Edge AI
Product Guide

MiTAC
MITAC DIGITAL TECHNOLOGY CORP.
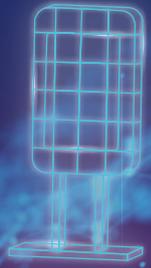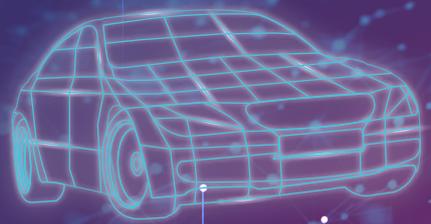
MA1

The MA1, powered by NVIDIA Jetson Orin Nano & NX, is an industrial Edge AI computer, operating in temperatures from -25°C to +60°C without a fan in a compact size. It features diverse I/O options, including 4K HDMI, dual RJ-45 Ethernet, USB 3.2 Gen 2 ports, RS-232 interface, M.2 2280 PCIe, NVMe connections, and 5G/LTE/WiFi-6E support. The MA1 targets applications requiring high AI inference performance in a compact footprint for public safety, smart retail, and smart transportation applications.

▍ Introduction

- NVIDIA® Jetson Orin™ Nano and NX SoC, Up to 100TOPS
- Industrial Fanless & Compact Design
- HDMI up to 4K®60Hz Resolution
- 2x RJ-45 1GLAN, 2x USB3.2, 1x COM
- High-speed M.2 2280 PCIe x4 NVMe
- Wide Operating Temperature -25~60°C

NVIDIA

AI Performace (100TOPS) | **Fanless Design** | **Wide temperature** | **Ubuntu**

Public Safety

Serves as a potent Edge AI platform for real-time monitoring and event detection in public safety. It connects to IP cameras for real-time image analysis, detecting security events like criminal activities or fires. Dual 1GbE LAN ports support multiple camera connections, and 5G/LTE and WiFi-6E ensure reliable connectivity.

Smart Retail

Enhances customer experiences, data analytics, and theft prevention in smart retail. IP cameras capture customer behavior and product data, analyzed in real-time using Edge AI on MA1. MA1 offers 4K®60Hz HDMI output for promotions, USB3.2 Gen2, and RS-232 interfaces for retail equipment.
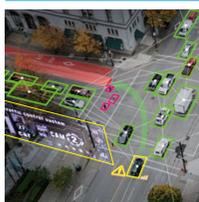
Traffic Management

Monitors traffic flow, identifies vehicles, and enhances traffic safety in traffic management. IP cameras at intersections capture data for real-time analysis on MA1, supported by dual 1GbE LAN ports, and works across a wide temperature range. 5G/LTE and WiFi-6E enable remote monitoring and data sharing.

Next-Gen NVIDIA Jetson Orin NX & Nano Compatibility

Unlock your Industrial Edge AI applications' full potential with the latest NVIDIA Jetson Orin NX and Nano System on Modules, delivering unmatched performance and efficiency.

High Reliability in Harsh Conditions

Robust, Fanless Design and Wide Operating Temperature Range for Seamless Industrial Integration and Unmatched Reliability in Harsh Conditions.

▍ Empower Your Industrial Edge AI Applications by NVIDIA Jetson Orin Edge Computer

Supporting both NVIDIA® Jetson Orin™ NX and Nano SOMs, delivering 20~100 TOPS of AI performance at the edge, even in harsh environments.

Future-Ready Connectivity

Versatile RJ-45, USB, and RS-232, coupled with 5G/LTE and WiFi-6E support, facilitate seamless data exchange in evolving Industrial Edge AI.

