



Accelerating AIoT Transformation

Intelligent Edge Computing and AI Solutions

Product Guide

ASUS IoT
IN SEARCH OF INCREDIBLE



iot.asus.com

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Made in Taiwan

intel.
partner
Titanium

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ABOUT ASUS



ASUS is a global technology leader that provides the world's most innovative and intuitive devices, components, and solutions to deliver incredible experiences that enhance the lives of people everywhere. With its team of 5,000 in-house R&D experts, the company is world-renowned for continuously reimagining today's technologies. Consistently ranked as one of Fortune's World's Most Admired Companies, ASUS is also committed to sustaining an incredible future. The goal is to create a net zero enterprise that helps drive the shift towards a circular economy, with a responsible supply chain creating shared value for every one of us.

16,000+
Employees worldwide

5,000+
World-class R&D experts

160+
Offices

A VISIONARY APPROACH TO UBIQUITOUS COMPUTING TECHNOLOGY

In the contemporary landscape of ubiquitous computing, ASUS has seamlessly integrated itself, embracing the interconnected fabric of our digital era. Rooted in a robust foundation of personal and mobile computing, we've extended our purview to encompass IoT computing, cloud computing, and advanced AI computing, aiming to contribute to a more enriched future for people's lives.



Personal
Computing



Mobile
Computing



IoT
Computing



Edge
Computing



AI
Computing

IN SEARCH OF INCREDIBLE

Worldwide Recognition

An ever-growing portfolio of products, solutions, and services that continue to garner global accolades.

FORTUNE

One of the World's Most
Admired Companies
(for 9 years)

Interbrand

Most Valuable
Taiwanese Brand
(for 11 years)

Forbes

World's Best
Employers
(for 5 years)



ABOUT ASUS IoT

Accelerating AIoT Transformation with 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 a partner in the AIoT solutions ecosystem. ASUS IoT strives to deliver best-in-class products and services across diverse vertical markets – providing convenient and efficient environments for people everywhere.



Exceptional AI
technology



Innovative
technology and
flexible design



Strong partnerships for
assured timely
production and stable
supply chain



Exclusive technical
support



Committed to
longevity



Exceptional quality
control for compatibility
and safety

DESIGN & MANUFACTURING SERVICE

ASUS IoT

ASUS is known for creating products and services that exceed industry standards. Our engineers design to exacting standards to guarantee quality, and we use only the best components to ensure real-world performance and reliability. Along with offering customized production at low or high volumes, ASUS also provides flexible options for modified standards or fully customized design and manufacturing services for modules, motherboards or systems.

DESIGN REVIEW GATE PROCESS



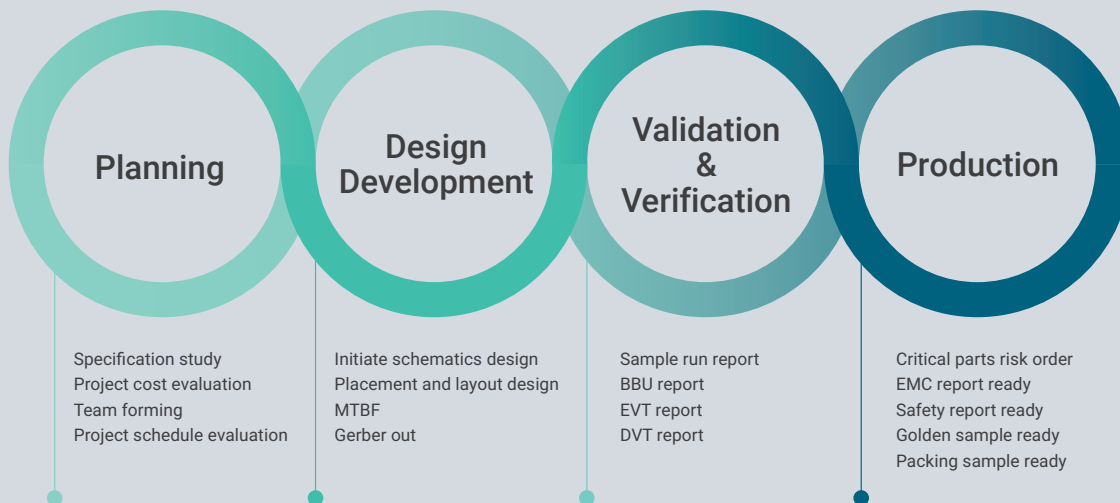
BOM
CHECK



SCHEMATIC
CHECK



LAYOUT
CHECK



All ASUS products undergo a series of strict validations, so customers can rest assured that they will receive consistent results of the highest quality.

- Dynamic tests - Altitude, vibration, shocks, and drops
- Environment tests - Temperature, humidity, thermal, acoustic noise and hardware monitor
- Emissions tests - EMC, EMI
- Power tests - Line voltage and frequency, power consumption, power line disturbance
- Function tests - BIOS for UEFI, system utilities, OS, and external hardware compatibility

ASUS factories are certified by ISO 9001, ISO 14001, OHSAS 18001, ISO 13485, QC 080000, and ISO/TS 16949 and ASUS offers customers the opportunity to visit our production facilities. To schedule a visit, please contact with your local ASUS representative.

ABOUT ASUS IoT

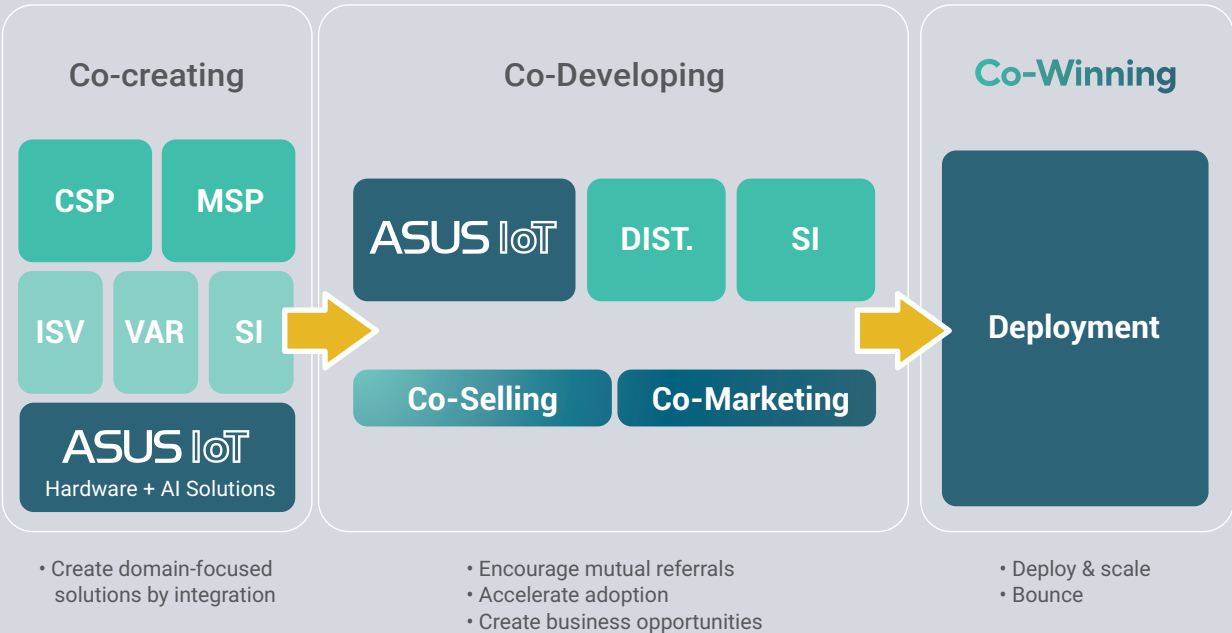


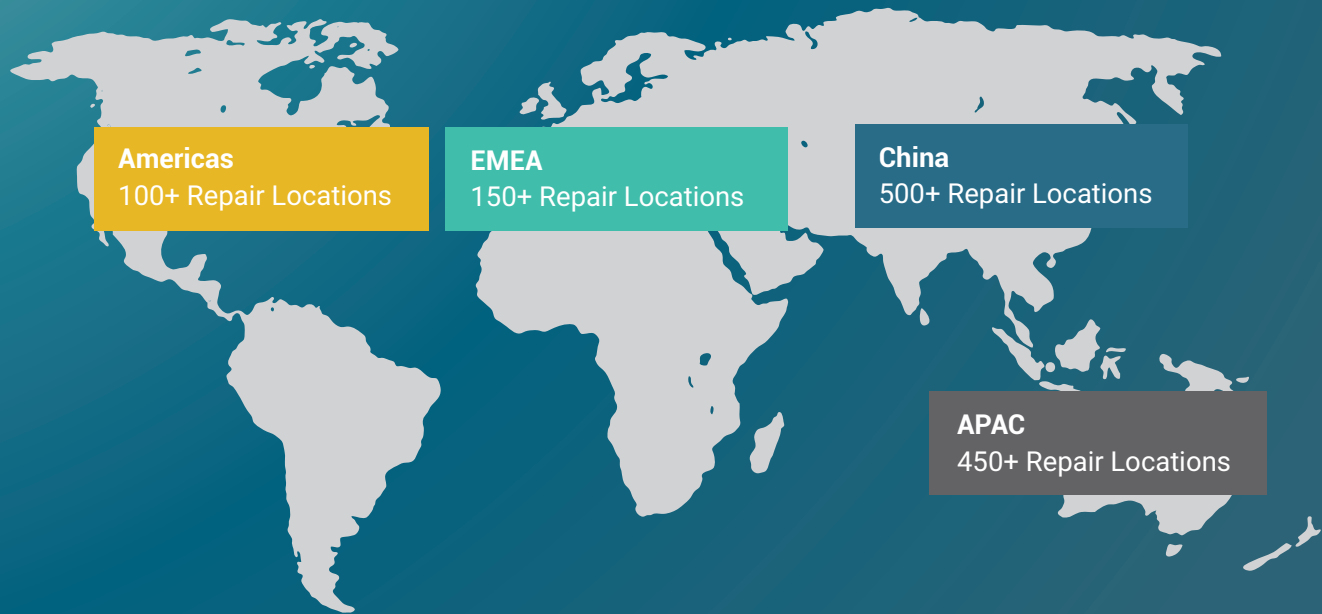
REVOLUTIONIZING AIOT THROUGH COLLABORATIVE SOLUTIONS

ASUS IoT's approach with the AIoT Partner Alliance Program aims to transform AI and IoT with a collaborative model. Focused on joint creation development, it combines hardware, AI software, design and quality for complete market solutions. The ASUS AIoT Alliance Program unites industry partners for end-to-end AIoT solutions, providing benefits like training, project engagement, customer support, and marketing resources.



Become a partner





Global Reach, Local Touch

ASUS has hundreds of local service centers around the world that provide efficient, timely service by enabling customers to drop off items in need of repair instead of shipping them to a remote location. These service centers are either owned or operated by ASUS or by authorized service providers trained and certified by ASUS to provide the best service and quality.

ASUS in Smart Manufacturing

Centralized monitoring and Control platform

- i. Real-time data visualization
- ii. Integrates factory big data



HMI in Production Line

- i. Panel PC series
- ii. Intuitive user interface



AOI Equipment

- i. PE3000G, PE4000G



AI-based defect inspection

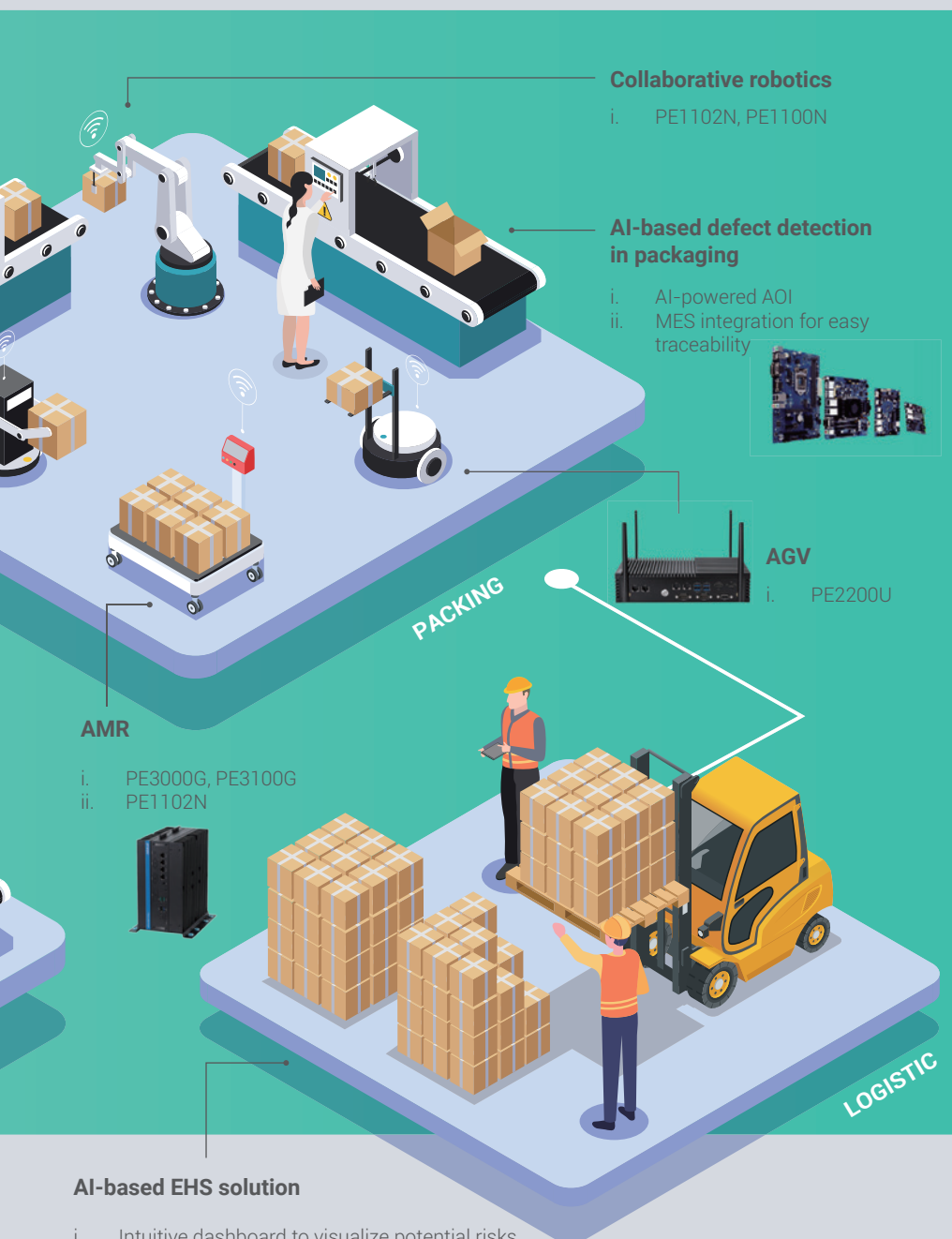
- i. PE3000G, PE6000G, PE8000G



Equipment & parameter monitoring

- i. Predictive maintenance and equipment health management
- ii. Real-time AI analysis and on-site motor modeling
- iii. Advancing condition monitoring vibration sensor for anomalies identification





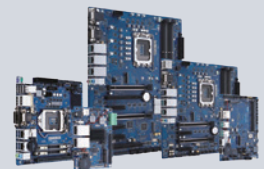
Chapter 1

AISVision, AIEHS,
AISPHM & AISSENS



Chapter 3

Edge AI & Rugged
Edge Computers



Chapter 7

Industrial
Motherboards & Single
Board Computers



Chapter 8

Tinker Series



Chapter 9

Industrial Panel PCs



Chapter 12

Intelligent Integrated
Solutions

ASUS in Smart Retail



Chapter 1 AISVision



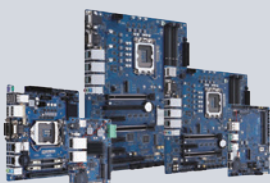
Chapter 2 ALPR Edge AI Dev Kit



Chapter 3 Edge AI & Rugged Edge Computers



Chapter 4 NUC & Mini PCs



Chapter 7 Industrial Motherboards & Single Board Computers



Chapter 8 Tinker Series



Chapter 9 Industrial Panel PCs



Intelligent vending machine

- i. Innovative technology and flexible design
- ii. Outstanding design capabilities

Self-checkout

- i. Efficient checkout process
- ii. Lower overhead, increased productivity





ASUS in Smart Healthcare



Chapter 4

NUC & Mini PCs

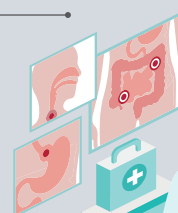
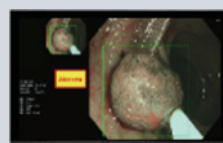
Medical PCs

- i. Meets industry-grade requirements
- ii. Committed to longevity



AI-based image processing

- i. Real-time polyp detection
- ii. Instant polyp classification



Commercial/clinical monitors

- i. High-resolution imaging
- ii. Dicom calibration



Medical IT

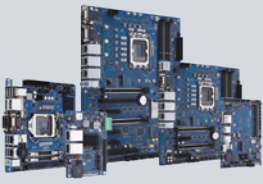
- i. Space-saving hardware
- ii. Superior performance and reliability



Telehealth solutions

- i. Integrate BP/AC/SpO2/BT/BMI devices
- ii. Designed for hospital/kiosk/home use





Chapter 7 Industrial Motherboards & Single Board Computers



Page 66 Medical PCs



ASUS HealthHub Computers



Commercial / Clinical Monitors Computers



ASUS VivoWatch Computers



ASUS Handheld Ultrasound Solution



Portable ultrasound solutions

- i. Compact and lightweight design
- ii. Wireless connectivity



HOME



Wearables Health monitoring apps

- i. Continuous vital-sign tracking
- ii. Health data synchronization

Smart nursing cart

- i. Mobile point-of-care solution

ASUS in Smart City



Chapter 2

ALPR Edge AI
Dev Kit



Chapter 3

Edge AI & Rugged
Edge Computers

Water management

- i. IoT-based leak detection
- ii. Real-time water-quality monitoring

Smart energy

- i. Microgrid solutions
- ii. Energy-efficiency optimization





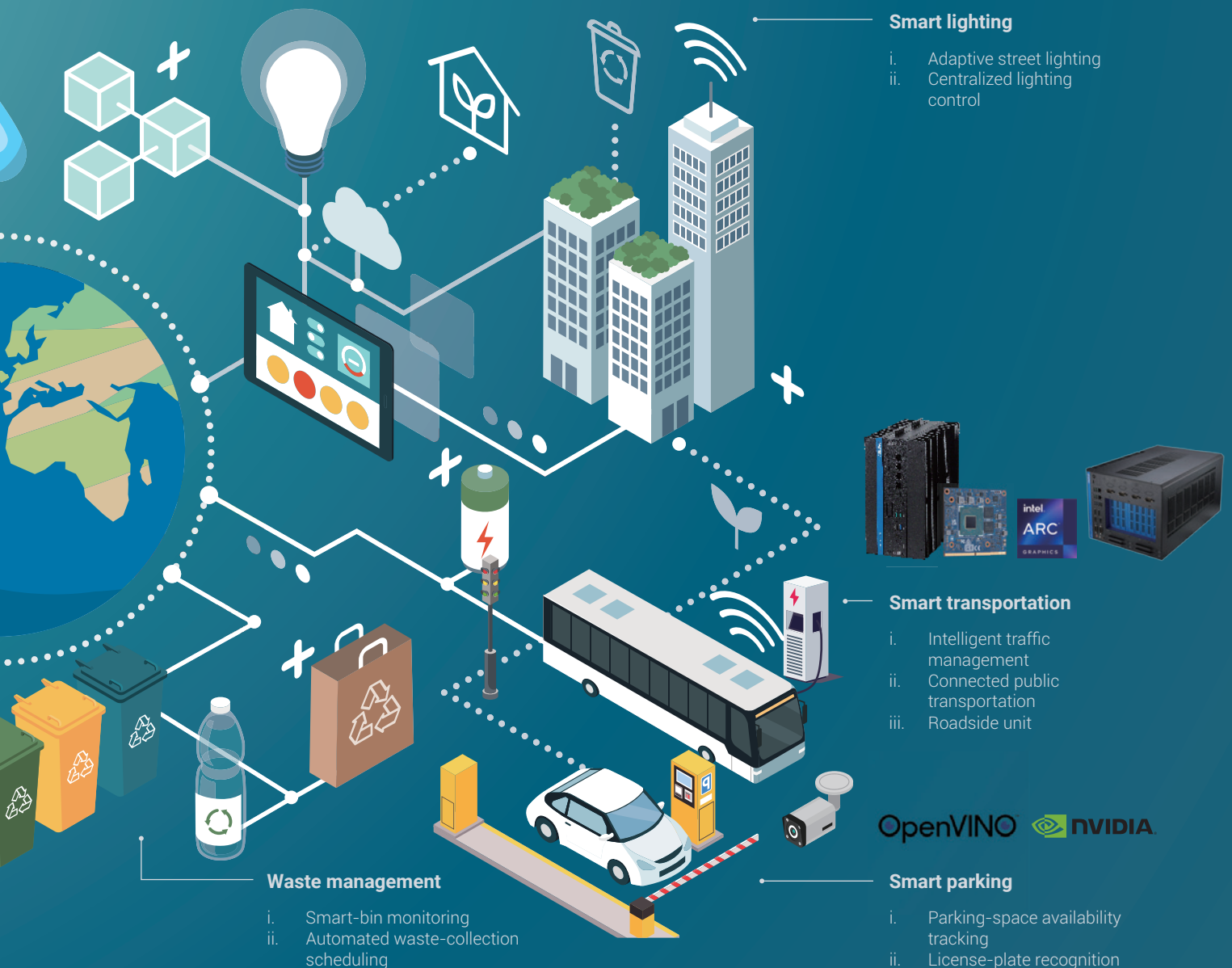
Chapter 7 Industrial Motherboards & Single Board Computers



Chapter 8 Tinker Series



Chapter 9 Industrial Panel PCs



APPLICATION STORIES

Smart Manufacturing

Smart inspection of each and every screw and nut: San Shing Fastech uses AI to implement zero-defect management



San Shing Fastech Corp, a global leader in the nut industry, grappled with the challenge of meeting the 'zero-defect' inspection requirements of an automotive manufacturer, fueling the quest for an advanced AI solution to enhance quality control.

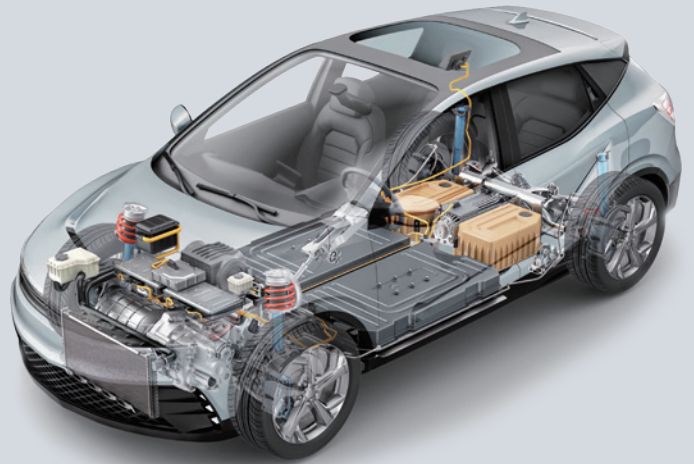


Solution Features

- ASUS IoT AISVision, an easy-to-use AI toolkit and SDK for computer vision, suitable for model training and inference
- Zero-code machine-learning toolkit, generate AI model in only four steps
- ASUS's unique AI technique for supervised and unsupervised learning

Customer Benefits

- Boosts quality inspection efficiency to achieve Zero PPM
- Empowers in-house R&D team to rapidly develop and deploy an AI-powered visual-inspection system



Smart Manufacturing

Unicomp and ASUS IoT create high-speed computing, massive image processing, and high-performance X-ray inspection system



X-ray inspection, integral in manufacturing and research, has evolved with Unicomp's LX9200, partnering with ASUS IoT for high-precision needs in semiconductors and new energy, driving automation and increasing demand for large-scale testing.



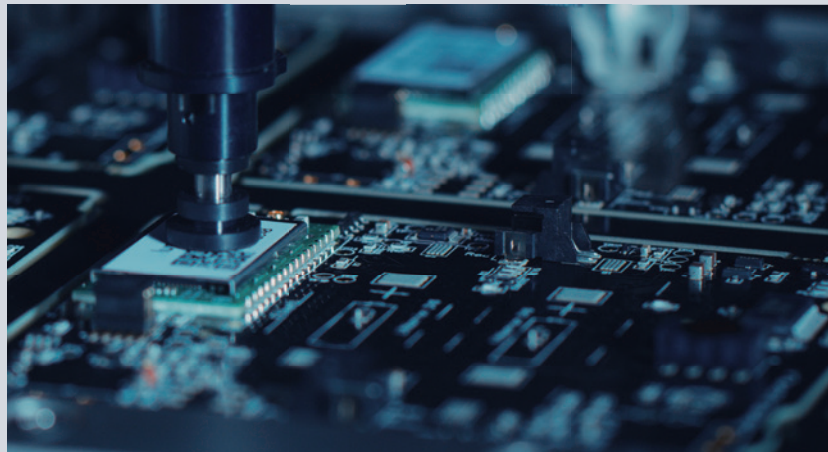
EBS-4U700

Solution Features

- ASUS IoT EBS-4U700 designed for enhanced performance, reliability and efficient high-speed data processing
- Powered by Intel® Core™ i9/i7 (14th/13th/12th gen) processors for optimized IIoT performance.
- ASUS IoT CTOS provides rapid time-to-market and production flexibility

Customer Benefits

- Empowers a robust X-ray inline automatic inspection system
- Boosts inspection capacity for quicker and more precise results
- Ensures reliability and efficiency, meeting diverse industrial demands



Smart Manufacturing

ASUS IoT and Intel co-develop high-performance server platform for semiconductor testing equipment

Leveraging advanced ASUS R&D capabilities and Intel's latest server technology, the collaboration facilitates the integration of high-speed signal processing into semiconductor testing equipment. This significantly enhances testing efficiency and helps clients gain a competitive edge in the market.

Solution Features

- Launch of 3+ SSD/DRAM-tester projects utilizing the leading Birch Stream platform
- Deep relationships with key component vendors, leveraging early access support and early ship program to enable first out advantages to eliminate competitions
- Extensive engineering expertise to complete designs with limited reference
- Compatibility for high-performance/frequency devices through superior layout and signal-design quality
- Stable factory operation and robust supply chain, facilitating high-volume production during the early-access stages

Customer Benefits

- Addressed industry pain points by downsizing the most powerful server platform, significantly boosting testing efficiency with additional slots and higher memory frequency
- Stable high-speed signal processing and streamlined component assembly due to specialized memory sockets
- Enhanced quality control and operational efficiency



Smart Healthcare

Achieve clinical excellence with digital imaging AI assistance

Patients often face high costs and long wait times for CT/MRI result assessments due to diagnostic inefficiencies and doctor shortages. The AI digital imaging solution, combined with remote specialist assistance and supported by ASUS' robust hardware, enables faster, more accurate diagnoses, reduced costs, and an improved experience for both patients and medical institutions.

Solution Features

- AI-powered clinical imaging analysis enhances CT/MRI result assessment, enabling faster and more accurate diagnostics
- Cloud-server capabilities facilitate seamless video analysis, allowing remote specialists to assist with complex CT/MRI result in real time
- High-integration solutions with cutting-edge video-audio capturing technology, resulting in seamless operation and enhanced user experience for clinical workflows
- Customized, robust ASUS hardware enables video input and output from CT/MRI machines and cloud server connectivity. Supported by the comprehensive ASUS supply chain, this ensures optimal performance and reliability

Customer Benefits

- Faster diagnosis, better service and lower cost for patients
- Simplified staff workflows and integrated system, leading to enhanced operational efficiency and clinical excellence
- Remote expert assistance further improves healthcare efficiency in CT/MRI diagnosis while reducing labor costs for medical institutions



APPLICATION STORIES

Smart Healthcare

ASUS IoT PE200U enhances patient safety in operating rooms

Smart Sensing Ltd., incubated by HKSTP, specializes in AIoT solutions for smart cities and business intelligence. Its adoption of the PE200U industrial PC from ASUS IoT addresses healthcare challenges, specifically minimizing the risk of retained foreign objects during clinical procedures.



PE200U

Solution Features

- ASUS IoT PE200U industrial PC with AI-powered item recognition
- Compact size, stable computing and low power consumption
- Fanless thermal design for hygiene control and quiet operation
- Diverse I/O interface, expansion options for medical devices

Customer Benefits

- Reduced hospital equipment check-up time
- Lowered risk of guidewire retention for enhanced patient safety
- Accurate and prompt recognition of used guidewires
- ASUS IoT's smart hospital development boosts efficiency and patient-centric environments



Smart Healthcare

ASUS IoT EBS-4U: Powerful, stable performance at the heart of digital radiography

A prominent Chinese medical equipment manufacturer, with over 20 years of industry presence, seeks global expansion by establishing a comprehensive medical imaging and dental equipment platform. It faced challenges with its existing control computer for digital radiography (DR) and required an efficient and reliable solution.



EBS-4U

Solution Features

- Industrial-grade hardware performance and medical sector expertise for optimal functionality
- EBS-4U's 19-inch 4U rackmount chassis is tailored for medical computing applications.
- High-performance Intel® H110 chipsets ensure effective DR image processing
- Access one-stop consulting and after sales service for comprehensive support

Customer Benefits

- Achieves enhanced performance and stability for DR equipment
- Delivers improved overall performance, leading to lower costs
- Enhances DR rack control with versatile connectivity for increased operational efficiency



Smart Transportation

Three-in-one charger helps TIDC realize vision for smart parking



Urbanization creates challenges like traffic congestion and inefficient parking resource utilization. Our smart city solution, utilizing advanced AI and edge computing technology, facilitates site management and boosted efficiency.

Solution Features

- One-stop solution with X-Spotter smart parking system, supporting high-mount license plate recognition, real-time parking space detection, multiple payment methods, intrusion detection for security and energy management
- In-depth integration of AI technologies, software and hardware
- Robust hardware that facilitating high power inputs and catering to different environmental conditions

Customer Benefits

- Enhanced overall parking experience and management efficiency
- Improved accuracy, reduced congestion and optimized space utilization
- Scalable and flexible infrastructure that can quickly adapt to evolving city requirements



Smart Transportation

Collaboration with Fortune Electric on AI-powered EV-charging station technology in Taiwan

ASUS IoT collaborates with Fortune Electric to transform the EV-charging landscape in Neihu, Taiwan, leveraging ASUS IoT Tinker Edge R and ALPR Edge AI DevKit for up to 99.99% accurate license-plate recognition.



Tinker Edge R

Solution Features

- The ALPR Edge AI DevKit precisely recognizes license plates, adeptly addressing challenges like insufficient lighting, poor weather, reflections, blurring and license-plate-bezel issues
- AI-powered technology enhances billing accuracy
- Compact, versatile design seamlessly integrates with external devices

Customer Benefits

- Time-saving, hassle-free operations for a smoother experience
- Increased efficiency, offering an enhanced overall user experience
- Upgraded service by refining customers' data platform management of IoT tech



ASUS IoT ALPR Edge AI DevKit

APPLICATION STORIES

Smart City

Innovating for progress: ASUS IoT and PE1000N drive smart city initiatives in Bình Định province

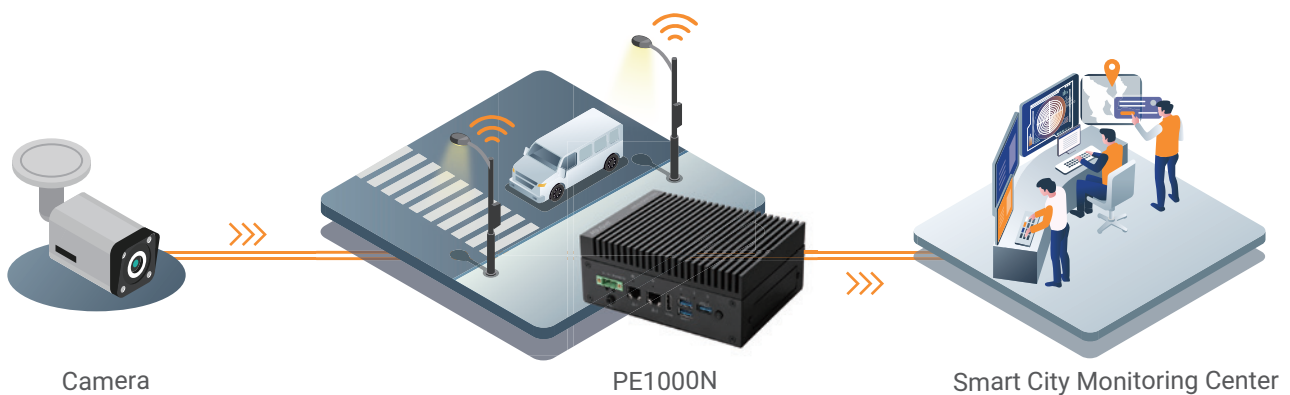
Bình Định province in Vietnam is actively pursuing smart city initiatives to drive tourism and sustainable growth. The establishment of the Bình Định Smart City Monitoring Center addresses challenges of traffic and urbanization.

Solution Features

- ASUS IoT PE1000N for efficient vehicle data collection
- Real-time monitoring, equipment oversight and violation proof capabilities
- Energy-efficient computing for cost-effective operations

Customer Benefits

- Effectively reduces traffic congestion, shortens passenger travel time, saves fuel consumption and contributes significantly to carbon emission reduction
- Crucial role in emergency response for enhanced security
- The monitoring center attracts experts and investments, fostering regional growth



Smart City

The power of partnership: ASUS IoT and Skidata transform access control and parking at Brazilian business park

The Perini Business Park in Brazil sought to address slow entry processes for its 10,000+ daily visitors. In collaboration with ASUS IoT, Skidata implemented a smart access control and parking-management solution, ensuring fast, touchless entry and improving daily parking management for over 4,500 vehicles.

SKIDATA



Tinker Edge R

Solution Features

- Compact and powerful design, energy-efficient at 1.5 watts maximum by Tinker Edge R
- Fast access in under 15 seconds with license plate recognition, achieving up to 99% accuracy with high-inference performance
- Real-time monitoring and statistical insights for business park management

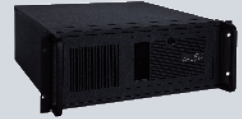
Customer Benefits

- Streamlined access enhances visitor experience
- Improved parking management for 4,500+ vehicles daily
- Valuable data insights support park management
- Scalable solution for real-time occupancy detection



Smart Retail**Bringing automated intelligence to store operations**

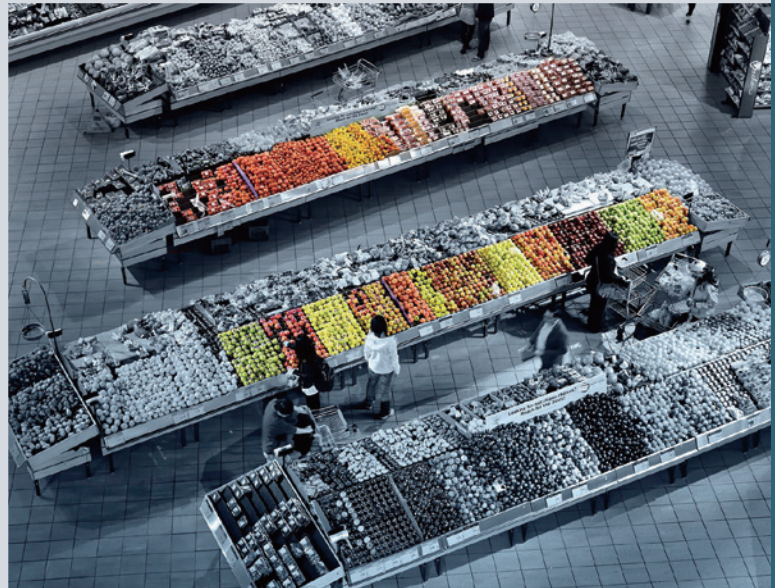
ASUS IoT and Macnica DHW collaborate to bring automation to food retail, providing heightened operational efficiency, reduced wastage and increased profitability through the smart replenishment and electronic shelf-labeling solutions.

MACNICA**EBS-4U****Solution Features**

- AI-driven 24/7 restocking with real-time alerts
- Dynamic e-paper pricing label updates
- Eliminates manual inspections for reduced labor costs
- GDPR-compliant image processing ensures accuracy
- Designed by Macnica DHW for reliability and adaptability

Customer Benefits

- Optimal stock levels and efficient pricing
- Cost-effective operations and increased profitability
- Scalable solutions for diverse retail environments

**Smart Retail****Application of OpenVINO for AI solutions in smart stores****TMA**
innovation

In the Industry 4.0 era, the retail sector leverages digital transformation, focusing on AI applications like people-counting, facial recognition and object analysis. ASUS IoT collaborates with TMA Innovation to offer a smart retail solution, enhancing customer experience, automating analytics, and providing real-time data insights.

Solution Features

- People-counting, facial recognition, and emotional analysis
- Real-time monitoring, heatmaps, and automatic alerting
- Automated AI systems for cost-effective and accurate results
- ASUS IoT-Intel EBS-I10, a compact box PC with extreme CPU/GPU performance

Customer Benefits

- Utilization of data for statistical analysis
- Improved facility management
- Increased operational efficiency
- Reduced operational cost

**EBS-I10**

APPLICATION STORIES

Smart Retail

Empowering AIRA AI-tracking surveillance solutions

Aira, a company specializing in AI-driven facial biometrics and computer vision, has partnered with ASUS NUC to power its scalable tracking solutions across diverse industries.

Solution Features

- Intel® Core™ Ultra processors offload heavy image processing workloads from the GPU and offer enhanced power efficiency
- Global availability of preconfigured hardware and support
- Compact and powerful designs that enable smooth field deployments
- Compatible with software such as Intel OpenVINO™ for edge-based image processing

Customer Benefits

- Reduced power consumption and simplified set-ups
- Space-saving design with the ability to support up to 50 cameras
- Global availability of hardware and support, reducing inventory cost and lead times
- Reliable design enables clients to run devices around the clock



Smart Retail

NUC-powered AI digital signage drives 3.5x boost in retail sales

meldCX® specializes in innovative vision analytics solutions that optimize retail experiences, improve efficiency, and increase ROI. Their AI-powered Viana™ platform, supported by ASUS NUC, delivers real-time insights to enhance customer and staff interactions.

