
DirectX	12 API
Operation System	Windows 7-10 Linu

Display Support

Max. Displays per Board	9
Max. Output Resolution Support	5760x3240 (3x3 mode)
Display Outputs	9 Single Link DVI or HDMI (via 3x VHDCI to 3 DVI or HDMI cable)

Thermal and Power Specs

Thermal	Two Ball Bearing Fan
Max. GPU Temperature	97 °C
Max. Board Power Consumption	75 W
Min. System Power Requirement	300 W

Dimensions

Slot Occupied	Two-slot
Width	203.64 mm
Length	111.15 mm
Form Factor	ATX

Ordering Information

Model Number	Description
M9-P107D	M9-P107 with VHDCI Cable to 3xDVI
M9-P107H	M9-P107 with VHDCI Cable to 3xHDMI
7W5000000120	VHDCI cable to 3xDVI
7W5000000130	VHDCI cable to 3xHDMI
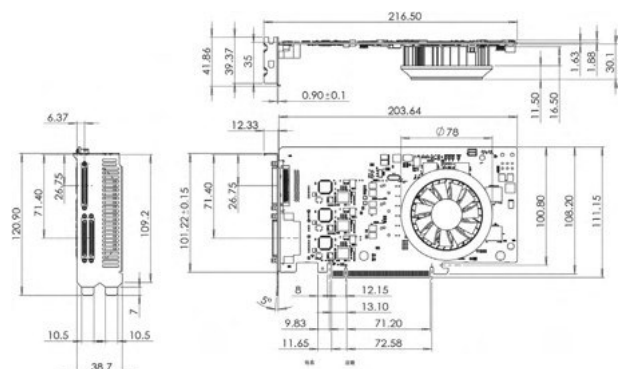
M12-P107

MDS Multi-Display Graphics Card 12x Displays with GPU for Large
Commercial or 3D Graphics Displaying Video Wall

Features

- Drive up to 12 displays in single card with single GPU
- Flexible displays configuration in clone or extended, portrait or landscape
- Support maximum 4x 4Kp30 video display
- Support EDID caching
- Ideal for wide screen advertising and digital signage

GPU Engine Specs

Graphics Clock (Base / Boost)	1290 MHz
Floating Point Performance	1.98 TFLOPS

Memory Specs

Memory Size	4GB GDDR5
Memory Clock	7.0 Gbps
Memory Interface Width	128-bit
Memory Bandwidth	112 GB/sec

Feature Support

Bus Type	PCI Express 3.0 x16
OpenGL	4.5
DirectX	12 API
Operation System	Windows 7-10 Linux

Display Support

Max. Displays per Board	12
Max. Output Resolution Support[2]	5760x4320 (3x4 mode)
Display Outputs	12 Single Link DVI or HDMI (via 4x VHDCI to 3 DVI or HDMI cable)

Thermal and Power Specs

Thermal	Two Ball Bearing Fan
Max. GPU Temperature	97 °C
Max. Board Power Consumption	75 W
Min. System Power Requirement	300 W

Dimensions

Slot Occupied	Two-slot
Width	203.64 mm
Length	111.15 mm
Form Factor	ATX

Ordering Information

Model Number	Description
M12-P107D	M12-P107 with VHDCI Cable to 3xDVI
M12-P107H	M12-P107 with VHDCI Cable to 3xHDMI
7W5000000120	VHDCI cable to 3xDVI
7W5000000130	VHDCI cable to 3xHDMI
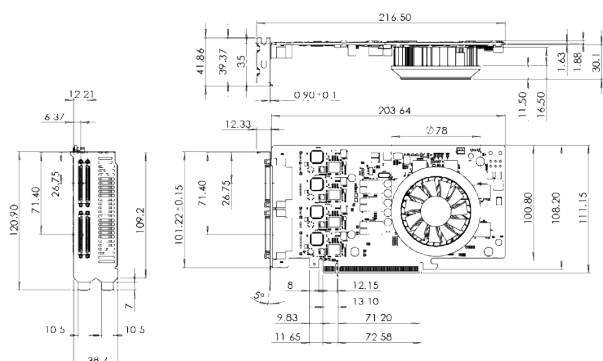
NVIDIA
Embedded
Platform

System on Modules (SoMs) gives scalable, reliable, cost-effective, and time-to-market embedded computer platforms to meet a wide range of vertical embedded markets.

