intel.

# Edge AI Systems

Unleashing the Power of Edge Computing

**ASUS IoT**

# Revolutionize Computing Power with
# Edge AI Systems

## The Game-Changing Platform for AI Applications

ASUS IoT edge AI systems combine GPU computing with AIoT potential. They offer embedded MXM GPU modules from both NVIDIA® and Intel®, NVIDIA® Jetson-based platforms, and GPU computing platforms for diverse market needs. With unparalleled performance, they enable real-time AI inferencing at the edge, transforming industries. Designed with a rugged, fanless, anti-vibration build, wide temperature support and low power consumption, they excels in demanding edge AI applications like factory automation, machine vision, video analytics, and autonomous vehicles. ASUS IoT ensures robustness and reliability for the most challenging scenarios, driving innovation and efficiency in this new era.

## Powerful & Scalable GPU Computing
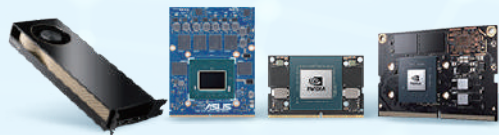
ASUS IoT pioneers the industry's first edge AI system that supports up to dual 450-watt TDP GPUs. ASUS IoT systems benefit from support for Intel Arc™ A-series MXM, NVIDIA PCIe® GPU cards, and Jetson SoM, offering a choice of power-efficient options through to extreme high-throughput solutions.

