ASUS IoT IN SEARCH OF INCREDIBLE

Accelerating AIoT Transformation

Intelligent Edge Computing and AI Solutions

2026 EDITION

Product Guide

ASUS IoT
IN SEARCH OF INCREDIBLE

iot.asus.com

Made in Taiwan

intel prestige partner

TABLE OF CONTENT

- **About ASUS** 02
- **About ASUS IoT** 04
- **Application Stories**
  - ASUS in Smart Manufacturing 08
  - ASUS in Smart Retail 10
  - ASUS in Smart Healthcare 12
  - ASUS in Smart City 14
- **New Product Highlights** 28

Chapter 01 **Industrial Servers** 34
- Server Systems 36
- Server Motherboards 36

Chapter 02 **Edge AI & Rugged Edge Computers** 38
- NVIDIA Jetson Edge AI Computers 42
- Edge AI GPU Computers 44
- Rugged Edge Computers 47
- Fanless Embedded Computers 52
- Arm-based Gateways 55

Chapter 03 **Embedded Systems & Chassis Solutions** 56
- AI Medical Computers 58
- Box PC Chassis 59
- Rackmount Chassis 60

Chapter 04 **Industrial Motherboards & Single Board Computers** 64
- ATX Boards 68
- Micro-ATX Boards 71
- Intel-based Mini-ITX Boards 73
- AMD-based Mini-ITX Boards 77
- Thin Mini-ITX Boards 78
- 3.5-inch SBCs 80
- Pico-ITX Boards 84

Chapter 05 **Network Interface Cards** 88

Chapter 06 **Industrial Panel PCs** 96
Intel-based Panel PCs 97
ARM-based Panel PCs 98

Chapter 07 **NUC & Mini PCs** 100

Chapter 08 **Tinker Series** 108
Tinker Board Series 110
Tinker Board Series - Accessories 113
Tinker Boards Systems 114

Chapter 09 **Desktop AI Supercomputer** 116

Chapter 10 **Network Switches** 118

Chapter 11 **GPU & AI Accelerator Cards**
Coral 120
MXM 122

Chapter 12 **AI Solutions**
AISVision 365 124
AIEHS 126
AISPHM & AISSENS 128
AISDetector 130
AISODA 132

Chapter 13 **Market Ready Solutions**
ALPR Edge AI Dev Kit 134
Face Recognition Edge AI Dev Kit 135
Face Recognition Solution 136

Chapter 14 **Software & Services**
ASUS IoT Cloud Console 138
ASUS Android & Linux FOTA 139
ASUS IoT Middleware 140
ASUS AICC Edge 142
ASUS IoT InsightOne 144
End-to-End AI Application Development & System Integration 145

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 5,500 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

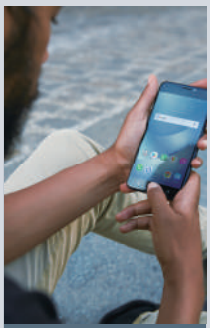
5,500+
World-class R&D experts

160+
Offices

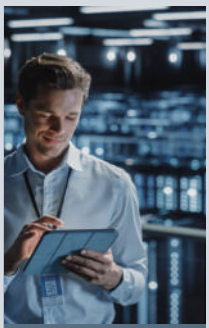
A VISIONARY APPROACH TO UBIQUITOUS COMPUTING TECHNOLOGY

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


Cloud Computing


IoT Computing


AI Computing

Worldwide Recognition

ASUS aspires to become the world's most admired innovative leading technology enterprise, and our ever-growing portfolio of products and services continues to garner global attention.

FORTUNE — One of the World's Most Admired Companies (for 10 years)

Interbrand — Best Taiwan Global Brand (for 12 years)

Forbes — World's Best Employers (for 9 years)

ABOUT ASUS IoT

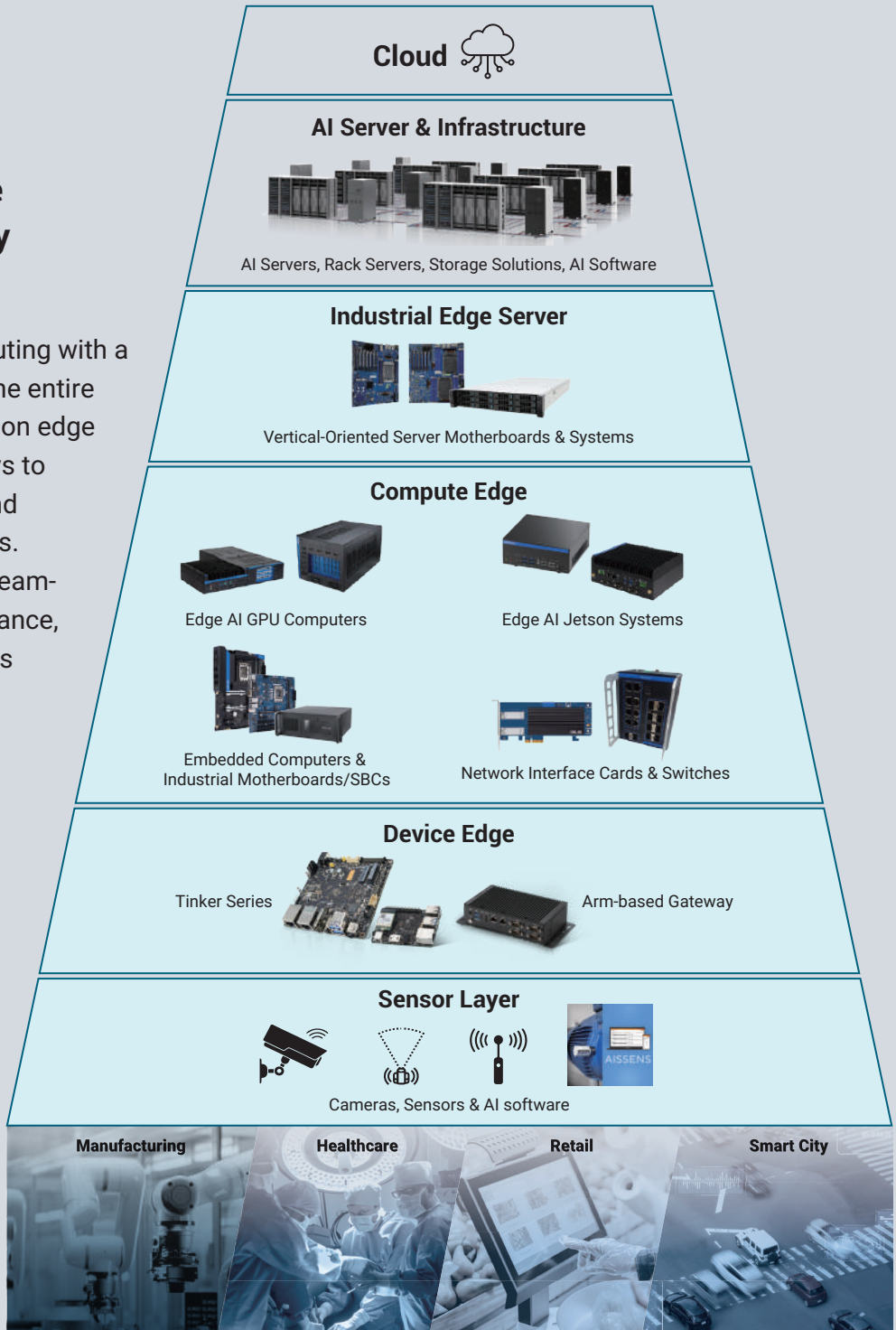
Accelerating AIoT Transformation with ASUS IoT

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.

Trusted Experts in Edge Computing and Industry Solutions

ASUS IoT leads in edge computing with a complete portfolio spanning the entire edge ecosystem—from precision edge sensors and versatile gateways to advanced compute devices and high-performance edge servers. This one-stop stack ensures seamless integration, peak performance, and reliable deployment across any edge scenario.

Leveraging deep expertise in smart manufacturing, retail, healthcare, and smart cities, ASUS delivers vertical-driven solutions that combine industry-leading performance with trusted technical support, driving long-term business value.



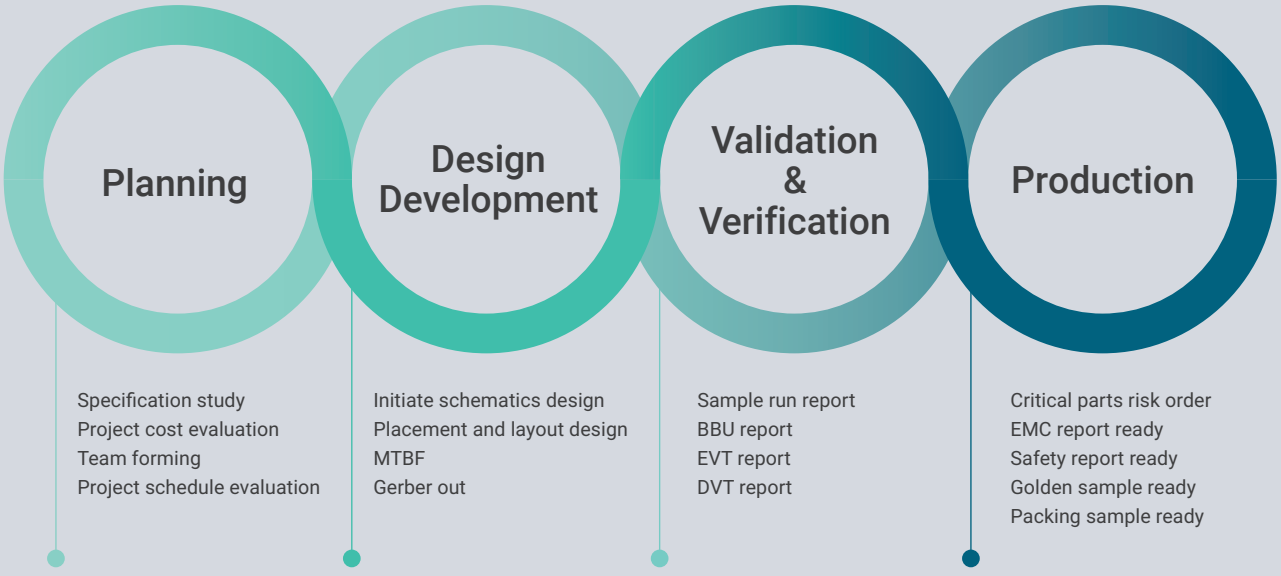
DESIGN & MANUFACTURING SERVICE

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

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



Exceptional AI Technology & Innovation

Quality, Reliability & Longevity

Exclusive Technical Support

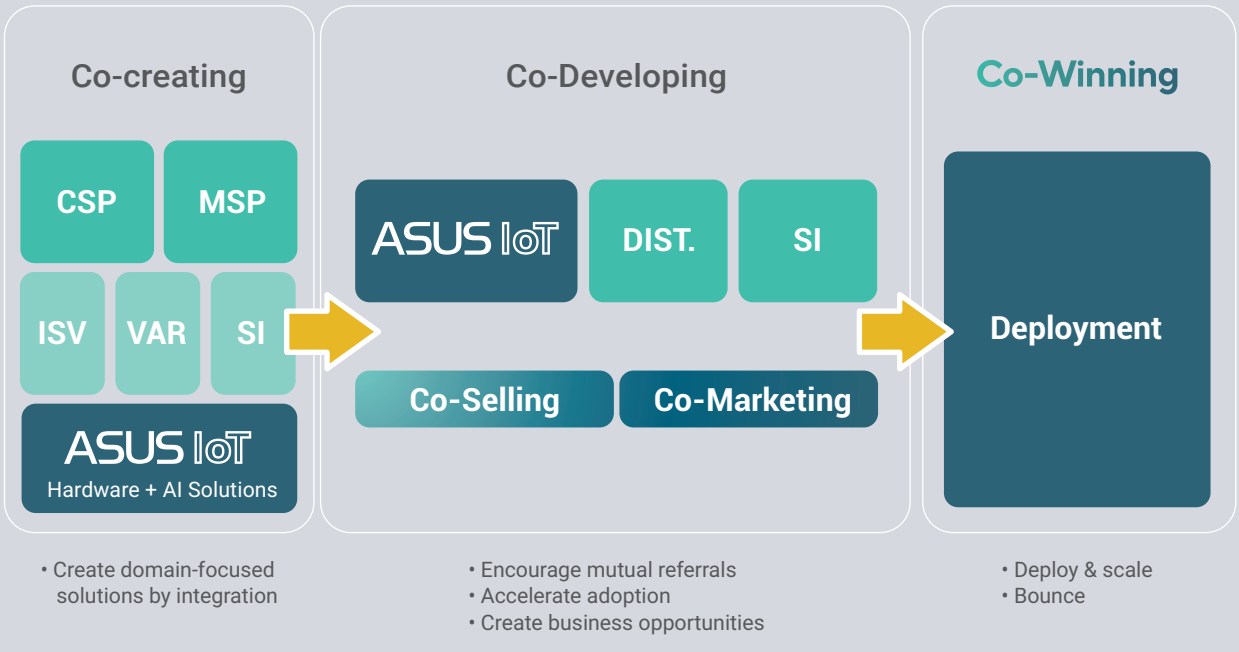
Strong Partnership for Timely Production & Stable Supply Chain

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 parter



- Create domain-focused solutions by integration

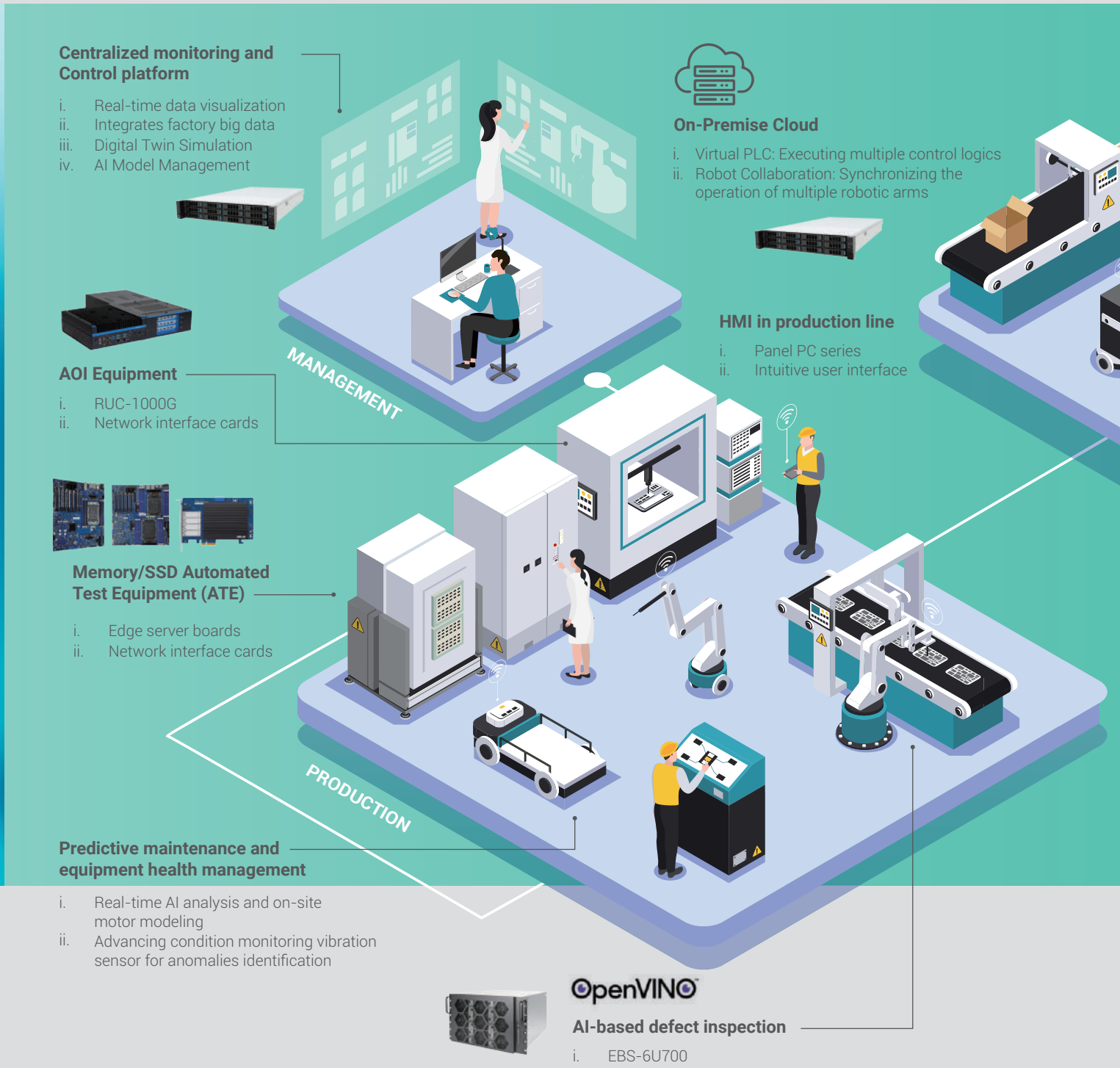
- Encourage mutual referrals
- Accelerate adoption
- Create business opportunities

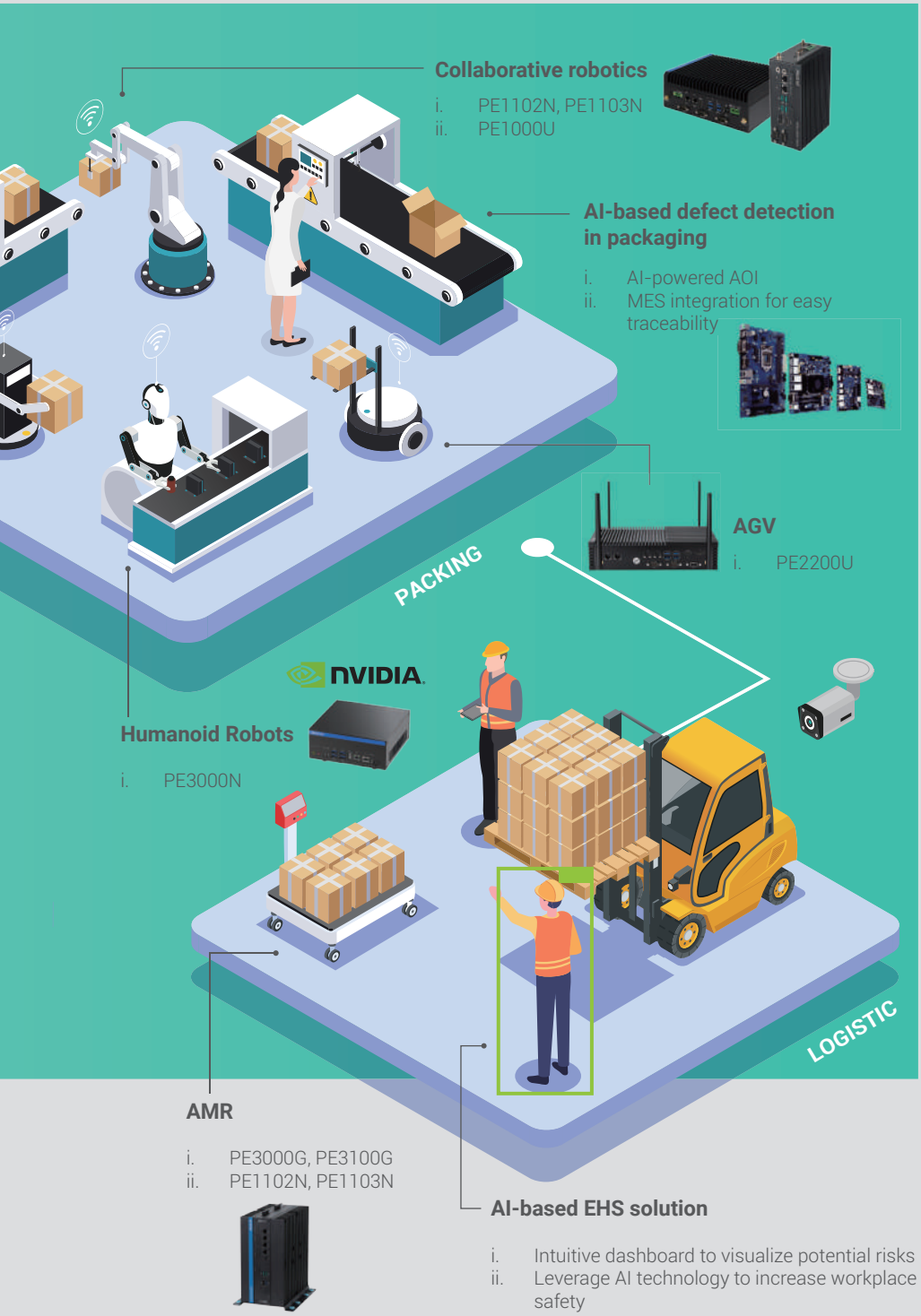
- Deploy & scale
- Bounce

Global Reach, Local Touch

ASUS has hundreds of local service centers around the world that provide efficient, timely service by enabling customers to drop office 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.

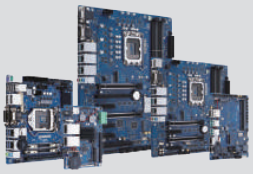
ASUS in
Smart Manufacturing





Chapter 1 Industrial Servers

Chapter 2 Edge AI & Rugged Edge Computers



Chapter 4 Industrial Motherboards & Single Board Computers

Chapter 5 Network Interface Cards

Chapter 6 Industrial Panel PCs

Chapter 12 AI Solutions

ASUS in
Smart Retail

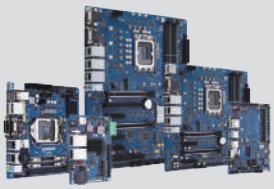
Intelligent vending machine

i. Innovative technology and flexible design
ii. Outstanding design capabilities
iii. PE1102N

AI self-checkout

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

Chapter 2 Edge AI & Rugged Edge Computers



Chapter 4 Industrial Motherboards & Single Board Computers

Chapter 7 NUC & Mini PCs

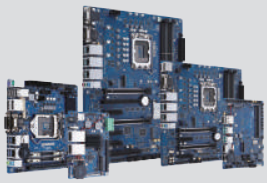
Chapter 6 Industrial Panel PCs

Chapter 8 Tinker Series

Chapter 12 AI Solutions


AI Intelligent Vision Analytics
i. Customer traffic-pattern recognition
ii. Personalized shopping recommendations
Digital signage
i. High performance with compact design
ii. 24/7 reliability
iii. NUC 15 Pro
Digital menu
i. Reliable fanless design
ii. 4K triple-display support
iii. EBS-S500W
Self-service ordering
i. SaaS empowers customers to tailor orders by themselves
ii. Integration with loyalty programs
Service robots
i. Customer assistance and guidance
ii. Automated inventory scanning
ATM
$ 6.68
Electronic shelf labeling solution
i. Real-time price updates
ii. Integration with inventory management
AI-based smart replenishment
i. Integrate AI technology into existing processes
ii. Optimize efficiency for increased profitability
OpenVINO

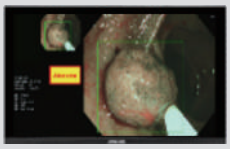
Chapter 1 Industrial Servers



Chapter 4 Industrial Motherboards & Single Board Computers

ASUS in **Smart Healthcare**

Endoaim

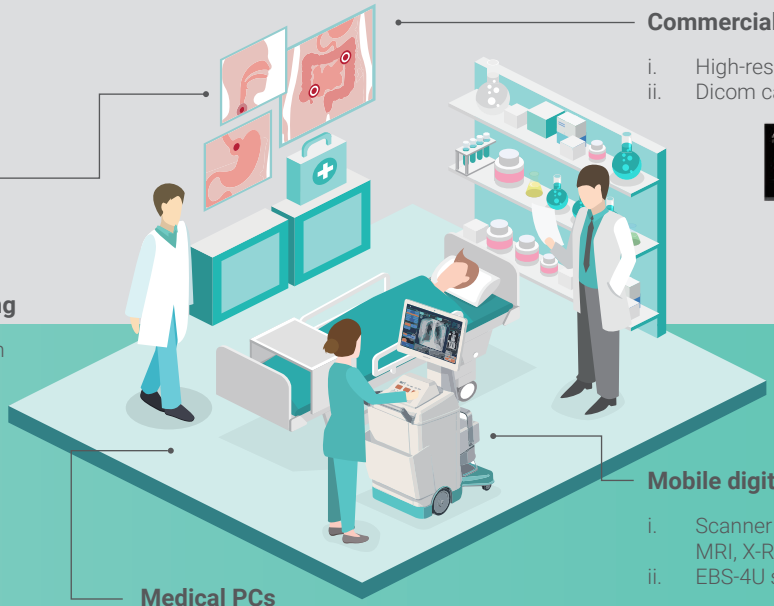


AI-based image processing

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

Commercial/clinical monitors

i. High-resolution imaging
ii. Dicom calibration

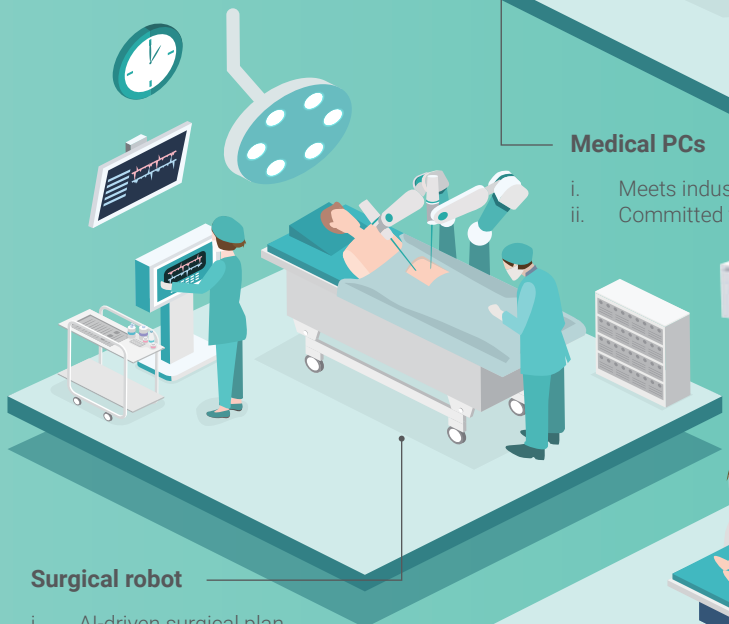


Mobile digital X-ray system

i. Scanner Host/Server PC for CT, MRI, X-Ray
ii. EBS-4U series, ISS-GPU series

Medical PCs

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



Surgical robot

i. AI-driven surgical plan
ii. Real-time navigation and monitoring
iii. Precise robot arm operation

PE3000G

Medical image process

i. Scanner Host/Server PC for CT, MRI, X-Ray
ii. EBS-4U series, ISS-GPU series

Medical IT

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

Chapter 7 NUC & Mini PCs

Page 58 Medical PCs

ASUS HealthHub Computers

US FDA Class 1

Commercial / Clinical Monitors Computers

ASUS VivoWatch Computers

US FDA Class 2

ASUS Handheld Ultrasound Solution

Portable ultrasound solutions

i. Compact and lightweight design
ii. Wireless connectivity

Teleheath solutions

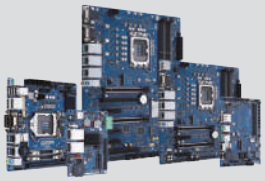
i. Integrate BP/AC/SpO2/BT/ BMI devices
ii. Designed for hospital/kiosk/home use

Wearables
Health monitoring apps

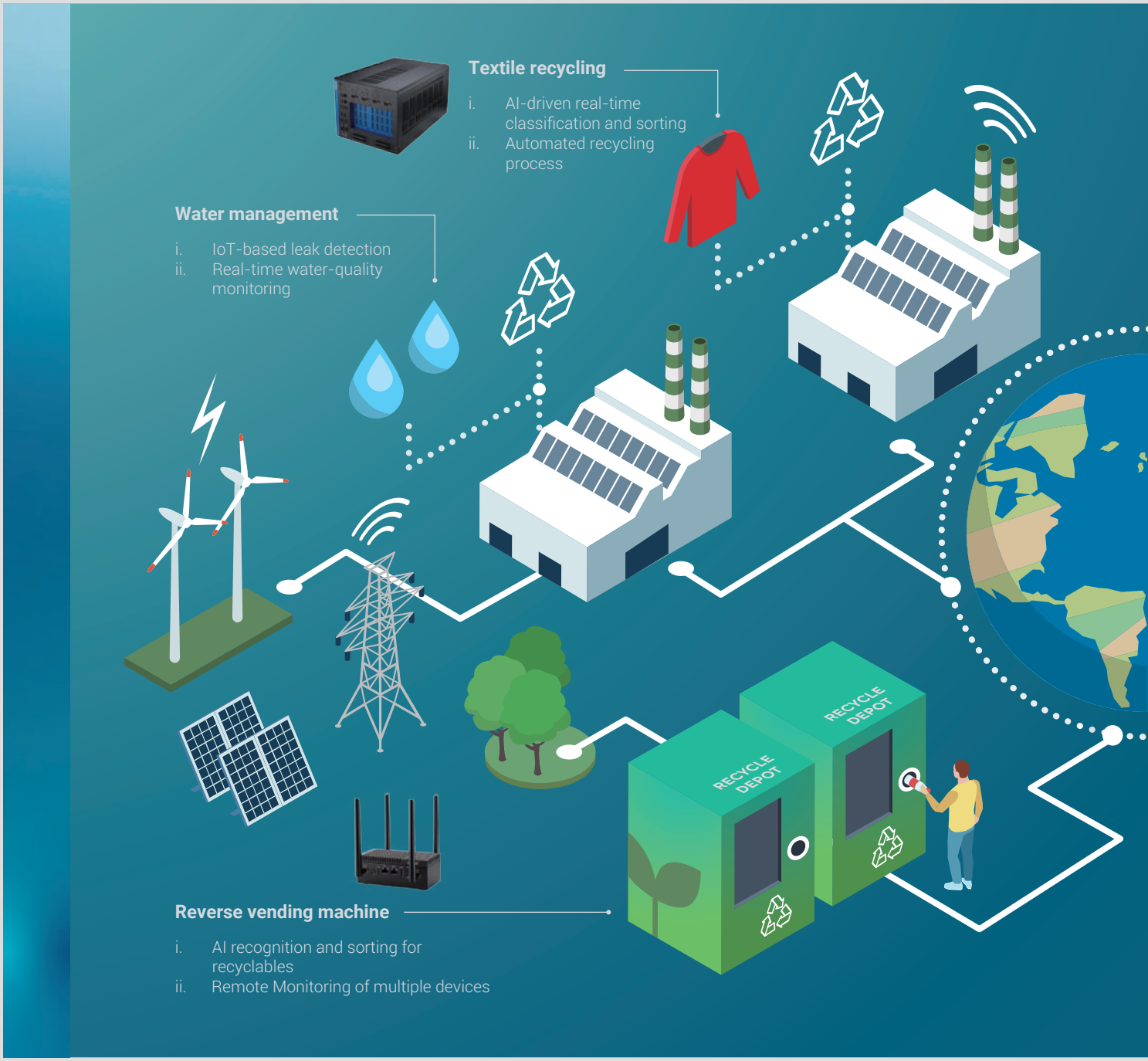
i. Continuous vital-sign tracking
ii. Health data synchronization

ASUS in **Smart City**

Chapter 2 Edge AI & Rugged Edge Computers



Chapter 4 Industrial Motherboards & Single Board Computers



Chapter 6 Industrial Panel PCs

Chapter 8 Tinker Series

Chapter 13 ALPR Edge AI Dev Kit

OpenVINO

Smart parking

i. Parking space availability tracking
ii. License plate recognition

Smart pole

i. Adaptive street lighting
ii. Centralized lighting control
iii. Built-in IP camera for real-time video analytics

Smart building

i. Centralized building control
ii. AI-driven data analytics

Roadside unit (RSU)

i. People flow monitoring
ii. On-road vehicle and crosswalk tracking

Station Passenger Information System (PIS)

i. Digital signage with real-time train schedules

Fleet management

i. GPS vehicle tracking and route optimization
ii. Driver behavior management
iii. Engine data reporting

APPLICATION STORIES

Smart Manufacturing

Semiconductor Testing Equipment with High-Performance Servers

ASUS IoT and Intel® have jointly developed a cutting-edge, high-performance server platform tailored for semiconductor testing equipment, now adopted by leading ATE manufacturers worldwide.

