Advantech
Qualcomm-Based
Solutions

Qualcomm

ADVANTECH
Enabling an Intelligent Planet

EdgeAI
Computing Solutions

Accelerating AI Transformation in Embedded Markets

Table of Contents

Advancing Intelligence At The Edge

In the era of AI transformation in embedded markets, Edge Computing and Edge AI have emerged as game-changers driving future innovation. Their unique combination of scalability, efficiency, and adaptability empowers industries to meet the demands of an increasingly connected world.

As edge devices become more advanced, Qualcomm's Dragonwing™ products and solutions—powered by cutting-edge on-device AI, with rich connectivity—unlock new potential and elevate industries to new heights. With real-time processing capabilities and seamless AI integration, Qualcomm technology addresses the critical needs of emerging applications. Positioned at the forefront of edge innovation, it enables industries to adopt smarter solutions, optimize resource utilization, and scale innovation efficiently.

Through the collaboration between Advantech and Qualcomm Technologies, Inc., Advantech is proudly positioned as a key partner in Qualcomm Technologies' IoT ecosystem. With forward-looking design and adaptive capabilities, we are not only accelerating the deployment of intelligent solutions across industries—we are shaping the future of the edge.

REAL-TIME

Enabling precise, real-time operations with advanced software and networking technologies for critical tasks.

"USD $163 Billion

Edge AI market to emerge globally by 2033."

source: Market.us

POWER EFFICIENCYY

Minimized power consumption on edge devices, ensuring longer operation and lower power costs.

PERFORMANCE & VISION AI

Providing high accuracy and efficiency through real-time visual data processing and productive multitasking for automated detection and decision-making.

GENERATIVE AI

Personalized, interactive interfaces with real-time speech-to-text and text-to-speech for seamless edge device interactions.

SECURITY

Delivering robust, multi-layered security through advanced technologies and industry standards.

Worldwide Leadership in Embedded Platform Innovations and Design-in Services

Mini-ITX	Micro-ATX	2.5" Pico-ITX	3.5" SBC	4" SBC	Client Size A	Client Size C	Server Size D	Server Size E

Industrial Motherboards	Single Board Computers	COM-HPC

Advantech stands as a global leader in embedded platform innovation and design-in services, driving technological advancements since 1990. With a rich standard form-factor portfolio spanning carrier board designs, thermal optimization, and AI acceleration modules, the company empowers diverse industries.

Advantech's scalable edge computing solutions integrate robust hardware and software, ensuring seamless support for IoT and AI applications. Through its pioneering spirit, innovative ecosystems, and customer-centric approach, Advantech consistently sets new standards for industrial computing, enabling clients worldwide to unlock the full potential of edge and AI-driven technologies.

m2.COM
(2016)

Q SEVEN
2.1
(2016)

COM Express
R3.0
(2017)

UIO40-Express
(2019)

COM HPC
(2021)

OPEN STANDARD MODULE™
(2023)

2020

2025

Mini Type 10   Compact Type 6   Basic Type 6 & 7   Half Size   Full Size   S Size   L Size
COM Express   SMARC   OSM
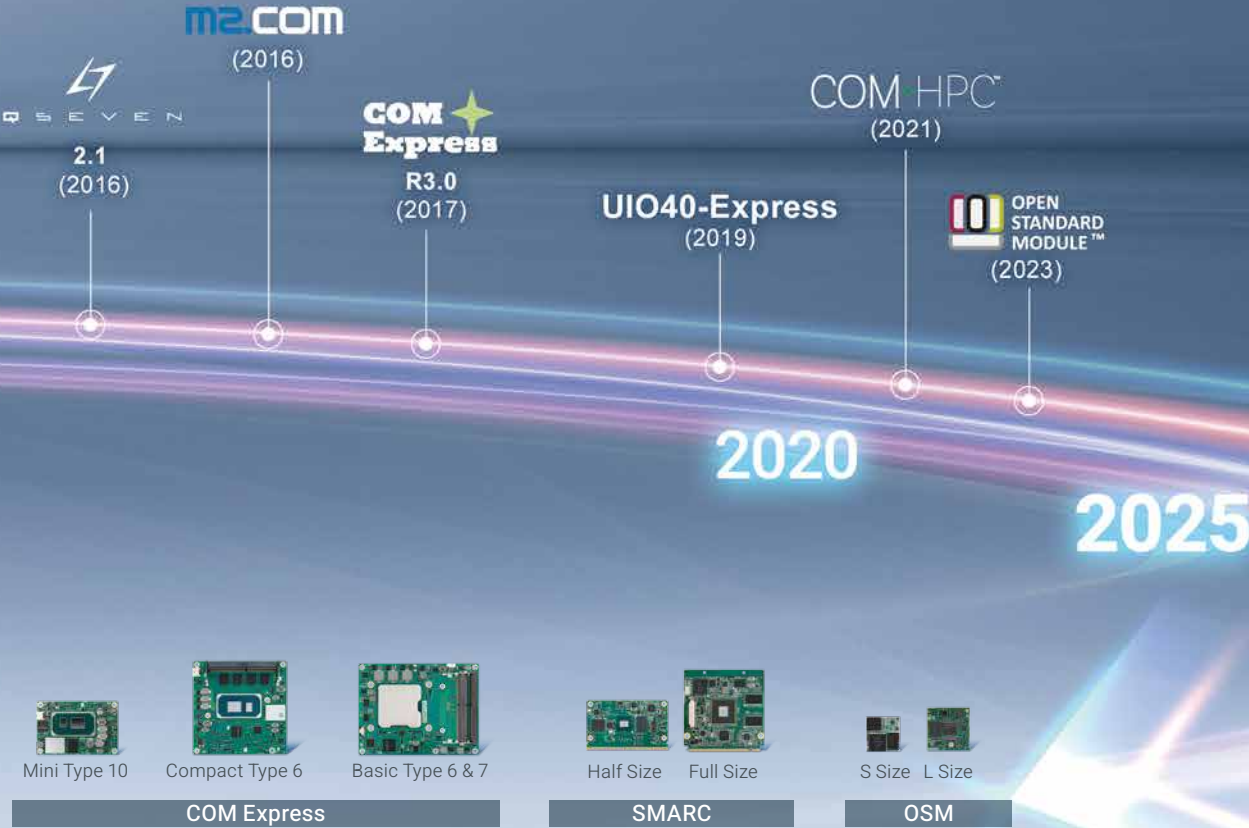
Qualcomm

Intelligent and Connected Edge Computing to Transform the Industry

Qualcomm's mission in the IoT market is to enable smart, connected devices that drive digital transformation across industries, enhancing efficiency, innovation, and sustainability through cutting-edge wireless and AI technologies.

Intelligence
Qualcomm's NPU delivers industry-leading AI processing, enabling faster and more efficient edge intelligence. This provides customers with enhanced real-time data analysis capabilities, crucial for AI-driven IoT applications.

Computing
Qualcomm's processors are optimized for high performance, offering superior processing power with low latency. This allows customers to run demanding applications smoothly, improving operational efficiency and response times.

Connectivity
Qualcomm excels in connectivity, supporting advanced wireless technologies like 5G, Wi-Fi 6E and Wi-Fi 7. This ensures seamless and reliable IoT device communication, benefiting customers with faster data transmission and lower latency.

Power Efficiency
Qualcomm's power-efficient designs maximize battery life while maintaining high performance. This offers customers the advantage of deploying IoT devices in energy-sensitive environments, reducing operational costs.

Simplify and Accelerate Application Deployment

By providing comprehensive SDKs, AI models, software tools, and resources, developers can seamlessly integrate and deploy advanced solutions on Qualcomm platforms. This approach accelerates innovation across AI, 5G, and IoT, driving faster digital transformation.

Docs

The developer workflow guides provide clear documentation and tutorials to streamline AI and IoT development processes.

Dev Environment

Comprehensive development toolkits include SDKs and tools for AI optimization, enabling efficient deployment and performance tuning.

Workflows Built for Developers

AI Hub

An online platform offers pre-optimized AI model libraries and sample applications for quick reference and seamless deployment on Qualcomm platforms.

Edge AI Development Platform

An end-to-end platform that automates data collection, simplifies model training, provides advanced optimization tools, and offers one-click deployment to hardware.

EDGE IMPULSE

Redefining the Edge with
Qualcomm-Based Solutions

Advantech is redefining the edge with an innovative portfolio of Qualcomm-based solutions, designed to meet the evolving demands of diverse industries. Our offerings include scalable pre-configured AI-ready edge systems, standardized AI modules and boards for rapid development, and industrial appliance solutions tailored to specific industry needs. These advanced solutions empower businesses to accelerate AI deployment, enhance operational efficiency, and seamlessly integrate intelligent systems. With a focus on scalability, performance, and sensor integration, Advantech delivers the tools necessary to unlock the full potential of AI at the edge.

AI-Ready Edge System

Scalable and pre-configured solutions to accelerate edge AI application deployment.

AI on Modules & Boards

Standardized AI modules and boards that simplify and expedite the development of AI- enabled equipment.

Industrial Appliance

Tailored to specific industries with system expertise and sensor integration.

Qualcomm Platform Adoption Plan

Qualcomm's platform portfolio perfectly addresses the current demands for mid-to-high-tier Arm computing performance. The Dragonwing QCS6490 and QCS5430 platforms deliver 12 TOPS of AI processing power, efficiently meeting industrial edge requirements. With support for a comprehensive OS ecosystem—including Windows, Ubuntu, Yocto, and Android—these platforms enable faster adaptation to diverse application scenarios. Building on this foundation, the Snapdragon X Elite / X Plus platforms elevate performance to 45 TOPS, catering to data-intensive and advanced AI applications. Looking ahead, the Dragonwing IQ9 and IQ8 platforms push the boundaries with 100 TOPS, offering exceptional computational power for high-performance AI workloads. With a tiered approach and robust OS support, Advantech is poised to penetrate various application markets, delivering scalable, high-performance Arm-based solutions seamlessly.

Performance (vertical axis)

Snapdragon X Elite & X Plus
Windows
45 TOPS

IQ9 & IQ8
ubuntu yocto PROJECT
100 TOPS

QCS6490 & QCS5430
Windows ubuntu yocto PROJECT android
12 TOPS

2025

QCS6490 / QCS5430

Up to Octa-core, 12 TOPS, TDP 6~9 Watts

Windows 11   ubuntu   yocto PROJECT   android

High Performance, Low Power

QCS6490 combines up to 8-core CPUs for superior edge processing and design flexibility in a low-power package.

Powerful AI-for-Edge Solution

Support for new-generation, power-efficient 12 TOPS NSP AI engine supporting multiple channels and multiple AI models concurrently.

Multiple OS and Longevity Support

15-year* long-term support for OS and security updates, allowing customers to build products based on the same hardware design.
*QCS6490 until 2035; QCS5430 until 2032.