## Latest Computing Platform

ASUS IoT edge AI systems are available in a variety of form factors embedded with the latest Intel 13th/12th Gen CPUs and NVIDIA Jetson Orin™ series, meeting the dynamic requirements of the market.

## Exclusive Thermal Design

The patented system design effectively diffuses heat from the CPU, GPU, and all peripherals, delivering extreme ruggedness with a fanless structure. This ensures stable operation while the fanless design further reduces dust generation and thus enhances durability.

## Robust Power Design

Innovative high-current tolerance power design ensures extreme reliability under a wide range of DC inputs and power-hungry GPU computing. Support for ignition power control adds further stability.

## Industrial Feature Set & Rich I/O

Supports PoE, isolated DIO, multiple COM ports, CAN bus, and more, enabling seamless connectivity for a wide range of applications.

## Anti-vibration Design

With a robust mechanical design featuring structured support, GPU retainer, cable screw lock, and damping bracket, ASUS IoT edge AI systems excel at in-vehicle situations for smooth and uninterrupted operation.

## Certification Compliance

Rest assured with our system-validated certification readiness. Our edge AI systems comply with MIL-STD 810H and offer vibration resistance up to 5 GRMS.
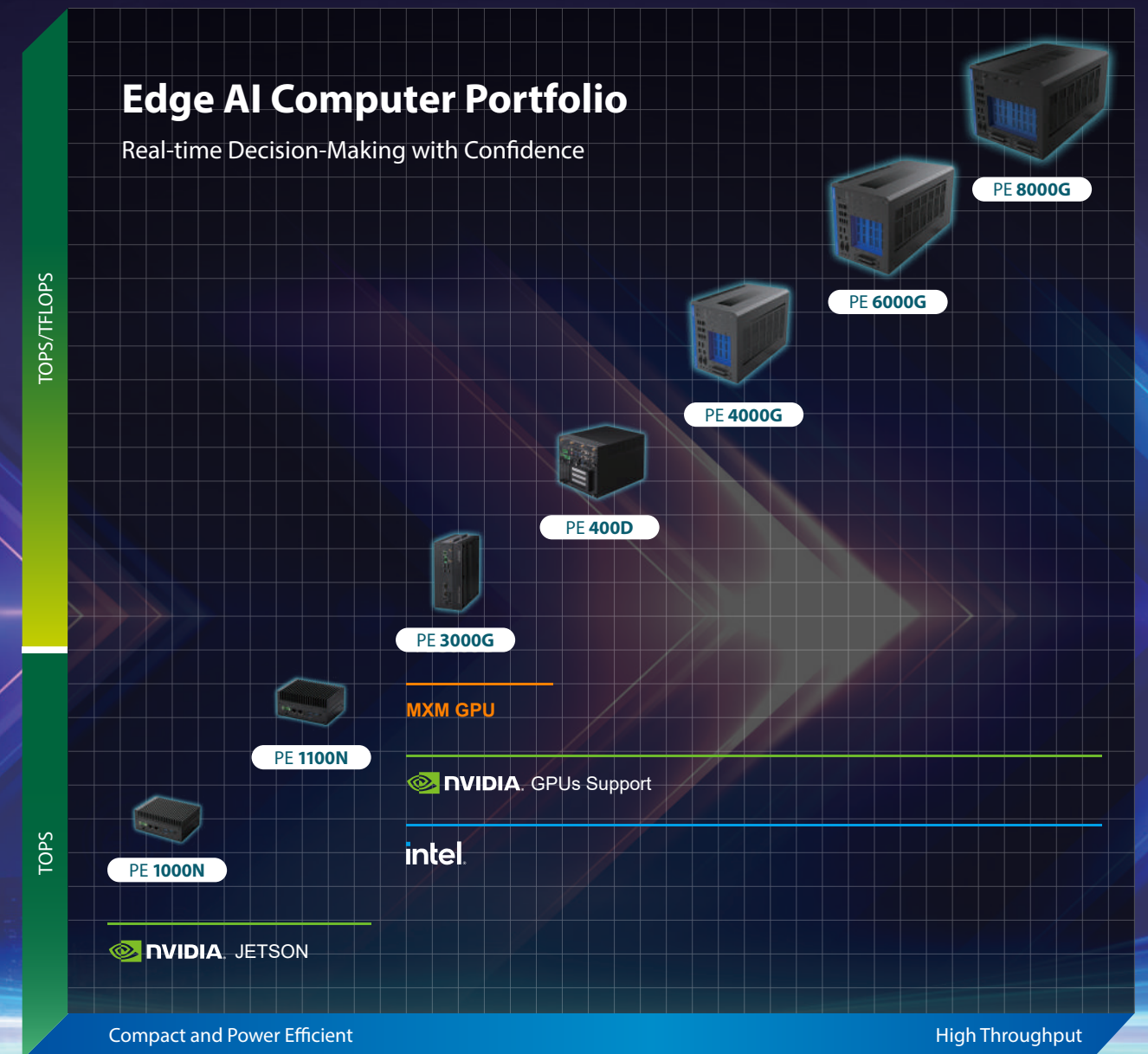
## Software Support for Easy Integration