Solution:

- Downsized server platform, boosting testing efficiency with additional slots and higher memory frequency
- Specialized memory sockets for stable high-speed signal processing and streamlined component assembly
- Enhanced quality control enabling early, large-scale shipments ahead of schedule

Key Benefits:

- Strong partnerships with platform vendors and extensive engineering expertise
- Superior layout and signal design ensuring compatibility with high-performance devices
- Stable manufacturing and supply chain support for high-volume early-stage production

Smart Manufacturing

Enhanced Semiconductor Security with AI-Driven Proactive Protection

ASUS IoT AISEHS software transforms security for a leading semiconductor manufacturer with solutions ranging from passive monitoring to intelligent, real-time protection, enhancing safety, efficiency, and compliance.

Solution:

- AI image detection for PPE compliance, virtual fencing, and hazardous behavior monitoring
- Real-time alerts and video-based incident tracking
- Flexible deployment: cloud, hybrid, or on-premises
- Seamless integration with existing CCTV/VMS
- Custom AI models and multi-tenant support

Key Benefits:

- Reduced safety risks and labor costs with proactive and automated monitoring
- Faster event processing, reducing response times from 30–60 minutes to under 5 minutes
- High AI accuracy (>90%) with minimal error rates (<1%)
- Quick deployment in 2–3 weeks

Smart Manufacturing

AI Powered Zero-Defect Quality Inspection of Automotive Screws and Nuts

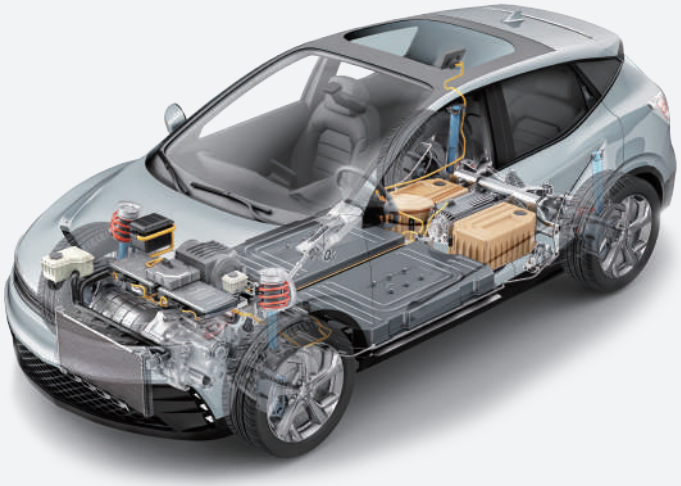
三星科技 SAN SHING FASTECH CORP.

San Shing Fastech leverages ASUS AISVision AI to ensure zero-defect quality for automotive screws and nuts, improving inspection accuracy, minimizing waste, and enabling in-house AI control.

AISVision

Solution:

- AI-powered defect detection goes beyond rule-based AOI, catching subtle and random defects
- Auto-labeling builds datasets quickly; AI continuously learns and improves
- In-house integration lets R&D maintain and optimize independently
- Operators retrain AI with real production data, improving real-time decision-making



Key Benefits:

- Zero-defect assurance, reducing downtime and recalls
- Faster, more accurate inspections with lower waste
- Self-sufficient system management and continuous improvement
- Scalable for broader production line applications

Smart Manufacturing

AI High-Speed Automated 3D X-Ray Inspection for Industrial Quality Control

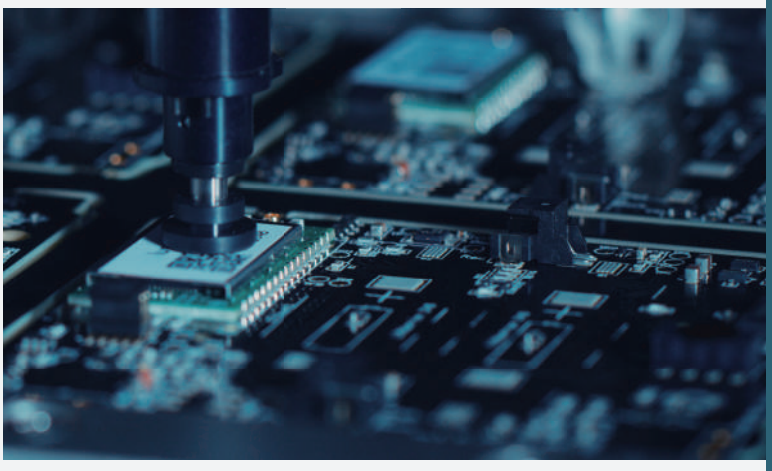
UNICOMP

Unicomp upgraded its LX9200 3D inline X-ray inspection system using ASUS IoT's EBS-4U700 industrial computer and Configure-to-Order Services (CTOS), enabling high-speed AI computing, massive image processing, and reliable 24/7 automated inspection.

EBS-4U700

Solution:

- High-speed, multi-angle 3D X-ray imaging and massive image processing
- AI and machine learning for automated defect detection and precision inspection
- Dual-GPU architecture for high-volume, continuous inspection
- Industrial-grade design for 24/7 automated operation



Key Benefits:

- Faster inspection throughput with high-precision results
- Improved defect detection accuracy and inspection consistency
- Support for 24/7 unmanned inspection and automation, and reduced manual inspection effort and operational costs

APPLICATION STORIES

Smart Manufacturing

Hazard Detection at Industrial and Utilities Plant with Intelligent Edge-Based Vison

VISIONAERY

ASUS IoT edge AI system PE1100N, powered by NVIDIA® Jetson Orin™, enables real-time hazard detection on-site, helping industrial and utility plants identify leaks, fires, flares, smoke, and other risks for safer, more efficient operations.

PE1100N

Solution:

- Detect liquid leaks and sprays in real time
- Monitor fires, smoke, and flares for early alerts.
- Identify gas and vapor hazards
- Process video feeds locally with edge-based AI for immediate action

Key Benefits:

- For staff: Safer working environment with proactive alerts
- For facilities: Reduced incidents, improved compliance, and lower operational risk
- For IT: Local edge processing ensures reliability, low latency, and data security

ASUS IoT Advantages:

- Rugged, fanless, high-performance NVIDIA Jetson edge AI systems
- Global support and reliable long-term supply

Smart Manufacturing

Flexible Autonomous Mobile Robots (AMR) for E-Commerce Warehouses

ASUS IoT powers AMRs with the PE2000U embedded computer, enabling precise navigation, workflow optimization, and human-robot collaboration in e-commerce warehouses for faster, safer operations.

PE2000U

Solution:

- Robots navigate autonomously with LiDAR and 3D cameras for mapping and obstacle avoidance
- Centralized management engine handles task allocation, fleet control, and real-time order processing
- AMRs collaborate with humans, taking on repetitive tasks while workers focus on complex operations
- Real-time monitoring and analytics optimize warehouse efficiency

Key Benefits:

- Streamlined operations, reduced physical strain, and higher throughput for operators
- Scalable, cost-effective, and efficient AMR deployment

Smart Manufacturing

Textile Recycling Transformation with Edge AI

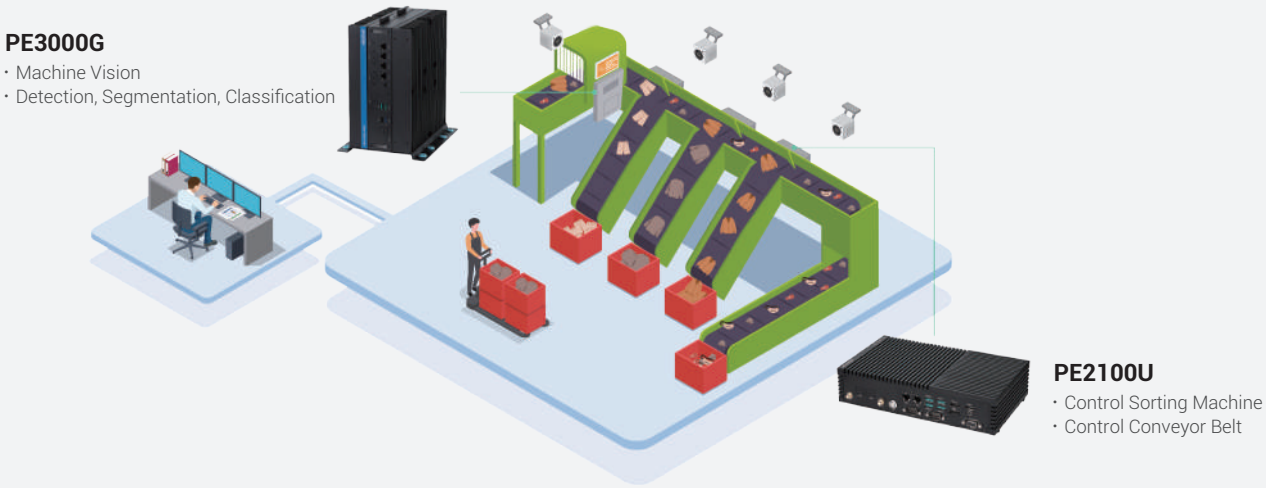
ASUS IoT Edge AI systems use machine vision and deep learning to identify and sort recyclable materials instantly, improving efficiency, reducing waste, and enabling on-site AI optimization.

Solution:

- Edge AI identifies and sorts various mixed materials in real time
- Deep learning and CNNs continuously improve sorting accuracy
- Auto-labeling accelerates AI training for new materials
- Operators retrain AI with live data for optimized decisions

Key Benefits:

- Faster, more precise material sorting
- Reduced waste and higher throughput
- On-site AI control reduces cloud dependency
- Scalable, durable systems for harsh industrial environments



Smart City

Autonomous Vehicle Powered by Edge AI Systems for Industrial and Agricultural Applications

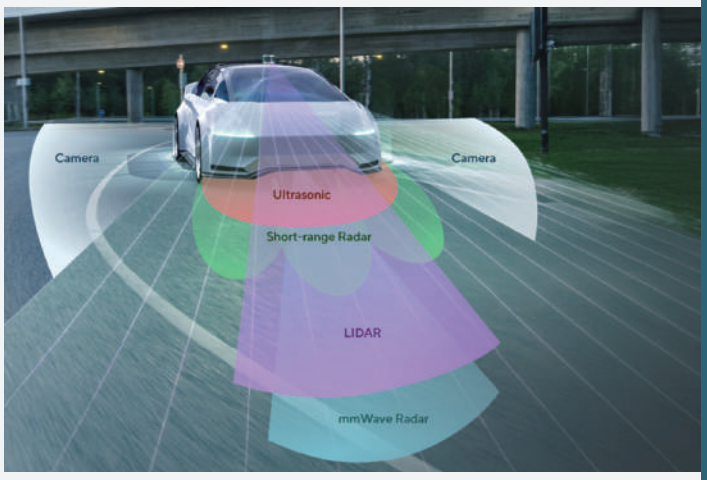
The ASUS PE8000G edge AI computer, with Intel® Core™ CPUs and Arc™ GPUs, enables real-time AI inference and sensor integration to bring autonomous industrial and agricultural vehicles from lab to field.

PE8000G

Solution:

The PE8000G enables autonomous vehicles to:

- Integrate multiple perception sensors (LiDAR, RADAR, ultrasound, GNSS, and cameras) for full 360° environment mapping
- Perform real-time AI inference for navigation, obstacle avoidance, and dynamic decision-making
- Execute edge-based AI training and processing for perception and control
- Operate reliably in rugged, high-vibration environments with flexible connectivity and power options



APPLICATION STORIES

Smart City

Real-Time LiDAR Intelligence for Safer, Smarter Transportation Infrastructure

outsight

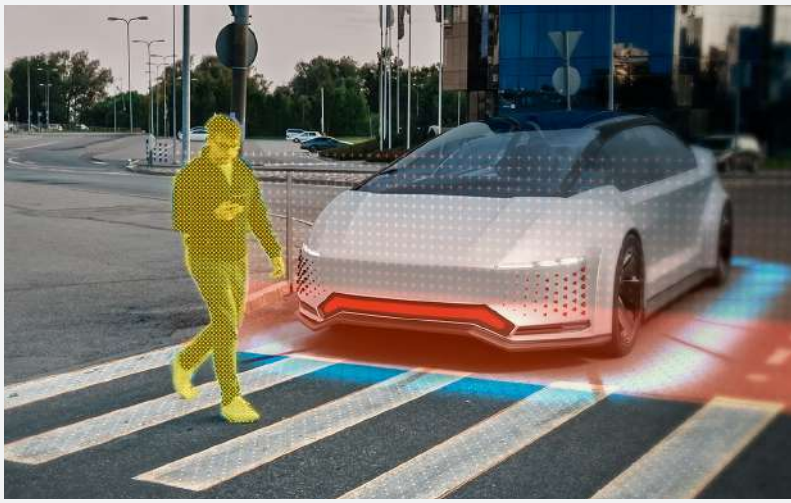
Outsight collaborated with ASUS IoT to create a spatial AI solution using 3D LiDAR and edge computing to deliver real-time analytics of people and vehicle movement across transportation hubs and cities, improving safety, efficiency, and operations without compromising privacy.

Solution:

- 3D LiDAR sensors network with edge AI processing across transportation hubs, roadways, and urban environments to provide real-time tracking and instant analytics on-site of people and vehicles
- Live digital twin tech continuously mirrors the physical environment to optimize traffic flow, crowd management, and asset utilization
- Advanced spatial analytics detect, track, and classify movement patterns and anomalies

Key Benefits:

- Improved safety and optimized traffic flow and operations
- Privacy-first sensing with no personal data
- Lower costs and power use than camera systems
- Scales from single sites to city-wide deployments



Smart City

AI-Optimized Smart Parking Management System

EPS GLOBAL

CityZen solution combines EPS Global's AI parking software with ASUS IoT edge hardware to optimize urban parking, reduce congestion, and improve driver experiences.

Solution:

- Real-time detection of parking space availability and occupancy in on-street and off-street lots via sensors and cameras
- Edge computing with ASUS Tinker series and ALPR systems for instant insights
- Automatic license plate recognition for faster entry/exit and improved security
- Mobile app for guidance, booking, and cashless payment
- Data analytics for operators to optimize traffic flow and parking usage

Key Benefits:

- Better use experience with quick parking process with real-time guidance
- Reduced congestion, better utilization, increased revenue
- Lower emissions from less cruising for parking

ASUS IoT ALPR Edge AI DevKit

Smart City

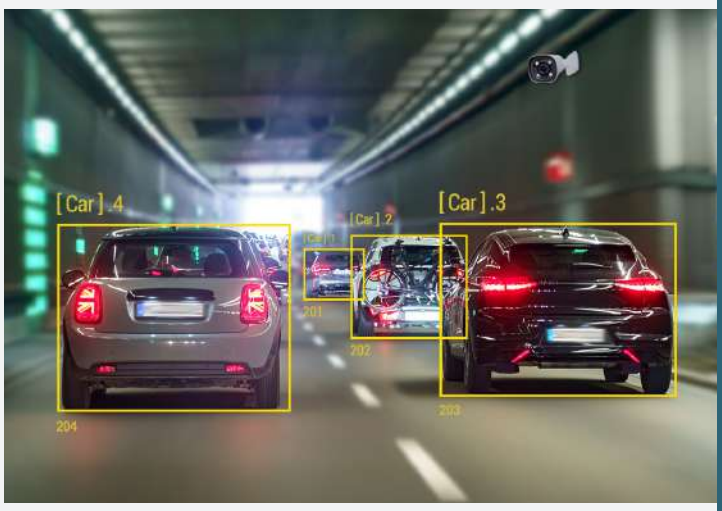
Real-Time AI Tunnel Incident Detection with Edge Server

HiPower developed the Incident Information Detection (IID) system, an AI-powered edge solution that features the ASUS IoT EBS-4U700 edge server, to monitor tunnels in real time to detect anomalies, improve emergency response, and enhance public safety.

EBS-4U700

Solution:

- AI-based video analysis of multiple high-resolution camera feeds to detect accidents, abnormal vehicle behavior, smoke, and other hazards
- Processes data locally on ASUS EBS-4U700 server for instant alerts
- Automatically highlights anomalies and sends real-time notifications
- Scalable system integrates with existing infrastructure



Key Benefits:

- Reduces operator's workload, improves monitoring accuracy
- Enhances public safety, minimizes accident risks

ASUS IoT Advantages:

- Industrial-grade, high-performance edge servers with robust cooling, modular design, perfect for critical tunnel environments

---

Smart City

Binh Dinh Smart City Monitoring Center Powered By Edge AI

Binh Dinh implemented a smart city monitoring center, powered by the ASUS IoT PE1000N NVIDIA Jetson edge AI system, to enable real-time traffic management, AI-driven vehicle analysis, and centralized safety and optimizing urban operations.

Solution:

- Real-time vehicle data collection (weight, axles, load)
- Precise vehicle number recognition and passing vehicle data
- Law enforcement with real-time vehicle monitoring, equipment monitoring and on-site violation proof

Key Benefits:

- Enhanced road safety and reduced congestion
- Lower fuel use and emissions
- Coordinated emergency response
- Centralized data supporting smart city growth

Camera | **PE1000N** | Smart City Monitoring Center

APPLICATION STORIES

Smart City

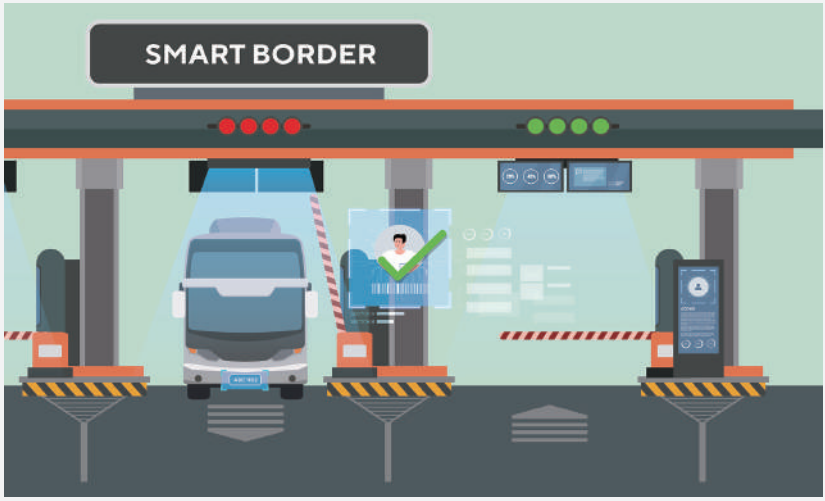
Smart Border Management Across Southeast Asia with Edge AI GPU Computer

Southeast Asian border sites implemented rapid deployment of smart city applications, including AI-driven driver and vehicle analytics and real-time traffic monitoring, to reduce border congestion and improve traffic efficiency.

PE4000G

Solution:

- Real-time traffic monitoring and congestion management at border checkpoints
- AI-driven driver and vehicle analytics for faster processing and law enforcement
- Digital signage and self-service kiosks to streamline traveler experiences
- Coordination of emergency and priority vehicle access



Key Benefits:

- Reduced congestion and improved border throughput
- Faster emergency response and operational efficiency
- Enhanced traveler experiences and enforcement accuracy
- Scalable AI infrastructure to meet future demands

Smart City

Smart Access Control and Parking Management Solution

SKIDATA

ASUS IoT and Skidata co-developed a Smart Access Control and Parking Management Solution in Brazil that uses AI-driven license plate recognition to streamline entry, optimize parking flow, and deliver operational insights with high accuracy and scalability.

Solution:

- Touchless vehicle access via automatic license plate recognition
- Fast entry and exit with pre-registered vehicles and visitors
- Integrated access control and parking management platform
- Smart parking guidance with dynamic digital signage
- Centralized monitoring, data collection, and analytics

Key Benefits:

- Reduces entry time to under 15 seconds, enhancing visitor experience
- Improves parking capacity utilization and traffic flow
- Maintains high security without manual intervention
- Enables data-driven operational and planning decisions

Smart Healthcare

Precision Robotic Surgery Powered by Edge AI Systems

ASUS IoT PE3000G edge AI system brings real-time intelligence, precision, and reliability for robotic-assisted surgery, for safer, faster, and more efficient procedures.

PE3000G

Solutions:

PE3000G enables robotic surgery by:

- Analyzing CT, MRI data to identify and provide optimal surgical strategies
- Enabling precise robotic arm navigation with real-time video, sensor, and positional data
- Identifying surgical images including organs, tumors, and critical anatomical structures with AI vision
- Providing AR-assisted navigation by overlaying 3D models onto the patient's body for intuitive surgical visualization

Key Benefits:

- For Doctors & Patients: Real-time guidance, improved precision, safer surgeries, reduced trauma, and faster recovery
- For Hospitals: Lower operational costs, reduced risk of errors, optimized resource use, and minimal reliance on cloud infrastructure

---

Smart Healthcare

AI-Powered Digital Imaging with Remote Diagnosis Assistance for Clinical Excellence

A digital imaging solution with an AI-augmented platform that centralizes control of CT, MRI, PET-CT, and ultrasound systems supports real-time scanning, remote specialist guidance, standardized protocols, and scalable multi-site operations, powered by ASUS IoT customized hardware.

Solution:

- Higher clearance of digital images from CT, MRI, PET-CT, and ultrasound
- Enables AI-augmented remote operation of radiology equipment and diagnostic guidance from certified specialists
- Works across equipment brands and integrates seamlessly with existing Radiology Information Systems (RIS)

Key Benefits:

- Delivers high and consistent image quality with remote specialist support for more accurate diagnoses
- Reduced reliance on on-site technologists
- Minimizes downtime and operational disruptions

APPLICATION STORIES

Smart Healthcare

Real-Time Eye Health Diagnostics with Edge AI

AI-powered ophthalmic systems, powered by the PE4000G edge AI system, combine high-resolution imaging with real-time edge AI analysis to enable faster, more accurate diagnoses, improving clinical efficiency and patient outcomes.

PE4000G

Solutions:

- Camera-based ophthalmic imaging capturing high-resolution eye data in real time with on-edge AI processing for image analysis and abnormality detection
- Deep learning models for automated screening, diagnosis, and surgical risk assessment
- Real-time image synthesis and AI inferencing for laser and corrective eye procedures
- Scalable platform for future tele-ophthalmology and mobile screening

Key Benefits:

- Faster, more accurate diagnoses with AI-assisted insights; earlier detection and safer, personalized treatment planning
- Reduced clinician workload with improved efficiency
- Better patient experience through quicker exams and improved outcomes
- Future-ready foundation for smart and remote eye care services

---

Smart Retail

AI Smart Replenishment & Dynamic Labeling for Modern Supermarkets

The ASUS IoT Smart Replenishment Solution, co-developed with Macnica DHW, leverages AI-powered computer vision to automate replenishment and electronic shelf labeling for non-barcoded perishable goods in supermarkets

EBS-4U

Solutions:

- AI-driven monitoring of non-barcoded perishable products
- Real-time stock level detection with customizable thresholds and automated staff alerts for timely replenishment
- Dynamic price updates via electronic shelf labeling
- Local image processing to ensure GDPR privacy compliance

Key Benefits:

- Lower labor costs and reduced food waste
- Improved product freshness, on-shelf availability, and customer satisfaction
- Faster, data-driven replenishment and pricing decisions
- Higher operational efficiency and store profitability

Smart Retail

AI Self-Checkout Kiosks with Barcode-Less Product Scanning

SHINSEGAE

SHINSEGAE I&C partnered with ASUS to deliver a barcode-less, AI self-checkout solution powered by ASUS NUC 13 Pro, running computer vision fully at the edge for faster, more secure, and scalable retail checkout.

NUC 13 Pro

Solutions:

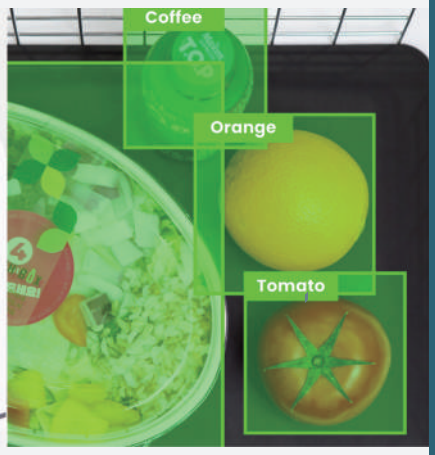
- Camera-based, barcode-less AI self-checkout with real-time edge processing
- Easy deployment and operation without complex backend systems

Key Benefits:

- One-second multi-item scanning with up to 99.5% accuracy
- Over 4X faster checkout and improved customer experiences
- Lower latency, stronger security, and reduced total cost of ownership

ASUS IoT Advantages:

- Reliable, high-performance edge AI in a compact NUC form factor
- Strong price-to-performance for large-scale deployment
- Flexible I/O, local support, and 3-year standard warranty



Smart Retail

Boost Retail Efficiency with Digital Menu Boards and Centralized Data Management

A leading Taiwanese restaurant chain deploys an ASUS IoT PE1000S industrial PC and AICC cloud management to overcome asynchronous updates, high maintenance costs, and limited remote control, enabling stable, data-driven operations across thousands of stores.

PE1000S

Solutions:

- PE1000S fanless industrial PC powers digital menu boards
- ASUS IoT Cloud Console (AICC) enables centralized monitoring and remote management

Key Benefits:

- 80% reduction in equipment failures
- Maintenance response cut to under two hours, with most issues fixed remotely
- Consistent nationwide menu updates and improved sales performance

ASUS IoT Advantages:

- Rugged, fanless hardware is designed for harsh restaurant environments, ensuring reliable and long-term operations and lower TCO
- Trusted local support and 3-year warranty

APPLICATION STORIES

Smart Retail

AI-Powered Autonomous Coffee Machine with ASUS IoT's One-Stop Solution

Ella, an autonomous robot barista, leverages ASUS IoT's hardware and software to deliver high-quality, contactless coffee in high-traffic spaces.

Solution:

Ella Coffee Machine features AI cameras to monitor cup placement, ingredients, and machine status. A robotic arm brews coffee and fixes anomalies instantly, when detected.

- Hardware: ASUS EBS-A710 industrial chassis + Q670EA-IM-A motherboard for 24/7 AI computation
- Software: AISVision handles real-time AI detection and process control
- Cloud: ASUS IoT Cloud Console enables remote monitoring, predictive maintenance, and inventory management

AISVision

Key Benefits:

- Ensures consistent coffee quality
- Minimizes operational downtime
- Optimizes inventory and resource usage via cloud-based analytics
- Enables scalable deployment across multiple locations, and enhances customer engagement with interactive display and seamless service

---

Smart Retail

AI Tracking Surveillance Solutions Powered By ASUS NUC Mini PCs

Aira uses ASUS NUC mini PC to deliver AI-powered facial recognition and tracking across retail, manufacturing, offices, and entertainment venues, providing scalable, low-power, and cost-efficient edge AI solutions for large-scale, 24/7 operations.

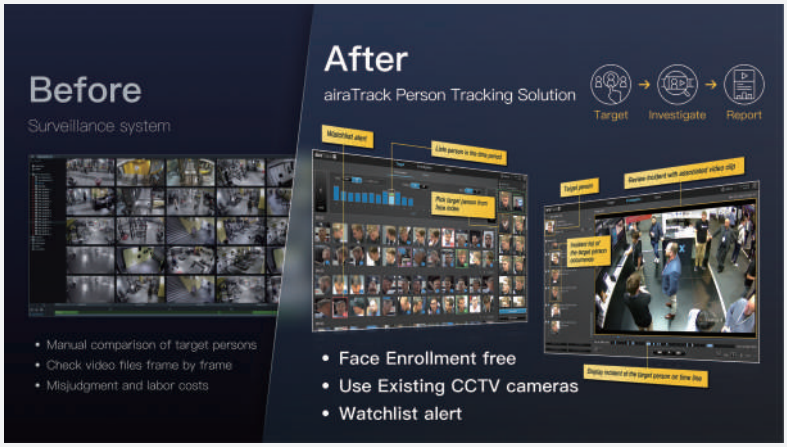
NUC 14 Pro

Solution:

- Real-time AI facial recognition and tracking for 20-50 cameras
- Usages includes safety monitoring (e.g., PPE detection on construction sites), customer flow and behavior analysis in retail, etc.
- Durable NUC design is suitable for dusty or space - limited environments, offering reliable 24/7 operation

Key Benefits:

- Enhanced safety and security through real-time monitoring and actionable insights
- Improved operational efficiency with automated tracking
- Cost-effective, low-power edge AI solution Reliable 24/7 performance in any environment



Smart Energy

Energy Industry Transformation Driven By Ruggedized Communication Gateways

Hitachi Energy

Hitachi Energy partnered with ASUS IoT to develop the TRO610 cellular router, a compact, ruggedized communication gateway, ensuring secure, always-on connectivity for distributed smart grid assets, supporting real-time data transmission, edge computing, and compliance with industry standards.

Solutions:

TRO610 cellular router provides

- Secure, real-time data transmission from remote sensors and smart meters to central control systems over 3G, 4G, and multiple frequency bands (CBRS, Anterix™, 410MHz, and 450MHz)
- Edge computing for local data processing, real-time monitoring, analytics, and grid operation decision-making
- Remote management via Hitachi Energy's Supros system, including over-the-air firmware updates

Key Benefits:

- Improved grid visibility and operational efficiency
- Reliable data transfer from distributed field devices
- Simplified installation and remote management

Smart Agriculture

Boosted Efficiency in Agriculture with Autonomous Mobile Robots (AMR)

A French fruit producer worked with ASUS IoT to deploy AMRs for fruit picking, using edge AI to enable real-time vision, navigation, and precise robotic control in challenging agricultural environments.