Solution Features

- Robust processing power and flexible NUC configuration options and support for Chrome, Windows, Ubuntu Linux, and OpenVINO enable easy integration of Viana retail analytics with existing infrastructure
- Worldwide ready inventory, creating a worry-free supply chain for any deployment
- Strong global aftersales support ensures high uptime

Customer Benefits

- End customer doubled ROI up to 3.5x
- Supported with full range of applications, from advertising and retail analytics to vehicle and anonymous visitor monitoring.
- Balanced between performance and cost



Smart Energy**ASUS IoT and Hitachi Energy transform energy industry with TR0610 cellular router**

Hitachi Energy, a global electricity systems leader, collaborated with ASUS IoT to develop the TR0610 cellular router, a crucial solution for ensuring secure and reliable connectivity in expansive electrical networks.

Solution Features

- Partnered with Hitachi Energy to create an advanced communication gateway
- Features a compact and ruggedized design, ideal for industrial IoT applications
- Engineered to endure extreme temperature and humidity variations
- Space-efficient and compact for versatile installation in various locations

Customer Benefits

- Successful product launches tailored for utility, petrochemical, and manufacturing environments
- Effective collaboration and support from ASUS IoT
- A mutually rewarding partnership between ASUS IoT and Hitachi Energy

**Smart Agriculture****Revolutionizing agriculture with autonomous mobile robots**

Traditional farming faces challenges like labor shortages and inefficient land use. Our AMR solution, powered by advanced machine vision and real-time processing, autonomously picks fruit in any condition, overcoming these obstacles with enhanced harvest efficiency and higher yields.

Solution Features

- Powerful Edge AI with MXM GPUs enables real-time data processing, complex orchard navigation and quick fruit identification
- Fanless, compact design and robust thermal management helps it withstand harsh environment
- Strong processor ensures precise coordination of the robot's robotic arm for accurate fruit picking without causing damage

Customer Benefits

- Enhanced harvesting efficiency with stable and predictable harvest process regardless of weather or time of day
- Optimized land use and increased yields with denser planting by robots
- Sustainable agricultural practices with reduced manual labor and improved land utilization

**PE3000G**

New Product Highlights

PE8000G

Intel® Core™ processors (14th/13th/12th gen)-based rugged edge AI GPU computer supporting up to dual 450W GPU cards

- Supports up to dual 450W GPU card for real-time AI inferencing at the edge
- Intel® Core™ processors (14th/13th/12th gen), 16C/24T 35W/65W, Intel R680E chipset
- Up to 64GB ECC/ non-ECC DDR5 4800 SDRAM
- 1 x M.2 M key (NVMe), 1 x M.2 B key (5G NR), 1 x M.2 E key (WiFi6)
- Military-grade (MIL-STD-810H) durability, and exceptional thermal design ensuring reliable operation under -20°C to 60°C
- 8 to 48V wide-range DC input with built-in ignition power control and power monitoring



PE5101D

Intel® Core™ processors (14th/13th/12th gen)-based rugged high-performance edge computer with Intel® R680E chipset supporting 2.5" hot-swappable HDD tray, RAID 0/1, and up to 200W graphics card

- Supports Intel® Core™ processors (14th/13th/12th gen) with R680E chipset
- Supports dual 2.5" hot-swappable HDD tray & RAID 0/1
- Rich I/O with 3 x 2.5 GbE, 10 x USB, 6 x COM
- PCIe x16 & PCIe x4 expansion slots support up to 200W GPU card
- 8 to 48V wide-range DC-in with built-in ignition power control
- Wide operating temperature range: -25° C to 60° C



PE5100D

Intel® Core™ processors (14th/13th/12th gen)-based rugged high-performance edge computer with Intel® R680E chipset supporting 2.5" hot-swappable HDD tray, RAID 0/1, and rich I/O

- Supports Intel® Core™ processors (14th/13th/12th gen) with R680E chipset
- Supports dual 2.5" hot-swappable HDD tray & RAID 0/1
- Rich I/O with 3 x 2.5 GbE, 10 x USB, 6 x COM
- 8 to 48V wide-range DC-in w/ built-in ignition power control
- Wide operating temperature range: -25° C to 70° C



PE3100G/PE3000G

Intel® Core™ processors (13/12th gen)-based rugged edge AI computer with NVIDIA® or Intel MXM GPU

- Supports NVIDIA Ada Lovelace/Ampere or Intel® Arc™ A-series MXM GPU, for varied edge AI computing
- Supports MXM 3.1 Type A and Type B GPU module, up to 125 W (Type B MXM is applicable only for PE3100G)
- Intel® Core™ 45W processors (13th/12th gen), up to 64GB DDR5 4800 SDRAM
- Patented system architecture and thermal design to ensure -20°C to 60°C rugged operation
- 3 x 2.5 GbE and 1 x GbE ports with optional PoE+ support
- 1 x M.2 M key (NVMe), 1 x M.2 B key (4G/5G NR), 1 x M.2 E key (WiFi 6)
- 8 to 48V wide-range DC-in input with built-in Ignition power control
- MIL-STD-810H and withstand 5 Grms vibration



PE2200U

Intel® Core™ Ultra processors (Series 1)-based compact fanless edge computer with diverse connectivity, up to 64GB DDR5, 2-4 x LAN, 4 x COM, 7 x USB, and 9-36V DC

- Supports Intel® Core™ Ultra 100U-series processor offering tremendous performance
- Rugged embedded computer with industrial compact fanless design
- Various wireless connectivity options: Wi-Fi 5/6, Bluetooth, 4G/5G and GPS
- Rich expansion capacity including POE and CANbus expansion module for diversified demand
- Wide range of power inputs (9-36V) and operating temperatures (-20°-60°C)



PE2100S

Intel Atom® x 7000RE-series processors-based rugged fanless computer with 6-12W TDP, up to 16GB DDR5, dual-LAN, 6 x COM, 6 x USB ports, and 9-36V DC

- Supports Intel Atom® x7000RE-series processors, with up to 16 GB DDR5
- Rugged embedded computer with industrial compact fanless design
- Rich I/O with two LAN, and up to six COM and six USB ports
- Rich expansion capacity including LAN, PoE, and COM ports modules
- Wide voltage range: 9 to 36V
- Wide operating temperature range: -20°C to 60°C



PE1000S

Intel Atom® processor x6000 Series-based or Celeron® J6412-based ultra-compact and rugged fanless DIN-rail gateway featuring 2.5 GbE and PoE+

- Intel Atom® x6000 Series or Celeron® J6412 processor with DDR4 up to 32 GB
- Ultra-compact design supports DIN-rail mount
- Rich I/O with up to 4 x 2.5 GbE, 6 x USB, 6 x COM
- Wide voltage range: 9 to 36V
- Wide operating temperature range: -25° C to 70° C



PE2100N

Rugged, fanless AI system with NVIDIA® Jetson AGX Orin™ offers up to 275 TOPS with 4 PSE ports

- Rugged fanless intelligent edge AI system with NVIDIA Jetson AGX Orin
- Up to 275 TOPS of AI inference performance
- 1 x GbE, 1 x 10GbE and 4 x IEEE 802.3af GbE PSE ports
- 3 x slots for expansion, Wi-Fi, SSD, 4G/5G and more
- Wide power-input range, from 12 to 36 VDC
- Wide operating-temperature range, from -25 to 55 °C



**Product available in Q1 2025*

PE1102N

Rugged Edge AI system with NVIDIA® Jetson Orin NX/Nano™ support up to four GMSL2 cameras

- Intelligent edge AI system with NVIDIA Jetson Orin NX and Orin Nano
- Supports up to 4x GMSL2 automotive cameras via FAKRA connectors
- Ready to connect to Wi-Fi, Bluetooth and 4G/5G via optional modules
- Wide-range DC input with built-in ignition power control
- Withstand harsh environment and tested by MIL-STD-810G
- Wide operating-temperature range, from -20 to 60 °C



**Product available in H1 2025
Preliminary Design*

EBS-4U700

Standard 19" 4U industrial rackmount chassis, capable of accommodating up to 2 cooling fans and an optional 3 x 5.25" drive cage for flexible storage expansion

- 7-Slot upgrade to support CRPS
- Available for rackmount and stand-alone installation
- Optional second 3 x 5.25" drive cage for maximum configuration flexibility



EBS-4U500

Standard 19-inch rackmount 4U chassis, made of sturdy and durable 1.2mm SGCC sheet metal, compatibility with ATX, micro ATX motherboards

- Supports up to Mini-redundant 500W or 1300W PSU
- Easy management with front-accessible I/O interface by upgrading design
- Compatible with PRIME-RTX508 expansion cards



EBS-I300

Intel® Celeron® J6412 processors-based fanless embedded computer with 2 x DDR4, DP and HDMI, Dual-LAN, 6 x COM, 8 x USB

- Intel® Celeron® J6412 processors
- A single-sided I/O design easy to operate
- Remote button enables convenient long-distance operation



Q870A-IM-A

Intel® Core™ Ultra processors (Series 2)-based ATX motherboard with Intel® Q870 Chipset, DDR5 4 x U-DIMM, HDMI, 3 x DP, VGA, 2 x M.2 M Key, 1 x M.2 E Key, and 6 x USB3.2

- Supports up to 125W Intel® Core™ processor (Series 2)
- 2 x PCIe x16 slots support dual graphic cards, 1 x PCI
- Supports up to 3 x Ethernet

**Q870I-IM-A**

Intel® Core™ Ultra processors (Series 2)-based Mini-ITX motherboard with Intel® Q870 Chipset, DDR5 2 x SO-DIMM, DP, HDMI, LVDS/eDP, dual LAN, 6 x COM, M.2 E key and M key

- Intel® Core™ Ultra processors (Series 2) with Q870 chipset
- Supports three display configuration via multiple interface
HDMI/DP/LVDS/eDP(optional)
- Support PCIe® 5.0 x 16 slot and Dual DDR5 SO-DIMM



Coming Soon

**Product available in Q2 2025*

H810A-IM-A

Intel® Core™ Ultra processors (Series 2)-based ATX motherboard with Intel® H810 Chipset, DDR5 2 x U-DIMM, HDMI, DP, VGA, M.2 M Key, SGPIO, and USB 3.2Gen2

- Intel® Core™ Ultra processors (Series 2) with H810 chipset
- Supports 4 x PCI, 1 x PCIe5.0 x16 slots, 1 x PCIe4.0 x16 slots(x4 mode),
1 x PCIe4.0 (x1 mode)
- 6 x COM
- Supports up to 4 x USB3.2, 6 x USB2.0



Coming Soon

**Product available in Q2 2025*

CHAPTER 01

AI Solutions

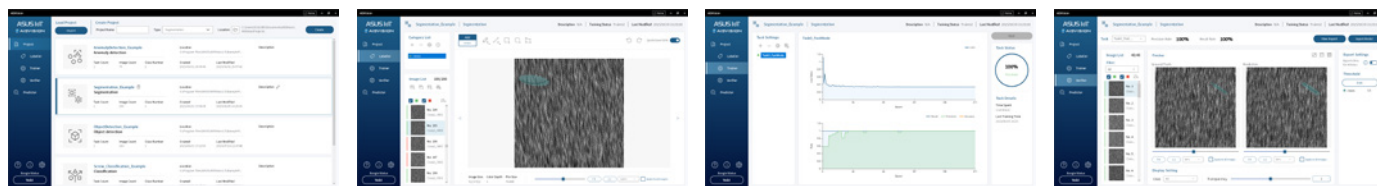
AISVision

AI Vision Model Toolkit

ASUS IoT AISVision, a user-friendly toolkit, streamlines computer-vision development with AI techniques, offering Trainer and Runtime modes for simplified AI model creation, batch training and inference, while its API empowers developers to build AI applications and export results for analysis or visualization.

Zero-code AI training in just four steps

User-friendly labeling, high-precision algorithms, a no-code training tool and flexible inferencing, supporting NVIDIA® GPUs and Intel® OpenVINO™ — all integrated through AISVision API (C, C++, C#).



Choose model

>

Label image

>

Train model

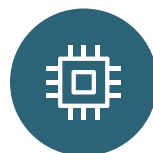
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Verify model



Flexible model training configuration

Use AISVision default setting to train AI model or use configurable hyperparameter to come out a customized training steps, support supervised (classification, oriented object detection, object detection, segmentation) and unsupervised learning (anomaly detection).



Dual inference architecture

Unique model capabilities, backed by NVIDIA® and Intel® OpenVINO framework, empowers efficient, high-accuracy inferencing in any scenario.



Intuitive labelling tool

Easy-to-use and intuitive integrated labelling, including pen, polygon, ellipse, rectangle and line tools.



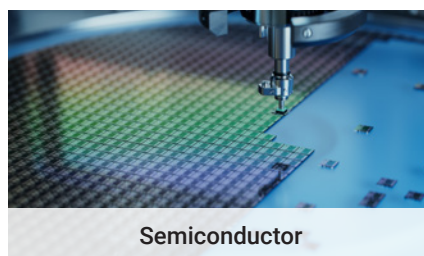
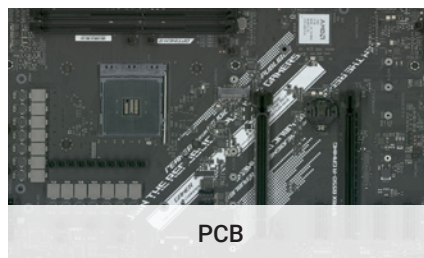
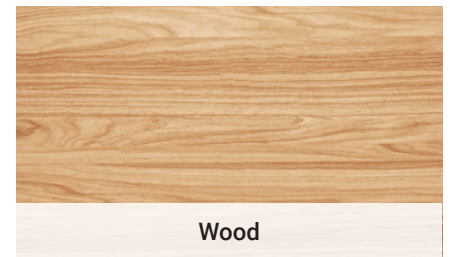
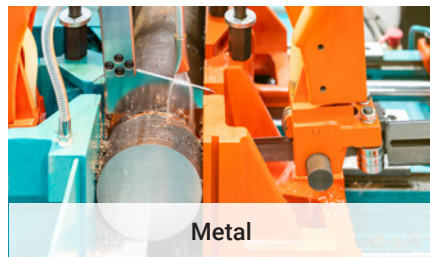
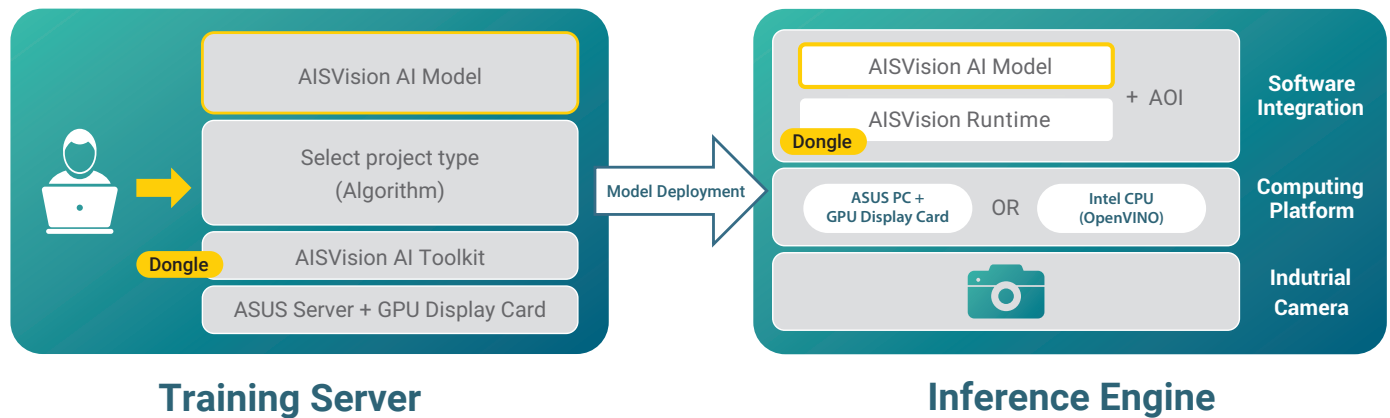
User-friendly software development

Strong API support for customized development, including C, C++, and C#.

Efficient Training, Deployment, and Analysis

Efficiently generate AI model on an NVIDIA GPU server via AISVision AI Toolkit. Developers configure the GPU or Intel OpenVINO inference engine, utilizing the AISVision API for AOI image analysis. Activation requires a dongle for seamless integration.

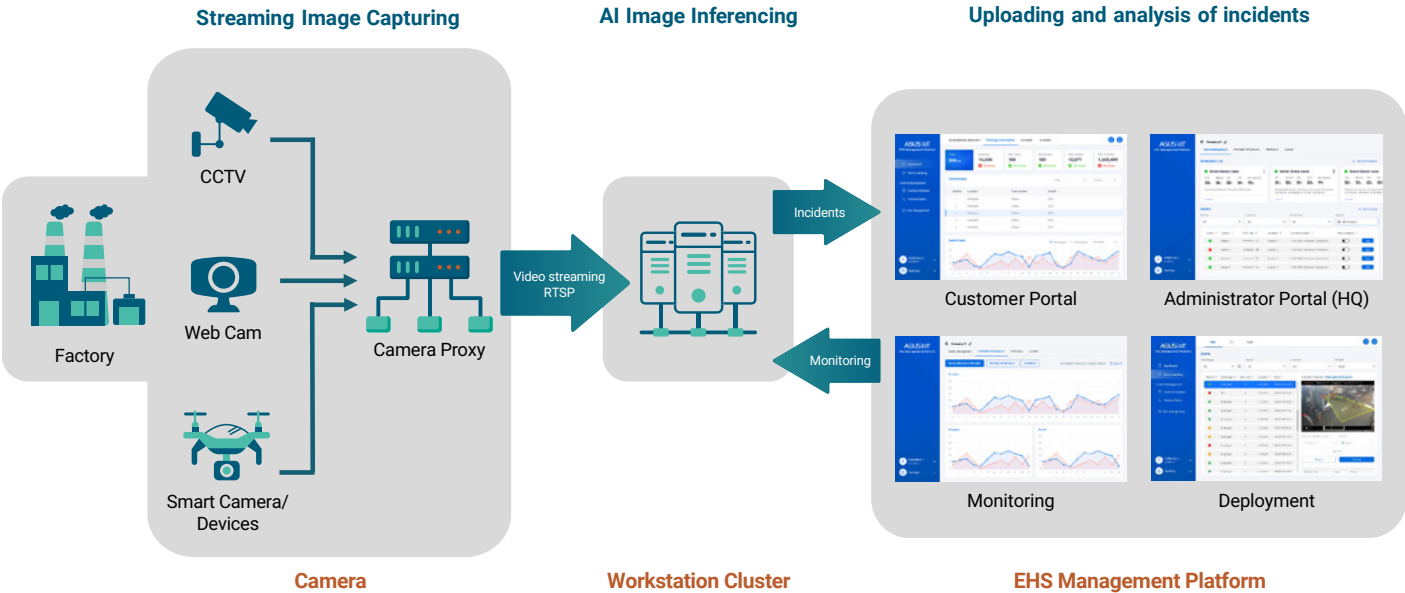
System Diagram – How AISVision works?







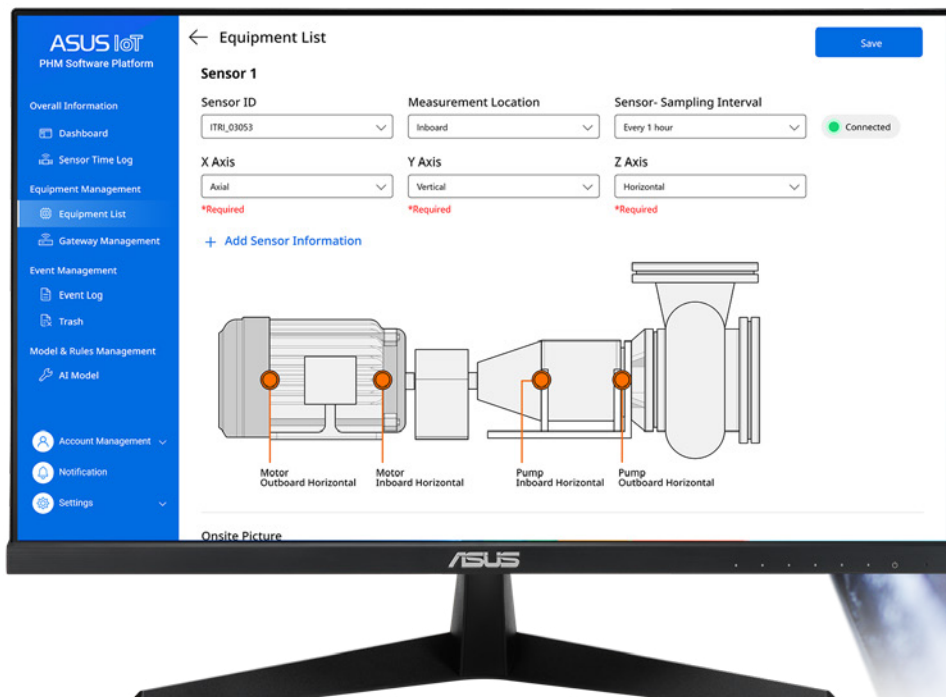
ASUS IoT AIEHS is an enterprise-level intelligent risk-analysis platform, engineered with advanced, AI-powered, computer-vision-analysis technology. It connects with security-monitoring systems to effectively manage field safety, such as dangerous machine operations, perilous behavior, unsuitable personal protective equipment (PPE) and more.

- Versatile AI Detection:**
 Adjusts model settings for diverse scenarios, integrating multiple models for comprehensive workplace safety on a unified platform.
- Real-time Alerts and Permissions:**
 Provides continuous detection, real-time assistance, and flexible role-based permissions for optimized resource allocation.
- Preventive Efficiency:**
 Records events and presents trends for proactive risk prevention, aiding in future planning and management.
- Resource Management Scheduler:**
 Enhances efficiency with task scheduling, allowing flexible adjustments for better control over operational costs.



10 AI missions

<p>Personal protective equipment</p> <p>Detects specialized equipment or clothing worn by individuals.</p>			<p>People counting</p> <p>Counts the number of personnel in the area, with maximum and minimum numbers for the control area.</p>
<p>People fence</p> <p>Monitors whether individuals are entering unauthorized areas.</p>			<p>Vehicle fence</p> <p>Monitors whether vehicles (including cars, trucks, motorcycles and trains) are entering unauthorized designated areas.</p>
<p>Flame detection</p> <p>Monitors for the presence of flames.</p>			<p>Smoke detection</p> <p>Monitoring for the presence of smoke.</p>
<p>Human-machine interface</p> <p>Detects entry into forbidden areas or incorrect postures when operating machinery.</p>			<p>Point confirmation</p> <p>Detects if personnel are following specific safety practices via physical gesturing.</p>
<p>Dangerous-object detection</p> <p>Monitors the environment for the presence of dangerous item, such as knives or guns.</p>			<p>Detection of risky behaviors</p> <p>Monitors for risky behaviors, including falls, violent behavior, fatigue actions and more.</p>

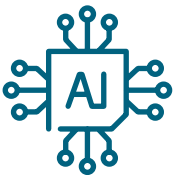


AISPHM

Predictive Maintenance and Equipment Health Management

ASUS IoT AISPHM employs AI and vibration analysis for advanced predictive maintenance on rotating equipment. Detecting issues in real-time, it adapts to diverse operational needs, reducing downtime and extending equipment life for continuous improvement in production, whether on-site or in the cloud.

Low to no code for exceptional simplicity



Combining ISO-10816-3 with FFT spectrum AI modeling

Dedicated AI models are established for each device, continuously monitoring their operational status. Any deviations from the original AI model are recorded as abnormal events.



Web-based private and public cloud architecture

A fully containerized architecture enhances deployment flexibility across multiple platforms, including PCs, smartphones, and tablets.



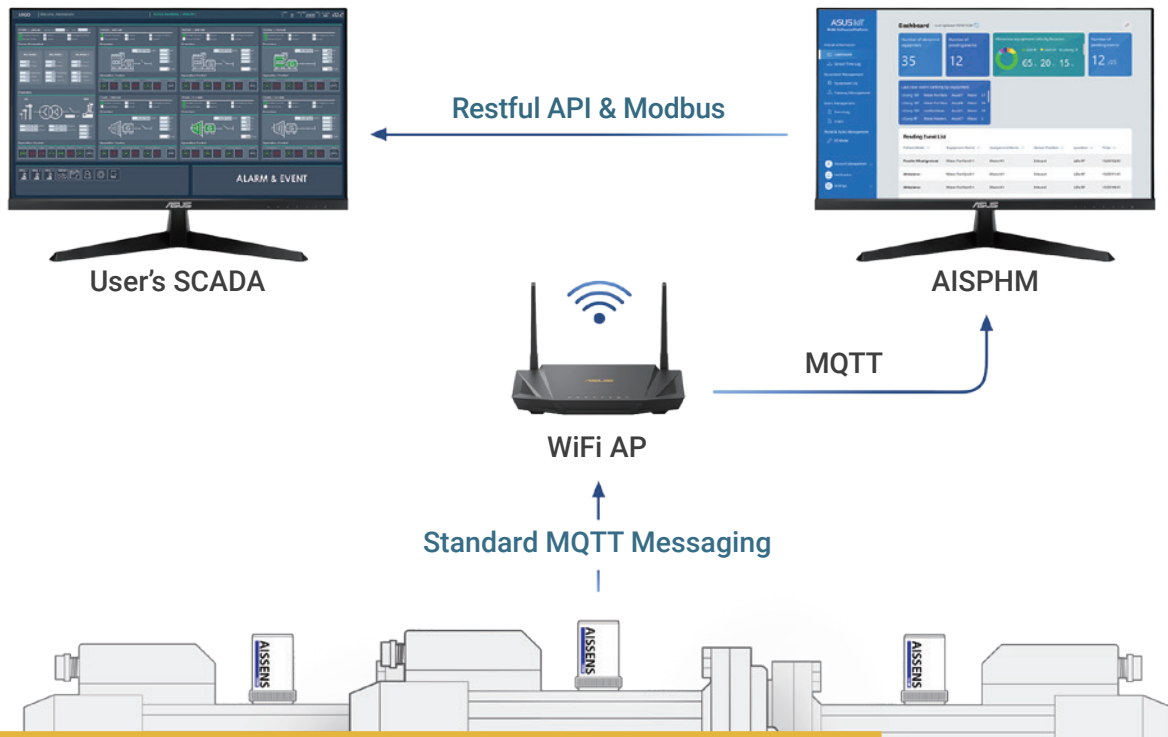
Cost-effective CPU-based modeling and inferencing

Intel i5 or equivalent machines can support data processing for up to 120 sensors without the need for additional GPU resources.



Supports the EdgeX open-source framework

For diverse industrial applications, modules can be developed for data reuse without the need for extensive code refactoring.



AISSENS

Advancing Condition Monitoring Vibration sensor

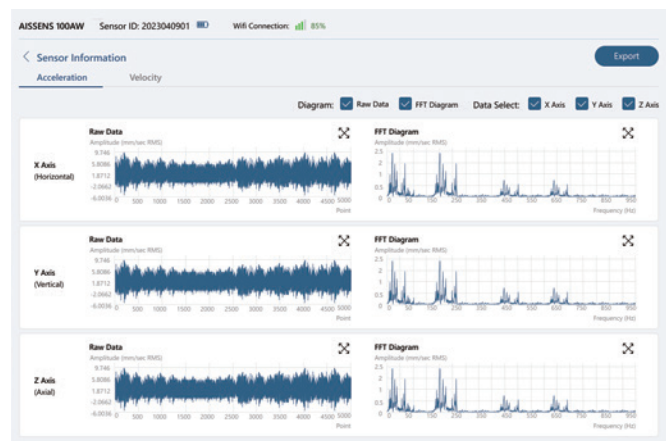


AISSENS 100AW, a state-of-the-art 6K wireless vibration/temperature sensor, is a cornerstone in the realm of condition monitoring. Designed to excel in the early identification of gear, belt, and bearing anomalies, its tri-axial 6K vibration sensitivity is pivotal for implementing strategic maintenance protocols. This approach not only guarantees operational continuity but also significantly extends the lifespan of machinery. By adopting condition monitoring, organizations can transition from routine preventive measures to a more dynamic, data-driven maintenance strategy, optimizing resource allocation and minimizing unexpected downtime.

-  Tri Axial 6K Vibration
-  2.4G Wi-Fi / BLE
-  Battery Powered
-  IP68
-  2 Years battery operation
-  Magnetic mount
-  -20~80°C
-  71.9mm x 45mm. 300g



AISSENS Connect
(Android APP)



AISSENS View
(Windows Utility)



AISDetector

AI-Based Time-Series Waveform Anomaly Detection

AISDetector, powered by advanced AI, efficiently identifies **abnormal signals** with minimal high-quality sensor data, eliminating the need for prior AI expertise. Handling diverse signal types, it streamlines the process from sensor data preprocessing to model training, enabling developers to swiftly create superior AI models through an intuitive interface **within minutes** for enhanced abnormal signal identification.



Rapid AI Model Generation

Train a model in minutes using just five 30-second high-quality signal data samples.

*compatible with 13th Intel® Core™ i3 processors and above



Instant AI Analysis

Quickly obtain AI models with AISDetector and perform real-time data inference through the web API.



Versatile Data Support

AISDetector handles diverse time series data, including sound, vibration, voltage, or current from various sensors.



Effortless Integration

Seamlessly integrate AISDetector into your system using a rich web API available in C, C++, C#, and Python.

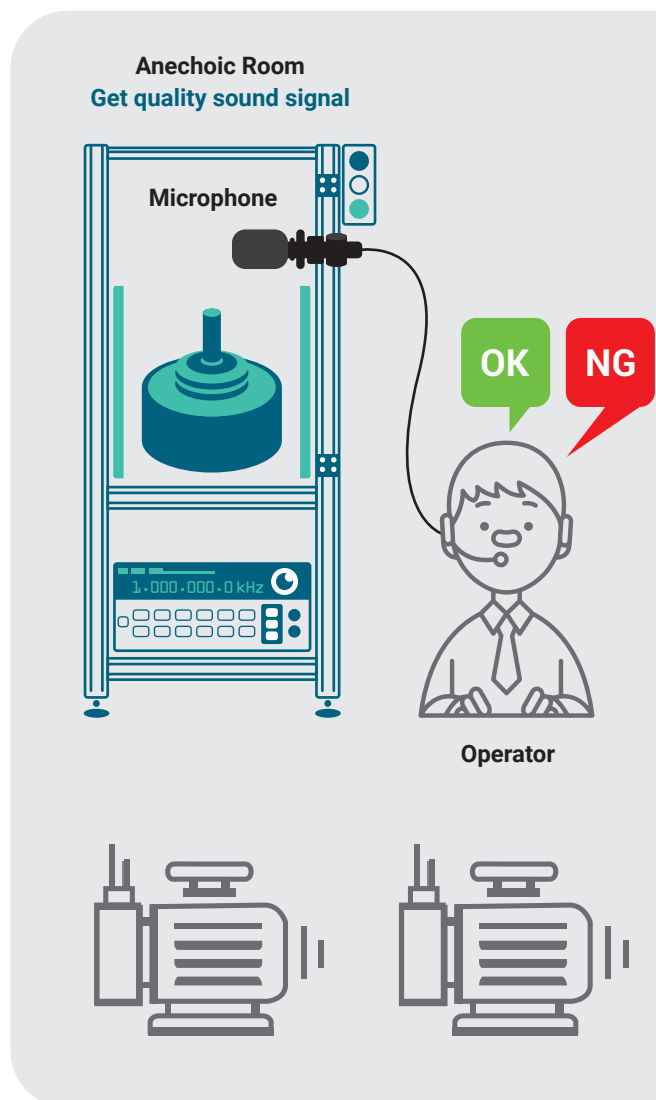
AISDetector Revolutionizes Motor Quality Inspection

In a crucial instance of monitoring air conditioner motor operation sounds, our client examined DC/AC motor parts using traditional QC and acoustic test, contributing to operational challenges and posing hurdles for internal quality assurance and result consistency.

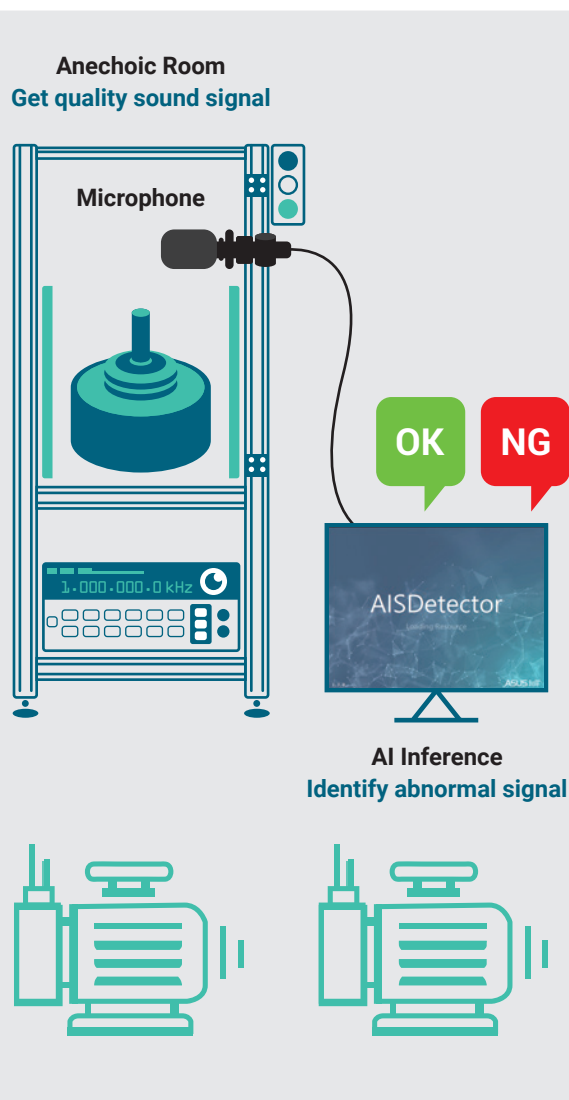
Challenges

1. Operators, tasked with making daily decisions for 1000 motors based on sound inspection, face inherent risks of human errors.
2. The manual inspection process, with its extended learning period.

Before – Human Inspection



After – ASUS IoT



Solution Features:

Empowers developers to efficiently identify abnormal signals using advanced AI techniques that leverage time series data, including sound, vibration, voltage, or current from sensors, providing a reliable alternative to human inspection.

Customer Benefits:

The implementation ensures not only a streamlined and error-free inspection process but also significantly reduces the learning curve for operators, thereby enhancing productivity.

CHAPTER 02

Market Ready Solutions

ALPR Edge AI Dev Kit

ASUS IoT ALPR Dev Kit is a comprehensive automatic license-plate recognition (ALPR) solution that includes both the necessary hardware and software to enable systems integrators (SIs) to create edge applications that mesh seamlessly with existing ALPR infrastructure. Power by ASUS IoT Tinker Board Edge R and PE1000N/PE1100N series for AI applications, ALPR Dev Kit is capable of up to 99% accuracy with high, 160ms inference performance. It integrates easily with existing USB or IP cameras and, with built-in machine-learning (ML) technology, it's able to learn from each inference – delivering continuously improving detection. ASUS IoT is able to fine-tune the ALPR software to service specific needs or cater to particular demands, empowering ALPR Dev Kit to provide accurate, fast and tailor-made detection that is ideal for almost any scenario.



Highly-flexible mounting methods



Novelty license-plate noise reduction



Edge AI empowers ALPR accuracy

Usage Scenario



Parking Lot

- Access Control
- Vehicle-tracking
- EV-charge Monitoring
- Custom Vehicle Tags
- Parking Analysis Reports



Government / Security Service

- Access Control
- Monitoring Potential Threat
- Improve Law Enforcement
- Connect to Smart Home
- Real-time Notification



Retail / Hospitality

- Auto car wash or service
- Drive-thru Restaurant
- Upgrade retailers' existing camera to AI camera



Warehousing Logistics

- Dock occupation detection
- Tally control
- Vendor access management

Solution Portfolio

ASUS IoT PE1100N



NVIDIA® Jetson Orin Nano™
CPU: 6 x Arm® Cortex®-A78AE v8.2
GPU: 1024-core NVIDIA Ampere GPU with 32 Tensor Cores
Memory: 8 GB 128-bit LPDDR5
Operating system: Ubuntu

ASUS IoT Tinker Edge R



Rockchip RK3399Pro
CPU: Dual-core 1.8 GHz ARM Cortex A72 + Quad-core 1.4 GHz ARM Cortex A53
GPU: 800 MHz ARM Mali T860 MP4
Rockchip NPU processor
Memory: 4 GB dual-channel LPDDR4 for system + 2 GB LPDDR3 for NPU
Operating system: Debian 9 / Android 9

ASUS IoT ALPR Software



Supported car-plate regions: Taiwan, China and EU countries
Supported OS: Debian, Jetpack, and Ubuntu
Inference performance: 160 ms
Accuracy: 99% within 3- to 5-meter range, with custom retraining service available
Supported cameras: USB webcams, and IP cameras on a project-by-project basis



Face Recognition Edge AI Dev Kit

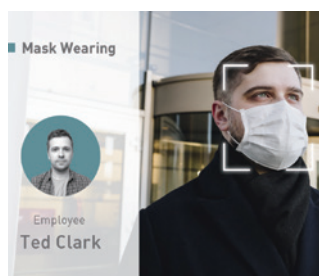
ASUS IoT Face Recognition Edge AI Dev Kit employs advanced AI technology for precise face and marker identification. Offering accurate AI models and APIs, it streamlines development, enhancing operational efficiency. Paired with ASUS IoT Tinker Board and PE1000N/PE1100N series, it achieves up to 99% recognition accuracy with fast inference speeds. Supporting Android and Linux, it caters to diverse biological system needs, making it a potent platform for enterprise, retail, hospitality, and public spaces applications.