Simplify the integration process with comprehensive software support, including APIs, middleware, and device control toolkits tailored for various vertical applications.
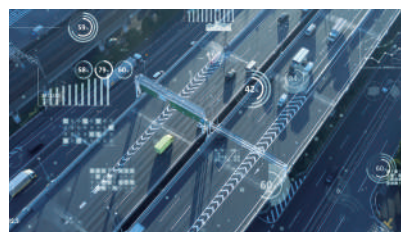
# Full Spectrum of

# Edge AI Systems & Applications

ASUS IoT offers a comprehensive portfolio of edge AI systems to address the diverse range of market applications. Powered by embedded MXM GPU modules from both NVIDIA® and Intel®, and PCI Express graphics cards based on NVIDIA® Quadro GPUs, as well as edge AI platforms utilizing NVIDIA® Jetson™ modules and other embedded form factors, these systems are designed to accelerate edge computing and AI workloads. With a focus on performance, long lifecycle, power consumption, and form factor, ASUS IoT provides a full spectrum of solutions to meet various embedded requirements. Whether it's high-performance computing or specific form factors, our edge AI systems deliver the power and flexibility needed to excel in diverse applications.

## Edge AI Computer Portfolio
Real-time Decision-Making with Confidence

TOPS/TFLOPS

PE **8000G**

PE **6000G**

PE **4000G**

PE **400D**

PE **3000G**

**MXM GPU**

PE **1100N**

**NVIDIA** GPUs Support

**intel**

TOPS

PE **1000N**

**NVIDIA** JETSON

Compact and Power Efficient     High Throughput

## Target Applications
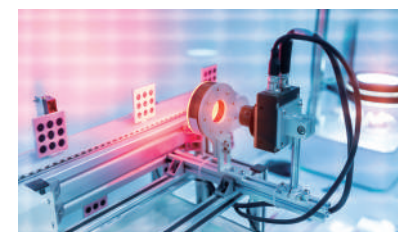
Traffic Management

AMR

Smart City

Machine Vision

Autonomous Driving

AI Inference & Training

# Product Selection



| Category | | PE3000G | PE400D | PE4000G | PE6000G | PE8000G |
|---|---|---|---|---|---|---|
| **Case** | Dimension | 240 x 230 x 125.7 mm | 176.6 x 210 x 250 mm | 225 x 190 x 350 mm | 225 x 221 x 443 mm | 225 x 288 x 443 mm |
| | Weight | 8.2 kg | 6.8 kg | 8 kg | 9.2 KG | Coming soon |
| | Chassis construction | Aluminum alloy with heavy duty metal | Aluminum alloy with heavy duty metal | Aluminum alloy with heavy duty metal | Aluminum alloy with heavy duty metal | Aluminum alloy with heavy duty metal |
| **System** | Processor | Intel® Core™ i7-12800HE Intel® Core™ i5-12600HE Intel® Core™ i3-12300HE | Intel® Xeon® W-1290TE Intel® Core™ i9-10900E Intel® Core™ i7-10700E Intel® Core™ i5-10500E Intel® Core™ i3-10100E | Intel® Core™ i9-12900E/ i9-12900TE Intel® Core™ i7-12700E/ i7-12700TE Intel® Core™ i5-12500E/ i5-12500TE Intel® Core™ i3-12100E/ i3-12100TE | Intel® Core™ i9-12900E/ i9-12900TE Intel® Core™ i7-12700E/ i7-12700TE Intel® Core™ i5-12500E/ i5-12500TE Intel® Core™ i3-12100E/ i3-12100TE | Intel® Core™ i9-12900E/ i9-12900TE Intel® Core™ i7-12700E/ i7-12700TE Intel® Core™ i5-12500E/ i5-12500TE Intel® Core™ i3-12100E/ i3-12100TE |
| | Chipset | - | W480E | R680E | R680E | R680E |
| | Graphics | Intel® Iris® Xe Graphics (i7/i5) Intel® UHD Graphics (i3) | Intel® UHD Graphics 630 | Intel® UHD Graphics 770 | Intel® UHD Graphics 770 | Intel® UHD Graphics 770 |
| | Memory | 2 x SO-DIMM, up to 64GB DDR5 SDRAM | 2 x SO-DIMM, up to 64GB ECC/non-ECC DDR4 SDRAM (ECC only for Xeon CPU) | 2 x SO-DIMM, up to 64GB ECC/non-ECC DDR5 SDRAM | 2 x SO-DIMM, up to 64GB ECC/non-ECC DDR5 SDRAM | 2 x SO-DIMM, up to 64GB ECC/non-ECC DDR5 SDRAM |
| **I/O Interface** | PoE | 4x PoE + (optional) | - | - | - | - |