RS-232
USB3.2 Peripherals

Wireless Communication

IP cameras

HDMI Monitor

Industrial camera

5G/WIFI

Edge AI Product Selection Guide

GPU Type

Integrated Intel® Xe LPG GFX & NPU	Hailo VPU Modules	NVIDIA Jetson Orin	MiAi-H8 Card	NVIDIA High-end GFX
22 TOPS	**26 TOPS**	**100 TOPS**	**208 TOPS**	**3600 TOPS**
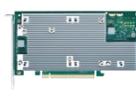
ME2 ▪ MA1 ▪ MB2 ▪ MP2 ▪ MX2 ▪ MZ1

High Performance ↑

Factory Automation	Machine Vision	Model	Size (Liters)	CPU Options	GPU Type	GPU Performance
Deep Learning	ML	MZ1	28	Core-i Socket	Nvdia GFX x2 (FHFL)	3600 TOPs
Machine Learning & Inference	AI Robotics	MZ1	28	Core-i Socket	Nvdia GFX x1 (FHFL)	1800 TOPs
		MX2-D	8.4	Core-i Socket	Nvdia GFX x1 (FHFL)	120-300 TOPs
	AOI	MX2	7.1	Core-i Socket	Hailo VPU Card (FHHL)	120-208 TOPs
		MP1-D	3.2	Core-i BGA	Hailo VPU (M.2)	26 TOPs
Inference	AMR	MP2	1.9	Core-i BGA	Intel® Xe LPG GFX & NPU	22 TOPs
		MA1	0.7	Jetson Orin	Nvidia SOM	20-100 TOPs
IoT Gateway	Data Acquisition	MB2	1.3	Atom BGA	Hailo VPU (M.2)	26 TOPs
		ME2	0.4	Atom BGA	Hailo VPU (M.2)	26 TOPs

Low Power ↓

Traffic Management & Tolling	Traffic Monitoring	Intersection Safey	Public Health Monitoring

Autonomous Delivery	Quality Inspection	Factory Safety	Retail Automated Checkout

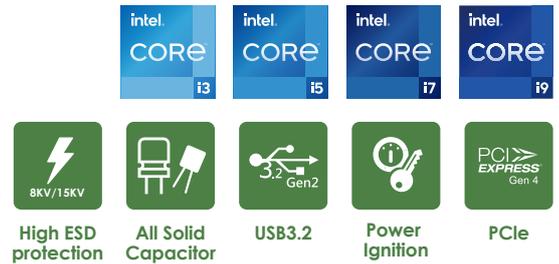| Smart Building	Advanced Driver Assistance (ADAS)	Front Facting Perception	Access Control

The MZ1-10ADP features a powerful Intel 12th/13th/14th Gen Core i processor, and cutting-edge AI capabilities by supporting two high-end FHFL GFX cards. This revolutionized design realizes the demand for intensive AI analytics, enabling no-latency inference and machine learning on the edge side. Its rugged design ensures durability even in harsh environments, making it an ideal choice for inference or machine learning applications such as factory automation and intelligent transportation systems.

Introduction

- Intel® 12th/13th/14th Gen Core-i processor
- Dual high-end GFX cards (600W+600W)
- 2 x DDR5 SO-DIMM (Up to 96GB)
- HDMI, DisplayPort, VGA, Dual 2.5G LAN
- Support 10 x USB, 4 x RS232, and 32-bit DIO
- 9~48V Wide Power Range

intel CORE i3	intel CORE i5	intel CORE i7	intel CORE i9

High ESD protection	All Solid Capacitor	USB3.2	Power Ignition	PCIe
8KV/15KV		3.2 Gen2		PCI EXPRESS Gen 4

Supporting 125W Intel Core™ Processor

intel®

12th Gen
Alder Lake-S Core™ Processors

13th Gen
Raptor Lake-S Core™ Processors

14th Gen
Raptor Lake-S Refresh Core™ Processors

Capable for x2 High-end GFX & AI Cards

Maximum
GFX Card Dimensions
358 mm × **150** mm × **4** Slots
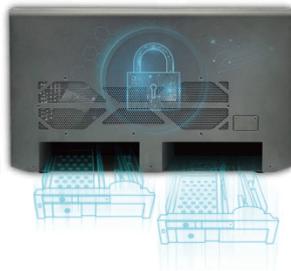
intel
LEADTEK
NVIDIA
HAILO
aetina

