

Qualcomm Dragonwing™

IQ-2390 Processor



The Dragonwing IQ-2390 processor is built as a highly integrated platform for HMIs, PLCs, gateways, machine vision, and building and energy control. It combines quad-core processing, vision, on-device AI, TSN networking, and a real-time RISC-V MCU, helping consolidate system functions, reduce complexity and cost, and support long-lifecycle industrial deployments at the edge.

Industrial systems are converging functions formerly split across processors and controllers. PLCs, HMIs, gateways, machine-vision systems, building controllers, and energy equipment increasingly need application software, vision, local AI, deterministic control, and industrial networking within tight power, thermal, cost, lifecycle, form-factor, and cybersecurity constraints.

The Dragonwing IQ-2390 processor brings these workloads together on one architecture. Quad-core application processing supports application and HMI workloads, while graphics, vision, AI, and real-time resources enable concurrent operation. A RISC-V microcontroller handles deterministic control and sensor tasks. Dual Gigabit Ethernet with Time-Sensitive Networking supports time-aware communications. Integrated ISP and video processing enable vision-based systems.

Yocto Linux, Ubuntu, Android, and RTOS/ Zephyr provide software flexibility. Industrial packaging, extended temperature operation, hardware ECC, security features, and 10-year supply longevity support reliability, lifecycle needs, and Cyber Resilience Act (CRA) readiness.

Highlights

Build compact industrial systems

Bring HMI, vision, control, and gateway functions together on one platform to support space- and cost-constrained industrial designs.



Consolidate IT and OT workloads

Run application software, machine vision, AI analytics, industrial networking, and real-time control concurrently, helping reduce system partitioning and integration complexity.



Reduce BOM and system complexity

Integrated ISP, AI acceleration, RISC-V MCU, Gigabit Ethernet with TSN, and audio processing can reduce external components, board area, power, and integration effort.



Accelerate development and software reuse

Carry software and engineering investments across designs, with evaluation hardware and ecosystem resources that aim to streamline the path from prototype to production.

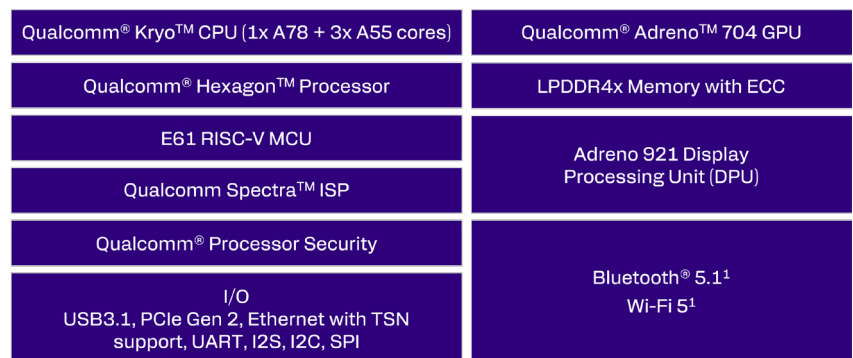


Support security and CRA readiness

Hardware-backed security features, device identity and key protection, software support, and long-term maintenance capabilities provide a foundation for product security strategies needed as manufacturers prepare for requirements such as CRA.



Block Diagram



¹Supported with a companion module





Target Applications

- Micro and small PLCs (Programmable Logic Controllers)
- Industrial HMI (Human-Machine Interface)
- Industrial gateways
- CNC machines (Computer Numerical Control)
- Machine vision systems
- Industrial scanners
- Building control systems
- Energy and EVSE (Electric Vehicle Supply Equipment) systems

Features

- **Run demanding application and HMI workloads** with one Arm Cortex-A78 core and three Arm Cortex-A55 cores, delivering approximately 33K DMIPS of application compute.
- **Handle deterministic tasks independently** with a 600 MHz RISC-V E61 microcontroller for time-sensitive control, sensor processing, and other real-time functions.
- **Connect time-aware industrial networks** with dual Gigabit Ethernet and Time-Sensitive Networking for coordinated, deterministic Ethernet communications.
- **Build vision directly into the system** with dual ISP support for two 13 MP sensors or one 25 MP sensor at 30 fps, plus 1080p video processing.
- **Run local machine-learning workloads** with 1.1 INT8 TOPS of AI acceleration while preserving application CPU resources for higher-level software.
- **Deliver responsive HMI graphics** with integrated 3D graphics and Full HD 60 fps display support for operator panels and control systems.
- **Develop across application and real-time environments** with Qualcomm® Linux® software stack based on Yocto, Android, and RTOS/Zephyr, supported by BSPs, tools, documentation, and development hardware.
- **Integrate industrial peripherals and expansion** using PCIe Gen2, USB 3.1, USB 2.0, serial, audio, and other system interfaces.
- **Design for long-life deployments** with an industrial 0.8 mm ball-pitch package, -30°C to 115°C operation, hardware ECC, security features, and 10-year supply longevity.
- **Support CRA readiness** with hardware-backed security features, software maintenance, and lifecycle support that help manufacturers address product security, vulnerability handling, updates, and long-term support requirements.

Ordering Information

Product	Part Numbers
IQ-2390	IQ2390-AB

Specifications

Dragonwing IQ-2390	
SoC	IQ-2390
Part Number	IQ2390-AB
CPU	1x Arm Cortex-A78 @ 1.9 GHz and 3x Arm Cortex-A55 @ 1.8 GHz
GPU	Adreno 704 @ 1.1 GHz
AI Performance	Qualcomm® Hexagon™ @ up to 1.1 INT8 TOPS
Real-Time Cores	RISC-V MCU: SiFive E61 @ 600MHz, 768 KB memory
Memory	2x 16 LPDDR4X @ 1.8 GHz
Addressable Memory	512 KB L3 cache ECC Up to 8GB
Audio DSP	Hexagon V66 DSP, 1.1 GHz, 512 KB Cache, 2x HVX
Display Support	Adreno DPU 921, FHD @60 Hz
Display Interfaces	1x MIPI DSI (4-Lane)
Video Decode	1080p @30 fps; H.264, H.265 (HEVC), VP9
Video Encode	1080p @30 fps; H.264, H.265 (HEVC)
Camera	Up to 2 cameras
	2x ISP, max 25 MP at 30 fps ZSL; 2x 4-lane CSI
PCIe	1x PCIe Gen2 (1-Lane)
USB	1x USB 3.1 Type-C/Micro USB+ 1x USB 2.0 Type-C
Ethernet / TSN	2x GbE w/ TSN
Other I/O	10x QUP_SE ;155x GPIO (UART/I2C/SPI)
Storage	eMMC 5.1, SD 3.0
Wi-Fi/Bluetooth/WAN	External WLAN attach through SDIO/PCIe
OS	Android, Yocto Linux, Ubuntu, Zephyr (MCU)
Package (chip)	18.4 mm × 21.3 mm x 1.82 mm 0.8 mm ball pitch
Temp. Range (Tj)	-30°C to +115°C
Longevity	Guaranteed 10 years supply longevity

To learn more visit: [qualcomm.com](https://www.qualcomm.com)



The Dragonwing IQ-2390 Series is a part of the Product Longevity Program for Qualcomm IoT Portfolio. These products are developed and engineered with product longevity and durability in mind, helping to bring stability to our customer product designs. Product longevity dates are subject to change without notice.

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