Target Applications
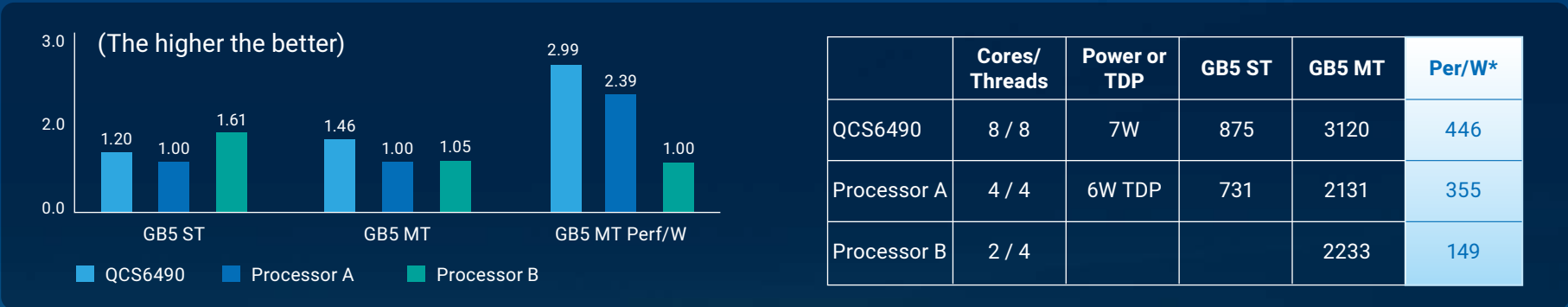
Handheld Equipment

Self-Service

Industrial Automation

CPU Benchmark Comparison
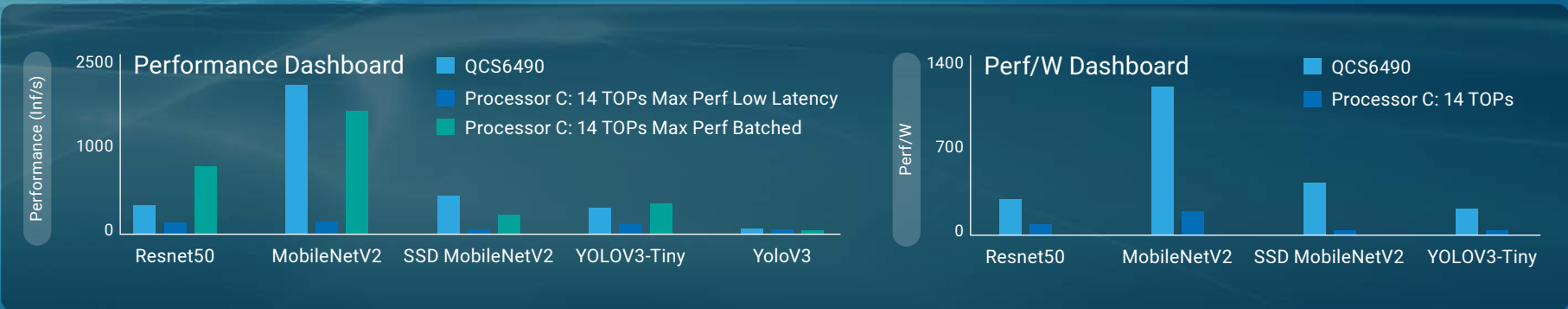
QCS6490 vs. x86 Competitor Processors

QCS6490 has higher performance per watt than both Processor A (up to 1.25x) and Processor B (up to 2.99x).

(The higher the better)

Chart values: GB5 ST	GB5 MT	GB5 MT Perf/W
QCS6490: 1.20	1.46	2.99
Processor A: 1.00	1.00	2.39
Processor B: 1.61	1.05	1.00

Legend: QCS6490, Processor A, Processor B

	Cores/Threads	Power or TDP	GB5 ST	GB5 MT	Per/W*
QCS6490	8 / 8	7W	875	3120	446
Processor A	4 / 4	6W TDP	731	2131	355
Processor B	2 / 4			2233	149

AI Competitive Landscape

QCS6490 vs. Processor C

Qualcomm's integrated AI leads in power efficiency and beats Processor C's performance in low-latency-driven use cases.

Performance Dashboard

Performance (Inf/s)

Legend:
- QCS6490
- Processor C: 14 TOPs Max Perf Low Latency
- Processor C: 14 TOPs Max Perf Batched

Categories: Resnet50, MobileNetV2, SSD MobileNetV2, YOLOV3-Tiny, YoloV3

Perf/W Dashboard

Perf/W

Legend:
- QCS6490
- Processor C: 14 TOPs

Categories: Resnet50, MobileNetV2, SSD MobileNetV2, YOLOV3-Tiny

AOM-2721

Open Standard Module Size-L

QCS6490	Phase In	Q1 2025	Longevity	Q1 2035
QCS5430	Phase In	Q1 2025	Longevity	Q2 2032

A new era for compact edge AI

Features

High-Performance Processing

- Qualcomm® 8x Kryo™ 670 ArmV8 cores up to 2.7GHz
- Qualcomm® Hexagon processor, capable of delivering up to 12 TOPS
- 4K30P full-duplex video codec, supporting OpenCL/GL for vision developments

Network and I/O Connectivity

- USB 3.2 Gen1 for Qualcomm 5G module SDX62
- USB 2.0 and PCIe Gen3.0 for Qualcomm WCN6856, Wi-Fi 6E, and BT V5.3
- 2 x GbE (Gigabit Ethernet), 1 x USB 3.2 Gen1, 2 x PCIe for expansion connectivity
- 1 x MIPI-DSI, 1 x eDP (share MIPI-DSI) and 1 x DP for multiple displays

Compact Design and Outdoor Durability

- Compatible with various OS including Windows, Ubuntu, Yocto, and Android for the different applications
- On-board OSM design fulfills the outdoor and anti-vibration applications

Applications

Robotics / Automation

AMR / Drone

HMI / AIO

AOM-5721

SMARC 2.2 Half

QCS6490	Phase In	**Q4 2025**	Longevity	**Q4 2035**
QCS5430	Phase In	**Q4 2025**	Longevity	**Q2 2032**

Empowering efficiency and AI at the edge

Features

High-Performance Processing
• Qualcomm® Kryo™ 670 CPU with 8 ArmV8 cores at up to 2.7GHz ensures powerful computation
• The Qualcomm® Hexagon processor delivers up to 12 TOPS for robust on-device AI, enhancing machine vision and efficiency
• With an ISP and VPU, the AOM-5721 supports 4K60 video decoding and pre-processing

Multi-I/O Connectivity
• Offers versatile I/O for AIoT, up to 2 x GbE, 2 x USB 3.2 Gen2, 4 x USB 2.0, 3 x PCIex3, 1 x MIPI-DSI, 1 x eDP and 1 x DP, ensuring seamless sensor and peripheral integration.

Comprehensive Software Support for Linux and Windows
• Unified core, driver, and longevity maintenance
• Modularized value-added app and SDK framework
• Multiple OS support, Windows and Ubuntu

New Form Factor for AI
• Featuring an ultra-thin AOM with MXM 3.0 connector, this design enhances space efficiency, facilitating seamless integration into confined spaces

Applications

Robotics / Automation

Smart Retail

Medical Equipment

MIO-5355

3.5" Single Board Computer

QCS6490	Phase In	**Q4 2025**	Longevity	**Q1 2035**
QCS5430	Phase In	**Q4 2025**	Longevity	**Q2 2032**
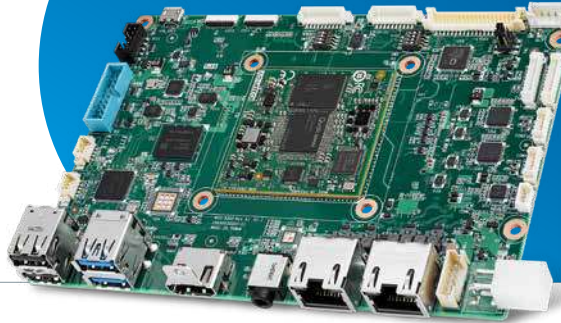
Ready-to-use power-efficient edge AI solution

Features

High Performance with Build-in NPU, but Low Power Computing

- 8x Kryo 670 CPU from 1.9 up to 2.7 GHz + Adreno GPU 643
- Up to 12.5 INT8 TOPS from integrated NPU for AI inference applications

Rugged On-Board Design and Extended Temperature Range

- 8GB LPDDR5 on-board memory and 128GB UFS or 64GB eMMC on-board storage
- 3 x standalone M.2 slots for solid extension: E-Key 2230 for Wi-Fi/BT, B-Key 3052 for 4G/LTE, M-Key 2280 for NVMe SSD
- -20~70°C extended operating temperature range

Multi-I/O Interface and Multi-Display

- 2x GbE, 6x USB, 4x COM, 2x I2C, 2x MIPI-CSI, 1x 8b GPIO, 1x Audio Combo Jack
- LVDS or eDP (Optional) + HDMI

Flexible OS and Longevity Support

- Multi-OS support with Windows 11 IoT LTSC and Ubuntu (22.04)
- Hardware and Software technical support up to 2036

Applications

Industrial Automation

Self-Service Kiosks

Handheld Equipment

QCS6490 / QCS5430　Windows 11　ubuntu

DS-011

Ultra-Slim Digital Signage System

| Phase In | Q4 2025 | Longevity | Q1 2035 |

Ultra-slim box with 12 TOPS and dual 4K UHD digital signage

Features

Enable Machine Vision for Edge AI Applications
· Built-in Qualcomm QCS6490 & Adreno 642 GPU (12 TOPS)
· TensorFlow, PyTorch and ONNX AI Framework support

Dual 4K Display and GMSL Camera Support
· 2 x (3840 x 2160) HDMI 2.1 TMDS ports for dual 4K signage
· 2 x GMSL Camera I/O interface support for AI big data analysis

Factory Reset Mode for Project Developer
· Qualcomm Debug mode and download mode support for Developer
· Rescue the EMMC OS /NVME OS from DeviceOn apps. (ODM Support)

22mm Slim and Fanless AI Box for Limited Space Setups
· Industrial environments: factories, smart cities, hospital Edge AI devices
· Commercial environments: chain stores, pedestrian zones, public space AI signage

Applications

Safety Monitoring Signage

UHD 4K Retail Signage

X-Ray Check Signage

14

ASR-D501

UAV Module

Preliminary

Dedicated controller for drone applications

Features

Excellent Computing and AI Performance with Low Power

• Qualcomm QCS6490 Kryo 8 Cores up to 2.7GHz
• Built-in 12TOPS AI accelerator
• AI streaming, Visual SLAM, gimbal

Dedicated Design for Industrial Applications

• Fan-less thermal design.
• Supports DC input of 5-12V for 3S/6S battery connection
• Operation temperature from -20 ~ 70°C

Dedicated I/Os for Drones

• 2 x GbE (GH connector), 2 x USB 3.0 (Type C) for LiDAR & depth cameras, etc.
• 3 x UART, 1 x I2C, 8 x GPIO (GH connector) for multiple sensors
• 2 x CAN-FD for connecting to flight controllers
• M.2 expansion slot, for LTE/5G/GPS add-on modules

Low Latency Visible Camera Embedded

• 5 x MIPI-CSI with stackable camera-interfaced sensor module

Applications

Delivery

Smart Agriculture

Inspection

CAM-7521P

AI-Powered Multiple Function 3D Camera

Preliminary

High quality vision device for industrial edge AI

Features

Enable Machine Vision for Edge AI Applications

- Equipped with Qualcomm QCS6490 OSM with excellent computing power
- Built-in iToF and RGB cameras for high-quality RGB-D (depth) data

Rugged System Design for Harsh Environments

- Full system IP65 protection against water and dust
- M12 connectors for PoE and data synchronization
- Operating temperature range: 0~45°C
- Fanless operation

Comprehensive Software and Technical Support

- Complete camera tuning software SDK, API, and documents
- Built-in depth calculation algorithm

Fully Compatible with Microsoft Azure Kinect DK

- Same quality and performance for depth and RGB image processing
- Compatible API with Microsoft Azure Kinect Sensor SDK

Applications

Parcel Logistics

Robotic Arms

Parcel Dimensioning

X Elite / X Plus

Up to 12 cores, LPDDR5X 16GB, 45 TOPS

Windows 11

High-Performance Processing

- Snapdragon X1 Elite 12C/X1 Plus 10C Orton CPU up to 3.4GHz
- LPDDR5X and UFS 4.0 Gear5 for high speed data operations.
- Integrated Qualcomm Wi-Fi 6E & 5G drivers for connectivity.

Powerful Multimedia

- Snapdragon Adreno 5th Gen. VPU 4K60P full duplex Codec.
- Snapdragon Adreno Snapdragon X GPU featuring OpenCL/G.
- Integrating Microsoft DirectX12 libraries.
- Hexagon DSP for Audio accelerations.

Comprehensive AI Packages

- Hexagon NPU capable 45 TOPS.
- Up to 75 TOPS with CPU and GPU.
- 100+ pre-trained and optimized AI models on Qualcomm's AI Hub website.