Aetina provides GPGPU-oriented solutions using leading Nvidia Jetson AGX Xavier, TX2i, TX2, TX2-4GB, Nano modules, offering high level embedded computing power and image analysis processing performance. By leveraging these GPU-acceleration processors, enables you to harness the power of Nvidia CUDA technology and to quickly develop and deploy compute-intensive systems for machine vision, autonomous robotics, drones, medical imaging, and more.

Aetina built ready-to-ship and well-featured, functionality carrier boards and developer kits. This helps to focus on domain know-how and speed up product time-to-market. To meet the versatile demand of applications, Aetina also offers customization services to fulfill each unique need.

	AN110	AN310	ACE-N510	ACE-N622	AX710
	p.23	p.24	p. 25	p.26	p.27
Model Number	AN110	AN310	ACE-N510	ACE-N622	AX710
Module Support	Nvidia Jetson Nano	Nvidia Jetson TX2 / TX2 4GB / TX1	Nvidia Jetson TX2 / TX2 4GB / TX1	Nvidia Jetson TX2 / TX1	Nvidia Jetson AGX Xavier / Xavier 8GB
Dimensions	87mm x 67mm (3.425" x 2.637")	87mm x 70mm (3.425" x 2.755")	87mm x 50mm (3.425" x 1.968")	120mm x 120mm (4.72" x 4.72")	112mm x 107 mm (4.33" x 4.213")
Expansion	1x M.2 E Key 2230	1x mPCIe (PCIe x1 / USB2.0)	N/A	1xFull-minicard (PCIe x1 / USB2.0) 1xFull-minicard (PCIe x1 / mSATA)	1x M.2 M Key 2280 1x M.2 E Key 2230
Display	1x HDMI 1x eDP	1x HDMI	1x HDMI	1x HDMI	2x HDMI
Audio	HDMI Integrated	HDMI Integrated	HDMI Integrated	HDMI Integrated 1x I2S interface	HDMI Integrated 1x I2S interface
USB	2x USB3.0 Type A(Hub mode) 1x USB2.0 Micro AB OTG	2x USB3.0 Type A 1x USB2.0 Micro AB OTG	2x USB3.0 Type A 1x USB2.0 Micro AB OTG	2x USB3.0 Type A 1x USB2.0 Micro AB OTG	2x USB3.0 Type A 1x USB2.0 Typc C 1x USB2.0 Micro AB OTG
Ethernet	1x GbE	1x GbE	1x GbE	1x GbE	1x GbE (Internal) 2x GbE (Extension)
Camera Inputs	1x 2-Lanes MIPI CSI-2 FPC 15 pins 1x 4-Lanes MIPI CSI-2 FPC 36 pins	6 x2-Lane MIPI CSI-2 (Extension board ACE-CAM6C) 3 x4-Lane MIPI CSI-2 (Extension board ACCS3-STD-AN00)	N/A	1x 2-Lanes MIPI CSI-2	4x 2-Lanes MIPI CSI-2 iPEX
SD Card	1x microSD Card	1x microSD Card	1x microSD Card	1x SD Card	1x microSD Card
MISC. External Interfaces	1x System Control (PWR / RST / Recovery) 5x GPIO 1x RS232 2x UART (1x debug UART) 1x I2C 1x FAN	1x System Control (PWR / RST / Recovery / Sleep) 5x GPIO 2x CAN BUS 1x RS232 1x UART(Debug) 1x I2C 1x FAN	1x System Control (PWR / RST/ Recovery / Sleep) 4x GPIO 2x CAN BUS 1x RS232 1x UART(Debug) 1x FAN	1x System Control (PWR / RST/ Recovery / Sleep) 4x GPIO 2x CAN BUS 1x RS232 1x UART (Debug) 1x I2C (3.3V) 1x SPI (1.8V / 3.3V) 1x FAN 1x 12V output 1x 5V output	1x System Control (PWR / RST / Recovery / Sleep botton) 5x GPIO 2x CAN BUS 1x RS232 1x UART (Debug) 1x I2C (3.3V) 1x SPI (3.3V) 1x FAN 1x UART (3.3V) 1x Extension slot (60 pins)
Power Requirements	+12V DC only	9.0 to + 19.6V DC	+12V DC only	Wide Input + 12 to + 19V DC	9.0 to + 19.6V DC
Operation Temperature	-40˚C ~ +85˚C	-40˚C ~ +85˚C	-20˚C ~ +70˚C	-20 ˚C ~ +70 ˚C	-25˚C ~ +80˚C