PE3000G

Solutions:

- Assess fruit ripeness, color, size, and harvesting readiness using real-time edge AI image processing
- AMR navigation with precise path planning, trajectory adjustments, and gentle robotic arm control in complex orchards
- Reliable, durable operation in dusty, uneven agricultural environments

Key Benefits:

- Consistent harvest quality
- 24/7 harvesting regardless of weather or daylight
- Increased yields through optimized land use and denser planting
- Reduced reliance on manual labor

New Product Highlights

ISS-H281-GNRSP

2U Rackmount Server System, supporting Intel® Xeon® 6 processors, delivering an optimal balance of performance and efficiency for diverse workloads

- Single Xeon® 6500/6700 series processor up to 350W
- Up to 12 SATA/SAS/NVMe supported
- Up to 1 double width GPU card supported
- On board 2 x10GbE, 2 x 1GbE ethernet supported
- Wide operation temperature from 0° C to 40° C

**Product available in Q2 2026*

ISB-C801-GNRSP

Rugged Single Socket CEB Server Board, supporting Intel® Xeon® 6 processors, optimized for edge computing workloads

- Single Xeon® 6500/6700 series processor up to 350W
- Up to 7 PCIe Gen5 slots and flexible MCIO configurations
- On board 2 x10GbE, 2 x 1GbE ethernet supported
- Wide operation temperature from -40° C to 75° C
- Military-grade, rugged design built to comply with the stringent requirements of hazardous industry applications

**Product available in Q3 2026*

RUC-1000G

19-inch 2U Rugged Rack-Edge AI GPU Computer, supporting Intel® Core™ Ultra 200S processors and up to a 600W GPU with PCIe® Gen 5, delivering up to 4000 AI TOPS

- Supports Intel® Core™ Ultra 200S Series CPU and dual 2.5" SSD/HDD with RAID 0/1
- Up to 4000 TOPS for real-time edge AI; 600W GPU & PCIe Gen 5 support
- Rich I/O: 1 x 10GbE, 2 x 2.5GbE, 10 x USB, 6 x COM ports
- 8–48V wide-range DC-in with built-in ignition power control
- Wide operating temperature range: -25–60°C

RUC-1000D

Half-Rack Rugged Fanless Edge Computer, supporting Intel® Core™ Ultra 200S processors featuring up to six 2.5" SSD/HDD (RAID 0/1/5/10) and rich I/O

- Supports Intel® Core™ Ultra 200S Series CPU with W880 chipset
- Supports up to six 2.5" SSD trays and RAID 0/1/5/10
- Rich I/O: 1 x 10GbE, 2 x 2.5GbE, 10 x USB, 6 x COM ports
- 8–48V wide-range DC-in with built-in ignition power control
- Wide operating temperature range: -25–70°C

PE1000U

Compact Rugged Fanless DIN-Rail Edge Computer, supporting Intel® Core™ Ultra processors (Series 2)

- Supports Intel® Core™ Ultra processors (Series 2)
- Rich I/O up to 4 x USB, 4 x LAN, 4 COM, 2 x CANBUS, DIO support
- 9–36V wide-range DC input with built-in ignition power control and power monitoring
- U.S. MIL-STD-810H durability testing, plus vibration resistance up to 5Grms and exceptional thermal design for reliable operation between -25–70°C
- Complies with the IEC 62443-4-1 cybersecurity standard, delivering robust protection against cyber threats throughout the product lifecycle
- DIN-rail form factor with single-side I/O simplifies cabinet wiring
- Ready to connect to WiFi 6E, Bluetooth® and 4G/5G via optional modules

PE8000G

Rugged Edge AI GPU Computer, supporting Intel® Core™ processors (Series 2), 14th/ 13th/ 12th gen Intel Core processors, and up to dual 450W GPU cards

- Supports up to dual 450W GPU cards for real-time AI inferencing at the edge
- Supports Intel® Core™ (Series 2) & 14th / 13th/ 12th Gen Intel Core CPU with R680E chipset
- Military-grade (MIL-STD-810H) durability, and exceptional thermal design ensuring reliable operation between -20–60°C
- 8–48V wide-range DC input with built-in ignition power control and power monitoring

PE5101D

Rugged High-Performance Edge Computer, supporting Intel® Core™ processors (Series 2), 14th/13th/12th gen Intel Core processors, 2.5” hot-swappable HDD tray, RAID 0/1, and up to 200W graphics card

- Supports Intel® Core™ Processors (Series 2) & 14th/13th/12th Gen Intel Core CPU with R680E chipset
- Supports dual 2.5” hot-swappable HDD tray & RAID 0/1
- Rich I/O with 3 x 2.5GbE, 10 x USB, 6 x COM ports
- PCIe® x16 & PCIe x4 expansion slots support up to 200W GPU card
- 8–48V wide-range DC-in with built-in ignition power control
- Wide operating temperature range: -25–60° C
- Compliant with EN 50121-3-2 (EMC requirements for EN 50155)

PE2300U

Rugged Fanless Computer supporting Intel® Core™ Ultra processor (Series 2)-based, DDR5 6400MHz, DisplayPort™, HDMI®, dual-LAN, multiple USB and COM ports, and 9–36V DC-in

- Supports Intel Core Ultra processor (Series 2), with up to 64GB DDR5
- Rich I/O with 2 x LAN, 7 x USB and 4 x COM ports
- Rich expansion capacity including PoE, CAN-bus and COM ports modules
- Wide voltage range: 9–36V
- Wide operating temperature range: -20–60°C

PE3000N

Next-Gen Edge AI Supercomputer with NVIDIA® Jetson Thor™, offering up to 2070 TFLOPS

- Accelerated by NVIDIA Jetson T5000™
- Rugged, low-profile and scalable chassis design
- Optional second stack enables project-specific I/O for vertical (CAN, QSFP28, POE) expansion, within 2U height
- 12–60V wide DC or battery power input with ignition
- Supports multiple generative AI pipelines and sensor fusion for next-gen robotics and automation
- Full support for NVIDIA AI stacks (NVIDIA Isaac™, Metropolis, Holoscan) for fast cloud-to-edge deployment

**Product available in Q2 2026*

PE1103N

Rugged Fanless Edge AI Computer with NVIDIA® Jetson Orin NX™/ Orin Nano™, offering up to 157 TOPs with up to 8 GMSL2 cameras

- Rugged fanless edge AI computer with NVIDIA Jetson Orin NX™/ Orin Nano™
- Offering up to 157 TOPs of AI inference performance
- Up to 8 x GMSL by flexible AEM expansion module
- Wide range of power inputs and operating temperatures with ignition control
- Rich I/O & OOB, with PTP for time sync
- Built-in GNSS with PPS

EBS-6U700

6.5U GPU Rackmount Chassis, supporting up to four RTX 5090 GPUs

- Short 516mm depth
- 9 hot-swap fans ensure superior cooling performance
- 18 full-height PCIe® expansion slots
- 7 half-height PCIe expansion slots
- Supports up to 4000W CRPS PSU

**Product available in Q3 2026*

EBS-5U500

5U Rackmount System, supporting RTX 5000 GPU Series\ ROG 5000 GPU Series\NV Quadro Cards (up to A6000 ADA)

- Supports RTX 5000 GPU Series\ROG 5000 GPU Series\NV Quadro Cards (up to A6000 ADA)
- Supports 360mm liquid cooling radiator (optional)
- Supports up to EATX motherboards
- Includes two Air Penetrator 184i PRO fans for superior air intake
- 8 PCI/ PCIe® expansion slots

EBS-4U1000

4U Rackmount Chassis, built for AI and rendering, offering scalable GPU performance with reliable operation

**Product available in Q3 2026*

- 11 full-height PCI/PCIe® slots; supports up to 4 double-width GPUs
- Eight 3.5-inch SATA/SAS bays; compatible with 2.5" SSD and U.2 NVMe®
- Motherboard supports up to 15.2 x 13.2-inch and below
- Three 12038 hot-swappable internal system fans and two 8038 external fans
- CRPS redundant power supply support

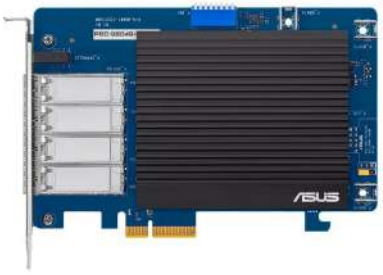
EBS-4U900

4U Rackmount Chassis, supporting up to EEB motherboards (30.5 x 33cm)

- One 2.5" and two 5.25" drive bays
- Optional 240mm liquid-cooling
- Four pre-installed cooling fans: 2 x 120mm, 2 x 80mm
- 7 full-height PCIe® expansion slots
- Flexible vertical or horizontal deployment

PEC-GE04S-FOC00

Industrial 4-port PCIe SFP/Fiber Network Interface Card with full-size design



- Intel® I350-AM4 LAN controller, PCIe Gen 2 x 4 compliant with 30µ gold contacts
- 4 x 1Gbps ports supporting 1000Base-FX (SM/MM) via SFP
- Supports jumbo frames up to 9K bytes
- Rugged fanless industrial design with -40 °C to 75 °C operating range
- Compliant with IEEE 802.3 standards, EN 61000-6-4/6-2, EN 50121-4, NEMA TS2
- 3-year industrial-grade warranty

PEC-GE04S-PAT00

4-port Industrial Gigabit PoE/ PoE+ Network Interface Card with 2KV surge protection

- Intel® I350-AM4 LAN controller, full-size card with 30µ gold contacts
- PCIe Gen 2 x4, 4 × 1Gbps ports, supports 12–48V external power
- PoE/PoE+ PD auto-detection and classification, power budget up to 120W
- Per-port power on/off control via DIP switch, jumbo frame support up to 9K bytes
- ESD 8kV/15kV and 2kV LAN surge protection
- Rugged fanless design, -40 °C to 75 °C operating range
- Compliant with IEEE 802.3/af/at and industrial standards EN 61000-6-4/6-2, EN 50121-4, NEMA TS2
- 3-year industrial-grade warranty

ADS-X318-2X8G

Industrial Unmanaged Network Switch, designed for harsh environments

- 2×10G SFP+, 8×1G RJ45 copper, 8×1G SFP slots for flexible connectivity
- Rugged design with operating temperature from -40 °C to 75 °C
- ESD 8kV/15kV (Criteria A compliant) and 2kV surge protection for reliable operation
- Certified to EN 50121-4, NEMA TS2, EN 61000-6-4, EN 61000-6-2
- Ideal for factory automation, AOI inspection, and high-bandwidth fiber applications

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 provide processing, storage and other applications at the edge. Engineered for mission-critical environments, these servers deliver exceptional performance where standard commercial servers often fall short.

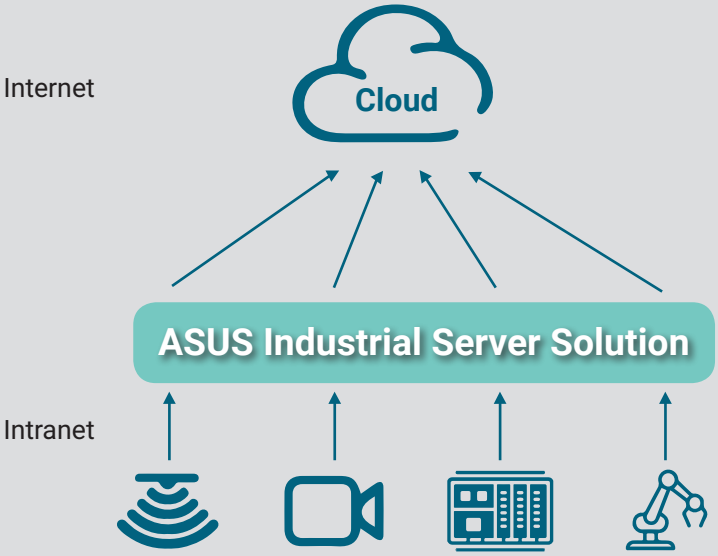
Built for extreme conditions, ASUS IoT Industrial Servers combine unmatched reliability and durability provide lasting value for businesses. Each unit undergoes extensive testing across a wide range of ambient temperatures, minimizing the risk of system failures due to overheating. Their resilience is further reinforced through rigorous vibration testing, making them ideal for high-impact, high-vibration environments such as factory automation, smart manufacturing, and other challenging industrial settings.

Server Motherboard
ISB-E701-GNRWS

Server Motherboard
ISB-E901-GNRSP

Server System
ISS-H281-GNRSP

Edge Computing High-Level Architecture



Cloud
- Public/Private Cloud
- Big Data Processing

Edge Computing
- Real-Time Data processing
- Data Caching, Buffering
- Data Visualization
- Basic Analytics

Edge Device
- Sensor, Camera, PLC, etc.

Applications

Manufacturing
- AOI
- Automation
- Data Storage

Healthcare
- Medical Imaging
- Electronic Health Records
- AI Data Processing
- DNA Sequencing

Smart City
- Surveillance and Security
- Smart Building
- Intelligent Transportation
- Video Streaming/Editing

ATE
- Advanced Technology Test Equipment

Why ASUS IoT Edge Servers?

Advanced Technology & Faster Time-to-Market

Deep partnerships with leading silicon partners and standards bodies like PCI-SIG and CXL enable early access to cutting-edge technologies and accelerate server development.

Rugged Industrial Design

Engineered for demanding environments, ASUS industrial-grade platforms deliver superior performance, durability, and reliability for edge and vertical-market applications.

Full Lifecycle Support

ASUS IoT ensures long product lifecycles with strict version control, providing stable and reliable operation over time.

Global Service Coverage

A dedicated export engineering team and worldwide service network reduce downtime and ensure fast, dependable support.

Server System

ISS-H281-GNRSP

Processor	1 x Socket E2 (LGA4710) Intel® Xeon® 6 Processors (Up to 350W)
Chipset	System on Chip (SoC)
Memory	8 x DIMM slots DDR5 up to 6400 RDIMM/3DS RDIMM Max 2048GB
VGA	Aspeed AST2600
Graphic	Up to 1 double deck or 2 single deck GPU
Expansion Slot	Up to 3 slots, 2 internal MCIO 2x PCIe x16 Slot (Gen5x16 link), FHFL 1x PCIe x16 Slot (Gen5x16 link), HHFL 2 x MCIO internal port (Gen5x8 link, R1S only)
Storage Controller	ASM1164
Storage Bays	12 x 3.5" Front Hot-swap Storage Bays (SAS/SATA/NVMe) 2 x M.2 (22110/2280, PCIe5.0 x4 link) *HBA/RAID card is required when the system is configured with nine or more hard drives or when SAS hard drives are used.
Networking	2 x 10GbE LAN 2 x 1GbE LAN 1 x Management Port
Optical Drive	N/A
Front I/O ports	2 x USB 3.2 Gen2 ports 1 x VGA
Rear I/O ports	2 x USB3.2 Gen2 ports 1 x VGA 1 x COM port 2 x 10 GbE RJ-45 port 2 x 1 GbE RJ-45 port 1 x Management port
Securit Options	Optional TPM module
Management Solutio	ASUS Contorl Center IPMI2.0
Power Supply	1+1 Redundant 1200W 80 PLUS Platinum Power Supply
Operating Temperature	0~40°C
Dimension	700mm x 438mm x 87mm(2U) 27.56"" x 17.24"" x 3.46""

Server Motherboards

ISB-E901-GNRSP

Processor	2 x Socket E2 (LGA4710) Intel® Xeon® 6 Processors (Up to 350W)
Chipset	System on Chip (SoC)
Memory	8 x DIMM slots DDR5 up to 6400 RDIMM/3DS RDIMM Max 2048GB
VGA	Aspeed AST2600
Expansion Slot	Up to 6 PCIe slots, 2 internal MCIO 1 x PCIe x16 Slot (Gen5x16 link, CPU0) 1 x PCIe x16 Slot (Gen5x16 link, CPU1) 1 x PCIe x16 Slot (Gen5x16 link, CPU0) 1 x PCIe x16 Slot (Gen5x16 link, CPU1) 1 x PCIe x16 Slot (Gen5x16 link, CPU1) 1 x PCIe x8 (Gen5x8 link, CPU1) 2 x MCIO internal port (x8 link, CPU0)
Storage	12 x SATA 6Gb/s ports (RAID 0, 1, 10, 5) via slimSAS 2 x M.2 (22110/2280, PCIe5.0 x4 link)
Networking	2 x 10GbE LAN 1 x Management port
Audio	2 (Line-In, Line-Out)
Rear I/O	2 x USB3.2 Gen1 ports 1 x COM port 1 x PS/2 KB/Mouse 2 x 10GbE RJ-45 port 1 x Management port
Other Internal I/O Devices	1 x USB 3.2 Gen1 header 1 x USB 2.0 header 1 x USB 2.0 (type A vertical) 1 x VGA header 1 x TPM header (SPI)
Management Solution	ASUS Contorl Center IPMI2.0
Operating Temperature	0~50° C
Form Factor	EATX, 12" x 13"

Server Motherboards

	ISB-C801-GNRSP	ISB-E701-GNRWS	ISB-P501-GRDAM5
	 *26'Q2		 *26'Q3
Processor	1 x Socket E2 (LGA4710) Intel® Xeon® 6 Processors (Up to 350W)	1 x Socket E2 (LGA4710-2) Intel® Xeon® 600 Processors for Workstation (Up to 350W)	1 x Socket AM5 (LGA1718) AMD EPYC™ 4005/4004 Series Processors AMD Ryzen™ 9000/7000 Series Processors
Chipset	System on Chip (SoC)	Intel® W890	AMD B650
Memory	8 x DIMM slots DDR5 up to 6400 RDIMM/3DS RDIMM Max 2048GB	8 x DIMM slots DDR5 up to 6400 RDIMM/3DS RDIMM Max 2048GB	4 x DIMM slots DDR5 up to 5600 ECC/Non-ECC UDIMM Max 192GB
VGA	Aspeed AST2600	Aspeed AST2600	Aspeed AST2600
Expansion Slot	Up to 7 slots, 2 internal MCIO 1 x PCIe x16 Slot (Gen5x8 link) 1 x PCIe x16 Slot (Gen5x16 link, R1S SKU only) 1 x PCIe x16 Slot (Gen5x16 link) 1 x PCIe x16 Slot (Gen5x16 link, R1S SKU only) 1 x PCIe x16 Slot (Gen5x8 link) 1 x PCIe x16 Slot (Gen5x16 link) 1 x PCIe x16 Slot (Gen5x16 link) 2 x MCIO internal port (Gen5x8 link, R1S only)	Up to 7 slots, 2 internal MCIO 1 x PCIe x16 Slot (Gen5x16 link, Expert1S only) 1 x PCIe x16 Slot (Gen5x16 link, Expert1S only) 1 x PCIe x16 Slot (Gen5x16 link) 1 x PCIe x16 Slot (Gen5x8 link) 1 x PCIe x16 Slot (Gen5x16 link) 1 x PCIe x16 Slot (Gen5x16 link) 1 x PCIe x16 Slot (Gen5x16 link) 2 x MCIO internal port (Gen5x8 link, Expert1S only)	Up to 2 slots 1 x PCIe 5.0 x16 Slot (x16/X8 link)* 1 x PCIe 5.0 x8 Slot (x0/X8 link)* *x16 slot auto switch to x8 link when x8 slot is occupied
Storage	8 x SATA 6Gb/s ports (RAID 0, 1, 10, 5) via slimSAS 2 x M.2 (22110/2280, PCIe5.0 x4 link)	8 x SATA 6Gb/s ports (RAID 0, 1, 10, 5) or 2 NVMe PCIe 4.0 x 4 link via slimSAS 2 x M.2 (22110/2280, PCIe5.0 x4 link) Support Intel® VROC Software RAID	4 x SATA 6Gb/s ports (RAID 0, 1, 10, 5) 1 x M.2 (2280, PCIe4.0 x4 link)
Networking	2 x 10GbE LAN 2 x 1GbE LAN 1 x Management Port	2 x 10GbE LAN 2 x 1GbE LAN 1 x Management Port	2 x 10GbE LAN 1 x Management Port
Audio	-	2 (Line-In, Line-Out)	-
Rear I/O	2 x USB3.2 Gen2 ports 1 x VGA 1 x COM port 2 x 10 GbE RJ-45 port 2 x 1 GbE RJ-45 port 1 x Management port	4 x USB3.2 Gen2 ports 2 x USB3.2 Gen1 ports 1 x VGA 1 x COM port 2 x 10 GbE RJ-45 port 2 x 1 GbE RJ-45 port 1 x Management port	2 x USB3.2 Gen2 ports 1 x VGA 2 x 10GbE SFP+ port 1 x Management port
Other Internal I/O Devices	1 x USB 3.2 Gen2 header 1 x USB 2.0 (type A vertical) 1 x TPM header (SPI)	2 x USB 3.2 Gen2 header 2 x USB 2.0 (type A vertical) 1 x COM port header 1 x TPM (onboard)	1 x USB 3.2 Gen2 header 1 x USB 2.0 header 4 x COM port header 1 x TPM header (SPI)
Management Solution	ASUS Contorl Center IPMI2.0	ASUS Contorl Center IPMI2.0	ASUS Contorl Center IPMI2.0
Operating Temperature	-40~75°C (Optional heaters and power control board are required)	0~60°C	0~60°C
Form Factor	CEB, 12"x10.5"	EATX, 12" x 13"	Proprietary, 7.5" x 10.5"

*Product available time

CHAPTER 02

Edge AI & Rugged Edge Computers

Revolutionize Computing Power with

EDGE AI SYSTEMS

The Game-Changing Platform for AI Applications

ASUS IoT edge AI systems deliver high-performance GPU computing that drives breakthrough digital transformation across AIoT applications. Featuring embedded MXM GPU modules from NVIDIA® and Intel®, as well as NVIDIA Jetson- and Intel-based platforms, these systems deliver real-time AI inferencing at the edge for diverse market applications. Their rugged, fanless, anti-vibration design supports wide temperature ranges and low power consumption, making them ideal for demanding environments such as factory automation, machine vision, video analytics, and autonomous vehicles. Engineered for reliability and robustness, ASUS IoT solutions empower industries to innovate and optimize efficiency in the era of AI-powered technology.

POWERFUL & SCALABLE GPU COMPUTING

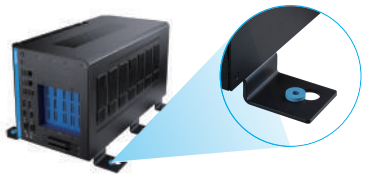
ASUS IoT developed the industry's first edge AI system supporting up to dual 450-watt GPUs. Compatible with Intel Arc™ A-series MXM, NVIDIA PCIe® GPUs, and Jetson SoM, it offers scalable solutions from power-efficient setups to extreme high-throughput performance.

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 rugged design including GPU retainers, cable locks, and damping brackets, ASUS IoT edge AI systems ensure smooth, reliable operation in in-vehicle environments.

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.

Power Edge AI with ASUS IoT Edge AI Computer Built on NVIDIA® Jetson™

ASUS IoT edge AI computers, built on NVIDIA® Jetson™, deliver exceptional AI inference performance and productization, engineered with rugged designs, wide temperature tolerance, and various form factors to withstand harsh industrial and edge environments. ASUS IoT solutions ensure reliability and stability for demanding applications, making them ideal for machine vision, autonomous vehicles, and smart city projects.

Combining industry-leading AI performance, versatile flexibility, and secure long-term support, our intelligent edge AI systems empower your AI deployments to achieve their full potential with confidence and resilience

Key Benefits

Top Quality Reliable Performance

Tested to MIL-STD-810H standards for shock and vibration, with advanced thermal design, rigorous reliability validation, and an energy-efficient, fanless architecture.

Faster Time to Market with Easy Deployment

Pre-configured OS images with the latest NVIDIA JetPack™ versions, along with comprehensive technical documentation and support, streamline rapid deployment.

Customization for Versatile Applications

Customized I/O design and ASUS Expansion Module (AEM) options enable seamless integration across off-road, industrial, and unmanned applications.

Power for Mobility

Wide operating voltage and temperature ranges, a low-power cignition control, and GMSL ompact form factor, camera connectivity, ensuring reliable operation in mobile environments.

Scalable Remote Management

A centralized cloud platform with integrated out-of-band (OOB) management enables large-scale remote monitoring, control, and maintenance.

ASUS and NVIDIA

Edge AI Acceleration Powered by Partnership

As an Elite partner of NVIDIA®, ASUS is at the forefront of ruggedized computing hardware innovation, pushing the boundaries of what's possible in the era of AI and edge computing.ASUS IoT now offers an advanced and comprehensive edge AI systems portfolio, spanning from the high-performance NVIDIA Jetson AGX Orin and Jetson Thor, mainstream NVIDIA Jetson Orin NX, to the entry-level NVIDIA Jetson Orin NX. Together, we deliver smarter, faster, and more reliable solutions designed for every edge environment.

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

NVIDIA Jetson Edge AI Computers

		PE3000N	PE1103N	PE1102N
		 *Q2'26		
Case	Dimension	165 x 165 x 68 mm 165 x 165 x 97 mm (with expansion chassis)	223 x 170 x 78mm	152 x 114 x 72 mm
System	Processor	NVIDIA Jetson T5000™	NVIDIA Jetson Orin Nano™ Orin™ NX (Super Mode)	NVIDIA® Jetson Orin Nano™ NVIDIA® Jetson Orin™ NX
	Chipset	14-core Arm® Neoverse® -V3AE	6/8-Arm® Cortex®-A78AE v8.2	6/8-core Arm® Cortex® -A78AE
	Graphics	2560-core NVIDIA Blackwell architecture GPU with 96 fifth-gen Tensor Cores Multi-Instance GPU (MIG) with 10 TPCs	512/1024-core NVIDIA Ampere GPU with 32 Tensor Cores	NVIDIA® Ampere GPU with Tensor Cores
	Memory	128 GB 256-bit LPDDR5X	on-board, up to 16GB LPDDR5	on-board, up to 16GB LPDDR5
I/O Interface	PoE	-	-	-
	Ethernet	1x 1 GbE, RJ45 1x 10 GbE, RJ45	1x 1Gbps & 10 Gbps w/PTP&gPTP	2x 10/100/1000 Mbps, RJ45
	Display Port	1x HDMI	1x HDMI	1x HDMI
	Serial Port	2x RS-232/422/485, Pin header for expansion 2x CANbus (w/ Isolation), Pin header for expansion	2x DB9: RS-232/422/485; 1x DB9: CAN bus	1x DB25 : RS-232/422/485 & CAN bus
	USB 2.0	2x USB 2.0, Pin header for expansion	2x USB 2.0, Micro-USB for OS Flash 2x USB 2.0	1x USB 2.0, Micro-USB for OS Flash 2x USB 2.0, Pin Header (Internal)
	USB 3.2/ 3.1	4x USB 3.2 Gen2 Type-A, 1x USB 3.2 Gen2 Type-C, 1x USB 3.2 Gen2 Type-C (OTG, OS Flash)	4x USB 3.2 Gen1, Type-A	3x USB 3.2 Gen1 (5Gbps), Type-A
	Audio	1x 3.5 Audio In 1 x 3.5 Audio Out	-	-
	Digital I/O	-	4x DI, 4x DO (2x5 Terminal Block, w/ isolation)	4x DI, 4x DO (2x5 Terminal Block, w/ isolation)
	GPIO	UART, I2C, SPI, Control Pin, GPIO	-	-
Storage Interface	SATA HDD	-	-	-
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)	1 (NVMe)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	-	-	-
	M.2 E/B	1x M.2 E-key; 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key
	SIM	1x nano-SIM slot	2x nano-SIM slots	2
	PCI/ PCIe	1x PCIe x4/x8, MCIO for expansion	-	-
	MXM	-	-	-
	Others	TPM v2.0, GMSL	TPM v2.0	1 x AEM (GSML or OOB or LAN)
Power Supply	DC Input	12-60V DC	9-36V DC	12-36V DC
	Ignition Control	Integrated	Integrated	Integrated
Environmental	Operating Temp.	-25 ~ up to 60°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

 *Product available time

		PE1100N V2	PE2100N	PE2101N
				
Case	Dimension	152 x 114 x 72 mm (w/o FAN) 158 x 114 x 93 mm (with FAN)	270 x 195 x 80 mm	220 x 170 x 79 mm
System	Processor	NVIDIA Jetson Orin Nano™ Orin™ NX (Super Mode)	NVIDIA® Jetson AGX Orin™	NVIDIA® Jetson AGX Orin™
	Chipset	6/8-Arm® Cortex®-A78AE v8.2	8/12-core Arm® Cortex® -A78AE	8/12-core Arm® Cortex® -A78AE
	Graphics	512/1024-core NVIDIA Ampere GPU with 16/32 Tensor Cores	NVIDIA® Ampere GPU with Tensor Cores	NVIDIA® Ampere GPU with Tensor Cores
	Memory	on-board, up to 16GB LPDDR5	on-board, up to 64GB LPDDR5	on-board, up to 64GB LPDDR5
I/O Interface	PoE	-	4x 10/100/1000 Mbps, RJ45 (optional)	4x 10/100/1000 Mbps, RJ45 (optional)
	Ethernet	2x 10/100/1000 Mbps, RJ45	1x 10/100/1000 Mbps, RJ45 1x 10 Gbps, RJ45	1x 10/100/1000 Mbps, RJ45 1x 10 Gbps, RJ45
	Display Port	1x HDMI	1x HDMI	1x HDMI
	Serial Port	2x DB9: RS-232/422/485 1x DB9: CAN bus	1x DB9: RS-232 1x DB9: RS-422/485 2x DB9: CAN bus	1x DB9: RS-232 1x DB9: RS-422/485 2x DB9: CAN bus
	USB 2.0	1x USB 2.0, Micro-USB for OS Flash 2x USB 2.0, Pin Header (Internal)	1x USB 2.0, Type-C for OS Flash 1x USB 2.0, DP15 (in GPIO)	1x USB 2.0, Type-C for OS Flash 1x USB 2.0, DP15 (in GPIO)
	USB 3.2/ 3.1	3x USB 3.2 Gen1, Type-A	1x USB 3.2 Gen2 (10Gbps), Type-C 2x USB 3.2 Gen1 (5Gbps), Type-A	1x USB 3.2 Gen2 (10Gbps), Type-C 2x USB 3.2 Gen1 (5Gbps), Type-A
	Audio	-	Line-out/Line-in/Mic (optional)	Line-out/Line-in/Mic (optional)
	Digital I/O	4x DI, 4x DO (2x5 Terminal Block, w/ isolation)	-	-
	GPIO	-	1x DB15: I2C/SPI/USB 2.0 1x DB15: GPIO/UART	1x DB15: I2C/SPI/USB 2.0 1x DB15: GPIO/UART
Storage Interface	SATA HDD	-	-	-
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)	1 (NVMe)
	eMMC	-	32G/64G	32G/64G
	SD Card	-	1x Micro SD	1x Micro SD
Expansion	mPCIe	-	-	-
	M.2 E/B	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key
	SIM	2x nano-SIM slot	1	1
	PCI/ PCIe	-	-	-
	MXM	-	-	-
	Others	TPM v2.0	1x OOB	1x OOB
Power Supply	DC Input	12-19V DC	12-36V DC	12-36V DC
	Ignition Control	-	-	-
Environmental	Operating Temp.	-25 ~ up to 60°C	-25 ~ up to 55°C	-25 ~ up to 70°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; 3 Grms	MIL-STD 810H, and 5-500 Hz; 3 Grms

Edge AI GPU Computers

		RUC-2000G	RUC-1000G
		 *Q3'26	 New
Case	Dimension	440 x 260 x 85 mm	440 x 488.9 x 85mm (Side by side mode) 220 x 488.9 x 170mm (Stack mode)
System	Processor	Intel® Core™ Ultra Series 3	Intel® Core™ Ultra 9 285/285T Intel® Core™ Ultra 7 265/265T Intel® Core™ Ultra 5 245/245T
	Chipset	-	W880
	Graphics	Intel® Xe LPG Graphics Architecture	Intel® Xe LPG Graphics Architecture
	Memory	2x SO-DIMM, up to 64GB DDR5 SDRAM	2x SO-DIMM, up to 64GB ECC/ non-ECC DDR5 SDRAM
I/O Interface	PoE	4x Intel® i226-IT (2.5 GbE) (IEEE 802.3at PoE+ PSE; 60W total power budget, optional)	-
	Ethernet	1x Intel® i226-IT (2.5 GbE) 1x Marvell AQC-113 (10GbE)	2x Intel® i226-IT (2.5 GbE) 1x AQC113 (10 GbE)
	Display Port	2x HDMI	1x HDMI 2x DP++
	Serial Port	2x CAN Bus 2.0 2x COM: RS-232/422/485 2x COM: RS-232 (optional)	2x COM: RS-232/422/485 4x COM: RS-232
	USB 2.0	2x USB2.0, type A 1x USB2.0, internal type A	2x USB2.0, type A
	USB 3.2/ 3.1	4x USB3.2 Gen2 (10Gbps), type A	8x USB 3.2 Gen2 (10Gbps), type A
	Audio	Mic in; Line out	Mic in; Line out
	Digital I/O	4x DI, 4x DO support isolation (optional)	4x DI, 4x DO support isolation (optional)
	GMSL	2x 4-ch GMSL2 (optional)	-
Storage Interface	SATA HDD	2x 2.5" hot-swappable SSD trays	2x 2.5" HDD/SSD
	mSATA	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)
	eMMC	-	-
	SD Card	-	-
Expansion	mPCIe	-	-
	M.2	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 2x M.2 B-key
	SIM	2 (external)	2
	PCI/ PCIe	1x PCIe x16 slot (1x PCIex8)	3x PCIe slots 1x PCIex16 + 1x PCIex4 or 2x PCIex8 + 1x PCIex4, audo-detect)
	MXM	-	-
Power Supply	DC Input	8-48V DC	8-48V DC
	Ignition Control	Integrated	Integrated
Environmental	Operating Temp.	-25~60°C	-25~60°C with 35W CPU -25~50°C with 65W CPU
	Certification	CE, FCC, CB, BSMI, UKCA, RCM	CE, FCC, CB, BSMI, UKCA, RCM
	Shock & Vibration	MIL-STD 810H	MIL-STD 810H