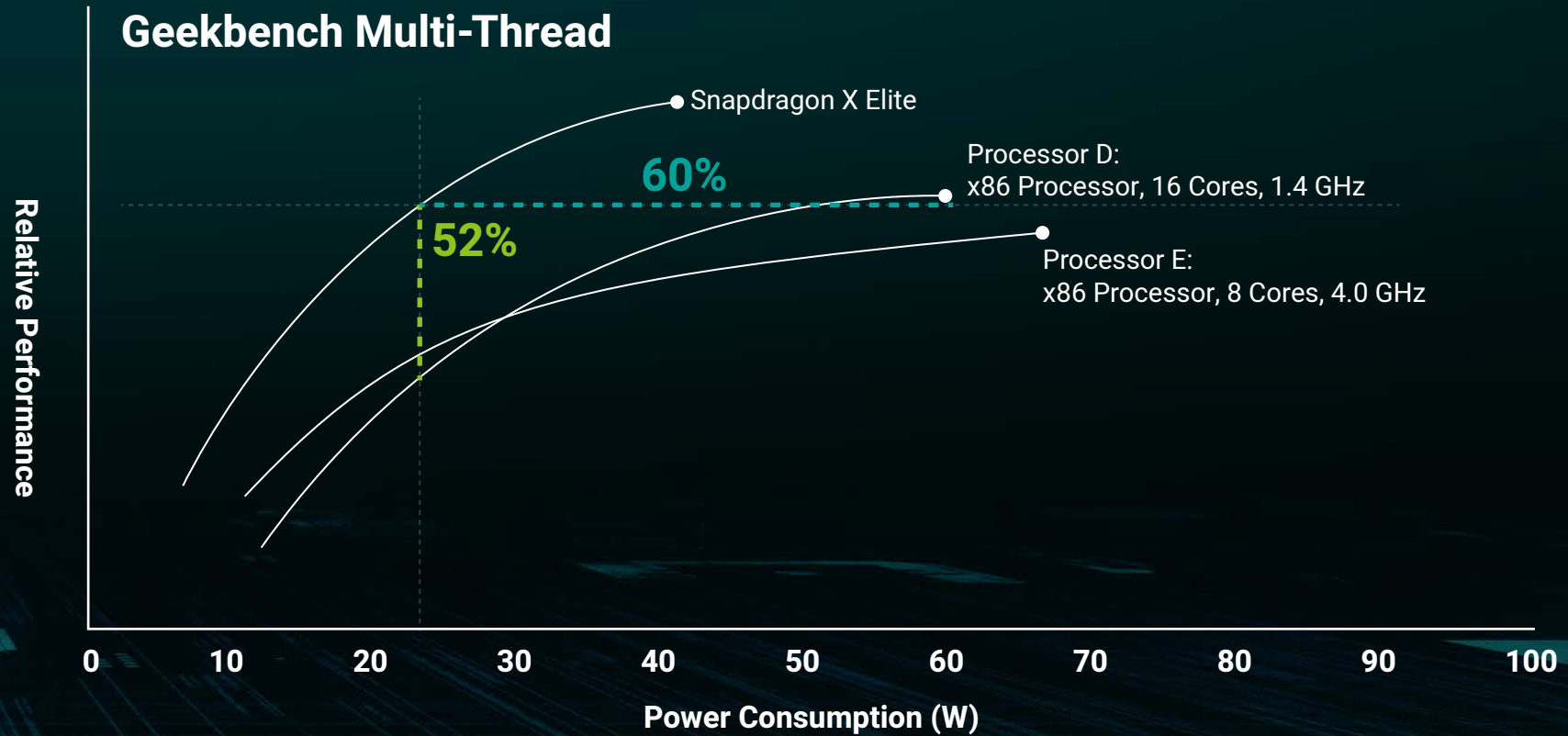### Target Applications

Robotics

Machine Vision

LLM & Generative AI

Multi-Threaded Performance

Snapdragon X Elite vs. x86 Competitor Processors

- Up to 52% faster CPU performance vs. the competition at ISO power
- Matches competitor peak PC performance at 60% less power

Geekbench Multi-Thread

Snapdragon X Elite

60%

52%

Processor D:
x86 Processor, 16 Cores, 1.4 GHz

Processor E:
x86 Processor, 8 Cores, 4.0 GHz

Relative Performance

Power Consumption (W)

0   10   20   30   40   50   60   70   80   90   100

Single-Thread Performance
Snapdragon X Elite vs. x86 Competitor Processors

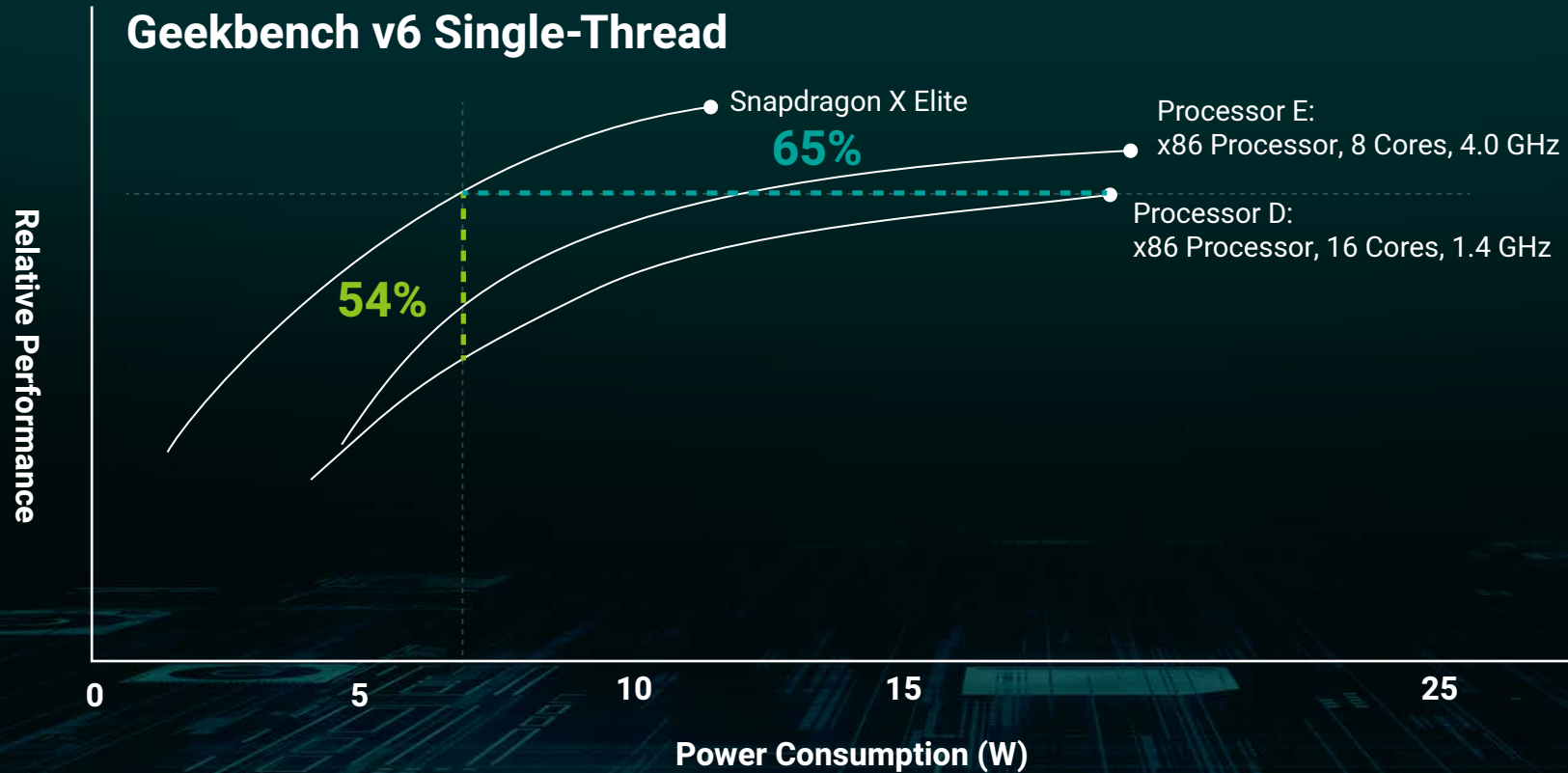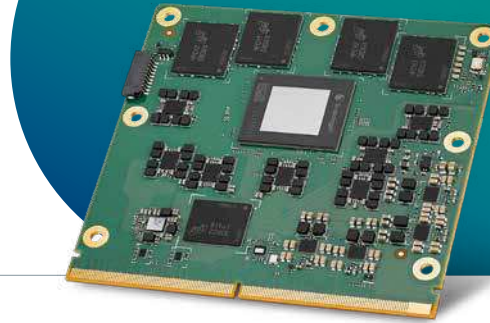- Up to 54% faster CPU performance vs. the competition at ISO power
- Matches competitor peak PC performance at 65% less power

Geekbench v6 Single-Thread

Relative Performance

Snapdragon X Elite

65%

54%

Processor E:
x86 Processor, 8 Cores, 4.0 GHz

Processor D:
x86 Processor, 16 Cores, 1.4 GHz

Power Consumption (W)

0   5   10   15   25

AOM-6731

SMARC 2.2 Full

Phase In	Q4 2025		Longevity	Q4 2032

A new era of the powerful efficient AI module

Features

High-Performance Processing

- Qualcomm 12 Kryo CPU cores up to 3.4GHz
- Qualcomm Hexagon processor, up to 45 Tops for robust on-device AI computation
- Adreno 5th Gen. VPU for 4K60P Codec, Adreno GPU supports DirectX 12.2, OpenCL/GL for vision applications

Network and I/O Connectivity

- USB 3.2 Gen2 for Qualcomm 5G module SDX62
- USB 2.0 and PCIe Gen3.0 for Qualcomm WCN6856 for Wi-Fi 6E and BT V5.3
- 2 x GbE (Gigabit Ethernet), 2 x USB 3.2 Gen2, 2 x PCIe for the expansion connectivity
- 1 x eDP and 1 x DP for multiple displays

Compact and Flexible Design

- SMARC 2.2 Full built-in onboard LPDDR5X, UFS storage for ruggedized requirements
- Advantech Edge AI SDK for faster and more efficient AI
- Utilizing Qualcomm AI Hub for 100+ pre-trained and optimized AI models for faster integration

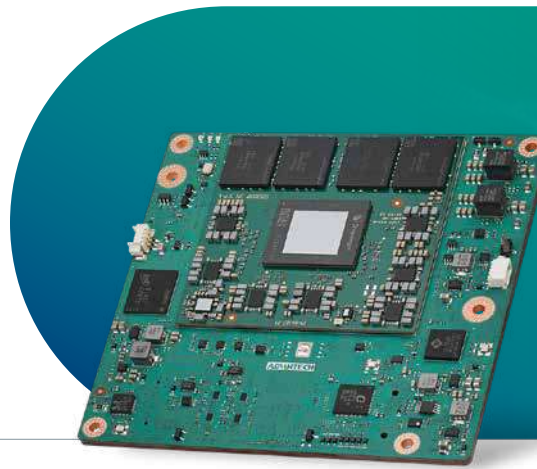## Applications

Intelligent Surveillance

Manufacturing

Fleet Management

SOM-6820

COM Express Type6 R3.1 Compact

| Phase In | Q4 2025 | | Longevity | Q4 2032 |

1st Arm COMe with native AI solution for seamless AI integration

Features

Advanced Performance with Exceptional Power Efficiency

- Qualcomm Oryon CPU supports 12 Cores up to 3.8GHz
- 45W TDP, high performance per watt for edge computing
- Supports LPDDR5X up to 64GB

Excellent AI Performance with Comprehensive SW Support

- Adreno GPU supports up to 4.6 TFLOPs AI
- Hexagon™ NPU supports 45 TOPS AI
- Edge AI SDK escalates AI evaluation and development

Versatile, High-speed I/O with Minimal Latency

- Maximum 16x PCIe lanes support up to Gen4
- 4 x USB3, 4 x SATA, 1 x GbE

Design-in Service Makes Implementation Effortless

- Windows 11 IoT ready-to-use OS environment
- QFCS thermal solution delivers 100% performance under 0-60°C conditions

Applications

Humanoid Robots

Medical Imaging

Factory Automation

AIMB-293

Mini-ITX Industrial Motherboard

Preliminary

Accelerate deployment with Mini-ITX for low latency AI inferecing

Features

Enhanced Productivity with Efficient AI Computing

- Superior AI performance with up to 12C X1, and LPDDR5
- 45TOPs Hexagon™ NPU.
- Low latency and Power efficiency for Edge Inferencing

Easy Integration Leveraging THIN Mini-ITX

- High-speed I/O: 4 MIPI-CSI and rich USB configuration for cameras
- Wireless connectivity by M.2 expansion
- Flexible and ready-to-use standard industrial motherboard

Reliable Design for Long-Term Operation

- Stability enhanced with memory down, SoC and SSD onboard
- Compact QFCS thermal solution to ensure consistently high performance

Windows and AI Toolkit Accelerate Development

- Windows 11 IoT ready-to-use OS environment
- Edge AI SDK for performance evaluation and software design

Applications

AMR/AGV

Collaborative Robots

Self-Service Kiosks

IQ9 / IQ8

Up to Octa-core, LPDDR5 32GB, 100 TOPS

ubuntu   yocto PROJECT

Superior Performance with AI

8-core CPU at 2.35GHz, delivering powerful computing performance. The integrated AI engine achieves 100 TOPS, offering exceptional AI performance and LLM flexibility to support customers' own AI models.