| | Ethernet | 3 x Intel® i226 (2.5 GbE) 1 x Intel® i219-LM(1 GbE) | 3 x Intel® i210-IT (1 GbE) | 1x Intel® i219 (1 GbE) 1x Intel® i226 (2.5 GbE) | 1x Intel® i219 (1 GbE) 1x Intel® i226 (2.5 GbE) | 1x Intel® i219 (1 GbE) 1x Intel® i226 (2.5 GbE) |
| | Display port | 2x HDMI 2x DP++ 4X DP (with MXM GPU card) | 1 x HDMI 2.0 1 x HDMI 1.4 1 x DP | 2x HDMI 2x DP++ | 2x HDMI 2x DP++ | 2x HDMI 2x DP++ |
| | Serial port | 2 x COM: RS-232/422/485, DB9 2 x COM: RS-232, DB9 (optional) | 3 x COM: RS-232/422/485, DB9 1 x COM*: RS-232/422/485, CAN Bus (2.0A/B), DB9 *Default RS-232, configured to CANBus by onboard jumper | 2x COM: RS-232/422/485 4x COM: RS-232, DB9 (optional) | 2x COM: RS-232/422/485 4x COM: RS-232, DB9 (optional) | 2x COM: RS-232/422/485 4x COM: RS-232, DB9 (optional) |
| | USB 3.2/ 3.1 | 3x USB 3.2 Gen2x1 (10G) ,type A | 2 x USB 3.2 Gen2, type A 4 x USB 3.2 Gen1, type A | 1x USB 3.2 Gen2x2 (20G), type C 4x USB 3.2 Gen2x1 (10G) ,type A 2x USB 3.2 Gen1 (5G) type A | 1x USB 3.2 Gen2x2 (20G), type C 4x USB 3.2 Gen2x1 (10G) ,type A 2x USB 3.2 Gen1 (5G) type A | 1x USB 3.2 Gen2x2 (20G), type C 4x USB 3.2 Gen2x1 (10G) ,type A 2x USB 3.2 Gen1 (5G) type A |
| | USB 2.0 | 1x USB 2.0, type A | - | 2x USB2.0, type A | 2x USB2.0, type A | 2x USB2.0, type A |
| | Audio | Mic in; Line out | Mic in; Line out | Mic in; Line out | Mic in; Line out | Mic in; Line out |
| | Digital I/O | 4x DI, 4 x DO support isolation | 4x DI, 4 x DO support isolation | 4x DI, 4 x DO support isolation | 4x DI, 4 x DO support isolation | 4x DI, 4 x DO support isolation |
| **Storage interface** | SATA HDD | 2 x hot-swappable 2.5" HDD/SSD trays | 2 x hot-swappable 2.5" HDD/SSD trays | 2 x hot-swappable 2.5" HDD/SSD trays | 4 x hot-swappable 2.5" HDD/SSD trays | 4 x hot-swappable 2.5" HDD/SSD trays |
| | mSATA | - | 1 | 1 | 1 | 1 |
| | M.2 (M-key) | 1 | 1 | 1 | 1 | 1 |
| **Expansion** | M.2 (E-key) | 1 | 1 | 1 | 1 | 1 |
| | M.2 (B-key) | 1 | - | 2 | 2 | 2 |
| | mPCIe | 1 | 1 | 1 | 1 | 1 |
| | SIM | 1 | 2 | 3 | 3 | 3 |
| | PCI/ PCIe | 1x PCIe slot (1 x PCIe x8 Gen4 for MXM GPU card) | 4 x PCIe slots (1 x PCIe x16 + 1 x PCIe x4 or 2 x PCIe x8 + 1 x PCIe x4, auto-detect) | 4 x PCIe slots (1 x PCIe x16 Gen4 + 2 x PCIe x4 or 2 x PCIe x8 Gen4 + 2 x PCIe x4, auto-detect) | 5 x PCIe slots (1 x PCIe x16 Gen4 + 3 x PCIe x4 or 2 x PCIe x8 Gen4 + 3 x PCIe Gen4 x4, auto-detect) | 7 x PCIe slots (1 x PCIe x16 Gen4 + 3 x PCIe x4 Gen3 + 2 x PCIe x1 Gen3 or 2 x PCIe x8 Gen4 + 3 x PCIe x4 Gen3 + 2 x PCIe x1 Gen3) |
| **Power supply** | DC Input | 8-48V DC | 9-36V DC | 8-48V DC | 8-48V DC | 8-48V DC |
| | Ignition Control | Integrated | - | Integrated | Integrated | Integrated |
| **Environmental** | Operating Temperature | -20~60°C (w/ 50W MXM, 45W CPU) | -20~60°C | -20~60°C with 35W CPU -20~55°C with 65W CPU | -20~60°C with 35W CPU -20~55°C with 65W CPU | -20~60°C with 35W CPU -20~55°C with 65W CPU |
| | Certification | CE, FCC, CB, BSMI | CE (IEC 61000-6-2/4), FCC, VCCI, RCM, CCC, BSMI, UL, CB | CE, FCC, CB, BSMI | CE, FCC, CB, BSMI | CE, FCC, CB, BSMI |
| | Shock & Vibration | MIL-STD 810H; Vibration during operation: 5-500 Hz, 5 Grms, 3 Axes | Vibration: 0.5 Grms, sine, 5-500 Hz Shock: 50 Grms, half sine, 11ms | MIL-STD 810H; Vibration during operation: 5-500 Hz, 3 Grms, 3 Axes | MIL-STD 810H | MIL-STD 810H |