Product specifications are subject to change without prior notice

AN110

NVIDIA Jetson Nano Carrier Board

Features

- Smallest design for Nvidia Jetson Nano module
- Amiable for compute-intensive and low-power AI applications
- Wide temperature range -40°C to 85°C
- Support 1x 2-Lanes / 1x 4-Lanes MIPI camera for machine vision demands
- Ideal for general robotics, drone and modern AI devices of smart city

Surveillance   **AI**   **AOI**

I/O

Mass Storage	1x Micro SD card slot
Video Interfaces	1x HDMI Type A
LAN	1x RJ-45 (Internal)
Expansion Slots	1x 2-Lanes MIPI CSI-2 FPC 15 pins 1x 4-Lanes MIPI CSI-2 FPC 36 pins
USB	1x USB2.0 Micro AB 2x USB3.0 Type A
Serial	1x RS-232
Others	1x Front Panel, 1x 4-pin FAN connector 2x UART (1x debug UART) 5x GPIO 4x CAN

Mechanical and Environmental

|	
Dimension	87 mm x 67 mm
Power Supply	12V / 5A DC
Operating Temperature	-40 °C ~ +85 °C (Standard Version)
Operating Humidity	10% ~ 90%
Storage Temperature	-40 °C ~ +125 °C

Ordering Information

Model Number	Description
AN110-STD-AN00	AN110 Carrier including Cable, Standard temp -40°C to +85°C
AN110-NAO-FN01	AN110 + Nano Module + Cable, -25°C to +80°C
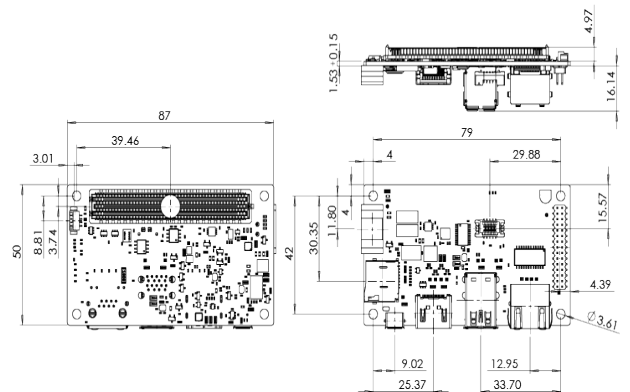
AN310

MIPI Cameras Supported Carrier Board for NVIDIA Jetson TX2/TX2 4GB
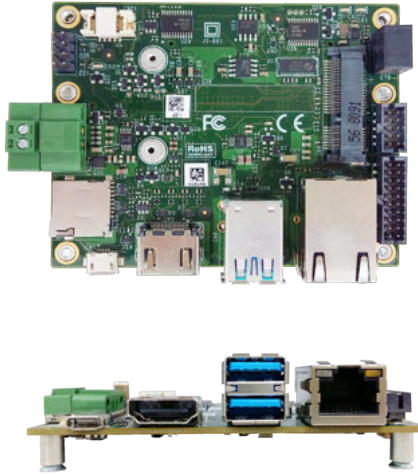
Features