Rugged & Reliable

LPDDR5 with ECC support with an operating temperature range of -40 to 85°C, IQ-9100 is built to withstand even the harshest conditions. The Safety Island also ensures functional safety, preventing potential accidents.

Development Friendly

The ready-to-use Linux software stack, AI Hub, and support for multiple operating systems make it easy for customers to develop, validate, and deploy applications and AI solutions on the IQ-9100.

Target Applications

Robotics/Automation

Drone/Transportation

Aerospace/Mission Critical

Efficient Bandwidth Compression
Compared to the Competition

Efficient bandwidth compression (BW/Inference) which shows up to ~14x-16x improvement for some higher resolution models compared to competitors' solutions.

Bandwidth / Inference – INT8
Ref: SA8650 = 1, Lower is better

IQ-91xx is with DLBC enabled

Legend: ■ IQ-91xx   ■ Competition SoC

Model	Competition SoC	IQ-91xx
Resnet50	1.50	1.00
Resnet101	1.15	1.00
Yolov5m	4.47	1.00
Yolov3	4.19	1.00
EfficientnetV2	1.87	1.00

Y-axis: 0.00, 2.00, 6.00
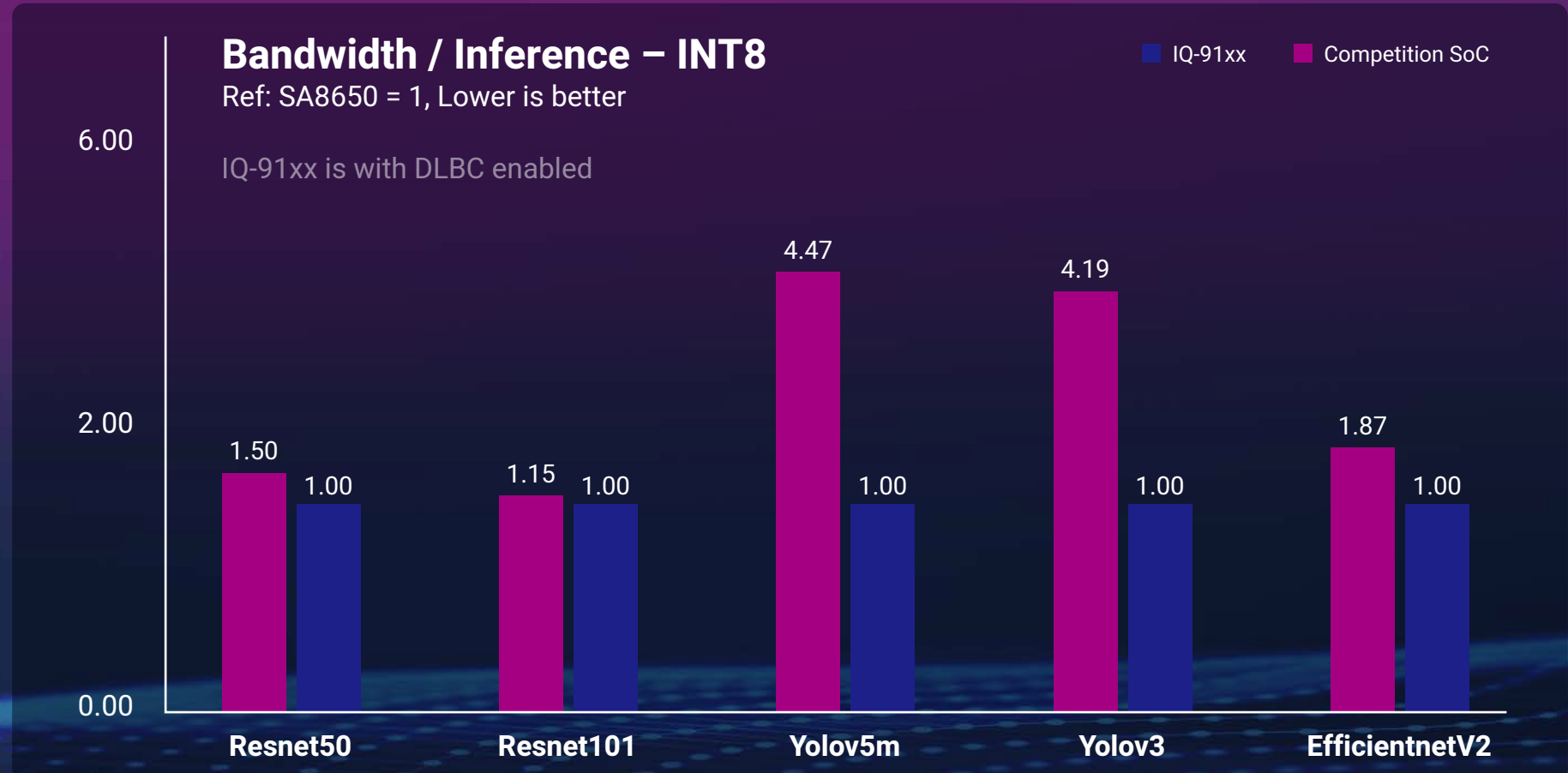
AIR-055

Edge AI Inference System

| Phase In | Q2, 2026 | | Longevity | Q1, 2038 |

A rugged, high-performance edge AI system for industrial vision

Features

High-Integration I/O for Imaging AI

- IQ-9075M up to octa-core, LPDDR5 36GB, 100 TOPS
- Dual MIPI-C wiht MIPI CSI2 D-PHY for direct camera input
- Supports up to 8 x GMSL1/2 cameras via AMO-0211GMSL dongle
- Dual 2.5GbE LAN with optional PoE for high-speed video streaming
- HexaDisplay output via HDMI, DisplayPort, and USB-C (DP-Alt Mode) for up to six simultaneous display outputs

Modular Design for System Flexibility

- 3 x M.2 slots (NVMe, Wi-Fi/BT, 5G/LTE)
- Supports local storage and wireless transmission
- Operates in -20°C to 60°C, ideal for field and edge deployments

Integrated AI Inference Framework

- Compatible with Advantech Edge AI Inference Kit
- Supports Phison aiDAPTIV+ for fast inference and efficient model compression
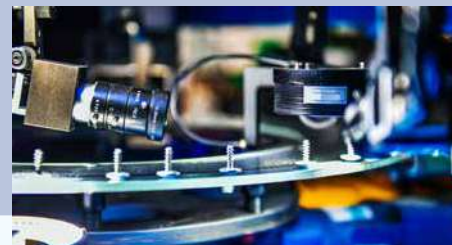
Applications

Smart Inspection Assistant

Autonomous Mobile Robot

Multi-Angle Inspection for Manufacturing Defects

AFE-R751

Robotic Controller

Preliminary

Dedicated controller for AMR applications

Features

Great AI Performance in an Ultra-Slim Form Factor

- IQ-9075M up to octa-core, LPDDR5 32GB, 100 TOPS
- Compact size for robot integration

Dedicated I/Os for AMR

- 4 x GbE, 4 x USB 3.2 for Lidar, sensors, TOF cameras, etc.
- 2 x RS-232/422/485
- Isolated 16-bit DIO for light indicators, e-stops, etc.
- Isolated CAN bus for motors
- 8 x GMSL FAKRA camera connectors

Rugged and Reliable Design

- 20-28 VDC for battery connection with sufficient tolerance
- ESD and TVS protection: up to 2kV (direct pin), 8kV (contact), 15kV (air)
- Wide operating temperature range: -20 to 60°C

Easy to Maintain

- Remote control Power Switch / Reset / LED
- Supports an external AMR system fan (12V)

Applications

Patrol Robots

Cobots

Forklifts
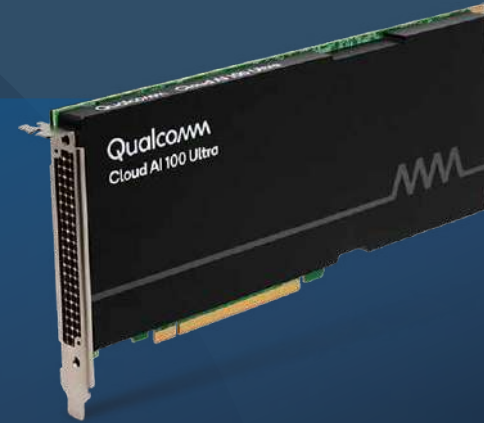
Cloud AI100 Ultra

Up to 64 AI cores, 128 GB LPDDR4X 870 TOPS

ubuntu

Superior AI performance

The Qualcomm AI100 Ultra offers 870 TOPS of AI processing. Built with up to 128GB of LPDDR4X memory and ECC support, the AI100 Ultra can handle LLM models with up to 100B parameters.
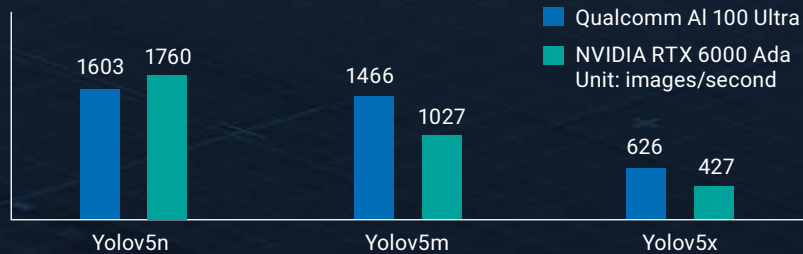
Exceptional Power efficiency

Qualcomm AI 100 Ultra achieves >1500 (tokens/s) in the Llama 7B model, and >110 (tokens/s) in the Llama 70B model, while maintaining TDP of only 150W.

Useful AI Toolkits

The Qualcomm AI Inference Suite includes pre-trained applications and libraries for Generative AI and Vision AI, simplifying the deployment of AI solutions such as chatbots, image generation, transcription, translation, and RAG.

Vision AI Inference

Legend:
- Qualcomm AI 100 Ultra
- NVIDIA RTX 6000 Ada
  Unit: images/second

Model	Qualcomm AI 100 Ultra	NVIDIA RTX 6000 Ada
Yolov5n	1603	1760
Yolov5m	1466	1027
Yolov5x	626	427

Testing condition:
Running popular object detection model by ONNX conversion under Ubuntu 22.04 on AIR-510 edge system (Kernal: 5.15, Batch size: 1, Data type: FP16, Resolution: 640 x 640)

LLM Inference

Average Token Latency
Unit: milliseconds

	Llama 7B	Llama 70B
	10	35
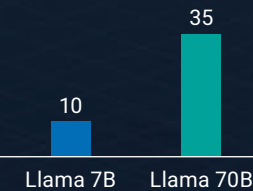
Throughput
Unit: tokens/second

	Llama 7B	Llama 70B
	1500	110
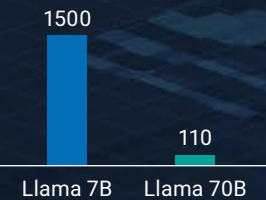
Source:
Qualcomm Cloud AI 100 UltraLarge-Language Model (LLM) inference Performance April 2024

AIR-510

AI Inferencing Edge Server

Phase In	Q4, 2024		Longevity	Q1, 2033

Edge server with best TCO AI computing power

Features

Best TCO Edge AI Server

- Powered by 14th Gen Intel® Core™ processor to provide up to 24 cores
- Supports DDR5 up to 192GB
- Offers 128GB DDR AI exclusive capacities and 288 TFLOPs (FP16) with Qualcomm Cloud AI 100 series

Remote Management and Connection

- Built-in DeviceOn for remote management
- Up to 3 x 2.5GbE LAN for smooth data streaming

Industrial-Grade System Certification

- ESD protection designed to sustain IEC Level 4 discharge
- EMC compliance with IEC-61000 certificate

Fast AI Deployment Edge Server

- Option to pre-load Ubuntu OS
- Shorter time-to-market based on Qualcomm optimized neural networks

Applications

LLM / Generative AI

Object Detection

Smart Cities

Domain-Driven
Software and Service Blueprint

Advantech, in collaboration with Qualcomm, integrates three foundational modules—value-enhanced OS, edge applications, and scalable cloud services—to empower next-generation edge AI and IoT ecosystems.