SUPPORTS **All**
the GPU &
AI Cards in the Market

Hot Swappable and Lockable HDD Tray

- Hot Swappable Design with Door Key for Data Protection
- Support Dual 2.5'' HDD and Dual 3.5'' HDD tray

Dedicated Designed Cooling Airflow

- Embedded Aluminum Extrusion Thermal Heatsink to Concentrate Airflow from **4 x CPU Fan**
- Side Chassis with Venting Holes in Mesh Type for Cold Air Inlet to **233CFM System Fan**

GPU Type	GPU Performance
Nvdia GFX x2 (FHFL)	1200 TOPs
Nvdia GFX x1 (FHFL)	600 TOPs

The MX2-10ADP is an advanced embedded box system designed for factory automation, machine vision, and Intelligent Transportation System markets. Powered by the Intel 12th/13th/14th Gen Core i processor, it delivers a significant performance boost while supporting rich I/O connectivity. The innovative Xpansion I/O Module design enables versatile I/O functionalities, supporting up to 12 PoE ports and accommodating a PCIex16 GPU card under 120W for graphics and AI applications.

■ Introduction

- Intel® Raptor Lake-S Refresh 14th/Raptor Lake-S 13th/Alder Lake-S 12th Core-i processor (Up to 65W)
- Support 2 x DDR5 SO-DIMM (Up to 96GB)
- HDMI, DisplayPort, VGA, 4 x 2.5G LAN
- Support 8 x USB, 3 x RS232, and 8-bit DIO
- 9~48V Wide Power Range

HAILO
Empowering Intelligence

intel CORE i3
intel CORE i5
intel CORE i7
intel CORE i9

Isolation I/O

High ESD protection
8KV/15KV

High shock & vibration protection
5G/50Grms

Fanless Design

■ AI Inferencing

■ Core™ i9 in Fanless Design

Core™ i9 — UP TO 2.5X
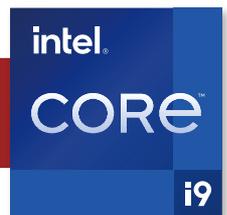
intel CORE i9

PERFORMANCE IMPROVEMENT GEN-ON-GEN

■ Harsh Environment

70℃

-40℃

■ I/O Expansion
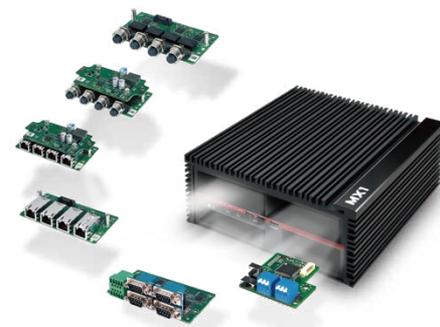
GPU Type	GPU Performance
Hailo VPU Card (FHHL)	120-208 TOPs

The MP2-10MTS, powered by Series 1 Intel® Core™ Ultra processors, boosts a 60% computing performance gain compared to the previous generation. To enhance I/O connectivity, the MP2-10MTS offers 4 x 2.5G LAN interface with optional PoE for Edge AI and machine vision, and with 4 x COM + 8-bit GPIO legacy I/O for factory automation applications. All these features make the MP2-10MTS a perfect fit for high performance and optimized size in various embedded applications.

Introduction

- Intel® Meteor Lake Core Ultra 7 & 5 processors
- Outstanding AI & Graphic computing capability with Integrated 4 x Inte®Iris Xe graphics
- Intel® vPro technology support
- 1 x DDR5 SO-DIMM and support up to 48GB
- Support 4 x i226LM 2.5G LAN (Optional PoE)
- 1 x 2.5'' SSD/HDD slot
- 3 x USB 2.0, 4 x USB 3.2 Gen2, 1 x USB Type C, 4 x COM, and 8-bit GPIO
- 8V~26V wide voltage power input
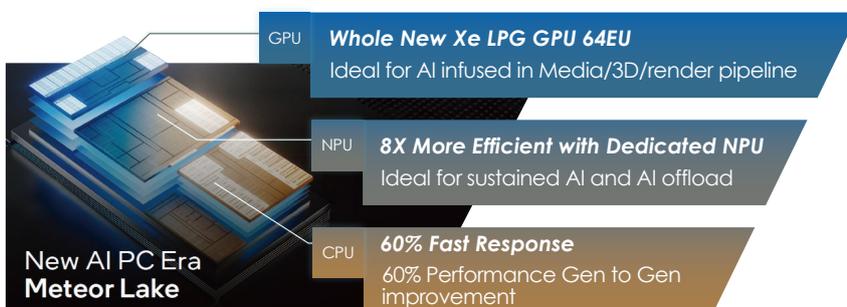
HAILO Empowering Intelligence