- Designed specifically for 360°surrounded view applications in compute-intensive edge devices
- Support up to 6x 2M cameras, 1080p 30 FPS
- Extension camera modules and peripheral I/O modules increase connectivity and time-to-market
- Support wide temperature -40°C to 85°C
- Meet to multi-vision demands in drones, vehicles, robots, surveillance, automation and edge devices

AI   **Drone**   **Medical**   **Surveillance**

I/O

Mass Storage	1x Micro SD card slot
Video Interfaces	1x HDMI Type A
LAN	1x RJ-45 for Gigabit Ethernet
Expansion Slots	1x Full-Mini card (PCI Express x1 or mSATA)
USB	1x USB2.0 Micro AB 2x USB3.0 Type A
Serial	1x RS-232
Others	1x Front Panel, 1x UART, 1x I2C, 5x GPIO 1x 4-pin FAN connector, 2x CAN 1x MIPI Interface connector (120 pins) 1x DC-in 5.5V~19.6V Euroblock connector (2 pins)

Mechanical and Environmental

Dimension	87 mm x 70 mm
Power Supply	9.0~19.6V / 5A DC
Operating Temperature	-40˚C ~ +85˚C
Operating Humidity	10% ~ 90%
Storage Temperature	-40 °C ~ +125 °C

Certified Extension Modules

I/O	Module Type Description
MIPI CSI-II	6x MIPI Cameras Extension Module M/N : ACE-CAM6C
MIPI CSI-II	3x 4K Cameras Extension Module M/N : ACC3-STD-AN00
USB 3.0	mPCIe to four USB 3.0 Module M/N : TMPU-3401
GbE LAN	mPCIe to Dual Isolated GbE LAN Module M/N : TMPL-G201
PoE	mPCIe to Dual Isolated PoE Module M/N : TMPL-G2P1

ACE-CAM6C

6x CSI-II Camera Carrier Board with FPC Connector

Feature

- Support up to 6x 2M camera modules
- Transmit by MIPI CSI-II interface
- Support FDP-Link III in-vehicle camera module

ACCS3-STD-AN00

3x 4K or 6x FHD Extension Camera Module

Feature

- Transmit by MIPI CSI-II interface
- Support 3x 4K camera modules
- Support FDP-Link III in-vehicle camera module

Ordering Information

Model Number	Description
AN310-STD-AN00	AN310 Carrier, Standard temp -40°C to +85°C
AN310-TX2-FN01	AN310 Carrier with Nvidia Jetson TX2 module, Standard temp -25°C to +80°C
AN310-TX2-FN02	AN310 + TX2 Module + Fan + Cable Kit + US Power Adapter & Power Cord, -25°C to +80°C
AN310-TX2-FN03	AN310 + TX2 Module + Fan + Cable Kit + EU Power Adapter & Power Cord, -25°C to +80°C
AN310-T4G-FN01	AN310 Carrier with Nvidia Jetson TX2 4GB module, Standard temp -25°C to +80°C
AN310-T4G-FN02	AN310 + TX2 4GB Module + Fan + Cable Kit + US Power Adapter & Power Cord, -25°C to +80°C
AN310-T4G-FN03	AN310 + TX2 4GB Module + Fan + Cable Kit + EU Power Adapter & Power Cord, -25°C to +80°C

ACE-N510
Credit Card Size Carrier Board for NVIDIA Jetson TX2 / TX2 4GB / TX1

Features

- Support Jetson TX2 Series and TX1 in ultra-small form factor
- Amiable for compute-intensive and low-power AI applications
- Support extended temperature -20°C to 70°C
- 1x HDMI, 2x CAN Bus, 1x Micro USB 2.0 OTG, 2x USB 3.0, 1x RS-232,1x UART and 4x GPIO
- Ideal for smart cameras, robots, drones, mobile medical and deep learning