Face Detection



Face Recognition



Mask Detection & Recognition



Anti-spoofing

Usage Scenario



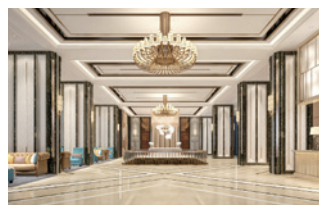
Enterprise

- Door Access Control
- Attendance Management
- Meeting Room Capacity Management



Retail

- Mask Detection
- Blacklist check



Hospitality

- Membership Management
- Contactless Check-in/out
- Mask Detection



Factory & Warehouse

- Door Access Control
- Blacklist check
- Stranger warning

Solution Portfolio

ASUS IoT PE1100N

NVIDIA® Jetson Orin™ NX
CPU: 8 x Arm® Cortex®- A78AE v8.2
GPU: 1024-core NVIDIA Ampere GPU with 32 Tensor Cores
Memory: 16 GB 128-bit LPDDR5
Operating system: Ubuntu



ASUS IoT Tinker Board 2

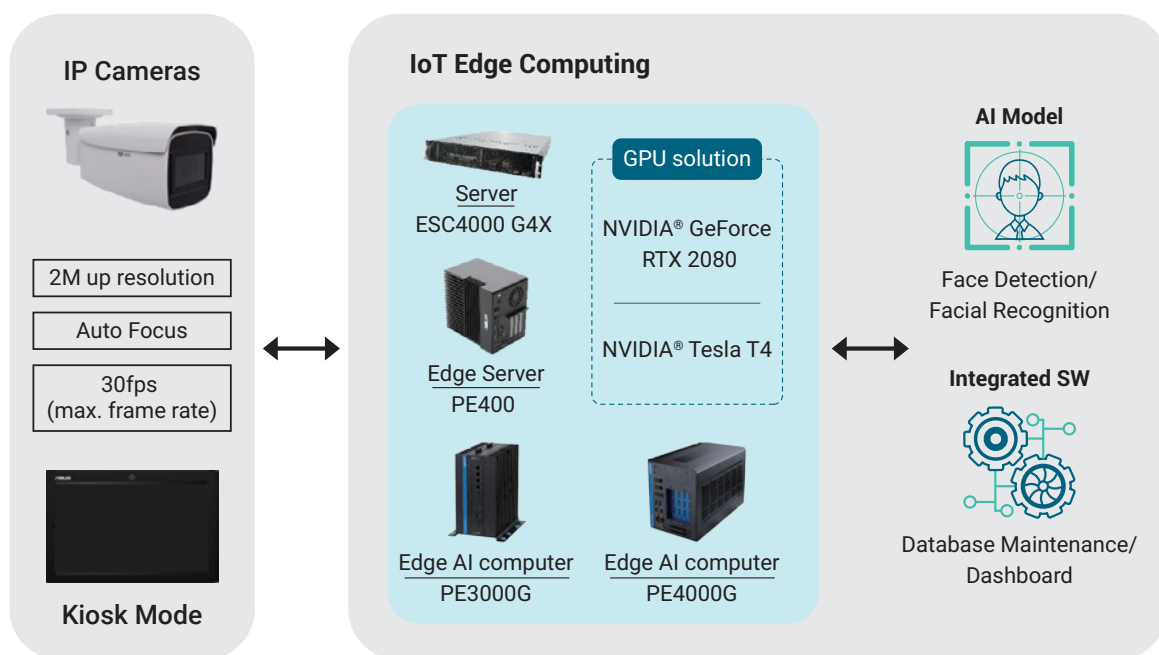
Rockchip RK3399
CPU: Dual-core ARM Cortex A72 @ 1.8 GHz and Quad-core Arm Cortex A53 @ 1.4 GHz
GPU: Arm Mali T860 MP4 @ 800 MHz
Memory: Dual-channel LPDDR4 2/4 GB
Operating system: Debian 10 / Android 11





Face Recognition Solution

ASUS IoT Face Recognition Solution is a one-stop solution for accurate and stable security monitoring. Face Recognition Solutions are ideal for all types of buildings and workplaces, providing a backend management system that is easy to manage and monitor, simplifying security processes and improving operational efficiency.

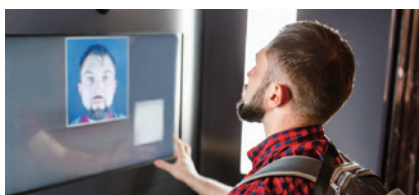


Usage Scenario



Building

- Access Control
- Visitor self-check-in



Enterprise

- Attendance Management
- Access Control



Surveillance

- Restricted Area Control
- Intrusion Detection

Product Advantage



Quick Photo Validation

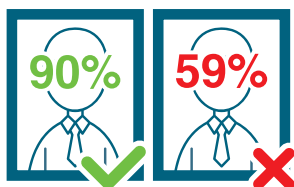


Photo Scoring System



ID Classification

CHAPTER 03 Edge AI & Rugged Edge Computers



Revolutionize Computing Power with **EDGE AI SYSTEMS**

intel
partner
Titanium

The Game-Changing Platform for AI Applications

ASUS IoT edge AI systems combine GPU computing with AIoT potential, offering embedded MXM GPU modules from both NVIDIA® and Intel®, NVIDIA Jetson-based and Intel-based platforms, and GPU computing platforms for diverse market needs. With unparalleled performance, these solutions enable real-time AI inferencing at the edge, driving transformation across industries. Designed with a rugged, fanless, anti-vibration build, wide temperature support

and low power consumption, these systems excel in demanding edge AI applications like factory automation, machine vision, video analytics, and autonomous vehicles. Built to deliver robustness and reliability, ASUS IoT solutions are designed to thrive in the most challenging scenarios, advancing innovation and efficiency in the new era of AI-powered technology.



POWERFUL & SCALABLE GPU COMPUTING

ASUS IoT pioneers the industry's first edge AI system that supports up to dual 450-watt 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 14th/13th/12th Gen CPUs and NVIDIA® Jetson Orin™ series, meeting the dynamic requirements of the market.



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.



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.



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.



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.

EDGE AI

NVIDIA® Jetson Solutions

Comprehensive Portfolio for GenAI and Computer Vision



Latest JetPack
6.1.1 Support



Compact
Design



Long-Term
Technical Support

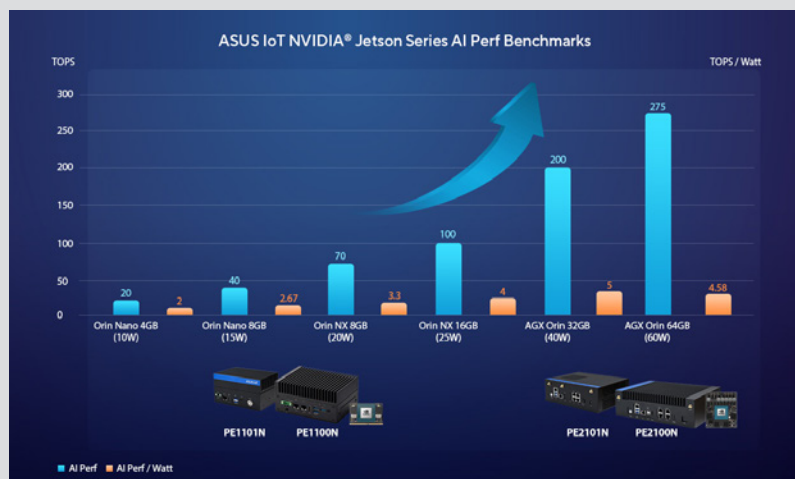


Preferred
Partner



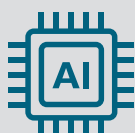
ASUS IoT NVIDIA® Jetson series delivers edge AI solutions with a focus on performance and adaptability. Designed to meet the demands of diverse environments, these systems offer a and operate across a wide temperature range. The integration of NVIDIA ARM-based CPUs and GPUs ensures efficient processing, while the JetPack 6.1.1 SDK streamlines software stack updates. The series encompasses a range of form factors to address different industry needs and connectivity requirements.

ASUS IoT NVIDIA Jetson Series AI Performance Benchmarks



- For demanding AI tasks, ASUS IoT PE2100N series provides robust computing power, suitable for industrial applications such as machine vision and automated inspection.
- Stablemate PE1101N targets deployments in constrained spaces, enabling smart city and manufacturing applications that require compact, fanless systems.
- Both series are supported by ASUS IoT's commitment to longevity through comprehensive R&D and a dependable supply chain.

Features



AI-Enabled



Latest JetPack
6.1.1 Support



Low Power
Consumption



Compact Design



Rugged Industrial
Design



Long-Term
Technical Support

Unlock Generative AI at the Edge with ASUS IoT and NVIDIA® Jetson

ASUS IoT, powered by the NVIDIA Jetson platform, brings cutting-edge edge AI to generative AI applications. The Jetson Orin™ platform combines exceptional AI performance, energy efficiency, and expansive memory to support advanced AI models like large language models (LLMs), vision transformers, and stable diffusion — all deployed locally at the edge. With proven performance in MLPerf benchmarks, ASUS IoT devices are the top choice for building powerful generative AI solutions.

Developers can accelerate their projects with resources from the NVIDIA Jetson AI Lab, which offers tutorials, prebuilt containers, and tools for applications ranging from text generation to advanced image synthesis. Together, ASUS IoT and NVIDIA provide a robust ecosystem that empowers developers to innovate and create intelligent, impactful edge AI applications.

Applications



Industrial Automation and Robotics

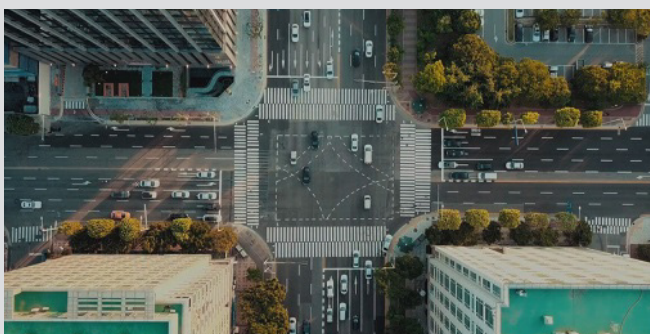
AI-based defect or object detection in factories

- High accuracy rate
- Low false-positive rate
- Diverse form factors
- Increased efficiency of production
- COM and CAN interfaces

Smart Agriculture and Farming

Enable AI-powered agriculture for smart farming

- Edge-side AI computing for data security
- Small and rugged for agricultural machinery
- Instant detection of pests and diseases
- Enhanced quality and yield for increased profits
- 4G/5G module support



Smart Transportation

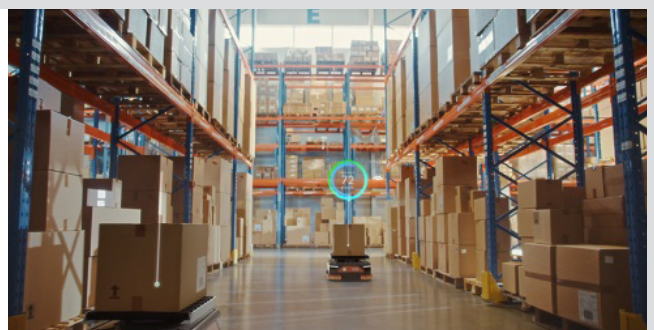
Enhance transportation management in smart cities

- Multiple camera inputs, for traffic analysis and control
- Ultra-compact size, ideal for charging piles
- High-speed AI inference at the edge
- Low power consumption
- 4G/5G module support




Warehousing Management and AGV/AMR




Automated picking and self-driving vehicles revolutionize warehouse operations

- High AI computing power
- AGV/AMR need ROS support
- COM / CAN interface
- Wireless or 4G/5G support



Edge AI GPU Computers

		RUC-1000G	PE8000G	PE6000G
		 *Q2'25		
Case	Dimension	440 x 489 x 85 mm	225 x 288 x 443 mm	225 x 221 x 443 mm
System	Processor	Intel® Core™ Ultra 9/7/5 processor (LGA1851)	Intel® 14th/13th/12th Gen Core™ CPU Intel® Core® i9-14900 / i9-14900T Intel® Core® i7-14700 / i7-14700T Intel® Core® i5-14500 / i5-14500T Intel® Core® i3-14100 / i3-14100T	Intel® 14th/13th/12th Gen Core™ CPU Intel® Core® i9-14900 / i9-14900T Intel® Core® i7-14700 / i7-14700T Intel® Core® i5-14500 / i5-14500T Intel® Core® i3-14100 / i3-14100T
	Chipset	W880	R680E	R680E
	Graphics	Intel® Xe LPG Graphics Architecture	Intel® UHD Graphics 770	Intel® UHD Graphics 770
	Memory	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	-	-	-
	Ethernet	2x Intel® i226-IT (2.5 GbE) 1x AQC113 (10 GbE)	1x Intel® i219-LM (1 GbE) 1x Intel® i226-IT (2.5 GbE)	1x Intel® i219-LM (1 GbE) 1x Intel® i226-IT (2.5 GbE)
	Display Port	1x HDMI 2x DP++	2x HDMI 2x DP	2x HDMI 2x DP
	Serial Port	2x COM: RS-232/422/485 4x COM: RS-232	2x COM: RS-232/422/485 4x COM: RS-232 (optional)	2x COM: RS-232/422/485 4x COM: RS-232 (optional)
	USB 2.0	2x USB2.0, type A	2x USB2.0, type A	2x USB2.0, type A
	USB 3.2/ 3.1	8x USB 3.2 Gen2 (10Gbps) ,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
	Audio	Mic in; Line out	Mic in; Line out	Mic in; Line out
	Digital I/O	4x DI, 4 x DO support isolation (optional)	4x DI, 4 x DO support isolation (optional)	4x DI, 4 x DO support isolation (optional)
	GPIO	-	-	-
Storage Interface	SATA HDD	2 x 2.5" HDD/SSD	4 x hot-swappable 2.5" HDD/SSD	4 x hot-swappable 2.5" HDD/SSD
	mSATA	-	1 (mux with mPCIe)	1 (mux with mPCIe)
	M.2 (M-key)	1 (NVMe)	1	1
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	-	1 (mux with mSATA)	1 (mux with mSATA)
	M.2	1 x M.2 E-key, 2 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key
	SIM	2	3	3
	PCI/ PCIe	3 x PCIe slot (2 configuration: 1 x PCIe16 + 1 x PCIe4 or 2 x PCIe8 + 1 x PCIe4, auto-detect)	7 x PCIe slots (1 x PCIe Gen4 x16 + 3 x PCIe Gen3 x4 + 2 x Gen3 x1 or 2 x PCIe Gen4 x8 + 3 x PCIe Gen3 x4 + 2 x PCIe Gen3 x1)	5 x PCIe slots (1 x PCIe Gen4 x16 + 3 x PCIe Gen4 x4 or 2 x PCIe Gen4 x8 + 3 x PCIe Gen4 x4, auto detect)
	MXM	-	-	-
Power Supply	DC Input	8-48V DC	8-48V DC	8-48V DC
	Ignition Control	Integrated	Integrated	Integrated
Environmental	Operating Temp.	-25~60°C with 35W CPU -25~50°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, FCC, CB, BSMI, VCCI, UKCA, RCM	CE, FCC, CB, BSMI, VCCI, UKCA, RCM
	Shock & Vibration	MIL-STD 810H	MIL-STD 810H	MIL-STD 810H




		PE4000G	PE3100G	PE3000G
				
Case	Dimension	225 x 198 x 350 mm	240 x 230 x 125.7 mm wo external fan kit 240 x 230 x 180 mm w/ external fan kit	240 x 230 x 125.7 mm
System	Processor	Intel® 14th/13th/12th Gen Core™ CPU Intel® Core™ i9-14900 / i9-14900T Intel® Core™ i7-14700 / i7-14700T Intel® Core™ i5-14500 / i5-14500T Intel® Core™ i3-14100 / i3-14100T	Intel® Core™ i7-13800HE Intel® Core™ i5-13600HE	Intel® Core™ i7-12800HE Intel® Core™ i5-12600HE Intel® Core™ i3-12300HE
	Chipset	R680E	-	-
	Graphics	Intel® UHD Graphics 770	Intel® Iris® Xe Graphics eligible (i7/i5)	Intel® Iris® Xe Graphics eligible (i7/i5) Intel® UHD Graphics (i3)
	Memory	2 x SO-DIMM, up to 64GB ECC/ non-ECC DDR5 SDRAM	2x SO DIMM, up to 64GB DDR5 SDRAM	2 x SO DIMM, up to 64GB DDR5 SDRAM
I/O Interface	PoE	-	1x Intel® I219-LM (1 GbE), RJ45 3x Intel® I226-IT (2.5 GbE), RJ45 IEEE 802.3at PoE+ PSE; 100W total power budget (4 ports)	1x Intel® I219-LM (1 GbE), RJ45 3x Intel® I226-IT (2.5 GbE), RJ45 IEEE 802.3at PoE+ PSE; 100W total power budget (4 ports)
	Ethernet	1x Intel® i219-LM (1 GbE) 1x Intel® i226-IT (2.5 GbE)	-	-
	Display Port	2x HDMI 2x DP	2x HDMI 1.4 2x DP ++ 4x DP* * The four DP ports are only functional when supported by an optional MXM GPU module	2x HDMI 1.4 2x DP ++ 4x DP* * The four DP ports are only functional when supported by an optional MXM GPU module
	Serial Port	2x COM: RS-232/422/485 4x COM: RS-232 (optional)	2x COM: RS-232/ 422/ 485, DB9 2x COM: RS 232, DB9 (optional)	2x COM: RS-232/ 422/ 485, DB9 2x COM: RS 232, DB9 (optional)
	USB 2.0	2x USB 2.0, type A	1x USB 2.0, type A	1x USB 2.0, type A
	USB 3.2/ 3.1	1x USB 3.2 Gen2x2 (20G), type C 4x USB 3.2 Gen2x1 (10G), type A 2x USB 3.2 Gen1 (5G), type A	3x USB 3.2 Gen2 x1 (10 G), type A	3x USB 3.2 Gen2 x1 (10 G), type A
	Audio	Mic in; Line out	Mic in; Line out	Mic in; Line out
	Digital I/O	4x DI, 4 x DO support isolation (optional)	4x DI, 4 x DO support isolation	4x DI, 4 x DO support isolation (optional)
	GPIO	-	-	-
Storage Interface	SATA HDD	2 x hot-swappable 2.5" HDD/SSD	2 x 2.5" HDD/SSD	2 x hot-swappable 2.5" HDD/SSD
	mSATA	1 (mux with mPCIe)	-	-
	M.2 (M-key)	1	1 (NVMe)	1 (NVMe)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	1 (mux with mSATA)	1	1
	M.2	1 x M.2 E-key, 3 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key
	SIM	3	2	2
	PCI/ PCIe	4 x PCIe Gen4 slot (1 x PCIe16 + 2 x PCIe4 or 2 x PCIe8 + 2 x PCIe4, auto-detect)	-	-
	MXM	-	1 (type A , type B)	1 (type A)
Power Supply	DC Input	8-48V DC	8-48V DC	8-48V DC
	Ignition Control	Integrated	Integrated	Integrated
Environmental	Operating Temp.	-20~60°C with 35W CPU -20~55°C with 65W CPU	-20~60°C (Due to the different TGP of the Type B MXM GPU, there will be different operating temperature settings)	-20~60°C with 45W CPU and 60W MXM
	Certification	CE, FCC, CB, BSMI, VCCI, UKCA, RCM	CE/FCC class A, CB, BSMI, UKCA, CE-LVD (CE/FCC class B for non POE SKU)	CE/FCC class A, CB, BSMI, UKCA, CE-LVD (CE/FCC class B for non POE SKU)
	Shock & Vibration	MIL-STD 810H, and 5-500 Hz; 3+ Grms	MIL-STD 810H	MIL-STD 810H, and 5-500 Hz; 5 Grms

Edge AI GPU Computers




PE5101D






Case	Dimension	242 x 241.4 x 137mm
System	Processor	Intel® 14th/13th/12th Gen Core™ CPU Intel® Core® i9-14900T Intel® Core® i7-14700T Intel® Core® i5-14500T Intel® Core® i3-14100T
	Chipset	R680E
	Graphics	Intel® UHD Graphics 770
	Memory	2 x SO-DIMM (supports DDR5 ECC/non-ECC, max. 64GB)
I/O Interface	PoE	-
	Ethernet	3 x Intel® i226-IT (2.5 GbE)
	Display Port	1x HDMI 2x DP
	Serial Port	2x COM: RS-232/422/485 4x COM: RS-232
	USB 2.0	2 x USB 2.0, type A
	USB 3.2/ 3.1	6 x USB 3.2 Gen 2 (10Gbps) 2 x USB 3.2 Gen 1 (5Gbps)
	Audio	Mic in; Line out
	Digital I/O	4x DI, 4 x DO support isolation (optional)
	GPIO	-
	Storage Interface	
	SATA HDD	2 x hot-swappable 2.5" HDD/SSD
	mSATA	-
	M.2 (M-key)	1 (NVMe)
	eMMC	-
	SD Card	-
Expansion	mPCIe	1
	M.2	1 x M.2 E-key, 1 x M.2 B-key
	SIM	2
	PCI/ PCIe	1 x PCIe16 + 1 x PCIe4
	MXM	-
Power Supply	DC Input	8-48V DC
	Ignition Control	Integrated
Environmental	Operating Temp.	-20~70°C
	Certification	CE, FCC, UKCA, BSMI, CB, CCC
	Shock & Vibration	MIL-STD 810H, and 5-500 Hz; 3+ Grms

		PE2100N	PE2101N	PE1100N
		 *Q1'25	 *Q2'25	
Case	Dimension	270 x 195 x 80 mm	220 x 170 x 79 mm	152 x 114 x 72 mm
System	Processor	NVIDIA® Jetson AGX Orin™	NVIDIA® Jetson AGX Orin™	NVIDIA® Jetson Orin Nano™ NVIDIA® Jetson Orin™ NX
	Chipset	8/12-core Arm® Cortex® -A78AE	8/12-core Arm® Cortex® -A78AE	6/8-core Arm® Cortex® -A78AE
	Graphics Memory	NVIDIA® Ampere GPU with Tensor Cores on-board, up to 64GB LPDDR5	NVIDIA® Ampere GPU with Tensor Cores on-board, up to 64GB LPDDR5	NVIDIA® Ampere GPU with Tensor Cores on-board, up to 16GB LPDDR5
I/O Interface	PoE	4 x 10/100/1000 Mbps, RJ45 (optional)	4 x 10/100/1000 Mbps, RJ45 (optional)	-
	Ethernet	1 x 10/100/1000 Mbps, RJ45 1 x 10 Gbps, RJ45	1 x 10/100/1000 Mbps, RJ45 1 x 10 Gbps, RJ45	2 x 10/100/1000 Mbps, RJ45
	Display Port	1 x HDMI	1 x HDMI	1x HDMI
	Serial Port	1 x DB9: RS-232 1 x DB9: RS-422/485 2 x DB9: CAN bus	1 x DB9: RS-232 1 x DB9: RS-422/485 2 x DB9: CAN bus	2 x DB9: RS-232/422/485 1 x DB9: CAN bus
	USB 2.0	1 x USB 2.0, Type-C for OS Flash 1 x USB 2.0, DP15 (in GPIO)	1 x USB 2.0, Type-C for OS Flash 1 x USB 2.0, DP15 (in GPIO)	1 x USB 2.0, Micro-USB for OS Flash 2 x USB 2.0, Pin Header (Internal)
	USB 3.2/ 3.1	1 x USB 3.2 Gen2 (10Gbps), Type-C 2 x USB 3.2 Gen1 (5Gbps), Type-A	1 x USB 3.2 Gen2 (10Gbps), Type-C 2 x USB 3.2 Gen1 (5Gbps), Type-A	3 x USB 3.2 Gen1 (5Gbps), Type-A
	Audio	Line-out/Line-in/Mic (optional)	Line-out/Line-in/Mic (optional)	-
	Digital I/O	-	-	4 x DI, 4 x DO (2x5 Terminal Block, w/ isolation)
	GPIO	1 x DB15: I2C/SPI/USB 2.0 1 x DB15: GPIO/UART	1 x DB15: I2C/SPI/USB 2.0 1 x DB15: GPIO/UART	-
Storage Interface	SATA HDD	-	-	-
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)	1 (NVMe)
	eMMC	32G/64G	32G/64G	-
Expansion	SD Card	1 x Micro SD	1 x Micro SD	-
	mPCIe	-	-	-
	M.2	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key
	SIM	1	1	2
	PCI/ PCIe	-	-	-
	MXM	-	-	-
Power Supply	Others	1 x OOB	1 x OOB	1 x AEM (LAN)
	DC Input	12-36V DC	12-36V DC	12-24V DC
Environmental	Ignition Control	-	-	-
	Operating Temp.	-25 ~ up to 55°C	-25 ~ up to 70°C	-25 ~ up to 60°C
	Certification	CE, FCC, CB, BSMI	CE, FCC, CB, BSMI	CE, FCC, CB, BSMI
	Shock & Vibration	MIL-STD 810H, and 5-500 Hz; 3 Grms	MIL-STD 810H, and 5-500 Hz; 3 Grms	MIL-STD 810H, and 5-500 Hz; 5 Grms

NVIDIA Jetson Edge AI Computers




		PE1101N	PE1102N	PE1103N
			 <small>*H1'25 Preliminary Design</small>	 <small>*H2'25 Preliminary Design</small>
Case	Dimension	130 x 90 x 72 mm	152 x 114 x 72 mm	220 x 240 x 85 mm
System	Processor	NVIDIA® Jetson Orin Nano™ NVIDIA® Jetson Orin™ NX	NVIDIA® Jetson Orin Nano™ NVIDIA® Jetson Orin™ NX	NVIDIA® Jetson Orin Nano™ NVIDIA® Jetson Orin™ NX
	Chipset	6/8-core Arm® Cortex® -A78AE	6/8-core Arm® Cortex® -A78AE	6/8-core Arm® Cortex® -A78AE
	Graphics Memory	NVIDIA® Ampere GPU with Tensor Cores on-board, up to 16GB LPDDR5	NVIDIA® Ampere GPU with Tensor Cores on-board, up to 16GB LPDDR5	NVIDIA® Ampere GPU with Tensor Cores on-board, up to 16GB LPDDR5
I/O Interface	PoE	-	-	-
	Ethernet	1 x 10/100/1000 Mbps, RJ45	2 x 10/100/1000 Mbps, RJ45	2 x 10/100/1000 Mbps, RJ45
	Display Port	1 x HDMI	1x HDMI	1x HDMI
	Serial Port	1 x DB9: CAN bus	1 x DB25 : RS-232/422/485 & CAN bus	1 x DB25 : RS-232/422/485 & CAN bus
	USB 2.0	1 x USB 2.0, Type-C for OS Flash	1 x USB 2.0, Micro-USB for OS Flash 2 x USB 2.0, Pin Header (Internal)	1 x USB 2.0, Micro-USB for OS Flash 2 x USB 2.0, Pin Header (Internal)
	USB 3.2/ 3.1	2 x USB 3.2 Gen2 (10Gbps), Type-A	3 x USB 3.2 Gen1 (5Gbps), Type-A	3 x USB 3.2 Gen1 (5Gbps), Type-A
	Audio	-	-	-
	Digital I/O	-	4 x DI, 4 x DO (2x5 Terminal Block, w/ isolation)	4 x DI, 4 x DO (2x5 Terminal Block, w/ isolation)
	GPIO	1 x DB9: GPIO/I2C/UART	-	-
Storage Interface	SATA HDD	-	-	-
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)	1 (NVMe)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	-	-	-
	M.2	1 x M.2 E-key	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key
	SIM	-	2	2
	PCI/ PCIe	-	-	-
	MXM	-	-	-
Power Supply	Others	-	1 x AEM (GSML or OOB or LAN)	1 x AEM (GSML or OOB or LAN)
	DC Input	12-24V DC	12-36V DC	12-36V DC
Environmental	Ignition Control	-	Integrated	Integrated
	Operating Temp.	-25 ~ up to 55°C	-25 ~ up to 60°C	-25 ~ up to 60°C
	Certification	CE, FCC, CB, BSMI	CE, FCC, CB, BSMI	CE, FCC, CB, BSMI
	Shock & Vibration	MIL-STD 810H, and 5-500 Hz; 5 Grms	MIL-STD 810H, and 5-500 Hz; 5 Grms	MIL-STD 810H, and 5-500 Hz; 5 Grms




Rugged Edge Computers

		RUC-1000D	PE5100D	PE2300U
		 *Q2'25		
Case	Dimension	220 x 260 x 85 mm	242 x 241.4 x 79 mm	254 x 147 x 57 mm
System	Processor	Intel® Core™ Ultra 9/7/5 processor (LGA1851)	Intel® 14th/13th/12th Gen Core™ CPU Intel® Core® i9-14900T Intel® Core® i7-14700T Intel® Core® i5-14500T Intel® Core® i3-14100T	Intel® Core™ Ultra 7 265U Intel® Core™ Ultra 5 235U
	Chipset	W880	R680E	-
	Graphics	Intel® Xe LPG Graphics Architecture	Intel® UHD Graphics 770	Intel® Xe LPG+ Graphics Architecture
I/O Interface	Memory	2 x SO-DIMM, up to 64GB ECC/ non-ECC DDR5 SDRAM	2 x SO-DIMM (supports DDR5 ECC/ non-ECC, max. 64GB)	2 x SO DIMM, DDR5 5600 MHz, supports up to 64GB
	PoE	-	-	2 x Intel® i210-IT (IEEE 802.3af, optional)
	Ethernet	2x Intel® i226-IT (2.5 GbE) 1x AQC113 (10 GbE)	3 x Intel® i226-IT (2.5 GbE)	1 x Intel® i219-LM (1 GbE) 1 x Intel® i226-IT (2.5 GbE)
I/O Interface	Display Port	1x HDMI 2x DP++	1x HDMI 2x DP	1x HDMI 2x DP
	Serial Port	2x COM: RS-232/422/485 4x COM: RS-232	2x COM: RS-232/422/485 4x COM: RS-232	4x COM: RS-232/422/485
	USB 2.0	2x USB2.0, type A	2 x USB 2.0, type A	2 x USB 2.0, type A
I/O Interface	USB 3.2/ 3.1	8x USB 3.2 Gen2 (10Gbps) ,type A	6 x USB 3.2 Gen 2 (10Gbps) 2 x USB 3.2 Gen 1 (5Gbps)	1 x USB 3.2 Gen2x2 (20G), type C 4 x USB 3.2 Gen 2, type A
	Audio	Mic in; Line out	Mic in; Line out	Mic in; Line out
	Digital I/O	4x DI, 4 x DO support isolation (optional)	4x DI, 4 x DO support isolation (optional)	-
Storage Interface	GPIO	-	-	1 x 8bit GPIO, DB9
	SATA HDD	2 x 2.5" HDD/SSD	2 x hot-swappable 2.5" HDD/SSD	1 x 2.5" HDD/SSD
	mSATA	-	-	-
Storage Interface	M.2 (M-key)	1 (NVMe)	1 (NVMe)	1 (NVMe)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	-	1	-
	M.2	1 x M.2 E-key, 2 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key, 1 x M.2 B-key
	SIM	2	2	1
Expansion	PCI/ PCIe	-	-	-
	MXM	-	-	-
	Others	-	-	-
Power Supply	DC Input	8-48V DC	8-48V DC	9-36V DC
	Ignition Control	Integrated	Integrated	-
Environmental	Operating Temp.	-25~70°C with 35W CPU -25~50°C with 65W CPU	-20~70°C	-20~60°C
	Certification	CE, FCC, CB, BSMI	CE, FCC, UKCA, BSMI, CB, CCC	CE, FCC, CB, BSMI
	Shock & Vibration	MIL-STD 810H	MIL-STD 810H, and 5-500 Hz; 3+ Grms	MIL-STD 810H




*Product available time

Rugged Edge Computers



		PE2200U	PE2100U	PE2000U
				
Case	Dimension	254 x 147 x 57 mm	254 x 147 x 57 mm	254 x 147 x 57 mm
System	Processor	Intel® Core™ Ultra 7 165U Intel® Core™ Ultra 5 135U	Intel® Core™ i7-1365UE Intel® Core™ i5-1345UE Intel® Core™ i3-1315UE	Intel® Core™ i7-1265UE Intel® Core™ i5-1245UE Intel® Core™ i3-1215UE
	Chipset	-	-	-
	Graphics	Intel® Graphics	Intel® Iris® Xe Graphics eligible	Intel® Iris® Xe Graphics eligible
	Memory	2 x SO DIMM, DDR5 5600 MHz, supports up to 64GB	2 x SO-DIMM, DDR5 4800 MHz, supports up to 64GB	2 x SO-DIMM, DDR5 4800 MHz, supports up to 64GB
I/O Interface	PoE	2 x Intel® i210-IT (IEEE 802.3af, optional)	2 x Intel® i210-IT (IEEE 802.3af, optional)	2 x Intel® i210-IT (IEEE 802.3af, optional)
	Ethernet	1 x Intel® i219-LM (1 GbE) 1 x Intel® i226-IT (2.5 GbE)	1x Intel® i219-LM (1 GbE) 1x Intel® i225-V (2.5 GbE)	1x Intel® i219-LM (1 GbE) 1x Intel® i225-V (2.5 GbE)
	Display Port	1x HDMI 1x DP	2x HDMI 1x DP	2x HDMI 1x DP
	Serial Port	4x COM: RS-232/422/485	2x COM: RS-232/422/485 2x COM: RS-232	2x COM: RS-232/422/485 2x COM: RS-232
	USB 2.0	2 x USB 2.0, type A	2 x USB 2.0, type A	2 x USB 2.0, type A
	USB 3.2/ 3.1	1 x USB 3.2 Gen2x2 (20G), type C 4 x USB 3.2 Gen 2, type A	4 x USB 3.2 Gen 2, type A	4 x USB 3.2 Gen 2, type A
	Audio	Mic in; Line out	Mic in; Line out	Mic in; Line out
	Digital I/O	1 x 8bit GPIO, DB9	1 x 8bit GPIO, DB9	1 x 8bit GPIO, DB9
	GPIO	-	-	-
Storage Interface	SATA HDD	1 x 2.5" HDD/SSD	1 x 2.5" HDD/SSD	1 x 2.5" HDD/SSD
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe/SATA)	1 (NVMe/SATA)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	-	1	1
	M.2	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key	1 x M.2 E-key
	SIM	1	1	1
	PCI/ PCIe	-	-	-
	MXM	-	-	-
Power Supply	DC Input	9-36V DC	9-36V DC	9-36V DC
	Ignition Control	-	-	-
Environmental	Operating Temp.	-20~60°C	-20~60°C	-20~60°C
	Certification	CE, FCC, UKCA, BSMI, IC, CB, CCC	CE, FCC, VCCI, BSMI, RCM, UL, CB, CCC, KCC	CE, FCC, VCCI, BSMI, RCM, UL, CB, CCC, KCC
	Shock & Vibration	MIL-STD 810H	MIL-STD 810H	MIL-STD 810H

		PE1000S	PE2100S	PE2000S
				
Case	Dimension	56 x 110.2 x 160mm 63 x 110.2 x 160mm (PoE SKU)	254 x 147 x 57 mm	254 x 147 x 57 mm
System	Processor	Intel® Atom® X6425E Intel® Atom® X6413E Intel® Celeron® J6412	Intel® Atom® x7211RE Intel® Atom® x7213RE Intel® Atom® x7433RE Intel® Atom® x7835RE	Intel® Processor N97 Intel® Processor N200 Intel® Core™ i3-N305 Intel Atom® x7425E
	Chipset	-	-	-
	Graphics	Intel® UHD Graphics for 10th Gen Intel® Processors	Intel® UHD Graphics	Intel® UHD Graphics
	Memory	1 x SO-DIMM, DDR4 supports up to 3200 MHz, max 32 GB	1x SO-DIMM, up to 16GB DDR5 SDRAM	1x SO-DIMM, up to 16GB DDR5 SDRAM
I/O Interface	PoE	2 x Intel® i226-IT (PoE SKU)	2 x Intel® i210-IT (IEEE 802.3af, optional)	2 x Intel® i210-IT (IEEE 802.3af, optional)
	Ethernet	2 x Intel® i226-IT (2.5 GbE)	1x Intel® i226-IT (2.5 GbE) 1x Intel® i210-IT (1 GbE)	2x Intel® i210-AT (1 GbE)
	Display Port	1x HDMI 1x DP	1x HDMI 2.0 1x DP1.4	1x HDMI 2.0 1x DP1.2
	Serial Port	1x COM: RS-232/422/485 3 x 3-wire RS-232 or 1 x RS-422/485 2 x RS-232 (optional, mux with GPIO)	2x COM: RS-232/422/485, DB9 4x COM: RS-232, DB9 2x COM: RS232 (Optional)	2x COM: RS-232/422/485, DB9 4x COM: RS-232, DB9
	USB 2.0	2 x USB 2.0, type A	2x USB 2.0, type A	2x USB 2.0, type A
	USB 3.2/ 3.1	2 x USB 3.2 Gen 2 (10Gbps) 2 x USB 3.2 Gen 1 (5Gbps)	2x USB 3.2 Gen2 (10 G), type A 2x USB 3.2 Gen1 (5 G), type A	4x USB 3.2 Gen 2 (10 G), type A
	Audio	-	1 x Mic in / 1 x Line out	1 x Mic in / 1 x Line out
	Digital I/O	1 x 8bit GPIO, DB9 (optional, mux with RS-232)	1 x 8bit GPIO, DB9	1 x 8bit GPIO, DB9
	Storage Interface	SATA HDD mSATA M.2 (M-key) eMMC SD Card	1 x 2.5" HDD/SSD - 1 (SATA) - -	1x 2.5" HDD/SSD - 1 (SATA) - -
	Expansion	mPCIe M.2 SIM PCI/ PCIe	- 1 x M.2 E-key, 1 x M.2 B-key 1 -	1 1 x M.2 E-key 1 -
Power Supply	DC Input	9-36V DC	9-36V DC	9-36V DC
	Ignition Control	POE SKU only	-	-
Environmental	Operating Temp.	-25°C to 70°C -25°C to 60°C (PoE SKU)	-20~60°C	0~50°C
	Certification	CE, FCC, UKCA, BSMI, CB, CCC	CE, FCC, CB, BSMI	CE, FCC, CB, BSMI
	Shock & Vibration	MIL-STD 810H, and 5-500 Hz; 5+ Grms	MIL-STD 810H, and 5-500 Hz; 5 Grms	MIL-STD 810H, and 5-500 Hz; 5 Grms