intel CORE ULTRA 5 **intel CORE ULTRA 7** **intel iRISxe GRAPHICS**

intel Meteor Lake — Intel Meteor Lake | **Fanless Design** | **LAN 2.5G** — 4x 2.5G LAN | **8V~26V DC-in** — Wide Range DC-in

New AI PC Era – Meteor Lake-U
Integrates CPU, GPU, and NPU

GPU — *Whole New Xe LPG GPU 64EU*
Ideal for AI infused in Media/3D/render pipeline

NPU — *8X More Efficient with Dedicated NPU*
Ideal for sustained AI and AI offload

CPU — *60% Fast Response*
60% Performance Gen to Gen improvement
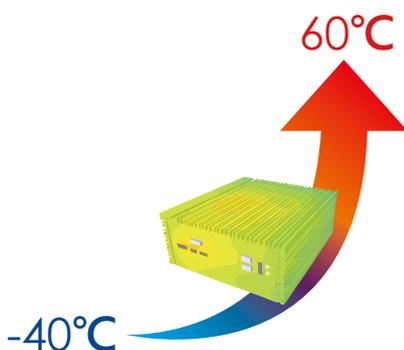
New AI PC Era
Meteor Lake

Supports 4 x 2.5G LAN w/ PoE+ options

- Total supports 4 x 2.5G Intel i226-LM LAN
- Supports 802.3af and 802.3at PoE w/ optional PoE power module
- For AI-driven AOI, AI-driven surveillance, or AI-driven environmental monitoring applications

PoE

Harsh Environment

60°C

-40°C

Intel® Series 1 (Meteor Lake-U) Core™ Ultra Processors (Up to 12 Cores)

New Generation of CPU architecture
Architecture on Intel 4(7nm) Process

Support Core Ultra 7
Up to 12 Cores, 14 Threads, 4.8GHz
Turbo Frequency, 15W TDP

60% Performance improve
Work done faster

UP TO **1.30X** **intel CORE ULTRA 5**
METEOR LAKE CORE ULTRA 5

UP TO **1.60X** **intel CORE ULTRA 7**
METEOR LAKE CORE ULTRA 7
GEN-OVER-GEN IMPROVEMENT

GPU Type		GPU Performance
Hailo VPU (M.2)		26 TOPs

The MB2-10ANS is a compact embedded system designed for Edge AI scenarios, such as functioning as an edge controller or an AIOT gateway. Powered by the Intel® Alder Lake-N N97/i3-N305 Processor, it is also equipped with 2x 2.5G Intel LAN and dedicated slots for WiFi, 4G, and 5G connectivity. With rich I/O ports supporting legacy I/Os, and its robust design featuring a wide operating voltage range and wide temperature tolerance, the MB2-10ANS becomes a reliable solution for diverse industrial environments.