Surveillance **AI** **Drone** **Medical**

I/O

Mass Storage	1x Micro SD card slot
Video Interfaces	1x HDMI Type A
LAN	1x RJ-45 for Gigabit Ethernet
Expansion Slots	--
USB	1x USB2.0 Micro AB 2x USB3.0 Type A
Serial	1x RS-232
Others	1x Front Panel, 1x 4-pin FAN connector 1x UART, 4x GPIO 1x DC-in 12V Power Jack 2x CAN

Mechanical and Environmental

|	
Dimension	87 mm x 50 mm
Power Supply	12V / 5A DC
Operating Temperature	0 °C ~ +55 °C (Standard Version) -20 °C ~ +70 °C (Optional)
Operating Humidity	10% ~ 90%
Storage Temperature	-40 °C ~ +125 °C
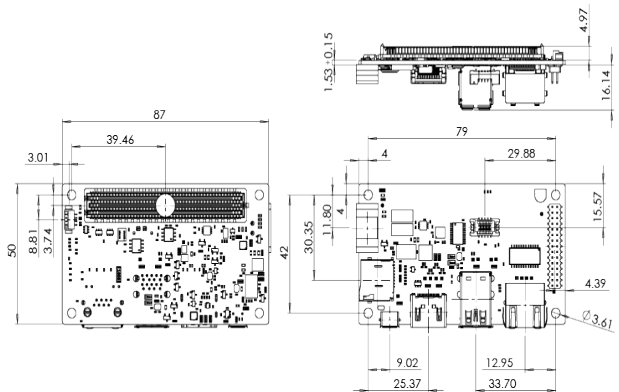
Ordering Information

Model Number	Description
ACE-N510	ACE-N510 Carrier, Standard temp 0°C to +55°C
ACE-N510-B	ACE-N510 Carrier, Wide temp -20°C to +70°C
AN510-TX2-NN01	ACE-N510 Carrier with Nvidia Jetson TX2 module, Standard temp 0°C to +55°C
AN510-TX2-BN01	ACE-N510 Carrier with Nvidia Jetson TX2 module, Wide temp -20°C to +70°C
AN510-TX2-NN02	ACE-N510 + TX2 Module + Fan + Cable Kit + Power Adapter & Power Cord, 0°C to +55°C
AN510-TX2-BN02	ACE-N510 + TX2 Module + Fan + Cable Kit + Power Adapter & Power Cord, -20°C to +70°C
AN510-TX2-NN03	ACE-N510 + TX2 Module + Fan + Cable Kit + Power Adapter & EU Power Cord, 0°C to +55°C
AN510-TX2-BN03	ACE-N510 + TX2 Module + Fan + Cable Kit + Power Adapter & EU Power Cord, -20°C to +70°C

Model Number	Description
AN510-T4G-NN01	ACE-N510 Carrier with Nvidia Jetson TX2 4GB module, Standard temp 0°C to +55°C
AN510- T4G -BN01	ACE-N510 Carrier with Nvidia Jetson TX2 4GB module, Wide temp -20°C to +70°C
AN510- T4G -NN02	ACE-N510 + TX2 4GB Module + Fan + Cab Kit + Power Adapter & Power Cord, 0°C to +55°C
AN510- T4G -BN02	ACE-N510 + TX2 4GB Module + Fan + Cable Kit + Power Adapter & Power Cord, -20°C to +70°C
AN510- T4G -NN03	ACE-N510 + TX2 4GB Module + Fan + Cable Kit + Power Adapter & EU Power Cord, 0°C to +55°C
AN510- T4G -BN03	ACE-N510 + TX2 4GB Module + Fan + Cable Kit + Power Adapter & EU Power Cord, -20°C to +70°C