Rugged Edge Computers

		PE200U	PE200S	PE400D
				
Case	Dimension	254 x 147 x 57 mm	254 x 147 x 57 mm	176.6 x 210 x 250 mm
System	Processor	Intel® Core® i7-8665UE Intel® Core® i5-8365UE Intel® Core® i3-8145UE	Intel® Atom® X7-E3950 Intel® Atom® X5-E3940 Intel® Atom® X5-E3930	Intel® Core™ i9-10900E Intel® Core™ i7-10700E Intel® Core™ i5-10500E Intel® Core™ i3-10100E Intel® Xeon® W-1290TE
	Chipset	-	-	W480E
	Graphics	Intel® UHD Graphics 620	Intel® HD Graphics 505	Intel® UHD Graphics 630
	Memory	1 x SO-DIMM, DDR4 2400 MHz, supports up to 32GB	1 x SO-DIMM, DDR3L 1866 MHz, supports up to 8GB	2 x SO-DIMM, up to 64GB ECC/ non-ECC DDR4 SDRAM
I/O Interface	PoE	2 x Intel® i210-IT (IEEE 802.3af, optional)	2 x Intel® i210-IT (IEEE 802.3af, optional)	-
	Ethernet	1 x Intel® i219 (1 GbE) 1 x Intel® i211-AT (1 GbE)	2 x Intel® i210-IT (1 GbE)	3 x Intel® i210-IT (1 GbE)
	Display Port	1x HDMI 1x DP	1x HDMI 1x DP	1 x HDMI 2.0 1 x HDMI 1.4 1 x DP 1.2
	Serial Port	2x COM: RS-232/422/485 4x COM: RS-232 (optional)	2x COM: RS-232/422/485 4x COM: RS-232 (optional)	3x COM: RS-232/422/485, DB9 1x COM: RS-232/422/485, DB9
	USB 2.0	4 x USB 2.0, type A (optional)	2 x USB 2.0, type A (optional)	-
	USB 3.2/ 3.1	4 x USB 3.2 Gen 2, type A	4 x USB 3.2 Gen 1	4x USB 3.2 Gen1 (5 G), type A 2x USB 3.2 Gen2 (10 G), type A
	Audio	Mic in; Line out	Mic in; Line out	1 x Mic in / 1 x Line out
	Digital I/O	1 x 8bit GPIO, DB9	1 x 8bit GPIO, DB9	4x DI, 4 x DO support isolation
	SATA HDD	1 x 2.5" HDD/SSD	1 x 2.5" HDD/SSD	2 x hot-swappable 2.5" HDD/SSD
	mSATA	1 (mux with mPCIe)	-	1 (mux with mPCIe)
Storage Interface	M.2 (M-key)	1 (NVMe/SATA)	1 (SATA)	1 (NVMe/SATA)
	eMMC	-	-	-
	SD Card	-	-	-
	PCIe	1 (mux with mSATA)	1	1 (mux with mSATA)
Expansion	M.2	1 x M.2 E-key, 1 x M.2 B-key	1 x M.2 E-key	1 x M.2 E-key
	SIM	1	1	2
	PCI/ PCIe	-	-	3 x PCIe slot *2 configuration: 1x PCIe16 + 1x PCIe4 or 2 x PCIe8 + 1x PCIe4, auto-detect *Max. length<192mm; Max. 100W power supply from mainboard for total 3 slots
	Power Supply	12-24V DC	12-24V DC	9-36V DC
Environmental	DC Input	-	-	-
	Ignition Control	-	-	-
	Operating Temp.	-20~60°C	-20~60°C	-20~60°C
	Certification	CE, FCC, VCCI, BSMI, RCM, KCC, UL, CB, CCC	CE, FCC, VCCI, BSMI, UL, CB, CCC	CE (IEC 61000-6-2/4), FCC, VCCI, RCM, BSMI, UL, CB, CCC
	Shock & Vibration	Vibration:0.21Grms, 5~500 Hz, 20min durationShock:50 G, half sine 11ms duration	Vibration:0.21Grms, 5~500 Hz, 20min durationShock:50 G, half sine 11ms duration	Vibration: 0.5 Grms, sine, 5-500 Hz (with SSD) Shock: 50 Grms, half sine, 11ms (with SSD)

Arm-based Gateways

		PE100A	PV100A
			
Case	Dimension	55.5 x 145 x 78 mm	216 x 112 x 70.5 mm
System	Processor	NXP® i.MX 8M ARM Cortex-A53 Quad core , 1.3 GHz	NXP® i.MX 8M ARM Cortex-A53 Quad core , 1.3 GHz
	Memory	4 GB LPDDR4 onboard	2 GB LPDDR4 onboard
I/O Interface	Ethernet	1 x Realtek® RTL8211 (1 GbE) 1x Intel® i210-AT (1 GbE)	1 x Realtek® RTL8211 (1 GbE) 1x Intel® i210-AT (1 GbE)
	Display Port	1x HDMI	1x HDMI
	Serial Port	1x COM: RS-232/422/485 (by terminal block) 1x COM: RS-232 (by terminal block)	1x COM: RS-232/422/485 (DB9) 2x COM: RS-232/422/485 (by HDC) 1x COM: RS-232/422 (DB9)
	USB 3.2/ 3.1	2x USB 3.2 Gen1, type A 1x USB 3.2 Gen1, support OTG, type C	2x USB 3.2 Gen1, type A 1x USB 3.2 Gen1, support OTG, type C
	Audio	-	Mic in; Line out (by HDC)
	Digital I/O	4x DI, 4 x DO support isolation	4x DI, 4 x DO support isolation (by HDC)
Storage Interface	mSATA	1 (mux with mPCIe)	1 (mux with mPCIe)
	eMMC	16GB	16GB
	SD Card	1	1
Expansion	mPCIe	1 (mux with mSATA)	1 (mux with mSATA)
	M.2	1 x M.2 E-key	1 x M.2 E-key, 1 x M.2 B-key
	SIM	1	1
Power Supply	DC Input	12-24V DC	9-36V DC
	Ignition Control	-	Integrated
Environmental	Operating Temp.	-20~60°C	-25~75°C
	Certification	CE, FCC, VCCI, BSMI, RCM, UL, CB, CCC	E-Mark, SO-7637-2, SAE J1455, EN50155, CE, FCC, CB, BSMI, UL, CCC
	Shock & Vibration	Vibration:0.21Grms, 5~500 Hz, 20min duration Shock:50 G, half sine 11ms duration	MIL-STD 810H

CHAPTER 04

NUC & Mini PCs



SMALLER, FASTER, BETTER, AI READY



SMALLER, FASTER, BETTER, AI READY

The ASUS NUC brand, developed by ASUS and Intel, focuses on delivering top-notch performance in compact designs with high quality, reliability, modularity, and advanced AI. Catering to developers, power users, and casual users, ASUS NUC products are versatile and suitable for various business and everyday applications. They aim to shape the next generation of PC experiences and make a significant impact in the tech industry.

NUC Mini PCs

- Ready to use
- Complete Mini PCs equipped with pre-installed memory, storage, and operating system

NUC Kits (Barebone)

- Ready to build configurable features
- Install your own memory, storage, and operating system (not included)

NUC Boards

- 4x4-inch form factor
- Independent of chassis for embedded use and custom design



Indoor Industrial

- Process Monitoring
- Industrial Gateways
- Inventory Management



Retail

- Digital Signage
- Kiosks
- Point-of-Sale



SMB

- Content Creation
- Productivity
- File Sharing



Healthcare

- Medical Imaging
- Patient Monitors
- Bedside Terminals

Elevate your Edge Solutions WITH ASUS NUC

Quality and Reliability



Exceptional Design

ASUS is committed to pursuing products that are both aesthetically pleasing and functional. For example, the rubbed design and beveled surface conceals heat dissipation holes. All ASUS products are engineered to exacting standards that guarantee quality.



Compact, yet Powerful

ASUS NUC is ready to handle even the most demanding workloads. The sub-3-liter chassis makes it well-suited for small and medium sized businesses. Retail settings, educational institutions, small offices, or homes.



Connectivity and Upgradability

ASUS NUC provides comprehensive connectivity with multiple ports. The easy access design also enables customizability, whether to add memory or WLAN card that guarantee quality.



Built to Sustain

ASUS NUC is recipient to ePEAT Gold award and ENERGY STAR. ASUS also exceeds legal compliance guidelines to protect customers, employees, and the environment.

Strictly Tested For Ensured Durability



Temperature/
Humidity Test



Vibration
Test



Noise
Test



24/7
Reliability Test



Drop Test



Durability
Test



Recognized for Quality

ASUS AI NUC



The ASUS NUC/Mini PC series delivers top AI performance in a compact, modular design, making it ideal for edge computing and SMBs. Featuring advanced AI capabilities, powerful components, and exceptional connectivity, it ensures maximum performance in minimal space.

Why Choose AI Mini PCs

Productivity Enhanced

Streamline your creative process by automating routine tasks. With new, locally running algorithms, you can unlock creativity and boost productivity seamlessly.

Energy Efficiency

Offload common tasks from the CPU/GPU to dedicated NPUs, resulting in more energy-efficient performance.

Advanced Security

As malware attacks become increasingly sophisticated, dedicated NPUs can offload deep learning tasks, reducing system performance impact and enabling continuous security monitoring.

Collaborative AI Assistant

Platforms with dedicated NPUs are enhanced with local collaborative assistance tools, providing a virtual partner to help maximize productivity.



Explore Latest NUC Series



ASUS NUC 15 PRO

Exceptional performance with the latest Intel® Core™ Ultra processors (Series 2). Featuring toolless integration, three AI engines, and Intel vPro® Enterprise for top-tier security, manageability, and stability, NUC 15 Pro is a powerful and versatile mini PC.



ASUS NUC 14 PRO AI

Embrace AI with the world's first Copilot+ PC, NUC 14 Pro AI. Powered by Intel® Core™ Ultra processor (Series 2), delivering 120 platform TOPS, it ensures seamless AI interactions with built-in microphone and smart AMP for voice command support.






ASUS NUC 14 Performance

NUC 14 Performance combines efficiency with raw power. Equipped with Intel® Core™ Ultra 9/7 processors and NVIDIA® GeForce RTX™ 4070 and 4060 laptop GPUs, this device is perfect for intensive graphics rendering, 3D simulations, and data processing tasks.

ASUS NUC 15 Pro




ASUS NUC 14 Pro AI




ASUS NUC 14 Performance

MODEL	 Tall Slim			
OPERATING SYSTEM SUPPORT	Windows 11 Pro		Windows 11 Home/Pro 24H2 Windows 11 IoT	Windows 11 64-bit Ubuntu 24.04 LTS 64-bit RedHat Enterprise Linux 64-bit
CPU	Intel® Core™ Ultra 7 265H (vPro) Intel® Core™ Ultra 5 235H (vPro) Intel® Core™ Ultra 7 255H Intel® Core™ Ultra 5 225H Intel® Core™ 7 240H / Intel® Core™ 5 210H Intel® Core™ 3 100U		Intel® Core™ Ultra 9 288V/32G Memory Intel® Core™ Ultra 7 258V/32G Memory Intel® Core™ Ultra 7 256V/16G Memory Intel® Core™ Ultra 5 228V/32G Memory Intel® Core™ Ultra 5 226V/16G Memory	Intel® Core™ Ultra 9 185H, cTDP (40-85W) Intel® Core™ Ultra 7 155H, cTDP (35-85W)
CHIPSET	Integrated		Integrated	Integrated
GRAPHICS	Intel® Arc™ GPU (Core Ultra)1 Intel® Graphics (Core3, Core 5, Core 7)		Integrated Intel® Arc™ 140V/130V Graphics	NVIDIA® GeForce RTX™ 4070 Laptop GPU (Core Ultra 9) NVIDIA® GeForce RTX™ 4060 Laptop GPU (Core Ultra 7) Intel® Arc™ GPU2
MEMORY	2 x SO-DIMM, Up to DDR5-6400, 96GB*2		Embedded LPDDR5x- 8533 MT/S 16G/32G Memory on Processor	2 x SO-DIMM, Up to DDR5-5600, 32GB*2
STORAGE	1 x M.2 2280 PCIe Gen4x4, supports 128GB~2TB NVMe SSD 1 x M.2 2242 PCIe Gen4x4, supports 128GB~2TB NVMe SSD PCIe Gen 5 ready design		1x M.2 2280 PCIe4x4, supports 256GB~2TB NVMe SSD	3 x M.2 2280 PCIe Gen4x4, supports 128GB~4TB NVMe SSD
WIRELESS NETWORK	Intel® Wi-Fi 7 BE201 + Bluetooth 5.4 (Core Ultra) Intel® Wi-Fi 7 BE202 + Bluetooth 5.4 (Core 3, Core 5, Core 7)		Wi-Fi 7(802.11be) 2*2 + Bluetooth® 5.4	Intel® Killer™ Wi-Fi 6E AX1690 i (Gig+), Bluetooth 5.3
LAN	Intel® Ethernet Controller I226-V/LM, 2.5G2		10/100/1000/2500 Mbps, 2.5G Intel® LAN	Intel® Ethernet Controller I226-V, 2.5G
AUDIO	Up to 7.1 multichannel (or 8-channel) digital audio on HDMI and DP Type-C ports		1x Internal Momo-Speaker with External Smart Amp	Realtek ALC256
TPM	fTPM		fTPM 2.0 or TPM 2.0 Chip (Optional)	fTPM
FRONT I/O PORTS	1 x USB 3.2 Gen2x2 Type-C 2 x USB 3.2 Gen2 Type-A		1x Power Button 1x Copilot Button 1x Thunderbolt™ 4 (Supports DisplayPort 2.1) 2x USB 3.2 Gen1 Type-A (5 Gbps) 1x Audio Jack (Line out/ Mic in/Headphone out)	2 x USB 3.2 Gen2 Type-A 1 x 3.5mm Headset jack
BACK I/O PORTS	2 x HDMI 2.1 TMDS Compatible (4K@60Hz) 2 x Thunderbolt™ 4 ports (incl. DP 2.1 and USB4) 1x USB 3.2 Gen2 Type-A / 1x USB Type-A / 1 x RJ45 LAN / 1 x DC-in		1x Thunderbolt™ 4 (Supports DisplayPort 2.1) 2 x USB 3.2 Gen2 Type-A (10 Gbps) 1 x HDMI port / 1x 2.5G RJ45 LAN / 1x DC-in	1 x Thunderbolt 4 Type-C w/ DisplayPort 2.1 2 x USB 3.2 Gen 2 Type-A 2 x USB 2.0 Type-A 1 x HDMI 2.1 (FRL) / 2 x DP 1.4a / 1 x RJ45 LAN / 1 x DC-in / 1 x Kensington Lock
SIDE I/O PORTS	1 x Kensington Lock		-	-
TOP I/O PORTS	-		1x Fingerprint Module	-
POWER SUPPLY	19VDC, 6.32A, 120W Power Adapter (Core 5, Core 7, Core Ultra) 19VDC, 4.74A, 90W Power Adapter (Core3)		120W Power Adapter	19.5VDC, 16.9A, 330W Power Adapter
HUMIDITY	0%-92% non-condensing3		-	-
DIMENSION (W x D x H)	Tall: 117mm x 112mm x 54mm Slim: 117mm x 112mm x 37mm		130 x 130 x 34mm (0.5476 L)	270mm x 180mm x 60mm

Available SKUs

● Mini PC
● Kit
● Board
|
● Mini PC
● Kit
○ Board
|
○ Mini PC
● Kit
○ Board

	ASUS NUC 14 Pro	NUC 14 Essential
MODEL	<div> <div>Tall</div>   <div>Slim</div> </div> <div>  </div>	
OPERATING SYSTEM SUPPORT	Windows 11 64-bit	Windows 11 Home/Pro 64-bit Windows 11 IoT 64-bit Windows 11 64-bit Ubuntu 24.04 LTS RedHat Enterprise Linux 64-bit
CPU	Intel® Core™ Ultra 7 Processor 165H w/ vPro, cTDP 40W Intel® Core™ Ultra 7 Processor 155H, cTDP 40W Intel® Core™ Ultra 5 Processor 135H w/ vPro, cTDP 40W Intel® Core™ Ultra 5 Processor 125H, cTDP 40W Intel® Core™ 3 Processor 100U, cTDP 25W	Intel® Processor N150, TDP 6W Intel® Processor N250, TDP 6W Intel® Processor Core™ 3 N355, TDP 15W Intel® Processor N97, TDP 12W
CHIPSET	Integrated	Integrated
GRAPHICS	Intel® Arc™ GPU (Core Ultra) Intel® Graphics (Core3)	Intel® UHD Graphics (N97) Intel® Graphics (N150, N250, N355)
MEMORY	2 x SO-DIMM, Up to DDR5-5600, 48GB*2	1 x SO-DIMM, Up to DDR5-4800, 16GB*1
STORAGE	1 x M.2 2280 PCIe Gen4x4, supports 128GB~4TB NVMe SSD 1 x M.2 2242 PCIe Gen4x4, supports 128GB~2TB NVMe SSD 1 x SATA Port for 2.5in SSD/HDD, supports 128GB~4TB SATA drive	1 x M.2 2280/2242 PCIe Gen3x4, supports 128GB~2TB NVMe or SATA SSD
WIRELESS NETWORK	Intel® Wi-Fi 6E AX211 (Gig+), Bluetooth 5.3	Intel® Wi-Fi 6E AX211 (Gig+), Bluetooth® 5.3
LAN	Intel® Ethernet Controller I226-V/LM, 2.5G	1 x Realtek Ethernet Controller RTL8125BG-CG, 2.5G
AUDIO	-	Audio Realtek ALC3251
TPM	fTPM	fTPM or TPM 2.0 chip
FRONT I/O PORTS	1 x USB 3.2 Gen2x2 Type-C 2 x USB 3.2 Gen2 Type-A	1 x USB 3.2 Gen2 Type-C 2 x USB 3.2 Gen2 Type-A 1 x 3.5mm Headset Jack
REAR I/O PORTS	2 x Thunderbolt 4 Type-C w/ DisplayPort 1.4 1 x USB 3.2 Gen 2 Type-A 1 x USB 2.0 Type-A 2 x HDMI 2.1 (TMDS) 1 x RJ45 LAN 1 x DC-in	1 x USB 3.2 Gen2 Type-C w/ DisplayPort 1.4 2 x USB 3.2 Gen 2 Type-A 1 x USB 2.0 Type-A 1 x HDMI 2.1 (TMDS) 1 x DisplayPort 1.4 1 x RJ45 LAN 1 x DC-in
SIDE I/O PORTS	1x Kensington Lock	1x Kensington Lock
TOP I/O PORTS	-	-
POWER SUPPLY	19VDC, 6.32A, 120W Power Adapter (Core Ultra) 19VDC, 4.74A, 90W Power Adapter (Core3)	19VDC, 3.42A, 65W Power Adapter
DIMENSION (W x D x H)	Tall: 117mm x 112mm x 54mm Slim: 117mm x 112mm x 37mm	135mm x 115mm x 36mm
Available SKUs	<div> <div>● Mini PC</div> <div>● Kit</div> <div>● Board</div> </div> <div> <div>● Mini PC</div> <div>● Kit</div> <div>● Board</div> </div>	

	ASUS NUC 13 Rugged (Slim)	ASUS NUC 13 Rugged (Tall)	PL64-D1
MODEL			
OPERATING SYSTEM SUPPORT	Windows 10 IoT-Enterprise LTSC 64-bit Windows 11 Pro 64-bit Ubuntu 22.04 LTS 64-bit RedHat Enterprise Linux 9 64-bit	Windows 10 IoT-Enterprise LTSC 64-bit Windows 11 Pro 64-bit Ubuntu 22.04 LTS 64-bit RedHat Enterprise Linux 9 64-bit	Windows 11 Pro 64-bit, Windows 11 64-bit, Windows IoT Enterprise W/O OS
CPU	Intel® Processor N50 (TDP 6W)	Intel® Processor N50, cTDP 6W	Intel® Core™ i7-1255U, i5-1235U, i3-1215U, Celeron® 7305 (cTDP 15W)
CHIPSET	Integrated	Integrated	Integrated
GRAPHICS	Intel® UHD Graphics Technology	Intel® Atom® x7211E, cTDP 6W	Integrated - Intel® Iris® Xe Graphics (i7/i5) or Intel® UHD Graphics (i3/ Celeron 7305) * *Intel® Iris® Xe Graphics requires 128-bit dual channel memory for optimal performance
MEMORY	2 x SO-DIMM, Up to DDR5-6400, 96GB*2	Embedded LPDDR5x- 8533 MT/S 16G/32G Memory on Processor	DDR4-3200MHz memory (up to 32GB*2)
STORAGE	64GB eMMC soldered-down 1x M.2 2280 slot PCIe x2 NVMe SSD 1x M.2 3042 Slot (SATA SSD/PCI x1/USB3.2 Gen2)	64GB eMMC soldered-down 1x M.2 2280 PCIe x2 Gen4x4, supports 128GB~4TB NVMe SSD 1x M.2 3042 PCIe SATA, supports 128GB-2TB SSD, w/ 1 x USB3.2 Gen2	1 x M.2 2280, up to PCIe Gen4x4, 256G~1TB SSD *Support NVMe
WIRELESS NETWORK	Intel® Wi-Fi 6E AX210 (External Antenna) + Bluetooth® v5.3	Intel® Wi-Fi 6E AX210 (Gig+) w/ External Antenna, Bluetooth® v5.3	Intel® WiFi 6E/ 6 and Bluetooth® 5, 2*2
LAN	2 x Intel® Ethernet Controller I226-V, 2.5G	2 x Intel® Ethernet Controller I226-V, 2.5G	3 x Intel® I225VLAN,10/100/1000/ 2500Mbps,each ports support up to 30W output (802.3at)
AUDIO	-	-	Realtek® HD Audio CODEC
TPM	fTPM	fTPM	fTPM 2.0 or TPM module onboard (Optional)
FRONT I/O PORTS	-	-	3 x USB 3.2 Gen 2 2 x USB2.0 1 x PoE port 802.3at/30W 1 x Audio Jack (Line out/ Mic in/ Headphone out)
REAR I/O PORTS	2 x USB 3.2 Gen2 Type A 2 x USB 2.0 Type A 2 x HDMI 2.1 (TMDS) 2 x RJ45 LAN 1 x DC-in	2 x USB 3.2 Gen2 Type A 2 x USB 2.0 Type A 2 x HDMI 2.1 (TMDS) 2 x RJ45 LAN 1 x DC-in	3 x HDMI 2.0 Port 2 x PoE ports 802.3at/30W 1 x EDID reset 2 x Antenna Jack 1 x DC-in
SIDE I/O PORTS	1 x Kensington Lock	1 x Kensington Lock	1 x USB 2.0 1 x Kensington lock
TOP I/O PORTS	-	-	-
POWER SUPPLY	20VDC, 3.25A, 65W Power Adapter	20VDC, 4.5A, 90W Power Adapter	150W
DIMENSION / WEIGHT	174 x 108 x 25.9H mm (internal heatsink) [H: +3.4mm rubber feet]	174 x 108 x 35.8H mm (external heatsink) [H: +3.4mm rubber feet]	199.7mm x 119.7mm x 33.9mm (0.81L) / TBD
OPERATING TEMPERTURE	0-40°C	0-50°C	0-50°C (only for models that support 16 GB memory and below) 0-35° C (for all other models)
Available SKUs	<input type="radio"/> Mini PC <input checked="" type="radio"/> Kit <input checked="" type="radio"/> Board	<input type="radio"/> Mini PC <input checked="" type="radio"/> Kit <input checked="" type="radio"/> Board	<input checked="" type="radio"/> Mini PC <input checked="" type="radio"/> Kit <input type="radio"/> Board

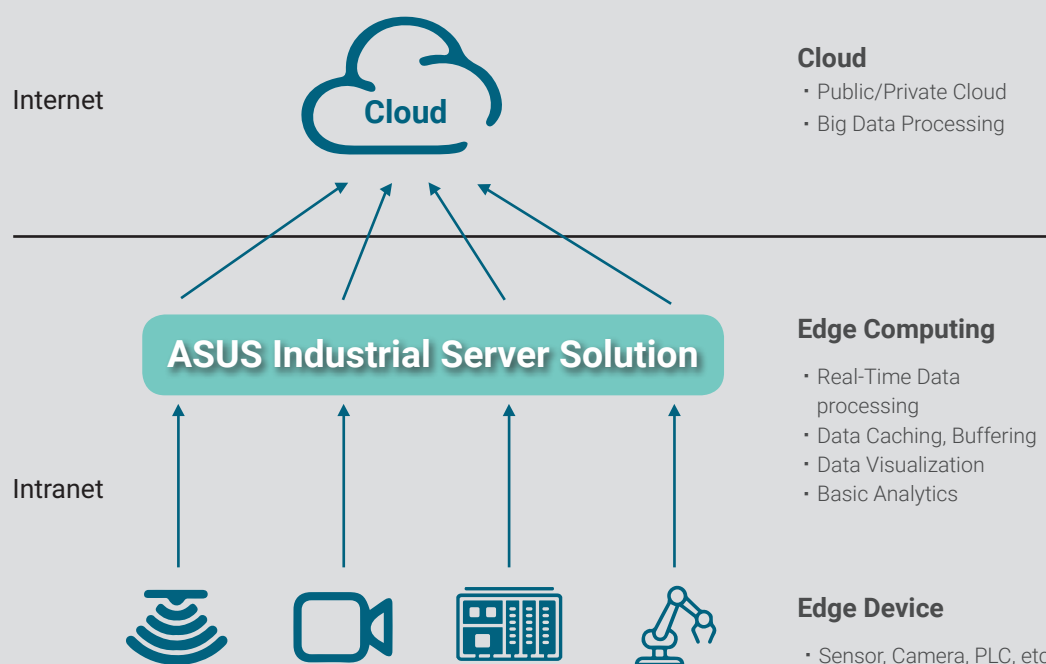
ASUS IoT Industrial Servers

Built for the Edge, Engineered for Excellence

Developed for industrial and high-performance applications

ASUS IoT Industrial Servers are high-performance, robust computer systems that provides processing, storage and other applications that requires high-demand computation at the edge. These servers are engineered to deliver outstanding performance in critical application environments where commercial servers often fail to meet the demands. These servers undergo extensive testing across a broad spectrum of ambient temperatures, ensuring superior reliability and significantly reducing the risk of system failures due to excessive heat. Their durability is further enhanced through rigorous vibration testing, making them ideal for high-impact and high-vibration scenarios, such as those encountered in factory automation.

Edge Computing High-Level Architecture



Applications



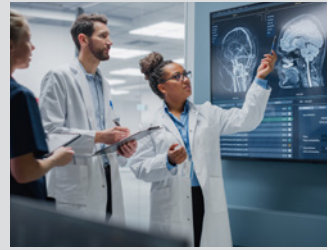
Manufacturing

- Machine Vision
- Storage Server
- Energy Management



Retail

- Customer Behavior Analysis
- Inventory Management
- Video Surveillance and Security



Healthcare

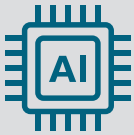
- Telemedicine
- Medical Imaging
- Electronic Health Records



Smart City

- Intelligent Transportation Systems
- Waste Management
- Smart Building

Why ASUS IoT Serves



Excellent
Performance



Long Longevity



Global Service

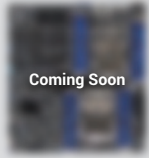
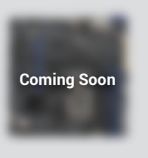


Energy Saving





Rugged Design

Server Board

	 *Q2'25	 *Q2'25
Model Name	ISB-E901	ISB-M501
Formfactor	E-ATX	Micro-ATX
Processor	Dual Intel® Xeon® 6 Scalable Processor	Single Intel® Raptor Lake-S Processor
Memory	16 x DDR5 RDIMM	4 x DDR5 UDIMM
Expansion Slot	6 x PCIe 5.0 x16 Slot 2 x NVMe M.2 Slot	1 x PCIe 5.0 x16 Slot 1 x PCIe 5.0 x8 Slot 1 x PCIe 5.0 x4 Slot
Networking	2 x 10GbE RJ45 1 x GbE RJ45 for BMC	2 x 2.5GbE RJ45 2 x GbE RJ45 1 x GbE RJ45 for BMC
Dimensions	305 x 330 mm	244 x 244 mm

Server System

	 *Q1'25	 *Q3'25
Model Name	ISS-H291	ISS-H292
Formfactor	2U Rackmount	2U Rackmount
Processor	Dual Intel® 4th/5th Gen Xeon Scalable Processor	Dual Intel® Xeon® 6 Scalable Processor
Memory	16 x DDR5 RDIMM	16 x DDR5 RDIMM
Expansion Slot	1 x PCIe 5.0 Slot (x8) 5 x PCIe 5.0 Slot (x16) 2 x NVMe M.2 Slot	6 x PCIe 5.0 x16 Slot 8 x Drive-bay 2 x NVMe M.2 Slot
Networking	2 x 10GbE RJ45 1 x GbE RJ45 for BMC	2 x 10GbE RJ45 1 x GbE RJ45 for BMC
Dimensions	658.6 x 438.0 x 87.0 mm	658.6 x 438.0 x 87.0 mm

*Product available time

CHAPTER 06 Embedded Systems & Chassis Solutions

ASUS IoT CONFIGURE TO ORDER SERVICES (CTOS)

Meet your specific needs and optimize your systems



ASUS IoT CTOS process flow

How to start your personalized ASUS IoT CTOS tech journey

1. Choose your foundation

Begin your customization journey by selecting products from our foundational list.

2. Fine-tune hardware

Customize your device with the necessary hardware configurations — including processors, memory and storage — aligning with your performance standards.

3. Personalize software

Tailor your tech experience by choosing pre-installed operating systems, software packages and drivers to ensure your system suits your workflow.

4. Enhance with accessories

Improve your setup with various accessories — extra ports, expansion cards and so on — customizing your device to meet specific needs.

5. Connect with local support

In the final stage, review your configuration, then contact ASUS local support. We're here to provide ASUS CTOS products and solutions tailored just for you.

Application

Industrial
manufacturing



Medical /
Healthcare



Smart Retail



Transportation



Elevate efficiency through system modularization - where flexibility meets seamless management

Crafting your unique service experience!

ASUS CTOS redefines service by offering personalized choices in hardware, software and accessories. Our ecosystem partners, with robust expertise, deliver swift and diverse solutions locally. Join us for a unique tech service tailored to your needs!

ASUS CTOS strengths and highlights

FAST AND REAL-TIME SUPPORT



1. SWIFT SUPPORT WITHOUT TIME-ZONE LIMITATIONS

Our local technical support team enables us to deliver fast and efficient support services, resulting in reduced downtime and improved system availability and stability.

2. OVER 25 REGIONAL SERVICE CENTERS

We track customer needs and offer timely assistance and solutions.

DEDICATED RD TEAM



1. HIGH-SPEED AND SPECIALIZED R&D SUPPORT

Our dedicated CTOS R&D team enables us to promptly address CTOS customer needs and adapt our research and development direction effectively.

Benefiting from our extensive experience in CTOS projects, the ASUS IoT R&D team excels in addressing customer issues and providing expert advice.

FLEXIBLE CTOS SOLUTIONS



1. ONE-STOP INTEGRATE SOLUTIONS

Key parts can be added to ensure that solution aligns with customers' business processes.

2. OPROVIDE KPS WITH COMPETITIVE PRICING AND EXPEDITED DELIVERY

By leveraging the ASUS group vendor pool, we have multiple supplier options reduces the risk of relying on a single supplier and allows for better price and quality comparisons

AI Medical Computers

MDS-M700






MDS-I500









*Q2'25

Dimension	320 x 335 x 145 mm	238 x 201 x 100 mm
MB	Micro-ATX	Mini ITX
CPU	Intel® Core 14th/13th/12th Gen (Socket LGA 1700) Intel® Core™ i9/i7/i5/i3/Pentium®/ Celeron® Processors	Intel® 14th/13th/12th Gen (Socket LGA 1700) Intel® i7/i5/i3 Processors
Displays	4 x DP1.4, supports up to 3840 x 2160 @ 60 Hz	2 x DP1.2 supports up to 4096 x 2304 @ 60 Hz 1 x HDMI 1.4, supports up to 4K x 2K @ 60 Hz
Memory	4 x DDR5 U-DIMM	2 x DDR4 SO-DIMM Max. 2 x 16G
OP. temperature	0°C~40°C	0°C~40°C
Voltage	Medical PSU 500W	DC 12V AC 100-240Vac, 4.3A, 50-60Hz, 350W (optional)
COM, USB	2 x USB 3.2 (Rear) 4 x USB 3.2 (Rear) 1 x Serial Port (Rear) 3 x USB 3.2 (Internal) 4 x USB 2.0 (Internal) 9 x Serial Port (Internal)	2 x RS-232 (optional up to 4 x RS-232, DC sku only) 2 x USB 2.0 2 x USB 3.0 (optional up to 4 x USB 2.0 and 4x USB 3.0) 2 x RJ-45 (Gbit LAN)
Expansion slot	1 x PCIe 5.0 x16 Slot (1 x16 mode/2 x8 mode) 1 x PCIe 4.0 x4 Slot (x4 mode) 1 x PCIe 5.0 x16 Slot (x8 mode) 1 x PCIe 4.0 x4 Slot (x4 mode)	1 x PCIe x 16 slot (max. support 50W) 1 x PCIe GEN3 M.2 key-M 2230 slot 1x SPI TPM header





	EBS-P300	EBS-P300W	EBS-S300W
			
Dimension	137 x 81 x 44.45 mm	137 x 81 x 61 mm	186 x 135 x 80 mm
CPU	Intel® Celeron® J6412	Intel® Atom™ x6425RE Intel® Atom™ x6425E Intel® Atom™ x6413E Intel® Atom™ X6211E	Intel® Atom™ x6425E Intel® Atom™ x6413E Intel® Atom™ x6211E
LAN	2 x RJ45	2 x RJ45	2 x RJ45
Displays	1 x HDMI 2.0 1 x HDMI 1.4	1 x HDMI 2.0 1 x HDMI 1.4	1 x HDMI 2.0 1 x DP++1.2
Memory	1 x LPDDR4 support max. 8GB, on board	1 x LPDDR4 support max. 8GB, on board	1 x DDR4 SO-DIMM support max. 32GB
OP. temperature	0°C~60°C standard (-20°C~60°C extend)	0°C~60°C standard (-40°C~60°C extend)	0°C~60°C standard (-40°C~60°C extend)
Voltage	12V-24V	12V-24V	9V-36V
COM, USB	2 x USB 3.2 2 x USB 2.0 2 x RS232/422/485	2 x USB 3.2 2 x USB 2.0 2 x RS232/422/485	4 x USB 3.2 2 x USB 2.0 2 x RS232/422/485 4 x RS232
Expansion slot	1 x 2230 M.2 E key for WIFI/BT device 1 x 2242 M.2 B Key (Support PCIE & SATA Storage)	1 x 2230 M.2 E key for WIFI/BT device 1 x 2242 M.2 B Key (Support PCIE & SATA Storage)	1 x 2230 M.2 E key (USB2.0, PCIE) for WIFI/BT device 1 x 3042/3052 M.2 B key (USB 2.0) for LTE device with on-board Nano-SIM slot 1 x 2280 M.2 M key (Support PCIE & SATA Storage)





Fanless Embedded Computers

	EBS-S500W	EBS-S510W	EBS-S100
			
Dimension	186 x 135 x 80 mm	186 x 135 x 80 mm	186 x 135 x 62 mm
CPU	Intel® Core™ Ultra 7 processor 165U Intel® Core™ Ultra 5 processor 135U	Intel® Core™ Ultra 7 processor 265U Intel® Core™ Ultra 5 processor 235U	Intel® Atom™ x7425E Intel® Core™ i3-N305 Intel® Processor N200 Intel® Processor N97
LAN	2 x RJ45	2 x RJ45	2 x RJ45
Displays	1 x HDMI 2 .1, supports up to 4096 x 2160 @ 60 Hz 1 x DP1.4a, supports up to 5120 x 3200 @ 60 Hz	1 x HDMI 2 .1, supports up to 4096 x 2160 @ 60 Hz 1 x DP1.4a, supports up to 5120 x 3200 @ 60 Hz	1 x HDMI 2.0, supports up to 4K x 2K @ 60 Hz 1 x DP1.4a, supports up to 4096 x 2304 @ 60 Hz
Memory	2 x DDR5 SO-DIMM support max. 64GB	2 x DDR5 SO-DIMM support max. 64GB	1 x DDR5 SO-DIMM support max. 16GB
OP. temperature	-20°C~60°C standard	-20°C~60°C standard	0°C~40°C standard (0°C~50°C extend)
Voltage	9V-36V	9V-36V	9V-36V
COM, USB	4 x USB 3.2 2 x USB 2.0 4 x RS232/422/485 1 x USB-C (USB3.2, DP 1.4 Alt. Mode)	4 x USB 3.2 2 x USB 2.0 4 x RS232/422/485 1 x USB-C (USB3.2, DP 1.4 Alt. Mode)	4 x USB 3.2 2 x USB 2.0 2 x RS232/422/485 4 x RS232
Expansion slot	1 x 3042/3052 M.2 B Key for LTE/5G device connected to Nano-SIM socket 1 x 2230 M.2 E key for WIFI 6E/BT 5.2 device (USB 2.0/ PCIe x1/ CNVi) 1 x 2280 M.2 M key for PCIe storage (PCIe x 4)	1 x 3042/3052 M.2 B Key for LTE/5G device connected to Nano-SIM socket 1 x 2230 M.2 E key for WIFI 6E/BT 5.2 device (USB 2.0/ PCIe x1/ CNVi) 1 x 2280 M.2 M key for PCIe storage (PCIe x 4)	1 x 2230 M.2 E Key for TPU/WIFI/BT device 1 x 2242/2280 M.2 M Key for SATA storage 1 x Mini PCIe with on-board Nano-SIM slot




	EBS-S110W	EBS-P310W	EBS-I300
		 *Q1'25	
Dimension	186 x 135 x 80 mm	123 x 80 x 45 mm	200 x 70 x 188 mm
CPU	Intel® Atom™ X7211RE Intel® Atom™ X7213RE Intel® Atom™ X7433RE Intel® Atom™ x7835RE	Intel® Atom™ X7211RE Intel® Atom™ X7213RE Intel® Atom™ x7835RE	Intel® Celeron® Quad-Core J6412 SoC
LAN	2 x RJ45	2 x RJ45	2 x RJ45
Displays	1 x HDMI 2.0, supports up to 4K x 2K @ 60 Hz 1 x DP1.4 supports up to 4096 x 2304 @ 60 Hz	1 x HDMI 2.0, supports up to 4K x 2K @ 60 Hz 1 x DP1.4 supports up to 4096 x 2304 @ 60 Hz	1 x HDMI 2.0, supports up to 4K x 2K @ 60 Hz 1 x DP++ supports up to 4096 x 2304 @ 60 Hz 1 x VGA
Memory	1 x DDR5 SO-DIMM support max. 16GB	LPDDR5 16GB on board	2 x DDR4 SO-DIMM support max. 32GB
OP. temperature	-20°C~60°C standard	-20°C~60°C standard (-40°C~60°C extend)	0°C~40°C standard (0°C~50°C extend)
Voltage	9V-36V	9V-36V	9V-36V
COM, USB	4 x USB 3.2 2 x USB 2.0 2 x RS232/422/485 4 x RS232	2 x USB3.2 2 x USB 2.0 2 x RS232/422/485	4 x USB 3.2 4 x USB 2.0 1 x RS232/422/485 5 x RS232
Expansion slot	1x M.2 3042/3052 B key for 4G/5G 1 x 2230 M.2 E Key for TPU/WIFI/BT device 1 x 2242/2280 M.2 M Key for storage (SATA/PCIEx1)	1x M.2 3042/3052 B key for 4G/5G 1 x 2230 M.2 E Key	1 x E key, type 2230 for WIFI/BT device (PCIEx1/USB2.0) 1 x M key, type 2242/2280/2260 (PCIEx2) supports NVMe

