# DFI
Desire
For
Innovation

## Embedded Systems

Our Durable Embedded Systems for Your
Industrial-grade Applications

# Our Durable Embedded Systems for Your Industrial-grade Applications

## Embedded Systems Index

### AI Inference / Training System

EC180-CS

X6-MTH-ORN

X6-ORN

EC633D-RPS

EC622-RPS

| Processor | Model | Index |
|---|---|---|
| NVIDIA® Jetson Orin™ Nano/NX | X6-ORN | P8 |
| | X6-ORN-GMSL | |
| | X6X-ORN | |
| | V6Xa-ORN | |
| NVIDIA® Jetson Orin AGX™ | X6a-AGX | P9 |
| Intel Core Ultra+ Nvidia Jetson™ Nano/NX | X6-MTH-ORN | |
| Independent GPU card | EC622-RPS | P10 |
| | EC633-RPS | |
| | EC633D-RPS | |
| MXM | EC180-CS | P11 |
| | DT200-CS | |
| | EC300-CS | |
| Independent GPU card | RM645-ICX610 | P12 |
| | RM645-ERX810 | |
| | RM840-PR810 | |
| | RM811-ERX810 | |
| Core Ultra | EB100-MTU | P13 |
| | EC70A-MTH | |
| Hailo | EC700-ADN | |
| | EC710-ADN | |

### Ultra Compact Fanless PC

EB100-MTU

EC70A-MTH

EC70A-HPT

EC700-ASL

EC900-8MM

EC900-QCS

| Processor | Model | Index |
|---|---|---|
| Intel® Core™ Ultra Processor | EB100-MTU | P15 |
| | EC70A-MTH | |
| 12th Gen Intel® Core™ Processor | EC70A-ADP | |
| 11th Gen Intel® Core™ Processor | EC70A-TGU | |
| 7th/6th Gen Intel® Core™ Processor | EC70A-SU | P16 |
| Intel® Atom® Amston Lake Processor | EC700-ASL | |
| Intel® Atom® Alder Lake-N Processors | EC70A-ADN | P17 |
| | EC700-ADN | |
| | EC710-ADN | |
| Intel® Atom® Elkhart Lake Processors | ED700-EHL22I | P18 |
| | ED700-EHL | |
| Intel® Atom® Processor E3900 | EC90A-AL | P19 |
| | EC800-AL | |
| | EC700-AL | |
| Intel® Atom® Processor E3800 | EC700-BT | P20 |
| AMD® Ryzen™ Embedded 8000 Series | EC70A-HPT | |
| AMD® Ryzen™ Embedded R1000 Series | EC90A-GH | P21 |
| Qualcomm® QCS6490 Kryo™ 670 | EC900-QCS | |
| NXP i.MX 8M Mini Processor | EC900-8MM | P22 |
| | EC910-8MM | |
| NXP i.MX 6 Series Processor | EC900-FS6 | |

## Embedded PC

| Processor | Model | Index |
|---|---|---|
| 14th/13th/12th Gen Intel® Core™ Processor | SF101-ADS | P24 |
| | EC600-RPS | |
| | EC622-RPS | |
| | EC633-RPS | P25 |
| | EC633D-RPS | |
| | EC500-ADS | P26 |
| | EC510-ADS/EC511-ADS | |
| | EC543-ADS | |
| 9th/8th Gen Intel® Core™ Processor | EC500-CS | P27 |
| | EC510/EC511-CS | |
| | EC543-CS | |
| | ES220-CS | P28 |
| | ES220F-CS | |

**Embedded PC**

EC600-RPS

EC622-RPS

EC633D-RPS

## Ruggedized Embedded System

| Processor | Model | Index |
|---|---|---|
| Intel® Atom® Amston Lake Processor | ECX700-ASL | P30 |
| 12th Gen Intel® Core™ Processor | ECX700-ADP | |
| Intel® Atom® Processor E3900 | ECX700-AL | |
| NVIDIA® Jetson Orin™ Nano/NX | X6X-ORN | P31 |

**Ruggedized Embedded System**

ECX700-ASL

## Rugged Design

- Industrial-rated components with high MTBF over 100,000 hours
- Extended operating temperatures
- High ESD protection for I/O ports
- Comprehensive signal integrity measurement
- Wide range power design
- 100% Japan-made solid capacitor
- Power hot plug protection for DC-in type SBC and Industrial Motherboards

## Software Support

- Embedded BIOS and OS customization services
- Ubuntu IoT Hardware Certification
- Multiple Android, Linux distribution support
- DFI developing embedded API
  (Hardware monitor, SMBus, I$^2$C, Brightness Control, GPIO, Watchdog)
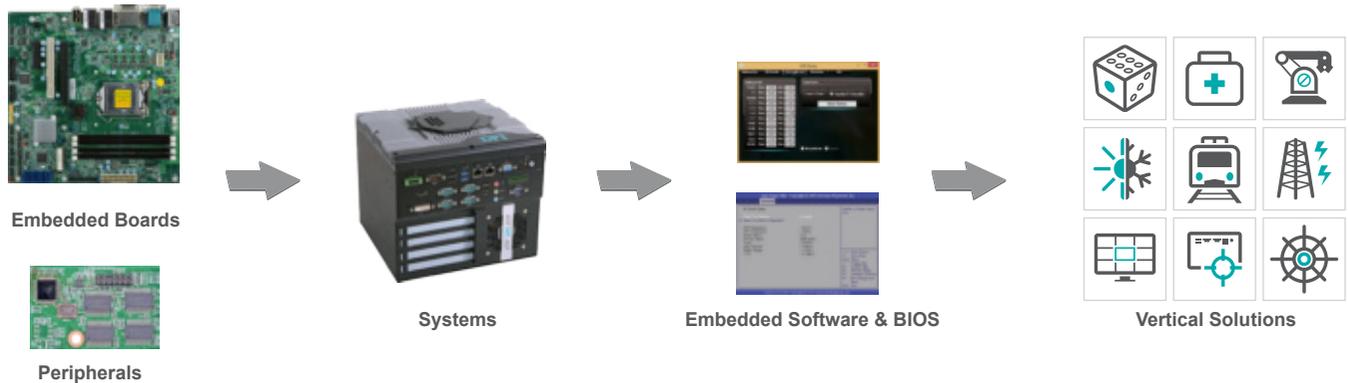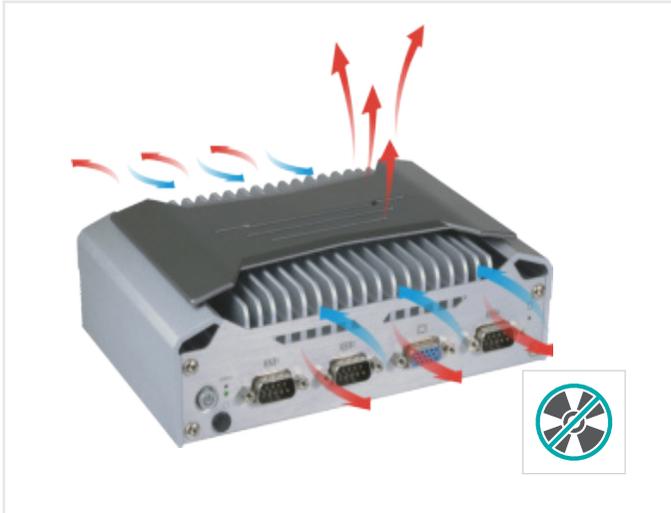- DFI Out of Band Management

ubuntu

## Embedded Total Solution

- Express customization service: 30 days (NRE cost: based on project)
- Strict revision control
- Long product life cycle support
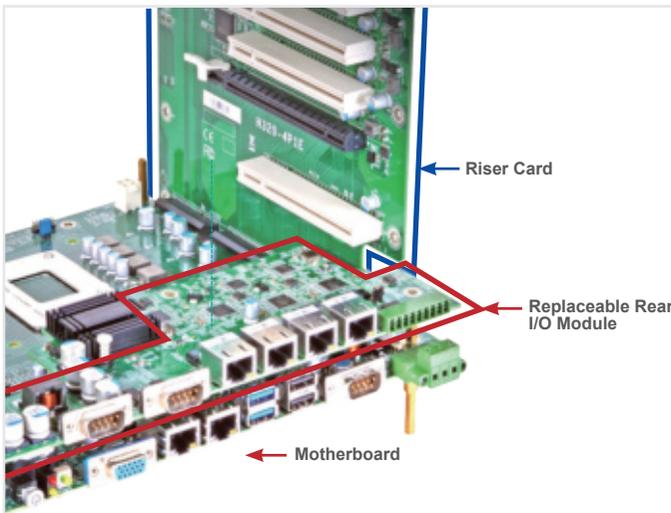- High volume OEM/ODM production capabilities

## We Provide a Total Solution Designed for Your Embedded Applications

**Embedded Boards**

**Peripherals**

**Systems**

**Embedded Software & BIOS**

**Vertical Solutions**

## Small and Lightweight, but Powerful

- Equipped with up to date Intel® Core™ and AMD Ryzen™ Processors with reliable memory design
- Optimized low profile thermal solution to improve system durability and reliability
- With ruggedized construction, the system survives a wide operating temperature range
- Various types of compact designed system, smallest dimension up to 110 x 80mm x 60mm  (W x H x D)

## Ultra-Flexible and Time-Effective Design

- Innovative modular concept designed to meet OEM requirements
- Replaceable I/O modules to provide I/O variations targeting industrial automation applications
- Multiple expansion configuration via different riser cards to offer flexibility to satisfy dedicated demands

**Riser Card**

**Replaceable Rear I/O Module**

**Motherboard**

## Various Form-Factor Configurable Systems

- Full range of standard industrial motherboards like Mini-ITX, ATX, microATX
- Multiple rack-mount, wall-mount chassis Options
- Designed for fast and easy implementation with minimal setup in a cost-effective manner
- Provides the configurable Options with well-integrated hardware and software to boost applications

# AI Inference/ Training System

GPU & High Performance CPU



## Actual AI applications are often composed of several AIs

In real-world scenarios, AI applications are rarely singular in function. Instead, they are composed of multiple AI models working together to process complex data streams, perform predictive analytics, and enhance automation. From machine vision and natural language processing to industrial anomaly detection, integrating several AI models into a single system is essential for achieving comprehensive intelligence. The challenge lies in efficiently managing these AI models within an edge computing environment, ensuring seamless execution without performance bottlenecks.

**Currently Available: X6-MTH-ORN**

DFI's X6-MTH-ORN is designed as a highly flexible AI computing platform, capable of supporting multiple AI ecosystems within a single, compact industrial system. With its robust architecture and compatibility with leading AI accelerators such as NVIDIA, Intel, the X6-MTH-ORN eliminates the need for multiple dedicated AI boxes. This refined approach reduces hardware redundancy, lowers costs, and simplifies system integration, allowing businesses to deploy and scale AI applications with minimal effort. By providing a unified platform for diverse AI workloads, the X6-MTH-ORN enhances adaptability in industrial environments.



**X6-MTH-ORN**

**Automated Optical Inspection**



## DFI Product x PEG

With a dedicated graphics card installed, the system enjoys maximum performance in both graphics and AI computing. Discrete graphics cards typically have more than an adequate number of cores and a higher bandwidth, as well as a large amount of video memory to handle both large-scale deep learning and high-intensity AI operations. To match the performance of the discrete graphics card, the powerful CPU is nothing but the must for I/O expandability and general-purpose applications.



**RM645-SO630**



**RM646-ERX810**

**Automation and Flaw Analysis**

Desire For Innovation

## DFI Product x MXM

Powers the same performance as its discrete counterpart, the MXM module allows more flexibility in layout, from size, weight to heat dissipation, achieves a more compact system. Systems with MXM module also enjoys the possibility of future upgrades and has no worries about the overall solution layout.