ACE-N622

NVIDIA Jetson TX2 / TX1 Nano-ITX Carrier Board
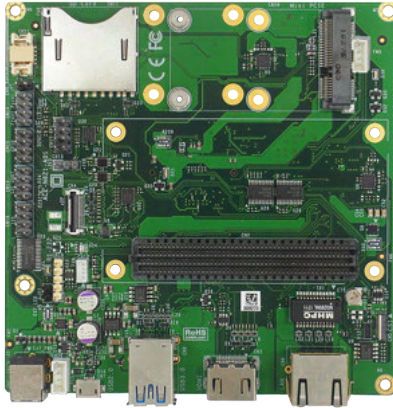
Features

- Nano-ITX form factor (120mm x 120mm)
- Two Full-Mini card for I/O extension flexibly and easily
- Support wide range of driver-ready extension I/O modules
- Compatible to Jetson TX2/TX1 modules, specifically designed for high performance, low-power Edge AI computing

Medical **AI** **Drone** **AOI** **3D Modeling**

I/O

Mass Storage	1x Full size SD card slot
Video Interfaces	1x HDMI Type A
LAN	1x RJ-45 for Gigabit Ethernet
Expansion Slots	1x Full-Mini card (PCI Express x1 USB2.0) 1x Full-Mini card (PCI Express x1 mSATA)
USB	1x USB2.0 Micro AB 2x USB3.0 Type A
Serial	1x RS-232
Others	1x Front Panel, 1x 4-pin FAN connector 1x 12V DC Output, 1x 5V DC Output 1x DC-in 12V~19V Power Jack 1x UART, 1x I2C, 4x GPIO, 1x I2S, 1x SPI 2x CAN

Ordering Information

Model Number	Description
ACE-N622	ACE-N622 Carrier, Standard temp 0°C to +55°C
ACE-N622-B	ACE-N622 Carrier, Wide temp -20°C to +70°C
AN622-TX1-NN01	ACE-N622 Carrier with Nvidia Jetson TX1 module, Standard temp 0°C to +55°C
AN622-TX1-BN01	ACE-N622 Carrier with Nvidia Jetson TX1 module, Wide temp -20°C to +70°C
AN622-TX1-NN02	ACE-N622 + TX1 Module + Fan + Cable Kit + Power Adapter and Power Cord, 0°C to +55°C
AN622-TX1-BN02	ACE-N622 + TX1 Module + Fan + Cable Kit + Power Adapter and Power Cord, -20°C to +70°C
AN622-TX2-NN01	ACE-N622 Carrier with Nvidia Jetson TX2 module, Standard temp 0°C to +55°C
AN622-TX2-BN01	ACE-N622 Carrier with Nvidia Jetson TX2 module, Wide temp -20°C to +70°C
AN622-TX2-NN02	ACE-N622 + TX2 Module + Fan+Cable Kit + Power Adapter and Power Cord, 0°C to +55°C
AN622-TX2-BN02	ACE-N622 + TX2 Module + Fan + Cable Kit + Power Adapter and Power Cord, -20°C to +70°C

Mechanical and Environmental

Dimension	Nano-ITX 120 mm x 120 mm
Power Supply	12V~19V/ 5A DC
Operating Temperature	0 °C ~ +55 °C (Standard Version) -20 °C ~ +70 °C (Optional)
Operating Humidity	10% ~ 90%
Storage Temperature	-40 °C ~ +125°C
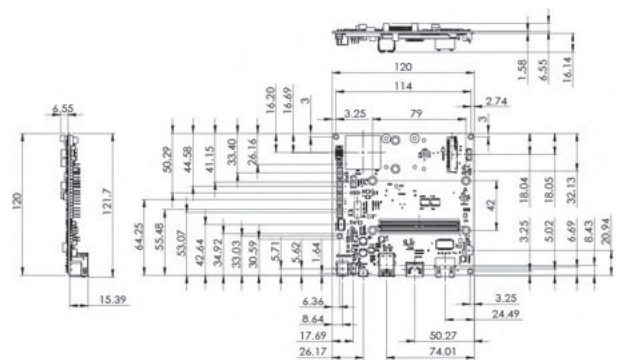
Certified Extension Modules