With a global team of over 1,000 software and technical design experts, Advantech excels in delivering customized solutions for BIOS, OS, and APIs, ensuring seamless integration and optimized system performance. Supported by a global network of 90 distribution services and R&D sites, Advantech provides efficient and innovative services.
By fostering early engagement and leveraging ecosystem partnerships, Advantech strengthens customer collaboration, enabling agile deployment, streamlined workflows, and scalable solutions tailored to the most demanding edge-to-cloud applications.

Learn about
Advantech AIoT Software & Services

Customer-Centric Support and Service

Experienced Experts

1,000+

Software and Technical Design Experts

Global Customer Base

$10 Million+

Cumulative Software Sales

Design-in Services

1,000+

Customized Software-Firmware-Hardware

BIOS
OS
API

Worldwide Network

90

Distribution Services and R&D Sites

Ecosystem Partnerships
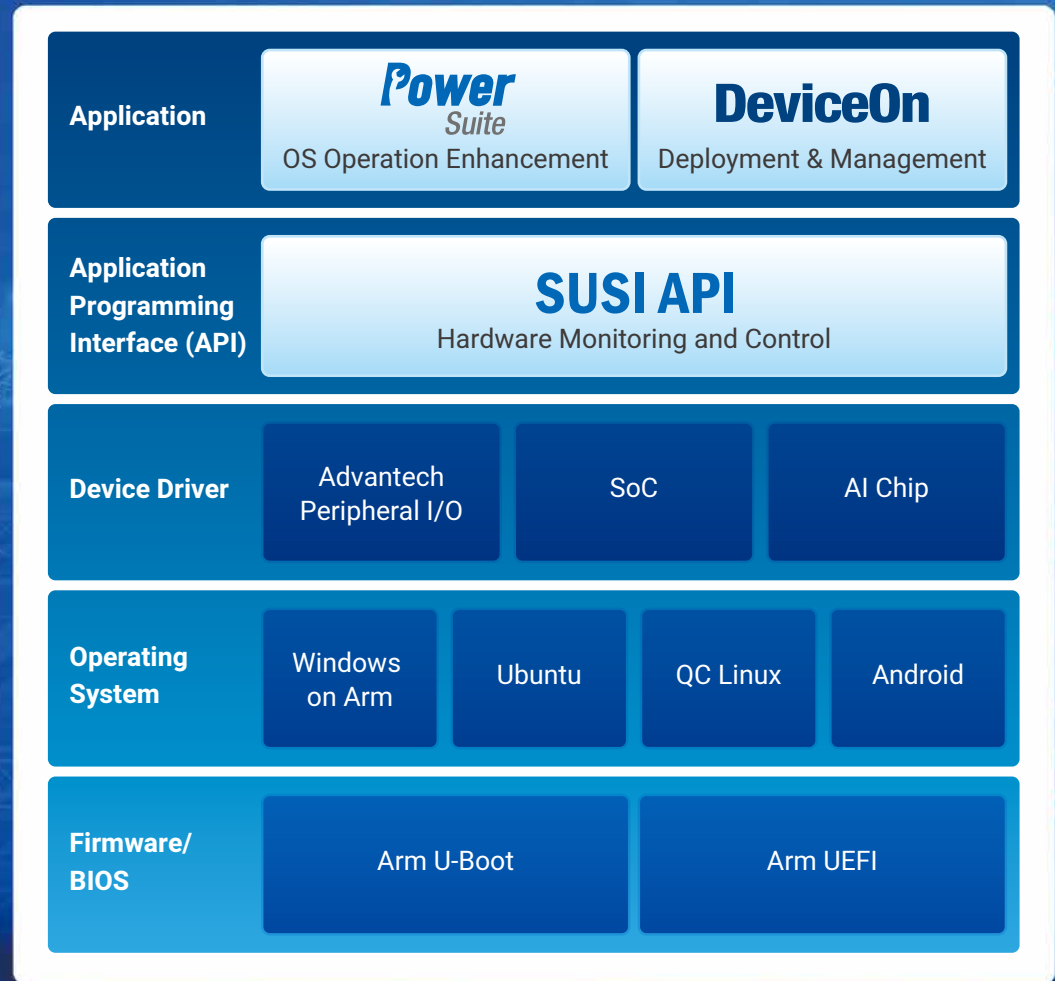
Early Engagement and Backend Support

Edge Computing & Edge AI Software Solutions

Advantech embedded software integrates foundational software development, device management, and cloud services to address the growing demands of edge AI and diverse industries.
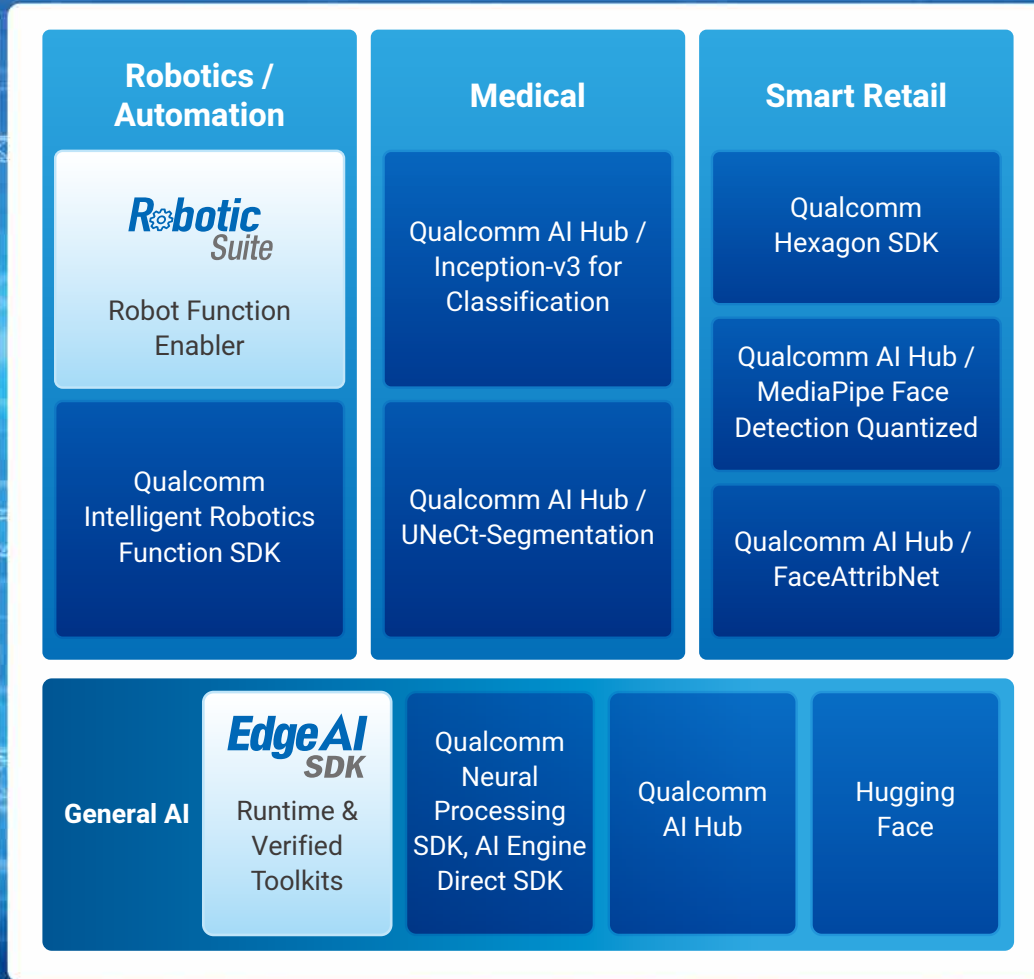
Advantech supports four major operating systems: Windows on Arm, Ubuntu, Qualcomm Linux, and Qualcomm Android, all tailored for embedded and industrial-grade applications. Each OS provides unique benefits, including long-term support, seamless integration, and scalability to meet diverse edge AI and IoT needs. Additionally, scalable cloud services bridge edge and cloud computing, offering robust tools for AI model deployment, migration, and system scalability.

Qualcomm's AI advancements and Advantech's expertise in embedded solutions empower industries like robotics and automation with intelligent, scalable tools. The Advantech Edge AI SDK seamlessly integrates with hardware, offering a compatible AI inference development platform, while the Advantech Robotic Suite enhances development by providing ROS2 nodes tailored to Advantech boards and peripherals. This collaboration accelerates robotic application integration, enabling businesses to achieve smarter, faster, and more efficient operations, setting new benchmarks in innovation.

Value-Enhanced OS

Application	**Power** *Suite* OS Operation Enhancement	**DeviceOn** Deployment & Management
Application Programming Interface (API)	**SUSI API** Hardware Monitoring and Control	
Device Driver	Advantech Peripheral I/O · SoC · AI Chip	
Operating System	Windows on Arm · Ubuntu · QC Linux · Android	
Firmware/ BIOS	Arm U-Boot · Arm UEFI	

Edge Applications

Robotics / Automation

Robotic Suite
Robot Function Enabler

Qualcomm Intelligent Robotics Function SDK

Medical

Qualcomm AI Hub / Inception-v3 for Classification

Qualcomm AI Hub / UNeCt-Segmentation

Smart Retail

Qualcomm Hexagon SDK

Qualcomm AI Hub / MediaPipe Face Detection Quantized

Qualcomm AI Hub / FaceAttribNet

General AI

Edge AI SDK
Runtime & Verified Toolkits

Qualcomm Neural Processing SDK, AI Engine Direct SDK

Qualcomm AI Hub

Hugging Face

Scalable Cloud Services

Microsoft Azure

Azure OpenAI

Azure Migration Service

Azure DevOps

Canonical MicroCloud

MicroK8s

Auto-healing on Instances

Scalable and Low-latency HA Cluster
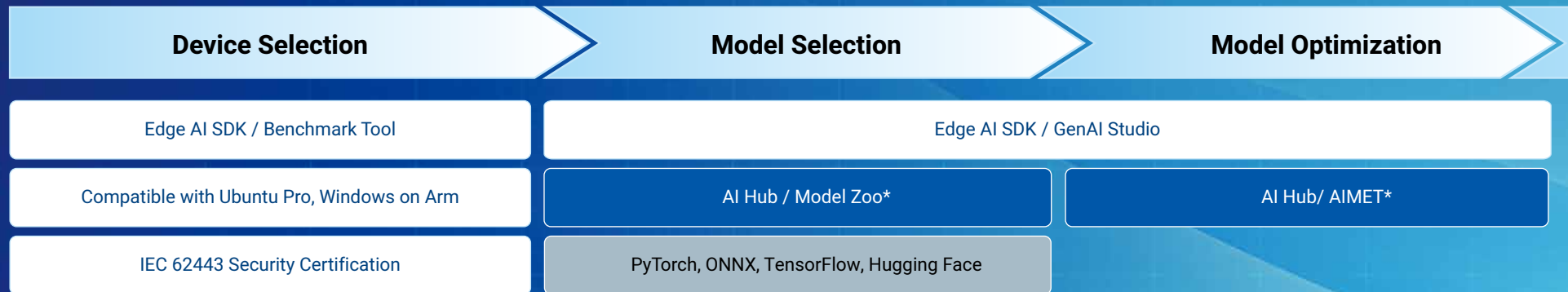
32

Optimized Collaboration to Empower Your AI Journey

We've simplified the complexities of edge AI development workflows through the seamless integration of Advantech and Qualcomm technologies. No matter the challenges or stage in development, our comprehensive tools and services provide tailored support to accelerate progress. From hardware and software compatibility to robust technical solutions, the collaboration between Advantech and Qualcomm empowers developers to deliver innovative edge AI applications efficiently and effectively.