 *Product available time

		PE8000G	PE6000G	PE4000G
				
Case	Dimension	225 x 288 x 443 mm	225 x 221 x 443 mm	225 x 198 x 350 mm
System	Processor	Intel® Core™ 7 251E/251TE Intel® Core™ 5 221E/221TE/221E/211TE Intel® Core™ 3 201E/201TE Intel® Core™ 300/300T Intel® 14th/13th/12th Gen Core™ CPU		
	Chipset	R680E	R680E	R680E
	Graphics	Intel® UHD Graphics 770	Intel® UHD Graphics 770	Intel® UHD Graphics 770
	Memory	2x SO-DIMM, up to 64GB ECC/ non-ECC DDR5 SDRAM	2x SO-DIMM, up to 64GB ECC/ non-ECC DDR5 SDRAM	2x SO-DIMM, up to 64GB ECC/ non-ECC DDR5 SDRAM
I/O Interface	PoE	-	-	-
	Ethernet	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)	1x Intel® i219-LM (1 GbE) 1x Intel® i226-IT (2.5 GbE)
	Display Port	2x HDMI 2x DP	2x HDMI 2x DP	2x HDMI 2x DP
	Serial Port	2x COM: RS-232/422/485 4x COM: RS-232 (optional)	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 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	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, 4x DO support isolation (optional)	4x DI, 4x DO support isolation (optional)	4x DI, 4x DO support isolation (optional)
	GPIO	-	-	-
Storage Interface	SATA HDD	4x hot-swappable 2.5” HDD/SSD	4x hot-swappable 2.5” HDD/SSD	2x hot-swappable 2.5” HDD/SSD
	mSATA	1 (mux with mPCIe)	1 (mux with mPCIe)	1 (mux with mPCIe)
	M.2 (M-key)	1	1	1
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	1 (mux with mSATA)	1 (mux with mSATA)	1 (mux with mSATA)
	M.2	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 3x M.2 B-key
	SIM	3	3	3
	PCI/ PCIe	7x PCIe slots (1x PCIe Gen4 x16 + 3x PCIe Gen3 x4 + 2x Gen3 x1 or 2x PCIe Gen4 x8 + 3x PCIe Gen3 x4 + 2x PCIe Gen3 x1)	5x PCIe slots (1x PCIe Gen4 x16 + 3x PCIe Gen4 x4 or 2x PCIe Gen4 x8 + 3x PCIe Gen4 x4, auto detect)	4x PCIe Gen4 slot (1x PCIe x16 + 2x PCIe x4 or 2x PCIe x8 + 2x PCIe 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.	-20~60°C with 35W CPU -20~55°C with 65W CPU	-20~60°C with 35W CPU -20~55°C with 65W CPU	-20~60°C with 35W CPU -20~55°C with 65W CPU
	Certification	CE, FCC, CB, BSMI, VCCI, UKCA, RCM	CE, FCC, CB, BSMI, VCCI, UKCA, RCM, KCC	CE, FCC, CB, BSMI, VCCI, UKCA, RCM, KCC
	Shock & Vibration	MIL-STD 810H	MIL-STD 810H	MIL-STD 810H, and 5-500 Hz; 3+ Grms

Edge AI GPU Computers

		PE3100G	PE3000G	PE5101D
				
Case	Dimension	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	242 x 241.4 x 137mm
System	Processor	Intel® Core™ i7-13800HE Intel® Core™ i5-13600HE	Intel® Core™ i7-12800HE Intel® Core™ i5-12600HE Intel® Core™ i3-12300HE	Intel® Core™ 7 251TE, Intel® Core™ 5 221TE, Intel® Core™ 3 201TE, Intel® 14th/13th/12th Gen Core™ CPU
	Chipset	-	-	R680E
	Graphics	Intel® Iris® Xe Graphics eligible (i7/i5)	Intel® Iris® Xe Graphics eligible (i7/i5) Intel® UHD Graphics (i3)	Intel® UHD Graphics 770
	Memory	2x SO DIMM, up to 64GB DDR5 SDRAM	2x SO DIMM, up to 64GB DDR5 SDRAM	2x SO-DIMM (supports DDR5 ECC/ non-ECC, max. 64GB)
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	-	-	3x Intel® i226-IT (2.5 GbE)
	Display Port	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	1x HDMI 2x DP
	Serial Port	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)	2x COM: RS-232/422/485 4x COM: RS-232
	USB 2.0	1x USB 2.0, type A	1x USB 2.0, type A	2x USB 2.0, type A
	USB 3.2/ 3.1	3x USB 3.2 Gen2 x1 (10 G), type A	3x USB 3.2 Gen2 x1 (10 G), type A	6x USB 3.2 Gen 2 (10Gbps) 2x USB 3.2 Gen 1 (5Gbps)
	Audio	Mic in; Line out	Mic in; Line out	Mic in; Line out
	Digital I/O	4x DI, 4x DO support isolation	4x DI, 4x DO support isolation (optional)	4x DI, 4x DO support isolation (optional)
	GPIO	-	-	-
Storage Interface	SATA HDD	2x 2.5" HDD/SSD	2x hot-swappable 2.5" HDD/SSD	2x hot-swappable 2.5" HDD/SSD
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)	1 (NVMe)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	1	1	1
	M.2	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key
	SIM	2	2	2
	PCI/ PCIe	-	-	1x PCIex16 + 1x PCIex4
	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 (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	-25~60°C
	Certification	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)	CE, FCC, UKCA, BSMI, CB, CCC, comply with EN50121-3-2 (EN 50155 EMC part)
	Shock & Vibration	MIL-STD 810H	MIL-STD 810H, and 5-500 Hz; 5 Grms	MIL-STD 810H, and 5-500 Hz; 3+ Grms

Rugged Edge Computers

		RUC-2000H	RUC-1000D
		 *Q3'26	 New
Case	Dimension	220 x 260 x 85 mm	220 x 260 x 85mm 220 x 260 x 140mm (with SSD expansion chassis)
System	Processor	Intel® Core™ Ultra Series 3	Intel® Core™ Ultra 9 285/285T Intel® Core™ Ultra 7 265/265T Intel® Core™ Ultra 5 245/245T
	Chipset	-	W880
	Graphics	Intel® Xe LPG+ Graphics Architecture	Intel® Xe LPG Graphics Architecture
	Memory	2x SO-DIMM, up to 64GB DDR5 SDRAM	2x SO-DIMM, up to 64GB ECC/ non-ECC DDR5 SDRAM
I/O Interface	PoE	4x Intel® i226-IT (2.5 GbE) (IEEE 802.3at PoE+ PSE; 60W total power budget, optional)	-
	Ethernet	1x Intel® i226-IT (2.5 GbE) 1x Marvell AQC-113 (10GbE)	2x Intel® i226-IT (2.5 GbE) 1x AQC113 (10 GbE)
	Display Port	2x HDMI	1x HDMI 2x DP++
	Serial Port	2x CAN Bus 2.0 2x COM: RS-232/422/485 2x COM: RS-232 (optional)	2x COM: RS-232/422/485 4x COM: RS-232
	USB 2.0	2x USB2.0, type A 1x USB2.0, internal type A	2x USB2.0, type A
	USB 3.2/ 3.1	4x USB3.2 Gen2 (10Gbps), type A	8x USB 3.2 Gen2 (10Gbps), type A
	Audio	Mic in; Line out	Mic in; Line out
	Digital I/O	4x DI, 4x DO support isolation (optional)	4x DI, 4x DO support isolation (optional)
	GMSL	2x 4-ch GMSL2 (optional)	-
Storage Interface	SATA HDD	2x 2.5" HDD/SSD	2x 2.5" HDD/SSD 4x 2.5" hot-swappable SSD trays (with SSD expansion chassis)
	mSATA	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)
	eMMC	-	-
	SD Card	-	-
Expansion	mPCIe	-	-
	M.2	1x M.2 E-key, 2x M.2 B-key	1x M.2 E-key, 2x M.2 B-key
	SIM	2 (external)	2
	PCI/ PCIe	-	-
Power Supply	DC Input	8-48V DC	8-48V DC
	Ignition Control	Integrated	Integrated
Environmental	Operating Temp.	-25~70°C	-25~70°C with 35W CPU -25~50°C with 65W CPU
	Certification	CE, FCC, CB, BSMI, UKCA, RCM	CE, FCC, CB, BSMI, UKCA, RCM
	Shock & Vibration	MIL-STD 810H	MIL-STD 810H

*Product available time

Rugged Edge Computers

		PE5100D	PE1000U	PE2300U
			 New	
Case	Dimension	242 x 241.4 x 79 mm	63 x 110 x 160 mm	254 x 147 x 57 mm
System	Processor	Intel® Core™ 7 251TE, Intel® Core™ 5 221TE, Intel® Core™ 3 201TE, Intel® 14th/13th/12th Gen Core™ CPU	Intel® Core™ Ultra 7 265U Intel® Core™ Ultra 5 235U	Intel® Core™ Ultra 7 265U Intel® Core™ Ultra 5 235U
	Chipset	R680E	-	-
	Graphics	Intel® UHD Graphics 770	Intel® Xe LPG+ Graphics Architecture	Intel® Xe LPG+ Graphics Architecture
	Memory	2x SO-DIMM (supports DDR5 ECC/ non-ECC, max. 64GB)	2x SO DIMM, DDR5 6400 MHz, supports up to 64GB	2x SO DIMM, DDR5 5600 MHz, supports up to 64GB
I/O Interface	PoE	-	-	2x Intel® i210-IT (IEEE 802.3af, optional)
	Ethernet	3x Intel® i226-IT (2.5 GbE)	2x 2.5 GbE, RJ45 (Intel® i226-IT) 2x GbE, RJ45 (Intel® i210) (optional)	1x Intel® i219-LM (1 GbE) 1x Intel® i226-IT (2.5 GbE)
	Display Port	1x HDMI 2x DP	1x HDMI 1x DP++	1x HDMI 2x DP
	Serial Port	2x COM: RS-232/422/485 4x COM: RS-232	4x COM: RS-232/422/485 2 for optional	4x COM: RS-232/422/485
	USB 2.0	2x USB 2.0, type A	-	2x USB 2.0, type A
	USB 3.2/ 3.1	6x USB 3.2 Gen 2 (10Gbps) 2x USB 3.2 Gen 1 (5Gbps)	4x USB3.2(Gen2x1) type A , 10G	1x USB 3.2 Gen2x2 (20G), type C 4x 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, 4x DO support isolation (optional)	4x DI, 4x DO support isolation (optional)	-
	GPIO	-	-	1x 8bit GPIO, DB9
Storage Interface	SATA HDD	2x hot-swappable 2.5" HDD/SSD	1x 2.5" HDD/SSD	1x 2.5" HDD/SSD
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe)	1 (NVMe)	1 (NVMe)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	1	-	-
	M.2	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key, 1x M.2 B-key
	SIM	2	1	1
	PCI/ PCIe	-	-	-
	CANBUS	-	2x CANBUS 2.0 (1xDB9)	-
Power Supply	DC Input	8-48V DC	9-36V DC	9-36V DC
	Ignition Control	Integrated	Integrated	-
Environmental	Operating Temp.	-25~70°C	-25~70°C(*) (*)60°C-70°C (with industrial 2.5" SSD and memory)	-20~60°C
	Certification	CE, FCC, UKCA, BSMI, CB, CCC, comply with EN50121-3-2 (EN 50155 EMC part)	CE, FCC, IC , BSMI, CE-LVD, UKCA, CB	CE, FCC, CB, BSMI
	Shock & Vibration	MIL-STD 810H, and 5-500 Hz; 5 Grms	MIL-STD 810H, and 5-500 Hz; 3+ Grms	MIL-STD 810H

		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	2x SO DIMM, DDR5 5600 MHz, supports up to 64GB	2x SO-DIMM, DDR5 4800 MHz, supports up to 64GB	2x SO-DIMM, DDR5 4800 MHz, supports up to 64GB
I/O Interface	PoE	2x Intel® i210-IT (IEEE 802.3af, optional)	2x Intel® i210-IT (IEEE 802.3af, optional)	2x Intel® i210-IT (IEEE 802.3af, optional)
	Ethernet	1x Intel® i219-LM (1 GbE) 1x 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	2x USB 2.0, type A	2x USB 2.0, type A	2x USB 2.0, type A
	USB 3.2/ 3.1	1x USB 3.2 Gen2x2 (20G), type C 4x USB 3.2 Gen 2, type A	4x USB 3.2 Gen 2, type A	4x USB 3.2 Gen 2, type A
	Audio	Mic in; Line out	Mic in; Line out	Mic in; Line out
	Digital I/O	1x 8bit GPIO, DB9	1x 8bit GPIO, DB9	1x 8bit GPIO, DB9
	GPIO	-	-	-
Storage Interface	SATA HDD	1x 2.5” HDD/SSD	1x 2.5” HDD/SSD	1x 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	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key	1x M.2 E-key
	SIM	1	1	1
	PCI/ PCIe	-	-	-
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

Rugged Edge Computers

		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	1x 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	2x Intel® i226-IT (PoE SKU)	2x Intel® i210-IT (IEEE 802.3af, optional)	2x Intel® i210-IT (IEEE 802.3af, optional)
	Ethernet	2x 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 3x 3-wire RS-232 or 1 x RS-422/485 2x 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	2x USB 2.0, type A	2x USB 2.0, type A	2x USB 2.0, type A
	USB 3.2/ 3.1	2x USB 3.2 Gen 2 (10Gbps) 2x 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	-	1x Mic in / 1x Line out	1x Mic in / 1x Line out
	Digital I/O	1x 8bit GPIO, DB9 (optional, mux with RS-232)	1x 8bit GPIO, DB9	1x 8bit GPIO, DB9
Storage Interface	SATA HDD	1x 2.5" HDD/SSD (standard SKU only)	1x 2.5" HDD/SSD	1x 2.5" HDD/SSD
	mSATA	-	-	-
	M.2 (M-key)	1 (NVMe/SATA)	1 (SATA/ PCIe Gen3x1)	1 (SATA)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	-	-	1
	M.2	1x M.2 E-key, 1x M.2 B-key	1 x M.2 E-key, 1x M.2 B-key	1x M.2 E-key
	SIM	1	1	1
	PCI/ PCIe	-	-	-
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)	-20~70°C (with wide temperate parts)	0~60°C (with wide temperate parts)
	Certification	CE, FCC, UKCA, BSMI, CB, CCC	CE, FCC, UKCA, IC, BSMI, CB, CE-LVD	CE, FCC, BSMI, CB, CE-LVD
	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

		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	1x SO-DIMM, DDR4 2400 MHz, supports up to 32GB	1x SO-DIMM, DDR3L 1866 MHz, supports up to 8GB	2x SO-DIMM, up to 64GB ECC/ non-ECC DDR4 SDRAM
I/O Interface	PoE	2x Intel® i210-IT (IEEE 802.3af, optional)	2x Intel® i210-IT (IEEE 802.3af, optional)	-
	Ethernet	1x Intel® i219 (1 GbE) 1x Intel® i211-AT (1 GbE)	2x Intel® i210-IT (1 GbE)	3x Intel® i210-IT (1 GbE)
	Display Port	1x HDMI 1x DP	1x HDMI 1x DP	1x HDMI 2.0 1x HDMI 1.4 1x 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	4x USB 2.0, type A (optional)	2x USB 2.0, type A (optional)	-
	USB 3.2/ 3.1	4x USB 3.2 Gen 2, type A	4x 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	1x Mic in / 1 x Line out
	Digital I/O	1x 8bit GPIO, DB9	1x 8bit GPIO, DB9	4x DI, 4x DO support isolation
Storage Interface	SATA HDD	1x 2.5" HDD/SSD	1x 2.5" HDD/SSD	2x hot-swappable 2.5" HDD/SSD
	mSATA	1 (mux with mPCIe)	-	1 (mux with mPCIe)
	M.2 (M-key)	1 (NVMe/SATA)	1 (SATA)	1 (NVMe/SATA)
	eMMC	-	-	-
	SD Card	-	-	-
Expansion	mPCIe	1 (mux with mSATA)	1	1 (mux with mSATA)
	M.2	1x M.2 E-key, 1x M.2 B-key	1x M.2 E-key	1x M.2 E-key
	SIM	1	1	2
	PCI/ PCIe	-	-	3x PCIe slot *2 configuration: 1x PCIex16 + 1x PCIex4 or 2x PCIex8 + 1x PCIex4, auto-detect *Max. length<192mm; Max. 100W power supply from mainboard for total 3 slots
Power Supply	DC Input	12-24V DC	12-24V DC	9-36V DC
	Ignition Control	-	-	-
Environmental	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, 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)

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	2x RJ45	2x RJ45	2x RJ45
Displays	1x HDMI 2 .1, supports up to 4096 x 2160 @ 60 Hz 1x DP1.4a, supports up to 5120 x 3200 @ 60 Hz	1x HDMI 2 .1, supports up to 4096 x 2160 @ 60 Hz 1x DP1.4a, supports up to 5120 x 3200 @ 60 Hz	1x HDMI 2.0, supports up to 4K x 2K @ 60 Hz 1x DP1.4a, supports up to 4096 x 2304 @ 60 Hz
Memory	2x DDR5 SO-DIMM support max. 64GB	2x DDR5 SO-DIMM support max. 64GB	1x 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	4x USB 3.2 2x USB 2.0 4x RS232/422/485 1x USB-C (USB3.2, DP 1.4 Alt. Mode)	4x USB 3.2 2x USB 2.0 4x RS232/422/485 1x USB-C (USB3.2, DP 1.4 Alt. Mode)	4x USB 3.2 2x USB 2.0 2x RS232/422/485 4x RS232
Expansion slot	1x 3042/3052 M.2 B Key for LTE/5G device connected to Nano-SIM socket 1x 2230 M.2 E key for WIFI 6E/BT 5.2 device (USB 2.0/ PCIe x1/ CNVi) 1x 2280 M.2 M key for PCIe storage (PCIe x 4)	1x 3042/3052 M.2 B Key for LTE/5G device connected to Nano-SIM socket 1x 2230 M.2 E key for WIFI 6E/BT 5.2 device (USB 2.0/ PCIe x1/ CNVi) 1x 2280 M.2 M key for PCIe storage (PCIe x 4)	1x 2230 M.2 E Key for TPU/WIFI/BT device 1x 2242/2280 M.2 M Key for SATA storage 1x Mini PCIe with on-board Nano-SIM slot

	EBS-S110W	EBS-S300W	EBS-I300
			
Dimension	186 x 135 x 80 mm	186 x 135 x 80 mm	200 x 70 x 188 mm
CPU	Intel® Atom™ X7211RE Intel® Atom™ X7213RE Intel® Atom™ X7433RE Intel® Atom™ x7835RE	Intel® Atom™ x6425E Intel® Atom™ x6413E Intel® Atom™ x6211E	Intel® Celeron® Quad-Core J6412 SoC
LAN	2x RJ45	2x RJ45	2x RJ45
Displays	1x HDMI 2.0, supports up to 4K x 2K @ 60 Hz 1x DP1.4 supports up to 4096 x 2304 @ 60 Hz	1x HDMI 2 .0 1x DP++1.2	1x HDMI 2.0, supports up to 4K x 2K @ 60 Hz 1x DP++. supports up to 4096 x 2304 @ 60 Hz 1x VGA
Memory	1x DDR5 SO-DIMM support max. 16GB	1x DDR4 SO-DIMM support max. 32GB	2x DDR4 SO-DIMM support max. 32GB
OP. temperature	-20°C~60°C standard	0°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	4x USB 3.2 2x USB 2.0 2x RS232/422/485 4x RS232	4x USB 3.2 2x USB 2.0 2x RS232/422/485 4x RS232	4x USB 3.2 4x USB 2.0 1x RS232/422/485 5x RS232
Expansion slot	1x M.2 3042/3052 B key for 4G/5G 1x 2230 M.2 E Key for TPU/WIFI/BT device 1x 2242/2280 M.2 M Key for storage (SATA/PCIEx1)	1x 2230 M.2 E key (USB2.0, PCIe) for WIFI/BT device 1x 3042/3052 M.2 B key (USB 2.0) for LTE device with on-board Nano-SIM slot 1x 2280 M.2 M key (Support PCIE & SATA Storage)	1x E key, type 2230 for WIFI/BT device (PCIE x1/USB2.0) 1x M key, type 2242/2280/2260 (PCIE x2) supports NVMe

Fanless Embedded Computers

	EBS-P300	EBS-P310	EBS-P310W	EBS-P300W
				
Dimension	137 x 81 x 44.45 mm	123 x 81 x 43 mm	123 x 81 x 43 mm	137 x 81 x 61 mm
CPU	Intel® Celeron® J6412	Intel® Processor N97 Intel® Core i3-N305 Intel® Atom® X7425E	Intel® Atom™ X7211RE Intel® Atom X7433RE Intel® Atom™ x7835RE	Intel® Atom™ x6425RE Intel® Atom™ x6425E Intel® Atom™ x6413E Intel® Atom™ X6211E
LAN	2x RJ45	2x RJ45	2x RJ45	2x RJ45
Displays	1x HDMI 2.0 1x HDMI 1.4	1x HDMI 1.4, supports up to 4K x 2K @ 60 Hz 1x DP1.4 supports up to 4096 x 2304 @ 60 Hz	1x HDMI 1.4, supports up to 4K x 2K @ 60 Hz 1x DP1.4 supports up to 4096 x 2304 @ 60 Hz	1x HDMI 2.0 1x HDMI 1.4
Memory	LPDDR4 8G on board	LPDDR5 16GB on board	LPDDR5 16GB on board	LPDDR4 8G on board
OP. temperature	0°C~60°C standard (-20°C~60°C extend)	0~50°C Standard	-20°C~60°C standard (-40°C~60°C extend)	-40~60°C Wide
Voltage	12V-24V	9V-36V	9V-36V	12V-24V
COM, USB	2x USB 3.2 2x USB 2.0 2x RS232/422/485	2x USB3.2 2x USB 2.0 2x RS232/422/485	2x USB3.2 2x USB 2.0 2x RS232/422/485	2x USB 3.2 2x USB 2.0 2x RS232/422/485
Expansion slot	1x 2230 M.2 E key for WIFI/BT device 1x 2242 M.2 B Key (Support PCIE & SATA Storage)	1x M.2 3042/3052 B key for 4G/5G 1x 2230 M.2 E Key	1x M.2 3042/3052 B key for 4G/5G 1x 2230 M.2 E Key	1x 2230 M.2 E key for WIFI/BT device 1x 2242 M.2 B Key (Support PCIE & SATA Storage)

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	1x Realtek® RTL8211 (1 GbE) 1x Intel® i210-AT (1 GbE)	1x 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, 4x DO support isolation	4x DI, 4x DO support isolation (by HDC)
Storage Interface	mSATA	1 (mux with mPCIe)	1 (mux with mPCIe)
	eMMC	32GB	16GB
	SD Card	1	1
Expansion	mPCIe	1 (mux with mSATA)	1 (mux with mSATA)
	M.2	1x M.2 E-key	1x M.2 E-key, 1x 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 03
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

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. **PROVIDE 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
		
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 1 x SPI TPM header

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

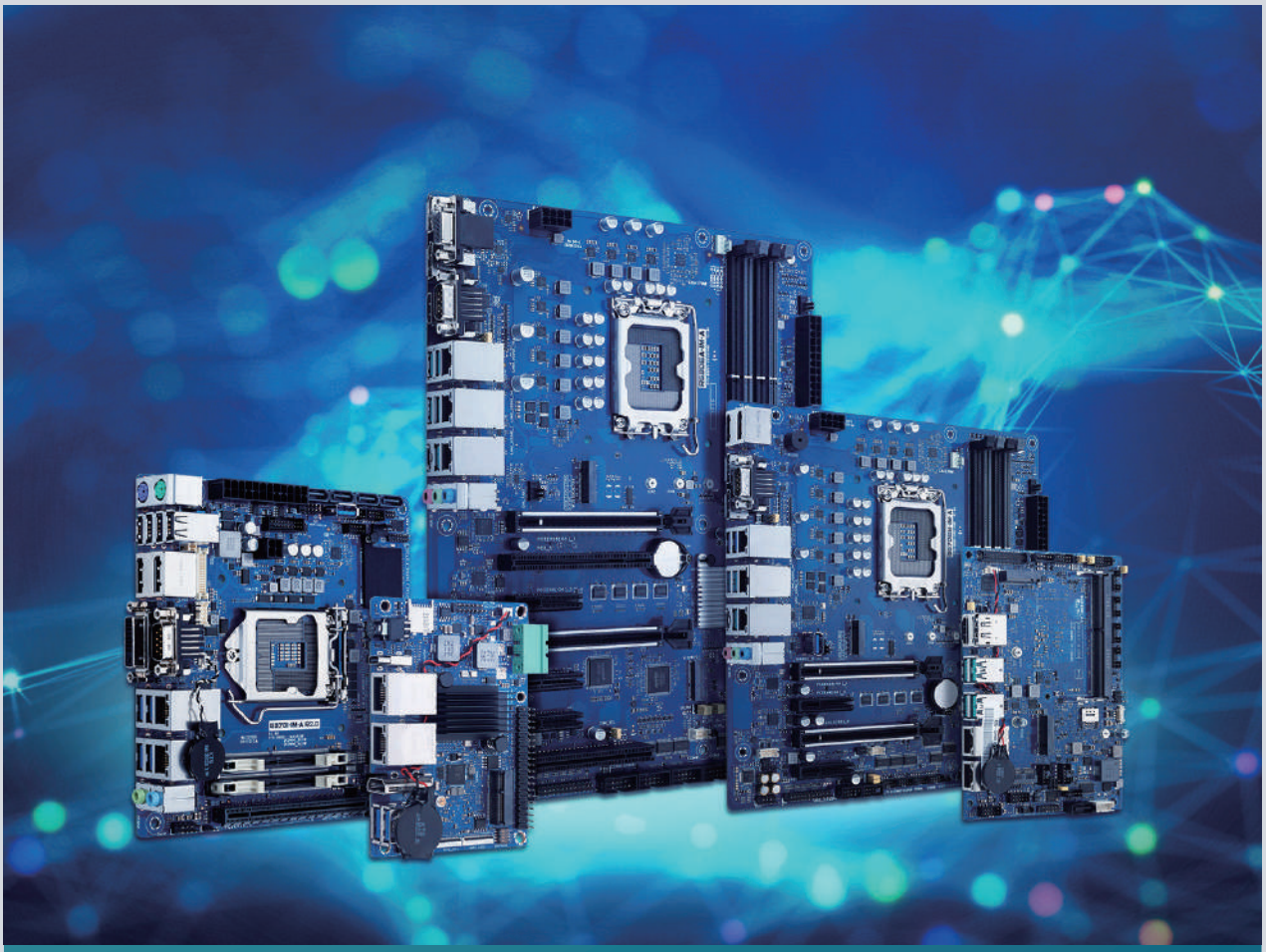
Rackmount Chassis

	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

	EBS-2U300	EBS-4U900	EBS-5U500
			
Compatible MB Form Factor	ATX, Micro-ATX, Mini-ITX	Up to EEB motherboards	--
Compatible Intel Chipset	--	--	Q870 R680E Q670
Dimensions	430 x 88 x 457 mm	430 x 176 x 468 mm	440 x 220 x 530 mm
External I/O	2 x Type-A USB 1 x RST Button 1 x PWR Switch Button 1 x HDD LED 1 x Power LED 2 x LAN LED	1 x Power LED 1 x HDD LED 2 x USB3.2 Type-A 1 x USB 3.2 Type-C® 1 x Audio 1 x MIC	1 x Power Status 2 x LAN Activity 1 x HDD Status 1 x Power on/off 1 x System Reset
Storage Capability	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	3.5" x 2 (compatible with 2.5" x 3) + 3.5" x 2 (compatible with SFX PSU) 2.5" x 4
Expansion Slot	7 x Low Profile PCIe Slots	7 x Full Height Slots	8 slots (Full Height PCI/PCIe Expansion Slots)
Cooling	1 x 80mm PWM Fan (front) 2 x 40mm PWM Fan (rear)	2 x 120mm Fan (front) 2 x 80 mm Fan (rear) (Optional) 1 x 240mm Liquid cooling	Includes 2 x Air Penetrator 184i PRO fans for superior air intake
Power Supply	850W / 500W / 350W Flex ATX	ATX PSU	ATX PSU
Environment	0~40°C	0~40°C	0~40°C

Rackmount Chassis

	EBS-6U700	EBS-4U1000
	 Coming Soon *Q3'26	 Coming Soon *Q3'26
Compatible MB Form Factor	Up to EEB Motherboards	SSI-EEB, CEB
Compatible Intel Chipset	--	Pro WS W790E-SAGE SE ISB-E701 ISB-E901
Dimensions	432 x 516 x 289 mm	437.5mm x 650mm x 176.5mm
External I/O	1 x Power LED 1 x LAN 1 LED 1 x LAN 2 LED 1 x System LED 1 x HDD LED 1 x Power on/off 1 x system reset 2 x USB 3.0	2 x USB2.0 (Optional USB3.0) 1 x Power LED 1 x Reset Button 1 x Power Switch 1 x HDD LED 1 x NIC LED 1 x UID LED 1 x UID Switch 1 x OH/FAN Fail LED 1 x Power Fail LED
Storage Capability	Internal: 2 x 2.5"	8 x 3.5" (or 2.5")
Expansion Slot	18 x Full Height Slots 7 x Low Profile Slots	11 x Full Height Slots
Cooling	9 x 80mm Fan (front)	3 x 12038 Fans 4 x 8038 Fans
Power Supply	CRPS PSU	2 x CRPS
Environment	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 accelerate 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 Configure-To-Order Services (CTOS)
- Comprehensive design and manufacture services tailored to specific 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 specitications
- 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

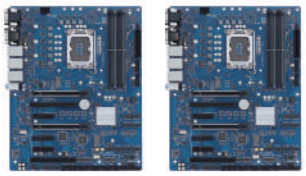
- Efficient operation in extremely high-temperature environments, including Southeast Asia
- Swift provision of transition boards during global IC shortage periods

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
				
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.	192GB	96GB	128GB
	Socket	4 x U-DIMM	2 x U-DIMM	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	7 (6 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	0	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 Header Support Additional 2 x USB2.0 Ports	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	-20~70°C	-10~70°C