I/O	Module Type Description
CANBus	USB to dual isolated CANBus 2.0B Module M/N : TMUC-B201
RS-232	USB to Dual Isolated RS232 Module Wide temp M/N : TMU2-X2S1
Digital I/O	USB to 32bit Digital I/O Module Adapter and M/N : TMUI-0D01
USB 3.0	mPCIe to four USB 3.0 Module M/N : TMPU-3401
GbE LAN	mPCIe to Dual Isolated GbE LAN Module M/N : TMPL-G20
PoE	mPCIe to Dual Isolated PoE Module M/N : TMPL-G2P1

AX710

NVIDIA Jetson AGX Xavier Carrier Board

Features

- Nvidia Jetson AGX Xavier supported
- Specifically designed for high-level inference performance at the edge
- Wide temperature range -25℃ to 80℃
- 60-pins extension slot for PCIe x8, Support 3x mPCIe daughter board
- Ideal for industrial inspection, robots, medical imaging and deep learning

**Medical**   **AI**   **Drone**   **Surveillance**

I/O

Mass Storage	1x Micro SD card slot
Video Interfaces	2x HDMI Type A
LAN	1x RJ-45 (Internal) 2x RJ-45 (by extension daughter board)
Expansion Slots	1x 60 pin connector (PCIe x8) 1x M.2 M Key 1x M.2 E Key 4x iPEX (Each for MIPI CSI-II 4 Lanes)
USB	1x USB2.0 Micro AB 1x USB2.0 Type C (USB2.0 Speed) 2x USB3.0 Type A
Serial	1x RS-232
Others	1x Front Panel 1x 4-pin FAN connector 2x UART (1x Debug UART) 1x 6-pin Power connector 2x CAN / 1x I2C / 1x I2S / 5x GPIO

Mechanical and Environmental

Dimension	112 mm x 107 mm
Power Supply	9~20V
Operating Temperature	-25 °C ~ +80°C (Standard Version)
Operating Humidity	10% ~ 90%
Storage Temperature	-40 °C ~ +125°C
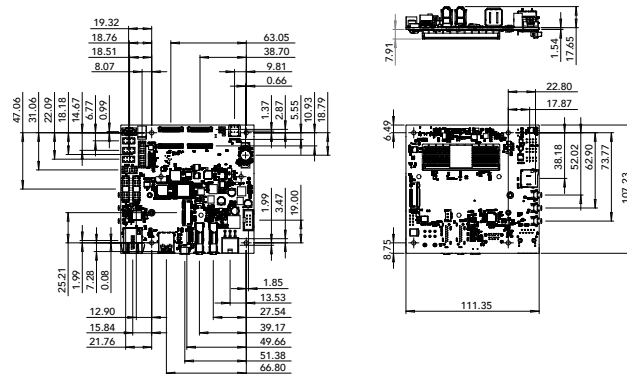
Ordering Information

Model Number	Description
AX710-STD-FN00	AX710 Carrier, Standard temp -25℃ to +80℃
AX710-XAV-FN02	AX710 + Xavier Module + FAN + Cable Kit + Power Adapter & US Power Cord -25℃ to +80℃
AX710-XAV-FN03	AX710 + Xavier Module + FAN + Cable Kit + Power Adapter and EU Power Cord -25℃ to +80℃

Aetina Corporation

www.aetina.com

Taipei, Taiwan

2-1,No.237,Sec.1, Datong Rd,Xizhi Dist,
New Taipei City 221, Taiwan

TEL | +886-2-7709-2568
FAX | +886-2-7746-1102
E-mail | sales@aetina.com

Shanghai, China

les enphants Building 701-Rm. B, No.1855.
Qishen Yi Duan Minxing Dist. Shanghai City China 201101

TEL | +86-21-6419 8038 / 21-6419 5356
Mobile | +86-1-86 6530 5062 / 173 2124 1600
E-mail | angus_hsu@aetina.com