

Qualcomm Dragonwing™

Q-2390 Processor



The Dragonwing Q-2390 processor enables compact, connected products with local AI, camera-based vision, responsive graphics, and real-time control. By integrating processing, I/O, and connectivity, the platform supports cost-effective system designs and flexibility across product configurations. Dragonwing Q-2390S supports Wi-Fi, Bluetooth, and wired connectivity, while Dragonwing Q-2390M adds 4G LTE Cat 4 data connectivity.

Commercial IoT products are moving from connected to intelligent. POS terminals, kiosks, access panels, appliances, home robots, and commercial terminals must deliver responsive experiences, local decision-making, real-time response, trusted operation, and flexible connectivity within tight board, power, thermal, and cost constraints.

The Dragonwing Q-2390 processor combines quad-core application processing with graphics, vision, AI, and real-time processing in an integrated architecture for compact connected products. Dedicated resources are structured to support concurrent workloads. A RISC-V microcontroller on select configurations handles time-sensitive control independent of the application CPU.

Android, Yocto Linux, Ubuntu, and RTOS/ Zephyr are built to provide software flexibility. Long-life supply, extended software support, and security features help address product lifecycle needs while supporting Cyber Resilience Act (CRA) readiness. Dragonwing Q-2390S supports Wi-Fi and Bluetooth through companion solutions. Dragonwing Q-2390M adds integrated 4G LTE Cat 4 data connectivity.



Highlights

Enable compact intelligent devices

Integrate application compute, graphics, vision, AI, connectivity, and broad I/O to help reduce external components, simplify board design, and address space-constrained form factors.



Run real-time control alongside application workloads

Use the RISC-V microcontroller on select configurations for time-sensitive control without relying on the application CPU.



Accelerate development

Build with Yocto Linux and Android support, evaluation hardware, development tools, and ecosystem resources that support development from prototyping through product deployment.



Scale processing to the product

Use a common architecture across product designs, with configurations that add on-device AI and RISC-V real-time processing where required, helping align capability and system cost with the end-product design.



Adapt connectivity to the deployment

Use Dragonwing Q-2390S with companion Wi-Fi and Bluetooth solutions. Choose Dragonwing Q-2390M when the product also needs integrated 4G LTE Cat 4 data connectivity.



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

Qualcomm® Kryo™ Quad-Core CPU	Qualcomm® Adreno™ 704 GPU
Qualcomm® Hexagon™ Processor	LPDDR4x Memory with ECC
E61 RISC-V MCU	Adreno 921 Display Processing Unit (DPU)
Qualcomm Spectra™ ISP	Location Bluetooth® 5.1 ¹ Wi-Fi 5
Qualcomm® Processor Security	4G modem (Q-2390M)
I/O USB3.1, PCIe Gen 2, Ethernet with TSN support, UART, I2S, I2C, SPI	

¹Supported with a companion module



Target Applications

- Intelligent in-store retail
- Biometrics payment & access control
- Hybrid AI-enabled smart home hub
- Home robots and fitness devices
- Enterprise and commercial terminals

Features

- **Run application software and responsive user interfaces concurrently** with Arm Cortex-A78 and Cortex-A55 CPU cores for application logic, multitasking, and interactive experiences.
- **Bring AI processing onto the device** with Hexagon processing on select configurations, helping enable local inference without consuming application CPU resources.
- **Build camera-enabled products with integrated vision processing** using Qualcomm Spectra™ ISP support for two 13 MP cameras or one 25 MP camera at 30 fps.
- **Deliver responsive visual experiences** with integrated 3D graphics and Full HD display support for interactive terminals, kiosks, appliances, and other display-based products.
- **Run real-time sensing and control independently** with a RISC-V microcontroller on select configurations, allowing time-sensitive tasks to operate alongside higher-level application workloads.
- **Develop with familiar embedded software environments** through support for Yocto Linux and Android, backed by Qualcomm® software, tools, evaluation hardware, and development resources.
- **Protect deployed devices with hardware backed security features** including Qualcomm® Trusted Execution Environment, hardware ECC, and hardware key management.
- **Plan for longer product lifecycles** with long life supply support that helps reduce redesign risk and supports products expected to remain in market for years.

Ordering Information

Product	Part Numbers
Q-2390S	CQ2390S-0-AA
Q-2390S	CQ2390S-0-AB
Q-2390M	CQ2390M-0-AA
Q-2390M	CQ2390M-0-AB

Specifications

Dragonwing Q-2390				
SoC	Q-2390S	Q-2390M	Q-2390S	Q-2390M
Part Number	CQ2390S-0-AA	CQ2390M-0-AA	CQ2390S-0-AB	CQ2390M-0-AB
CPU	1x Arm Cortex-A78 @ 1.5 GHz and 3x Arm Cortex-A55 @ 1.5 GHz		1x Arm Cortex-A78 @ 1.9 GHz and 3x Arm Cortex-A55 @ 1.8 GHz	
GPU	Adreno 704 @ 1.1 GHz			
AI Performance	No AI processor		Qualcomm® Hexagon™ @ up to 1.1 INT8 TOPS	
Real-Time Cores	No MCU		RISC-V MCU: SiFive E61 @ 600MHz, 768kB memory	
Memory	2×16 LPDDR4X @ 1.8 GHz			
Addressable Memory	512 KB L3 cache ECC			
Audio DSP	No 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	Wi-Fi 5 via (WCN3950/WCN398x), BT 5.0/5.1			
Modem		LTE Cat-4		LTE Cat-4
GNSS		Gen 9 VT v4-Lite GPS L1		Gen 9 VT v4-Lite GPS L1
OS	Android, Yocto Linux, Ubuntu		Android, Yocto Linux, Ubuntu, Zephyr (MCU)	
Package (chip)	12 mm x 12 mm x 0.92 mm, 0.4 mm ball pitch			
Temp. Range (Tj)	-30°C to +95°C		-30°C to +115°C	
Longevity	Guaranteed 10 years supply longevity			

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



The Dragonwing Q-2390 Processor 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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