		R680EA-IM-A, Q670EA-IM-A	Q470EA-IM-A	Q170A-IM-A
				
Processor System	CPU	Intel® Core™ 14th/13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 10th Gen (Socket LGA1200) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 7th/6th Gen (Socket LGA1151) Intel® Core™ i7/i5/i3 Processors
	Chipset	Intel® R680E / Q670E Chipset	Intel® Q470E Chipset	Intel® Q170 Chipset
Memory	Technology	DDR5	DDR4	DDR4
	Max.	128GB	128GB	32GB
	Socket	4 x U-DIMM	4 x U-DIMM	2x U-DIMM
Display	Display Port	2	2	0
	HDMI	1	1	1
	VGA	1	1	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 slot (1 x16 mode/ 2 x8 mode) 3 x PCIe 3.0/2.0 x4 slot (x4, x4, x2 mode)	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
	PCI	2	2	3
	M.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 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)	1 x M.2 M key, type 2242/2260/2280 (SATA mode)
Ethernet	Speed	10/100/1000/2500 Mbps	10/100/1000/2500 Mbps	10/100/1000 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 Intel® i225V (2.5 GbE), support WOL/PXE	1 x Intel® i219LM 1 x Intel® i210AT
Storage	SATA port	7, up to 6Gb/s	6, up to 6Gb/s	4, up to 6Gb/s
	RAID	0,1,5,10	0,1,5,10	PCIe 0,1,5 / SATA 0,1,5,10
Rear I/O	Display Port	2	2	2
	HDMI	1	1	1
	VGA	1	1	1
	USB3.2 Gen2	6 (5 x Type-A, 1 x Type-C)	4 (3 x Type-A, 1 x Type-C)	N/A
	USB3.2 Gen1	0	N/A	4
	USB2.0	0	2	6
	Ethernet	3 x RJ45	2 x RJ45	2 x RJ45
	Serial Port	1 (RS232/422/485)	1 (RS232/422/485)	2 (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)	5 (1 x RS232/422/485, 4 x RS232)	6 (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	0
	USB2.0	2 x Headers support additional 4 x USB2.0 ports	1 x Header support additional 2 x USB2.0 connectors 2 x Vertical connector	2 x Headers support additional 4 x USB2.0 ports 2 x Stick sockets
	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) / 1 x Headers (PWM + DC Mode)
	Buzzer	1	1	0
	PS/2	1	0	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	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
Power	Power Type	AT/ATX mode	AT/ATX mode	ATX
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C

ATX Boards

		H310A-EM-A	H610A-IM-A D5	H110A-IM-A
				
Processor System	CPU	Intel® Core™ 9th/8th Gen (Socket LGA1151) Intel® Core™ i7/i5/i3 Processors	Intel® Core™ 13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 7th/6th Gen (Socket LGA1151) Intel® Core™ i7/i5/i3 Processors
	Chipset	Intel® H310 chipset	Intel® H610 Chipset	Intel® H110 chipset
Memory	Technology	DDR4	DDR5	DDR4
	Max.	64GB	64GB	32GB
	Socket	2 x U-DIMM	2 x U-DIMM	2 x U-DIMM
Display	Display Port	1	1	0
	HDMI	1	1	1
	VGA	1	1	1
Expansion Slot	PCIe	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	4	5
	M.2	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	10/100/1000Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	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	3, up to 6Gb/s
	RAID	-	-	-
Rear I/O	Display Port	1	1	-
	HDMI	1	1	1 (colay with DP, optional)
	VGA	1	1	1
	USB3.2 Gen2	0	2	4
	USB3.2 Gen1	4	2	0
	USB2.0	2	6	0
	Ethernet	2	2 x RJ45	2
	Serial Port	2 (RS232/422/485)	2 (RS232/422/485)	2 (RS232/422/485)
	Audio jack	2 (Line-Out, Mic in)	2 (Line-Out, Mic in)	3 (Line-Out, Line-In, Mic in)
Internal I/O	COM Header	4 (RS232)	4 (RS232)	6 (RS232)
	USB3.2 Gen1	0	0	0
	USB2.0	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 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	1	1	0
	PS/2	1	1	0
	AT/ATX Select Jumper	0	1	1
	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	AT/ATX mode	ATX	AT/ATX mode
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C

Micro-ATX Boards

		Q870M-IM-A	Q670M-EM-A	Q670EM-IM-A
				
Processor System	CPU	LGA1851 for Intel® Core™ Ultra Processors(Series 2) Max. 125W TDP	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
	Chipset	Intel® Q870 chipset	Intel® Q670 chipset	Intel® Q670E Chipset
Memory	Technology	DDR5 5600MT/s (SPC 0r2r) 4400MT/s (25PC 2r2r)	DDR4	DDR5
	Max.	192GB	128GB	128GB
	Socket	4 x U-DIMM	4 x U-DIMM	4 x U-DIMM
Display	Display Port	2, Supports DP 1.4(DP++), up to 4096 x 2160 @60Hz	2, Supports 4096 x 2304 @60Hz	4, Supports 3840 x 2160 @60Hz
	HDMI	2, Supports 2.1, up to 4096 x 2160 @60Hz	1	0
	VGA	Max.4 displays	0	0
Expansion Slot	PCIe	1 x PCIe 5.0 x16 slot (1 x16 mode/ 2 x8 mode) 1 x PCIe 4.0 x16 slot (x4 mode) 1 x PCIe 4.0 x4 slot (x4 mode) 1 x PCIe 4.0 x4 slot (x4 mode)	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 s lot (x4 mode)
	M.2	1 x M.2 M key, type 2242/2260/2280 (PCIe 4.0 x4 mode) supports NVMe 1 x M.2 M key, type 2280 (PCIe 5.0 x4 mode) supports NVMe	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
Ethernet	Speed	10/100/1000/2500 Mbps	10/100/1000 Mbps	10/100/1000/2500 Mbps
	Controller	1 x Intel® i210AT 1 x Intel® i226LM (Intel vPro supported)	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)
Storage	SATA port	4 x SATA Gen 3.0, Up to 6Gb/s	4, up to 6Gb/s	7, up to 6Gb/s
	RAID	Support RAID 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	2	4
	HDMI	2	1	0
	VGA	0	4	0
	USB3.2 Gen2	2	4	4 (3 x type A, 1 x Type C)
	USB3.2 Gen1	4	4	2
	USB2.0	1	2	0
	Ethernet	2 x RJ45	2 x RJ45	3 x RJ45
	Serial Port	1 (RS232/422/485)	3 (RS232)	1 (RS232/422/485)
	PS/2	1	0	0
	Audio jack	Line-Out, Line-In, Mic-In	Line-Out, Line-In, Mic-In	Line-Out, Line-In, Mic-In
Internal I/O	COM Header	5 x COM Headers (1 x RS232/422/485, 4 x RS232)	5 (RS232)	9 (RS232)
	USB3.2 Gen1	1 x USB 3.2 Gen 1 connector supports additional 2 x USB3.2 Gen1 ports 1 x USB 3.2 Gen 1 vertical connector	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
	USB2.0	1 x USB 2.0 Headers support additional 2 x USB2.0 ports	2 x Headers support additional 4 x USB2.0 ports	2 x Header Support Additional 4 x USB2.0 Ports
	CPU Fan / Chassis Fan	1 x (PWM Mode) / 3 x (PWM Mode)	1 x (PWM Mode) / 2 x (PWM Mode)	1 x (PWM Mode) / 3 x (PWM Mode)
	TPM Header	1	1	1
	LPT port header	0	0	1
	Buzzer	1	1	1
	PS/2	1	1	1
	AT/ATX Select Jumper	1	1	1
Power	Power Type	AT mode/ ATX mode	1 x 8-pin ATX Power connector 1 x 24-pin ATX	1 x 8-pin ATX Power connector 1 x 24-pin ATX
Environment	Operating Temperature	0~60°C	0~60°C	0~60°C

Micro-ATX Boards

		Q370M-IM-A	H610M-IM-A D5	H310M-IM-A
				
Processor System	CPU	Intel® Core™ 9th/8th Gen (Socket LGA1151) Intel® Core™ i9/i7/i5/i3 Processors	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® Q370 Chipset	Intel® H610 chipset	Intel® H310 Chipset
Memory	Technology	DDR4	DDR5	DDR4
	Max.	64GB	64GB	32GB
	Socket	4 x U-DIMM	2 x U-DIMM	2 x U-DIMM
Display	Display Port	2, Supports 4096 x 2304 @60Hz	1, Supports 4096 x 2160 @60Hz	0
	HDMI	1, Supports 4096 x 2160 @24Hz / 2560 x 1600 @60Hz	2, Supports 4096 X 2160 @60Hz	0
	VGA	0	1, Supports 1920 x 1200 @60Hz	0
Expansion Slot	PCIe	1 x PCIe 3.0/2.0 x16 slot 2 x PCIe 3.0/2.0 x1 slots 1 x PCI slot	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	2 x M.2 M Key, type 2242/2260/2280 with IRST support (SATA/PCIe mode) **SATA mode ready for Intel® Optane Memory* 1 x M.2 E Key, type 2230 Wi-Fi Devices Support	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	10/100/1000 Mbps
	Controller	1 x Intel® I219LM, supports WOL/PXE	1 x Realtek® 8111H, 1 x Intel® i219V	1 x Realtek® RTL8111H
Storage	SATA port	6, up to 6Gb/s	4, up to 6Gb/s	4, up to 6Gb/s
	RAID	PCIe 0,1,5 / SATA 0,1,5,10	-	-
Rear I/O	Display Port	2	1	0
	HDMI	1	2	0
	VGA	0	1	0
	USB3.2 Gen2	0	2	0
	USB3.2 Gen1	2, support additional 4 x USB 3.2 Gen1 ports	2	2
	USB2.0	1, support additional 2 x USB2.0 ports	0	4
	Ethernet	1 x RJ45	2 x RJ45	1 x RJ45
	Serial Port	2 (RS232)	2 (RS232/422/485)	1 (RS232)
	PS/2	1 x keyboard port, 1 x mouse port	0	1 x keyboard port, 1 x mouse port
	Audio jack	Line-Out, Line-In, Mic-In	Line-Out, Mic-In	Line-Out, Line-In, Mic-In
Internal I/O	COM Header	2 (RS232)	4 (RS232)	1 (RS232)
	USB3.2 Gen1	2 x Headers support additional 4 x USB3.2 Gen1 ports	N/A	1 x Header support additional 2 x USB3.2 Gen1 ports
	USB2.0	1 x Headers support additional 2 x USB2.0 ports	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) / 2 x (PWM Mode)	1 x (PWM Mode) / 1 x (PWM Mode)	1 x (PWM Mode) / 1 x (PWM Mode)
	TPM Header	N/A (IC Onboard)	1 (SPI)	1 (LPC)
	LPT port header	1	0	0
	Buzzer	0	0	0
	PS/2	0	1	0
	AT/ATX Select Jumper	0	1	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 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	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™ i7/i5/i3 Processors	Intel Core 14th/13th/12th Gen (Socket LGA 1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Core™ 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® Q370 chipset	Intel® R680E / Q670E Chipset	Intel® Q470E Chipset	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)
	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
				
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.	96GB	64GB	16GB
	Socket	2 x SO-DIMM	2 x SO-DIMM *R680E support ECC memory	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/ PCIex1)
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	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

		N150I-IM-A	H610I-EM-A	H610I-IM-A D5
		 Coming soon *Q2'26		
Processor System	CPU	Intel® Processor N150	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
	Chipset	N/A	Intel® H610 Chipset	Intel® H610 Chipset
Memory	Technology	DDR5	DDR4	DDR5
	Max.	16GB	64GB	64GB
	Socket	1 x SO-DIMM	2 x SO-DIMM	2 x SO-DIMM
Display	Display Port	2	1	1
	HDMI	1	0	2
	VGA	0	2	0
	eDP/LVDS	0	1	1
Expansion Slot	PCIe	1 x PCIe x4	1 x PCIe 4.0 x16 slot	1 x PCIe 4.0 x16 slot
	M.2	1 x M.2 E key, type 2230 for WIFI/BT device (PCIe/USB2.0) 1 x M.2 M key, type 2242/2260/2280 (PCIex2)	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)
Ethernet	Speed	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	1 x Realtek RTL8111H (Support WOL/PXE)	2 × RTL8111H	1 x Intel® i210AT 1 x Intel® i219V
Storage	SATA port	1, Up to 6Gb/s	2, Up to 6Gb/s	2, Up to 6Gb/s
	RAID	-	-	-
Rear I/O	Display Port	2	1	1
	HDMI	1	2	2
	VGA	0	0	0
	USB3.2 Gen2	0	4	1
	USB3.2 Gen1	2	0	0
	USB2.0	6	2	2
	Ethernet	1	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	1 (RS-232), 1 (RS-232 support CC Talk)	4 (RS232)	4 (RS232)
	USB3.2 Gen1	0	0	0
	USB2.0	0	2 x Headers support additional 4 x USB2.0 ports 1 x Vertical connecter	2 x Headers support additional 4 x USB2.0 ports
	CPU Fan/ Chassis Fan	0 / 2 (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	0	0	0
Power	Power Type	1 (4-pin ATX power connector, DC in mode)	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

*Product available time

Intel-based Mini-ITX Boards

		H310I-IM-A R3.0	R680EI-IM-A	N5105I-IM-A R2.0	J3455I-CM-A R2.0
					
Processor System	CPU	Intel® Core™ 9th/8th Gen (Socket LGA1151) Intel® Core™ i7/i5/i3 Processors	Intel® Core™ 13th/12th Gen (Socket LGA1700) Intel® Core™ i9/i7/i5/i3 Processors	Intel® Celeron® Processor N5105	Intel® Celeron® Processor J3455
	Chipset	Intel® H310 Chipset	Intel® R680E / Q670E Chipset	Integrated	Integrated
Memory	Technology	DDR4	DDR5	DDR4	DDR3L
	Max.	32GB	64GB	32GB	8GB
	Socket	2 x SO-DIMM	2 x SO-DIMM **R680E support ECC memory*	2 x SO-DIMM	2 x U-DIMM
Display	Display Port	2	3	0	0
	HDMI	1	1	1	1
	VGA	0	1	1	1
	eDP/LVDS	1	1 (eDP & LVDS can be switched by BIOS)	1	1
Expansion Slot	PCIe	1 x PCIe 3.0 x16 slot	1 x PCIe 3.0/2.0 x16 slot	1 x PCIe 3.0 / 2.0 slot 1 x Mini PCIe slot (support PCIex1/ 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 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)	0	1 x M.2 E key, type 2230 for WIFI/BT device
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® i219V	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	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	2	3	0	0
	HDMI	1	1	1	1
	VGA	0	3 (2*Type A, 1*Type C)	1	1
	USB3.2 Gen2	0	1 (Type A)	0	0
	USB3.2 Gen1	4	4 (Type A)	4	4
	USB2.0	0	2 x RJ45	0	0
	Ethernet	2	1 (RS232/422/485)	1 x RJ45	1 x RJ45
	Serial Port	2	2	3	1
	PS/2	0	1 x Keyboard, 1x Mouse	0	1 x Keyboard, 1x Mouse
	Audio jack	Line-Out, Mic-In	Line-Out, Mic-In	Line-Out, Mic-In	Line-Out, Line-In, Mic-In
Internal I/O	COM Header	4 (RS232)	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 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	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	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)	0 / 1 (PWM Mode)	1 (PWM Mode) / 1 (PWM + DC Mode)
	TPM Header	1 (SPI)	1 (SPI)	1 (SPI)	1 (LPC)
	AT/ATX Select Jumper	1	0	0	0
Power	Power Type	1 X 4-pin ATX 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 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	0~60°C	0~50°C

AMD-based Mini-ITX Boards

		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.	32GB	32GB	32GB
	Socket	2 x SO-DIMM	2 x SO-DIMM	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	DDR4	DDR5	DDR4
	Max.	32GB	16GB	32GB
	Socket	2 x SO-DIMM	1 x SO-DIMM	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.	8GB	8GB	8GB	32GB
	Socket	2 x SO-DIMM	2 x SO-DIMM	2 x SO-DIMM	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 x1200 @ 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

		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™ 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	Technology	DDR5	DDR5	DDR4
	Max.	64GB	64GB	32GB
	Socket	2 x SO-DIMM	2 x SO-DIMM	1 x SO-DIMM
Display	Display Port	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 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)
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
	M.2	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
	Controller	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 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
	HDMI	2	2	1
	USB3.2 Gen2	4	4	4
	USB-C	0	0	0
	USB2.0	0	0	6
	Ethernet	2	2	2
Internal I/O	COM Header	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	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
	TPM Header	1 (SPI)	1 (SPI)	1 (SPI)
	Others	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
Environment	Operating Temperature	-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.	64GB	64GB	32GB
	Socket	2 x SO-DIMM	2 x SO-DIMM	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 Controller	10/100/1000/2500 Mbps 1 x Intel® i219LM, 1 x Intel® I226IT	10/100/1000/2500 Mbps 1 x Intel® i219LM, 1 x Intel® I226IT	10/100/1000 Mbps 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.	16GB	8GB	8GB	8GB
	Socket	1 x SO-DIMM	1 x SO-DIMM	1 x SO-DIMM	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 forTPU/WIFI/BT device (PCIE/USB/CNVi) 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	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps	10/100/1000 Mbps
	Controller	2 x Intel® i210AT, supports WOL/PXE	2 x Intel® i210IT, supports WOL/PXE	2 x Intel® i210IT, supports WOL/PXE	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	DDRL
	Max.	8GB
	Socket	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 forTPU/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	1 (SPI); Intel® PTT
	Others	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.	8GB
	Socket	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

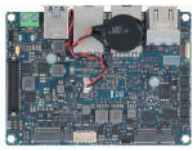
Processor System	CPU	Intel® Atom® x7211RE Processor Intel® Atom® x7433RE Processor Intel® Atom® x7835RE Processor
Memory	Technology	LPDDR5
	Max.	16GB
	Socket	On board
Display	HDMI	1
	DP	1
	eDP/LVDS	LVDS (co-lay with eDP)
Expansion Slot	M.2	1x M.2 3042/3052 B key for 4G/5G 1 x 2230 M.2 E Key
Ethernet	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
	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	-40~85°C

N97P-IM-AA
N305P-IM-AA
X7425EP-IM-AA

*Q2'26

Processor System	CPU	Intel® Processor N97 Intel® Core™ i3-N305 Intel® Atom® X7425E
Memory	Technology	LPDDR5
	Max.	16GB
	Socket	On board
Display	HDMI	1
	DP	1
	eDP/LVDS	LVDS (co-lay with eDP)
Expansion Slot	M.2	1x M.2 3042/3052 B key for 4G/5G 1 x 2230 M.2 E Key
Ethernet	Speed	10/100/1000 Mbps
	Controller	2 x Intel® 2.5G LAN
Rear I/O	HDMI	1
	DP	1
	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	-40~85°C

X6425REP-IM-AA
X642EP-IM-AA
X641EP-IM-AA
X621EP-IM-AA

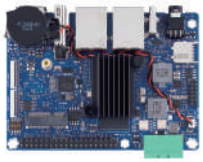


Processor System	CPU	Intel Atom® x6211E X6211e/X6413E/X6425E/ X6425RE Processor
Memory	Technology	LPDDR4
	Max.	8GB
	Socket	On board
Display	HDMI	2
	eDP/LVDS	LVDS (co-lay with eDP)
Expansion Slot	M.2	1 x 2230 M.2 E key (WIFI/BT) 1 x M.2 B key
Ethernet	Speed	10/100/1000 Mbps
	Controller	1x Intel® I226-IT 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 VCC Power Selection Jumper	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 Phoenix Terminal
Environment	Operating Temperature	-40~85°C

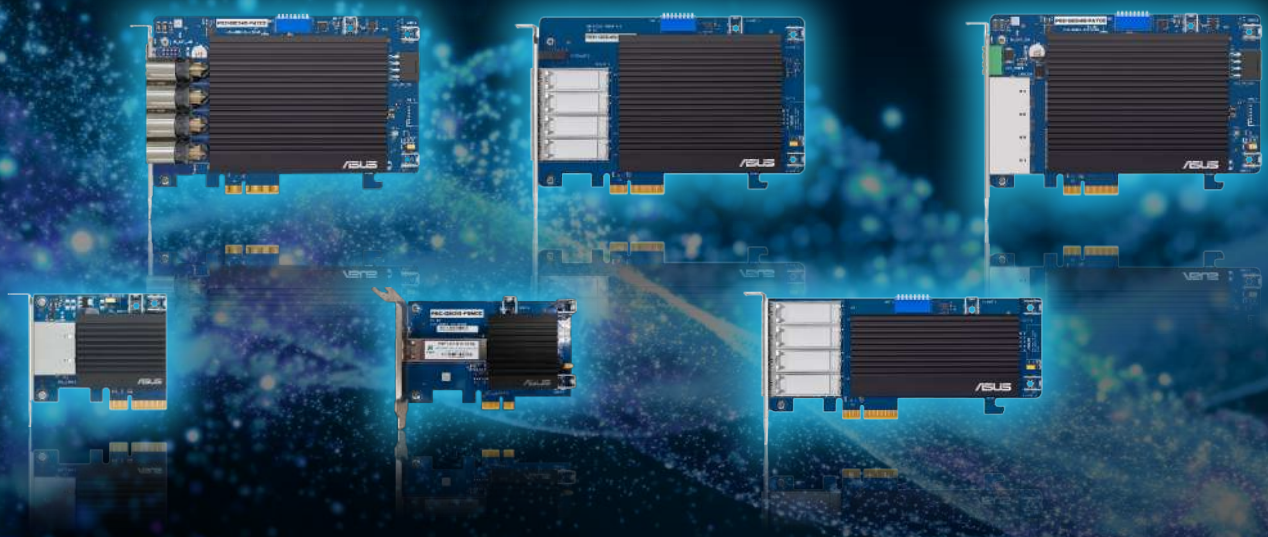
*Product available time

Pico-ITX Boards

IMX8P-IM-A R2.0



Processor System	CPU	NXP® i.MX 8 M ARM Cortex-A53 core
	Chipset	Integrated
Memory	Technology	LPDDR4
	Max.	4GB
	Socket	On board
Display	Display Port	0
	HDMI	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	0
	M.2	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	10/100/1000 Mbps
	Controller	1 x Realtek® RTL8211, supports WOL 1 x Intel I210-AT, supports WOL
Storage	SATA port	0
	eMMC	1 x 16GB onboard eMMC
	RAID	-
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 IoT
Network Interface Cards

Redefining Industrial Standard

Reliable Networking Solutions for Critical Industrial Applications

The ASUS IoT Network Interface Card (NIC) series offers a comprehensive networking solution for industrial applications. Featuring copper (PoE/LAN) and fiber optic connections, these NICs leverage advanced technologies to deliver long-term reliability, seamless compatibility, and superior performance in demanding environments. They are ideal for transportation, power utilities, and factory automation.

Key Features

Industrial Compliance*

Adheres to stringent standards testing, including EN-50121-4, EN-50155, IEC-61850-3, IEEE 1613, and NEMA TS2

Extreme Temperature

-40°C ~ 75°C wide-operating temperature support

Enhanced Protection

Features 8kV/15kV ESD, 2kV LAN surge protection, 30µ gold fingers, and anti-vibration screws

Data Integrity

Ensures packet transmission and continuous uptime according to IEC/IEEE standards

Full Load PoE/PoE+Power

PoE power budget up to 120 watts*

 *varies by model

Full Range of ASUS IoT Industrial Network Interface Cards

ASUS IoT offers a comprehensive lineup of industrial network interface cards, covering all connectivity types, power options, form factors, and deployment scenarios to meet mission-critical industrial needs.

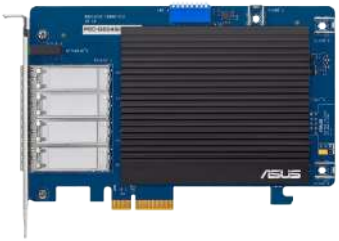
PCIe LAN/ PoE Cards

Standard RJ45 Gigabit Ethernet, ideal for automation controllers, AOI systems, and high-density wired production lines.

PCIe M12/ PoE Cards

Rugged M12 connectors with PoE support of up to 120W*. Designed for vibration-prone and mobile installations.*

*Selective by model



PCIe SFP/ Fiber Cards

SFP fiber interfaces for long-distance transmission and EMI immunity, ideal for power utilities, railways, and large-scale networks.

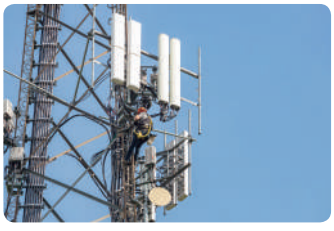
M.2 LAN/ Fiber Cards

Compact M.2 form factor for embedded systems, ideal for equipment requiring Ethernet or fiber connectivity.

Mission-Critical Compliance: High-Level Industrial Standards

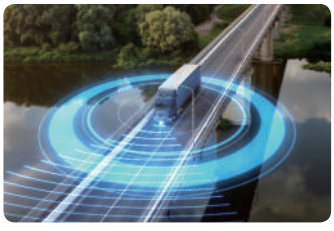
ASUS IoT NICs are certified to rigorous industrial standards, delivering reliable, high-performance operation in extreme, mission-critical environments, tailored to meet customers' specific needs.

Railways



Power Utilities

Heavy Industry



Roadway Signaling

EN-50121-4
EN-50155

IEC 61850-3
IEEE 1613

IEC 61000-6-4
IEC 61000-6-2

NEMA TS2

Engineered for Extreme Transportation & Industrial Environments

ASUS IoT NICs deliver reliable connectivity in harsh environments, handling extreme temperatures, strong vibrations, and electromagnetic interference—ideal for vehicular, trackside, and industrial applications.

Power Utilities & Substation Automation

Ironclad Data Defense : Superior ESD and Surge Immunity

- ASUS IoT NICs incorporate 8kV/15kV ESD (contact/air) immunity and 2kV LAN surge protection on all RJ45 ports, along with durable 30µ gold-plated connectors. This robust shielding helps ensure stable network performance and long-term reliability, even harsh industrial environments

.

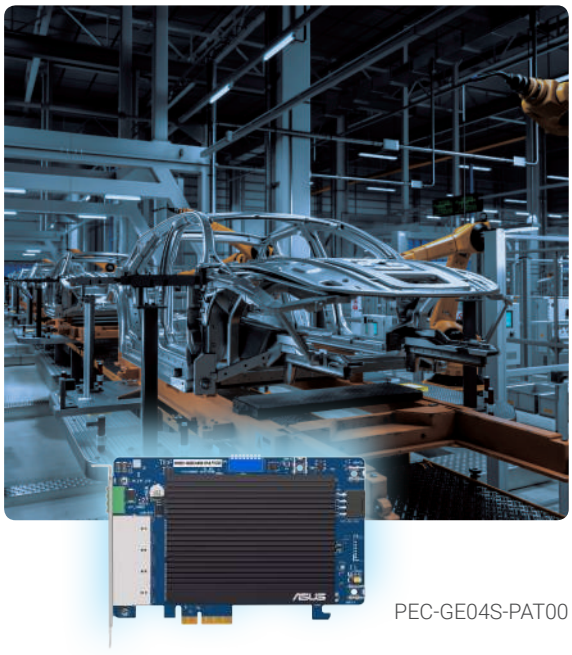
- Ideal solution for mission-critical applications like substation automation, where IEC 61850 and IEEE 1613 compliance is required.

PEC-GE04L-FOC00

Factory Automation & Robots Control

Flexible Power: Full Load PoE and Simplified Deployment

- ASUS NICs deliver flexible network deployment with high-capacity PoE, providing up to 120 watts to support a wide range of industrial devices, including high-power endpoints.
- Power is supplied via Ethernet, fully compliant with IEEE 802.3af/at standards (15.4 watts/30 watts per port); the card also supports AT/ATX and 12V/24V/48V DC inputs. This versatility simplifies cabling while helping to ensure stable performance under full load.
- Ideal solution for powering multiple or high-demand industrial devices.