Supported MXM-compliant module: NVIDIA

**5G**

**EC300-CS**

**Driver Assistance**

## CPU+NPU

### Intel

| EB100-MTU | EC700-ADN |
|---|---|
| Ultra Core NUC | Alder Lake N with M.2 Hailo |

### AMD | Qualcomm

| EC70A-HPT | EC900-QCS |
|---|---|
| Embedded 8000 | QCS6490 |

## MXM

| Type A | Type B / B+ / C | | |
|---|---|---|---|
| EC180-CS | DT200-CS | EC300-CS | VC500-CMS-MXM |
| 60W MXM | 115W MXM | 150W MXM | 150W MXM |

## NVIDIA Jetson

### ORIN

| X6-ORN | X6-ORN-GMSL | X6X-ORN | V6Xa-ORN |
|---|---|---|---|
| ORIN NX or Nano | ORIN NX or Nano | ORIN NX or Nano | ORIN NX or Nano |

## NVIDIA Jetson

### AGX

| X6a-AGX |
|---|
| ORIN AGX |

## PCI Express GPU Card

### Expandable

| EC622-RPS | EC633-RPS | EC633D-RPS | RM641 | RM645 |
|---|---|---|---|---|
| 4.4"H x 6.6"L | 4.4"H x 9.5"L | 4.4"H x 10.5"L or longer | 4.4"H x 10.5"L or longer | 4.4"H x 10.5"L or longer |
| WM130 | WM343 | WM646 | RM646 | RM840 |
| 4.4"H x 6.6"L | 4.4"H x 9.5"L | 4.4"H x 9.5"L | 4.4"H x 10.5"L or longer | 4.4"H x 10.5"L or longer |

| Model Name | | X6-ORN | X6-ORN-GMSL | X6X-ORN | V6Xa-ORN |
|---|---|---|---|---|---|
| Platform | | - | - | - | - |
| System | Processor | 6/8-core Arm® Cortex®-A78AE v8.2 64-bit CPU | 6/8-core Arm® Cortex®-A78AE v8.2 64-bit CPU | 6/8-core Arm® Cortex®-A78AE v8.2 64-bit CPU | 6/8-core Arm® Cortex®-A78AE v8.2 64-bit CPU |
| | Socket | - | - | - | - |
| | Max. Speed | - | - | - | - |
| | CPU TDP | 7-25W / 10-40W | 7-25W / 10-40W | 7-25W / 10-40W | 7-15W / 10-25W |
| | Cache | - | - | - | - |
| | Chipset | - | - | - | - |
| | BIOS | - | - | - | - |
| GPU / AI Accelerator Card Support | | NVIDIA® Jetson Orin Nano™/ NX, up to 157TOPS | NVIDIA® Jetson Orin Nano™/ NX, up to 157TOPS | NVIDIA® Jetson Orin Nano™/ NX, up to 157TOPS | NVIDIA® Jetson Orin Nano™/ NX, up to 100TOPS |
| Memory | Technology | 128-bit/64-bit LPDDR5 | 128-bit/64-bit LPDDR5 | 128-bit/64-bit LPDDR5 | 128-bit/64-bit LPDDR5 |
| | Max. Capacity | 8/16GB | 8/16GB | 8/16GB | 8/16GB |
| | Socket | onboard | onboard | onboard | onboard |
| Storage | | M.2 2242/2280 M key | M.2 2242/2280 M key | M.2 2242/2280 M key | M.2 2242/2280 M key (NVMe) |
| Expansion | PCIe, PCI, Mini PCIe | - | - | - | - |
| | M.2 | 1 M.2 Key E 2230, 1 M.2 Key B 3042/3052 | 1 M.2 Key E 2230, 1 M.2 Key B 3042/3052 | 1 M.2 Key E 2230, 1 M.2 Key B 3042/3052 | 1 M.2 Key E 2230, 1 M.2 Key B 3042/3052 |
| | SIM | 1 Nano SIM | 1 Nano SIM | 1 Nano SIM | 1 Nano SIM |
| Audio | Audio Codec | HS-100B | - | - | - |
| Ethernet | Controller | 4 Intel I210, 2 PoE (Opt.) | 4 Intel I210, 2 PoE (Opt.) | 4 Intel I210, 2 PoE (Opt.) | 2 Intel I210 |
| LED | Indicators | Power, PoE, OOB | Power, PoE, OOB | Power | Power |
| I/O | Ethernet | 4 GbE | 4 GbE | 4 GbE | 2 GbE M12 X code with PoE |
| | Camera I/F | - | 2 GMSL2 | 2 GMSL2 | 8 GMSL2 or 4 x PoE |
| | Serial | 1 RS-232/485, CAN bus | 1 RS-232, 1 CAN bus | 1 RS-232, 1 CAN bus | 1 M12 A Code (Isolated CAN BUS 2.0) |
| | USB | 4 USB 3.2 Gen1, 1 micro USB for OS Flash | 4 USB 3.2 Gen1, 1 micro USB for OS Flash | 4 x USB 3.0 Type-A, M20 1 x USB 2.0 M20 (type A for recovery) | 1 USB 2.0 M20, 2 USB 3.0 M20 |
| | Display | 1 HDMI | 1 HDMI | 1 HDMI | 1 HDMI |
| | DIO | 4 DI, 4 DO | 4 DI, 4 DO | 4 DI, 4 DO | - |
| | Buttons | Power, Reset, Recover | Power, Reset, Recover | Power, Reset, Recover | Power, Reset Button, Recover |
| | Antenna | 6 holes | 6 holes | 6 holes | 6 holes |
| | Audio | Mic-in, Line-out | Mic-in, Line-out | Mic-in, Line-out | - |
| Power | | 9-36V DC-in | 9-36V DC-in | 9-36V DC-in | 9-36V DC-in, Ignition control |
| Cooling | | Fanless | Fanless | Fanless | Fanless |
| OS Support | | Linux Ubuntu 22.04 | Linux Ubuntu 22.04 | Linux Ubuntu 22.04 | Linux Jetpack 6.2 |
| Mechanism | Construction | Aluminum + SGCC | Aluminum + SGCC | Aluminum + SGCC | Aluminum + SGCC |
| | Mounting | Wall mount / DIN mount (Opt.) | Wall mount / DIN mount (Opt.) | Wall mount / DIN mount (Opt.) | Wall mount |
| | Dimensions (W x H x D) | 165 x 65 x 150 mm | 165 x 65 x 150 mm | 237 x L: 194 x H: 105.3 mm | 237 x L: 194 x H: 105.3 mm |
| Environment | Operating Temp. | -20°C ~ 60°C | -20°C ~ 60°C | -20°C ~ 60°C | -20°C ~ 70°C Optional -40°C |

| Model Name | | X6a-AGX | X6-MTH-ORN |
|---|---|---|---|
| Platform | | - | - |
| System | Processor | 8/12-core Arm® Cortex®-A78AE v8.2 64-bit CPU | Intel® Core™ Ultra Processor/ 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU |
| | Socket | - | BGA 2049 |
| | Max. Speed | - | 1.3~1.7GHz |
| | CPU TDP | 15-75W | 15W / 7-40W |
| | Cache | - | 12M |
| | Chipset | - | - |
| | BIOS | - | AMI SPI |
| GPU / AI Accelerator Card Support | | NVIDIA® Jetson Orin AGX™, up to 275 TOPs | Nvidia Orin NX / Nvidia Orin Nano, up to 157OPS |
| Memory | Technology | 256-bit LPDDR5 | Dual Channel DDR5 5600MHz |
| | Max. Capacity | 64GB | 64GB / 16GB |
| | Socket | onboard | 2 SO-DIMM |
| Storage | | M.2 2242/2280 M key (NVMe), micro-SD card | 1 on board SSD up to 1024GB (Opt.) Optional 2x 2.5" SATA tray kit, M.2 2242/2280 M key SSD |
| Expansion | PCIe, PCI, Mini PCIe | - | - |
| | M.2 | 1 M.2 Key E 2230, 1 M.2 Key B 3042/3052 | 1 M.2 3042/3052 B key 1 M.2 2230 E key, 1 M.2 2242/2280 M key |
| | SIM | 1 Nano SIM | 1 Nano SIM |
| Audio | Audio Codec | - | - |
| Ethernet | Controller | 1 I210 1 AQR113 | 5 Intel i210, Optional 2x 15W PoE |
| LED | Indicators | Power LED | Power, PoE, OOB |
| I/O | Ethernet | 1 GbE RJ-45, 1 10G RJ-45 | 2 GbE, 2x2 stacked RJ45 GbE |
| | Camera I/F | 8 GMSL2 (Opt.) | - |
| | Serial | CAN bus | 1 RS-232, 1 combo RS-232/CAN bus |
| | USB | 2 USB 3.2 Gen1, 2 USB 2.0 USB type B for OTG recovery | 8 USB 3.2, 1 micro USB |
| | Display | 1 HDMI | 1 VGA, 3 HDMI |
| | DIO | - | - |
| | Buttons | Power, Recovery | Power, Reset Button |
| | Antenna | 6 holes | 6 holes |
| | Audio | Mic-in, Line-out | Mic-in, Line-out |
| Power | | 12~54V DC-in | 9-36V DC-in |
| Cooling | | Fanless | Fanless |
| OS Support | | Linux Jetpack 6.2 | Win10, Win11, Linux Ubuntu 22.04 |
| Mechanism | Construction | Aluminum + SGCC | Aluminum + SGCC |
| | Mounting | Wall mount | Wall / DIN Mount (Opt.) |
| | Dimensions (W x H x D) | 221 x L: 200 x H: 80 mm | 250 x 65 x 150 mm |
| Environment | Operating Temp. | -20°C ~ 60°C | -20°C ~ 60°C |

| Model Name | | EC622-RPS | EC633-RPS | EC633D-RPS |
|---|---|---|---|---|
| Platform | | Desktop | Desktop | Desktop |
| System | Processor | 14th/13th/12th Gen Intel® Core™ Processor | 14th/13th/12th Gen Intel® Core™ Processor | 14th/13th/12th Gen Intel® Core™ Processor |
| | Socket | LGA1700 | LGA1700 | LGA1700 |
| | Max. Speed | 1.1~5.2GHz | 1.1~5.2GHz | 1.1~5.2GHz |
| | CPU TDP | 35/46/60/65W | 35/46/60/65W | 35/46/60/65W |
| | Cache | 4/6/12/18/20/24/25/30/33/36M | 4/6/12/18/20/24/25/30/33/36M | 4/6/12/18/20/24/25/30/33/36M |
| | Chipset | Intel® R680E | Intel® R680E | Intel® R680E |
| | BIOS | AMI SPI 256Mbit | AMI SPI 256Mbit | AMI SPI 256Mbit |
| GPU / AI Accelerator Card Support | | - | - | - |
| Memory | Technology | Dual Channel DDR5 4800MHz | Dual Channel DDR5 4800MHz | Dual Channel DDR5 4800MHz |
| | Max. Capacity | 64GB | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM | 2 SODIMM |
| Storage | | 2 M.2 2280 M key | 2 M.2 2280 M key | 2 M.2 2280 M key |
| Expansion | PCIe, PCI, Mini PCIe | 1 Full mPCIe, 1 PCIe x16, 1 PCIe x4 | 1 Full mPCIe, 2 PCIe x8, 1 PCIe x4 | 1 Full mPCIe, 2 PCIe x8, 1 PCIe x4 |
| | M.2 | 2 M.2 2280 M key<br>1 M.2 3042/3052 B key<br>1 M.2 2230 E key<br>1 M.2 3042 A key | 2 M.2 2280 M key<br>1 M.2 3042/3052 B key<br>1 M.2 2230 E key<br>1 M.2 3042 A key | 2 M.2 2280 M key<br>1 M.2 3042/3052 B key<br>1 M.2 2230 E key<br>1 M.2 3042 A key |
| | SIM | 2 Nano SIM | 2 Nano SIM | 2 Nano SIM |
| Audio | Audio Codec | - | - | - |
| Ethernet | Controller | 1 Intel® I219LM, 3 Intel® I210IT, 2 Intel® I226IT | 2 Intel® I226IT, 1 Intel® I219LM, 3 Intel® I210IT | 2 Intel® I226IT, 1 Intel® I219LM, 3 Intel® I210IT |
| LED | Indicators | Status, HDD LED | Status, HDD LED | Status, HDD LED |
| I/O | Ethernet | 4 GbE + 2 2.5GbE<br>or 2 GbE + 2 2.5GbE + 2 PoE (Opt.) | 4 GbE + 2 2.5GbE<br>or 2 GbE + 2 2.5GbE + 2 PoE (Opt.) | 4 GbE + 2 2.5GbE<br>or 2 GbE + 2 2.5GbE + 2 PoE (Opt.) |
| | Camera I/F | - | - | - |
| | Serial | 1 RS-232/422/485/DIO, 8 RS-232 | 2 RS-232/422/485/DIO, 8 RS-232 | 2 RS-232/422/485/DIO, 8 RS-232 |
| | USB | 5 USB 3.2 Gen2, 1 Type-C | 5 USB 3.2 Gen2, 1 Type-C | 5 USB 3.2 Gen2, 1 Type-C |
| | Display | 1 VGA, 1 DP++, 1 HDMI | 1 VGA, 1 DP++, 1 HDMI | 1 VGA, 1 DP++, 1 HDMI |
| | DIO | 8bits (share with COM1) | 8bits (share with COM1) | 8bits (share with COM1) |
| | Buttons | Power, Reset | Power, Reset | Power, Reset |
| | Antenna | 4 Holes | 4 Holes | 4 Holes |
| | Audio | - | - | - |
| Power | | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fan  (optional Fanless) | Fan  (optional Fanless) | Fan  (optional Fanless) |
| OS Support | | Win10 IoT, Win11, Linux(Opt.) | Win10 IoT, Win11, Linux(Opt.) | Win10 IoT, Win11, Linux(Opt.) |
| Mechanism | Construction | Metal + Aluminum | Metal + Aluminum | Metal + Aluminum |
| | Mounting | Wall Mount | Wall Mount | Wall Mount |
| | Dimensions (W x H x D) | 249.5 x 120 x 223 mm | 249.5 x 193 x 275 mm | 249.5 x 193 x 342 mm |
| Environment | Operating Temp. | CPU TDP 35W: -20°C~70°C<br>CPU TDP 65W: -20°C~50°C | CPU TDP 35W: -20°C~70°C<br>CPU TDP 65W: -20°C~50°C | CPU TDP 35W: -20°C~70°C<br>CPU TDP 65W: -20°C~50°C |