Device Selection	Model Selection	Model Optimization
Edge AI SDK / Benchmark Tool	Edge AI SDK / GenAI Studio	
Compatible with Ubuntu Pro, Windows on Arm	AI Hub / Model Zoo*	AI Hub/ AIMET*
IEC 62443 Security Certification	PyTorch, ONNX, TensorFlow, Hugging Face	

- ■ Advantech Offerings
- □ Qualcomm Offerings
- ▨ Open Source

* AI Hub/Model Zoo: 100+ pretrained models using TensorFlow, PyTorch, ONNX or Keras

* AI Hub/AIMET: An open-source library for advanced model quantization and compression

Essential Runtime Environments and Tools Ready for Use

Industry-Focused Reference Examples Provided

End-to-End Support in Collaboration with Qualcomm

AI/ML Application

Model/App Deployment

AI/ML Application	Model/App Deployment
Edge AI SDK / Runtime SDK	Edge AI SDK / DeviceOn
Edge AI SDK / Workflow Navigator	Acronis for Backup, Recovery
Edge AI SDK / GenAI Studio	Trellix for Cyber Security
Neural Processing SDK, AI Engine Direct SDK	Azure for MLOps Integration
Intelligent Robotics SDK	FoundriesFactory for Linux Device Mgmt.
Intelligent Multimedia SDK with GStreamer plugins	
Hexagon SDK for Hexagon DSP Apps	
Reference Blueprints & Microservices by IoTSolutions Framework	

Gen AI

Robotics

Medical

Smart Retail

Smart Manufacturing

Industrial Wireless Solution
Enabling Seamless Connectivity for AIoT

New Generation Technology Provider
- Wi-Fi 7
- 5G Redcap
- MCU+Wi-Fi 6
- LTE Cat. 1bis

Longevity Support Industrial-Grade Products
- 5-year product lifecycle
- -40~85°C temperature support

Wireless System Integration
- Antenna design
- FW and driver support

RF Testing & Certification Services
- Global RF certification
- Wireless performance testing

ADVANTECH
AIWireless
Advantech Industrial Wireless

AIW 100 Series
Wi-Fi

AIW 200 Series
GNSS / GPS

AIW 300 Series
Cellular

AIW 400 Series
Bluetooth

AIW 500 Series
Antenna

Wireless Market Focus and Star Solutions

Advantech Industrial Wireless (AIW) is a leading wireless solution provider empowering edge devices by connecting them via wireless technologies for AIoT. AIW offers diverse module and antenna solutions for different vertical applications and focuses on wireless system integration based on their AIW Design-In service.

Agriculture

Medical

EV Chargers

Transportation

Retail

AMR

Smart Cities

Wi-Fi 6E / Wi-Fi 7

WiFi 6E   WiFi 7

AIW-100 Series

- Well-established standard
- High indoor network coverage
- High-speed connection
- Made for industrial applications

AIW-170   AIW-173

Throughput Enhancement	Latency Improvement	Ready-to-Go Certificate
Max speed up to 46.4Gbps to satisfy application areas like medical and Edge AI with demand for massive real-time data transmission.	Additional 6Ghz bandwidth and puncturing help lower latency to 1ms and enhance stability.	AIW products have global certificates to help customers speed up the certification process and reduce cost.

4G LTE / 5G NR

4G LTE   5G

AIW-300 Series

- Wide spectrum efficiency
- High traffic capacity
- Fastest connection speeds
- Excellent longevity support

AIW-344   AIW-356

High-Speed Connectivity	Latency Improvement	AIW Tool Support
5G technology brings new bandwidth power for applications with 4K/8K video demands.	Average latency via 4G is 50ms, and through 5G the latency can be lowered to 1ms and provide more connections.	The AIW tool simplifies installation and provides a record of any disconnection and reconnection.

Future-Driven Solution:

The Rise of Wi-Fi 7 Connectivity

Extremely low latency -1ms

Multi-Link operation and DBDC support

Qualcomm Wi-Fi 7 solution (-40-85°C)

FCC/CE/IC/ TELEC/NCC/RCM certified

AIW-173 Series

AGV & AMR

Medical

Edge AI

Product Highlights

Qualcomm WCN7851
2x2 2.4/5/6GHz 11b/g/n/a/ac/ax/be WLAN

Various Form Factor Support
M.2 2230 E-Key / Mini-PCIe / LGA 1620

Multi-OS Support on x86 & Arm
Windows 11 & Ubuntu 22.04

Dual Band Simultaneous (DBS)
2.4 GHz + 5GHz or 6GHz

Industrial-Grade Temperature Range
Operating temperate range: -40~85°C

Global Certification
FCC/CE/IC/TELEC/NCC/RCM/KCC/ANATEL

Design-In Services

AIW is revolutionizing IoT development with its Wireless Design-In Services, set to transform wireless connectivity for IoT devices. Through collaborations with strategic partners, testing is sped up and manufacturing is simplified. It comprises four parts: solution assessment, RF and antenna design, system integration, and certification acquisition. AIW is especially impactful in RF design, testing, and certification.

Leading
Industrial Wireless Solution Provider

Robust RD Capability
for Design-In Service

Strong Partnership
for A+ Products & Speed to Market

Antenna Customization Service
• Requirement assessment, antenna placement evaluation
• Throughput optimization, radiation pattern and isolation testing

Global Certification Service
• Cost reduction via early assessment and wireless kit selection
• Pre-test and troubleshooting during the certification process

Gen AI-Enabled Interactive Kiosks

The retail sector is evolving to meet changing consumer preferences and dietary trends, driven by digitalization and automation. Managing inventory and reducing food waste present both challenges and opportunities. Enhancing customer experience through personalized service is essential, while balancing labor costs and efficiency with automation will shape the future of retail.
By seamlessly integrating smart technologies with Gen AI, retailers can enhance efficiency and customer satisfaction while optimizing operational processes.
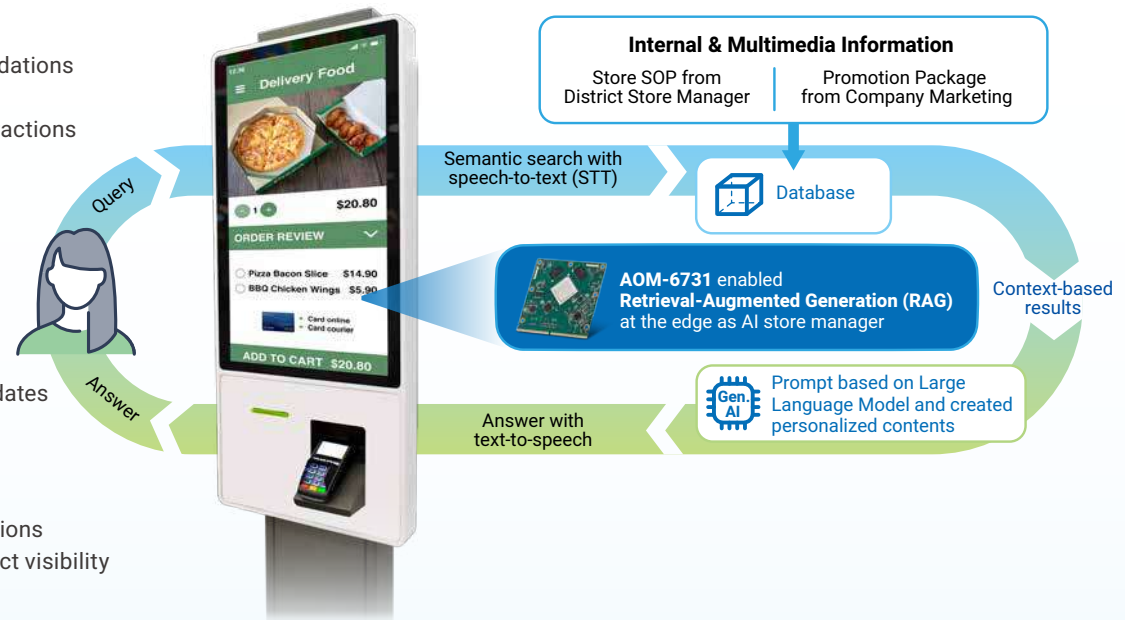
Challenges & Market Demands

- Real-time Gen AI is required for quick, personalized services and recommendations
- Flexible and scalable systems are needed to support peripheral integration
- Multi-display support is essential for both product showcases and user interactions
- Data security is crucial for online transactions and customer privacy

Solutions & Technologies

- AOM-6731, powered by Qualcomm Snapdragon X Elite, offers up to 45 TOPS with Windows 11 Copilot, enabling intelligent retail applications.
- High-speed connectivity: 4 × PCIe Gen3.0 x1, 2 × USB 3.2 Gen 2, 4 × USB 2.0
- Multi-display support: eDP (5120 × 2880 @ 60Hz), DP (4096 × 2160 @ 60Hz)
- Long-term Windows support: 10+ years of maintenance & security patch updates

Key Benefits

- Offline Copilot AI assistant enables quick responses to user needs
- Comprehensive multi-IO support ensures compatibility with diverse applications
- Seamless multi-display support enhances customer engagement and product visibility
- A mature Windows environment facilitates efficient software development

Query

Answer

Semantic search with speech-to-text (STT)

Internal & Multimedia Information

Store SOP from District Store Manager | Promotion Package from Company Marketing

Database

AOM-6731 enabled
Retrieval-Augmented Generation (RAG)
at the edge as AI store manager

Context-based results

Gen.AI
Prompt based on Large Language Model and created personalized contents

Answer with text-to-speech

Robotic Lawn Mowers

Robotic lawnmowers are gaining popularity as they provide time optimization, labor reduction, and automation of repetitive tasks. These battery-powered autonomous machines are equipped with specialized sensors, cameras, and navigation systems to identify mowing areas and avoid obstacles. They offer convenience, precision, and eco-friendliness, enabling autonomous operation and ensuring a consistently well-maintained lawn.