Introduction

- Intel® Alder Lake-N N97 (4C) / i3-N305 (8C8T) Processor
- 1 x DDR5 SO-DIMM and support up to 16GB
- 2 x Intel® i226 2.5Gigabit Ethernet
- 1 x M.2 B Key, 1 x M.2 M Key, 1 x M.2 E Key slot
- 2 x USB 2.0, 3 x USB 3.2 Gen2 and 1 x USB Type C
- 8V~26V wide voltage power input

Powerful Alder Lake-N Processor

- i3-N305 (6M Cache, up to 3.8 GHz)
- N97 (6M Cache, up to 3.6 GHz)

HAILO Empowering Intelligence

intel INSIDE

intel CORE i3

Fanless Design

Wide temperature

Wide Range DC-in 8V~26V

Peripheral Options

All Solid Capacitor

Lower Power Consumption Fanless Thermal Design for Less Environmental Impact

2.7x Performance Improvement (CPU Passmark)

intel PENTIUM inside
2170 (23%) Intel® Pentium Core (2.5GHz)

intel INSIDE
5857 (58%) Intel® N97 4 x Core (3.6GHz)

intel CORE i3
10074 (100%) Intel® i3-N305 8 x Core (3.8GHz)

**Optional AI accelerating card**

All the Necessary IOs & Slots in One System

- Support HDMI + DisplayPort dual display
- Support 2 x 2.5G Intel LAN for high speed data transmission
- Support 4 x COM port & 8-bit Digital I/O for iIoT application
- 3 x M.2 Slot (B+M+E Key) for expansion modules

-25~60°C Wide Temperature

MB2-10ANS is designed in patented aluminum enclosure not only for atheistic appearance but also for fan-less application in extreme temperature condition from -25°C to 60°C.

-25°C ❄   ☀ 60°C
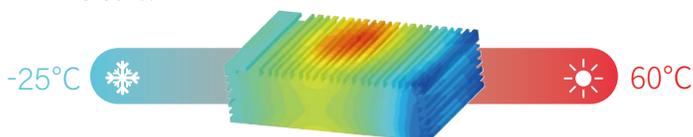
Advanced Power Protection

Reverse Power Input Protection
- Over Voltage Protection
- Over Current Protection
- ESD Protection: +/-15kV (air), +/-8kV (contact)
- Surge Protection: 3kW

Wide Power Range
8V~26V

ME2-10TWT

Intel Twin Lake
- 8 Cores
- 8 Thread
- 3.9GHz
- 6MB Cache

The ME2-10TWT is a compact and rugged embedded system designed for Edge Gateway and IoT applications, such as industrial gateways, on-site controllers, and field-deployed edge nodes. Powered by the Intel® Twin Lake Processor (N150/Core™ 3 N355), it delivers efficient computing performance and AI inference capability with low power consumption in a palm-sized form factor.
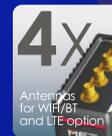
Introduction

- Intel® Twin Lake N150 (4C) / Core 3-N355 (8C8T) Processor
- 1 x LPDDR5-4800 (4GB, 8GB, 16GB)
- 1 x eMMC (64GB, 128GB)
- 2 x Realtek RTL8111H-CG 1 GbE
- 1 x M.2 B Key, 1x Nano SIM, 1 x M.2 E Key slot
- 3 x USB 3.2 Gen2 and 1 x USB Type C
- 1 x HMDI, 1 x COM port
- 1 x TPM 2.0
- 8V~26V wide voltage power input

SIM Slot — Easy Installation

4x Antennas for WiFi/BT and LTE option

Rich I/O — 3 x Type A, 1 x Type C — TYPE-C USB3.2 15W PD DisplayPort

Legacy I/O — Lock-type terminal block DC input — RS232/422/485

intel INSIDE

intel CORE 3

intel graphics — Up to 32 EU 4K@60HZ Display

Fanless Design 0.37Litter

Wide temperature -25~55°C

Wide Range DC-in 8V~26V

Supports PD/PSE Mode

All Solid Capacitor

Edge Gateway Application Scenarios.

1 x LAN supports 802.3af and 802.3at PoE Function by Modular Design

Dual PoE Modular Design

PD mode daughter board 25.5W

PSE mode daughter board 30W

VESA mounting

Fix VESA mount bracket to chassis by 2 screws.

- **Horizontal** Fix 2 M4 screws to monitor
- **Vertical** Fix 2 M4 screws to monitor

DIN Rail Mounting

Pocket Size
- Dimension (W x D x H): 118.5(W) x 80.4(D) x 39.5(H) mm