# AI Inference / Training System

| Model Name | | EC180-CS | DT200-CS | EC300-CS |
|---|---|---|---|---|
| Platform | | Desktop | Desktop | Desktop |
| System | Processor | 9th/8th Gen Intel® Core™ Processor | 9th/8th Gen Intel® Core™ Processor | 9th/8th Gen Intel® Core™ Processor |
| | Socket | LGA 1151 Socket | LGA 1151 Socket | LGA 1151 |
| | Max. Speed | 3.1~4.0GHz | 3.1~4.6GHz | 1.8~2.6GHz |
| | CPU TDP | 35/58W | 35/54/58/65W | 35/65W |
| | Cache | 6~12MB | 6~12MB | 9/12M |
| | Chipset | Intel® H310/Q370 | Intel® H310/Q370 | Intel® Q370 |
| | BIOS | AMI SPI 128Mbit (supports UEFI/Legacy mode) | AMI SPI 128Mbit (supports UEFI/Legacy mode) | AMI SPI 128Mbit |
| GPU / AI Accelerator Card Support | | 1 MXM 3.1 slot, Type-A/B up to 60W | 1 MXM 3.1 slot, Type-A/B up to 110W | MXM Type A, B, C on x16 PCIe 3.0 |
| Memory | Technology | DDR4 2400/2666MHz | DDR4 2400/2666MHz | Dual Channel DDR4 2400/2666MHz |
| | Max. Capacity | 64GB | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM | 2 SODIMM |
| Storage | | 1x SATA 3.0 for 1x 2.5" SSD, 1 M.2 2242/2280 M Key | 1x SATA 3.0 for 1x 2.5" SSD, 1 M.2 2242/2280 M Key | 4 Swappable 2.5" SSD Storage Bays, 1 M.2 2280 M Key |
| Expansion | PCIe, PCI, Mini PCIe | - | - | 1 Half mPCIe, 2 Full mPCIe |
| | M.2 | 1 M.2 2242/2280 M key, 1 M.2 3052 B key, 1 M.2 2230 E key | 1 M.2 2242/2280 M key, 1 M.2 3052 B key, 1 M.2 2230 E key | 1 M.2 3042/3052 B Key, 1 M.2 2280 M Key |
| | SIM | - | - | 3 SIM |
| Audio | Audio Codec | Realtek ALC888S | Realtek ALC888S | Realtek ALC888 |
| Ethernet | Controller | 1 Intel® I219V/LM, 3 Intel® I210AT | 1 Intel® I219V/LM, 3 Intel® I210AT | 5 Intel® I210IT, 1 Intel® I219LM |
| LED | Indicators | PWD, HDD LED | PWD, HDD LED | Power, Storage, POE LED |
| I/O | Ethernet | 4 GbE | 4 GbE | 2 GbE, 4 PoE |
| | Camera I/F | - | - | - |
| | Serial | 2 RS-232/422/485 | 2 RS-232 | 2 RS-232/422/485 (DB-9), 2 RS-232/422/485 (onboard) |
| | USB | 4 USB 3.2 | 4 USB 3.2, 6 USB 2.0 | 4 USB 3.2, 2 USB 2.0 |
| | Display | 1 DP++, 4 DP++ (from MXM) | 1 DP++, 4 DP++ (from MXM) | 1 VGA, 1 DP++, 1 HDMI |
| | DIO | - | - | 1 isolated DI, 1 isolated DO |
| | Buttons | Power | Power | Power, Reset |
| | Antenna | 6 holes | 6 holes | 7 holes |
| | Audio | Line-out, Mic-in | Line-out, Mic-in | Line-out, Mic-in |
| Power | | 19V DC-in | 19V DC-in | 12V DC-in |
| Cooling | | Fanless | Fan | Fanless |
| OS Support | | Win10 IoT, Linux | Win10 IoT, Linux | Win10 IoT, Linux Ubuntu |
| Mechanism | Construction | Aluminum + SGCC | Aluminum + SGCC | Metal + Aluminum |
| | Mounting | Wall Mount | Wall Mount | Wall Mount |
| | Dimensions (W x H x D) | 250 x 180 x 76 mm | 320 x 220 x 87 mm | 340.5 x 132 x 223 mm |
| Environment | Operating Temp. | 0°C~45°C | 0°C~55°C | -20°C~70°C / -20°C~55°C |

| Model Name | | RM645-ICX610 | RM645-ERX810 | RM840-PR810 | RM811-ERX810 |
|---|---|---|---|---|---|
| Platform | | Server-Grade | Server-Grade | Server-Grade | Server-Grade |
| System | Processor | 3rd Gen Intel® Xeon® Scalable Processor Family | 5th/4th Gen Intel® Xeon® Scalable Processor Family | 2nd/1st Gen Intel® Xeon® Scalable Processor Family | 5th/4th Gen Intel® Xeon® Scalable Processor Family |
| | Socket | LGA 4189 | LGA 4677 Socket | LGA 3647 | LGA 4677 Socket |
| | Max. Speed | 3.6GHz | ~4.1GHz | 3.0~3.9GHz | ~4.1GHz |
| | CPU TDP | Max. 205W | Max. 250W | Max. 150W | Max. 165W |
| | Cache | Max 48M | Max. 60MB | Max. 35.75M | Max. 22.5M |
| | Chipset | Intel® C621A | Intel® C741 | Intel® C622 | Intel® C741 |
| | BIOS | Insyde SPI 128Mbit | Insyde | Insyde SPI 256Mbit | Insyde |
| GPU / AI Accelerator Card Support | | 3 x PCIe x16 Gen4 slot<br>3 x PCIe x8 Gen4 slot | 4 x PCIe x16 Gen5 slot<br>2 x PCIe x8 Gen5 slot | 4 x PCIe x16 Gen3 slot<br>1 x PCIe x8 Gen3 slot | 1 x PCIe x16 Gen5 slot |
| Memory | Technology | DDR4 Max. 3200MHz | DDR5 Max. 5600MHz | Single Channel DDR4 2133/2400/2666/2933 MHZ | DDR5 Max. 5600MHz |
| | Max. Capacity | 512GB | 1024GB | 384GB | 1024GB |
| | Socket | 8 ECC-RDIMM | 16 ECC-RDIMM | 12 RDIMM | 16 ECC-RDIMM |
| Storage | | 6 SATA 3.0, 1 M.2 2280 M key | 4 x 2.5" hot-swap<br>1 M.2 2280 M Key<br>4 x E1.S NVME Gen5 | 2x 5.25" (1x 2.5"),<br>1x 3.5" (1x 2.5"),<br>1 M.2 2280 M Key | 4 x 3.5"/2.5" hot-swap<br>1 M.2 2280 M Key |
| Expansion | PCIe, PCI, Mini PCIe | 3 PCIe x16, 3 PCIe x8 | 4 PCIe x16, 2 PCIe x8 | 4 PCIe x16, 1 PCIe x8, 1 PCI | 1 PCIe x16 |
| | M.2 | 1 M.2 M key 2280 | 1 M.2 M key 2280 | 1 BMC Module slot for SEM2500/2510 (IPMI),<br>1 100GbE slot (x4 + x8) | 1 M.2 M key 2280 |
| | SIM | - | - | - | - |
| Audio | Audio Codec | ALC888S | ALC888S | Realtek ALC888 | ALC888S |
| Ethernet | Controller | 2 Intel® I210AT, 2 Intel® x550-AT2, IPMI: RTL8211F | 4 Intel® I210AT, IPMI: RTL8211F | 2 Intel® I210AT, 1 Intel® x557-AT2 | 2 Intel® I210AT, IPMI: RTL8211F |
| LED | Indicators | Power, HDD LED | Power, HDD LED | Power, HDD LED | Power, HDD LED |
| I/O | Ethernet | 2x GbE, 2x 10GbE, 1 IPMI LAN | 4 GbE, 1 IPMI LAN | 2 GbE, 2 10GbE,<br>IPMI 2.0: 1 share w/ i210AT (Opt.) | 2 GbE, 1 IPMI LAN |
| | Camera I/F | - | - | - | |
| | Serial | 1 RS-232 | 1 RS-232/422/485 | 1 RS-232 | 1 RS-232/422/485 |
| | USB | 4 USB 3.2, 2 USB 2.0 | 4 USB 3.2 Gen1 | 4 USB 3.2, 2 USB 2.0 | 4 USB 3.2 Gen1 |
| | Display | 1 VGA (Opt.) | 1 DP | 1 VGA (Opt.) | 1 DP |
| | DIO | - | - | - | - |
| | Buttons | Power Button | Power, Reset | Power, Reset | Power, Reset |
| | Antenna | - | - | - | - |
| | Audio | Onboard Front Audio Pin Header | Onboard Front Audio Pin Header | Onboard Front Audio Pin Header | Onboard Front Audio Pin Header |
| Power | | ATX PS/2 or Mini Redundant PSU | ATX PS/2 or Redundant PSU | ATX PS/2 Power Supply 650W | FlexATX or Redundant PSU |
| Cooling | | Fan | Fan | Fan | Fan |
| OS Support | | Win10 IoT, Windows Server 2019, Linux Ubuntu | Windows 11 LTSC<br>Widows server 2022 LTSC | Win 10 IoT,<br>Windows Server 2016 & 2019, Linux | Windows 11 LTSC<br>Widows server 2022 LTSC |
| Mechanism | Construction | Heavy Industrial Steel | Heavy Industrial Steel | Heavy Industrial Steel | Heavy Industrial Steel |
| | Mounting | Rackmount kit | Rackmount kit | Rackmount kit | Rackmount kit |
| | Dimensions (W x H x D) | 481.6 x 175.6 x 470.8 mm | 481.6 x 175.6 x 470.8mm | 483 x 177 x 510 mm | 438 x 44 x 673.2 mm |
| Environment | Operating Temp. | 0°C ~ 40°C | 0°C ~ 40°C | 0°C ~ 40°C | 0°C ~ 40°C |