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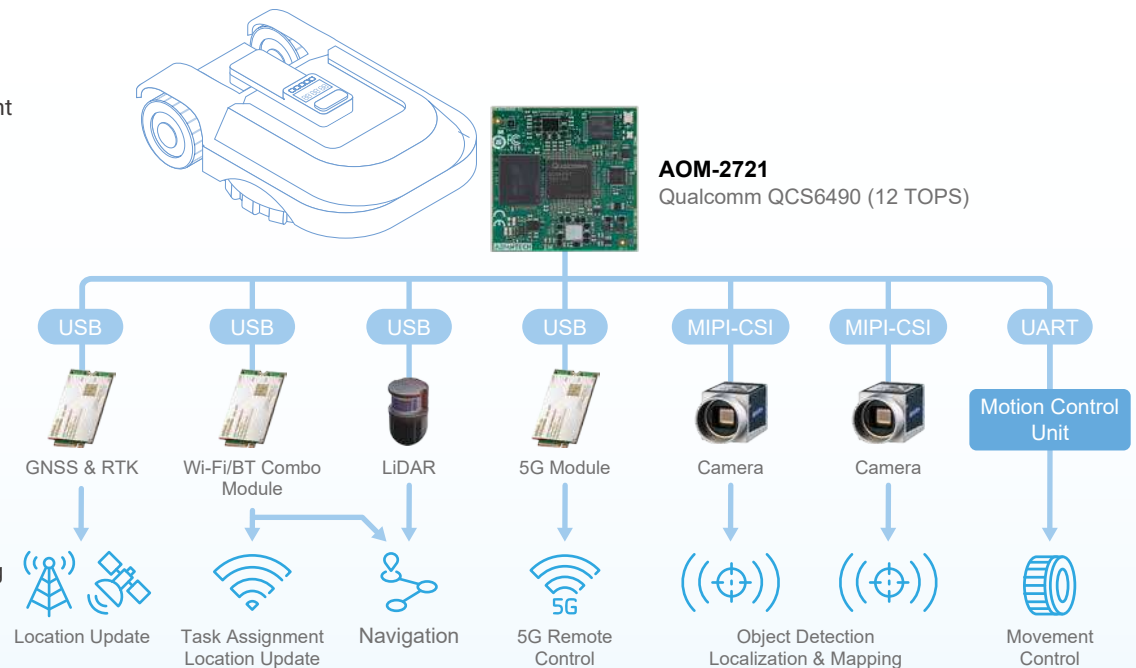E 86°55'31.15

Challenges & Market Demands

- Lower power requirements for extended battery-powered operation
- On-device AI computing for instant machine vision
- GNSS and 5G connectivity for the low-latency fleet lawnmower management
- High-vibration tolerance for outdoor, ruggedized environments

Solutions & Technologies

- Solder-on, ultra-thin open standard module
- Powered by Qualcomm QCS6490 (8 cores, up to 2.7 GHz, 6.5 watts)
- On-device machine learning up to 12 TOPS
- Equipped with ISP and VPU for 4K60 video decoding and pre-processing
- Supports Qualcomm GNSS and 5G technologies via optional M.2 modules
- Compatible with Ubuntu OS and Advantech Robotic Suite

Key Benefits

- High integration from processing, connectivity, to software in a single chip to streamline development efforts
- Optimal performance and efficiency with advanced Edge-AI and computing at lower power
- Space efficiency and enhanced reliability for mobile edge devices

AOM-2721
Qualcomm QCS6490 (12 TOPS)

USB	USB	USB	USB	MIPI-CSI	MIPI-CSI	UART
GNSS & RTK	Wi-Fi/BT Combo Module	LiDAR	5G Module	Camera	Camera	Motion Control Unit
Location Update	Task Assignment Location Update	Navigation	5G Remote Control	Object Detection Localization & Mapping		Movement Control

Surgery Robot Video System

With advancements in wireless technology, real-time video streaming of surgical procedures has become increasingly popular. These streams can be shared with more than four devices, allowing medical teams to stay updated on the latest status and provide instant assistance to surgeons during operations. This technology has become a mainstream solution for surgical training and medical AR/VR applications.

The AIW-170BQ functions as both an access point (AP) and client, enabling stable and reliable wireless connections for critical medical tasks.

Challenges & Market Demands

· Limited space and budget constraints for dual Wi-Fi module designs
· Antenna design optimization for optimal performance
· Driver integration challenges in Linux on Arm-based systems

Solutions & Technologies

· 320MHz bandwidth and 6GHz frequency enable ultra-high-speed, low-latency multi-device connections
· Driver integration and firmware optimization provided by the AIW firmware team
· Customized antenna design & performance testing for optimized connectivity

Key Benefits

· Dual-band, dual-concurrent support with a single AIW-170BQ module
· Reduced wireless development time and cost through streamlined integration
· Low-latency 4K video streaming for multi-client medical applications

Wi-Fi 6

AIW-170
Wi-Fi 6E
M.2 2230 E-Key

Product Selection Guide

Computer On Modules ———

Model Name	AOM-2721	AOM-5721	AOM-6731	SOM-6820
Form Factor	OSM 1.1 Size-L	SMARC 2.2 Half	SMARC 2.2 Full	COM Express Compact Type6 R3.1
Processor	Dragonwing QCS6490/QCS5430	Dragonwing QCS6490/QCS5430	Snapdragon X Elite	Snapdragon X Elite
NPU	Hexagon NPU up to 12 TOPS	Hexagon NPU up to 12 TOPS	Hexagon NPU up to 45 TOPS	Hexagon NPU up to 45 TOPS
Memory	LPDDR5 8GB	Up to 16GB LPDDR5 (on-board)	LPDDR5X 16GB	LPDDR5X up to 64GB
Display	1 x eDP, 1 x DP	1 x 4-Lane MIPI DSI/HDMI, 1 x eDP, 1 x DP	1 x eDP, 1 x DP	1 x eDP/LVDS, 3 x DP
I/O	2 x GbE, 1 x USB 3.2 Gen1, 2 x PCIe x1, 1 x PCIe x2, 2 x 4-Lane MIPI-CSI	1 x PCIe Gen3 x2, 2 x PCIe Gen 3 x1, 1 x USB 3.2 Gen 1, 2 x GbE	1 x GbE, 2 x USB 3.2 Gen2, 2 x PCIe x1, 1 x PCIe x2, 3 x 4-Lane MIPI-CSI, 1 x 2-Lane MIPI-CSI	Up to 16 lanes PCIe, 4x SATA, 4x USB3, 1x 1GbE
Operating Temp.	-20 ~ 70°C	0 ~ 60°C / -20 ~ 70°C	0 ~ 60°C	0~60°C / -40~85°C
Operating System	Yocto, Windows 11 IoT, Ubuntu Pro, Android	Yocto, Windows 11 IoT, Ubuntu Pro, Android	Windows 11 Pro	Windows 11 Pro
Dimensions	45 x 45 mm	82 x 50 mm	82 x 80 mm	95 x 95mm

Single Board Computers ———

Model Name	MIO-5355
Form Factor	3.5" SBC
Processor	Dragonwing QCS6490/QCS5430
Memory & Storage	8GB LPDDR5, 128GB UFS or eMMC
Display	LVDS (*Otp. eDP), HDMI
I/O	2 x GbE, 6 x USB, 4 x COM, 2 x MIPI-CSI, 1 x Combo Audio Jack, 1 x 8-bit GPIO
Expansion	1x M.2 E-Key 2230, 1x M.2 B-Key 2280, 1x M.2 B-Key 3052
Operating Temp.	0 ~ 60°C / -20 ~ 70°C
Operating System	Windows 11 IoT, Ubuntu Pro
Dimensions	146 x 102 mm

Edge AI Systems

Model Name	DS-011	AIR-055
Processor	Dragonwing QCS6490/ QCS5430	Dragonwing IQ9075M
Memory	PDDR5 8GB	LPDDR5 up to 36GB
Display	2 x HDMI	2 x HDMI, 2 x DP, 2 x USB-C with DP ALT mode
I/O	2 x GbE, 2 x USB 3.2, 1 x COM, 1 x Console, 1 x USB-C, 1 x Micro-SD, 1 x Audio Jack, 2 x GMSL (optional)	2 x USB 3.2, 2 x USB-C (DP ALT Support), 2 x USB 2.0, 2 x 2.5 GbE, 3 x COM, 1 x DIO, 2 x CAN, 2 x MIPI CSI USB-C (GMSL Option), 1 x Headphone Combo Jack, 1 x Micro SD
Expansion	1 x M.2 M-Key 2280, 1 x M.2 E-Key 2230, 1 x M.2 B-Key 3042	1 x M.2 M-Key 2280, 1 x M.2 E-Key 2230, 1 x M.2 B-Key 3052
Operating Temp.	0 ~ 40°C	-20~60°C
Operating System	Ubuntu Pro	Yocto
Dimensions	180 x 190 x 23 mm	190 x 174 x 60 mm

Development Kits

AOM-2721 OSM Development Kit Based on Qualcomm Dragonwing QCS6490

Preloaded with Windows 11 IoT Enterprise & Yocto Linux

- Octa-Core Armv8 processors
- Delivering up to 12 TOPS

AOM-2721 OSM Development Kit Based on Qualcomm Dragonwing QCS6490

Preloaded with Edge Impulse & Yocto Linux

- Octa-Core Armv8 processors
- Delivering up to 12 TOPS

AOM-6731 SMARC Development Kit Based on Qualcomm Snapdragon X Elite

Preloaded with Windows 11 IoT Enterprise

- 12x Qualcomm® Oryon™ processors
- Delivering up to 45 TOPS

4G LTE CAT6

Model Name	AIW-344			AIW-346	
Part Number	AIW-344FQ-N01	AIW-344FQ-E02	AIW-344FQ-J01	AIW-346FQ-N01	AIW-346FQ-N02
Chipset	Qualcomm MDM9X07	Qualcomm MDM9X07	Qualcomm MDM9X07	Qualcomm MDM9X07	Qualcomm MDM9X07
Radio Technology	LTE Cat.4 + GPS	LTE Cat.4 + GPS	LTE Cat.4 + GPS	LTE Cat.4 + GPS	LTE Cat.4 + GPS
Form Factor	Full-size Mini-PCIe	Full-size Mini-PCIe	Full-size Mini-PCIe	Full-size Mini-PCIe	M.2 3052 B-Key
SIM Slot	No	No	No	Yes	Yes
Signal Protocol	USB 2.0	USB 2.0	USB 2.0	USB 2.0	USB 2.0
Downlink/Uplink	150Mbps / 50Mbps	150Mbps / 50Mbps	150Mbps / 50Mbps	150Mbps / 50Mbps	150Mbps / 50Mbps
Frequency Band	LTE FDD: Band 2,4,5,12,13,17,66,71 WCDMA: Band 2,4,5	FDD-LTE: Band 1,3,5,7,8,20,28 TDD-LTE: Band 38,40,41 HSPA / UMTS:Band 1,5,8 GSM / GPRS / EDGE850 / 900 / 1800MHz	LTE FDD: band1,3,8,11,18, 19,21,26,28 LTE TDD: Band41 WCDMA/HSPA+: Band1,6,8,19	LTE bands: 2 / 4 / 5 / 12 / 13 / 14 / 66 / 71 WCDMA bands: 2/4/5	LTE bands: 2 / 4 / 5 / 12 / 13 / 14 / 66 / 71 WCDMA bands: 2/4/5
Operating Temperature	Extended: -40°C ~ 85°C	Extended: -40°C ~ 85°C	Extended: -40°C ~ 85°C	-30 ~ 80°C	-30 ~ 80°C
Support Area	-	EU, TW, Australia, Brazil	JP	US	US
Antenna Information	3 x MHF1 connectors	3 x MHF1 connectors	3 x MHF1 connectors	3 x MHF1 connectors	3 x MHF1 connectors
Recommended Antenna	AIW-531	AIW-531	AIW-531	AIW-531	AIW-531

5G NR FR1

Model Name	AIW-356			
Part Number	AIW-356DQ-N01	AIW-356DQ-E01	AIW-356DQ-C01	AIW-356DQ-JK1
Chipset	Qualcomm SDX62	Qualcomm SDX62	Qualcomm SDX62	Qualcomm SDX62
Radio Technology	5G FR1 + GPS	5G FR1 + GPS	5G FR1 + GPS	5G FR1 + GPS
Form Factor	M.2 3052 B-Key	M.2 3052 B-Key	M.2 3052 B-Key	M.2 3052 B-Key
SIM Slot	No	No	No	No
Signal Protocol	USB 3.1	USB 3.1	USB 3.1	USB 3.1
Downlink / Uplink	Max DL peak rate 3.47 Gbps, Max UL peak rate 555 Mbps	Max DL peak rate 3.2 Gbps, Max UL peak rate 555 Mbps	Max DL peak rate 2.4 Gbps, Max UL peak rate 555 Mbps	Max DL peak rate 3.2 Gbps, Max UL peak rate 555 Mbps
Frequency Band	NSA:n2/5/12/25/30/41/66/71/77 SA:n2/5/12/14/25/30/41/48/66/70/71/77 TDD-LTE: Band 41/48/46 (LAA) FDD-LTE: Band 2/4/5/12/13/29/30/66/71	NSA: n1/3/5/7/8/20/28/38/40/77/78 SA:n1/3/5/7/8/20/28/38/40/41/75/76/77/78 TDD-LTE:Band 38/40/41/42/43 FDD-LTE: Band1/3/5/7/8/20/28/32 WCDMA: Band 1/5/8	NSA:n41/78/79 SA:n1/28/41/78/79 TDD-LTE:Band 34/38/39/40/41 FDD-LTE:Band 1/3/5/8 WCDMA: Band 1/8	NSA: n1/3/28/41/77/78/79 SA: n1/3/7/8/28/41/77/78/79 TDD-LTE: Band 39/41/42 FDD-LTE: Band 1/3/5/7/8/18/19/26/28
Operating Temperature	Extended: -40°C ~ 85°C	Extended: -40°C ~ 85°C	Extended: -40°C ~ 85°C	Extended: -40°C ~ 85°C
Support Area	-	EU, Brazil	China	JP, South Korea
Antenna Information	4 x MHF4 connectors	4 x MHF4 connectors	4 x MHF4 connectors	4 x MHF4 connectors
Recommended Antenna	AIW-532	AIW-532	AIW-532	AIW-532