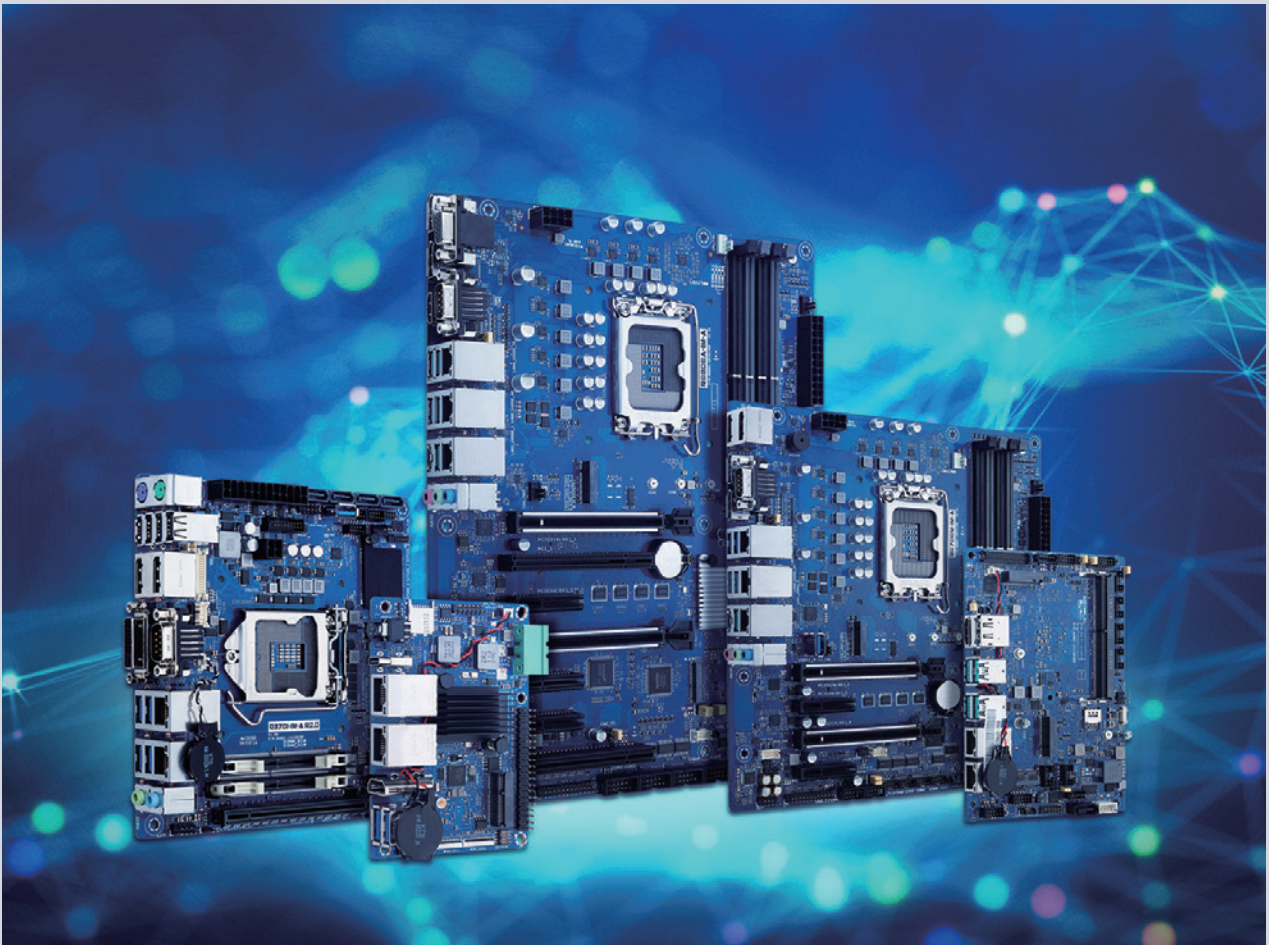
Box PC Chassis

	EBS-A700	EBS-A710	EBS-I10	EB-ITX-B
				
Compatible MB Form Factor	ATX, Micro-ATX	ATX, Micro-ATX	Mini-ITX	Mini-ITX
Compatible Intel Chipset	R680E Q670E Q470E Q170 H610 H310 H110	H110 H310 Q470 H610 Q670	Q470	H310
Dimensions	330 x 196 x 445 mm	316.5 x 164 x 380 mm	255 x 230 x 88 mm	310 x 109 x 252 mm
External I/O	Depend on compatible motherboard design	Depend on compatible motherboard design	Depend on compatible motherboard design	Depend on compatible motherboard design
Storage Capability	2 x 3.5" HDD 1 x 2.5" SSD 1 x 5.25" CD-ROM	1 x 3.5" HDD 1 x 2.5" Slim HDD	1 x 2.5" HDD 1 x 2280 M.2 M Key	1 x 3.5" or 1 x 2.5" HDD
Expansion Slot	7 x Full Height Slots	7 x Full Height Slots	1 x Low-profile add-on card	2 x Low-profile add-on card
Cooling	1 x 2025 Fan 2 x 5010 Fan	1 x 12025 Fan	2 x 6010 Fan	2 x 6010 Fan
Power Supply	ATX PSU	Flex ATX PSU	Flex ATX PSU	Flex ATX PSU
Environment	0°C~40°C	0°C~40°C	0°C~40°C	0~40°C

	EBS-4U500	EBS-4U	EBS-4UG	EBS-4U700
				
Compatible MB Form Factor	ATX, Micro-ATX	ATX, Micro-ATX	ATX, Micro-ATX	ATX, Micro-ATX
Compatible Intel Chipset	R680E Q670E Q470E Q170 H610 H310 H110	Q670E Q470E Q170 H610 H310 H110	Q670E Q470E Q170 H610 H310 H110	Q670E Q470
Dimensions	430.0 x 457.7 x 175.7 mm	430.2 x 457.2 x 175.7 mm	430.2 x 457.2 x 175.7 mm	465.2 x 430.0 x 176.0 (mm) 18.32" x 16.93" x 6.93
External I/O	2 x USB 2.0 1 x Power Switch 1 x System Reset Button 2 x LED Indicators	2 x USB 2.0 1 x Power Switch 1 x System Reset Button 2 x LED Indicators	2 x USB 2.0 1 x Power Switch 1 x System Reset Button 2 x LED Indicators	2 x USB 3.0 1 x Power Status 2 x LAN Activity 1 x HDD Status 1 x Power On/Off 1 x System Reset
Storage Capability	1 x 5.25"+3 x 3.5" (or 5*2.5")	2 x 5.25" 1 x 3.5" 1 x 3.5" (Slim)	2 x 5.25" 1 x 3.5" 1 x 3.5" (Slim)	External 3.5" : 1 External 5.25" : 3 Internal 3.5" : 4 Slim ODD : 1
Expansion Slot	7 x Full Height Slots	7 x Full Height Slots	7 x Full Height Slots	7 x Full Height Slots
Cooling	1 x 12025 Fan	1 x 12025 Fan	1 x 12025 Fan	built-in 120mm chassis fan
Power Supply	ATX PSU	ATX PSU	ATX PSU	ATX PSU
Environment	0~40°C	0~40°C	0~40°C	0~40°C

Rackmount Chassis

	EBS-1U500	EBS-2U300	EBS-4U900
	 *Q3'25	 Coming Soon	 *Q2'25
Compatible MB Form Factor	ATX, Micro-ATX	ATX, Micro-ATX, Mini-ITX	Up to SSI-EEB motherboards
Dimensions	437 x 43 x 503 mm	430 x 88 x 457 mm	430 x 176 x 468 mm
External I/O	Depend on compatible motherboard design	Depend on compatible motherboard design	1 x Power LED 1 x HDD LED 2 x USB 3.0 (2 x Type-A) 1 x USB 3.2 Type-C® 1 x Audio 1 x MIC
Storage Capability	External: 4 x 3.5" HDD	External: 2 x 5.25", 2 x 3.5" Drive Bay Internal: 2 x 2.5" Drive Bay	External: 5.25" x 2 (compatible with 2.5" x 4 or 3.5" x 2) Internal : 2.5" x 1
Expansion Slot	1 x Full-Height/Half-Length through Riser Card	7 x Low Profile PCIe Slots	7 x Full Height Slots
Cooling	3 x 40mm Swappable PWM Fan (Up to 6 Fans)	1 x 80mm System PWM Fan (front) 2 x 40mm Optional PWM Fan (rear)	Cooling Fan: Front: 120mm x 2 / Rear: 80mm x 2 Liquid Cooling Radiators: Front: 240mm x 1
Power Supply	Support 1U Power Supply	850W / 500W / 350W Flex ATX	ATX PSU
Environment	0~40°C	0~40°C	0~40°C



Industrial Motherboards & Single Board Computers

Superior Technology
Excellent Quality
High Compatibilities and Reliability
Configure-To-Order Services (CTOS) and Customization Service

ASUS IoT provides robust, long-lifecycle industrial motherboards and single-board computers designed for reliable 24/7 operation in challenging environments. Our products feature industrial-grade components, providing a full range of form factors, comprehensive connectivity and outstanding design capabilities - offering both standard and customized solutions for diverse applications.



Meet Your Specific Needs And Optimize Your Systems

Deep partnership with key vendors

- Close partnerships with Intel, AMD, NVIDIA and ARM for product development
 - Participation in the IC vendor's early access program ensures dedicated support.
 - Pioneers in bringing leading products to the industrial market
-

Leverage OneASUS expertise to accelerating your business

- Embracing the OneASUS philosophy, we leverage expertise across diverse business units, covering servers, clients, graphics cards, laptops and and more
 - Recognized for world-leading BIOS development, including vBIOS
-

Accelerated innovation and quality advancements

- By leveraging all the ASUS resources with IC vendors, ASUS IoT delivers excellent quality, reliability, high compatibility, and accelerated time to market
-

Tailored CTOS and customization services

- BIOS/vBIOS modification, BOM and layout adjustments
- Dedicated R&D for Contigure-To-Order Services (CTOS)
- Comprehensive design and manufacture services tailored to specitic needs

Unleashing success:
A proven application in action

Active-fan heatsink for in-flight entertainment

- 3.5" single-board computer (SBC) for embedded applications
- Custom thermal Solution combining heatsink and active fan, suitable for enclosure integration
- Rapid design and validation ensuring timely delivery



Panel integration product kit for COVID-19 test machines

- Tailored BIOS to match panel specifications
- High-value solution for panel integration product kit
- Expert panel-testing team
- Accelerated time to market with 12th-gen CPU technology



Outdoor EV charger in challenging environments

- Efficient operation in extremely high-temperature environments, including Southeast Asia
- Swift provision of transition boards during global IC shortage periods






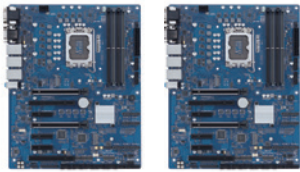


ATM for limited spaces

- Fan-less mini-ITX industrial motherboard with a compact design
- Customized BIOS services and solutions are available
- Unique thermal design enabling 100% CPU-load operation










ATX Boards

		Q870A-IM-A	H810A-IM-A	R680EA-IM-Z
			 Coming Soon *Q2'25	
Processor System	CPU	Intel® Core™ Ultra Series 2 (Socket LGA1851) Intel® Core™ Ultra 9/7/5 Processors	Intel® Core™ Ultra Series 2 (Socket LGA1851) Intel® Core™ Ultra 9/7/5 Processors	Intel® Core™ 14th/13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors
	Chipset	Intel® Q870 Chipset	Intel® H810 Chipset	Intel® R680E Chipset
Memory	Technology	DDR5	DDR5	DDR5 (2DPC)
	Max. Socket	192GB 4 x U-DIMM	96GB 2 x U-DIMM	128GB 4 x U-DIMM
Display	Display Port	3	1	2
	HDMI	1	1	1
	VGA	1	1	0
Expansion Slot	PCIe	1 x PCIe 5.0 x16 Slot (1 x16 mode/ 2 x8 mode) 1 x PCIe 4.0 x4 Slot (x2 mode, open slot) 1 x PCIe 4.0 x4 Slot (x4 mode, open slot) 1 x PCIe 5.0 x16 Slot (x8 mode) 1 x PCIe 4.0 x4 Slot (x2 mode, open slot) 1 x PCIe 4.0 x4 Slot (x4 mode, open slot)	1 x PCIe 5.0 x16 slot 1 x PCIe 4.0 x16 slot (run at x4) 1 x PCIe 4.0 x4 slot (run at x1)	1 x PCIe 5.0 x16 slot (1 x16 mode/ 2 x8 mode) 1 x PCIe 3.0 x4 slot (x4 mode, open slot) 1 x PCIe 5.0 x16 slot (x8 mode) 1 x PCIe 4.0 x4 slot (x4 mode, open slot) 1 x PCIe 4.0 x4 slot (x4 mode, open slot)
	PCI	1	4	0
	M.2	1 x M.2 M key, Type 2242/2260/2280 (PCIe 5.0 x4 mode) supports NVMe 1 x M.2 M key, Type 2280 (PCIe 4.0 x4 mode) supports NVMe 1 x M.2 E key, type 2230 for WIFI/BT device (only support Intel® CNVi)	1 x M.2 M key, type 2242/2260/2280 (PCIe x1/ SATA mode)	1 x M.2 2280 M key from CPU (PCIe4.0 x4 / SATA mode, both support RAID 0, 1, 10); 1 x M.2 2280 M key from PCH (PCIe3.0 x4 / SATA mode, both support RAID 0, 1, 10)
Ethernet	Speed	10/100/1000/2500 Mbps	10/100/1000 Mbps	10/100/1000/2500 Mbps
	Controller	1 x Intel® i210AT 1 x Intel® i226V 1 x Intel® i226LM (Intel vPro supported)	1 x Intel® i219V 1 x Intel® i210AT	1 x Intel® i210AT 2 x Intel® i226V 1 x Intel® i226LM (Intel vPro supported)
Storage	SATA port	4, up to 6Gb/s	4, up to 6Gb/s	6, up to 6Gb/s
	RAID	0,1,5,10	-	0,1,5,10
Rear I/O	Display Port	2, Supports DP 1.4, up to 3840 x2160 @ 60Hz 1, Supports DP 1.4 (colay with USB 3.2 Gen2 Type C)	1	2
	HDMI	1	1	1
	VGA	N/A	1	0
	USB3.2 Gen2	6 (5 x Type-A, 1 x Type-C)	2	4 (3 x type A, 1 x Type C)
	USB3.2 Gen1	0	2	0
	USB2.0	0	4	1 x PCIe 3.0 x4 slot (x4 mode, open slot)
	Ethernet	3 x RJ45	2 x RJ45	4 x RJ-45
	Serial Port	1 (RS232/422/485)	2 (RS232/422/485)	1 (RS232/422/485)
	Audio jack	3 (Line-Out, Line-In, Mic in)	3 (Line-Out, Line-In, Mic in)	3 (Line-Out, Line-In, Mic in)
Internal I/O	COM Header	5 (1 x RS232/422/485, 4 x RS232)	4 (RS232)	5 (1 x RS232/422/485, 4 x RS232)
	USB3.2 Gen1	2 x Headers support additional 4 x USB3.2 Gen1 ports	1 x Vertical Connector	3 x Headers support additional 6 x USB3.2 Gen1 ports
	USB2.0	1 x 10-1 pin Header Support Additional 2 x USB2.0 Ports 1 x vertical connector	1 x 4-pin	0
	SGPIO Header	N/A	1	0
	CPU Fan/ Chassis Fan	1 x Header (PWM Mode) / 3 x Headers (PWM Mode)	1 x Header (PWM Mode) / 2 x Headers (PWM Mode)	2 x Header (PWM Mode) / 3 x Headers (PWM Mode)
	Buzzer	1	1	1
	PS/2	1	1	0
	AT/ATX Select Jumper	1	1	1
	Power connector	1 x 24-pin ATX Power connector 1 x 8-pin ATX 12V Power connector	2 X 4-pin ATX Power Connector 1 X 24-pin ATX Power Connector	1 x 24-pin ATX Power connector 1 x 8-pin + 4-pin ATX 12V Power Connector 1 x 6-pin Power Connector for PCIe Slots
Power	Power Type	AT/ATX mode	AT/ATX mode	AT/ATX mode
Environment	Operating Temperature	-20~70°C	0~60°C	-10~70°C



		R680EA-IM-A, Q670EA-IM-A	Q470A-EM-A	Q470EA-IM-A
				
Processor System	CPU	Intel® Core™ 14th/13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 11th/10th Gen (Socket LGA1200) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 10th Gen (Socket LGA1200) Intel® Core™ i9/i7/i5/i3 Processors
	Chipset	Intel® R680E / Q670E Chipset	Intel® Q470 Chipset	Intel® Q470E Chipset
Memory	Technology	DDR5	DDR4	DDR4
	Max. Socket	128GB 4 x U-DIMM	128GB 4 x U-DIMM	128GB 4 x U-DIMM
Display	Display Port	2	2	2
	HDMI	1	1	1
	VGA	1	N/A	1
Expansion Slot	PCIe	1 x PCIe 5.0 x16 slot (1 x16 mode/ 2 x8 mode) 1 x PCIe 4.0 x4 slot (x4 mode, open slot) 1 x PCIe 5.0 x16 slot (x8 mode) 1 x PCIe 3.0 x4 slot (x4 mode, open slot) 1 x PCIe 4.0 x4 slot (x4 mode, open slot)	2 x PCIe 3.0/2.0 x16 slots (1 x16 mode/ 2 x8 mode) 3 x PCIe 3.0/2.0 x4 slots (x4 mode) 1 x PCIe 3.0/2.0 x1 slot (x1 mode)	2 x PCIe 3.0/2.0 x16 slot (1 x16 mode/ 2 x8 mode) 3 x PCIe 3.0/2.0 x4 slot (x4, x4, x2 mode)
	PCI M.2	2 1 x M.2 M key, type 2242/2260/2280 (PCIe x4 /SATA mode) 1 x M.2 E key, type 2230 for WIFI/BT device (only support Intel® CNVi)	1 1 x M.2 M key, type 2242/2260/2280 (PCIe x4/ SATA mode)	2 1 x M.2 M key, type 2242/2260/2280 (PCIe x4/ SATA mode) 1 x M.2 B key, type 3042/3052/2260/2280 (PCIe x1/USB 3.2 Gen1/USB 2.0) *type 3042/3052 support 4G/5G module 1 x M.2 E key, type 2230 (PCIe x1/USB 2.0)
Ethernet	Speed	10/100/1000/2500 Mbps	10/100/1000Mbps	10/100/1000/2500 Mbps
	Controller	1 x Intel® i210AT 1 x Intel® i226V 1 x Intel® i226LM (Intel vPro supported)	1 x Intel® i219LM (1 GbE), support WOL/PXE 1 x Realtek® RTL8111H	1 x Intel® i219LM (1 GbE), support WOL/PXE 1 x Intel® i225V (2.5 GbE), support WOL/PXE
Storage	SATA port	7, up to 6Gb/s	4, up to 6Gb/s	6, up to 6Gb/s
	RAID	0,1,5,10	SATA 0,1,5,10	0,1,5,10
Rear I/O	Display Port	2	2	2
	HDMI	1	1	1
	VGA	1	N/A	1
	USB3.2 Gen2	6 (5 x Type-A, 1 x Type-C)	N/A	4 (3 x Type-A, 1 x Type-C)
	USB3.2 Gen1	0	4 x Type-A	N/A
	USB2.0	0	2	2
	Ethernet	3 x RJ45	2 x RJ45	2 x RJ45
	Serial Port	1 (RS232/422/485)	1 (RS232/422/485)	1 (RS232/422/485)
Internal I/O	Audio jack	3 (Line-Out, Line-In, Mic in)	3 (Line-Out, Line-In, Mic in)	3 (Line-Out, Line-In, Mic in)
	COM Header	5 (1 x RS232/422/485, 4 x RS232)	5 (RS232)	5 (1 x RS232/422/485, 4 x RS232)
	USB3.2 Gen1	2 x Headers support additional 4 x USB3.2 Gen1 ports	1 x Header support additional 2 x USB3.2 Gen1 Port	1 x Header support additional 2 x USB3.2 Gen1 port
	USB2.0	2 x Headers support additional 4 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports 1 x Vertical connector	1 x Header support additional 2 x USB2.0 connectors 2 x Vertical connector
	CPU Fan/ Chassis Fan	1 x Header (PWM Mode) / 3 x Headers (PWM Mode)	1 x Header (PWM Mode) / 3 x Headers (PWM Mode)	1 x Header (PWM Mode) / 3 x Headers (PWM Mode)
	Buzzer	1	1	1
	PS/2	1	1	0
	AT/ATX Select Jumper	1	1	1
Power	Power connector	1 x 24-pin ATX Power connector 1 x 8-pin ATX 12V Power connector	1 x 24-pin ATX Power connector 1 x 8-pin ATX 12V Power connector	1 x 24-pin ATX Power connector 1 x 8-pin ATX 12V Power connector
	Power Type	AT/ATX mode	AT mode/ ATX mode	AT/ATX mode
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C

ATX Boards





		Q170A-IM-A	H310A-EM-A	H610A-IM-A	H110A-IM-A
					
Processor System	CPU	Intel® Core™ 7th/6th Gen (Socket LGA1151)	Intel® Core™ 9th/8th Gen (Socket LGA1151)	Intel® Core™ 13th/12th Gen (Socket LGA1700)	Intel® Core™ 7th/6th Gen (Socket LGA1151)
	Chipset	Intel® Core™ i7/i5/i3 Processors	Intel® Core™ i7/i5/i3 Processors	Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ i7/i5/i3 Processors
		Intel® Q170 Chipset	Intel® H310 chipset	Intel® H610 Chipset	Intel® H110 chipset
Memory	Technology	DDR4	DDR4	DDR4	DDR4
	Max.	32GB	64GB	64GB	32GB
	Socket	2x U-DIMM	2 x U-DIMM	2 x U-DIMM	2 x U-DIMM
Display	Display Port	0	1	1	0
	HDMI	1	1	1	1
	VGA	1	1	1	1
Expansion Slot	PCIe	1 x PCIe 3.0 /2.0 x16 slot 1 x PCIe 3.0/2.0 x16 slot (x 4 mode) 1x PCIe 3.0/2.0 x4 slot	1x PCIe 3.0/2.0 x16 slot 3x PCIe 2.0 x1 slots	1 x PCIe 5.0 x16 slot 1 x PCIe 3.0/2.0 x16 slot (x4 mode) 1x PCIe 3.0/2.0 x1 slot	1 x PCIe 3.0/2.0 x16 slot (x16 mode) 1 x PCIe 2.0 x16 slot (x4 mode)
	PCI	3	3	4	5
	M.2	1 x M.2 M key, type 2242/2260/2280 (SATA mode)	1 x M.2 socket 3 with M key, type 2242/ 2260/2280 storage devices (SATA mode)	1 x M.2 M key, type 2242/2260/2280 (PCIe x1/ SATA mode)	1 x M.2 M key, type 2242/2260/2280 (SATA mode)
Ethernet	Speed	10/100/1000 Mbps	10/100/1000Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Intel® i219LM 1 x Intel® i210AT	1 x Intel® i219V 1x Realtek® RTL8111H	1 x Intel® i219V 1 x Intel® i210AT	1 x Intel® i219V 1 x Intel® i210AT, supports WOL/PXE
Storage	SATA port	4, up to 6Gb/s	4, up to 6Gb/s	4, up to 6Gb/s	3, up to 6Gb/s
	RAID	PCIe 0,1,5 / SATA 0,1,5,10	-	-	-
Rear I/O	Display Port	2	1	1	-
	HDMI	1	1	1	1 (colay with DP, optional)
	VGA	1	1	1	1
	USB3.2 Gen2	N/A	0	2	4
	USB3.2 Gen1	4	4	2	0
	USB2.0	6	2	6	0
	Ethernet	2 x RJ45	2	2 x RJ45	2
	Serial Port	2 (RS232/422/485)	2 (RS232/422/485)	2 (RS232/422/485)	2 (RS232/422/485)
	Audio jack	3 (Line-Out, Line-In, Mic in)	2 (Line-Out, Mic in)	2 (Line-Out, Mic in)	3 (Line-Out, Line-In, Mic in)
Internal I/O	COM Header	6 (RS232)	4 (RS232)	4 (RS232)	6 (RS232)
	USB3.2 Gen1	0	0	0	0
	USB2.0	2 x Headers support additional 4 x USB2.0 ports 2 x Stick sockets	1, support additional 2 x USB2.0 connectors 1 x Single port 1 x Stick socket	1 x Header support additional 2 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports 2 x Stick sockets
	CPU Fan/ Chassis Fan	1 x Header (PWM Mode) / 1 x Headers (PWM + DC Mode)	1 x Header (PWM Mode) / 1 x Header (PWM Mode)	1 x Header (PWM Mode) / 2 x Headers (PWM Mode)	1 x Header (PWM Mode) / 1 x Headers (PWM + DC Mode)
	Buzzer	0	1	1	0
	PS/2	0	1	1	0
	AT/ATX Select Jumper	1	0	1	1
	Power connector	1 x 24-pin ATX Power connector 1 x 4-pin ATX Power connector	1 x 24-pin EATX Power connector 1 x 4-pin EATX 12V Power connector	2 x 4-pin ATX Power connectors 1 x 24-pin ATX Power connector	1 x 4-pin ATX Power connector 1 x 24-pin ATX Power connector
Power	Power Type	ATX	AT/ATX mode	ATX	AT/ATX mode
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C	0~60°C

		Q670M-EM-A	Q670EM-IM-A	Q370M-IM-A
				
Processor System	CPU	Intel® Core™ 14th/13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	LGA1700 for Intel® 14th/13th/ 12th Gen. Core™ i9/ i7/ i5/ i3/ Pentium® /Celeron® Processors	Intel® Core™ 9th/8th Gen (Socket LGA1151) Intel® Core™ i9/i7/i5/i3 Processors
	Chipset	Intel® Q670 chipset	Intel® Q670E Chipset	Intel® Q370 Chipset
Memory	Technology	DDR4	DDR5	DDR4
	Max. Socket	128GB 4 x U-DIMM	128GB 4 x U-DIMM	64GB 4 x U-DIMM
Display	Display Port	2, Supports 4096 x 2304 @60Hz	4, Supports 3840 x 2160 @60Hz	2, Supports 4096 x 2304 @60Hz
	HDMI VGA	1 0	0 0	1, Supports 4096 x 2160 @24Hz / 2560 x 1600 @60Hz 0
Expansion Slot	PCIe	1 x PCIe 4.0 x16 slot 1 x PCIe 4.0 x1 slot 1 x PCIe 4.0 x16 slot (x4 speed) 1 x PCI slot	1 x PCIe 5.0 x16 Slot (1 x16 mode/ 2 x8 mode) 1 x PCIe 4.0 x4 Slot (x4 mode) 1 x PCIe 5.0 x16 Slot (x8 mode) 1 x PCIe 4.0 x4 Slot (x4 mode)	1 x PCIe 3.0/2.0 x16 slot 2 x PCIe 3.0/2.0 x1 slots 1 x PCI slot
	M.2	1 x M.2 M key, type 2242/2260/2280 (PCIe 4.0 x4/SATA mode) 1 x M.2 M key, type 2242/2260/2280 (PCIe 4.0 x4 mode)	1 x M.2 E key, Type 2230 for WIFI/BT device (PCIe x1 & USB2.0 & CNVI) 1 x M.2 M key, Type 2242/2260/2280 (PCIe x4 /SATA mode) supports NVMe	2 x M.2 M Key, type 2242/2260/2280 with IRST support (SATA/PCIe mode) <i>*SATA mode ready for Intel® Optane Memory</i> 1 x M.2 E Key, type 2230 Wi-Fi Devices Support
Ethernet	Speed	10/100/1000 Mbps	10/100/1000/2500 Mbps	10/100/1000 Mbps
	Controller	1 x Intel® I219LM (vPRO) 1 x Realtek RTL 8111H	1 x Intel® i210AT 1 x Intel® i226V 1 x Intel® i226LM (Intel vPro supported)	1 x Intel® I219LM, supports WOL/PXE
Storage	SATA port	4, up to 6Gb/s	7, up to 6Gb/s	6, up to 6Gb/s
	RAID	PCIe 0,1,5 / SATA 0,1,5,10	PCIe 0,1,5 / SATA 0,1,5,10	PCIe 0,1,5 / SATA 0,1,5,10
Rear I/O	Display Port	2	4	2
	HDMI	1	0	1
	VGA	4	0	0
	USB3.2 Gen2	4	4 (3 x type A, 1 x Type C)	0
	USB3.2 Gen1	4	2	2, support additional 4 x USB 3.2 Gen1 ports
	USB2.0	2	0	1, support additional 2 x USB2.0 ports
	Ethernet	2 x RJ45	3 x RJ45	1 x RJ45
	Serial Port	3 (RS232)	1 (RS232/422/485)	2 (RS232)
	PS/2 Audio jack	0 Line-Out, Line-In, Mic-In	0 Line-Out, Line-In, Mic-In	1 x keyboard port, 1 x mouse port Line-Out, Line-In, Mic-In
Internal I/O	COM Header	5 (RS232)	9 (RS232)	2 (RS232)
	USB3.2 Gen1	1 x Header support additional 2 x USB3.2 Gen1 ports	1 x Header Support Additional 2 x USB3.2 Gen1 Ports 1 x vertical connector	2 x Headers support additional 4 x USB3.2 Gen1 ports
	USB2.0	2 x Headers support additional 4 x USB2.0 ports	2 x Header Support Additional 4 x USB2.0 Ports	1 x Headers support additional 2 x USB2.0 ports
	CPU Fan / Chassis Fan	1 x (PWM Mode) / 2 x (PWM Mode)	1 x (PWM Mode) / 3 x (PWM Mode)	1 x (PWM Mode) / 2 x (PWM Mode)
	TPM Header	1	1	N/A (IC Onboard)
	LPT port header	0	1	1
	Buzzer	1	1	0
	PS/2	1	1	0
	AT/ATX Select Jumper	1	1	0
Power	Power Type	1 x 8-pin ATX Power connector 1 x 24-pin ATX	1 x 8-pin ATX Power connector 1 x 24-pin ATX	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector
	Operating Temperature	0~60°C	0~60°C	0~60°C




Micro-ATX Boards




		H610M-IM-A	H310M-IM-A
			
Processor System	CPU	Intel® Core™ 12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 9th/8th Gen (Socket LGA1151) Intel® Core™ i7/i5/i3 Processors
	Chipset	Intel® H610 chipset	Intel® H310 Chipset
Memory	Technology	DDR4	DDR4
	Max.	64GB	32GB
	Socket	2 x U-DIMM	2 x U-DIMM
Display	Display Port	1, Supports 4096 x 2160 @60Hz	0
	HDMI	2, Supports 4096 X 2160 @60Hz	0
	VGA	1, Supports 1920 x 1200 @60Hz	0
Expansion Slot	PCIe	1 x PCIe 5.0 x16 slot 1 x PCIe 3.0/2.0 x4 slot (x1 speed)	1 x PCIe 3.0/2.0 x16 slot 2 x PCIe 2.0 x1 slots
	M.2	1 x M.2 M key, type 2242/2260/2280 (SATA/PCIe x4 mode)	1 x M.2 M key, type 2260/2280 (SATA/PCIe x2 mode)
Ethernet	Speed	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Realtek® 8111H, 1 x Intel® i219V	1 x Realtek® RTL8111H
Storage	SATA port	4, up to 6Gb/s	4, up to 6Gb/s
	RAID	-	-
Rear I/O	Display Port	1	0
	HDMI	2	0
	VGA	1	0
	USB3.2 Gen2	2	0
	USB3.2 Gen1	2	2
	USB2.0	0	4
	2 x RJ45	2 x RJ45	1 x RJ45
	Ethernet	2 (RS232/422/485)	1 (RS232)
	Serial Port	0	1 x keyboard port, 1 x mouse port
	PS/2	Line-Out, Mic-In	Line-Out, Line-In, Mic-In
	Audio jack		
Internal I/O	COM Header	4 (RS232)	1 (RS232)
	USB3.2 Gen1	N/A	1 x Header support additional 2 x USB3.2 Gen1 ports
	USB2.0	2 x Headers support additional 4 x USB2.0 ports 1 x Stick socket	1 x Header support additional 2 x USB2.0 ports
	CPU Fan / Chassis Fan	1 x (PWM Mode) / 1 x (PWM Mode)	1 x (PWM Mode) / 1 x (PWM Mode)
	TPM Header	1 (SPI)	1 (LPC)
	LPT port header	0	0
	Buzzer	0	0
	PS/2	1	0
	AT/ATX Select Jumper	1	0
Power	Power Type	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector	1 x 4-pin ATX 12V Power connector 1 x 24-pin ATX Power connector
Environment	Operating Temperature	0~60°C	0~60°C

Intel-based Mini-ITX Boards




		Q370I-IM-A R3.0	Q670EI-IM-A	Q470EI-IM-A R3.0	W480EI-IM-A R3.0
					
Processor System	CPU	Intel® Core™ 9th/8th Gen (Socket LGA1151)	Intel Core 14th/13th/12th Gen (Socket LGA 1700)	Intel® Core™ 10th Gen (Socket LGA1200)	Intel® Core™ 10th Gen (Socket LGA1200)
	Chipset	Intel® Core™ i7/i5/i3 Processors Intel® Q370 chipset	Intel® Core™ i9/i7/i5/i3 Processors Intel® R680E / Q670E Chipset	Intel® Core™ i9/i7/i5/i3 Processors Intel® Q470E Chipset	Intel® Core™ i9/i7/i5/i3 Processors Intel® W480E Chipset
Memory	Technology	DDR4	DDR5	DDR4	DDR4
	Max.	64GB	64GB	64GB	64GB
	Socket	2 x SO-DIMM	2 x SO-DIMM *R680E support ECC memory	2 x SO-DIMM	2 x SO-DIMM
Display	Display Port	2	3	2	2
	HDMI	0	0	0	0
	VGA	0	1	0 (1 x DVI-D)	0 (1 x DVI-D)
	eDP/LVDS	1	1 x Header (eDP & LVDS can be switched by BIOS)	1 x Header (eDP & LVDS can be switched by BIOS)	1 x Header (eDP & LVDS can be switched by BIOS)
Expansion Slot	PCIe	1 x PCIe 3.0/2.0 x16 slot	1 x PCIe x16 slot	1 x PCIe 3.0/2.0 x16 slot	1 x PCIe 3.0/2.0 x16 slot
	M.2	1 x M.2 E key, type 2230 for WIFI/BT device (support Intel® CNVi, PCIe) 1 x M.2 M key, type 2242/2260/2280 (PCIe & SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M.2 M key, type 2242/2260/2280 (PCIe x4 & SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M.2 M key, type 2242/2260/2280 (PCIe x4 & SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M.2 M key, type 2242/2260/2280 (PCIe x4 & SATA mode)
Ethernet	Speed	10/100/1000 Mbps	10/100/1000/2500 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Intel® i210AT 1 x Intel® I219LM	1 x Intel® i210AT 1 x Intel® I225LM (Intel vPro supported)	1 x Intel® I210AT 1 x Intel® I219LM	1 x Intel® I211AT 1 x Intel® I219LM
Storage	SATA port	4, up to 6Gb/s	4, Up to 6Gb/s	3, Up to 6Gb/s	3, Up to 6Gb/s
	RAID	PCIe 0,1,5 / SATA 0,1,5,10	PCIe 0,1,5 / SATA 0,1,5,10	PCIe 0,1,5 / SATA 0,1,5,10	PCIe 0,1,5 / SATA 0,1,5,10
Rear I/O	Display Port	2	3	2	2
	HDMI	0	1	0	0
	VGA	0	0	0	0
	USB3.2 Gen2	0	3 (2 x Type-A + 1 x Type-C)	3 (2 x Type-A + 1 x Type-C)	3 (2 x Type-A + 1 x Type-C)
	USB3.2 Gen1	4	1 (Type-A)	1 (Type-A)	1 (Type-A)
	USB2.0	4	4 (Type A)	4 (Type A)	4 (Type A)
	Ethernet	2	2	2	2
	Serial Port	1 (RS232/422/485)	1 (RS232/422/485)	1 (RS232/422/485)	1 (RS232/422/485)
	PS/2	1 x Keyboard, 1x Mouse	1 x Keyboard, 1x Mouse	1 x Keyboard, 1x Mouse	1 x Keyboard, 1x Mouse
	Audio jack	Line-Out, Mic-In	Line-Out, Mic-In	Line-Out, Mic-In	Line-Out, Mic-In
Internal I/O	COM Header	3 (RS232)	4 (1 x RS232/422/485, 3 x RS232)	4 (1 x RS232/422/485, 3 x RS232)	4 (1 x RS232/422/485, 3 x RS232)
	USB3.2 Gen1	1 x Header support additional 2 x USB3.2 Gen1 ports 1 x Stick socket	1 x Header support additional 2 x USB3.2 Gen1 ports 1 x Stick socket	1 x Header support additional 2 x USB3.2 Gen1 ports 1 x Stick socket	1 x Header support additional 2 x USB3.2 Gen1 ports 1 x Stick socket
	USB2.0	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports
	CPU Fan/ Chassis Fan	1 (PWM Mode) / 1 (PWM + DC Mode)	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)
	TPM Header	1 (SPI)	1 (SPI)	1 (SPI)	1 (SPI)
Power	AT/ATX Select Jumper	1	0	1	1
Power	Power Type	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C	0~60°C