# AI Inference / Training System



| Model Name | | EB100-MTU | EC70A-MTH | EC700-ADN | EC710-ADN |
|---|---|---|---|---|---|
| Platform | | ULT | ULT | Atom | Atom |
| System | Processor | Intel® Core™ Ultra Processor | Intel® Core™ Ultra Processor | Intel® Atom® Alder Lake-N Processors | Intel® Atom® Alder Lake-N Processors |
| | Socket | BGA2049 | FCBGA2049 | BGA 1264 | BGA 1264 |
| | Max. Speed | 1.3~1.7GHz | 4.3~4.9GHz | 2.7~3.4GHz | 3.0GHz |
| | CPU TDP | 12W | 15W(Fanless), 28W(w/Fan) | 6/10/12W | 15W |
| | Cache | 12M | 12M | 6 MB Smart Cache | SOC |
| | Chipset | - | - | SOC | SOC |
| | BIOS | AMI SPI 256Mbit | AMI SPI 256Mbit | AMI SPI 256Mbit (supports UEFI boot only) | AMI SPI 256Mbit (supports UEFI boot only) |
| Memory | Technology | Single Channel DDR5 5600MHz | Dual Channel LPDDR5 6400MHz | LPDDR5 4800MHz | LPDDR5 4800MHz |
| | Max. Capacity | 48GB | 16/32GB (Opt.) | 8GB/16GB | 8GB/16GB |
| | Socket | 1 SODIMM | Memory down | Memory down | Memory down |
| Storage | | 1 M.2 2280 M Key | 1 M.2 2280 M Key | 1 M.2 2280 M Key | 1 M.2 2280 M Key |
| Expansion | PCIe, PCI, Mini PCIe | - | - | - | - |
| | M.2 | 1 M.2 2230 E Key 1 M.2 2280 M Key | 1 M.2 M Key 2280 1 M.2 B Key 3052 1 M.2 E Key 2230 | 1 M.2 2230 E key, 1 M.2 3042/3052 B key, 1 M.2 2242/2280 M key | 1 M.2 2230 E key, 1 M.2 3042/3052 B key, 1 M.2 2242/2280 M key |
| | SIM | - | 1 | 1 | 1 |
| Audio | Audio Codec | - | - | Realtek ALC888S | Realtek ALC888S |
| Ethernet | Controller | 2 Intel® I226IT | 2 Intel® I226IT 1 Intel® I210IT | 2 Intel I226, 1 Intel I210 | 2 Intel I226, 1 Intel I210 |
| LED | Indicators | Power, Storage LED | Power, Storage LED | Power, Storage LED | Power, Storage LED |
| I/O | Ethernet | 2 2.5GbE | 2 2.5GbE, 1 GbE | 2 2.5GbE, 1 GbE | 2 2.5GbE, 1 GbE |
| | Serial | 1 RS-232/422/485 (default RS-232) 1 RS-232 | 1 RS-232/422/485, 2 RS-232, 1 RS-232/422/485/8-bit DIO | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO |
| | USB | 4 USB 3.2 + 2 USB-C or 5 USB 3.2 + 1 USB-C (USB-C w/DP Alt. Mode) | 5 USB 3.2 or 4 USB 3.2 + 1 USB 2.0, 1 USB Type C | 3 USB 3.2 type A, 1 USB-C 3.2 | 3 USB 3.2 type A, 1 USB-C 3.2 |
| | Display | 1/2 USB-C DP Alt. mode | 1 HDMI, 1 Type-C DP Alt. Mode | 1 VGA, 1 HDMI, 1 USB-C (DP1.2 Alt. Mode) | 1 VGA, 1 HDMI, 1 USB-C (DP1.2 Alt. Mode) |
| | DIO | - | 8-bit DIO (share w/ COM4) | COM4: RS232/DIO | COM4: RS232/DIO |
| | Buttons | Power, Reset Button | Power, Reset Button | Power, Reset Button | Power, Reset Button |
| | Antenna | 2 Holes | 3 Holes | 4 Holes | 4 Holes |
| | Audio | - | - | Mic-in / Line-out | Mic-in / Line-out |
| Power | | 12V DC-in | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless (optional w/ Fan) | Fanless | Fanless |
| OS Support | | Win10 IoT, Win11 | Win10 IoT, Win11 IoT, Linux | Win10 IoT, Win11 IoT, Linux Ubuntu 22.04 | Win10 IoT, Win11 IoT, Linux Ubuntu 22.04 |
| Mechanism | Construction | Aluminum + Metal Aluminum | Aluminum + Metal Aluminum | Aluminum + Metal | Aluminum + Metal |
| | Mounting | Wall/VESA rail mount | Wall/VESA/DIN Rail Mount | Wall/DIN Rail/VESA Mount | Wall/DIN Rail/VESA Mount |
| | Dimensions (W x H x D) | 111 x 50 x 106 mm | 181.6 x 57 x 118.4 mm | 180 x 33 x 127.8 mm | 180 x 43 x 127.8 mm |
| Environment | Operating Temp. | -20°C ~ 50°C | Fanless: -20°C ~ 60°C W/Fan: -20°C ~ 70°C | -5°C ~ 60°C | -5°C ~ 60°C |

# Ultra Compact Fanless PC
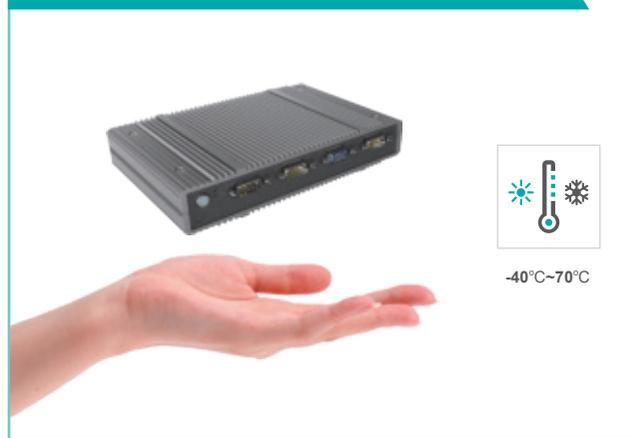
## Low Power & Compact Solutions

## Features

Our industrial compact embedded systems, powered by 12th/11th/7th/6th Gen IntelCore. ULV processors and/or low power Atom/ARM processors, deliver extremely low power consumption for efficient fanless thermal solution in an ultra-small size. The systems are also equipped with extensive I/O interfaces and have efficient wireless connectivity to the cloud.
Fanless & Compact Embedded Systems are ideal for a wide range of industrial applications such as factory automation, IoT gateways, and smart healthcare.

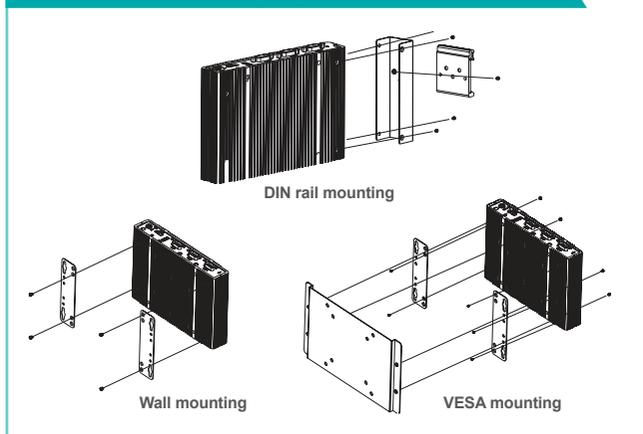### Excellent Thermal Dissipation Design



Low Power

### Compact and Rugged Design



-40℃~70℃

### Multiple Mounting Type



DIN rail mounting

Wall mounting

VESA mounting

### Rich Wireless Connectivity



Wi-Fi
3G/4G/5G

Bluetooth

Desire For Innovation

# Ultra Compact Fanless PC

| Model Name | | EB100-MTU | EC70A-MTH | EC70A-ADP | EC70A-TGU |
|---|---|---|---|---|---|
| Platform | | ULT | ULT | ULT | ULT |
| System | Processor | Intel® Core™ Ultra Processor | Intel® Core™ Ultra Processor | 12th Gen Intel® Core™ Processor | 11th Gen Intel® Core™ Processor |
| | Socket | BGA2049 | FCBGA2049 | BGA 1744 | FCBGA 1449 |
| | Max. Speed | 1.3~1.7GHz | 4.3~4.9GHz | 4.4~4.7GHz | 3.9~4.4GHz |
| | CPU TDP | 12W | 15W(Fanless), 28W(w/Fan) | 15W(Fanless), 28W(w/Fan) | 15W |
| | Cache | 12M | 12M | 10/12M | 6/8/12M |
| | Chipset | - | - | - | - |
| | BIOS | AMI SPI 256Mbit | AMI SPI 256Mbit | AMI SPI 256Mbit | AMI SPI 256Mbit |
| Memory | Technology | Single Channel DDR5 5600MHz | Dual Channel LPDDR5 6400MHz | Dual Channel DDR4 3200MHz | Dual Channel DDR4 |
| | Max. Capacity | 48GB | 16/32GB (Opt.) | 40GB (8GB memory onboard + 32GB memory DIMM) | 40GB (8GB memory onboard + 32GB memory DIMM) |
| | Socket | 1 SODIMM | Memory down | Memory Onboard, 1 SODIMM | Memory Onboard, 1 SODIMM |
| Storage | | 1 M.2 2280 M Key | 1 M.2 2280 M Key | 1 M.2 2280 M Key | 1 M.2 2280 M Key |
| Expansion | PCIe, PCI, Mini PCIe | - | - | - | - |
| | M.2 | 1 M.2 2230 E Key 1 M.2 2280 M Key | 1 M.2 M Key 2280 1 M.2 B Key 3052 1 M.2 E Key 2230 | 1 M.2 2280 M Key, 1 M.2 3042/3052 B Key, 1 M.2 2230 E Key | 1 M.2 3042/3052 B Key, 1 M.2 2230 E Key, 1 M.2 2280 M Key |
| | SIM | - | 1 | 1 SIM | - |
| Audio | Audio Codec | - | - | Realtek ALC888 | - |
| Ethernet | Controller | 2 Intel® I226IT | 2 Intel® I226IT 1 Intel® I210IT | 3 Intel® I226IT | 1 Intel® I226IT, 1/2 Intel® I210IT, 1 LAN7500i (Opt.) |
| LED | Indicators | Power, Storage LED | Power, Storage LED | Power, HDD LED | Power, HDD LED |
| I/O | Ethernet | 2 2.5GbE | 2 2.5GbE, 1 GbE | 1 2.5GHz, 2 GbE | 2/3/4 GbE |
| | Serial | 1 RS-232/422/485 (default RS-232) 1 RS-232 | 1 RS-232/422/485 2 RS-232 1 RS-232/422/485/8-bit DIO | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO |
| | USB | 4 USB 3.2 + 2 USB-C or 5 USB 3.2 + 1 USB-C (USB-C w/DP Alt. Mode) | 5 USB 3.2 or 4 USB 3.2 + 1 USB 2.0, 1 USB Type C | 4 USB 3.2 (4 Type A or 2 Type A + 2 Type C) | 2/4/6 USB 3.2 (type A) |
| | Display | 1/2 USB-C DP Alt. mode | 1 HDMI, 1 Type-C DP Alt. Mode | 1 HDMI, 1 DP, 2 Type-C DP Alt. Mode | 1 VGA, 2 HDMI |
| | DIO | - | 8-bit DIO (share w/ COM4) | 8-bit DIO (share with COM3) | 8-bit DIO (share with COM3) |
| | Buttons | Power, Reset Button | Power, Reset Button | Power, Reset Button | Power, Reset Button |
| | Antenna | 2 Holes | 3 Holes | 6 Holes | 6 Holes |
| | Audio | - | - | Mic-in, Line-out | - |
| Power | | 12V DC-in | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless (optional w/ Fan) | Fanless (optional with Fan) | Fanless |
| OS Support | | Win10 IoT, Win11 | Win10 IoT, Win11 IoT, Linux | Win10 IoT, Win11 IoT, Linux | Win10 IoT, Linux |
| Mechanism | Construction | Aluminum + Metal Aluminum | Aluminum + Metal Aluminum | Aluminum + Metal Aluminum | Aluminum + Metal Aluminum |
| | Mounting | Wall/VESA rail mount | Wall/VESA/DIN Rail Mount | Wall/VESA/DIN Rail Mount | Wall/VESA/DIN Rail Mount |
| | Dimensions (W x H x D) | 111 x 50 x 106 mm | 181.6 x 57 x 118.4 mm | 181.6 x 57 x 118.4 mm | 181.6 x 57 x 118.4 mm |
| Environment | Operating Temp. | -20°C ~ 50°C | Fanless: -20°C ~ 60°C W/Fan: -20°C ~ 70°C | Fanless: -20°C~60°C W/Fan: -20°C~70°C | -20°C~60°C |