PEC-GE04S-PAT00

Off-Road Vehicles & Railway Rolling Stock, Trackside

High-vibration, mobile railway trackside and rolling stock installations

- 4-port M12 PoE/PoE+ PCIe card with rugged M12 X-Code connectors
- Full-load 120-watt PoE/PoE+ PSE to power high-demand devices
- Wide -40°C to 75°C operating temperature range
- Industrial protection: 8kV/15kV ESD, 2kV LAN surge
- Certified to EN 50121-4, EN 50155, IEC 61000-6-4 / 6-2, NEMA TS2
- PCIe interface with reinforced mounting for secure, vibration-resistant installation

PEC-GE04M-PAT00

Long-Distance Fiber Networking for ITS, Oil and Gas

Large-scale networks, and high-EMI immunity applications

- 1-, 2-, or 4-port PCIe fiber NIC options
- Wide operating temperature range: -40°C to 75°C
- Industrial-grade 8kV/15kV ESD protection (Criterion A compliant)
- Certified to EN 50121-4, IEC 61000-6-4 / 6-2, NEMA TS2
- Supports single-mode and multimode SFP modules with LC connectors

PEC-GE02L-FOC00

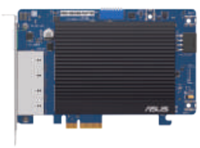
AOI & IP Surveillance

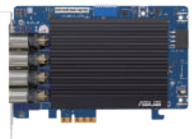
Factory automation, machine vision, and surveillance requiring durable power delivery

- 2- or 4-port PCIe PoE/PoE+ or LAN card options
- Wide -40°C to 75°C operating temperature range
- Industrial-grade protection: 8kV/15kV ESD, 2kV LAN surge
- Certified to EN 50121-4, EN 50155, IEC 61000-6-4 / 6-2, NEMA TS2
- Full-load 120-watt PoE/PoE+ PSE for high-power devices
- PCIe interface with reinforced mounting, cable management support

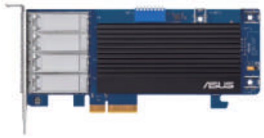
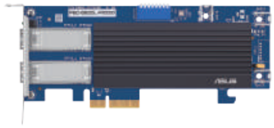
PEC-GE02L-PAT00

Network Interface Cards

	PEC-GE04S-PAT00	PEC-GE04S-LAN00	PEC-GE04S-FOC00
			
Basic Information			
Chipset	Intel I350-AM4	Intel I350-AM4	Intel I350-AM4
Card Size	Full size	Full size	Full size
Port No.	4	4	4
Operating temperature	-40~75°C	-40~75°C	-40~75°C
Jumbo frame	9K	9K	9K
Flow Control (PAUSE Frame)	YES	YES	YES
Power Input	PCIE	PCIE	PCIE
30μ golden finger	YES	YES	YES
Fiber Optic			
SFP slot	-	-	4
SFF (Single-mode)	-	-	-
SFF (Muli-mode)	-	-	-
Connector			
RJ45 Connector	4	4	-
M12 Connector	-	-	-
LC Connector	-	-	4
EMS			
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m
Protection			
ESD Protection	8K/15K, Criteria A	8K/15K, Criteria A	8K/15K, Criteria A
Overcurrent protection	YES	YES	YES
LAN Surge protection	2KV	2KV	-
Certification			
EN-50121-4	YES	YES	YES
EN50155	-	-	-
EN61000-6-4	YES	YES	YES
EN61000-6-2	YES	YES	YES
IEC61850-3	-	-	-
IEEE1613	-	-	-
Mounting			
Extra mounting screw	3	3	3
PCIE Slot	YES	YES	YES
PCIE Socket	YES	YES	YES
Ethernet Standard			
IEEE 802.3 for 10BaseT	support	support	support
IEEE 802.3u for 100BaseT(X)/F(X)	support	support	support
IEEE 802.3ab for 1000BaseT(X)	support	support	support
IEEE 802.3x for flow control	support	support	support
IEEE 802.3z for 1000BaseX	support	support	support
IEEE 802.3az for EEE	support	support	support
IEEE 802.1p/Q	support	support	support
IEEE 802.3af/at	support	-	-
Environmental Specification			
Vibration	IEC 60068-2-6	IEC 60068-2-6	IEC 60068-2-6
Shock	IEC 60068-2-27	IEC 60068-2-27	IEC 60068-2-27
Free Fall	IEC 60068-2-32	IEC 60068-2-32	IEC 60068-2-32

	PEC-GE04M-PAT00	PEC-GE02L-PAT00	PEC-GE04L-LAN00
			
Basic Information			
Chipset	Intel I350-AM4	Intel I350-AM2	Intel I350-AM4
Card Size	Full size	Low-profile	Low-profile
Port No.	4	2	4
Operating temperature	-40~75°C	-40~75°C	-40~75°C
Jumbo frame	9K	9K	9K
Flow Control (PAUSE Frame)	YES	YES	YES
Power Input	PCIE	PCIE	PCIE
30μ golden finger	YES	YES	YES
Fiber Optic			
SFP slot	-	-	-
SFF (Single-mode)	-	-	-
SFF (Muli-mode)	-	-	-
Connector			
RJ45 Connector	-	2	4
M12 Connector	4	-	-
LC Connector	-	-	-
EMS			
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m
Protection			
ESD Protection	8K/15K, Criteria A	8K/15K, Criteria A	8K/15K, Criteria A
Overcurrent protection	YES	YES	YES
LAN Surge protection	2KV	2KV	2KV
Certification			
EN-50121-4	YES	YES	YES
EN50155	YES	-	-
EN61000-6-4	YES	YES	YES
EN61000-6-2	YES	YES	YES
IEC61850-3	-	-	-
IEEE1613	-	-	-
Mounting			
Extra mounting screw	3	2	2
PCIE Slot	YES	YES	YES
PCIE Socket	YES	YES	YES
Ethernet Standard			
IEEE 802.3 for 10BaseT	support	support	support
IEEE 802.3u for 100BaseT(X)/F(X)	support	support	support
IEEE 802.3ab for 1000BaseT(X)	support	support	support
IEEE 802.3x for flow control	support	support	support
IEEE 802.3z for 1000BaseX	support	support	support
IEEE 802.3az for EEE	support	support	support
IEEE 802.1p/Q	support	support	support
IEEE 802.3af/at	support	support	-
Environmental Specification			
Vibration	IEC 60068-2-6	IEC 60068-2-6	IEC 60068-2-6
Shock	IEC 60068-2-27	IEC 60068-2-27	IEC 60068-2-27
Free Fall	IEC 60068-2-32	IEC 60068-2-32	IEC 60068-2-32

Network Interface Cards

	PEC-GE02Q-LAN00	PEC-GE04L-FOC00	PEC-GE02L-FOC00
			
Basic Information			
Chipset	Intel I350-AM2	Intel I350-AM4	Intel I350-AM2
Card Size	Quarter size	Low-profile	Low-profile
Port No.	2	4	2
Operating temperature	-40~75°C	-40~85°C	-40~85°C
Jumbo frame	9K	9K	9K
Flow Control (PAUSE Frame)	YES	YES	YES
Power Input	PCIE	PCIE	PCIE
30µ golden finger	YES	YES	YES
Fiber Optic			
SFP slot	-	4	2
SFF (Single-mode)	-	-	-
SFF (Muli-mode)	-	-	-
Connector			
RJ45 Connector	2	-	-
M12 Connector	-	-	-
LC Connector	-	4	2
EMS			
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m
Protection			
ESD Protection	8K/15K, Criteria A	8K/15K, Criteria A	8K/15K, Criteria A
Overcurrent protection	YES	YES	YES
LAN Surge protection	2KV	-	-
Certification			
EN-50121-4	YES	-	-
EN50155	-	-	-
EN61000-6-4	YES	YES	YES
EN61000-6-2	YES	YES	YES
IEC61850-3	-	YES	YES
IEEE1613	-	YES	YES
Mounting			
Extra mounting screw	2	2	3
PCIE Slot	YES	YES	YES
PCIE Socket	-	YES	YES
Ethernet Standard			
IEEE 802.3 for 10BaseT	support	support	support
IEEE 802.3u for 100BaseT(X)/F(X)	support	support	support
IEEE 802.3ab for 1000BaseT(X)	support	support	support
IEEE 802.3x for flow control	support	support	support
IEEE 802.3z for 1000BaseX	support	support	support
IEEE 802.3az for EEE	support	support	support
IEEE 802.1p/Q	support	support	support
IEEE 802.3af/at	-	-	-
Environmental Specification			
Vibration	IEC 60068-2-6	IEC 60068-2-6	IEC 60068-2-6
Shock	IEC 60068-2-27	IEC 60068-2-27	IEC 60068-2-27
Free Fall	IEC 60068-2-32	IEC 60068-2-32	IEC 60068-2-32

	PEC-GE01Q-FSM00	EBC-GE04S-LAN00	EBC-GE02S-LAN00
			
Basic Information			
Chipset	Intel I210	Intel I350-AM4	Intel I350-AM2
Card Size	Quarter size	M.2280	M.2280
Port No.	1	4	2
Operating temperature	-40~75°C	-40~75°C	-40~75°C
Jumbo frame	9K	9K	9K
Flow Control (PAUSE Frame)	YES	YES	YES
Power Input	PCIE	M.2	M.2
30μ golden finger	YES	YES	YES
Fiber Optic			
SFP slot	-	-	-
SFF (Single-mode)	YES	-	-
SFF (Muli-mode)	YES	-	-
Connector			
RJ45 Connector	-	4	2
M12 Connector	-	-	-
LC Connector	1	-	-
EMS			
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 KV IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m
Protection			
ESD Protection	8K/15K, Criteria A	8K/15K, Criteria A	8K/15K, Criteria A
Overcurrent protection	YES	YES	YES
LAN Surge protection	-	2KV	2KV
Certification			
EN-50121-4	YES	YES	YES
EN50155	-	-	-
EN61000-6-4	YES	YES	YES
EN61000-6-2	YES	YES	YES
IEC61850-3	-	-	-
IEEE1613	-	-	-
Mounting			
Extra mounting screw	2	-	-
PCIE Slot	YES	-	-
PCIE Socket	-	-	-
Ethernet Standard			
IEEE 802.3 for 10BaseT	support	support	support
IEEE 802.3u for 100BaseT(X)/F(X)	support	support	support
IEEE 802.3ab for 1000BaseT(X)	support	support	support
IEEE 802.3x for flow control	support	support	support
IEEE 802.3z for 1000BaseX	support	support	support
IEEE 802.3az for EEE	support	support	support
IEEE 802.1p/Q	support	support	support
IEEE 802.3af/at	-	-	-
Environmental Specification			
Vibration	IEC 60068-2-6	IEC 60068-2-6	IEC 60068-2-6
Shock	IEC 60068-2-27	IEC 60068-2-27	IEC 60068-2-27
Free Fall	IEC 60068-2-32	IEC 60068-2-32	IEC 60068-2-32

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

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

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 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

APC-125U-215W

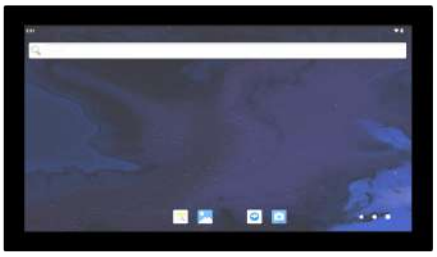
APC-125U-15S, APC-125U-17S

- Intel® Core™ Ultra 5-125U Processor
- Fanless and compact design
- 4:3 (15”and 17”), 16:9 (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

ARM-based Panel PCs

PP-156W-3568

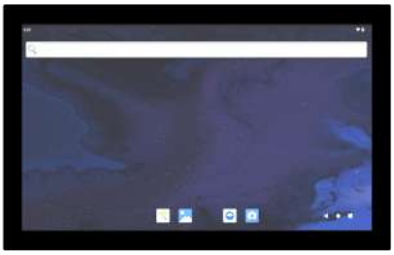
ARM System 15.6” Panel PC provide an industrial-grad touch display with front IP65, various interface, plug-and-play integrated into manufacturing, transportation and commercial applications



- 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-grad 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

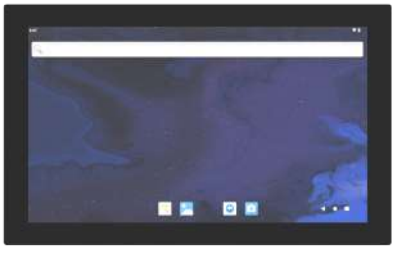
PP-156W-3399

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)

ASUS NUC

Smaller, Faster, Better, AI Ready.

Powerful, Compact, Versatile Solutions for All

ASUS NUC Mini PCs deliver uncompromised performance in the smallest form factors, backed by industry-leading quality and reliability. Their versatility shines through an array of configurations catering to diverse edge computing needs across smart manufacturing, retail, SMB, and healthcare.

NUC Mini PCs	NUC Kits (Barebone)	NUC Boards
· Ready to use · Complete Mini PCs equipped with pre-installed memory, storage, and operating system	· Ready to build configurable features · Install your own memory, storage, and operating system (not included)	· 4x4-inch or 5x4-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

Exceptional Quality & Reliability

Built to last, ASUS NUC Mini PCs deliver enduring performance thanks to rigorous durability testing to ensure that every device is ready for the toughest environments.

Advanced AI Capabilities

Each model in the complete NUC Mini PC lineup features a high-performance NPU, so they're ready to handle everything from everyday AI tasks to the most demanding AI workloads.

Compact But Powerful

Ultra-small-form-factor ASUS NUC Mini PCs deliver industry-leading power density (watts per liter) with elite performance.

Enterprise-Grade Security

UEFI Secure Boot, self-healing BIOS, TPM, lock options, ACC management, and Intel® vPro offer complete protection and control.

Award-winning Design

Eco-friendly Design

ASUS AI NUC: Redefining Versatility and Innovation

Spanning from mainstream to premium, the ASUS NUC Mini PC portfolio offers scalable AI PC solutions, enabling customers to select the system that best fits their needs and use cases.

Everyday AI

Up to 180 platform TOPS

ASUS NUC 14 Essential

ASUS NUC 15 Pro

The ASUS NUC Essential and NUC Pro deliver efficient AI acceleration for everyday business needs, from voice control and image recognition to AI-enhanced video conferencing with real-time translation, as well as light IoT uses like digital signage and smart kiosks with personalized content.

Next Level AI

Compact Copilot+ PC

ASUS NUC 14 Pro AI

ExpertCenter PN55

ASUS NUC 14 Pro AI and ExpertCenter Mini PCs support demanding AI workloads and edge inference, delivering secure, efficient office computing with Copilot+, Bluetooth® 5.4, voice control, and fingerprint authentication, plus on-device AI for industrial uses like real-time object recognition.

Advanced AI

NPU + RTX 50-seres GPU

ASUS NUC 15 Performance

ASUS NUC 15 Performance pairs an Intel® CPU with an NVIDIA® GeForce RTX™ 5070 Laptop GPU to deliver powerful acceleration for complex edge AI workloads, supporting advanced applications such as autonomous robotics, digital twins, real-time vision analytics, predictive maintenance, and large-scale on-device AI training and decision-making.

ASUS NUC :
Tested Tough for the Best Performance

Each NUC unit is subjected to extensive and rigorous testing to ensure it can withstand the wear and tear of constant use as well as the harshest environments. Designed to exceed industry standards, the meticulous ASUS testing process guarantees each product delivers outstanding durability and performance.

This unwavering commitment to excellence ensures that ASUS NUC offerings deliver exceptional reliability to provide customers with a powerful and long-lasting solution designed to perform seamlessly, day after day.

Built to Endure:
Military-Grade Reliability backed by MIL-STD 810H Test

High Temperature Test
Duration: 7 days (7 x 24-hour cycle)
Temperature: 33 to 71° C
Unit is non-operational during test
&
Duration: 3 days (3 x 24-hour cycle)
Temperature: 32 to 49° C cycling temperature exposure
Unit is operational during test

Low-Temperature Test
Duration: 7 days (7 x 24-hour cycle)
Temperature: -25 to -33° C
Unit is non-operational during test
&
Duration: 3 days (3 x 24-hour cycle)
Temperature: -21 to -32° C
Unit is operational during test

Altitude Test
Duration: 12 hours
Temperature: -20° C
Unit is non-operational during test
&
Duration: 12 hours
Temperature: 5° C and 40° C
Unit is operational during test

Humidity Test
Duration: 10 days (10 x 24-hour cycle)
Temperature: 30° C and 60° C
Humidity: 95% relative humidity (RH) (constant)
Unit is non-operational during test

Shock Test
Drop height: 100 mm
Unit is operational during test

Vibration Test
Test time: 40 min/axis
Unit is non-operational during test

* The testing regime meets the requirements of both military-grade standards and ASUS quality tests, and varies depending on device. MIL-STD-810 testing is conducted on select ASUS products only. Note that the MIL-STD-810 testing helps to ensure the quality of ASUS products but does not indicate a particular fitness for military use. Tests are performed under laboratory conditions. Any damage caused by attempts to replicate these test conditions would be considered accidental, and would not be covered by the standard ASUS warranty. Additional coverage is available with ASUS Premium Care.

Built to Excel:
Extreme Testing Beyond Industry Standards

Cross Section

Solder joints are checked to ensure they meet IPC-A-610 certification standards.

Emperature Shock

This test ensures that the solder joints will hold up over the product life cycle.
> 600 cycles, -40 to 100° C

Drop Test

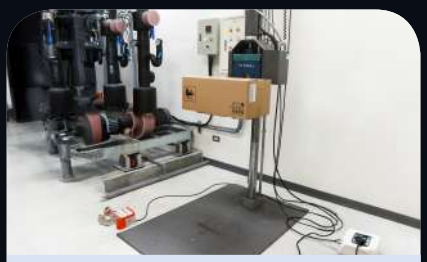
Products are dropped from a height of 80cm, with one drop across all six faces, three edges, and two corners.

Port Test

1500-cycle insertion-and-removal tests help ensure connector durability, functionality, and structural integrity.

Package Bump Test

Products are subjected to 4000 bumps to test the ability to withstand even the harshest shipping conditions.



Package Drop Test

This test ensures that the product is well-protected during transport and shipping.

Noise & Audio Test

Products are tested to ensure system noise levels do not exceed ISO 7779 requirements.

Thermal Bake Test

This test ensures that the thermal solution holds up to long-term exposure to high temperatures.

Package Vibration Test

This test ensures that the packaging protects the product from vibrations.

Built to Lead:
Demonstrated MTBF, Best Performance Guaranteed

Unlike typical estimated MTBF (Mean Time Between Failure), ASUS NUC goes beyond industry standards with a demonstrated MTBF of over 50,000 hours. Forty units were tested in a 40°C chamber for 90 days, ensuring 24/7 reliable operation and long-term confidence for our customers.

	NUC 16 Pro	NUC 15 Pro	NUC 14 Pro
MODEL		 Tall Slim	 Tall Slim
OPERATING SYSTEM SUPPORT	Windows 11 Home 64-bit Windows 11 Pro 64-bit	Windows 11 Home 64-bit Windows 11 Pro 64-bit	Windows 11 64-bit
CPU	Intel® Core™ Ultra X9 388H Intel® Core™ Ultra X7 358H Intel® Core™ Ultra 7 366H (vPro) Intel® Core™ Ultra 7 356H Intel® Core™ Ultra 5 335 (vPro) Intel® Core™ Ultra 5 325	Intel® Core Ultra 7 265H (vPro), cTDP 40W Intel® Core Ultra 7 255H, cTDP 40W Intel® Core Ultra 5 235H (vPro), cTDP 40W Intel® Core Ultra 5 225H, cTDP 40W Intel® Core 7 Processor 240H, cTDP 40W Intel® Core 5 Processor 210H, cTDP 40W Intel® Core 5 Processor 120U, cTDP 25W Intel® Core 3 Processor 100U, cTDP 25W	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
CHIPSET	Integrated	Integrated	Integrated
GRAPHICS	Intel® Arc™ Graphics Intel® Graphics	Intel® Arc 140T GPU	Intel® Arc™ GPU (Core Ultra) Intel® Graphics (Core3)
MEMORY	LPDDR5x-8533, 16GB, 32GB, 64GB or 96GB 2 x CSO-DIMM, Up to DDR5-7200, 64GB*2 2 x CSO-DIMM, Up to DDR5-6400, 64GB*2	2 x SO-DIMM, Up to DDR5-5600, 48GB*2 2 x CSO-DIMM, Up to DDR5-6400, 48GB*2	2 x SO-DIMM, Up to DDR5-5600, 48GB*2
STORAGE	1 x M.2 2280 PCIe Gen5x4, supports 128GB~8TB NVMe SSD 1 x M.2 2280 PCIe Gen4x4, supports 128GB~8TB NVMe SSD	1 x M.2 2280 PCIe Gen5x4, supports 128GB~8TB NVMe SSD 1 x M.2 2242 PCIe Gen4x4, supports 128GB~2TB NVMe SSD	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
WIRELESS NETWORK	Intel® Wi-Fi 7 BE211 (Gig+), Bluetooth 6.0	Intel® Wi-Fi 7 BE201 (Gig+), Bluetooth 5.4	Intel® Wi-Fi 6E AX211 (Gig+), Bluetooth 5.3
LAN	Dual Intel® Ethernet Controller I226-V, 2.5G Intel® Ethernet Controller I226-V and I226-LM, 2.5G Dual Intel® Ethernet Controller I226-V, 2.5G Intel® Ethernet Controller I226-V and I226-LM, 2.5G Dual Intel® Ethernet Controller I226-V, 2.5G	Intel® Ethernet Controller I226-V, 2.5G (U9 285H; U7 255H; U5 255H) Intel® Ethernet Controller I226-LM, 2.5G (U5 235H(vPro); U7 265H(vPro)	Intel® Ethernet Controller I226-V/LM, 2.5G
AUDIO	-	No Analog Audio Support - Digital Audio2	-
TPM	fTPM	fTPM	fTPM
FRONT I/O PORTS	1 x USB 3.2 Gen2x1 Type-C 2 x USB 3.2 Gen2 Type-A	1 x USB 3.2 Gen2x2 Type-C 2 x USB 3.2 Gen2 Type-A	1 x USB 3.2 Gen2x2 Type-C 2 x USB 3.2 Gen2 Type-A
REAR I/O PORTS	2 x Thunderbolt 4 Type-C w/ DisplayPort 2.1 2 x USB 3.2 Gen 2 Type-A 2 x HDMI 2.1 (TMDS Compatible) 2 x RJ45 LAN 1 x DC-in	2 x Thunderbolt 4 Type-C w/ DisplayPort 2.1 1 x USB 3.2 Gen 2 Type-A 1 x USB 2.0 Type-A 2 x HDMI 2.1 (TMDS Compatible) 1 x RJ45 LAN 1 x DC-in	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
POWER SUPPLY	19.5VDC, 7.7A, 150W Power Adapter 19VDC, 6.32A, 120W Power Adapter	Power Adapter Meets DOE Level VI, efficiency >=88% 19VDC, 6.32A, 120W Power Adapter 120U & 100U: 19VDC, 4.74A, 90W Power Adapter	19VDC, 6.32A, 120W Power Adapter (Core Ultra) 19VDC, 4.74A, 90W Power Adapter (Core3)
DIMENSION (W x D x H)	144mm x 117mm x 42mm	Tall: 117mm x 112mm x 54mm Slim: 117mm x 112mm x 37mm	Tall: 117mm x 112mm x 54mm Slim: 117mm x 112mm x 37mm
Available SKUs	Mini PC Kit Board	Mini PC Kit Board	Mini PC Kit Board

	ASUS NUC 14 Pro AI	NUC 15 Performance
MODEL		
OPERATING SYSTEM SUPPORT	Windows 11 Home/Pro 24H2 Windows 11 IoT	Windows 11 Home 64-bit Windows 11 Pro 64-bit Windows 11 Pro Education 64-bit Windows 11 IoT Enterprise 64-bit
CPU	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 275HX, cTDP (45-75) Intel® Core™ Ultra 7 255HX, cTDP (45-65)
CHIPSET	Integrated	Intel Chipset HM870
GRAPHICS	Integrated Intel® ArcTM 140V/130V Graphics	NVIDIA® GeForce RTX™ 5070 Laptop GPU NVIDIA® GeForce RTX™ 5060 Laptop GPU
MEMORY	Embedded LPDDR5x- 8533 MT/S 16G/32G Memory on Processor	2 x CSO-DIMM, Up to DDR5-6400, 48GB*2
STORAGE	1 x M.2 2280 PCIe4x4, supports 256GB~2TB NVMe SSD	1 x M.2 2280 PCIe Gen4x4, supports 128GB~4TB NVMe SSD, 1 x M.2 2280 PCIe Gen5x4, supports 128GB~4TB NVMe SSD
WIRELESS NETWORK	Wi-Fi 7(802.11be) 2*2 + Bluetooth®	Intel® Killer™ Wi-Fi 7 BE1750x (Gig+), Bluetooth 5.4
LAN	10/100/1000/2500 Mbps, 2.5G Intel	Intel® Ethernet Controller E3100G, 2.5G
AUDIO	1 x Internal Momo-Speaker with External Smart Amp	Realtek ALC3251
TPM	fTPM 2.0 or TPM 2.0 Chip (Optional)	fTPM
FRONT I/O PORTS	1 x Power Button 1 x Copilot Button 1 x Thunderbolt™ 4 (Supports DisplayPort 2.1) 2 x USB 3.2 Gen1 Type-A (5 Gbps) 1 x Audio Jack (Line out/ Mic in/Headphone out)	2 x USB 3.2 Gen2 Type-A 1 x USB 3.2 Gen2 Type-C 1 x 3.5mm Combo Audio Jack
REAR I/O PORTS	1 x Thunderbolt™ 4 (Supports DisplayPort 2.1) 2 x USB 3.2 Gen2 Type-A (10 Gbps) 1 x HDMI port 1 x 2.5G RJ45 LAN 1 x DC-in	1 x Thunderbolt 4 Type-C w/ DisplayPort™ 2.1 4 x USB 3.2 Gen 2 Type-A 2 x HDMI 2.1 FRL 2 x DP 2.1 1 x RJ45 LAN 1 x DC-in 1 x Kensington Lock Slot
POWER SUPPLY	20Vdc/19Vdc, 6.0A/6.32A, 120W Power Adapter	Power Adapter Meets DOE Level VI, efficiency > 88% 19.5VDC, 16.9A, 330W Power Adapter
DIMENSION (W x D x H)	130 x 130 x 34mm	282.4 x 187.7 x 56.5mm (bottom: 146mm)
Available SKUs	● Mini PC ● Kit ○ Board	○ Mini PC ● Kit ○ Board

	ExpertCenter PN55	ExpertCenter PN54-S1	ExpertCenter PB64
MODEL			
OPERATING SYSTEM SUPPORT	Windows® 11 Pro Windows® 11 Home	Windows® 11 Pro Windows® 11 Home	Windows® 11 Pro Windows® 11 Home
CPU	AMD Ryzen™ AI 9 HX 470, 55 TOPS, cTDP 45W AMD Ryzen™ AI 9 465, 50 TOPS, cTDP 45W AMD Ryzen™ AI 7 PRO 450, 50 TOPS, cTDP 45W AMD Ryzen™ AI 7 450, 50 TOPS, cTDP 45W AMD Ryzen™ AI 7 445, 50 TOPS, cTDP 45W AMD Ryzen™ AI 5 PRO 440, 50 TOPS, cTDP 45W AMD Ryzen™ AI 5 435, 50 TOPS, cTDP 45W AMD Ryzen™ AI 5 430, 50 TOPS, cTDP 45W AMD Ryzen™ AI 5 330, 50 TOPS, cTDP 28W	AMD Ryzen 7 260 AMD Ryzen 5 220 AMD Ryzen 3 210	Intel® Core™ Ultra 7 processor 265, (P-core: 8C, up to 5.20 GHz / E-core: 12C, up to 4.60 GHz) Intel® Core™ Ultra 5 processor 245, (P-core: 6C, up to 5.10 GHz / E-core: 8C, up to 4.50 GHz) Intel® Core™ Ultra 5 processor 235, (P-core: 6C, up to 5.00 GHz / E-core: 8C, up to 4.40 GHz) Intel® Core™ Ultra 5 processor 225, (P-core: 6C, up to 4.90 GHz / E-core: 4C, up to 4.40 GHz)
CHIPSET	Integrated	Integrated	Intel® B860 Chipset
GRAPHICS	AMD Radeon 800M Graphics	AMD Radeon 780M Graphics (R7) AMD Radeon 740M Graphics (R5 & R3)	Integrated - Intel® Graphics
MEMORY	2 x SO-DIMM , DDR5-5600MHz memory, supports up to 48GB*2	2 x SO-DIMM , DDR5-5600MHz memory, up to 32GB*2	2 x SO-DIMM, DDR5-5600/6400 *MHz memory, up to 32GB*2 *6400MHz only support on CSO-DIMM
STORAGE	2 x M.2 2280 PCIe Gen4x4, supports 256GB~2TB NVMe™ SSD	2 x M.2 2280 PCIe Gen4x4, supports 256GB~2TB NVMe™ SSD	2 x M.2 2280 PCIe Gen4x4, supports 256GB~2TB NVMe™ SSD
WIRELESS NETWORK	Mediatek MT7922A22M, Wi-Fi 6E, Bluetooth 5.4, 2*2 Mediatek MT7925B22M, Wi-Fi 7, Bluetooth 5.4, 2*2	Mediatek MT7922A22M, Wi-Fi 6E, Bluetooth 5.4, 2*2 Mediatek MT7925B22M, Wi-Fi 7, Bluetooth 5.4, 2*2	Intel® BE202 (Gig+), Wi-Fi 7, Bluetooth 5.4, 2*2 Intel® AX211 (Gig+), Wi-Fi 6E, Bluetooth 5.4, 2*2
LAN	2 x Realtek® RTL8125BG-CG, 2.5G LAN	1 x Realtek® RTL8125BG-CG, 2.5G LAN 1 x Realtek® RTL8125BG-CG, 2.5G LAN (Optional)	1 x Intel® I226V, 2.5Gb LAN 1 x Intel® I225V, 2.5Gb LAN (Config. Port)
AUDIO	ALC3251-CG, 2 channels	ALC3251-CG, 2 channels	ALC3251-CG, 2 channels
TPM	fTPM 2.0 or TPM 2.0 chip (Optional)	fTPM 2.0 or TPM 2.0 chip (Optional)	fTPM 2.0 or TPM 2.0 chip (Optional)
FRONT I/O PORTS	1 x USB 3.2 Gen2 Type-C (5V/3A, 10Gbps) 2 x USB 3.2 Gen2 Type-A (5V/0.9A, 10Gbps) 1 x Audio Jack (Line out/Mic in/Headphone out) 1 x Copilot Button	1 x USB 3.2 Gen2 Type-C (5V/3A, 10Gbps) 2 x USB 3.2 Gen2 Type-A (5V/0.9A, 10Gbps) 1 x Audio Jack (Line out/Mic in/Headphone out)	1 x USB 4.0 Type-C (with DP2.1, 5V/3A, 20Gbps) 2 x USB 3.2 Gen2 Type-A (5V/0.9A, 10Gbps) 2 x USB 3.2 Gen1 Type-A (5V/0.9A, 5Gbps) 1 x Mic in 1 x Audio Jack (Line out/Mic in/Headphone out)
REAR I/O PORTS	1 x USB 4.0 Type-C (with DP1.4/PD-in*, 5V/3A, 40Gbps) 1 x USB 3.2 Gen2 Type-A (5V/0.9A, 10Gbps) 1 x USB 2.0 (5V/0.5A) 1 x HDMI 2.1 (Up to 4K@60Hz) 2 x DisplayPort 1.4 2 x 2.5G RJ45 LAN 1 x DC-in	1 x USB 4.0 Type-C (with DP1.4/PD-in*, 5V/3A, 40Gbps) 1 x USB 3.2 Gen2 Type-A (5V/0.9A, 10Gbps) 1 x USB 2.0 (5V/0.5A) 1 x HDMI 2.1 (Up to 4K@60Hz) 2 x DisplayPort 1.4 1 x 2.5G RJ45 LAN 1 x 2.5G RJ45 LAN (optional) 1 x DC-in	1 x USB 3.2 Gen2 Type-A (5V/0.9A, 10Gbps) 1 x USB 3.2 Gen2 Type-C (5V/3A, 10Gbps) 1 x USB 2.0 (5V/0.5A) 2 x DisplayPort 1.4 1 x Configurable (options: HDMI*/DP1.4/COM/VGA/2.5G LAN) 1 x 2.5G RJ45 LAN 1 x Padlock ring 1 x DC-in 1 x Kensington Lock slot
SIDE I/O PORTS	1 x Kensington Lock slot (Side) 1 x Fingerprint Reader (Top)	1 x Kensington Lock slot	-
POWER SUPPLY	20Vdc, 6.0A 120W Power Adapter	20Vdc, 6.0A 120W Power Adapter	20Vdc, 6.0A 120W Power Adapter (65W CPU) 19.5Vdc, 4.62A 90W Power Adapter (35W CPU)
DIMENSION (W x D x H)	130 x 130 x 34 mm	130 x 130 x 34 mm	175 x 175 x 44.2 mm 175 x 175 x 75 mm (with ODD)
Available SKUs	● Mini PC ● Kit ○ Board	● Mini PC ● Kit ● Board	● Mini PC ● Kit ○ Board