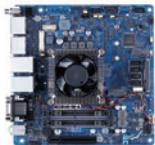


Intel-based Mini-ITX Boards

		Q870I-IM-A	W680I-EM-A	N100I-EM-A
		 <p>Coming Soon</p> <p>*Q2'25</p>		
Processor System	CPU	Intel® Core™ Ultra Series 2 (Socket LGA1851) Intel® Core™ Ultra 9/7/5 Processors	Intel® Core™ 13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Processor N100
	Chipset	Intel® Q870 Chipset	Intel® Chipset W680 Chipset	N/A
Memory	Technology	DDR5	DDR5	DDR4
	Max. Socket	96GB 2 x SO-DIMM	64GB 2 x SO-DIMM *R680E support ECC memory	16GB 1 x SO-DIMM
Display	Display Port	2 (DP++)	3	N/A
	HDMI	1	0	1
	VGA	1	0	1
	eDP/LVDS	1	1 x Header (eDP & LVDS can be switched by BIOS)	LVDS (co-lay with eDP)
Expansion Slot	PCIe	1 x PCIe 5.0 x16 Slot (1 x16 mode/ 2 x 8 mode/ 4x4 mode)	1 x PCIe x16 slot	1 x PCIe 3.0/2.0 x1 slot
	M.2	1 x M.2 E key, type 2230 for WIFI/BT device (support Intel® CNVi, PCIe) 1 x M.2 M key, type 2280 (PCIe Gen5)	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M.2 M key, type 2242/2260/2280 (PCIe x4 & SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe x1 /USB2.0) 1 x M key, type 2242/ 2260/ 2280 (SATA/ PCIe1)
Ethernet	Speed	10/100/1000/2500 Mbps	10/100/1000/2500 Mbps	10/100/1000 Mbps
	Controller	1 x Intel® i210AT 1 x Intel® i226LM (Intel vPro support)	1 x Intel® i210AT 1 x Intel® i225LM (Intel vPro supported)	1 x Realtek RTL8111H, supports WOL/PXE
Storage	SATA port	4, up to 6Gb/s	4, up to 6Gb/s	2, Up to 6Gb/s
	RAID	PCIe 0,1,5 / SATA 0,1,5,10	PCIe 0,1,5 / SATA 0,1,5,10	-
Rear I/O	Display Port	2	3	0
	HDMI	0	1	1
	VGA	0	0	0
	USB3.2 Gen2	3 (3 xType-A+ 1x Type C w/DP Alt mode)	3 (2 x Type-A + 1 x Type-C)	2
	USB3.2 Gen1	4	1 (Type-A)	2
	USB2.0	4	4 (Type A)	2
	Ethernet	2	2	1
	Serial Port	1 (RS232/422/485)	1 (RS232/422/485)	2
	PS/2	0	1 x Keyboard, 1x Mouse	0
	Audio jack	Line-Out, Mic-In	Line-Out, Mic-In	Line-Out, Mic-In
Internal I/O	COM Header	5 (1 x RS232/422/485, 4 x RS232)	3 (RS232)	3 (RS232)
	USB3.2 Gen1	1 x Header support additional 2 x USB3.2 Gen1 ports 1 x Stick socket	1 x Header support additional 2 x USB3.2 Gen1 ports 1 x Stick socket	1 x Header support additional 2 x USB3.2 Gen1 port
	USB2.0	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports	1
	CPU Fan/ Chassis Fan	1 (PWM Mode) / 1 (PWM + DC Mode)	1 (PWM Mode) / 1 (PWM + DC Mode)	0 / 1 (PWM Mode)
TPM Header AT/ATX Select Jumper	TPM Header	1 (SPI)	1 (SPI)	1 (SPI)
	AT/ATX Select Jumper	1	0	0
Power	Power Type	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connecto	1 x 4-pin ATX power connector, DC in mode
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C




		H610I-EM-A	H610I-IM-A	H310I-IM-A R3.0
				
Processor System	CPU	Intel® Core™ 14th/13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 14th/13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 9th/8th Gen (Socket LGA1151) Intel® Core™ i7/i5/i3 Processors
	Chipset	Intel® H610 Chipset	Intel® H610 Chipset	Intel® H310 Chipset
Memory	Technology	DDR4	DDR4	DDR4
	Max. Socket	64GB 2 x SO-DIMM	64GB 2 x SO-DIMM	32GB 2 x SO-DIMM
Display	Display Port	1	1	2
	HDMI	0	2	1
	VGA	2	0	0
	eDP/LVDS	1	1	1
Expansion Slot	PCIe	1 x PCIe 4.0 x16 slot	1 x PCIe 4.0 x16 slot	1 x PCIe 3.0 x16 slot
	M.2	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M.2 M key, type 2242/2260/2280 (PCIe x4/SATA mode support NVME)	1 x M.2 E key, type 2230 for WIFI/BT device 1 x M.2 M key, type 2242/2260/2280 (PCIe x4/SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device 1 x M.2 M key, type 2242/2260/2280 (PCIe & SATA mode)
Ethernet	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	2 x RTL8111H	1 x Intel® i210AT 1 x Intel® i219V	1 x Intel® i210AT 1 x Intel® i219V
Storage	SATA port	2, Up to 6Gb/s	2, Up to 6Gb/s	4, up to 6Gb/s
	RAID	-	-	-
Rear I/O	Display Port	1	1	2
	HDMI	2	2	1
	VGA	0	0	0
	USB3.2 Gen2	4	1	0
	USB3.2 Gen1	0	0	4
	USB2.0	2	2	0
	Ethernet	2	2	2
	Serial Port	2	2	2
	PS/2	0	0	0
	Audio jack	Line-Out, Mic-In	Line-Out, Mic-In	Line-Out, Mic-In
Internal I/O	COM Header	4 (RS232)	4 (RS232)	4 (RS232)
	USB3.2 Gen1	0	0	1 x Header support additional 2 x USB3.2 Gen1 port
	USB2.0	2 x Headers support additional 4 x USB2.0 ports 1 x Vertical connector	2 x Headers support additional 4 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports
	CPU Fan/ Chassis Fan	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)
	TPM Header AT/ATX Select Jumper	1 (SPI) 0	1 (SPI) 0	1 (SPI) 1
Power	Power Type	1 x 24-pin ATX Power connector	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector	1 X 4-pin ATX Power connector, 1 X 24-pin ATX Power connector
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C





Intel-based Mini-ITX Boards

		R680EI-IM-A	N5105I-IM-A R2.0	J3455I-CM-A R2.0
				
Processor System	CPU	Intel® Core™ 13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Celeron® Processor N5105	Intel® Celeron® Processor J3455
	Chipset	Intel® R680E / Q670E Chipset	Integrated	Integrated
Memory	Technology	DDR5	DDR4	DDR3L
	Max. Socket	64GB 2 x SO-DIMM *R680E support ECC memory	32GB 2 x SO-DIMM	8GB 2 x U-DIMM
Display	Display Port	3	0	0
	HDMI	1	1	1
	VGA	1	1	1
	eDP/LVDS	1 (eDP & LVDS can be switched by BIOS)	1	1
Expansion Slot	PCIe	1 x PCIe 3.0/2.0 x16 slot	1 x PCIe 3.0 / 2.0 slot 1 x Mini PCIe slot (support PCIe1/USB2.0 mode, connect to SIM holder)	1 x PCIe 2.0 x4 (x1 mode) slot
	M.2	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M.2 M key, type 2242/2260/2280 (PCIe x4 & SATA mode)	0	1 x M.2 E key, type 2230 for WIFI/BT device
Ethernet	Speed	10/100/1000/2500 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Intel® i210AT (co-lay i211AT) 1 x Intel® I225LM (Intel vPro supported)	1 x Realtek® RTL8111H, support WOL/PXE	1 x Realtek® RTL8111H, supports PXE/WOL
Storage	SATA port	4, Up to 6Gb/s	2, Up to 6Gb/s	2, up to 6Gb/s
	RAID	PCIe 0,1,5 / SATA 0,1,5,10	-	-
Rear I/O	Display Port	3	0	0
	HDMI	1	1	1
	VGA	3 (2*Type A, 1*Type C)	1	1
	USB3.2 Gen2	1 (Type A)	0	0
	USB3.2 Gen1	4 (Type A)	4	4
	USB2.0	2 x RJ45	0	0
	Ethernet	1 (RS232/422/485)	1 x RJ45	1 x RJ45
	Serial Port	2	3	1
	PS/2	1 x Keyboard, 1x Mouse	0	1 x Keyboard, 1x Mouse
	Audio jack	Line-Out, Mic-In	Line-Out, Mic-In	Line-Out, Line-In, Mic-In
Internal I/O	COM Header	4 (1 x RS232/422/485, 3 x RS232)	3 (RS232: Ring/5V/12V Select, switched by jumper)	1 (RS232)
	USB3.2 Gen1	1 x Header support additional 2 x USB3.2 Gen1 port 1 x Stick socket	0	1 x Header support additional 2 x USB3.2 Gen1 port
	USB2.0	1 x Header support additional 2 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports
	CPU Fan/ Chassis Fan	1 (PWM Mode) / 1 (PWM Mode)	0 / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM + DC Mode)
TPM Header AT/ATX Select Jumper	TPM Header	1 (SPI)	1 (SPI)	1 (LPC)
	AT/ATX Select Jumper	0	0	0
Power	Power Type	1 x 8-pin ATX 12V Power connector 1 x 24-pin ATX Power connector	1 x 4-pin ATX Power In connector (DC In Mode)	1 X 4-pin ATX Power connector 1 X 24-pin EATX Power connector
Environment	Operating Temperature	0~60°C	0~60°C	0~50°C





		R2314I-IM-A	V1605I-IM-B	R1606I-IM-B R1505I-IM-B R1305I-IM-B
				
Processor System	CPU	AMD Ryzen™ Embedded R2314	AMD Ryzen™ Embedded V1605	AMD Ryzen™ Embedded R1606 AMD Ryzen™ Embedded R1505 AMD Ryzen™ Embedded R1305
Memory	Technology	DDR4 up to 2667 MHz, ECC support	DDR4 up to 2667 MHz, ECC support	DDR4 up to 2667 MHz, ECC support
	Max. Socket	32GB 2 x SO-DIMM	32GB 2 x SO-DIMM	32GB 2 x SO-DIMM
Display	Display Port	4, max. resolution 3840x2160 @60Hz	4, max. resolution 3840x2160 @60Hz	3, max. resolution 3840x2160 @60Hz
	Multiple displays	4 x DP(default) 3 x DP+LVDS (optional) 3 x DP+eDP (optional)	3 x DP+LVDS (default) 3 x DP+eDP (optional) 4 x DP (optional)	2 x DP+LVDS (default) 2 x DP+eDP (optional) 3 x DP (optional)
Expansion Slot	PCIe	1x PCIe 3.0 x8 slot (x8 mode)	1x PCIe 3.0 x8 slot (x8 mode)	1x PCIe 3.0 x8 slot (x4 mode)
	M.2	1 x M.2 E key, type 2230 (PCIe x1, USB 2.0) 1 x M.2 M key, type 2242/2260/2280 (PCIe x2, SATA)	1 x M.2 E key, type 2230 (PCIe x1, USB 2.0) 1 x M.2 M key, type 2242/2260/2280 (PCIe x2, SATA)	1 x M.2 M key, type 2242/2260/2280 (PCIe x2, SATA)
Ethernet	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	2 x Realtek® 8111H, support WOL/PXE	2 x Realtek® 8111H, support WOL/PXE	2 x Realtek® 8111H, support WOL/PXE
Storage	SATA port	1, up to 6Gb/s	1, up to 6Gb/s	1, up to 6Gb/s
Rear I/O	Display Port	4	3	2
	USB3.2 Gen2	2	2	2
	USB2.0	2	2	2
	Ethernet	2 x RJ45 ports	2	2
	Serial Port	2 (RS232/422/485)	2 (RS232/422/485)	2 (RS232/422/485)
	Audio jack	2	2	2
Internal I/O	COM Header	4 (RS-232) COM3 colay Cctalk & COM4 colay TTL (Option)	4 (RS-232) COM3 colay Cctalk & COM4 colay TTL (Option)	4 (RS-232) COM3 colay Cctalk & COM4 colay TTL (Option)
	USB3.2 Gen1	1 x Type A vertical connector	1 x Type A vertical connector	0
	USB2.0	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports
	CPU Fan/ Chassis Fan	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)
	TPM Header	1 (SPI)	1 (SPI)	1 (SPI)
	AT/ATX Select Jumper	1	1	1
Power	Power Type	DC-in 12V ~ 24V	DC-in 12V ~ 24V	DC-in 12V ~ 24V
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C




Thin Mini-ITX Boards

		H610T-EM-A	N97T-IM-A	J6412T-IM-A
				
Processor System	CPU	Intel® Core™ 14th/13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Processor N97	Intel® Celeron® Processor J6412
	Memory	Technology Max. Socket	DDR5 16GB 1 x SO-DIMM	DDR4 32GB 2 x SO-DIMM
Display	Display Port	3	1 (Default) 1 (optional by request , colay with HDMI)	1 (Default) 1 (optional by request , colay with HDMI)
	HDMI	0	1	1
	VGA	0	0	0
	eDP/LVDS	1 (colay with LVDS)	LVDS: 1 (Default), eDP (optional by request, colay with LVDS)	LVDS: 1 (Default), eDP (optional by request, colay with LVDS)
Expansion Slot	Mini PCIe	0	0	1 x Full/Half-size PCIe mini card slot (w/ SIM holder) (PCIe x1 mode)
	PCIe	0	PCIe 3.0/2.0 x1	PCIe 3.0/2.0 x1
	M.2	1 x E key, type 2230 for WIFI/BT device (PCIe & CNVi) 1 x M key, type 2242/2260/2280 (PCIe x4 / SATA mode)	1 x E key, type 2230 for WIFI/BT device (PCIe x1 & USB2.0 & CNVi) 1 x M key, type 2242/2260/2280 (PCIe x2/ SATA mode) supports NVMe	1 x E key, type 2230 for WIFI/BT device (PCIe x1 /USB2.0) 1 x M key, type 2242/2260/2280 (PCIe x2 / SATA mode) supports NVMe
	SD card	0	0	1 x Full-size SD card slot
Ethernet	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Realtek® 8111H 1 x Intel® I219V	2 x Realtek RTL8111H (Support WOL/PXE)	2 x Realtek RTL8111H (Support WOL/PXE)
Storage	SATA port	3	2	1
	mSATA	N/A	0	0
Rear I/O	Display Port	3	1	1
	HDMI	0	1	1
	VGA	0	0	0
	USB3.2 Gen2	0	0	3
	USB3.2 Gen1	4	2	0
	USB2.0	0	2	1
	Ethernet	2	2	2
	Audio jack	Default Line-out, switch to line-in by BIOS	Default Line-out, switch to line-in by retasking	Default Line-out, switch to line-in by BIOS
	Power Input	DC 12V	DC 9V-36V	DC 12V
Internal I/O	COM Header	4 (1 x RS232/422/485, 3 x RS232)	6 (1 x RS232/422/485, 5 x RS232)	6 (1 x RS232/422/485, 5 x RS232)
	USB2.0 Header	2 x Headers support additional 4 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports
	CPU Fan / Chassis Fan Header	1 (PWM Mode) / 1 (PWM Mode)	0 / 1 (PWM Mode)	0 / 1 (PWM Mode)
	LVDS Signal Header	0	1	1
	System Panel Header	1	0	0
	Chassis Intrusion Header	1	1	1
	Speaker	1	1	1
	Stereo Out	0	2	2
	TPM	1 (IC Onboard)	1 (SPI)	1 (SPI)
Power	Power Type	12V & 19V DC in	9V-36V DC-in (1x external DC jack; 1 x internal 4-pin power connector)	12V DC-in (1x external DC jack; 1 x internal 4-pin power connector)
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C

		J3455T-IM-A R2.0	N3350T-IM-A	N4200T-IM-A	H110T-CM-A R2.0
					
Processor System	CPU	Intel® Celeron® Processor J3455	Intel® Celeron® Processor N3350	Intel® Pentium® Processor N4200	Intel® Core™ 7th/6th Gen (Socket LGA1151) Intel® Core™ i7/i5/i3 Processors
Memory	Technology	DDR3L	DDR3L	DDR3L	DDR4
	Max. Socket	8GB 2 x SO-DIMM	8GB 2 x SO-DIMM	8GB 2 x SO-DIMM	32GB 2 x SO-DIMM
Display	Display Port	1 (colay with VGA)	1 (colay with VGA)	1 (colay with VGA)	1, Supports up to 4096 x 2160 @ 60 Hz
	HDMI	1	1	1	1, Supports up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz
	VGA	1 (colay with DP++)	1 (colay with DP++)	1 (colay with DP++)	0
	eDP/LVDS	LVDS: 1 (Default), eDP (optional by request, colay with LVDS)	LVDS: 1 (Default), eDP (optional by request, colay with LVDS)	LVDS: 1 (Default), eDP (optional by request, colay with LVDS)	1, Supports up to 1920 x 1200 @ 60Hz
Expansion Slot	Mini PCIe	1 x Full/Half-size PCIe mini card slot (w/ SIM holder)	1 x Full/Half-size PCIe mini card slot (w/ SIM holder)	1 x Full/Half-size PCIe mini card slot (w/ SIM holder)	0
	PCIe	1 x PCIe 2.0 x1 (colay with M.2 E key)	1 x PCIe 2.0 x1 (colay with M.2 E key)	1 x PCIe 2.0 x1 (colay with M.2 E key)	0
	M.2	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device (colay with PCIe)	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device (colay with PCIe)	1 x M.2 Socket 1 with E key, type 2230 for WIFI/BT device (colay with PCIe)	1 x M.2 Socket 3 with M key, type 2242/2260 storage devices (SATA & PCIe mode) 1 x M.2 Socket 1 with E key, type 2230 for Wi-Fi/BT devices (PCIe/USB mode)
	SD card	0	0	0	0
Ethernet	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	2 x Realtek® 8111H, supports WOL/PXE	2 x Realtek® 8111H, supports WOL/PXE	2 x Realtek® 8111H, supports WOL/PXE	1 x Realtek RTL8111H 1 x Intel I219V, support WOL/PXE
Storage	SATA port	2	2	2	2 x SATA 6Gb/s port(s) 1 x SATA PWR CONN
	mSATA	1 x Full/Half-size mSATA slot (shared with Mini PCIe)	1 x Full/Half-size mSATA slot (shared with Mini PCIe)	1 x Full/Half-size mSATA slot (shared with Mini PCIe)	0
Rear I/O	Display Port	1	1	1	1
	HDMI	1	1	1	1
	VGA	1	1	1	0
	USB3.2 Gen2	0	0	0	0
	USB3.2 Gen1	4	4	4	0
	USB3.0	0	0	0	4
	Ethernet	2	2	2	2 x RJ-45
	Audio jack	Default Line-out, switch to line-in by BIOS	Default Line-out, switch to line-in by BIOS	Default Line-out, switch to line-in by BIOS	1 x Line-Out, 1 x MIC-In
	Power Input	DC 12V	DC 12V	DC 12V	DC 12V
Internal I/O	COM Header	6 (5 x RS232, 1 x RS232/422/485)	6 (5 x RS232, 1 x RS232/422/485)	6 (5 x RS232, 1 x RS232/422/485)	1 (RS232)
	USB2.0 Header	2 x Headers support additional 4 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports	3 x Headers support additional 5 x USB2.0 ports
	CPU Fan / Chassis Fan Header	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM + DC Mode)
	LVDS Signal Header	1	1	1	1
	System Panel Header	1	1	1	1
	Chassis Intrusion Header	1	1	1	1
	Speaker	1	1	1	1
	Stereo Out	0	0	0	1
	TPM	1 (SPI)	1 (IC Onboard)	1 (SPI)	1 (SPI)
Power	Power Type	AT/ATX mode and DC in	AT/ATX mode and DC in	AT/ATX mode and DC in	DC in mode (12V/9V)
Environment	Operating Temperature	0~60°C	0~60°C	0~50°C	0~50°C

3.5-inch SBCs

		C786ES-IM-AA C583ES-IM-AA C381ES-IM-AA	C7126ES-IM-AA C5124ES-IM-AA C3121ES-IM-AA	C7136ES-IM-AA C5134ES-IM-AA C3131ES-IM-AA	C786ES-IM-AA R2.0 C583ES-IM-AA R2.0 C381ES-IM-AA R2.0
					
Processor System	CPU	Intel® Core™ i7-8665UE/i5-8365UE/i3-8145UE Processor	Intel® Core™ 12th Gen (Socket LGA1700) i7/i5/i3 Processors	Intel® Core™ 13th Gen (Socket LGA1700) i7/i5/i3 Processors	Intel® Core™ i7-8665UE/i5-8365UE/i3-8145UE Processor
	Memory				
Display	Technology	DDR4	DDR5	DDR5	DDR4
	Max.	32GB	64GB	64GB	32GB
	Socket	1 x SO-DIMM	2 x SO-DIMM	2 x SO-DIMM	1 x SO-DIMM
Display	Display Port	DP 1.2a up to 4096 x 2304 @ 60 Hz	DP1.4a up to 4096 x 2304 @ 60 Hz	DP1.4a up to 4096 x 2304 @ 60 Hz	DP 1.2a up to 4096 x 2304 @ 60 Hz
	HDMI	HDMI 1.4 up to 4096 x 2160 @ 24 Hz	HDMI 2.0 up to 4096 x 2160 @ 60 Hz	HDMI 2.0 up to 4096 x 2160 @ 60 Hz	HDMI 1.4 up to 4096 x 2160 @ 24 Hz
	eDP/LVDS	LVDS (co-lay with eDP)	LVDS (co-lay with eDP)	LVDS (co-lay with eDP)	LVDS (co-lay with eDP)
Expansion Slot	PCIe	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket
	M.2	1 x E key, type 2230 for WIFI/BT device and Intel® CNVi 1 x M key, type 2242 (PCIe & SATA mode)	1 x E key, type 2230 for WIFI/BT device and Intel® CNVi 1 x M key, type 2280/2242 (PCIe & SATA mode)	1 x E key, type 2230 for WIFI/BT device and Intel® CNVi 1 x M key, type 2280/2242 (PCIe & SATA mode)	1 x E key, type 2230 for WIFI/BT device and Intel® CNVi 1 x M key, type 2242 (PCIe & SATA mode)
Ethernet	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Intel® i219LM, supports vPro/WOL/PXE 1 x Intel® i211AT, supports WOL/PXE	1 x Intel® i219LM & 1 x Intel® i225V	1x Intel® i219LM & 1x Intel® i225V	1 x Intel® i219LM, supports vPro/WOL/PXE 1 x Intel® i211AT, supports WOL/PXE
Storage	SATA port	1 x SATA Gen 3.0, up to 6Gb/s	1 x SATA Gen 3.0, up to 6 Gb/s	1 x SATA Gen 3.0, up to 6 Gb/s	1x SATA Gen 3.0, up to 6Gb/s
	RAID	-	SATA 0, 1 Support	SATA 0, 1 Support	-
Rear I/O	Display Port	1	1	1	1
	HDMI	1	2	2	1
	USB3.2 Gen2	4	4	4	4
	USB-C	0	0	0	0
	USB2.0	6	0	0	6
	Ethernet	2	2	2	2
Internal I/O	COM Header	9 (2 x RS232/422/485, 4 x RS232)	4 (2 x RS232/422/485 w/ ring, 1 x RS232 w/ Ring/5V/12V, 1 x RS232 w/ring)	4 (2 x RS232/422/485 w/ ring, 1 x RS232 w/ Ring/5V/12V, 1 x RS232 w/ring)	6 (2 x RS232/422/485, 4 x RS232)
	USB2.0	2 x Headers support additional 4 x USB2.0 ports	1 x Headers support additional 2 x USB2.0 ports	1 x Headers support additional 2 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports
	Chassis Fan	1	1	1	1
	TPM Header	1 (SPI)	1 (SPI)	1 (SPI)	1 (SPI)
	Others	N/A	1 x SATA Power Connector	1 x COM RS232 Ring/5V/12V Selection Jumper	N/A
Power	Power Type	1 x 4-pin ATX Power connector	1 x 4-pin ATX Power connector	1 x 4-pin ATX Power connector	1 x 4-pin ATX Power connector
Environment	Operating Temperature	-20~60°C	-20~60°C	-20~60°C	-20~60°C

		C7146ES-IM-AA C5143ES-IM-AA	C7156ES-IM-AA C5153ES-IM-AA	X642ES-IM-AA X641ES-IM-AA X621ES-IM-AA
				
Processor System	CPU	Intel® Core™ Ultra 7 Processor 165U Intel® Core™ Ultra 5 Processor 135U	Intel® Core™ Ultra 7 Processor 265U Intel® Core™ Ultra 5 Processor 235U	Intel Atom x6211E/x6413E/x6425E Processor
Memory	Technology	DDR5	DDR5	DDR4
	Max. Socket	64GB 2 x SO-DIMM	64GB 2 x SO-DIMM	32GB 1 x SO-DIMM
Display	Display Port	DP 1.4 up to 5120 x 3200 @ 60 Hz	DP 1.4 up to 4096 x 2160 @ 60 Hz	DP1.2++ up to 4096 x 2160 @ 60 Hz
	HDMI	HDMI 2.1 up to 4096 x 2160 @ 60 Hz	HDMI 2.1 up to 4096 x 2160 @ 60 Hz	HDMI 2.0 up to 4096 x 2160 @ 60 Hz
	eDP/LVDS	LVDS (co-lay with eDP)	LVDS (co-lay with eDP)	LVDS (default), eDP (optional)
Expansion Slot	PCIe	N/A	N/A	N/A
	M.2	1 x B Key, type 3042/3052 for LTE/5G connected to Nano-SIM socket (PCIe x1) 1 x E key, type 2230 for Wi-Fi 6E/BT 5.2 (USB 2.0/ PCIe x1/ CNVi) 1 x M key, type 2280 Gen 4 (PCIe x4)	1 x B Key, type 3042/3052 for LTE/5G connected to Nano-SIM socket (PCIe x1) 1 x E key, type 2230 for Wi-Fi 6E/BT 5.2 (USB 2.0/ PCIe x1/ CNVi) 1 x M key, type 2280 Gen 4 (PCIe x4)	1 x B key, type 3042/3052 for LTE connected to Nano-SIM socket (USB 2.0) 1 x E key, type 2230 for WIFI/BT device 1 x M key, type 2280 (SATA mode & PCIe x2 mode)
Ethernet	Speed	10/100/1000/2500 Mbps	10/100/1000/2500 Mbps	10/100/1000 Mbps
	Controller	1 x Intel® i219LM, 1 x Intel® I226iT	1 x Intel® i219LM, 1 x Intel® I226iT	2 x Intel® i210IT, supports WOL/PXE
Storage	SATA port	1 x SATA Gen 3.0, up to 6Gb/s	1 x SATA Gen 3.0, up to 6Gb/s	1 x SATA Gen 3.0, up to 6Gb/s
	RAID	SATA 0, 1 Support	SATA 0, 1 Support	-
Rear I/O	Display Port	1	1	1
	HDMI	1	1	1
	USB3.2 Gen2	4	4	4
	USB-C	1	1	0
	USB2.0	2	2	0
	Ethernet	2	2	2
Internal I/O	COM Header	4 (RS232/422/485)	4 (RS232/422/485)	6 (2 x RS232/422/485, 4 x RS232)
	USB2.0	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports
	Chassis Fan	1	1	1
	TPM Header	1 (SPI)	1 (SPI)	1 (SPI)
	Others	1 x SATA Power Header 1 x LVDS Panel Power selection Jumper 2 x COM RS232 Ring/5V/12V Selection Jumper	1 x SATA Power Header 1 x LVDS Panel Power selection Jumper 2 x COM RS232 Ring/5V/12V Selection Jumper	N/A
Power	Power Type	DC power input, 9V-36V	DC power input, 9V-36V	DC power input, 9V-36V
Environment	Operating Temperature	-20~60°C	-20~60°C	-40~85°C

3.5-inch SBCs

**N97S-IM-AA,
N200S-IM-AA,
N305S-IM-AA,
X742ES-IM-AA**



N420S-IM-AA R3.0



E395S-IM-AA/DC R3.0



**E395S-IM-AA R3.0
E394S-IM-AA R3.0
E393S-IM-AA R3.0**



Processor System	CPU	Intel® Processor N97/N200/N305 Intel® Atom® x7425E Processor	Intel® Pentium® N4200 Processor	Intel® Atom® x5-E3930 Processor	Intel® Atom® x7-E3950 Processor
Memory	Technology	DDR5	DDR3L	DDR3L	DDR3L
	Max. Socket	16GB 1 x SO-DIMM	8GB 1 x SO-DIMM	8GB 1 x SO-DIMM	8GB 1 x SO-DIMM
Display	Display Port	DP1.2 up to 4096 x 2304 @ 60 Hz	DP1.2 up to 4096 x 2160 @ 60 Hz	DP1.2 up to 4096 x 2160 @ 60 Hz	DP1.2 up to 4096 x 2160 @ 60 Hz
	HDMI	HDMI 2.0 up to 4096 x 2160 @ 60 Hz	HDMI1.4b up to 3840 x 2160 @ 30 Hz	HDMI1.4b up to 3840 x 2160 @ 30 Hz	HDMI1.4b up to 3840 x 2160 @ 30 Hz
	eDP/LVDS	LVDS(co-lay with eDP)	LVDS(co-lay with eDP)	LVDS(co-lay with eDP)	LVDS(co-lay with eDP)
Expansion Slot	PCIe	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket	1 x Full-Length Mini PCIe slot with on-board Nano-SIM socket
	M.2	1 x E key, type 2230 for TPU/WIFI/BT device (PCIe/USB/CNVl) 1 x M key, type 2280/2242 (SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device 1 x M.2 M key, type 2242 (SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device 1 x M.2 M key, type 2242 (SATA mode)	1 x M.2 E key, type 2230 for WIFI/BT device 1 x M.2 M key, type 2242 (SATA mode)
Ethernet	Speed Controller	10/100/1000 Mbps 2 x Intel® i210AT, supports WOL/PXE	10/100/1000 Mbps 2 x Intel® i210IT, supports WOL/PXE	10/100/1000 Mbps 2 x Intel® i210IT, supports WOL/PXE	10/100/1000 Mbps 2 x Intel® i210IT, supports WOL/PXE
Storage	SATA port	1 x SATA Gen 3.0, up to 6 Gb/s	1 x SATA Gen 3.0, up to 6Gb/s	1 x SATA Gen 3.0, up to 6Gb/s	1 x SATA Gen 3.0, up to 6Gb/s
	RAID	-	-	-	-
Rear I/O	Display Port	1	1	1	1
	HDMI	1	1	1	1
	USB3.2 Gen2	4	4	4	4
	USB-C	0	0	0	0
	USB2.0	2	0	0	0
	Ethernet	2	2	2	2
Internal I/O	COM Header	6 (2 x RS-232/422/485, 4x RS-232)	6 (2 x RS-232/422/485, 4x RS-232)	6 (2 x RS-232/422/485, 4x RS-232)	6 (2 x RS-232/422/485, 4x RS-232)
	USB2.0	2	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports	1 x Header support additional 2 x USB2.0 ports
	Chassis Fan	1 (PWM + DC Mode)	1 (PWM + DC Mode)	1 (PWM + DC Mode)	1 (PWM + DC Mode)
	TPM Header	1 (SPI); Intel® PTT	1 (SPI)	1 (SPI)	1 (SPI)
	Others	N/A	N/A	N/A	N/A
Power	Power Type	DC power input, 9V-36V	DC power input, 12V-24V	DC power input, 12V-24V	DC power input, 12V-24V
Environment	Operating Temperature	0~ 60°C	-40~60°C	-40~85°C	-40~85°C

X7211RE-IM-A
X7213RE-IM-A
X7433RE-IM-A
X7835RE-IM-A



Processor System	CPU	Intel® Atom® x7211RE Processor Intel® Atom® x7213RE Processor Intel® Atom® x7433RE Processor Intel® Atom® x7835RE Processor
Memory	Technology	DDR4
	Max. Socket	8GB 1 x SO-DIMM
Display	Display Port	DP1.4 up to 4096 x 2304 @ 60 Hz
	HDMI	HDMI 2.0 up to 4096 x 2160 @ 60 Hz
	eDP/LVDS	LVDS (co-lay with eDP) 1920 x 1080@ 60 Hz
Expansion Slot	PCIe	0
	M.2	1 x M.2 B key (3042/3052) for 4G/5G (PCIe/USB2.0/USB3.2 Gen2) 1 x E key, type 2230 for TPU/WIFI/BT device (PCIe/USB/CNVi) 1 x M key, type 2280/2242 (SATA mode/PCIEx1)
Ethernet	Speed	10/100/1000 Mbps/2.5G
	Controller	1x Intel® i210IT, supports WOL/PXE 1x Intel® i226IT (2.5G), supports WOL/PXE
Storage	SATA port	1 x SATA Gen 3.0, up to 6 Gb/s
	RAID	-
Rear I/O	Display Port	1
	HDMI	1
	USB3.2 Gen2	4 (2x USB3.2 Gen2 (10 Gb/s)+ 2x Gen1 (5 Gb/s))
	USB-C	0
	USB2.0	2
	Ethernet	2
Internal I/O	COM Header	6 (2 x RS-232/422/485, 4x RS-232)
	USB2.0	2
	Chassis Fan	1 (PWM + DC Mode)
	TPM Header Others	1 (SPI); Intel® PTT N/A
Power	Power Type	DC power input, 9V-36V
Environment	Operating Temperature	-20~ 70°C

Pico-ITX Boards

J6412P-IM-AA



Processor System	CPU	Intel® Celeron® J6412 Processor
Memory	Technology	LPDDR4
	Max. Socket	8GB On board
Display	HDMI	2
	eDP/LVDS	LVDS (co-lay with eDP)
Expansion Slot	M.2	1 x 2230 M.2 E key (WIFI/BT) 1 x M.2 B key
Ethernet	Speed Controller	10/100/1000 Mbps 1x Intel® I226V 1x Intel® I210AT
Rear I/O	HDMI	2
	USB3.2 Gen1	2
	USB2.0	2
	Ethernet	2
	Serial Port	2
Internal I/O	Serial Port	2 (RS232/422/485)
	USB2.0	1
	GPIO	1
	System Panel	1
	Display Panel	1
	I2C Connector	I2C (Default) / SMBUS (Optional)
	Backlight Control	1
	Clear CMOS	1
	AT/ATX Select	1
	TPM	TPM2.0, On board (Infineon SLB 96xx, optional)
Power	Power Type	Lockable DC Jack
Environment	Operating Temperature	0~60°C

X7211REP-IM-A X7433REP-IM-A X7835REP-IM-A

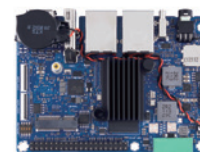


*Q2'25

Processor System	CPU	Intel® Atom® x7211RE Processor Intel® Atom® x7433RE Processor Intel® Atom® x7835RE Processor
Memory	Technology	LPDDR5
	Max. Socket	16GB On board
Display	HDMI	1
	DP	1
Expansion Slot	eDP/LVDS	LVDS (co-lay with eDP)
	M.2	1x M.2 3042/3052 B key for 4G/5G 1 x 2230 M.2 E Key
Ethernet	Speed Controller	10/100/1000 Mbps 2 x Intel® 2.5G LAN
Rear I/O	HDMI	1
	DP	1
	USB3.2 Gen1	2
	USB2.0	2
	Ethernet	2
Internal I/O	Serial Port	2 (RS232/422/485)
	USB2.0	1
	GPIO	1
	System Panel	1
	Display Panel	1
Power	I2C Connector	I2C (Default) / SMBUS (Optional)
	Backlight Control	1
	Clear CMOS	1
	AT/ATX Select	1
	TPM	TPM2.0, On board (Infineon SLB 96xx, optional)
Power	Power Type	Lockable DC Jack
Environment	Operating Temperature	-40~85°C

**X6425REP-IM-AA, X642EP-IM-AA,
X641EP-IM-AA, X621EP-IM-AA**


Processor System	CPU	Intel Atom® x6211E X6211e/X6413E/X6425E/X6425RE Processor
Memory	Technology	LPDDR4
	Max. Socket	8GB On board
Display	HDMI	2
	eDP/LVDS	LVDS (co-lay with eDP)
Expansion Slot	M.2	1 x 2230 M.2 E key (WiFi/BT) 1 x M.2 B key
Ethernet	Speed Controller	10/100/1000 Mbps 1x Intel® I226-IT 1x Intel® I210-IT
Rear I/O	HDMI	2
	USB3.2 Gen1	2
	USB2.0	2
	Ethernet	2
	Serial Port	2
Internal I/O	Serial Port	2 (RS232/422/485)
	USB2.0	1
	GPIO	1
	System Panel	1
	Display Panel	1
	VCC Power Selection Jumper	
	I2C Connector	I2C (Default) / SMBUS (Optional)
	Backlight Control	1
	Clear CMOS	1
	AT/ATX Select	1
	TPM	TPM2.0, On board (Infineon SLB 96xx, optional)
Power	Power Type	Lockable Phoenix Terminal
Environment	Operating Temperature	-40~85°C

IMX8P-IM-A R2.0


Processor System	CPU Chipset	NXP® i.MX 8 M ARM Cortex-A53 core Integrated
Memory	Technology	LPDDR4
	Max. Socket	4GB On board
Display	Display Port HDMI	0 1, Supports HDMI 2.0 up to 3840 x 2160 @ 60 Hz
	MIPI DSI	1, Supports MIPI DSI (4 lane) up to 1920 x 1080 @60Hz
	eDP/LVDS	0
Expansion Slot	PCIe M.2	0 1 x M.2 2230 E Key for BT/WiFi module (cooperate with Google EdgeTPU Module)
	Others	1 x Micro-SD Card connector
Ethernet	Speed Controller	10/100/1000 Mbps 1 x Realtek® RTL8211, supports WOL 1 x Intel I210-AT, supports WOL
Storage	SATA port	0
	eMMC RAID	1 x 16GB onboard eMMC -
Front I/O	Display Port	0
	HDMI	1
	USB3.2 Gen2	0
	USB3.2 Gen1	2 x Type A, 5V/2A 1 x Type C OTG, 5V/1.5A
	USB2.0	0
	Ethernet	2
	Audio jack	0
	PS/2	0
	Power Button	1
	Reset Button	1
	Power Connector	1
Internal I/O	GPIO Header	1 x 40-pin headers includes: - up to 6 x GPIO pins - up to 2 x I2C bus - up to 1 x UART - up to 2 x PWM - up to 1 x PCM/I2S - 2 x 5V power pins - 2 x 3.3V power pins - 8 x ground pins
	Micro-SD Card	1
	TPM Header	1
	MIPI DSI	1, Supports MIPI DSI up to 1920 x 1080 @ 60 Hz
	MIPI CSI	2, support Two MIPI-CSI Camera Inputs (4-lane each)
Power	Power Type	DC Power input
Environment	Operating Temperature	-20~60°C

ASUS TINKER BOARD SERIES

The small, powerful way to unleash IoT performance

ASUS Tinker Board series is an ultrasmall, single-board computer (SBC) that offers class-leading performance, outstanding mechanical compatibility and superb reliability – making it the perfect platform for diverse commercial, industrial and IoT applications.