| Model Name | | EC70A-SU | EC700-ASL |
|---|---|---|---|
| Platform | | ULT | Atom |
| System | Processor | 7th/6th Gen Intel® Core™ Processor | Intel® Atom® Amston Lake Processor |
| | Socket | BGA 1356 | BGA1264 |
| | Max. Speed | 2.3~3.9GHz | 3.2~3.6GHz |
| | CPU TDP | 15W | 6/9/12W |
| | Cache | 3/4M | 6 MB Smart Cache |
| | Chipset | - | SOC |
| | BIOS | Insyde SPI 128Mbit | AMI SPI 256Mbit (supports UEFI boot only) |
| Memory | Technology | Dual Channel DDR4 2133MHz | LPDDR5 4800MHz |
| | Max. Capacity | 4/8GB | 8GB/16GB |
| | Socket | Memory Onboard | Memory down |
| Storage | | 1x 2.5" SATA 3.0 Drive Bay | 1 M.2 2280 M key |
| Expansion | PCIe, PCI, Mini PCIe | 1 Full mPCIe, 1 Half mPCIe | - |
| | M.2 | - | 1 M.2 2230 E key, 1 M.2 3042/3052 B key, 1 M.2 2242/2280 M key |
| | SIM | - | 1 SIM |
| Audio | Audio Codec | Realtek ALC888 | Realtek ALC888S |
| Ethernet | Controller | 1 Intel® I210IT, 1 Intel® I219LM | 2 Intel® I226, 1 Intel® I210 |
| LED | Indicators | Power, HDD LED | Power, Storage LED |
| I/O | Ethernet | 2 GbE | 2 2.5GbE, 1 GbE |
| | Serial | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO |
| | USB | 4 USB 3.2 | 3 USB 3.2 type A, 1 USB-C 3.2 |
| | Display | 1 VGA, 1 DP++ | 1 VGA, 1 HDMI, 1 USB-C (DP1.2 Alt. Mode) |
| | DIO | 8-bit DIO (share with COM) | COM4: RS232/DIO |
| | Buttons | Power, Reset Button | Power, Reset Button |
| | Antenna | 3 Holes | 4 Holes |
| | Audio | Mic-in, Line-out | Mic-in / Line-out |
| Power | | 15~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless |
| OS Support | | Win7, WES 7, Win8.1, WE8S, Win10 | Win10 IoT, Win11 IoT, Linux Ubuntu 22.04 |
| Mechanism | Construction | Aluminum + Metal Aluminum | Aluminum + Metal |
| | Mounting | Wall/VESA/Din Rail Mount | Wall/DIN Rail/VESA Mount |
| | Dimensions (W x H x D) | 181.6 x 57 x 118.4 mm | 180 x 33 x 127.8 mm |
| Environment | Operating Temp. | -20°C ~ 60°C / 0°C ~ 50°C | -40°C ~ 60°C |

# Ultra Compact Fanless PC

| Model Name | | EC70A-ADN | EC700-ADN | EC710-ADN |
|---|---|---|---|---|
| Platform | | Atom | Atom | Atom |
| System | Processor | Intel® Atom® Alder Lake-N Processors | Intel® Atom® Alder Lake-N Processors | Intel® Atom® Alder Lake-N Processors |
| | Socket | BGA1264 | BGA 1264 | BGA 1264 |
| | Max. Speed | 3.8GHz | 2.7~3.4GHz | 3.0GHz |
| | CPU TDP | 15W | 6/10/12W | 15W |
| | Cache | 6 MB Smart Cache | 6 MB Smart Cache | SOC |
| | Chipset | SOC | SOC | SOC |
| | BIOS | AMI SPI 256Mbit | AMI SPI 256Mbit (supports UEFI boot only) | AMI SPI 256Mbit (supports UEFI boot only) |
| Memory | Technology | DDR5 4800MHz | LPDDR5 4800MHz | LPDDR5 4800MHz |
| | Max. Capacity | 32GB | 8GB/16GB | 8GB/16GB |
| | Socket | 1 SODIMM | Memory down | Memory down |
| Storage | | 1 M.2 2280/2242 M Key | 1 M.2 2280 M Key | 1 M.2 2280 M Key |
| Expansion | PCIe, PCI, Mini PCIe | - | - | - |
| | M.2 | 1 M.2 2280/2242 M key, 1 M.2 3052/3042 B key, 1 M.2 2230 E key | 1 M.2 2230 E key, 1 M.2 3042/3052 B key, 1 M.2 2242/2280 M key | 1 M.2 2230 E key, 1 M.2 3042/3052 B key, 1 M.2 2242/2280 M key |
| | SIM | 1 SIM | 1 | 1 |
| Audio | Audio Codec | Realtek ALC888S | Realtek ALC888S | Realtek ALC888S |
| Ethernet | Controller | 3 Intel® I226V/IT | 2 Intel® I226, 1 Intel I210 | 2 Intel® I226, 1 Intel I210 |
| LED | Indicators | Power, HDD LED | Power, Storage LED | Power, Storage LED |
| I/O | Ethernet | 3 2.5GbE | 2 2.5GbE, 1 GbE | 2 2.5GbE, 1 GbE |
| | Serial | 1 RS-232/422/485 (Opt.) | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO | 2 RS-232/422/485, 1 RS-232, 1 RS-232/DIO |
| | USB | 4 USB 3.2, 2 USB 2.0 | 3 USB 3.2 type A, 1 USB-C 3.2 | 3 USB 3.2 type A, 1 USB-C 3.2 |
| | Display | 1 HDMI, 1 Type-C DP Alt. Mode | 1 VGA, 1 HDMI, 1 USB-C (DP1.2 Alt. Mode) | 1 VGA, 1 HDMI, 1 USB-C (DP1.2 Alt. Mode) |
| | DIO | - | COM4: RS232/DIO | COM4: RS232/DIO |
| | Buttons | Power | Power, Reset Button | Power, Reset Button |
| | Antenna | 2 Holes | 4 Holes | 4 Holes |
| | Audio | Mic-in, Line-out | Mic-in / Line-out | Mic-in / Line-out |
| Power | | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless | Fanless |
| OS Support | | Win10 IoT, Linux | Win10 IoT, Win11 IoT, Linux Ubuntu 22.04 | Win10 IoT, Win11 IoT, Linux Ubuntu 22.04 |
| Mechanism | Construction | Aluminum + Metal Aluminum | Aluminum + Metal | Aluminum + Metal |
| | Mounting | Wall/DIN Rail/VESA Mount | Wall/DIN Rail/VESA Mount | Wall/DIN Rail/VESA Mount |
| | Dimensions (W x H x D) | 181.6 x 52 x 118.4 mm | 180 x 33 x 127.8 mm | 180 x 43 x 127.8 mm |
| Environment | Operating Temp. | -5°C ~ 60°C | -5°C ~ 60°C | -5°C ~ 60°C |

| Model Name | | ED700-EHL22I | ED700-EHL |
|---|---|---|---|
| Platform | | Atom | Atom |
| System | Processor | Intel® Atom® Elkhart Lake Processors | Intel® Atom® Elkhart Lake Processors |
| | Socket | BGA 1493 | BGA 1493 |
| | Max. Speed | 1.8~3GHz | 1.8~3GHz |
| | CPU TDP | 6.5/9/10/12W | 6.5/9/10/12W |
| | Cache | 1.5 MB L2 Cache | 1.5 MB L2 Cache |
| | Chipset | - | - |
| | BIOS | AMI SPI 256Mbit (supports UEFI boot only) | AMI SPI 256Mbit (supports UEFI boot only) |
| Memory | Technology | Dual Channel DDR4 3200MHz (in-band ECC support in embedded/industrial SKU) | Dual Channel DDR4 3200MHz (in-band ECC support in embedded/industrial SKU) |
| | Max. Capacity | 32GB | 32GB |
| | Socket | Memory onboard + 1 SODIMM | Memory onboard + 1 SODIMM |
| Storage | | 1 M.2 2280, 16GB/32GB eMMC | 1 M.2 2280, 16GB/32GB eMMC |
| Expansion | PCIe, PCI, Mini PCIe | - | - |
| | M.2 | 1 M.2 2230, 1 M.2 3042/3052 | 1 M.2 2230, 1 M.2 3042/3052 |
| | SIM | 2 SIM | 2 SIM |
| Audio | Audio Codec | Realtek ALC888 | Realtek ALC888 |
| Ethernet | Controller | 2/3 Intel® I210/I211, 1 Intel® 2.5GbE LAN | 2/3 Intel® I210/I211, 1 Intel® 2.5GbE LAN |
| LED | Indicators | 1 Power, 1 HDD, 1 WiFi, 1 4G/5G, 2 COM, 8 DIO LED | 1 Power, 1 HDD, 1 WiFi, 1 4G/5G, 2 COM, 8 DIO LED |
| I/O | Ethernet | 2/3 GbE, 1 2.5GbE TSN, 1 Allxon OOB Enabler (Opt.) | 2/3 GbE, 1 2.5GbE TSN, 1 Allxon OOB Enabler (Opt.) |
| | Serial | 2 RS-232/422/485, 2 Isolated COM | 2 RS-232/422/485 |
| | USB | 2/4 USB 3.2, 2 USB 2.0 | 2/4 USB 3.2, 2 USB 2.0 |
| | Display | 1 VGA, 1 DP (Opt.) | 1 VGA, 1 DP (Opt.) |
| | DIO | 8-bit DIO, 12-bit isolated DIO | 8-bit DIO |
| | Buttons | - | - |
| | Antenna | 6 Holes | 6 Holes |
| | Audio | - | - |
| Power | | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless |
| OS Support | | Win10 IoT, Linux Ubuntu 20.04 | Win10 IoT, Linux Ubuntu 20.04 |
| Mechanism | Construction | Aluminum + Metal | Aluminum + Metal |
| | Mounting | Wall/DIN Rail Mount | Wall/DIN Rail Mount |
| | Dimensions (W x H x D) | 72 x 172 x 118.2 mm | 72 x 172 x 118.2 mm |
| Environment | Operating Temp. | 0°C ~ 60°C / -40°C ~ 60°C | 0°C ~ 60°C / -40°C ~ 60°C |

| Model Name | | EC90A-AL | EC800-AL | EC700-AL |
|---|---|---|---|---|
| Platform | | Atom | Atom | Atom |
| System | Processor | Intel® Atom® Processor E3900 | Intel® Atom® Processor E3900 | Intel® Atom® Processor E3900 |
| | Socket | BGA 1296 | BGA 1296 | BGA 1296 |
| | Max. Speed | 1.8GHz | 1.8~2.5GHz | 1.8~2.5GHz |
| | CPU TDP | 6.5/9W | 6/9/12W | 6/9/10/12W |
| | Cache | 2M | 2M | 2M |
| | Chipset | - | - | - |
| | BIOS | Insyde SPI 128Mbit (supports UEFI boot only) | Insyde SPI 128Mbit (supports UEFI boot only) | AMI SPI 128Mbit (support UEFI/legacy mode) |
| Memory | Technology | Single Channel LPDDR4 2400MHz | Dual Channel LPDDR4 2400MHz | Dual Channel DDR3L 1866MHz |
| | Max. Capacity | 2/4GB | 2/4/8GB | 2/4/8GB |
| | Socket | Memory Onboard | Memory Onboard | Memory Onboard, 1 SODIMM |
| Storage | | eMMC up to 64GB | 1 mSATA, 1 M.2 2242 B Key | eMMC up to 64GB (Opt.), 1 x 2.5" SATA bay, 1 Full mSATA" |
| Expansion | PCIe, PCI, Mini PCIe | 1 Full mPCIe | 1 Full mPCIe | 1 Full mPCIe |
| | M.2 | - | 1 M.2 2230 E Key, 1 M.2 2242 B Key | 1 M.2 2230 E Key |
| | SIM | - | - | 1 Nano SIM |
| Audio | Audio Codec | - | Realtek ALC262 | Realtek ALC262 |
| Ethernet | Controller | 2 Intel® I210IT | 2 Intel® I210AT | 2/4 Intel® I210 |
| LED | Indicators | Power, HDD LED | Power, HDD LED | Power, Status LED |
| I/O | Ethernet | 2 GbE | 2 GbE | 2/4 GbE |
| | Serial | 1 RS-232/422/485/DIO | 1 RS-232/422/485, 1 RS-232/422/485/DIO | 2 RS-232/422/485, 2 RS-232/422/485/DIO (Opt.) |
| | USB | 1 USB 2.0, 2 USB 3.2 | 2 USB 2.0, 2 USB 3.2 | 4/2 USB 3.2 |
| | Display | 1 Mini DP++ | 1 VGA + 2 Micro-HDMI or 1 DVI-D + 2 Mini-DP | 1 DP/VGA, 1 DP |
| | DIO | 8-bit DIO (via COM) | 8-bit DIO (via COM) | 8-bit DIO (via COM) (Opt.) |
| | Buttons | Power Button | Power Button | Power, Reset Button |
| | Antenna | 2 Holes | 2 Holes | 3 Holes |
| | Audio | - | Line-out, Mic-in | - |
| Power | | 12V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless | Fanless |
| OS Support | | Win10 IoT, Linux, Linux Yocto | Win10 IoT, Linux, Linux Yocto | Win10 IoT, Win7, Linux |
| Mechanism | Construction | Sheet Metal | Aluminum | Aluminum + Metal |
| | Mounting | Wall/Din Rail Mount | Wall/VESA/Din Rail Mount (Opt.) | Wall/VESA/Din Rail Mount (Opt.) |
| | Dimensions (W x H x D) | 127 x 42 x 80.4 mm | 161 x 35.1 x 108.2 mm | 180 x 33 x 127.8 mm |
| Environment | Operating Temp. | -20°C ~ 60°C | -20°C ~ 60°C / -40°C ~ 70°C | -20°C ~ 60°C / -40°C ~ 70°C |