	NUC 14 Essential	NUC 13 Rugged (Slim)	NUC 13 Rugged (Tall)
MODEL			
OPERATING SYSTEM SUPPORT	Windows 11 Home 64-bit Windows 11 Pro 64-bit	Windows 10 IOT-Enterprise LTSC 64-bit Windows 11 Pro 64-bit Ubuntu 22.04 LTS 64-bit RedHat Enterprise 9.4 Linux 64-bit *No OS installed at shipment	Windows 10 IOT-Enterprise LTSC 64-bit Windows 11 Pro 64-bit Ubuntu 22.04 LTS 64-bit RedHat Enterprise 9.4 Linux 64-bit *No OS installed at shipment
CPU	Intel® Processor N150, TDP 6W Intel® Processor N250, TDP 6W Intel® Processor CoreTM 3 N355, TDP 15W Intel® Processor N97, TDP 12W	Intel® Processor N50, cTDP 6W	Intel® Atom® x7425E, cTDP 12W (Board option available) Intel® Atom® x7211E, cTDP 6W
CHIPSET	Integrated	Integrated	Integrated
GRAPHICS	Intel® UHD Graphics (N97) Intel® Graphics (N150, N250, N355)	Intel® UHD Graphics	Intel® UHD Graphics
MEMORY	1 x SO-DIMM, Up to DDR5-4800, 16GB*1	1 x SO-DIMM, Up to DDR5-4800, 16GB*1	1 x SO-DIMM, Up to DDR5-4800, 16GB*1 w/optional “in-band” ECC support
STORAGE	1 x M.2 2280/2242 PCIe Gen3x4, supports 128GB~2TB NVMe or SATA SSD	64GB eMMC soldered-down 1 x M.2 2280 PCIe x2 Gen4x2, supports 128GB~4TB NVMe SSD 1 x M.2 3042 PCIe SATA, supports 128GB-2TB SSD, w/ 1 x USB3.2 Gen2	64GB eMMC soldered-down 1 x M.2 2280 PCIe x2 Gen4x2, supports 128GB~4TB NVMe SSD 1 x M.2 3042 PCIe SATA, supports 128GB-2TB SSD, w/ 1 x USB3.2 Gen2
WIRELESS NETWORK	Intel® Wi-Fi 6E AX211 (Gig+), Bluetooth® 5.3	Intel® Wi-Fi 6E AX210 (Gig+) w/External Antenna, Bluetooth® v5.3	Intel® Wi-Fi 6E AX210 (Gig+) w/External Antenna, Bluetooth® v5.3
LAN	1 x Realtek Ethernet Controller RTL8125BG-CG, 2.5G	2 x Intel® Ethernet Controller I226-V, 2.5G	2 x Intel® Ethernet Controller I226-LM, 2.5G(x7425E) 2 x Intel® Ethernet Controller I226-V, 2.5G(x7211E)
AUDIO	Realtek ALC3251	N/A	N/A
TPM	fTPM or TPM 2.0 chip	fTPM	fTPM
FRONT I/O PORTS	1 x USB 3.2 Gen2 Type-C 2 x USB 3.2 Gen2 Type-A 1 x 3.5mm Headset Jack	N/A	N/A
REAR I/O PORTS	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 LAN1 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	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
POWER SUPPLY	19VDC, 3.42A, 65W Power Adapter	20VDC, 3.25A, 65W Power Adapter	20VDC, 4.25A, 65W Power Adapter (x7425E) 20VDC, 3.25A, 65W Power Adapter (x7211E)
DIMENSION (W x D x H)	135 x 115 x 36 mm	174 x 108 x 25.9 mm (internal heatsink)	174 x 108 x 35.8 mm (external heatsink)
Available SKUs	● Mini PC ● Kit ● Board	○ Mini PC ● Kit ● Board	○ Mini PC ● Kit ● Board

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

NVIDIA
Coral Google
Rockchip

AMR

NVIDIA ROS
ROS 2

Tool & Service

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

Ready Package

ALPR
Face Recognition

API / SDK

Linux-based System

debian android yocto PROJECT NVIDIA Ubuntu

Bootloader **Linux Kernel**

NVIDIA RENESAS RISC-V NXP Rockchip

Orin Nano / Orin NX	RZ / Five	I.MX 8M		RK3568		
						
PE1100N	Tinker V	IMX8P-IM-A	PE100A	Tinker Board 3N	Tinker System 3N	PP-156W-3568

Rich hardware portfolio

We offer 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 benefit 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 3N PLUS	Tinker Board 3N	Tinker Board 3N LITE
				
System	SoC	Rockchip RK3568J	Rockchip RK3568B2	Rockchip RK3568B2
	CPU	Quad-core Arm® Cortex®-A55 @ 1.8 GHz	Quad-core Arm® Cortex®-A55 @ 2.0 GHz	Quad-core Arm® Cortex®-A55 @ 2.0 GHz
	GPU	Arm® Mali™-G52 2EE @ 800 MHz	Arm® Mali™-G52 2EE @ 800 MHz	Arm® Mali™-G52 2EE @ 800 MHz
	NPU	Rockchip NPU (1 TOPS)	Rockchip NPU (1 TOPS)	Rockchip NPU (1 TOPS)
	Memory	2GB / 4GB / 8GB LPDDR4X	2GB / 4GB / 8GB LPDDR4X	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	32GB /64GB	32GB /64GB	32GB /64GB
	SPI Flash	16MB	16MB	-
Ethernet	Ethernet	2 x GbE LAN RTL8211FI	2 x GbE LAN RTL8211F	1 x GbE LAN RTL8211F
	PoE	1 x PD mode, 802.3at 25W (option)	1 x PD mode, 802.3at 25W (option)	-
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 / 5G (Optional)	4G / 5G (Optional)	-
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)	1 x 40-pin header LVDS (1920x1080) / eDP (2560x1600)	1 x 40-pin header LVDS (1920x1080) / eDP (2560x1600)
	MIPI DSI	-	-	-
	Multi Output	HDMI + LVDS / HDMI + eDP	HDMI + LVDS / HDMI + eDP	HDMI + LVDS / HDMI + eDP
Camera	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-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 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)	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	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	-	-	-
	M.2 B-Key	3042, 3052 (PCIe 3.0x1, USB3, USB2, SIM) for 4G/5G	3042, 3052 (PCIe 3.0x1, USB3, USB2, SIM) for 4G/5G	-
	SIM slot	1 x Nano SIM slot	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	1 x RS-232/422/485 header 1 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 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	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 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	1 x 4-pin Power-on & Reset header 1 x 2-pin Recovery Mode header 1 x 2-pin Maskrom (eMMC) header
	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	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 4-pin DC Fan header	1 x 4-pin DC Fan header	1 x 4-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	- 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		12~24V DC, Barrel Jack (5.5/2.5mm) & 4-Pin Header	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		100 x 100 mm	100 x 100 mm	100 x 100 mm
Operation temperature		-45˚C ~ 85˚C	0˚C ~ 60˚C	0˚C ~ 60˚C
Non operation temperature		-45˚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

 *Product available time

		Tinker Board 3S	Tinker Board 3
			
System	SoC	Rockchip RK3566	Rockchip RK3566
	CPU	Quad-core Arm® Cortex®-A55 @ 1.8 GHz	Quad-core Arm® Cortex®-A55 @ 1.8 GHz
	GPU	Arm® Mali™-G52 2EE @ 800 MHz	Arm® Mali™-G52 2EE @ 800 MHz
	NPU	Rockchip NPU (1 TOPS)	Rockchip NPU (1 TOPS)
	Memory	2GB/ 4GB LPDDR4X	2GB/ 4GB LPDDR4X
Storage	Memory Card	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)
	eMMC	16GB	-
	SPI Flash	-	-
Ethernet	Ethernet	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
	Cellular/GPS	-	-
Display	HDMI	1 x HDMI™ 2.0 (4096x2160)	1 x HDMI™ 2.0 (4096x2160)
	DP	-	-
	LVDS/eDP	-	-
	MIPI DSI	1 x 22-pin (4 lane, 1920x1080)	1 x 22-pin (4 lane, 1920x1080)
	Multi Output	-	-
Camera	MIPI CSI-2	-	-
Wired Interface	USB	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 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)
Expansion	M.2 E-Key	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT
	mPCIe	-	-
	M.2 B-Key	-	-
	SIM slot	-	-
Serial Interface	COM	-	-
	CAN	-	-
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 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 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
	IR receiver	-	-
	RTC	1 x RTC header	1 x RTC header
	FAN	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
	Others	-	-
Power Input		12~19V DC, Barrel Jack (5.5/2.5mm)	12~19V DC, Barrel Jack (5.5/2.5mm)
Dimensions		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
Non operation temperature		-40˚C ~ 85˚C	-40˚C ~ 85˚C
Non operation humidity		10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)
Operating System		Linux Debian, Android, Yocto	Linux Debian, Android, Yocto

Tinker Board Series

		Tinker Board 2S	Tinker Board 2
			
System	SoC	Rockchip RK3399	Rockchip RK3399
	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
	GPU	Arm® Mali™-T860 MP4 @ 800 MHz	Arm® Mali™-T860 MP4 @ 800 MHz
	NPU	-	-
	Memory	2GB / 4GB LPDDR4	2GB / 4GB LPDDR4
Storage	Memory Card	Micro SD (TF) card slot (push/pull)	Micro SD (TF) card slot (push/pull)
	eMMC	16GB / 32GB	-
	SPI Flash	-	-
Ethernet	Ethernet	1 x GbE LAN RTL8211E/F	1 x GbE LAN RTL8211E/F
	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
	Cellular/GPS	-	-
Display	HDMI	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)
	LVDS/eDP	-	-
	MIPI DSI	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
Camera	MIPI CSI-2	1 x 15-pin (2 lane)	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 3 x USB 3.2 Gen1 Type-A
	Audio	1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)	1 x HDMI™ audio 1 x S/PDIF TX pin (from GPIO) 1 x PCM/I2S pins (from GPIO)
Expansion	M.2 E-Key	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT	2230 (PCIe 2.0x1, USB2) for Wi-Fi/BT
	mPCIe	-	-
	M.2 B-Key	-	-
	SIM slot	-	-
Serial Interface	COM	-	-
	CAN	-	-
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 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 2-pin Power-on & Reset header 1 x 2-pin Recovery Mode header	1 x 2-pin Power-on & Reset header 1 x 2-pin Recovery Mode header
	Debug	1 x 2-pin Debug UART header	1 x 2-pin Debug UART header
	IR receiver	(in GPIO)	(in GPIO)
	RTC	1 x RTC header	1 x RTC header
	FAN	1 x 2-pin DC Fan header	1 x 2-pin DC Fan header
	LED	3 x LEDs	3 x LEDs
	Others	-	-
Power Input		12~19V DC, Barrel Jack (5.5/2.5mm)	12~19V DC, Barrel Jack (5.5/2.5mm)
Dimensions		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
Non operation temperature		-40˚C ~ 85˚C	-40˚C ~ 85˚C
Non operation humidity		10% ~ 85% (Non condensing)	10% ~ 85% (Non condensing)
Operating System		Linux Debian, Android, Yocto	Linux Debian, Android, Yocto

 *Product available time

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 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

Desktop AI Supercomputer

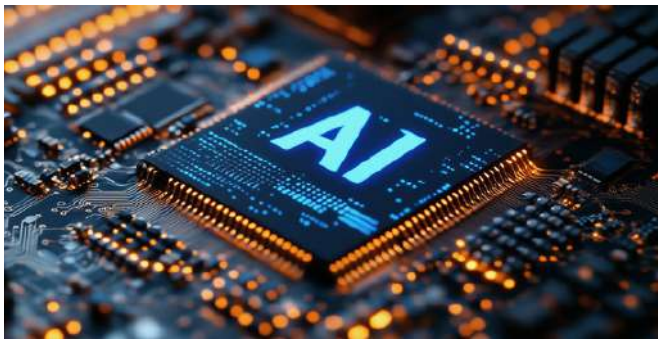
ASUS Ascent GX10

Compact, Powerful and Scalable

Revolutionary AI Performance on Your Desktop

ASUS Ascent GX10 AI Supercomputer, powered by the NVIDIA GB10 Grace Blackwell Superchip and the NVIDIA AI software stack, delivers a full-stack solution for AI development and deployment.

Designed for developers, AI researchers, and data scientists, it brings petaflop-scale AI computing directly to the desktop, enabling powerful local AI development with exceptional performance.



Up to
1 petaflop
of AI performance using FP4

128GB
coherent unified system memory

Support for
200B
model fine-tuning

Built on Cutting-Edge Architecture

NVIDIA GB10 Grace Blackwell Superchip
Advanced chip with fifth-generation Tensor Cores and FP4 support.

High Performance 20-Core Arm CPU
Enhanced data preprocessing and orchestration, accelerating model tuning and real-time inferencing.

NVLink®-C2C Technology
Provides a cohesive CPU+GPU memory model with five times the bandwidth of PCIe 5.0.

Local Development, Scalable Deployment

- **Seamless Transition to Cloud:** Move models from desktop to DGX Cloud or any accelerated cloud or data center with minimal code changes.
- **Cost-Effective Experimentation Platform:** Free up essential compute resources in clusters better suited for training and deploying production models.

Precision-Crafted for Ultimate Thermal Efficiency

- **Advanced dual-fan cooling** with 7-level control ensures smooth, precise airflow
- **1.6X greater thermal efficiency** than comparable compact systems, keeping performance consistently at its peak

Combine Two Units to Scale Beyond Limits Run Models Twice as Large

- Double unified memory from 128GB to 256GB, scale up to 405B parameter models with up to 8TB of storage
- Provides exceptional high-density AI compute performance within a minimal footprint

Applications

Fine Tuning / Inference

Prototyping

Data Science

Edge Computing

Network Switches

	ADS-X318-2X8G	ADS-X318-2X	ADS-X310-2X
			
Basic Information			
Chipset	microchip LAN9696	microchip LAN9696	microchip LAN9696
Size	125x105x75mm(HxWxD)	125x105x75mm(HxWxD)	125x65x75mm(HxWxD)
Port No.	18	18	10
Operating temperature	-40~75°C	-40~75°C	-40~75°C
Jumbo frame	9K	9K	9K
Flow Control (PAUSE Frame)	YES	YES	YES
Power Input	DC 12/24/48V	DC 12/24/48V, PD	DC 12/24/48V, PD
PD(Powerd Device)	-	2	2
Reeundant Power	YES	YES	YES
Relay output	1A, 30V, Dry-contact	1A, 30V, Dry-contact	1A, 30V, Dry-contact
Fiber Optic			
SFP slot (1G)	8	0	0
SFP+ slot (10G)	2	2	2
Connector			
RJ45 Connector	8	16	8
LC Connector	10	2	2
EMS			
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 Kv IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 Kv IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 Kv IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m
Protection			
ESD Protection	8K/15K, Criteria A	8K/15K, Criteria A	8K/15K, Criteria A
Overcurrent protection	YES	YES	YES
LAN Surge protection	2KV	2KV	-
Certification			
EN61000-6-4	YES	YES	YES
EN61000-6-2	YES	YES	YES
Mounting			
DIN-Rail	YES	YES	YES
Wall mount	YES	YES	YES
19" rack mount	-	-	-
Ethernet Standard			
IEEE 802.3 for 10BaseT	support	support	support
IEEE 802.3u for 100BaseT(X)/F(X)	support	support	support
IEEE 802.3ab for 1000BaseT(X)	support	support	support
IEEE 802.3x for flow control	support	support	support
IEEE 802.3z for 1000BaseX	support	support	support
IEEE 802.3az for EEE	support	support	support
IEEE 802.1p/Q	support	support	support
Environmental Specification			
Vibration	IEC 60068-2-6	IEC 60068-2-6	IEC 60068-2-6
Shock	IEC 60068-2-27	IEC 60068-2-27	IEC 60068-2-27
Free Fall	IEC 60068-2-32	IEC 60068-2-32	IEC 60068-2-32

	ADS-X308-2X	ARS-X314-2X4G2A	ARS-X314-2X2A
			
Basic Information			
Chipset	microchip LAN9696	microchip LAN9696	microchip LAN9696
Size	125x65x75mm(HxWxD)	220x44x260mm(WxHxD)	220x44x260mm(WxHxD)
Port No.	8	14	14
Operating temperature	-40~75°C	-40~75°C	-40~75°C
Jumbo frame	9K	9K	9K
Flow Control (PAUSE Frame)	YES	YES	YES
Power Input	DC 12/24/48V	AC110/220V	AC110/220V
PD(Powerd Device)	-	-	-
Reeundant Power	YES	YES	YES
Relay output	1A, 30V, Dry-contact	1A, 30V, Dry-contact	1A, 30V, Dry-contact
Fiber Optic			
SFP slot (1G)	0	4	0
SFP+ slot (10G)	2	2	2
Connector			
RJ45 Connector	6	6	12
LC Connector	2	8	2
EMS			
EMI	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 Kv IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 Kv IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV, Criteria A IEC 61000-4-3 RS: 80 MHz to 800 MHz: 10 V/m IEC 61000-4-3 RS: 800 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 Kv IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF: 100 A/m
Protection			
ESD Protection	8K/15K, Criteria A	8K/15K, Criteria A	8K/15K, Criteria A
Overcurrent protection	YES	YES	YES
LAN Surge protection	2KV	2KV	2KV
Certification			
EN61000-6-4	YES	YES	YES
EN61000-6-2	YES	YES	YES
Mounting			
DIN-Rail	YES	-	-
Wall mount	YES	YES	YES
19" rack mount	-	YES	YES
Ethernet Standard			
IEEE 802.3 for 10BaseT	support	support	support
IEEE 802.3u for 100BaseT(X)/F(X)	support	support	support
IEEE 802.3ab for 1000BaseT(X)	support	support	support
IEEE 802.3x for flow control	support	support	support
IEEE 802.3z for 1000BaseX	support	support	support
IEEE 802.3az for EEE	support	support	support
IEEE 802.1p/Q	support	support	support
Environmental Specification			
Vibration	IEC 60068-2-6	IEC 60068-2-6	IEC 60068-2-6
Shock	IEC 60068-2-27	IEC 60068-2-27	IEC 60068-2-27
Free Fall	IEC 60068-2-32	IEC 60068-2-32	IEC 60068-2-32

CHAPTER 11

GPU & AI Accelerator Cards

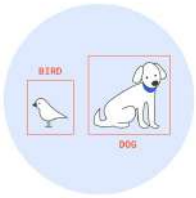
Coral Edge TPU

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 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 Dev Board Micro Series

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

PoE board

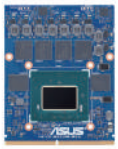
Wireless board

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

A fully-integrated system for accelerated ML applications.

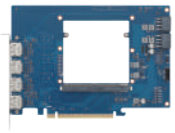
GPU & AI Accelerator Cards

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
	Vetor Eneines (XVE)	384	256	192
	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)	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
Mechaicals	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	Operatin Temp.	Standard: 0°C to 55°C	Standard: 0°C to 55°C	Standard: 0°C to 55°C
	Starage Temp.	-40°C to 85°C	-40°C to 85°C	-40°C to 85°C
	Power Consumpation	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
			
Graphic Core	GPU	Intel® Arc™A370E	Intel® Arc™A350E
	Memory	4GB GDDR6, 64 bit, 112 GB/s	4GB GDDR6, 64 bit, 112 GB/s
GPU Computing	Xe-Cores	8	6
	Matrix Engines (XMX)	128	96
	Vetor Eneines (XVE)	128	96
	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*)**
	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
	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
	Starage Temp.	-40°C to 85°C	-40°C to 85°C
	Power Consumpation	35W-50W TGP	25W-35W TGP
SW support	OS Support	Windows 11, 10 64-bit, Ubuntu 22.04 LTS	Windows 11, 10 64-bit, Ubuntu 22.04 LTS

	PCIe-to MXM Adapter card
	
Dimension	214.48 x 157.08 mm
Weight	0.15 kg
Support MXM modules	MXM 3.1 type A (82 x 70mm) MXM 3.1 type B (82 x 105mm)
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
External Connector	12V DC fan power connector 8-pin ATX power input connector
Operating System	Windows 11, 10 64 bit, Ubuntu 22.04 LTS
Certification	CE, FCC, BSMI
Operating Temperture	0~60°C

*Depend on the design of MXM carrier
**For optional HDMI support, please contact ASUS IoT

AISVision 365

AI Vision Model Toolkit

An all-in-one AI vision platform for rapid activation, flexible deployment, and continuous evolution.

AISVision 365 is a browser-based AI vision platform with built-in tools for data labeling, model training and inference. It accelerates AI deployment and improves inspection accuracy for industrial applications, with support for both cloud and on-premises use cases.

Instant Access, Zero Installation

Use AISVision 365 directly from a web browser — no setup needed. Just register and log in to start immediately.

Versatile AI Models for Industrial Applications

AISVision 365 supports classification, segmentation and detection of anomalies and objects, with pretrained models tailored for different industries.

Low-Barrier Proof-of-Concept Cloud Service

No hardware or AI expertise is needed, so users can start validating models quickly.
Fast AI deployment, enhanced efficiency and easily-scalable availability amount to expansive benefits.

Flexible Deployment, from Cloud to Edge

Train in the cloud or on-premises, with lightweight inference tools available for various production needs.

Plan Comparison

Product Name	Environment Type	Licensing Model	Recommendation
AISVision	On-premises	Perpetual	· Full control over training and inference resources · Suitable for clients needing fully on-premise deployment and prioritizing data privacy and security
AISVision 365	Cloud	Subscription	· < 1 year: Suitable for short-term deployment or PoC projects for large teams · > 1 year: Ideal for long-term, enterprise-level projects requiring large-scale model training
AISVision 2.0	On-premise	Perpetual	· Offers a wide selection of AI models and improved AI algorithm · Suitable for cross-industry, diverse visual inspection needs

Note: All three product offerings support AISVision AI runtime, for clients with pre-trained models requiring on-site or edge inference

Usage Scenarios

Robotic Arm Grasping & Multi-Angle Inspection

Laptops and servers feature complex shapes and non-standard components that traditional automated optical inspection (AOI) systems cannot inspect effectively.

AISVision with robotic arms enables

- **Real-time, multi-angle AI inspection**, where optical modules capture images from various perspectives;
- **Oriented object detection**, allowing robotic grippers to accurately handle irregularly shaped parts.

Zero-Defect Packaging with Integrated Automation

Food production demands hygienic, efficient and consistent inspection, with minimal manual intervention.

AISVision enables fully automated visual inspection for:

- **Anomaly detection**, in smart coffee machines to ensure contamination-free operation;
- **Identification of packaging defects**—air bubbles, leaks, and label errors—using deep learning and optical character recognition.

AIEHS

Environment Health and Safety Platform

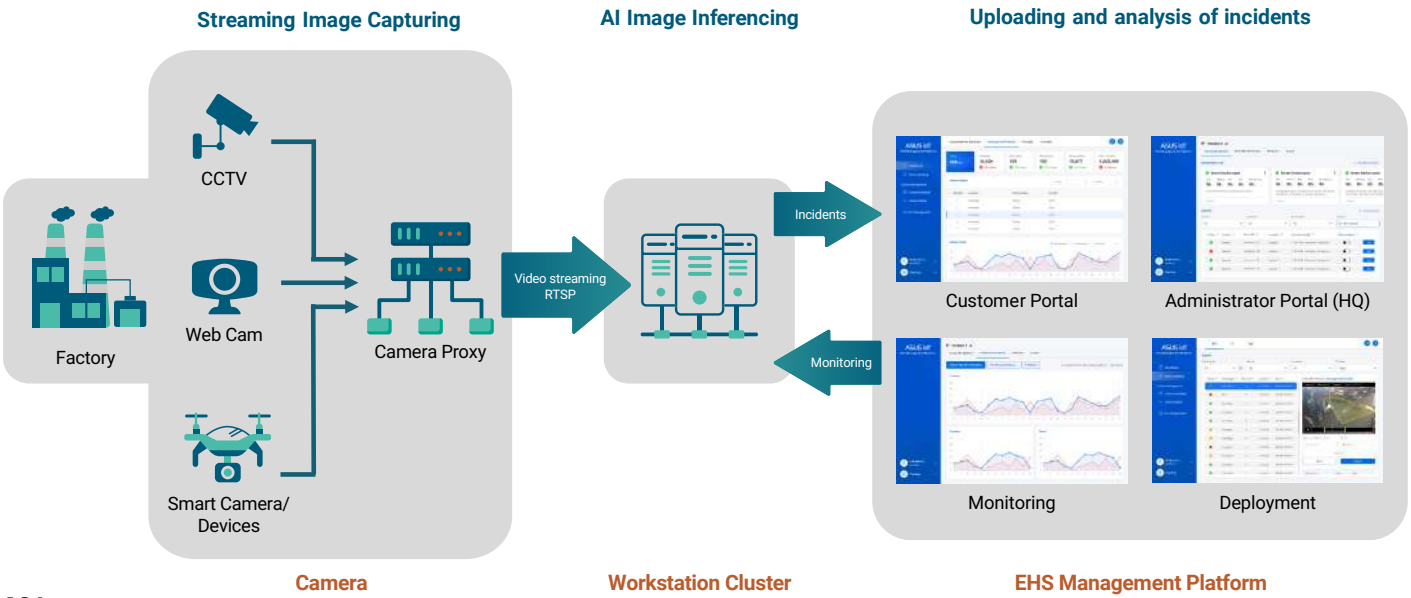
ASUS IoT AIEHS is an enterprise-level intelligent risk-analysis platform, engineered with advanced, AI-powered, computer-vision-analysis technology. It connects with security-monitoring systems to effectively manage field safety, such as dangerous machine operations, perilous behavior, unsuitable personal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



35k
Cost saving per monitoring spot

83%
Improvement in operational efficiency

5 min.
Response and confirmation time

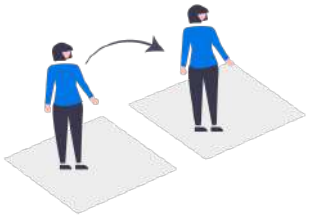
Deployment Options

On-premise

Pure Cloud

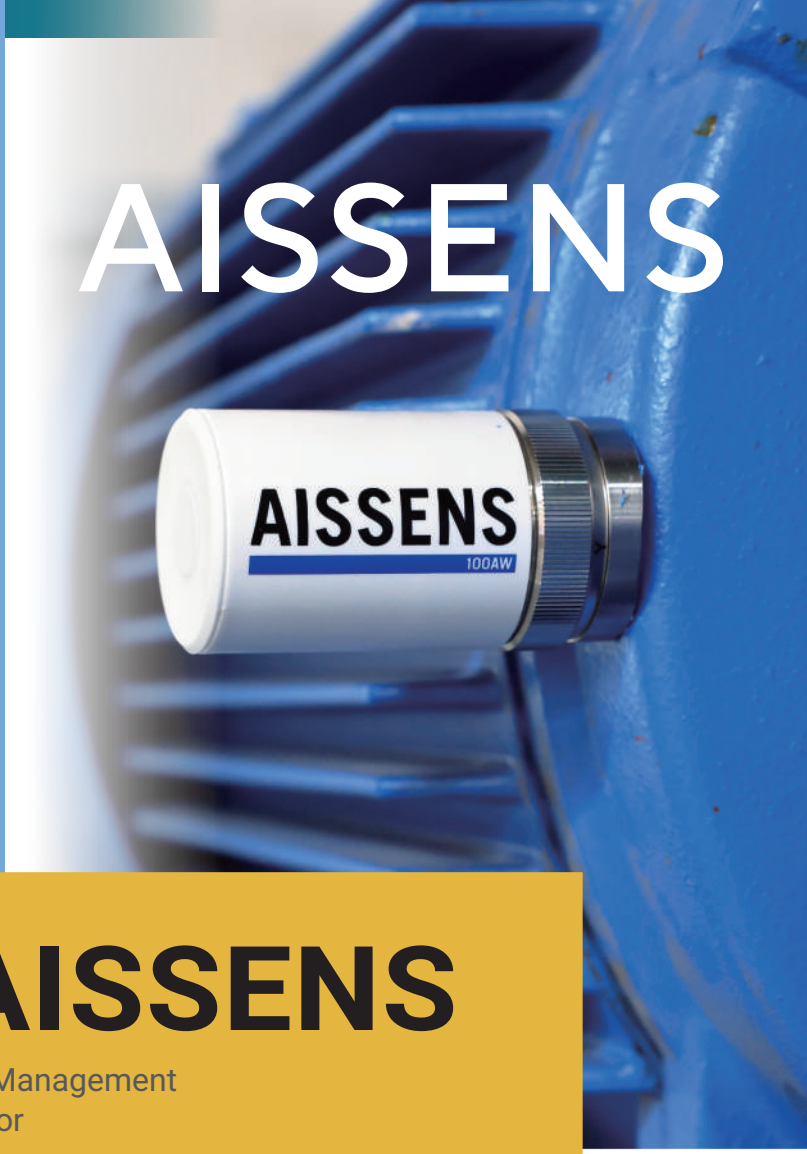
Hybrid Cloud

10 AI missions

Personal protective equipment Detects specialized equipment or clothing worn by individuals.			**People counting** Counts the number of personnel in the area, with maximum and minimum numbers for the control area.
People fence Monitors whether individuals are entering unauthorized areas.			**Vehicle fence** Monitors whether vehicles (including cars, trucks, motorcycles and trains) are entering unauthorized designated areas.
Flame detection Monitors for the presence of flames.			**Smoke detection** Monitoring for the presence of smoke.
Dangerous-object detection Monitors the environment for the presence of dangerous item, such as knives or guns.			**Detection of risky behaviors** Monitors for risky behaviors, including falls, violent behavior, fatigue actions and more.

AISPHM

AISSENS



AISPHM & AISSENS

Predictive Maintenance and Equipment Health Management
Advancing Condition Monitoring Vibration Sensor

Monitoring vibration in rotating equipment demands precision sensors, intelligent AI, and reliable data infrastructure to overcome challenges like variable site noise and VFD interference. ASUS IoT delivers an integrated solution— featuring proprietary sensors and continuous AI learning — for scalable, hassle-free equipment monitoring and management.

AI-enhanced detection of abnormal resonance and temperature.

Generates vibration records for key rotating equipment.

Assesses the effectiveness of repairs through vibration analysis.

- Predictive maintenance to reduce downtime and detect hidden faults
- AI-powered frequency analysis for VFDs
- 6kHz sensing for early bearing and gear fault detection
- Containerized for cloud or on-premise deployment

WiFi sensor highlights

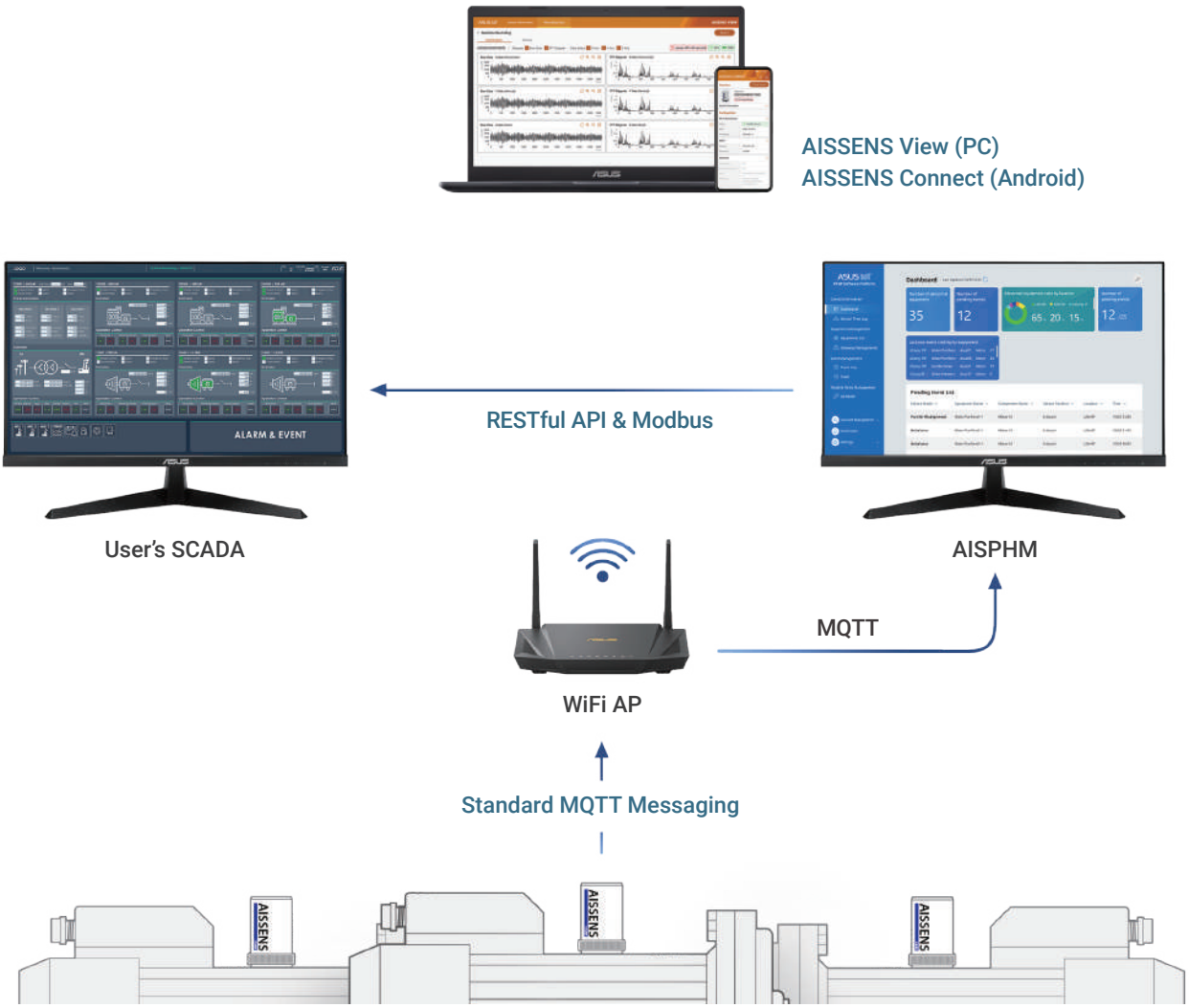
3-axis, 6kHz sensing
Detects early bearing/gear faults across diverse equipment.