User Guide



Tinker Forum



Developer Guide

UNLOCKING EXCELLENCE: FOUR KEY FEATURES

Superior performance powered by a RISC processor

We collaborate with a range of processor vendors to design and launch diverse products that cater to market needs. The architecture includes Arm Cortex-A and RISC-V.

Industry-leading operating system support

A dedicated team for software and operating system development consistently maintains and releases various operating systems to address different requirements.

RISC SOLUTION STACK

Software Suite

AI accelerators



AMR



Tool & Service

Kiosk Mode
Remote Management &
Recovery
ASUS IoT Cloud Console
Firmware OTA

Ready Package

ALPR
Face Recognition

API / SDK

Linux-based System



Bootloader

Linux Kernel



Orin Nano / Orin NX



PE1100N



RZ / Five



Tinker V



IMX 8M



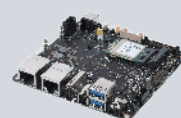
IMX8P-IM-A



PE100A



RK3568



Tinker Board 3N



Tinker System 3N



PP-156W-3568




Rich hardware portfolio




We offering a diverse range of products, including single-board computers (SBCs), box-shaped PCs and panel PCs. Additionally, various expansion cards and accessories are available.

Comprehensive documentation and vibrant support community




As a platform, Tinker Board series benets from an abundance of tried, tested and trusted resources, from detailed documentation and open-source code to a thriving user community. All this and more is ready and waiting to accelerate the development of any project.



Tinker Board Series

		Tinker Board 4	Tinker Board 3N PLUS	Tinker Board 3N
		 <p>Coming Soon</p> <p>*H2'25</p>		
System	SoC CPU	Rockchip RK3576 Quad-core Arm® Cortex®-A72 @ 2.2 GHz + Quad-core Arm® Cortex®-A53 @ 1.8 GHz	Rockchip RK3568J Quad-core Arm® Cortex®-A55 @ 1.8 GHz	Rockchip RK3568B2 Quad-core Arm® Cortex®-A55 @ 2.0 GHz
	GPU NPU Memory	Arm® Mali™ G52 MC3 @ 1 GHz Rockchip NPU (6 TOPS) 2GB / 4GB / 8GB LPDDR4X	Arm® Mali™-G52 2EE @ 800 MHz Rockchip NPU (1 TOPS) 2GB / 4GB / 8GB LPDDR4X	Arm® Mali™-G52 2EE @ 800 MHz Rockchip NPU (1 TOPS) 2GB / 4GB / 8GB LPDDR4X
Storage	Memory Card	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)
	eMMC	16GB / 32GB	32GB / 64GB	32GB / 64GB
Ethernet	SPI Flash	-	16MB	16MB
	Ethernet PoE	1 x GbE LAN RTL8211E/F -	2 x GbE LAN RTL8211FI 1 x PD mode, 802.3at 25W (option)	2 x GbE LAN RTL8211F 1 x PD mode, 802.3at 25W (option)
Connectivity	Wi-Fi/BT Cellular/GPS	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key -	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key 4G / 5G (Optional)	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key 4G / 5G (Optional)
Display	HDMI DP	1 x HDMI™ 2.0 (4096x2160)	1 x HDMI™ 2.0 (4096x2160)	1 x HDMI™ 2.0 (4096x2160)
	LVDS/eDP	1 x DP Alt Mode via USB Type-C® (4096x2160) -	- 1 x 40-pin header LVDS (1920x1080) / eDP (2560x1600)	- 1 x 40-pin header LVDS (1920x1080) / eDP (2560x1600)
	MIPI DSI	1 x 22-pin (4 lane, 2560x1600)	-	-
	Multi Output	Supported	HDMI + LVDS / HDMI + eDP	HDMI + LVDS / HDMI + eDP
Camera	MIPI CSI-2	1 x 15-pin (2 lane)	-	-
Wired Interface	USB	1 x USB 3.2 Gen1 Type-C® OTG 3 x USB 3.2 Gen1 Type-A	1 x USB 3.2 Gen1 Type-C® OTG 2 x USB 3.2 Gen1 Type-A 2 x USB 2.0 Pin header	1 x USB 3.2 Gen1 Type-C® OTG 2 x USB 3.2 Gen1 Type-A 2 x USB 2.0 Pin header
	Audio	1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)	1 x 3.5mm Phone Jack 1 x 4-pin Stereo Speaker, 4ohm, 2 x 3W 1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)	1 x 3.5mm Phone Jack 1 x 4-pin Stereo Speaker, 4ohm, 2 x 3W 1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)
Expansion	M.2 E-Key mPCIe	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT -	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT -	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT -
	M.2 B-Key SIM slot	-	3042, 3052 (PCIe 3.0x1, USB3, USB2, SIM) for 4G/5G 1 x Nano SIM slot	3042, 3052 (PCIe 3.0x1, USB3, USB2, SIM) for 4G/5G 1 x Nano SIM slot
		-		
Serial Interface	COM	-	1 x RS-232/422/485 header 2 x RS-232 header with flow control	1 x RS-232/422/485 header 2 x RS-232 header with flow control
	CAN	-	1 x CAN Bus 2.0B header	1 x CAN Bus 2.0B header
Internal I/O & Header	GPIO	1 x 40-pin headers: - 2 x 5V power, 2 x 3.3V power, 8 x Ground pins - Up to 28 x GPIO pins, 2 x SPI bus, 2 x I2C bus, 2 x UART, 3 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX	1 x 14-pin GPIO headers: - 1 x 5V, 1 x 3.3V, 1 x GND, 2 x ADC (8 bit) - Up to 2 x UART, 1 x SPI bus (2 select), 1 x I2C bus, 4 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX	1 x 14-pin GPIO headers: - 1 x 5V, 1 x 3.3V, 1 x GND, 2 x ADC (8 bit) - Up to 2 x UART, 1 x SPI bus (2 select), 1 x I2C bus, 4 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX
	Keys	1 x 2-pin Power-on & Reset header 1 x 2-pin Recovery Mode header	1 x 4-pin Power-on & Reset header 1 x 2-pin Recovery Mode header 1 x 2-pin Maskrom (eMMC) header 1 x Maskrom (SPI) DIP switch	1 x 4-pin Power-on & Reset header 1 x 2-pin Recovery Mode header 1 x 2-pin Maskrom (eMMC) header 1 x Maskrom (SPI) DIP switch
	Debug	1 x 2-pin Debug UART header	1 x 3-pin Debug UART header	1 x 3-pin Debug UART header
	IR receiver	(in GPIO)	1 x 3-pin IR receiver header	1 x 3-pin IR receiver header
	RTC	1 x RTC header	1 x RTC header	1 x RTC header
	FAN	1 x 2-pin DC Fan header	1 x 4-pin DC Fan header	1 x 4-pin DC Fan header
	LED	3 x LEDs	3 x LEDs side view	3 x LEDs side view
	Others	-	- 1 x Panel VCC power select jumper - 1 x 5V Panel Backlight header	- 1 x Panel VCC power select jumper - 1 x 5V Panel Backlight header
Power Input		12~19V DC, Barrel Jack (5.5/2.5mm)	12~24V DC, Barrel Jack (5.5/2.5mm) & 4-Pin Header	12~24V DC, Barrel Jack (5.5/2.5mm) & 4-Pin Header
Dimensions		3.37" x 2.125" (85 x 56 mm)	100 x 100 mm	100 x 100 mm
Operation temperature		0°C ~ 60°C	-45°C ~ 85°C	0°C ~ 60°C
Non operation temperature		-40°C ~ 85°C	-45°C ~ 85°C	-45°C ~ 85°C
Non operation humidity		10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)
Operating System		Linux Debian, Android, Yocto	Linux Debian, Android, Yocto	Linux Debian, Android, Yocto

		Tinker Board 3N LITE	Tinker Board 3S	Tinker Board 3
				
System	SoC	Rockchip RK3568B2	Rockchip RK3566	Rockchip RK3566
	CPU	Quad-core Arm® Cortex®-A55 @ 2.0 GHz	Quad-core Arm® Cortex®-A55 @ 1.8 GHz	Quad-core Arm® Cortex®-A55 @ 1.8 GHz
	GPU NPU Memory	Arm® Mali™-G52 2EE @ 800 MHz Rockchip NPU (1 TOPS) 2GB / 4GB / 8GB LPDDR4X	Arm® Mali™-G52 2EE @ 800 MHz Rockchip NPU (1 TOPS) 2GB/ 4GB LPDDR4X	Arm® Mali™-G52 2EE @ 800 MHz Rockchip NPU (1 TOPS) 2GB/ 4GB LPDDR4X
Storage	Memory Card	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)
	eMMC	32GB / 64GB	16GB	-
	SPI Flash	-	-	-
Ethernet	Ethernet	1 x GbE LAN RTL8211F	1 x GbE LAN RTL8211F	1 x GbE LAN RTL8211F
	PoE	-	-	-
Connectivity	Wi-Fi/BT	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key
	Cellular/GPS	-	-	-
Display	HDMI	1 x HDMI™ 2.0 (4096x2160)	1 x HDMI™ 2.0 (4096x2160)	1 x HDMI™ 2.0 (4096x2160)
	DP	-	-	-
	LVDS/eDP	1 x 40-pin header LVDS (1920x1080) / eDP (2560x1600)	-	-
	MIPI DSI	-	1 x 22-pin (4 lane, 1920x1080)	1 x 22-pin (4 lane, 1920x1080)
Camera	Multi Output	HDMI + LVDS / HDMI + eDP	-	-
	MIPI CSI-2	-	-	-
Wired Interface	USB	1 x USB 3.2 Gen1 Type-C® OTG 2 x USB 3.2 Gen1 Type-A 2 x USB 2.0 Pin header	1 x USB 3.2 Gen1 Type-A 2 x USB 2.0 Type-A 1 x USB 2.0 Micro-B (Device only) 1 x USB2.0 Pin header	1 x USB 3.2 Gen1 Type-A 2 x USB 2.0 Type-A 1 x USB 2.0 Micro-B (Device only) 1 x USB2.0 Pin header
	Audio	1 x 3.5mm Phone Jack 1 x 4-pin Stereo Speaker, 4ohm, 2 x 3W 1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)	1 x 3.5mm Phone Jack 1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)	1 x 3.5mm Phone Jack 1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)
	M.2 E-Key	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT
	mPCIe	-	-	-
Expansion	M.2 B-Key	-	-	-
	SIM slot	-	-	-
Serial Interface	COM	1 x RS-232/422/485 header 1 x RS-232 header with flow control	-	-
	CAN	-	-	-
Internal I/O & Header	GPIO	1 x 14-pin GPIO headers: - 1 x 5V, 1 x 3.3V, 1 x GND, 2 x ADC (8 bit) - Up to 2 x UART, 1 x SPI bus (2 select), 1 x I2C bus, 4 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX	1 x 40-pin headers: - 2 x 5V power, 2 x 3.3V power, 8 x Ground pins - Up to 28 x GPIO pins, 2 x SPI bus, 2 x I2C bus, 2 x UART, 3 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX	1 x 40-pin headers: - 2 x 5V power, 2 x 3.3V power, 8 x Ground pins - Up to 28 x GPIO pins, 2 x SPI bus, 2 x I2C bus, 2 x UART, 3 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX
	Keys	1 x 4-pin Power-on & Reset header 1 x 2-pin Recovery Mode header 1 x 2-pin Maskrom (eMMC) header	1 x 4-pin Power-on & Reset header 1 x 2-pin Recovery Mode header 1 x Maskrom DIP switch	1 x 4-pin Power-on & Reset header 1 x 2-pin Recovery Mode header 1 x Maskrom DIP switch
	Debug	1 x 3-pin Debug UART header	1 x 3-pin Debug UART header	1 x 3-pin Debug UART header
	IR receiver	1 x 3-pin IR receiver header	-	-
	RTC	1 x RTC header	1 x RTC header	1 x RTC header
	FAN	1 x 4-pin DC Fan header	1 x 2-pin DC Fan header	1 x 2-pin DC Fan header
	LED	3 x LEDs side view	3 x LEDs side view	3 x LEDs side view
	Others	- 1 x Panel VCC power select jumper - 1 x 5V Panel Backlight header	-	-
Power Input		12~24V DC, Barrel Jack (5.5/2.5mm) & 4-Pin Header	12~19V DC, Barrel Jack (5.5/2.5mm)	12~19V DC, Barrel Jack (5.5/2.5mm)
Dimensions		100 x 100 mm	3.37" x 2.125" (85 x 56 mm)	3.37" x 2.125" (85 x 56 mm)
Operation temperature		0°C ~ 60°C	0°C ~ 60°C	0°C ~ 60°C
Non operation temperature		-45°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Non operation humidity		10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)
Operating System		Linux Debian, Android, Yocto	Linux Debian, Android, Yocto	Linux Debian, Android, Yocto

Tinker Board Series

		Tinker Board 2S	Tinker Board 2	Tinker Edge R
				
System	SoC	Rockchip RK3399	Rockchip RK3399	Rockchip RK3399Pro
	CPU	Dual-core Arm® Cortex®-A72 @ 2.0 GHz + Quad-core Arm® Cortex®-A53 @ 1.5 GHz	Dual-core Arm® Cortex®-A72 @ 2.0 GHz + Quad-core Arm® Cortex®-A53 @ 1.5 GHz	Dual-core Arm® Cortex®-A72 @ 1.8 GHz + Quad-core Arm® Cortex®-A53 @ 1.4 GHz
	GPU	Arm® Mali™-T860 MP4 @ 800 MHz	Arm® Mali™-T860 MP4 @ 800 MHz	Arm® Mali™-T860 MP4 @ 800 MHz
	NPU	-	-	Rockchip NPU (3 TOPS)
Memory	Memory	2GB / 4GB LPDDR4	2GB / 4GB LPDDR4	2GB / 4GB LPDDR4 (SYSTEM)
				1GB / 2GB LPDDR3 (NPU)
Storage	Memory Card	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)
	eMMC	16GB / 32GB	-	16GB
	SPI Flash	-	-	-
Ethernet	Ethernet	1 x GbE LAN RTL8211E/F	1 x GbE LAN RTL8211E/F	1 x GbE LAN Realtek RTL8211F
	PoE	-	-	-
Connectivity	Wi-Fi/BT	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key	Wi-Fi 5 & BT 5.0 (2T2R), default occupied M.2 E key
	Cellular/GPS	-	-	4G (Optional)
Display	HDMI	1 x HDMI™ 2.0 (4096x2160)	1 x HDMI™ 2.0 (4096x2160)	1 x HDMI™ 2.0 (4096x2160)
	DP	1 x DP Alt Mode via USB Type-C® (4096x2160)	1 x DP Alt Mode via USB Type-C® (4096x2160)	1 x DP Alt Mode via USB Type-C® (4096x2160)
	LVDS/eDP	-	-	-
	MIPI DSI	1 x 22-pin (4 lane, 1920x1080)	1 x 22-pin (4 lane, 1920x1080)	1 x 22-pin (4 lane, 1920x1080)
Multi Output		HDMI + Type-C / HDMI + DSI / Type-C + DSI	HDMI + Type-C / HDMI + DSI / Type-C + DSI	HDMI + Type-C / HDMI + DSI / Type-C + DSI
Camera	MIPI CSI-2	1 x 15-pin (2 lane)	1 x 15-pin (2 lane)	1 x 15-pin (2 lane)
Wired Interface	USB	1 x USB 3.2 Gen1 Type-C® OTG	1 x USB 3.2 Gen1 Type-C® OTG	1 x USB 3.2 Gen1 Type-C® OTG
		3 x USB 3.2 Gen1 Type-A	3 x USB 3.2 Gen1 Type-A	3 x USB 3.2 Gen1 Type-A
	Audio	1 x HDMI™ audio	1 x HDMI™ audio	1 x 3.5mm Phone Jack
		1 x S/PDIF TX pin (from GPIO)	1 x S/PDIF TX pin (from GPIO)	1 x HDMI™ audio
Expansion	M.2 E-Key	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT	-
		-	-	Full (USB2, SIM) for 4G
	M.2 B-Key	-	-	-
		-	-	1 x Nano SIM slot
Serial Interface	COM	-	-	-
	CAN	-	-	-
Internal I/O & Header	GPIO	1 x 40-pin headers:	1 x 40-pin headers:	1 x 40-pin headers:
		- 2 x 5V power, 2 x 3.3V power, 8 x Ground pins	- 2 x 5V power, 2 x 3.3V power, 8 x Ground pins	- 2 x 5V Power pins, 2 x 3.3V Power pins,
		- Up to 28 x GPIO pins, 2 x SPI bus, 2 x I2C bus,	- Up to 28 x GPIO pins, 2 x SPI bus, 2 x I2C bus,	8 x Ground pins
		2 x UART, 3 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX	2 x UART, 3 x PWM, 1 x PCM/I2S, 1 x S/PDIF TX	- Up to 28 x GPIO pins, 2 x SPI bus, 2 x I2C bus,
	Keys	1 x 2-pin Power-on & Reset header	1 x 2-pin Power-on & Reset header	1 x 2-pin Power-on header
		1 x 2-pin Recovery Mode header	1 x 2-pin Recovery Mode header	1 x 2-pin Reset header
	Debug	1 x 2-pin Debug UART header	1 x 2-pin Debug UART header	1 x 2-pin Recovery Mode header
	IR receiver	(in GPIO)	(in GPIO)	-
	RTC	1 x RTC header	1 x RTC header	(in GPIO)
	FAN	1 x 2-pin DC Fan header	1 x 2-pin DC Fan header	1 x RTC header
	LED	3 x LEDs	3 x LEDs	1 x 2-pin DC Fan header
	Others	-	-	3 x LEDs
Power Input		12~19V DC, Barrel Jack (5.5/2.5mm)	12~19V DC, Barrel Jack (5.5/2.5mm)	12~19V DC, Barrel jack (5.5/2.5mm) & 4-pin header
Dimensions		3.37" x 2.125" (85 x 56 mm)	3.37" x 2.125" (85 x 56 mm)	Pico-ITX, 3.9" x 2.8" (100 x 72 mm)
Operation temperature		0°C ~ 60°C	0°C ~ 60°C	0°C ~ 60°C
Non operation temperature		-40°C ~ 85°C	-40°C ~ 85°C	-40°C ~ 85°C
Non operation humidity		10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)
Operating System		Linux Debian, Android, Yocto	Linux Debian, Android, Yocto	Linux Debian, Android

		Tinker Edge T	Tinker V
			
System	SoC	NXP i.MX 8M	Renesas RZ/Five
	CPU	Quad-core Arm® Cortex®-A53 @ 1.5 GHz	RISC-V Single-core AndesCore™ AX45MP 1.0 GHz
	GPU	GC7000 Lite	-
	NPU	Google Edge TPU (4 TOPS)	-
Memory	Memory	1GB LPDDR4	1GB DDR4
Storage	Memory Card	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)
	eMMC	8GB	none / 16GB
	SPI Flash	-	none / 16MB
Ethernet	Ethernet	1 x GbE LAN Realtek RTL8211F	2 x GbE LAN Realtek RTL8211FI
	PoE	-	-
Connectivity	Wi-Fi/BT	Wi-Fi 5 & BT 4.2 (2T2R)	-
	Cellular/GPS	-	-
Display	HDMI	1 x HDMI™ 2.0 (4096x2160)	-
	DP	-	-
	LVDS/eDP	-	-
	MIPI DSI	1 x 22-pin (4 lane, 1920x1080)	-
Multi Output	HDMI + DSI	-	-
Camera	MIPI CSI-2	2 x 24-pin (4 lane)	-
Wired Interface	USB	1 x USB 3.2 Gen1 Type-C® OTG 2 x USB 3.2 Gen1 Type-A	1 x USB 2.0 Micro-B OTG 1 x USB 2.0 Micro-B
	Audio	1 x HDMI™ audio 1 x SPDIF TX pin 1 x PCM/I2S pins (from GPIO)	-
Expansion	M.2 E-Key	-	-
	mPCIe	-	-
	M.2 B-Key	-	-
	SIM slot	-	-
Serial Interface	COM	-	2 x RS-232 (10-pin terminal block)
	CAN	-	2 x CAN Bus (6-pin terminal block)
Internal I/O & Header	GPIO	1 x 40-pin headers: - 2 x 5V Power pins, 2 x 3.3V Power pins, 8 x Ground pins - Up to 28 x GPIO pins, 1 x SPI bus, 2 x I2C bus, 2 x UART, 3 x PWM, 1 x PCM/I2S	1 x 20-pin headers: - 1 x 3.3V Power pin, 5 x Ground pins, 1 x SPI bus - Up to 4 x GPIO pins, 2 x I2C bus, 2 x UART, 2 x ADC
	Keys	1 x 2-pin Reset header 1 x Boot mode switch	1 x 2-pin Power-on header 1 x 2-pin Reset header
	Debug	-	JTAG pin header
	IR receiver	-	-
	RTC	-	-
	FAN	1 x 2-pin DC Fan header	1 x 2-pin DC Fan header
	LED	4 x LEDs	3 x LEDs side view
	Others	-	-
Power Input		12~19V DC, Barrel jack (5.5/2.5mm)	10~24V DC, Barrel Jack (5.5/2.5 mm)
Dimensions		3.37" x 2.125" (85 x 56 mm)	Pico-ITX, 3.9" x 2.8" (100 x 72 mm)
Operation temperature		0°C ~ 60°C	-20°C ~ 60°C
Non operation temperature		-40°C ~ 85°C	-40°C ~ 85°C
Non operation humidity		10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)
Operating System		Mendel	Linux Debian, Yocto

MIPI Converter

- MIPI Converter enables devices with LVDS interfaces to support industrial display panels, expanding compatibility and streamlining product development. MIPI Converter benefits from a flexible, versatile design that enables either two- or four-lane input. It output up to Full HD via dual-link LVDS, and also supports touch input and backlighting. Moreover, it ensures that only one power input is needed – with wide range of voltages supported for display and backlight power, plus 5V or 12V power output to the mainboard.



PoE Splitter Board

- PoE Splitter Board enables non-Power over Ethernet Powered Devices (PoE PD) to be able to pair power and ethernet data from PoE Power Sourcing Equipment (PSE). PoE Splitter Board is compliant with the IEEE 802.3at (Type 2, PoE+) standard. It can be used with any PoE PSE device that adheres to the IEEE 802.3af PoE standard, both for power in and to provide 5V or 12V DC output.



Tinker 2 Fanless Aluminum Case

- Heat dissipation is a crucial factor in achieving maximum performance with Tinker Board 2. By encasing yours in the custom-designed Fanless Aluminum Case, any generated heat will be quickly and efficiently dissipated – ensuring Tinker Board 2 is able to deliver top-notch performance.



Tinker Power Supply

- The full range of products offers suitable power supplies as additional options for customers, featuring short circuit protection, over voltage protection, over current protection, and over temperature protection to ensure safe operation. Furthermore, all are certified and comply with international safety standards, further demonstrating their quality.



*The product photo is for reference only, the actual appearance depending on the selected specifications.

Tinker System 3N

Arm-based fanless Edge System, with versatile applicability for industrial use, provided low power consumption, and rich interfaces make IIoT and IoRT feasible, flexible, and productive

- Fanless design for great heat conductivity
- Certified with RF regulation for WiFi (CE, FCC, VCCI, BSMI)
- High expandability, including Dual-LAN, COM, CAN and M.2 for cellular module
- Wide range DC power 12-24V and -40-60°C operating-temperature range
- Embedded design with wall mount and DIN rail clip
- Linux, Android, and Yocto supported



Tinker System 2

Arm-based embedded system, featuring 64-bit Armv8 architecture, offers enhanced computing performance with low power consumption

- Fanless design for great heat conductivity
- Certified with RF regulation for WiFi (CE, FCC, VCCI, BSMI)
- High peripheral extensibility: Reserved I/O for antenna and accessory extension
- Wide 12-19.5V DC inputs offers stable power delivery
- Linux, Android and Yocto supported



CHAPTER 09

Industrial Panel PCs

A collection of five ASUS IoT Industrial Panel PCs of various sizes, arranged in a cluster. They are all displaying the Windows 10 desktop with the 'Windows' logo wallpaper. The background is a dark blue grid with glowing blue light trails that curve across the scene.

ASUS IoT Industrial Panel PCs

Visualize Efficiency, Realize Productivity

Best solution for industrial HMI and MES applications

ASUS IoT Panel PC is an ideal choice for industrial automation, suitable for applications in machine vision, equipment control, and even MES and retail. ASUS Panel PCs offer upgradable performance, customization, and I/O expansion capabilities. These panel computers feature an industrial-grade rugged design, making them suitable for long-term operation and enabling manufacturers to easily access timely sensor data for real-time control and production process monitoring.

Applications

Machine Vision

Machine Control

MES application

Smart Retail

Intel-based Panel PCs

IPP-J6412-101W, IPP-J6412-156W, IPP-J6412-215W

The IPP-J6412 series panel pc offers industrial-grade 16:9 touch displays in 10.1", 15.6", and 21.5", supporting multi-touch and rich I/O. Its rugged design includes front IP65, wide voltage input, shock and vibration resistance, and wide operating temperature.

- Intel® Celeron® J6412 Processor
- 10.1", 15.6" and 21.5", projected-capacitive multi-touch display
- Rich connectivity, including DP, HDMI, dual GbE Lan, one RS-232, one RS-232/422/485.
- Fanless and rugged design front IP65
- Wide 9-36V DC power inputs supported
- Wide 0-50°C operating-temperature range



*Q4'24

IPP-H610-156W, IPP-H610-215W

The IPP-H610 series is equipped with the ASUS H610I-IM-A industrial motherboard, supporting Intel LGA1700 socket for Intel® 14th/13th/12th Gen. Core™ CPUs, It features rich I/O and flexible expansion capabilities, making it an ideal choice for various embedded applications.

- LGA1700 socket for Intel® 14th/13th/12th Gen. Core™ i9/ i7/ i5/ i3, Pentium®, and Celeron® Processors
- 15.6" and 21.5, projected-capacitive multi-touch display.
- 3 x SATA 6.0 Gb/s, 4 x USB 3.2 Gen 1, 6 COM ports
- 1 x PCIe 4.0 x16 slot, 1 x M.2 Socket 3 with Key M, type 2242/2260/2280 (SATA/PCIe x4 mode), 1 x M.2 Socket 1 with Key E, type 2230 for WIFI/BT device (PCIe & CNVi)
- Rugged design front IP65
- Wide 0-50°C operating-temperature range



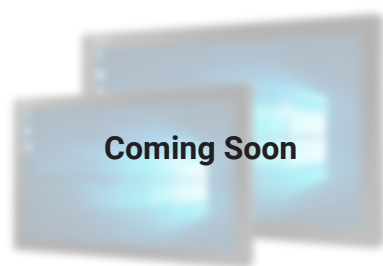
*Q1'25

APC-125U-185W, APC-125U-215W

APC-125U-185W, APC-125U-215W, APC-125U-15S, APC-125U-17S

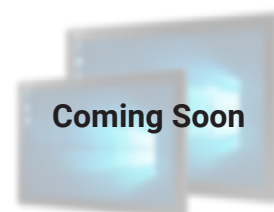
The APC-125U series offers industrial-grade 4:3 touch displays in 15" and 17", as well as ultra-narrow bezel with 16:9 touch displays in 18.5" and 21.5". The slim body design makes it easier to embed into equipment, and the key part door simplifies maintenance and upgrades. With support for AEM (ASUS Extend Module), it offers excellent expandability

- Intel® Core™ Ultra 5-125U Processor
- Fanless and compact design
- 4:3 (15" and 17"), 16:9 (18.5" and 21.5") P-CAP multi-touch display
- Rich connectivity, including 6XUSB, 4X GbE Lan, 2XCOM, Remote I/O
- Supports ASUS Extend Module
- Wide 9-36V DC power inputs supported
- Wide 0-50°C operating-temperature range



Coming Soon

APC-125U-15S, APC-125U-17S



Coming Soon

*Q2'25

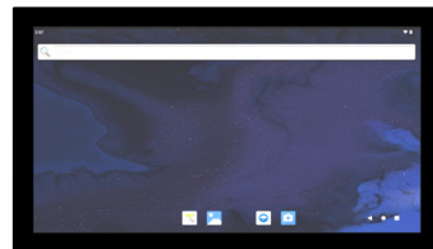
*Product available time

ARM-based Panel PCs

PP-156W-3568

ARM System 15.6" Panel PC provide an industrial-grade touch display with front IP65, various interface, plug-and-play integrated into manufacturing, transportation and commercial applications

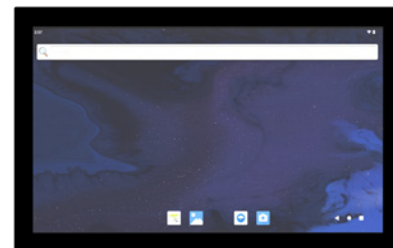
- Fanless design with embedded Rockchip RK3568 processor
- 15.6-inch, 1920x1080, projected-capacitive multi-touch display
- Cross-platform compatibility with Android, Linux Debian and Yocto
- Rich connectivity, including HDMI, dual GbE Lan, dual RS-232, one RS-232/422/485 and one CAN bus
- Supports IEEE 802.3af/at PoE-PD module (optional)
- Wide 12-24V DC power inputs supported
- Wide -20-60°C operating-temperature range



PP-101W-3568

ARM System 10.1" Panel PC provide an industrial-grade touch display with front IP65, various interface, plug-and-play integrated into manufacturing, transportation and commercial applications

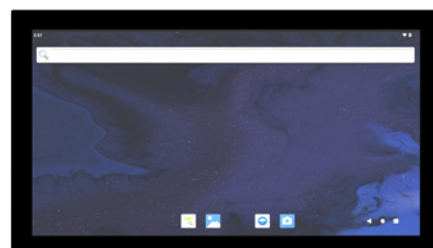
- Fanless design with embedded Rockchip RK3568 processor
- 10.1-inch, 1280x800, projected-capacitive multi-touch display
- Cross-platform compatibility with Android, Linux Debian and Yocto
- Rich connectivity, including HDMI, dual GbE Lan, dual RS-232, one RS-232/422/485 and one CAN bus
- Supports IEEE 802.3af/at PoE-PD module (optional)
- Wide 12-24V DC power inputs supported
- Wide -20-60°C operating-temperature range



PP-156W-3399

ARM System 15.6" Panel PC provide an industrial-grade touch display with front IP65, plug-and-play integrated into kiosks, and commercial applications embedded solution

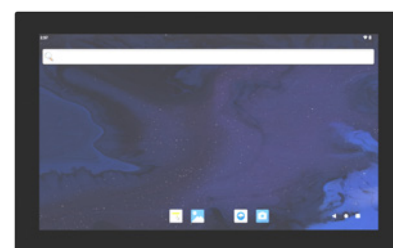
- Fanless design with embedded Rockchip RK3399 processor
- 15.6-inch, 1920x1080, projected-capacitive multi-touch display
- Cross-platform compatibility with both Linux Debian and Android
- Supports HDMI output up to 4K UHD video resolution
- Supports IEEE 802.3af/at PoE-PD module (optional)
- Supports VESA, Wall and Panel mounting (optional)



PP-101W-3399

ARM System 10.1" Panel PC provide an industrial-grade touch display with front IP65, plug-and-play integrated into kiosks, and commercial applications embedded solution

- Fanless design with Embedded Rockchip RK3399 processor
- 10.1-inch, 1280x800, projected-capacitive multi-touch display
- Cross-platform compatibility with both Linux Debian and Android
- Supports HDMI output up to 4K UHD video resolution
- Supports IEEE 802.3af/at PoE-PD module (optional)
- Supports VESA, Wall and Panel mounting (optional)



Type 6 COM Express Module

RPLB6-IM-A

COM Express Type 6 basic-size module with 13th gen Intel® H/P/U processor , DDR5 SO-DIMM, PCIe 4.0, USB 3.2 Gen2, 2.5Gb Ethernet, discrete TPM 2.0, eDP and SATA

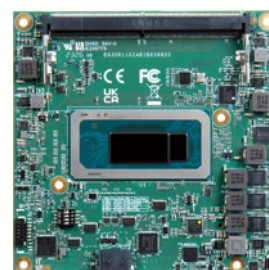
- 13th Gen Intel® Core™ Celeron® (13th gen) processors in Intel 7 lithography
- Up to 6X performance core +8x efficient core, and up to 96X graphic execution units
- 2 x DDR5-5200 non-ECC SO-DIMMs up to 96GB
- 1 x PCIe 4.0 x8(H series), 2 x PCIe 4.0 x4
- Options for industrial temperature range -40°C up to +85°C
- Options for onboard PCIe NVMe SSD



RPLC6-IM-A

COM Express Type 6 compact-size module based on 13th gen Intel® Core™ processors family (U/P/H) with DDR5 SO-DIMM, DDI, PCIe 4.0, USB4, USB 3.2 Gen 2, 2.5 GbE TSN Ethernet, discrete TPM 2.0, eDP and SATAIII

- 13th gen Intel® Core™ processors series family (U/P/H) processors
- Up to 14C/20T, and up to 96X graphic execution units
- 2 x DDR5-4800 non-ECC SO-DIMMs up to 64GB, 2 x PCIe 4.0 x4, and 8 x PCIe 3.0 x1
- 4 x USB 3.2 Gen 2, 8 x USB 2.0, 2 x SATAIII, 3 x DDI, VGA, eDP/LVDS, 2 x USB4 (optional)
- Industrial temperature range -40°C to +85°C (optional)
- Onboard PCIe NVMe SSD (optional)

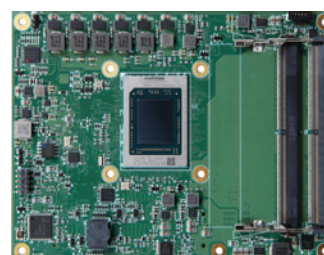


Type 7 COM Express Module

RV3B7-IM-A

COM-Express® Type 7 Basic module with AMD® Embedded Ryzen™ V3000 CPU Family equipped on-module NVME SSD

- AMD® Embedded Ryzen™ V3000 processor
- 2 x DDR5 4800 MT/s SO-DIMM, 2 x 10G KR port
- 10W-54W cTDP with -40-85 °C support on selected SKUs
- Up to 16x PCIe 4.0 lanes for high-speed interconnection
- Optional on-module PCIe x2 NVME storage



ICLB7-IM-A

COM Express Type 7 basic module based on Intel® Xeon® D-1700 processors with three channels and four SO-DIMM slots

- Intel® Xeon® D-1700 processors for edge IoT
- Intel® Deep Learning Boost and Time Coordinated Computing
- 4 x USB2.0/3.2 Gen 2x1, 2 x SATAIII, 4 x 10G KR, 2 x UART
- Three memory channels with maximum four SODIMM slots
- Selected SKUs support -40°C to 80°C extended temperature range for extreme environments



Type 10 COM Express Module

EHLMA-IM-A

Intel® Atom® x6000-series SoC based on Type 10 Mini COM-Express® module with LPDDR4 SDRAM

- Intel® Atom® x6000E-series processor
- LPDDR4-3200 MT/s on-board memory up to 16GB with in-band ECC support
- Dual 4k display, eDP/LVDS/HDMI/DPI interfaces
- 4 x PCIe 3.0 x1, 2 x USB 3.1, 8 x USB 2.0 and 2 x SATA III
- 2.5GbE with Intel TCC/TSN support
- Wide voltage input from 4.75V to 20VDC
- Industrial temperature range from -40°C to 85°C on selected SKUs



APLMA-IM-A

Intel® Atom® E3900-series SoC based on Type 10 Mini COM-Express® module with LPDDR4 SDRAM, eMMC and USB 3.0

- Intel® Atom® E3900, Pentium® N4200 or Celeron® N3350 processor
- Supports LPDDR4-2400 MT/s on-board memory up to 8GB
- Supports DDI, LVDS/eDP display interfaces
- Support 8 x USB 2.0 or 4 x USB 2.0 and 3 x USB 3.0, 2 x SATA III and 4 x PCIe 2.0 x1
- Supports wide voltage input from 4.5V to 20V
- Supports a wide -40°C to 85°C extended temperature range (via E39XX SKUs)



COM-HPC Module

ICLHE-IM-A

COM-HPC server, Size E module with Intel® Xeon® D-2700 processor

- Intel® Xeon® D-2700 processors for edge IoT computing
- AI/deep-learning accelerated data analytics with Intel AVX-512 and VNNI
- 8 x 10G KR, 4 x USB2.0/3.2 Gen 2x1, 2 x SATAIII, 2 x UART
- Eight DIMM slots and maximum 1024GB memory support
- Selected SKUs support -40-80°C for extended-temperature applications



RPLHC-IM-A

COM-HPC Size C client module with with Intel® 13th /14th gen socket-type processor, plus DDR5 SO-DIMM, DDI, PCIe 5.0, USB 3.2 Gen2, 2.5G Ethernet, discrete TPM 2.0, eDP and SATA

- Intel® Core™ (13th gen), Pentium® or Celeron®-series socket-type processors in Intel 7 lithography
- Up to 8X Performance cores and 16X Efficiency cores, and up to 32X graphic execution units
- 4 x DDR5 ECC/non-ECC SO-DIMM up to 128GB capacities
- 1 x PCIe 5.0 x16, 4 x PCIe 4.0 x4, 3 x PCIe 3.0 x4 4x USB3.2 Gen2 x2, 2x SATA, 3x DDI and eDP



CHAPTER 11

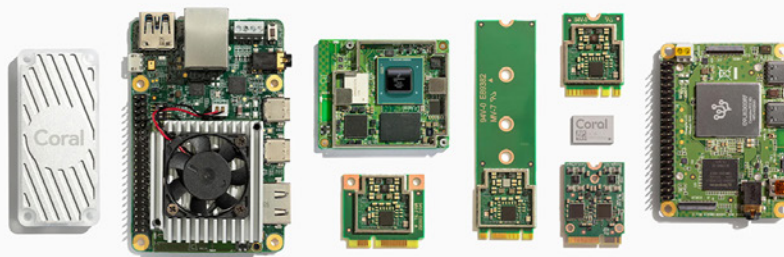
GPU & AI Accelerator Cards

Coral Edge TPU

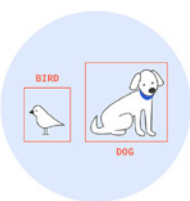
Build your own edge AI applications from sketch to reality

ASUS IoT is dedicated to providing ideal solutions for the era of IoT and AI. Together with Google technology and the Coral toolkit, the Coral Edge TPU empowers you to build products that are efficient, private, fast and offline.