| Model Name | | EC700-BT | EC70A-HPT |
|---|---|---|---|
| Platform | | Atom | AMD |
| System | Processor | Intel® Atom® Processor E3800 | AMD® Ryzen™ Embedded 8000 Series |
| | Socket | BGA 1170 | BGA1140 |
| | Max. Speed | 1.33~2.41GHz | 3.3~5.1GHz |
| | CPU TDP | 4.3/6/10W | 15/28W |
| | Cache | 1/2M | 16M |
| | Chipset | - | - |
| | BIOS | AMI SPI 64Mbit | AMI SPI 256Mbit |
| Memory | Technology | Single Channel DDR3L 1066/1333MHz | Dual Channel DDR5 5600MHz |
| | Max. Capacity | 2/4GB | 96GB |
| | Socket | ECC/non-ECC Memory Onboard | 2 SODIMM |
| Storage | | 1x 2.5" SATA 2.0 Drive Bay, eMMC up to 32GB (Opt.), mSATA (Opt.) | 1 M.2 2280 M Key |
| Expansion | PCIe, PCI, Mini PCIe | 2 Full mPCIe, 1 Half mPCIe | - |
| | M.2 | - | 1 M.2 2230 E key,<br>1 M.2 3042/3052 B key,<br>1 M.2 2242/2280 M key |
| | SIM | 1 | 1 Nano SIM |
| Audio | Audio Codec | - | - |
| Ethernet | Controller | 2 Intel® I210IT | 2 Intel® I226IT<br>1 Intel® I210IT |
| LED | Indicators | Status, HDD LED | Status, HDD LED |
| I/O | Ethernet | 2 GbE | 2 2.5GbE<br>1 GbE |
| | Serial | 3 RS-232/422/485, 1 RS-232/422/485/DIO (Opt.) | 1 RS-232/422/485<br>2 RS-232<br>1 RS-232/422/485/8-bit DIO |
| | USB | 4 USB 2.0, 1 USB 3.2 | 1 USB 2.0, 2 USB 3.2<br>1 USB-C |
| | Display | 1 VGA + 1 HDMI<br>or 1 DVI-I | 1 HDMI, 1 DP<br>1 USB-C(DP Alt mode) |
| | DIO | 8-bit DIO (via COM) | 8-bit DIO (via COM) |
| | Buttons | Power, Reset Button | Power, Reset Button |
| | Antenna | 3 Holes | 3 Holes |
| | Audio | - | - |
| Power | | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless |
| OS Support | | Win7, WES 7, Win8, WES 8, Win8.1, Win10, Linux | Win10 IoT, Win11 IoT, Linux |
| Mechanism | Construction | Aluminum + Metal Aluminum | Aluminum + Metal Aluminum |
| | Mounting | Wall/VESA/Din Rail Mount | Wall/VESA/DIN Rail Mount |
| | Dimensions<br>(W x H x D) | 180 x 33 x 121.2 mm | 181.6 x 57 x 118.4 mm |
| Environment | Operating Temp. | -20°C ~ 60°C / 0°C ~ 50°C,<br>0°C ~ 60°C / 0°C ~ 50°C | Fanless: -20°C ~ 60°C<br>W/Fan: -20°C ~ 70°C |

| Model Name | | EC90A-GH | EC900-QCS |
|---|---|---|---|
| Platform | | AMD | ARM |
| System | Processor | AMD® Ryzen™ Embedded R1000 Series | QCS6490 Qualcomm® Kryo™ 670 |
| | Socket | BGA1140 | - |
| | Max. Speed | 2.6~3.5GHz | 2.7 GHz |
| | CPU TDP | up to 12W | 5W |
| | Cache | 1M | - |
| | Chipset | - | - |
| | BIOS | AMI SPI 64bit | - |
| Memory | Technology | Single DDR4 2400MHz | LPDDR5x |
| | Max. Capacity | 4/8GB | 4/8GB |
| | Socket | Memory Down | Memory Down |
| Storage | | eMMC up to 128GB | UFS 3.1 (128GB), 1 uSD 3.0 card |
| Expansion | PCIe, PCI, Mini PCIe | 1 Full mPCIe | - |
| | M.2 | - | 1 M.2 3052 B key, 1 M.2 2230 E key |
| | SIM | - | 1 Nano SIM |
| Audio | Audio Codec | - | - |
| Ethernet | Controller | 1 Intel® I211AT/ I210IT (Opt.) | AX88179A USB3 to GbE controller |
| LED | Indicators | Power status | Status LED |
| I/O | Ethernet | 1 GbE | 1 GbE |
| | Serial | 2 RS-232 or 8-bit DIO + 1 SMBus | 1 RS-232 |
| | USB | 1 USB 3.2 Gen2 type C | 2 USB 3.2 Gen1 Type A, 3 USB 2.0, 1 USB Type C |
| | Display | 2 Micro HDMI | 1 HDMI |
| | DIO | 8-bit DIO (Opt.) | 8-bit DIO |
| | Buttons | - | - |
| | Antenna | 2 Holes (LTE or WiFi) | 3 Holes |
| | Audio | - | - |
| Power | | 12V DC-in | 5V DC-in |
| Cooling | | Fanless | - |
| OS Support | | Win10 IoT, Ubuntu | Linux Yocto, Ubuntu 20.04 (Opt.) |
| Mechanism | Construction | Aluminum + Metal | Sheet Metal |
| | Mounting | Wall/VESA Mount | DIN Rail Mount |
| | Dimensions (W x H x D) | 112.29 x 80 x 56.20 mm | 145 x 34 x 96 mm |
| Environment | Operating Temp. | -20°C ~ 45°C | -20°C ~ 60°C |

| Model Name | | EC900-8MM | EC910-8MM | EC900-FS6 |
|---|---|---|---|---|
| Platform | | ARM | ARM | ARM |
| System | Processor | i.MX 8M Mini Processor | i.MX 8M Mini Processor | NXP i.MX 6 Series Processor |
| | Socket | BGA type | BGA type | 21x21 BGA |
| | Max. Speed | 1.6/1.8Ghz | 1.6/1.8Ghz | 1.0GHz |
| | CPU TDP | - | - | - |
| | Cache | - | - | - |
| | Chipset | - | - | - |
| | BIOS | - | - | - |
| Memory | Technology | LPDDR4 die size | LPDDR4 die size | Single Channel DDR3L 1600MHz |
| | Max. Capacity | 1/4/8GB | 1/4/8GB | 1/2GB |
| | Socket | Memory Onboard | Memory Onboard | SDRAM Memory Down |
| Storage | | eMMC up to 64GB, MicroSD | eMMC up to 64GB, MicroSD | 4MB NOR Flash, 8GB/16GB eMMC, 1 micro SD |
| Expansion | PCIe, PCI, Mini PCIe | - | - | 1 Full mPCIe |
| | M.2 | 1 M.2 2230 E key, 1 M.2 3042/2242 B key | 1 M.2 2230 E key, 1 M.2 3042/2242 B key | - |
| | SIM | 1 Nano SIM | 1 Nano SIM | - |
| Audio | Audio Codec | - | - | - |
| Ethernet | Controller | 1 ATHEROS Ethernet RTL8211, 1 Ethernet | 1 ATHEROS Ethernet RTL8211, 1 Ethernet | 1 ATHEROS Ethernet, 1 Microchip USB to Ethernet LAN7500-ABZJ |
| LED | Indicators | Status LED | Status LED | Status LED |
| I/O | Ethernet | 2 GbE | 2 GbE | 2 GbE |
| | Serial | 1 RS-485, 1 RS-422 | 1 RS-485, 1 RS-422, 2 RS-232 | 1 RS-485, 1 RS-422, |
| | USB | 2 USB 2.0, 1 USB 2.0 (Internal), 1 OTG USB Type C (Internal) | 2 USB 2.0, 1 USB 2.0 (Internal), 1 OTG USB Type C (Internal) | 2 USB 2.0 1 USB 2.0 (Internal) 1 OTG USB (Internal) |
| | Display | 1 HDMI | 1 HDMI | 1 HDMI |
| | DIO | 4-bit DIO | 4-bit DIO | 4-bit DIO |
| | Buttons | 1 Power reset button | 1 Power reset button | 1 Power Reset Button |
| | Antenna | 2 Holes | 6 Holes | 2 Holes |
| | Audio | - | - | - |
| Power | | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless | Fanless |
| OS Support | | Linux Yocto 3.3, Kernel 5.10.72 | Linux Yocto 3.3, Kernel 5.10.72 | Yocto 1.8 beta, Kernel 3.14.52 |
| Mechanism | Construction | Sheet Metal | Sheet Metal | Sheet Metal |
| | Mounting | Din Rail Mount | Din Rail Mount | Din Rail Mount |
| | Dimensions (W x H x D) | 145 x 34 x 96 mm | 145 x 40 x 96 mm | 145 x 34 x 96.4 mm |
| Environment | Operating Temp. | -5°C ~ 60°C, -40°C ~ 70°C (Opt.) | -5°C ~ 60°C, -40°C ~ 70°C (Opt.) | -20°C ~ 60°C / -40°C ~ 70°C |

Desire For Innovation

# Embedded Fanless PC
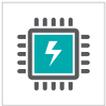## Advanced Computing Solutions

## Features

DFI's performance embedded PC series is based on the powerful 9th/8th/7th/6th Gen Intel® Core™ Desktop platform with advanced graphics and computing performance, which are available in solid designs and expansibility. Their high flexibility and reliability will fulfill your various I/O requirements and deliver high computing performance in industry environments.