2-year battery life
Enables periodic measurements and reliable remote data logging.

2.4GHz Wi-Fi and BLE
Enables three-minute setup and transmits detailed raw data for versatile applications.

Rugged industrial build
IP68 waterproof and one-meter drop resistant — ideal for harsh environments

System Architecture



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.

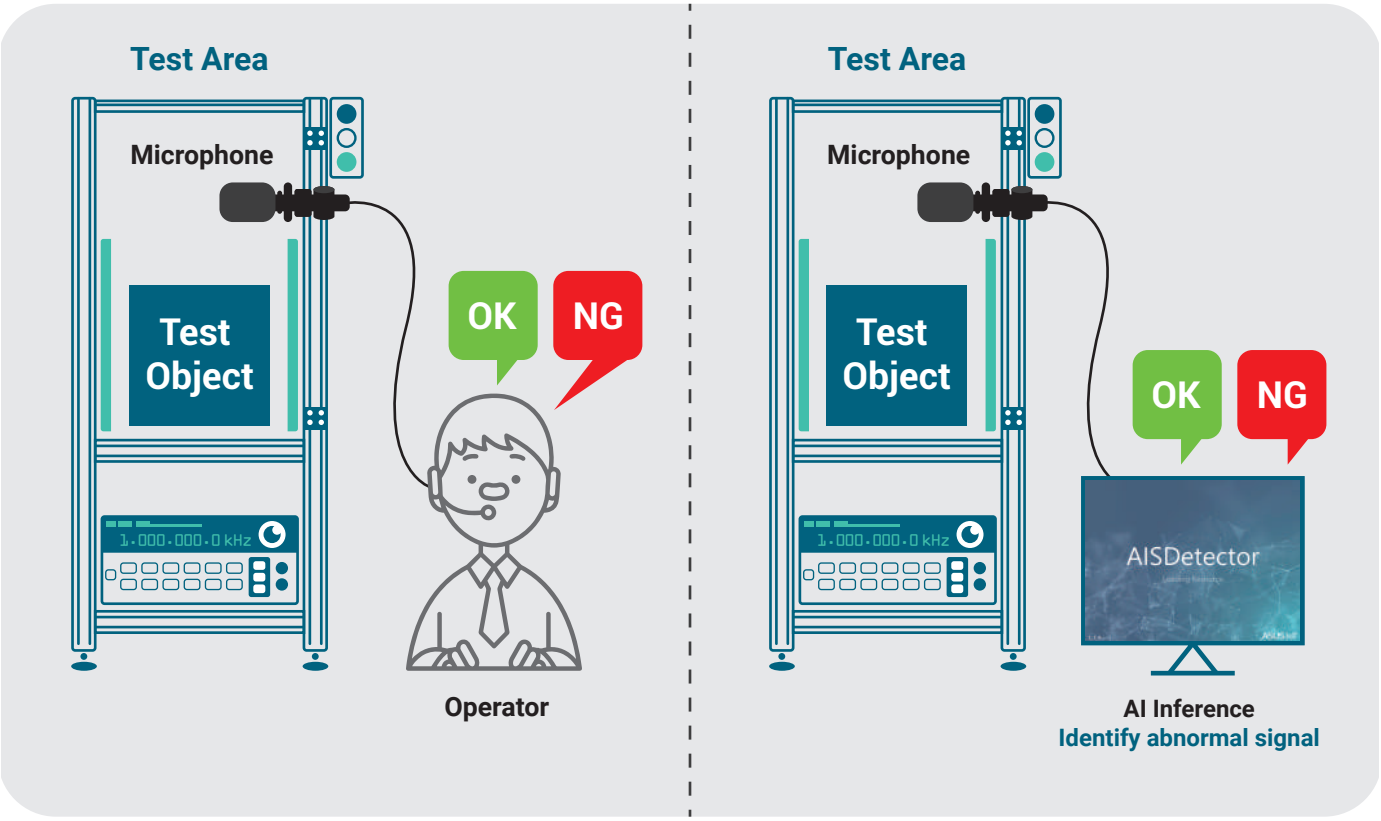
Effortless Integration

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

Applications

Before – Human Inspection

After – ASUS IoT



Smart Manufacturing

Air Conditioner Motor Quality Inspection

Traditional manual sound inspections of DC/AC motors are challenging, often resulting in inconsistent results, human errors, and lengthy training for operators handling thousands of motors daily.

AISDetector enables operators to:

- Quickly detect abnormal signals by using AI to analyze time series data—such as sound, vibration, voltage, and current.
- Streamlines inspections, improves accuracy, and cuts operator training time, boosting productivity.

Smart City

Railroad Inspection

Manual and periodic rail inspections are low-frequency, costly, and often detect issues too late.

AISDetector enables operators to:

- Automatically monitor train-running sounds daily, providing early alerts, reducing maintenance costs, and ensuring safer operations.

AISODA

AI-Empowered Shop Order Dispatching & Analysis System

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

Beyond built-in heuristic rules, SODA features a multi-goal, multi-weight optimization AI engine that enables supervisors to select the optimal execution plan aligned with specific requirements and KPIs.

Real Time Dispatching

Generates optimal dispatching plans in 3–5 minutes through agile, high-speed data integration and computation, enabling rapid response to sudden changes in the shop floor and production status.

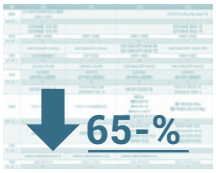
EMS Industry Focus

Designed for the Electronic Manufacturing Services (EMS) industry, SODA monitors key factors that impact production, such as capacity, materials, labor shifts, production line/equipment status, and product inventory, ensuring resource optimization.

PDCA Closed Loop

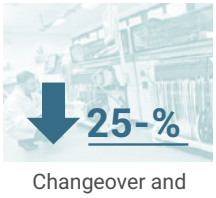
Data-driven dispatching decisions grow smarter as SODA continuously verifies plan versus actual output, analysis deviations and bottlenecks, and applies real-time adjustments to optimize performance.

Benefits

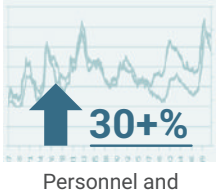


Dispatching Plan Generation Time

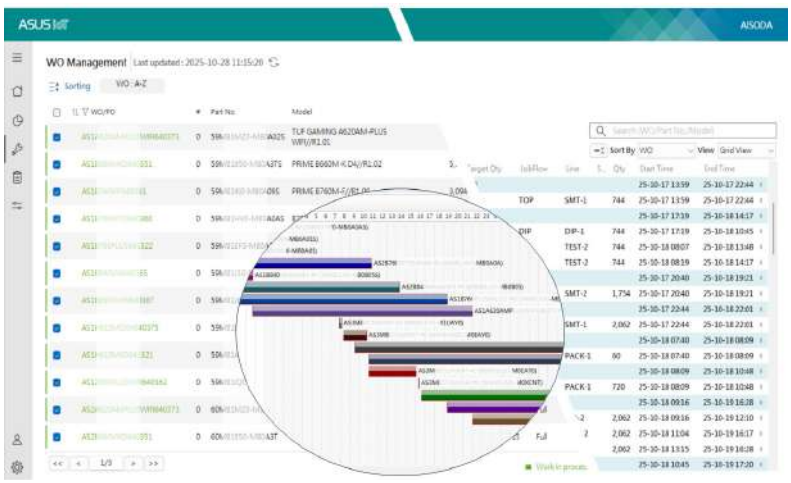
Woke Order Delivery Rate



Changeover and Transfer Time



Personnel and Equipment Utilization Rate



CHAPTER 13

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 V2

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 ALPR Software

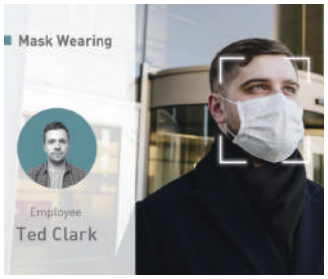
Supported car-plate regions: Taiwan, China and EU countries
Supported OS: Debian, Jetpack, and Ubuntu **Inference performance:** 160 ms
Accuracy: 99% within 3- to 5-meter range, with custom retraining service available
Supported cameras: USB webcams, and IP cameras on a project-by-project basis

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 V2

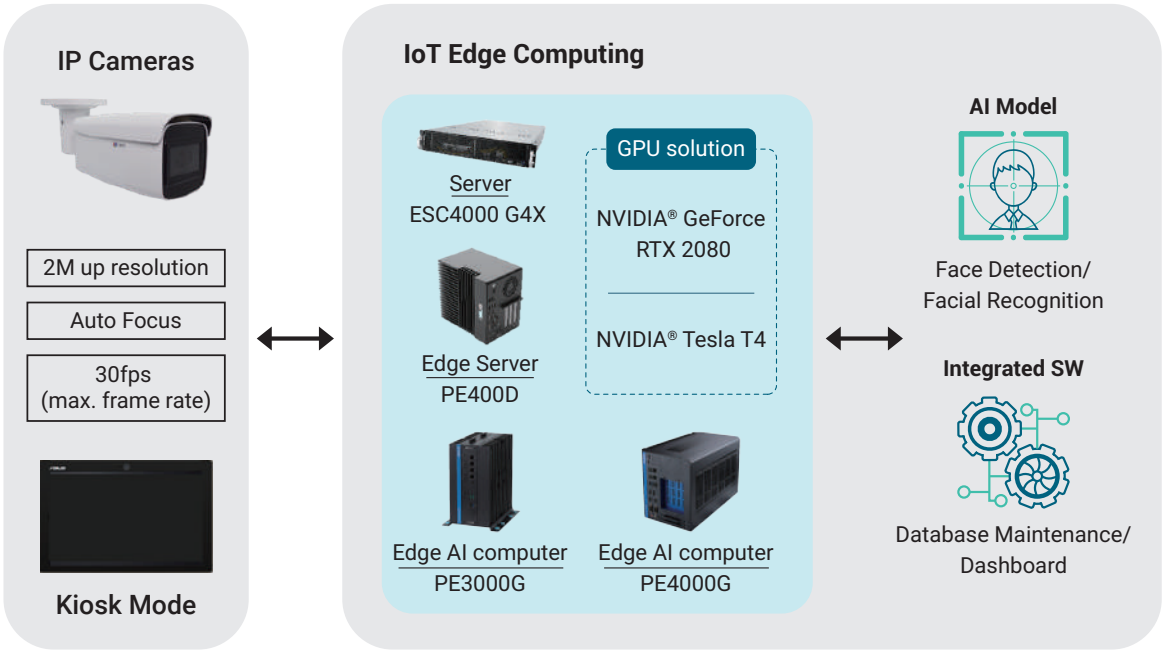
NVIDIA® Jetson Orin™ NX
CPU: 8 x Arm® Cortex®- A78AE v8.2
GPU: 1024-core NVIDIA Ampere GPU with 32 Tensor Cores
Memory: 16 GB 128-bit LPDDR5
Operating system: Ubuntu

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

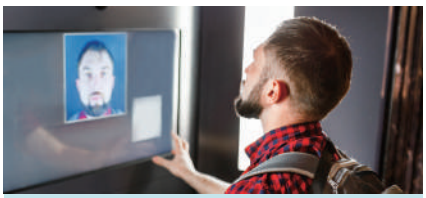
ASUS IoT Face Recognition Solution is a one-stop solution for accurate and stable security monitoring. Face Recognition Solutions are ideal for all types of buildings and workplaces, providing a backend management system that is easy to manage and monitor, simplifying security processes and improving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

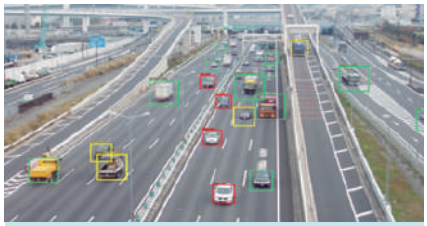
CHAPTER 14
Software & Services

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

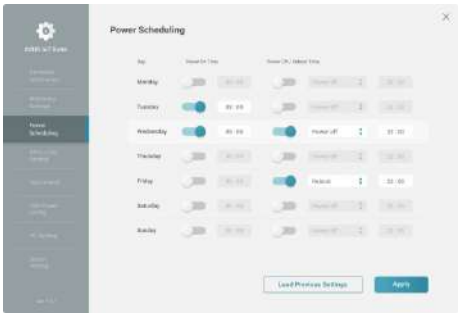
Report Management with progress, quantity and problem

ASUS IoT Middleware

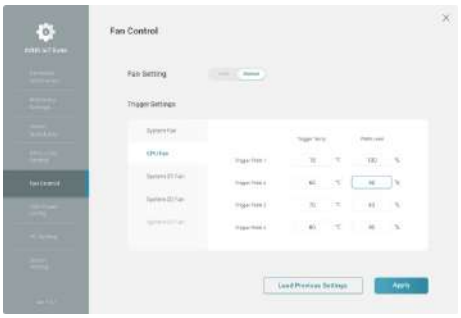
ASUS IoT Middleware simplifies system customization and application development on ASUS IoT platforms by providing easy-to-use tools to configure systems. It takes just a few clicks to configure a plethora of interfaces and options.

Configuration Tools

Hardware Monitor



Power Schedule

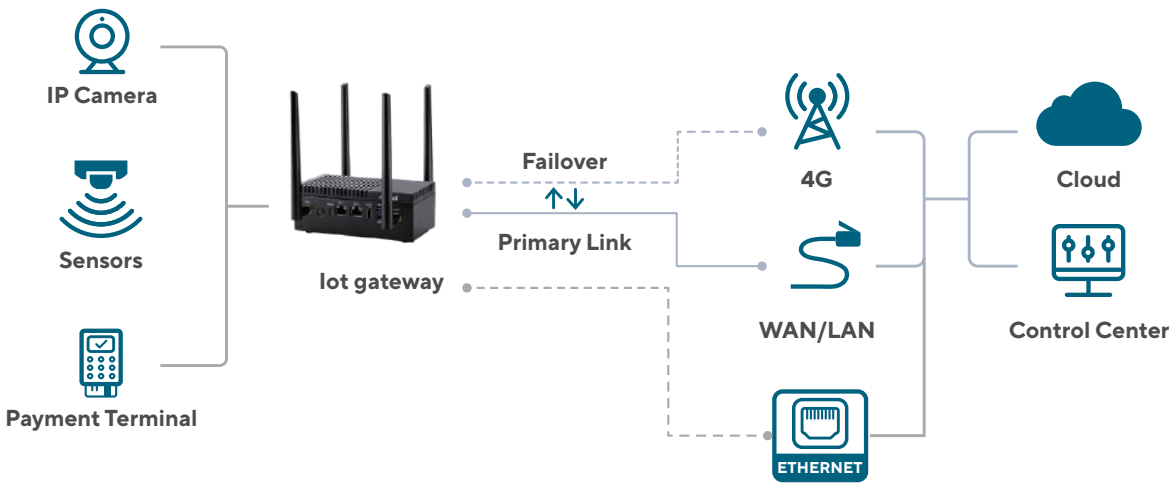


Smart Fan Control

GPIO / DIO Control

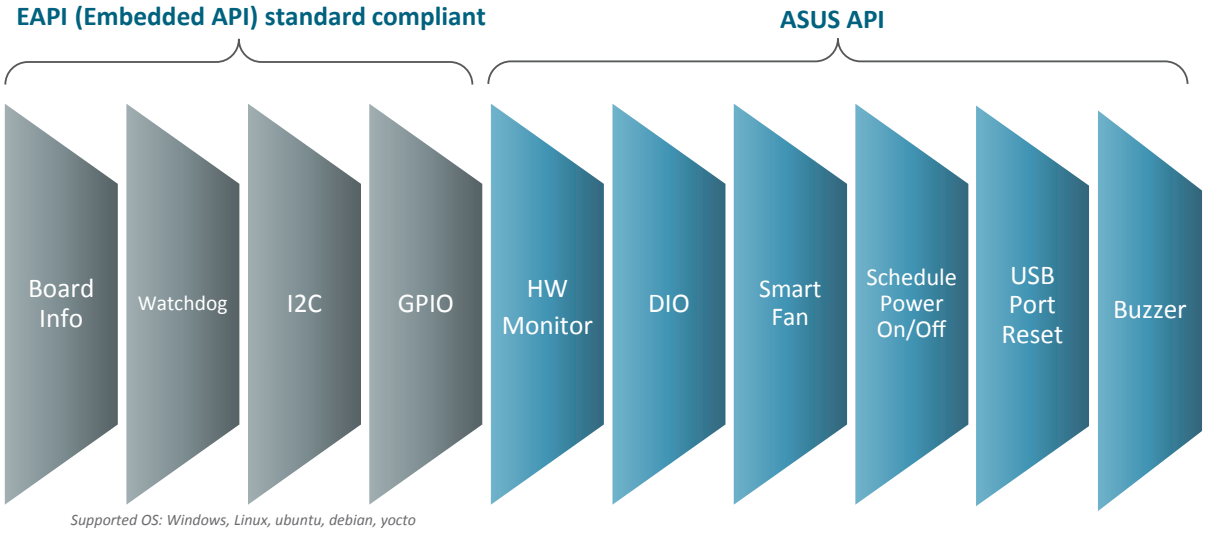
Always Connected

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



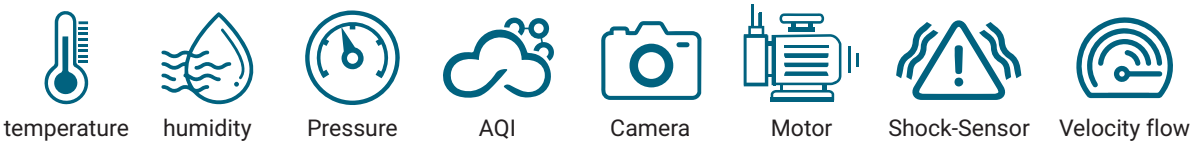
API

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.



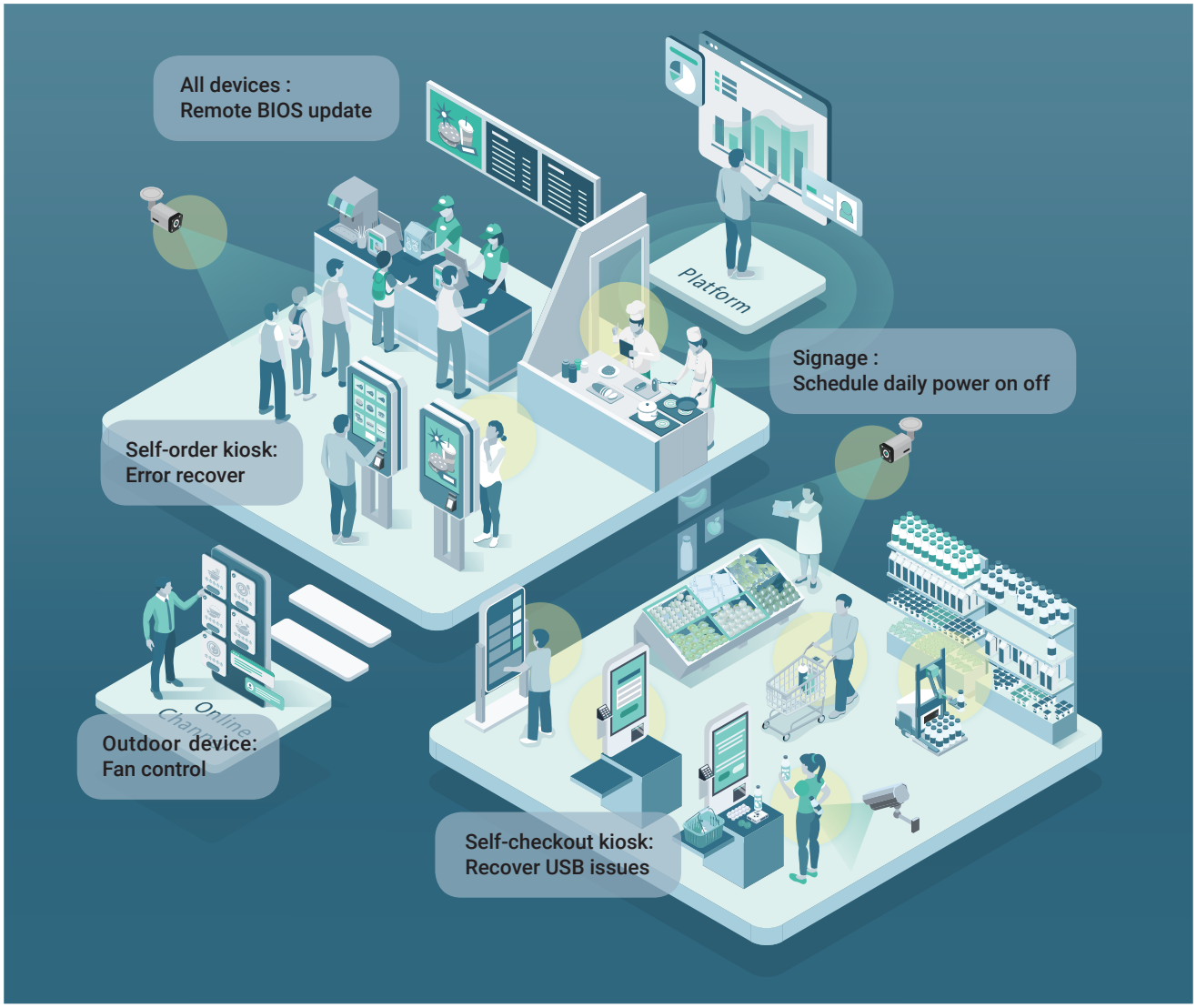
Key Features

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

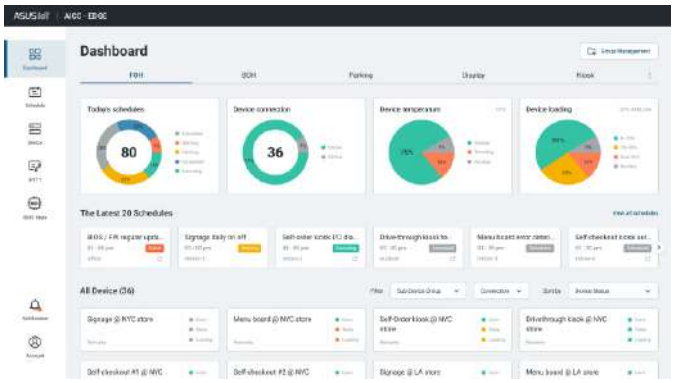
Task Schedule

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

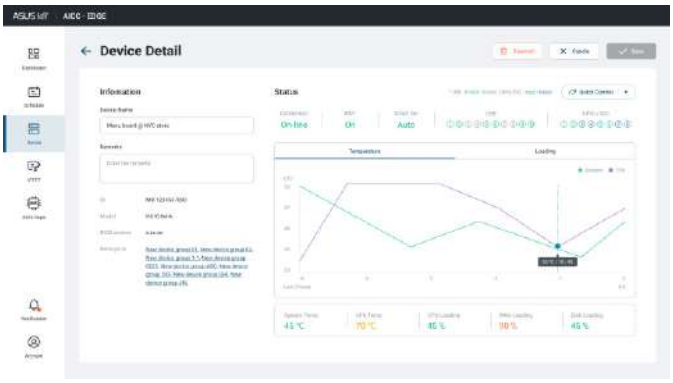
Remote Management

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

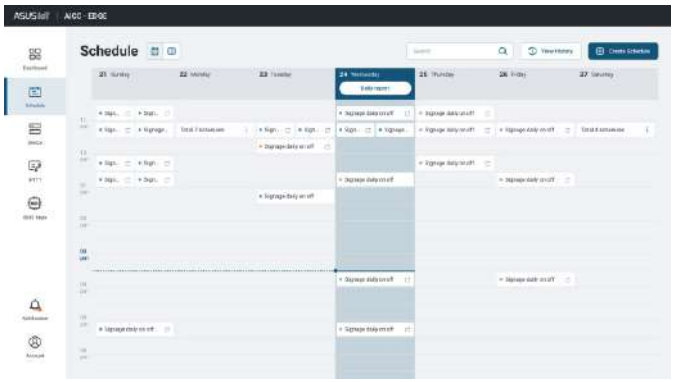
AICC Edge offers an intuitive interface for seamless IoT management, featuring a dashboard for real-time device monitoring and task scheduling to boost efficiency. Users can remotely update BIOS and adjust BIOS settings without needing to be onsite, ensuring devices stay optimized. AICC Edge combines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



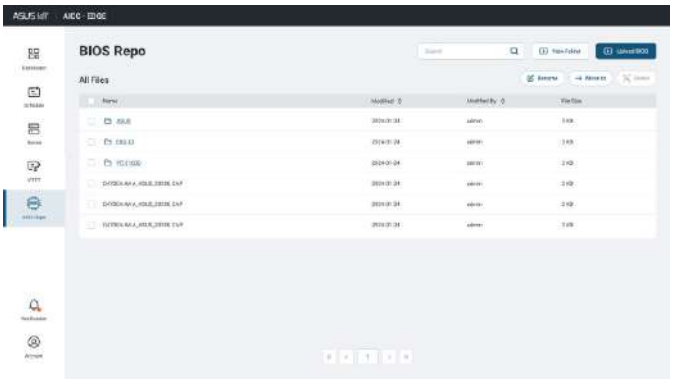
Dashboard



Monitor Devices



Schedule Tasks



Updates BIOS / BIOS Settings

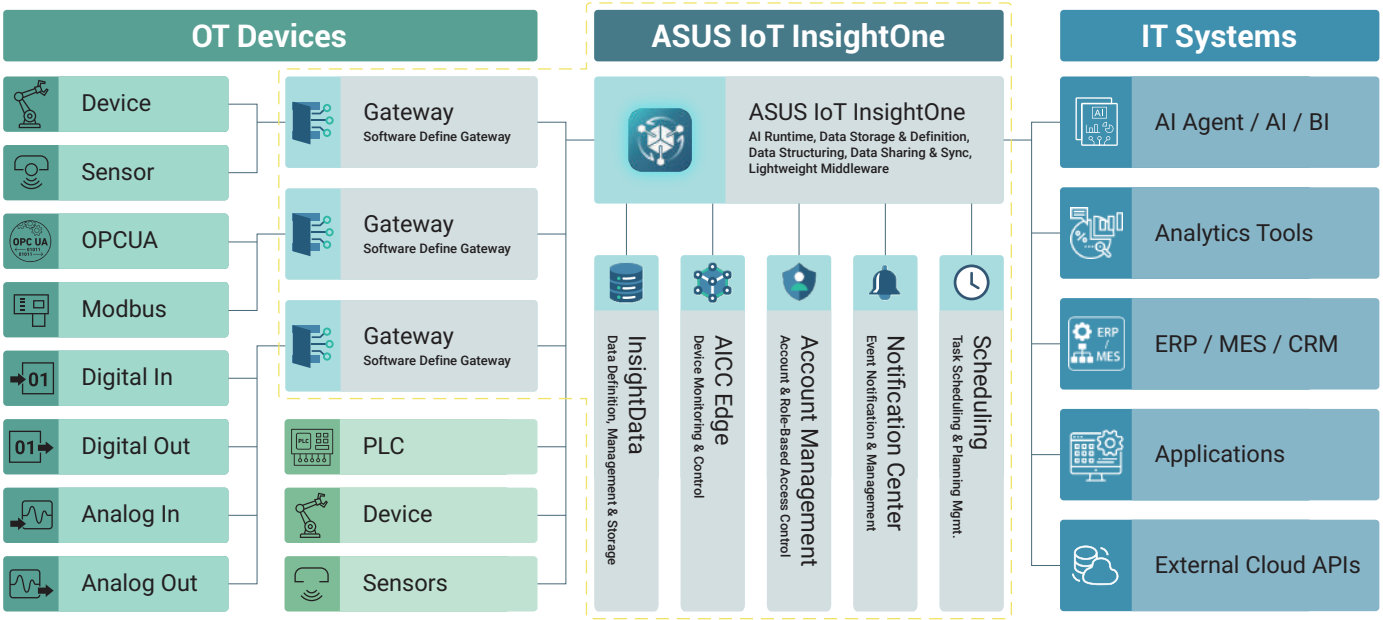
Product Advantages

- Update BIOS / BIOS setting
- Task Scheduler
- Smart Fan Control
- USB port reset
- ASUS HW monitor
- Power Scheduler
- Watchdog Recover
- Control Peripherals

ASUS IoT InsightOne

Connecting Data, Enabling Insight, Driving Intelligence

InsightOne is an AI platform that helps organizations get more value from their data. With a modular design and flexible deployment options, it enables developers and partners to integrate quickly and focus on solving real problems. By bridging devices, edges, and applications across domains, InsightOne provides a foundation for smarter operations and future-ready growth.



Diverse configuration plans for complex scenarios :

Bundle with Software Defined Gateway (SDG) to enable seamless data integration across diverse scenarios.

ASUS IoT InsightOne Starter Kit

Hardware : ASUS IoT PE100A

- Smart edge computer powered by a low-power, scalable NXP® i.MX 8M processor
- Built-in 16GB eMMC with MicroSD slot for flexible storage expansion
- Supports Ubuntu Core/Server and Linux Yocto OS
- Wide operating temperature range: -20°C to 60°C

License : Includes 150 data tags with 3 dataflows

Dashboard : 1 basic dashboard template

PE100A

Basic

Designed for PoC or small-scale monitoring, enabling smooth early-stage data exploration.

Tags : 300~500 **Dataflow : 30~50**

Professional

Supports multi-department or multi-site IoT deployments with moderate data frequency analysis.

Tags : 1000~3000 **Dataflow : 100~300**

Ultra

Built for massive, city-scale deployments with top-tier tag capacity and Dataflow performance.

Tags : 5000 **Dataflow : 500**

End-to-End AI Application Development & System Integration

Empowering customers with scalable, production-ready AI systems

ASUS IoT helps customers build, integrate, and scale AI solutions efficiently, ensuring seamless integration with existing systems, hardware, and business processes. A typical process is illustrated below.

Process Flow

1 Initial Consultation

- Align AI initiatives with business goals and operational constraints
- Define use cases, scope, success metrics, and integration needs

2 Architecture & Feasibility

- Design end-to-end AI system architecture (Edge/Cloud/On-Prem)
- Assess data readiness, system interfaces, security, and scalability

3 AI Design & Integration

- Design AI pipelines for data, inference, and monitoring
- Define APIs, middleware, and system integration logic

4 Operations & Lifecycle Management

- Collect, label, clean, and govern data
- Train, validate, and optimize AI models

5 Data & Model Development

- Integrate AI with existing systems (VMS, ERP, MES, CMS, etc.)

6 System Integration & Deployment

- Monitoring, model updates, and system optimization

Usage Scenarios

License Plate Recognition

PE4000G

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

Smart Multi-Language Agent

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