Wi-Fi and Bluetooth Combo

Antennas

Model Name	AIW-170BQ	AIW-171HQ
Chipset	WCN6856	WCN6856
Wireless Generation	Wi-Fi 6E+BT 5.3	Wi-Fi 6E+BT 5.3
Form Factor	M.2 2230 E-Key	Half-Size Mini-PCIe
Interface	Wi-Fi: PCIe BT: USB	Wi-Fi: PCIe BT: USB
Antenna Information	2 x MHF4 connectors	2 x MHF1 connectors
Advanced Security	WPA / WPA2 / WPA3	
Operating Temperture Range	-40 ~ 85°C	
OS Support*	Windows / Linux	Windows / Linux
Maximum Data Rate**	1200Mbps	
Certification	FCC / CE / IC / TELEC / NCC / KC	FCC / CE / IC
Recommended Antenna	AIW-512	

Model Name	AIW-512	AIW-513	AIW-532	AIW-533
Antenna Type	Dipole	Dipole	Dipole	Dipole
Frequency	2.4-2.5GHz, 5.15-5.85GHz 5.925-7.125GHz	2.4-2.5GHz, 5.15-5.85GHz 5.925-7.125GHz	699~960MHz, 1710~2700MHz, 3300~5000MHz, 5150~5850MHz	0.6-6GHz
Antenna Peak Gain	2.87dBi @2.4GHz 3.11dBi @5GHz 3.22dBi @6GHz	2.06dBi @2.4-2.5GHz, 4.16dBi @5.15-5.85GHz, 4.61dBi @6-7.125GHz	1.78dBi @699~960MHz, 3.27dBi @1710~2700MHz, 0.18dBi @3300~5000MHz, 4.02dBi @5150~5850MHz	2dBi @617~960MHz, 2.6dBi @1450~2700MHz, 3.5dBi @3300~5000MHz, 3.7dBi @5150~5850MHz
Length (cm)	11.1 x 1.0	23 x 2.2	13 x 2.5	13.4 x 1.9
Connector	RP-SMA male	RP-SMA male	SMA male	SMA male
IP Level	IP55	IP65	-	-
Operating Temperature	-10 ~ 55°C	-40 ~ 70°C	-25 ~ 70°C	-30 ~ 65°C

* Some features are only suported in Windows 11 and Windows 7 is no longer on the ADV support list. Linux support depends on the kernel version.
**Maximum datarate is based on the theoretical value of Wi-Fi technology.

ADVANTECH
Enabling an Intelligent Planet

Est. 1983

Headquarters: **Taipei, Taiwan**

INDUSTRIES SERVED

Industry 4.0, Industrial IoT, Embedded Computing, Medical, Retail, Logistics

WORLD'S LARGEST IPC COMPANY

Advantech IPC WW Revenue Share

41%

● Advantech ● Other IPC Companies

Source: OMDIA – Market Share estimates for Industrial PCs: World, 2024 Edition

$1.87B **2024 REVENUE** (USD)

$10.2B **MARKET CAP (USD)** (March, 2025)

1.8 MILLION+ sq. ft.

MANUFACTURING PLANTS

Linkou, Taiwan

- 9 SMT lines, 16 system lines
- Engineering sample services
- Complex product lines
- Flexible & quick production

Kunshan, China

- 12 SMT lines, 13 system lines, 6 chassis lines
- Chassis design & production
- Mature product lines
- Cost-effective production

Nogata, Japan

- 4 SMT lines, 1 system line
- Japan design center, CTOS service, logistics center, repair center

KEY ECO-SYSTEM PARTNERS

intel. Microsoft NVIDIA Micron

AMD Canonical Ubuntu TEXAS INSTRUMENTS

arm NXP Qualcomm MEDIATEK

and more...

HONORS & AWARDS

- No.5 in Best Taiwan Global Brands
- No.17 in Top 50 Global Automation Vendors
- No.9 in Top 100 Industrial IoT Companies
- Red Dot Product Design Award
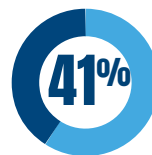- iF Product Design Award

Interbrand

CONTROL

IoT ONE

reddot design award

iF

WORLDWIDE OFFICES

Manufacturing 3
On-site service 4
Design centers 11
CTOS centers 16
Repair centers 17
Logistics centers 20

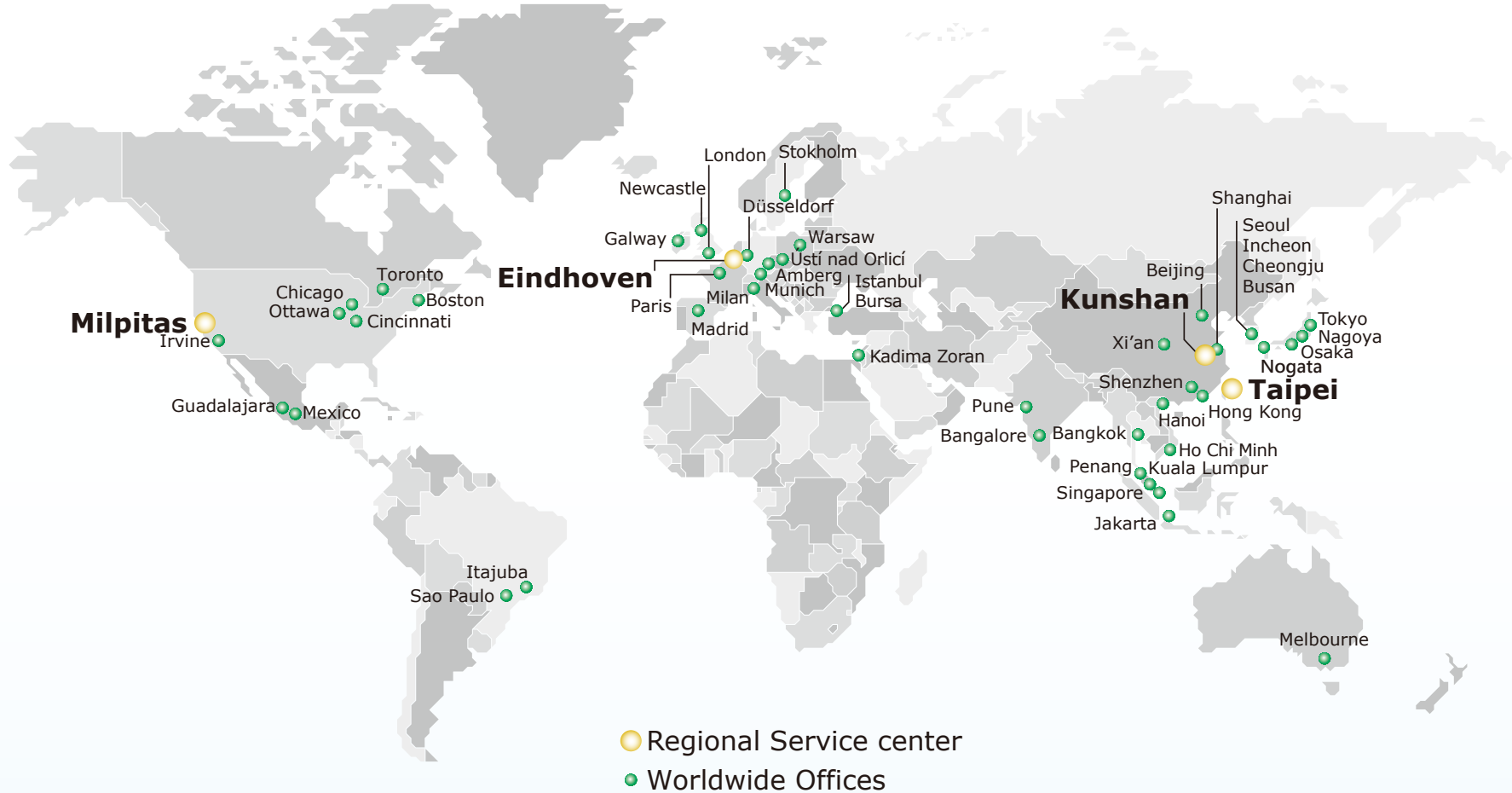More than 90 offices globally!

8800+ **EMPLOYEES**

QUALITY SYSTEMS IN PLACE

- ISO9001
- ISO14001
- ISO13485
- ISO17025
- ISO27001
- ISO45001
- TL9000
- ISO50001
- RoHS
- WEEE
- SONY GP
- REACH

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Ottawa
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Mexico
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Shanghai
Seoul
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Cheongju
Busan
Beijing
Kunshan
Tokyo
Nagoya
Xi'an
Osaka
Nogata
Shenzhen
Taipei
Hong Kong
Pune
Hanoi
Bangalore
Bangkok
Ho Chi Minh
Penang
Kuala Lumpur
Singapore
Jakarta

Melbourne

○ Regional Service center
● Worldwide Offices

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Regional Service & Customization Centers

| China | Kunshan
86-512-5777-5666 | Taiwan | Taipei
886-2-7732-3399 | Netherlands | Eindhoven
31-40-267-7000 | USA | Milpitas, CA
1-408-519-3800 |

Worldwide Offices

Asia Pacific

Taiwan
Toll Free	0800-777-111
Taipei	886-2-7732-3399
Taichung	886-4-2372-5058
Kaohsiung	886-7-392-3600

China
Toll Free	800-810-0345
Beijing	86-10-6298-4346
Shanghai	86-21-3632-1616
Shenzhen	86-755-8212-4222
Kunshan	86-512-5777-5666
Hong Kong	852-2720-5118

Asia Pacific

Japan
Toll Free	0800-500-1055
Tokyo	81-3-6802-1021
Osaka	81-6-6267-1887
Nagoya	81-052-291-4860
Nogata	81-949-22-2890

Korea
| Toll Free | 080-363-9494/5 |
| Korea HQ (Seoul) | 080-363-9494/5 |

Singapore
| Singapore | 65-6442-1000 |

Malaysia
| Kuala Lumpur | 60-3-7725-4188 |
| Penang | 60-4-537-9188 |

Thailand
| Bangkok | 66-02-2488306-9 |

Vietnam
| Hanoi | 84-24-3399-1155 |
| Hochiminh | 84-28-3836-5856 |

Indonesia
| Jakarta | 62-21-751-1939 |

Australia
| Toll Free | 1300-308-531 |
| Melbourne | 61-3-9797-0100 |

India
| Bangalore | 1-800-425-5071 |
| Pune | 91-94-2260-2349 |

Europe

Netherlands
| Eindhoven | 31-40-267-7000 |

Germany
Munich	49-89-12599-0
Düsseldorf	49-2103-97-885-0
Amberg	49-9621-9732-100

France
| Paris | 33-1-4119-4666 |

Italy
| Milan | 39-02-9544-961 |

UK
| Newcastle | 44-0-191-262-4844 |
| London | 44-0-208-317-1380 |

Spain
| Madrid | 34-91-668-86-76 |

Sweden
| Stockholm | 46-0-864-60-500 |

Poland
| Warsaw | 48-22-31-51-100 |

Czech Republic
| Ústí nad Orlicí | 420-465-524-421 |

Ireland
| Galway | 353-91-792444 |

Americas

United States
Cincinnati	1-888-576-9668
Milpitas	1-408-519-3800
Irvine	1-800-866-6008
Ottawa	1-800-346-3119
Chicago	1-513-742-8895
Boston	1-800-866-6008

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Itajuba	55-35-3623-5949

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Toll Free	1-800-467-2415
Mexico City	1-800-467-2415
Guadalajara	52-33-3169-7670

Middle East and Africa

Israel
| Kadima-Zoran | 072-2410527 |

Turkiye
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