### Desktop Platforms

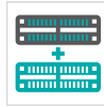**Next-Gen Intel® Core™ Processor**

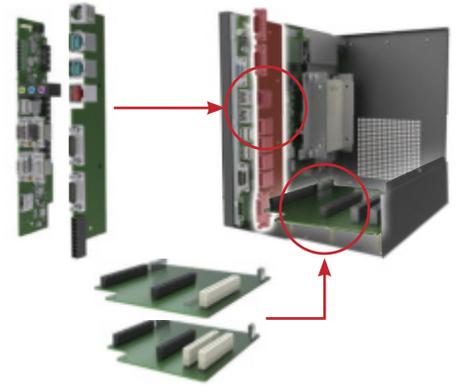**High-Performance CPU**

### Customization & Scalability

**We accept custom-made I/O board on a MOQ basis**

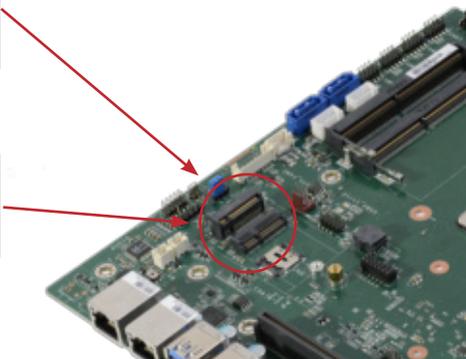**Customized I/O Board**

**Multiple Expansions**

### 5G & Wifi 6 Module

**5G**

**Wifi 7**

### Rugged Design

**Up to 65W**

**Wide-Temperature**

**Wide-Voltage**

| Model Name | | SF101-ADS | EC600-RPS | EC622-RPS |
|---|---|---|---|---|
| Platform | | Desktop IPC | Desktop | Desktop |
| System | Processor | 14th/13th/12th Gen Intel® Core™ Processor | 14th/13th/12th Gen Intel® Core™ Processor | 14th/13th/12th Gen Intel® Core™ Processor |
| | Socket | LGA1700 | LGA1700 | LGA1700 |
| | Max. Speed | 2.4~5.5GHz | 1.1~5.2GHz | 1.1~5.2GHz |
| | CPU TDP | 35W | 35/46/60/65W | 35/46/60/65W |
| | Cache | 4~36M | 4/6/12/18/20/24/25/30/33/36M | 4/6/12/18/20/24/25/30/33/36M |
| | Chipset | Intel® R680E | Intel® H610E/R680E | Intel® R680E |
| | BIOS | AMI SPI 128Mbit | AMI SPI 256Mbit | AMI SPI 256Mbit |
| GPU / AI Accelerator Card Support | | - | - | - |
| Memory | Technology | Dual Channel DDR4 3200 MHz (ECC/Non-ECC) | Dual Channel DDR5 4800MHz | Dual Channel DDR5 4800MHz |
| | Max. Capacity | 64GB | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM | 2 SODIMM |
| Storage | | 1x 2.5" SATA bay, 1 M.2 2280 M Key | 1 M.2 2280 B Key or 2 M.2 2280 M Key | 2 M.2 2280 M key |
| Expansion | PCIe, PCI, Mini PCIe | - | 1 Full mPCIe | 1 Full mPCIe, 1 PCIe x16, 1 PCIe x4 |
| | M.2 | 1 M.2 2230 E Key, 1 M.2 2280 M Key, 1 M.2 2242/3042/3052 B Key | 2 M.2 2280 M key(or 1 M.2 2280 B key) 1 M.2 3042/3052 B key 1 M.2 2230 E key 1 M.2 3042 A key | 2 M.2 2280 M key 1 M.2 3042/3052 B key 1 M.2 2230 E key 1 M.2 3042 A key |
| | SIM | - | 2 Nano SIM | 2 Nano SIM |
| Audio | Audio Codec | Realtek ALC888S | - | - |
| Ethernet | Controller | 1 Intel® I226V, 1 Intel® I219LM | 1 Intel® I219LM, 3 Intel® I210IT, 2 Intel® i226IT | 1 Intel® I219LM, 3 Intel® I210IT, 2 Intel® I226IT |
| LED | Indicators | Power, HDD LED | Status, HDD LED | Status, HDD LED |
| I/O | Ethernet | 1 2.5GbE, 1 GbE | 4 GbE + 2 2.5GbE or 2 GbE + 2 2.5GbE + 2 PoE (Opt.) | 4 GbE + 2 2.5GbE or 2 GbE + 2 2.5GbE + 2 PoE (Opt.) |
| | Serial | 2 COM | 1 RS-232/422/485, 1 RS-232/422/485/DIO, 4/8 RS-232 | 1 RS-232/422/485/DIO, 8 RS-232 |
| | USB | 6 USB 3.2 Gen2, 2 USB 2.0 | 3/5 USB 3.2, 2 USB 2.0, 1 USB Type-C (Alt. mode) | 5 USB 3.2 Gen2, 1 Type-C |
| | Display | 2 DP++ | 1 VGA, 1 DP++, 1 HDMI | 1 VGA, 1 DP++, 1 HDMI |
| | DIO | - | 8-bits DIO (via COM1) | 8bits (share with COM1) |
| | Buttons | Power | Power, Reset | Power, Reset |
| | Antenna | - | 4 Holes | 4 Holes |
| | Audio | Line-out | - | - |
| Power | | 15~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | - | Fanless (optional with Fan) | Fan (optional Fanless) |
| OS Support | | Win10 IoT, Linux | Win10 IoT, Win11, Linux (Opt.) | Win10 IoT, Win11, Linux(Opt.) |
| Mechanism | Construction | Metal chassis + Aluminum front bezel | Metal + Aluminum | Metal + Aluminum |
| | Mounting | Wall Mount, Rack Mount | Wall Mount | Wall Mount |
| | Dimensions (W x H x D) | 220 x 43 x 197.2 mm | 249.5 x 85 x 223 mm | 249.5 x 120 x 223 mm |
| Environment | Operating Temp. | -5°C~45°C | CPU TDP 35W: -20°C ~ 70°C CPU TDP 65W: -20°C ~ 50°C | CPU TDP 35W: -20°C ~ 70°C CPU TDP 65W: -20°C ~ 50°C |

# Embedded Fanless PC



| Model Name | | EC633-RPS | EC633D-RPS |
|---|---|---|---|
| Platform | | Desktop | Desktop |
| System | Processor | 14th/13th/12th Gen Intel® Core™ Processor | 14th/13th/12th Gen Intel® Core™ Processor |
| | Socket | LGA1700 | LGA1700 |
| | Max. Speed | 1.1~5.2GHz | 1.1~5.2GHz |
| | CPU TDP | 35/46/60/65W | 35/46/60/65W |
| | Cache | 4/6/12/18/20/24/25/30/33/36M | 4/6/12/18/20/24/25/30/33/36M |
| | Chipset | Intel® R680E | Intel® R680E |
| | BIOS | AMI SPI 256Mbit | AMI SPI 256Mbit |
| GPU / AI Accelerator Card Support | | - | - |
| Memory | Technology | Dual Channel DDR5 4800MHz | Dual Channel DDR5 4800MHz |
| | Max. Capacity | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM |
| Storage | | 2 M.2 2280 M key | 2 M.2 2280 M key |
| Expansion | PCIe, PCI, Mini PCIe | 1 Full mPCIe, 2 PCIe x8, 1 PCIe x4 | 1 Full mPCIe, 2 PCIe x8, 1 PCIe x4 |
| | M.2 | 2 M.2 2280 M key<br>1 M.2 3042/3052 B key<br>1 M.2 2230 E key<br>1 M.2 3042 A key | 2 M.2 2280 M key<br>1 M.2 3042/3052 B key<br>1 M.2 2230 E key<br>1 M.2 3042 A key |
| | SIM | 2 Nano SIM | 2 Nano SIM |
| Audio | Audio Codec | - | - |
| Ethernet | Controller | 2 Intel® I226IT, 1 Intel® I219LM, 3 Intel® I210IT | 2 Intel® I226IT, 1 Intel® I219LM, 3 Intel® I210IT |
| LED | Indicators | Status, HDD LED | Status, HDD LED |
| I/O | Ethernet | 4 GbE + 2 2.5GbE<br>or 2 GbE + 2 2.5GbE + 2 PoE (Opt.) | 4 GbE + 2 2.5GbE<br>or 2 GbE + 2 2.5GbE + 2 PoE (Opt.) |
| | Serial | 2 RS-232/422/485/DIO, 8 RS-232 | 2 RS-232/422/485/DIO, 8 RS-232 |
| | USB | 5 USB 3.2 Gen2, 1 Type-C | 5 USB 3.2 Gen2, 1 Type-C |
| | Display | 1 VGA, 1 DP++, 1 HDMI | 1 VGA, 1 DP++, 1 HDMI |
| | DIO | 8bits (share with COM1) | 8bits (share with COM1) |
| | Buttons | Power, Reset | Power, Reset |
| | Antenna | 4 Holes | 4 Holes |
| | Audio | - | - |
| Power | | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fan  (optional Fanless) | Fan  (optional Fanless) |
| OS Support | | Win10 IoT, Win11, Linux(Opt.) | Win10 IoT, Win11, Linux(Opt.) |
| Mechanism | Construction | Metal + Aluminum | Metal + Aluminum |
| | Mounting | Wall Mount | Wall Mount |
| | Dimensions (W x H x D) | 249.5 x 193 x 275 mm | 249.5 x 193 x 342 mm |
| Environment | Operating Temp. | CPU TDP 35W: -20°C ~ 70°C<br>CPU TDP 65W: -20°C ~ 50°C | CPU TDP 35W: -20°C ~ 70°C<br>CPU TDP 65W: -20°C ~ 50°C |

| Model Name | | EC500-ADS | EC510-ADS/EC511-ADS | EC543-ADS |
|---|---|---|---|---|
| Platform | | Desktop | Desktop | Desktop |
| System | Processor | 12th Gen Intel® Core™ Processor | 12th Gen Intel® Core™ Processor | 12th Gen Intel® Core™ Processor |
| | Socket | LGA1700 | LGA1700 | LGA1700 |
| | Max. Speed | 2.4~4.8GHz | 2.4~4.8GHz | 2.4~4.8GHz |
| | CPU TDP | 35W | 35W | 35W |
| | Cache | 4/6/12/18/25/30M | 4/6/12/18/25/30M | 4/6/12/18/25/30M |
| | Chipset | Intel® H610E/Q670E/R680E | Intel® Q670E | Intel® Q670E |
| | BIOS | AMI SPI 128Mbit | AMI SPI 128Mbit | AMI SPI 128Mbit |
| GPU / AI Accelerator Card Support | | -- | -- | -- |
| Memory | Technology | Dual Channel DDR4 3200MHz | Dual Channel DDR4 2400/2666MHz | Dual Channel DDR4 3200MHz |
| | Max. Capacity | 64GB | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM | 2 SODIMM |
| Storage | | 2x 2.5" SATA 3.0 Drive Bays | 2x 2.5" SATA 3.0 Drive Bays | 2x 2.5" SATA 3.0 Drive Bays |
| Expansion | PCIe, PCI, Mini PCIe | - | 1 PCI / 1 PCIe x16 | 1 PCIe x16, 1 PCIe x4, 1 PCIe x1, 1 PCI |
| | M.2 | 1 M.2 2230 E key<br>1 M.2 2280 M key<br>1 M.2 3042/3052 B key | 1 M.2 2230 E key,<br>1 M.2 2280 M key<br>1 M.2 3042/3052 B key | 1 M.2 2230 E key,<br>1 M.2 2280 M key<br>1 M.2 3042/3052 B key |
| | SIM | 1 Nano SIM | 1 Nano SIM | 1 Nano SIM |
| Audio | Audio Codec | Realtek ALC888 | Realtek ALC888 | Realtek ALC888 |
| Ethernet | Controller | 2 Intel® I225IT | 2 Intel® I225IT | 2 Intel® I225IT |
| LED | Indicators | Status, HDD LED | Status, HDD LED | Status, HDD LED |
| I/O | Ethernet | 2 GbE | 2 GbE/ 6 GbE/ 2 GbE+4 PoE/ 4 GbE/<br>2 GbE+ 2 PoE | 2 GbE/ 6 GbE/ 2 GbE+4 PoE/ 4 GbE/<br>2 GbE+ 2 PoE |
| | Serial | 4 RS-232/422/485, 2 RS-232 | 4/8 RS232/422/485, 2 RS232 | 4/8 RS232/422/485, 2 RS232 |
| | USB | 4 USB 3.2, 2 USB 2.0 | 4/6/10 USB 3.2, 4 USB 2.0 | 4/6/10 USB 3.2, 4 USB 2.0 |
| | Display | 1 VGA, 2 DP++ | 1 VGA, 2 DP++ | 1 VGA, 2 DP++ |
| | DIO | 8-bits DIO | 8/16/32-bits | 8/16/32-bits |
| | Buttons | Power, Reset | Power, Reset | Power, Reset |
| | Antenna | 4 Holes | 6 Holes | 6 Holes |
| | Audio | Mic-in, Line-out | Mic-in, Line-out | Mic-in, Line-out |
| Power | | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless | Fanless |
| OS Support | | Win10 IoT, Linux (Opt.) | Win10 IoT, Linux (Opt.) | Win10 IoT, Linux (Opt.) |
| Mechanism | Construction | Metal + Aluminum | Metal + Aluminum | Metal + Aluminum |
| | Mounting | Wall Mount | Wall Mount | Wall Mount |
| | Dimensions (W x H x D) | 255.3 x 85 x 224 mm | 255.3 x 124.6 x 224 mm | 255.3 x 195 x 221.1 mm |
| Environment | Operating Temp. | -20°C ~ 70°C | -20°C ~ 60°C | -20°C ~ 60°C |