| Category | | PE1100N Series | | | | PE1000N Series | | |
|---|---|---|---|---|---|---|---|---|
| **System** | SoC/SOM | Jetson Orin Nano 4G | Jetson Orin Nano 8G | Jetson Orin NX 8G | Jetson Orin NX 16G | Jetson Nano™ | Jetson TX2 NX | Jetson Xavier™ NX |
| | CPU | 6 x Arm® Cortex®-A78AE v8.2 | | 8 x Arm® Cortex®-A78AE v8.2 | | 4 x Arm® Cortex®-A57 | 2 x NVIDIA Denver 2 64-Bit 4 x Arm® Cortex®-A57 | 6 x NVIDIA Carmel Arm®v8.2 64-bit |
| | GPU | 512-core NVIDIA Ampere GPU with 16 Tensor Cores | 1024-core NVIDIA Ampere GPU with 32 Tensor Cores | | | 128-core NVIDIA Maxwell™ | 256-core NVIDIA Pascal™ GPU | 384-core NVIDIA Volta™ with 48 Tensor Cores |
| | Memory | 4 GB 64-bit LPDDR5 | 8 GB 128-bit LPDDR5 | 8 GB 128-bit LPDDR5 | 16 GB 128-bit LPDDR5 | 4 GB 64-bit LPDDR4 | 4 GB 128-bit LPDDR4 | 8 or 16 GB 128-bit LPDDR4x |
| **Wired Interface** | Ethernet | 2 x 10/100/1000 Mbps, RJ45 | | | | 2 x 10/100/1000 Mbps, RJ45 | | |
| | USB (or header) | 3 x USB 3.2 Gen1, Type-A 1 x USB 2.0, Micro-USB for OS Flash 2 x USB 2.0, Pin Header (Internal) | | | | 3 x USB 3.2 Gen1, Type-A 1 x USB 2.0, Micro-USB for OS Flash 2 x USB 2.0, Pin Header (Internal) | | |
| | COM | 2 x RS-232/422/485, 1 x CAN bus, DB9 | | | | 2x RS-232/422/485, DB9 | 2 x RS-232/422/485, 1 x CAN bus, DB9 | |
| | DIO | 4 x DI, 4 x DO (2x5 Terminal Block, w/ isolation) | | | | 4 x DI, 4 x DO (2x5 Terminal Block, w/ isolation) | | |
| | Display | 1 x HDMI 1.4a 3840 x 2160 @30Hz | | 1 x HDMI 2.0b 3840 x 2160 @60Hz | | 1 x HDMI 2.0b 3840 x 2160 @60Hz | | |
| | Debug Port | 1 x Debug console via Micro-USB | | | | 1 x Debug console via Micro-USB | | |
| **Wireless Interface** | Wi-Fi | Optional | | | | Optional | | |
| | Bluetooth | Optional | | | | Optional | | |
| | Cellular | Optional | | | | Optional | | |
| | GPS | Optional | | | | Optional | | |
| **Expansion** | M.2 M key | 1 x 2242/2260/2280, for M.2 SSD (PCIe, OS disk, size option) | | | | 1 x 2242/2260/2280, for AEM, M.2 SSD (PCIe, I2C and SMBus) | | |
| | M.2 E key | 1 x 2230, for Wi-Fi/BT (PCIe, USB 2.0, I2C and PCM) | | | | 1 x 2230, for Wi-Fi/BT (PCIe, USB 2.0, I2C and PCM) | | |
| | M.2 B key | 1 x 3042/3052, for 4G/5G (PCIe, USB 2.0/3.0) | | | | N/A | | |
| | Mini PCIe | N/A | | | | 1 x Full-Length socket, for 4G/LTE (USB 2.0) | | |
| **Slot** | SIM | 2 x nano-SIM slots | | | | 2 x nano-SIM slots | | |
| | Micro SD | N/A | | | | 1 x Micro SD slot | | |
| **Power** | Power Input | 12 to 24 VDC, 3-pin terminal block (1-pin for remote button) | | | | 12 to 24 VDC, 3-pin terminal block (1-pin for remote button) | | |
| **Mechanical** | Mounting | Wall-mount (support assembly with DIN rail clips) | | | | Wall-mount (support assembly with DIN rail clips) | | |
| | Dimensions | Board: 3.5", 146 x 105 mm System: 152 x 114 x 72 mm | | | | Board: 3.5", 146 x 105 mm System: 152 x 114 x 62 mm | | |
| | Weight | 1.4 KG | | | | 1.4 KG | | |
| **Environment** | Operating Temp. | -20 ~ 50°C | | | | -20~60°C | | |
| | Operating Humidity | 5~95% (non-condensing, IEC standard) | | | | 10~95% (non-condensing, IEC standard) | | |
| | Storage Temp. | -40~85°C | | | | -40~85°C | | |
| | Relative Humidity | 10 to 95% (non-condensing) | | | | 10 to 95% (non-condensing) | | |
| **Security** | TPM | on-board TPM v2.0 | | | | on-board TPM v2.0 | | |
| **Others** | Watch Dog Timer | Yes. HW WDT | | | | Yes. HW WDT | | |
| | Operating System | Ubuntu | | | | Ubuntu | | |

# Why ASUS IoT



**Innovative Technology & Flexible Design**



**Exclusive Technical Support**



**Strong partnerships with Tier 1 suppliers**

# About ASUS IoT

ASUS IoT is a sub-brand of ASUS dedicated to the creation of incredible solutions in the fields of AI and IoT. Our mission is to become a trusted provider of embedded systems and partner to the wider AIoT solutions ecosystem. ASUS IoT strives to deliver best-in-class products and services across diverse vertical markets, and to partner with customers in the development of fully integrated and rapid time-to-market applications that drive efficiency – providing convenient, efficient and secure living and working environments for people everywhere.

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