Coral | **ASUS IoT**



Solutions for on-device intelligence



Object detection

Draw a square around the location of various recognized objects in an image.



Pose estimation

Estimate the poses of people in an image by identifying various body joints.

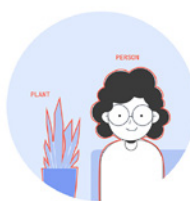


Image segmentation

Identify various objects in an image and their location on a pixel-by-pixel basis.



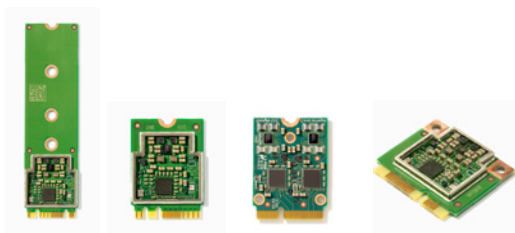
Key phrase detection

Listen to audio samples and quickly recognize known words and phrases.

Discover the form-factor fit for your AI applications

Coral M.2/mPCIe Module

Integrate the Edge TPU into legacy and new systems using a Mini PCIe or M.2 interface.



Coral Dev Board Micro Series

A microcontroller board with a camera, mic and Coral Edge TPU.



PoE board

Wireless board

Coral USB Accelerator

A USB accessory that brings machine learning inferencing to existing systems.



Accelerator Module

A solderable multi-chip module including the Edge TPU.



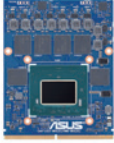


Coral System-on-Module (SoM)/Dev Board

A fully-integrated system for accelerated ML applications.






GPU & AI Accelerator Cards

MXM

		MXM-M23B-E5	MXM-M23B-P7	MXM-M23B-P5
				
Graphic Core	GPU	Intel® Arc™ A730M	Intel® Arc™ A570M	Intel® Arc™ A530M
	Memory	12GB GDDR6, 192 bit, 336 GB/s	8GB GDDR6, 128 bit, 256 GB/s	8GB GDDR6, 128 bit, 224 GB/s
GPU Computing	Xe-Cores	24	16	12
	Matrix Engines (XMX)	384	256	192
	Vector Engines (XVE)	384	256	192
	Graphics Engine	DX12 Ultimate, OpenGL 4.6, OpenCL 3.0, AV1, H.264/ H.265 (HEVC)	DX12 Ultimate, OpenGL 4.6, OpenCL 3.0, AV1, H.264/ H.265 (HEVC)	DX12 Ultimate, OpenGL 4.6, OpenCL 3.0, AV1, H.264/ H.265 (HEVC)
Display	Display Outputs	4 x DisplayPort 1.4/ 2.0* (Optional 4x HDMI 2.0/ 2.1*)**	4 x DisplayPort 1.4/ 2.0* (Optional 4x HDMI 2.0/ 2.1*)**	4 x DisplayPort 1.4/ 2.0* (Optional 4x HDMI 2.0/ 2.1*)**
	Interface	MXM 3.1, PCIe 4.0 x16 support	MXM 3.1, PCIe 4.0 x16 support	MXM 3.1, PCIe 4.0 x16 support
Mechanicals	Dimensions	82 (W) x 105 (D) x 6.2 (H) mm	82 (W) x 105 (D) x 6.2 (H) mm	82 (W) x 105 (D) x 6.2 (H) mm
	Form Factor	Standard MXM 3.1 Type B	Standard MXM 3.1 Type B	Standard MXM 3.1 Type B
Environmental	Operating Temp.	Standard: 0°C to 55°C	Standard: 0°C to 55°C	Standard: 0°C to 55°C
	Storage Temp.	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
	Power Consumption	80W - 120W TGP	75W - 95W TGP	65W - 95W TGP
SW support	OS Support	Windows 11, 10 64-bit, Ubuntu 22.04 LTS	Windows 11, 10 64-bit, Ubuntu 22.04 LTS	Windows 11, 10 64-bit, Ubuntu 22.04 LTS

*Depend on the design of MXM carrier

**For optional HDMI support, please contact ASUS IoT

		MXM-M23A-M7	MXM-M23A-M5		
				PCIe-to MXM Adapter card 	
Graphic Core	GPU	Intel® Arc™ A370E	Intel® Arc™ A350E	Dimension	214.48 x 157.08 mm
	Memory	4GB GDDR6, 64 bit, 112 GB/s	4GB GDDR6, 64 bit, 112 GB/s		
GPU Computing	Xe-Cores	8	6	Weight	0.15 kg
	Matrix Engines (XMX)	128	96		
	Vetor Eneines (XVE)	128	96	Support MXM modules	MXM 3.1 type A (82 x 70mm) MXM 3.1 type B (82 x 105mm)
	Graphice Engine	DX12 Ultimate, OpenGL 4.6, OpenCL 3.0, AV1, H.264/ H.265 (HEVC)	DX12 Ultimate, OpenGL 4.6, OpenCL 3.0, AV1, H.264/ H.265 (HEVC)		
Display	Display Outputs	4 x DisplayPort 1.4/ 2.0* (Optional 4x HDMI 2.0/ 2.1*)**	4 x DisplayPort 1.4/ 2.0* (Optional 4x HDMI 2.0/ 2.1*)**	Display output	4 x DisplayPort 1.4a ports that support up to 7680 x 4320 or 4 x HDMI 2.0/2.1 ports that support up to 3840 x 2160 @60Hz
	Interface	MXM 3.1, PCIe 4.0 x8 support	MXM 3.1, PCIe 4.0 x8 support		
Mechaicals	Dimensions	82 (W) x 70 (D) x 6.2 (H) mm	82 (W) x 70 (D) x 6.2 (H) mm	External Connector	12V DC fan power connector 8-pin ATX power input connector
	Form Factor	Standard MXM 3.1 Type A	Standard MXM 3.1 Type A		
Environmental	Operatin Temp.	Standard: 0°C to 55°C	Standard: 0°C to 55°C	Operating System	Windows 11, 10 64 bit, Ubuntu 22.04 LTS
	Starage Temp.	-40°C to 85°C	-40°C to 85°C		
	Power Consumption	35W-50W TGP	25W-35W TGP	Certification	CE, FCC, BSMI
SW support	OS Support	Windows 11, 10 64-bit, Ubuntu 22.04 LTS	Windows 11, 10 64-bit, Ubuntu 22.04 LTS		
				Operating Temperature	0~60°C

*Depend on the design of MXM carrier

**For optional HDMI support, please contact ASUS IoT

CHAPTER 12

Intelligent Integrated Solutions

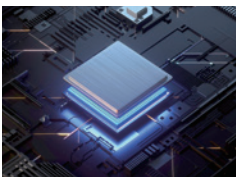
UNLEASHING AI:

Optimizing efficiency and elevating product quality

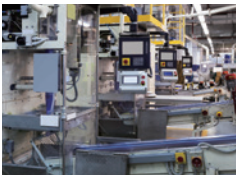
Overview of our Intelligent Integrated Systems

Shop Order Dispatching and Analysis (AISODA)	AR Smart Glasses	Intelligent Material Handling System & AMR	Smart Data Service Platform (AIDSP)
--	------------------	--	-------------------------------------

Intelligent Integrated Solutions (IIS) is dedicated to seamlessly incorporating artificial intelligence (AI) and its applications into EMS production or product inspection equipment. Our primary objectives include elevating product quality, optimizing operational efficiency, and reducing production costs. We achieve these goals through comprehensive ground-up hardware/software integration or by seamlessly integrating AI capabilities into existing equipment. Our expertise lies in harnessing the power of AI to enhance the overall performance of production and inspection processes.



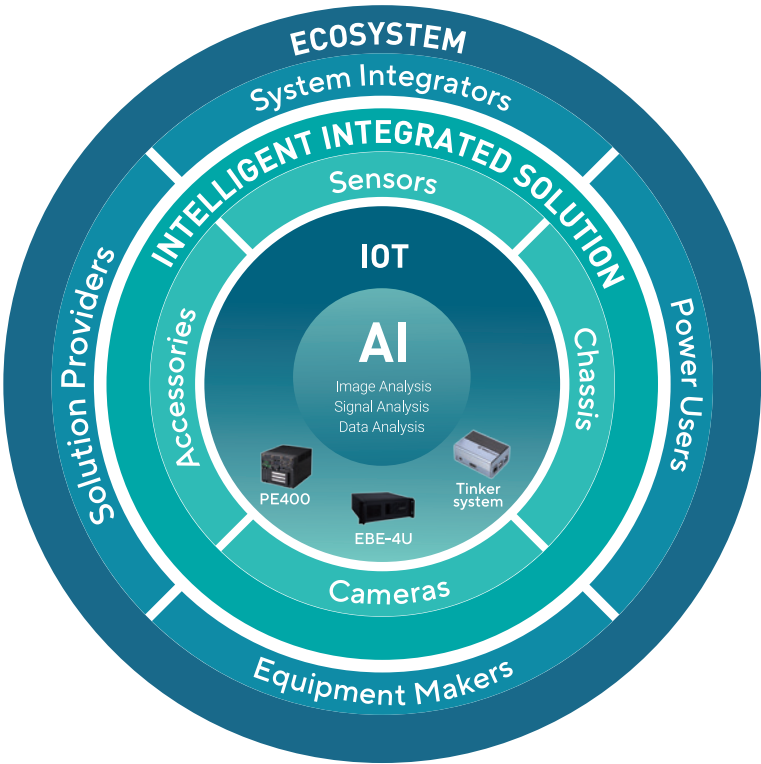
SEMICONDUCTORS



INJECTION MOLDING



PACKAGING



EMS



METAL PROCESSING



FOOD AND BEVERAGE

Shop Order Dispatching and Analysis (SODA)

- Data-driven lean manufacturing
- Build efficient resilience in manufacturing operations management (MOM)

The Shop Order Dispatching and Analysis system primarily operates based on the current status of the manufacturing floor, integrating ERP/MES production plans with actual output data (production reporting) to maximize the utilization of limited resources within the plant. Empowered by AI, the goal is to improve delivery rates and optimize production line scheduling capacity resources, and operational efficiency.

Key Features



Optimization AI Engine

In addition to built-in heuristic rules, SODA offers a multi-goals, multi-weight optimization AI engine. This allows managers to select the most appropriate manufacturing execution plan based on specific KPI requirements and performance indicators.



Real Time Scheduling and Dispatching

In response to sudden changes on the manufacturing floor — including personnel, machines, materials and methods — as well as the current production status, SODA leverages agile, rapid integration and computational capabilities to deliver an optimal dispatch and scheduling plan within an average of 3-5 minutes.



EMS Industry Focus

For the electronics manufacturing services (EMS) industry, SODA considers key factors that impact production — such as capacity, materials, labor, production line attributes and equipment status. It rapidly identifies intelligent, tailored scheduling dispatching solutions to optimize manufacturing operations.



PDCA Cycle

Data-driven dispatch decisions are based on continuously validating plans against actual output, analyzing discrepancies and bottleneck causes, and performing real-time parameter adjustments and corrections. This approach builds a highly transparent and reliable information system.

Multi Dispatching Version Comparison

Achieve 100% delivery rate through AI optimized dispatching.

SODA - Shop Order Dispatching and Analysis (Client service: 10.95.128.251)

Dispatch Results [New Version](#)

BaseLine	Version Name	Rule	MakeSpan	Idle Time	Changeover	Cost(K)	Delivery Rate	Remark	Actions
●	Version_20240823182914	EDD	557.32 hrs	757.13 hrs	76 hrs	\$108066...	50.0 %	Original	
○	Version_20240823183400	Opt	-27.18 hrs	-79.45 hrs	-3 hrs	-724912...	+50 %	Multi Goal 50% 50% 50%	

EED Rule

WO Delivery Analysis

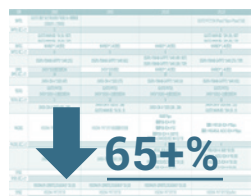
WO	SN	Model	PartNo	TargetQty	Promise date	Finish date	Difference
2206-058466	0	US	90580AH-D-M0...	194	2024-10-16	2024-10-15 10:45	-1 D
2207-066584	0	Z690-E	90MB18U-MB...	252	2024-10-22	2024-10-23 16:25	+1 D

AI Engine Rule

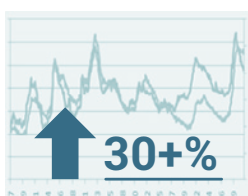
WO Delivery Analysis

WO	SN	Model	PartNo	TargetQty	Promise date	Finish date	Difference
2206-058466	0	US	90580AH-D-M0X...	194	2024-10-16	2024-10-16 16:57	0 D
2207-066584	0	Z690-E	90MB18U-MBGA...	252	2024-10-22	2024-10-22 14:42	0 D

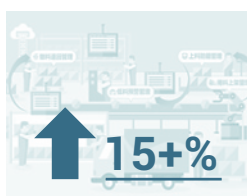
Benefits



Dispatching Plan
Generation Time



Personnel and
Equipment Utilization Rate



Woke Order
Delivery Rate



Plan Transparency
and Accuracy



Changeover and
Transfer Time

AR Smart Glasses System – AIARG 100

Scenarios

Mobile Situation Room

(Machine Condition and Manufacturing Dashboards)

- AR glasses quickly scan QR codes on equipment, giving instant access to essential information for hands-free inspections and maintenance, boosting operational efficiency.

Remote Collaboration

- AR glasses enable smooth remote guidance for training and maintenance, allowing on-site operators to connect with experts who provide real-time assistance for quick issue resolution.

Process Audit / Factory Audit

- The process audit can replace traditional paper-based daily audits, achieving the digitization of factory inspection.
- Supports photo captures and audio recording.
- Automatically generate reports on the computer.

AR Smart Glasses System – AIARG 100

AR Glasses	Supports Jorjin J7EF PLUS, BT-45C, MX1, MC1, AR01-BTR (explosion-proof)
Smart Phone	Supports HTC U23 Pro
	Supports Android 8.0 or above
	USB Type-C, supporting DisplayPort Alt Mode
PC (Minimum requirements)	Processor: Intel Core i5 or above
	Memory: 8GB or above
	OS: Windows 10/Windows 11, 64-bit editions
	Internet speed: 100Mbps or above

Defect Inspection with AI

IQC SMD Component Inspection – AIDIS 100QC



Features:

- Pre-trained OCR model for SMD incoming quality inspection.
- Object dimensions: length, width, height
- Identification of marking code
- Number and color dots
- Inspection performed in 10 seconds

IQC SMD Reel Inspection – AIDIS 100QR



Features:

- Before storing incoming SMD materials, confirms part numbers and date codes to avoid extensive rework after assembly
- Simultaneously identify part numbers on the original manufacturer's label and the supplier's label. Compares the text information on the label and make sure it is consistent with factory data system.
- Date code validation: Inspect and calculate whether the expiration date complies with the specified period

Specifications:

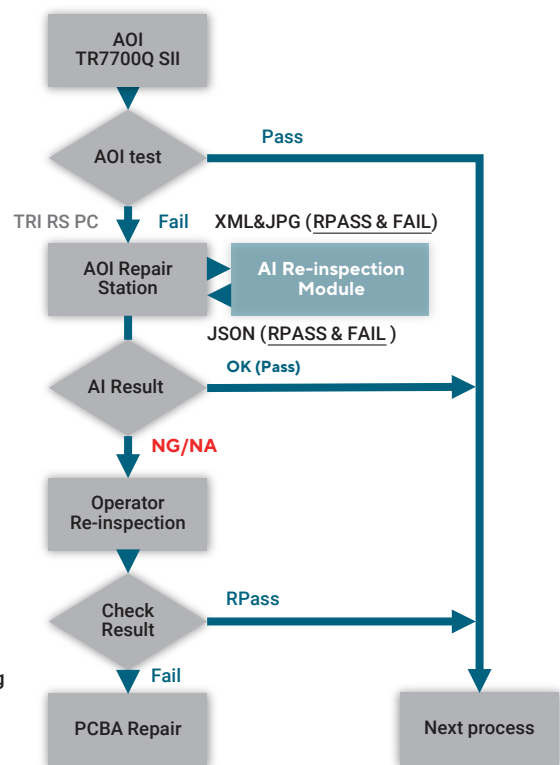
		IQC SMD Component Inspection- AIDIS 100QC	IQC SMD Reel Inspection- AIDIS 100QR
Inspection Capability	Inspection	Surface marking, color dots, and dimensions	Part number verification and production date confirmation.
	Time	Inspection results will be available in 10 seconds.	The time for recognition and comparison is less than 5 seconds.
	Accuracy	Above 95%	Above 90%
Vision System	Method	Visual recognition and comparison through AI models.	AI OCR
	Camera	26M color camera	25M color camera
	Lighting	White LED light	White LED light
Target Application	Size	SMD From 2*3 mm to 50*50 mm	Tape From 180 mm (7") to 380 mm(15")
	Height Range	SMD 0.3-10 mm	Tape 10~93 mm
Dimensions	WxHxD	350mm(L)x450mm(W)x620mm(H)	730mm(L)x400mm(W)x600mm(H)

SMT AOI Re-inspection with AI – AIDIS 100R



Features:

- Pre-built AI model, capable to be pre-installed in E500 workstation
- Resistor, capacitor, and inductor types of components: post-reflow oven AOI defect re-inspection for missing components, tombstoning, cold solder joints, side-standing components, skewed components, and shorts.
- Capable for TRI* TR7700Q SII 3rd-gen AOI software inter-operation
- *TRI is 3rd party name and trademark



Specifications:

SMT AOI Re-inspection with AI – AIDIS 100R		
Inspection Performance	Scanning Speed	Missing, reverse polarity, rotation, skew, wrong part, shifting, lead lift, tombstone, bubbles, solder insufficient, solder bridges, solder balls..etc.
Vision System	Method	AIS purposely design and built AI algorithm and inference model
	Sensor	Nil
	Resolution	Nil
File Format Handling	Input File Format	JPG and XML file
	Output File Format	JSON
Industrial Computer (embedded)	Computing	ASUS E-500 G9 i9-11900k
	Display	24" LCD x 1
	OS	Windows 11 Pro
Dimensions	Weight	12.1 kg
	WxHxL	190mm(W) x 435mm(H) x 423mm(L)

CHAPTER 13

Software & Services

ASUS IoT Cloud Console

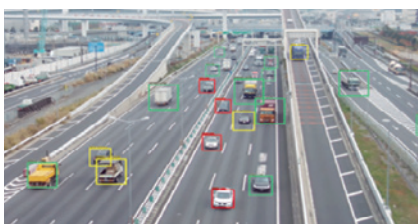
ASUS IoT Cloud Console (AICC) is a unified platform for managing and analyzing big data collected by IoT devices running different operating systems. With an intuitive user interface and advanced data-encryption technology, AICC enables you to collect and analyze comprehensive information in a variety of smart-technology sectors, such as transportation, retail and farming, to assist you in making the best decisions at the right times to seize business opportunities.



Dashboard Menu



Visualization Chart



Smart Traffic

Remotely manage traffic monitors on highways and overpasses to analyze traffic flow.



Smart Retail

Manage POS systems and data-analysis boxes in retail stores.



Smart Farms

Collect and analyze information about soil, temperature, sunlight and more.

Product Advantage



Intuitive Interface



Reliability



Data Monitoring



Responsive Web Design



Free Trial



ASUS Android & Linux FOTA

ASUS IoT and Tinker Board's Android & Linux FOTA is an advanced system for seamless updates. Tailored for ASUS IoT devices and Tinker Boards, it streamlines firmware updates without manual intervention. Users receive timely notifications, and the FOTA mechanism provides flexibility for update installation, aligning with user preferences. Security is paramount, ensuring a protected IoT and Tinker Board ecosystem with prompt delivery of patches for vulnerabilities. In essence, ASUS IoT and Tinker Board's FOTA prioritizes user convenience and security for an optimized and secure experience.



ASUS Official Image Update

Offers seamless official image updates for devices, ensuring an easy way to keep devices current with the latest features and security enhancements directly from ASUS.



Customized Image Updates via a Single Cloud Portal

Provides personalized image updates via a single cloud portal, empowering users to tailor device updates to specific preferences for a flexible and user-centric experience.



On-Premises Image Update

Enables on-premise image updates, giving organizations local control for firmware deployment, ensuring heightened security and meeting strict data governance requirements.

Product Advantage



Solid service experience with over 20 million devices upgrade in mobile market



Single Interface with global content delivery network



Enhanced system flexibility, remote functions and long-term maintenance



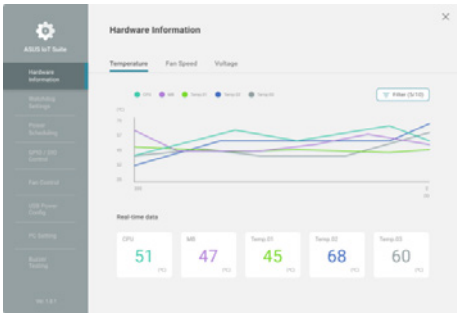
Report Management with progress, quantity and problem



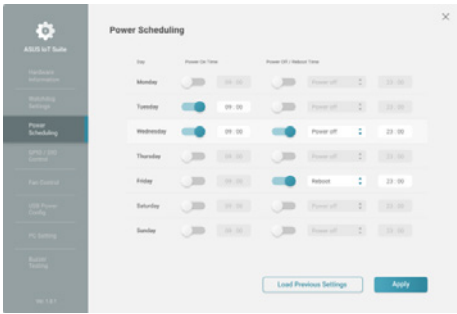
ASUS IoT Middleware

ASUS IoT Middleware simplifies system customization and application development on ASUS IoT platforms by providing easy-to-use tools to configure systems. It takes just a few clicks to configure a plethora of interfaces and options.

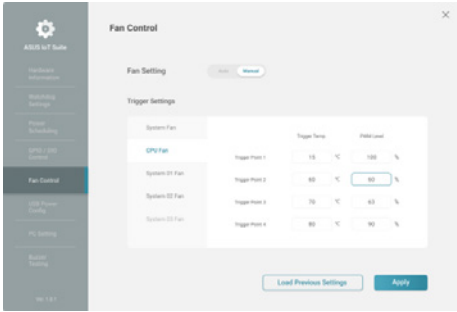
Configuration Tools



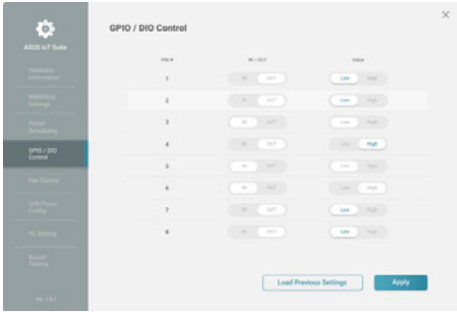
Hardware Monitor



Power Schedule



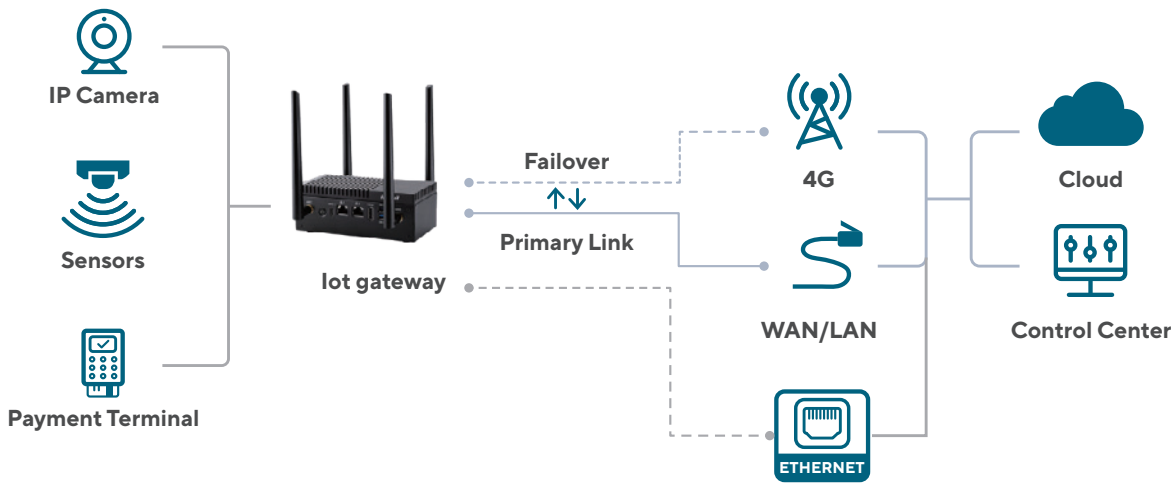
Smart Fan Control



GPIO / DIO Control

Always Connected

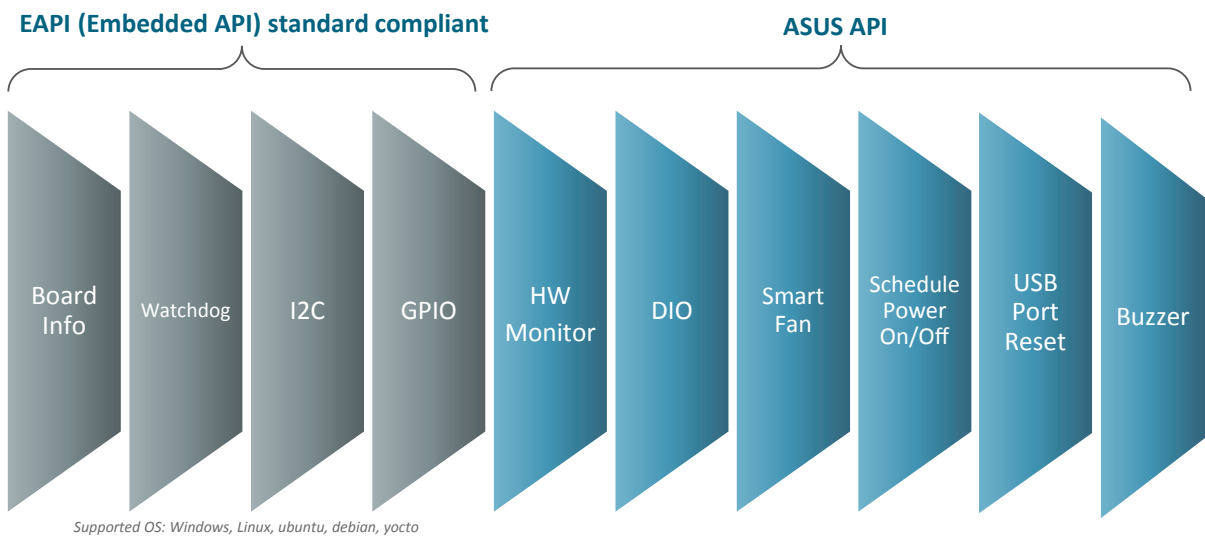
The suite enables automatic network recovery and network failover – ensuring that systems are always online and available.





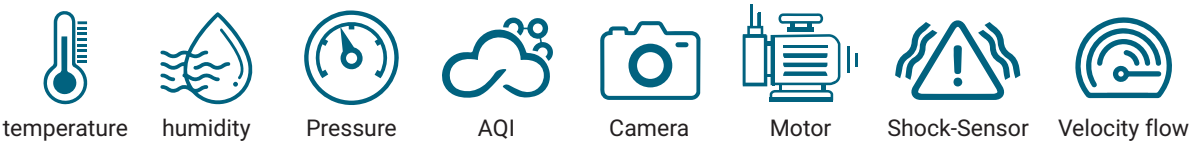
API

The middleware provides a rich set of APIs that empower you to take full advantage of ASUS hardware. These include an SDK, sample code and programming guides. It also offers cross-OS support for Windows and Linux.



Protocols & Framework

The suite supports Modbus, MQTT, and BACnet, making it easy to connect sensors and backends.



Key Features

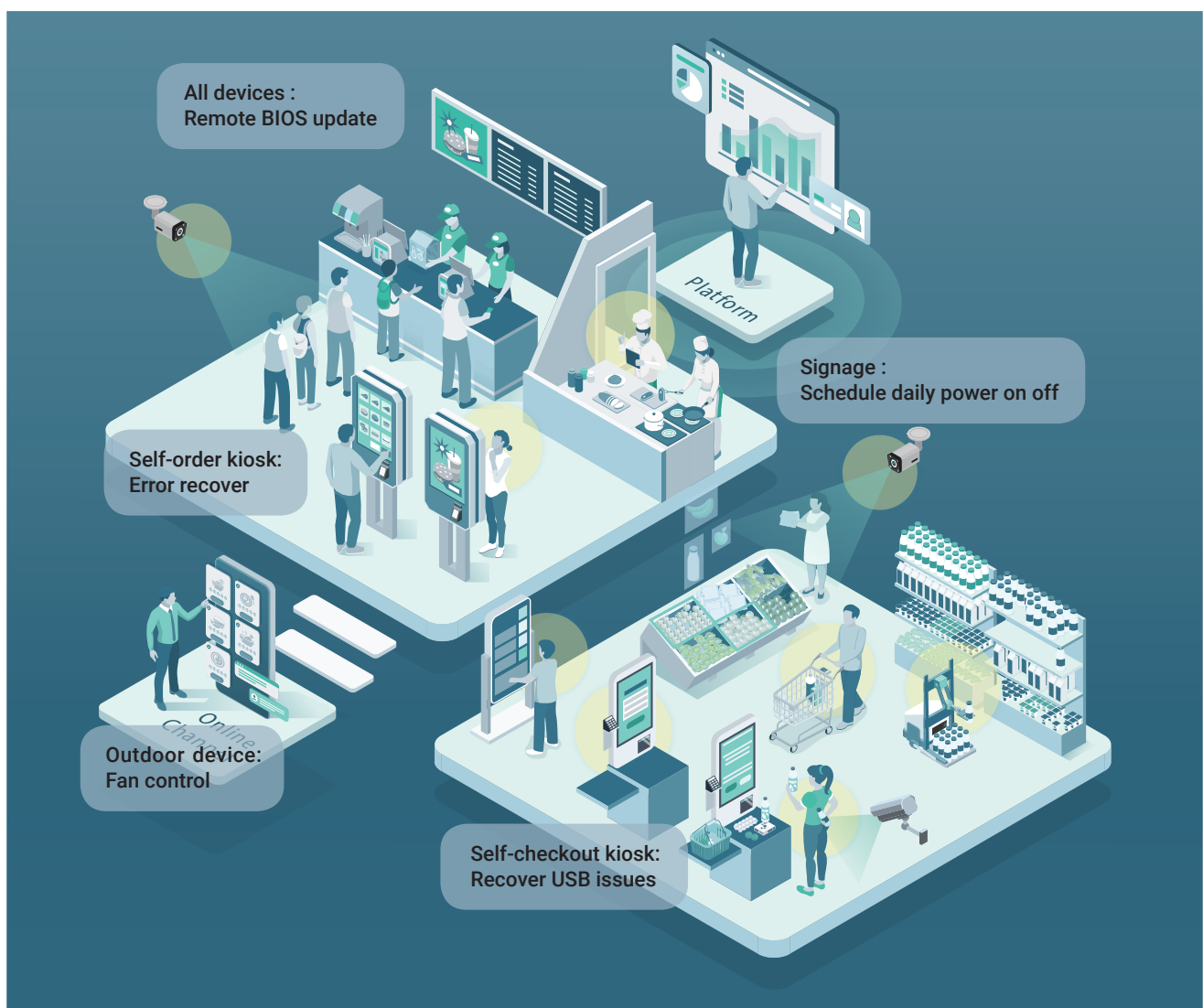
Function	API classes
System monitoring and Protection	Hardware monitor and board-info API
	Fan-control API
	Scheduled power-cycling API
	Watchdog API
	USB port enable/disable API
	Buzzer API
Peripheral	G sensor / RTC / COM / Wakeup API
	GPIO (DIO) API
	I²C API
	SPI API
	UART API
	PWM API
Connectivity	Automatic network recovery
	Automatic networks failover
Protocols and framework	Sensor framework
	Protocols (MQTT, Modbus, BACnet)



AICC Edge

Next-generation Software to Optimize IoT Management

AICC Edge is innovative management software that optimizes IoT operations with a secure private network, task scheduler, and remote monitoring and control. Our seamless design protects sensitive IoT data, simplifies routine tasks, and provides an intuitive interface for easy remote control.



Private Network

- Sensitive data remains private
- Customer-controlled infrastructure
- Predictable costs



Task Schedule

- Automated daily and weekly tasks
- Task scheduling
- Deploy to device groups

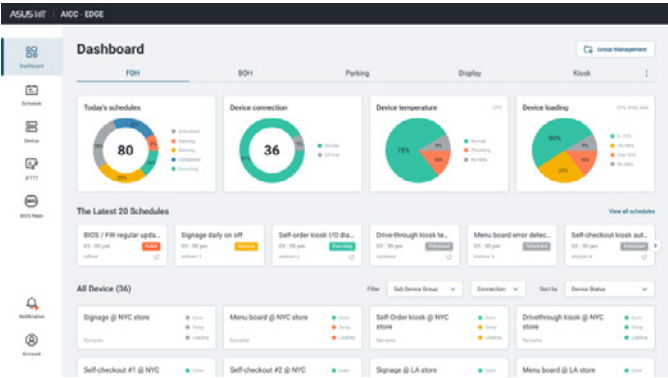


Remote Management

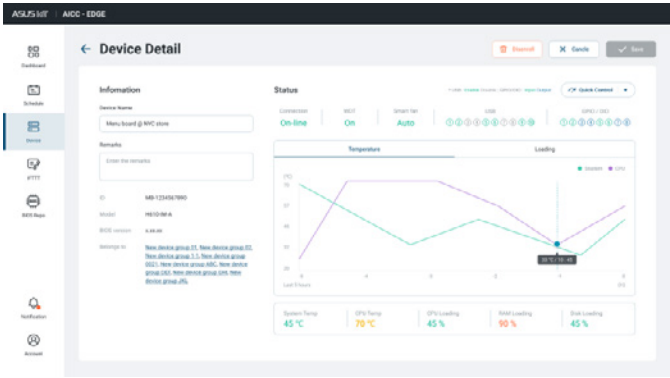
- Remote APIs and commands
- Zero touch device enrollment
- ASUS-specific hardware monitor



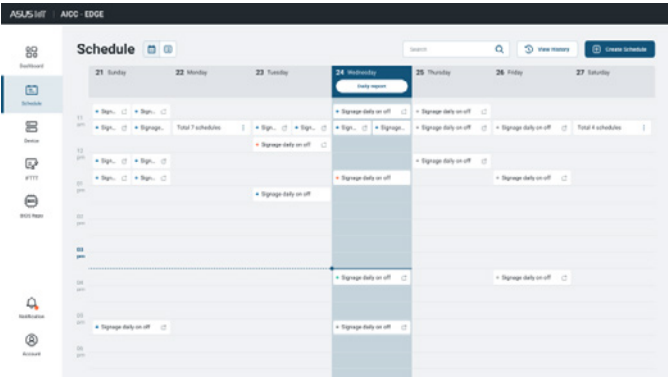
AICC Edge offers an intuitive interface for seamless IoT management, featuring a dashboard for real-time device monitoring and task scheduling to boost efficiency. Users can remotely update BIOS and adjust BIOS settings without needing to be onsite, ensuring devices stay optimized. AICC Edge combines all essential IoT management functions in one secure, efficient user interface.



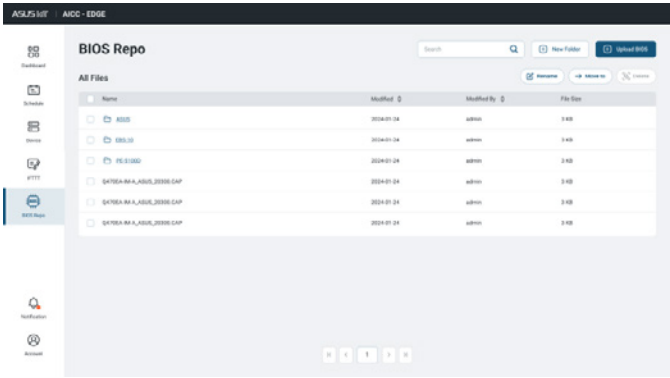
Dashboard



Monitor Devices



Schedule Tasks



Updates BIOS / BIOS Settings

Product Advantages



Update BIOS / BIOS setting



Task Scheduler



Smart Fan Control



USB port reset



ASUS HW monitor



Power Scheduler



Watchdog Recover



Control Peripherals



End-to-end hardware and software integration service

Smart Cities | Smart Transportation | GenAI APP

ASUS IoT's end-to-end hardware and software integration service is designed to help you create datasets, train models, and deploy to production seamlessly. Our tailored AI solutions ensure efficient data handling, robust model training, and smooth deployment, empowering your business with cutting-edge AI capabilities for enhanced performance and innovation.

Process Flow

1. Initial consultation



Define objectives, understand client's needs and outline AI solution goals, including hardware integration.

2. Feasibility study and planning



Assess the existing technology stack, data infrastructure and hardware capabilities to ensure project viability.

3. Hardware selection and procurement



Recommend and provide suitable ASUS IoT hardware, ranging from Tinker Board to high-performance edge AI solutions.

4. Data collection and preparation



Gather, clean and format data to ensure accuracy and readiness for AI model training.

5. AI model development



Select appropriate AI technologies and frameworks to design, build and train customized AI models.

6. Solution deployment



Implement and optimize the AI solution on selected hardware, ensuring seamless integration and performance.

Usage Scenarios



GCC car-plate recognition

PE4000G

- Integrate hardware with parking-management system
- Improve car-plate recognition accuracy from 85% to over 92% in one month



AI customer service

PE8000G

- Built AI advisor applications with LLM and RAG technologies.
- Triple customer-service capabilities with instant, accurate and personalized responses to business inquiries.