| Model Name | | EC500-CS | EC510/EC511-CS | EC543-CS |
|---|---|---|---|---|
| Platform | | Desktop | Desktop | Desktop |
| System | Processor | 9th/8th Gen Intel® Core™ Processor | 9th/8th Gen Intel® Core™ Processor | 9th/8th Gen Intel® Core™ Processor |
| | Socket | LGA 1151 | LGA 1151 | LGA 1151 |
| | Max. Speed | 3.1~4.0GHz | 3.1~4.0GHz | 3.1~4.0GHz |
| | CPU TDP | 35W | 35W | 35W |
| | Cache | 2/4/6/9/12M | 2/4/6/9/12M | 2/4/6/9/12M |
| | Chipset | Intel® H310/Q370/C246 | Intel® H310/Q370 | Intel® Q370 |
| | BIOS | AMI SPI 128Mbit | AMI SPI 128Mbit | AMI SPI 128Mbit |
| GPU / AI Accelerator Card Support | | MXM 3.1 Type A/B/C: RTX2080, RTX2070 | Intel® movidius™ AI accelerator card (Opt.) (EC511) | Intel® movidius™ AI accelerator card (Opt.) |
| Memory | Technology | Dual Channel DDR4 2666/2400MHz | Dual Channel DDR4 2666/2400MHz | Dual Channel DDR4 2666/2400MHz |
| | Max. Capacity | 64GB | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM | 2 SODIMM |
| Storage | | 2x 2.5" SATA 3.0 Drive Bays | 2x 2.5" SATA 3.0 Drive Bays | 2x 2.5" SATA 3.0 Drive Bays |
| Expansion | PCIe, PCI, Mini PCIe | - | 1 PCI or 1 PCIe | 1 PCI, 1 PCIe x16, 1 PCIe x4, 1 PCIe x1 |
| | M.2 | 1 M.2 2230 E key<br>1 M.2 2280 M key<br>1 M.2 3042/3052 B key | 1 M.2 2230 E key<br>1 M.2 2280 M key<br>1 M.2 3042/3052 B key | 1 M.2 2230 E key<br>1 M.2 2280 M key<br>1 M.2 3042/3052 B key |
| | SIM | 1 Nano SIM | 1 Nano SIM | 1 Nano SIM |
| Audio | Audio Codec | Realtek ALC888 | Realtek ALC888 | Realtek ALC888 |
| Ethernet | Controller | 1 Intel® I211AT, 1 Intel® I219LM/V | 1 Intel® I210AT, 1 Intel® I219LM/V | 1 Intel® I210AT, 1 Intel® I219LM |
| LED | Indicators | Status, HDD LED | Status, HDD LED | Status, HDD LED |
| I/O | Ethernet | 2 GbE | 2 GbE + 4 PoE / 6 GbE / 2 GbE | 2 GbE + 4 PoE / 6 GbE / 2 GbE |
| | Serial | 4 RS-232/422/485, 2 RS-232 | 4/7 RS-232/422/485, 2 RS-232 | 4/7 RS-232/422/485, 2 RS-232 |
| | USB | 4 USB 3.2, 2 USB 2.0 | 4 USB 3.2 + 4 USB 2.0 / 8 USB 3.2 + 2 USB 2.0 | 4 USB 3.2 + 4 USB 2.0 / 8 USB 3.2 + 2 USB 2.0 |
| | Display | 1 VGA, 1/2 DP++ | 1 VGA, 1/2 DP++ | 1 VGA, 2 DP++ |
| | DIO | 8-bits | 8/16-bits | 8/16-bits |
| | Buttons | Power, Reset | Power, Reset | Power, Reset |
| | Antenna | 4 Holes | 4 Holes | 4 Holes |
| | Audio | Mic-in, Line-out | Mic-in, Line-out | Mic-in, Line-out |
| Power | | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless | Fanless |
| OS Support | | Win10 IoT, Linux (Opt.) | Win10 IoT, Linux (Opt.) | Win10 IoT, Linux (Opt.) |
| Mechanism | Construction | Metal + Aluminum | Metal + Aluminum | Metal + Aluminum |
| | Mounting | Wall Mount | Wall Mount | Wall Mount |
| | Dimensions (W x H x D) | 255.3 x 85 x 224 mm | 255.3 x 124.6 x 224 mm | 255.3 x 195 x 224 mm |
| Environment | Operating Temp. | -20°C ~ 70°C | -20°C ~ 60°C | -20°C ~ 60°C |

| Model Name | | ES220-CS | ES220F-CS |
|---|---|---|---|
| Platform | | Desktop | Desktop |
| System | Processor | 9th/8th Gen Intel® Core™ Processor | 9th/8th Gen Intel® Core™ Processor |
| | Socket | LGA 1151 | LGA 1151 |
| | Max. Speed | 2.9GHz~4GHz | 2.9GHz~4GHz |
| | CPU TDP | 35W | 35W |
| | Cache | 2/4/6/9/12M | 2/4/6/9/12M |
| | Chipset | Intel® C246/Q370/H310 | Intel® C246/Q370/H310 |
| | BIOS | Insyde SPI 128Mbit | Insyde SPI 128Mbit |
| GPU / AI Accelerator Card Support | | - | - |
| Memory | Technology | Dual Channel DDR4 2666MHz (C246 support ECC) | Dual Channel DDR4 2666MHz (C246 support ECC) |
| | Max. Capacity | 64GB | 64GB |
| | Socket | 2 SODIMM | 2 SODIMM |
| Storage | | 2x 2.5" SATA bay (Opt.) | 2x 2.5" SATA bay (Opt.) |
| Expansion | PCIe, PCI, Mini PCIe | - | - |
| | M.2 | 1 M.2 2280 M key<br>1 M.2 2230 E key | 1 M.2 2280 M key<br>1 M.2 2230 E key |
| | SIM | - | - |
| Audio | Audio Codec | - | - |
| Ethernet | Controller | 2 Intel® I219/I210IT | 2 Intel® I219/I210IT |
| LED | Indicators | Power, HDD LED | Power, HDD LED |
| I/O | Ethernet | 2 GbE | 2 GbE |
| | Serial | 2 RS-232/422/485<br>or 1 RS-232/422/485 + 8-bit DIO | 2 RS-232/422/485<br>or 1 RS-232/422/485 + 8-bit DIO |
| | USB | 4 USB 3.2, 2 USB 2.0 | 4 USB 3.2, 2 USB 2.0 |
| | Display | 2 HDMI | 2 HDMI |
| | DIO | 8-bits DIO | 8-bits DIO |
| | Buttons | Reset, Power Button | Reset, Power Button |
| | Antenna | 2 Holes | 2 Holes |
| | Audio | - | - |
| Power | | 12V DC-in | 12V DC-in |
| Cooling | | Active Fan | Fanless |
| OS Support | | Win10 IoT, Win10 Professional | Win10 IoT, Win10 Professional |
| Mechanism | Construction | Metal + Aluminum | Metal + Aluminum |
| | Mounting | Wall mount / VESA mount (Opt.) | Wall mount / VESA mount (Opt.) |
| | Dimensions<br>(W x H x D) | 175 x 48.5 x 120 mm /<br>175 x 73.5 x 120 mm | 175 x 69.4 x 120 mm /<br>175 x 90.4 x 120 mm |
| Environment | Operating Temp. | -5°C ~ 45°C | -5°C ~ 45°C / -20°C ~ 60°C |

# Ruggedized Embedded System

Application-Oriented Solutions

## Ultra Ruggedized

Featuring the IP66 white enclosure and wide-temperate from -40 to 70°C, our ultra-ruggedized system can operate as the edge computer outdoor 24/7 without any shelter. The smart vent design can easily drains off water automatically to remain dry inside the system.

Our system also delivers versatile water-proof I/O including external SIM slot, high-gain antenna, combo port, and selective display ports (HDMI/VGA) were also delivered to help integrator meet the demand for various applications. It's an ideal candidate as outdoor IoT edge computing in the critical environment.

### IP66 Enclosure Withstand Water and Dust

IP66 Grade

### Outdoor IoT Edge Computing

Outdoor Application

| Model Name | | ECX700-ASL | ECX700-ADP | ECX700-AL |
|---|---|---|---|---|
| Platform | | Atom | ULT | Atom |
| System | Processor | Intel® Atom® Amston Lake Processor | 12th Gen Intel® Core™ Processor | Intel Atom® Processor E3900 |
| | Socket | FCBGA 1264 | BGA 1744 | BGA 1296 |
| | Max. Speed | 3.4~3.6GHz | 4.4~4.7GHz | 1.8~2.0GHz |
| | CPU TDP | 9 / 12W | 15W | 6/9.5/12W |
| | Cache | 6M | 12M | 2M |
| | BIOS | AMI SPI 256Mbit (supports UEFI boot only) | AMI SPI 256Mbit | AMI SPI 128Mbit (supports UEFI/Legacy mode and Security Boot (Opt.)) |
| Memory | Technology | Single Channel LPDDR5 4800MHz | Dual Channel DDR4 3200MHz | Dual Channel DDR3L 1866MHz |
| | Max. Capacity | 8/16GB | 40GB (8GB memory onboard + 32GB memory DIMM) | 8GB |
| | Socket | Memory Down | Memory Onboard, 1 SODIMM | Memory Onboard, 1 SODIMM |
| Storage | | eMMC up to 128GB (Opt.) | M.2 SSD (M Key) up to 2TB (Opt.) | eMMC up to 64GB (Opt.) |
| Expansion | PCIe, PCI, Mini PCIe | - | - | 2 Full mPCIe |
| | M.2 | 1 M.2 2242/2280 M key<br>1 M.2 2230 E key<br>1 M.2 3042/3052 B key | 1 M.2 3042/3052 B Key, 1 M.2 2230 E Key | 1 M.2 2230 E Key |
| | SIM | 1 SIM | 1 SIM | 1 SIM |
| Audio | Audio Codec | ALC888S | - | - |
| Ethernet | Controller | 2 Intel® I226V | 2 Intel® I226IT | 2 Intel® I210AT |
| LED | Indicators | Power Status | Power Status | Power Status |
| I/O | Ethernet | 2 2.5GbE | 2 GbE | 2 GbE |
| | Serial | 2 RS-232, 2 Can bus protocol | 2 RS-232, 1 Can bus protocol | 2 RS-232, 2 Can bus protocol |
| | USB | 2 USB 3.2 | 4 USB 3.2 | 2 USB 3.2 |
| | Display | 1 HDMI | 1 HDMI | 1 HDMI, 1 VGA(opt.) |
| | Antenna | 2 (LTE), 2 (WiFi) | 4 (LTE), 2 (WiFi) | 2 (LTE), 2 (WiFi) |
| Power | | 9~36V DC-in | 9~36V DC-in | 9~36V DC-in |
| Cooling | | Fanless | Fanless | Fanless |
| OS Support | | Win11 IoT, Linux | Win10 IoT, Win11 IoT, Linux | Win10 IoT, Linux |
| Mechanism | Construction | Construction Metal + Aluminum, IP67/ IP69K enclosure | Metal + Aluminum, IP67/ IP69K enclosure | Aluminum, IP67/ IP69K enclosure |
| | Mounting | Wall Mount | Wall Mount | Wall Mount |
| | Dimensions (W x H x D) | 217 x 188 x 87 mm | 239.24 x 194 x 101 mm | 217 x 188 x 87 mm (with wall-mount bracket) |
| Environment | Operating Temp. | -40°C ~ 70° C | -20°C ~ 70° C | -40°C ~ 70° C |

| Model Name | | X6X-ORN |
|---|---|---|
| Platform | | - |
| System | Processor | 6/8-core Arm® Cortex®-A78AE v8.2 64-bit CPU |
| | Socket | - |
| | Max. Speed | - |
| | CPU TDP | 7-25W / 10-40W |
| | Cache | - |
| | Chipset | - |
| | BIOS | - |
| GPU / AI Accelerator Card Support | | NVIDIA® Jetson Orin Nano™/ NX, up to 157TOPS |
| Memory | Technology | 128-bit/64-bit LPDDR5 |
| | Max. Capacity | 8/16GB |
| | Socket | onboard |
| Storage | | M.2 2242/2280 M key |
| Expansion | PCIe, PCI, Mini PCIe | - |
| | M.2 | 1 M.2 Key E 2230, 1 M.2 Key B 3042/3052 |
| | SIM | 1 Nano SIM |
| Audio | Audio Codec | - |
| Ethernet | Controller | 4 Intel I210, 2 PoE (Opt.) |
| LED | Indicators | Power |
| I/O | Ethernet | 4 GbE |
| | Camera I/F | 2 GMSL2 |
| | Serial | 1 RS-232, 1 CAN bus |
| | USB | 4 x USB 3.0 Type-A, M20 1 x USB 2.0 M20 (type A for recovery) |
| | Display | 1 HDMI |
| | DIO | 4 DI, 4 DO |
| | Buttons | Power, Reset, Recover |
| | Antenna | 6 holes |
| | Audio | |
| Power | | 9-36V DC-in |
| Cooling | | Fanless |
| OS Support | | Linux Ubuntu 22.04 |
| Mechanism | Construction | Aluminum + SGCC |
| | Mounting | Wall mount / DIN mount (Opt.) |
| | Dimensions (W x H x D) | 237 x L: 194 x H: 105.3 mm |
| Environment | Operating Temp. | -20°C ~ 60°C |