Qualcomm Dragonwing™
IQ-X Series

Best-in-class single-thread and multithread performance meet industrial-grade design and on-device AI.

Building reliable edge systems takes more than raw power. Industrial PCs must handle real-time process workloads, support legacy and modern applications, and manage thermal constraints, all while keeping operations running on schedule.

Engineered for next-gen industrial systems, the Dragonwing IQ-X Series combines best-in-class compute, rugged reliability, and built-in intelligence, all in one solution ready for the edge.

Ordering Information

Product	Module Part Numbers
Dragonwing IQ-X7181	IQX7181MD-1-AC
	IQX7181MD-1-AB
	IQX7181MD-1-AA
	IQX7181MD-0-AA
Dragonwing IQ-X5121	IQX5121MD-1-AC
	IQX5121MD-1-AB
	IQX5121MD-1-AA
	IQX5121MD-0-AA

Highlights

RUN COMPLEX WORKLOADS WITHOUT BOTTLENECKS

With up to 3.4 GHz single-thread performance from the 12- and 8-core Qualcomm Oryon™ CPU, the Dragonwing IQ-X series delivers deterministic execution for control, logging, and real-time workloads—plus on-device AI in an industrial-grade design.

RUN ON-DEVICE AI FOR INDUSTRIAL DEMANDS

With 45 TOPS of on-device AI enabled by the Qualcomm® Hexagon™ NPU, the Dragonwing IQ-X Series of processors handle machine vision, advanced analytics, and AI-based workflows without external hardware.

SIMPLIFY HIGH-SPEED CONNECTIVITY AND EXPANSION

With USB4, up to 16 PCIe lanes, UFS 4.0, and DisplayPort 1.4a, the Dragonwing IQ-X Series eliminates I/O bottlenecks while supporting next-gen peripherals and external modules.

INTEGRATE MULTIPLE CAMERAS WITHOUT PERFORMANCE TRADE-OFFS

Dual ISPs support up to six high-resolution RGB and IR cameras—enabling real-time capture, analysis, and streaming from multiple angles without sacrificing performance.

DRIVE RICH INTERFACES WITH EXTENSIBLE MULTIMEDIA

Supports up to four 4K displays, 4K120 playback, and AV1 encoding—ideal for advanced HMIs, operator terminals, and industrial control panels that demand immersive visuals and responsive performance.

RUN MIXED OS WORKLOADS WITHOUT REWORK

Supports Windows LTSC, enabling flexibility across legacy industrial applications and modern AI or container-based environments.

Target Applications

- **Factory Automation and Robotics:** Real-time motion control and AI-driven defect detection
- **Industrial Human Machine Interfaces (HMI):** High-resolution operator panels
- **Edge AI Vision and Surveillance:** Local video analytics and intelligent monitoring
- **Smart Transportation and Mobile Control Systems:** Embedded control platforms for connected vehicles and equipment
- **Energy and Utilities Infrastructure:** Edge-based SCADA nodes and monitoring systems

Features

- Best-in-class single and multithread CPU performance with remarkable power efficiency
- Industry-leading NPU with up to 45 TOPS of AI performance
- Best-in-class processing across CPU, GPU, and NPU
  - Qualcomm Oryon CPU
  - Qualcomm® Adreno™ GPU
  - Hexagon NPU
  - Qualcomm® Sensing Hub
- Premium integrated GPU delivers exceptional graphics performance
- High-speed memory interface supports up to 64 GB LPDDR5X (8x 16-bit channels at 4.2 GHz) for data-heavy applications
- Premium connectivity choices with 5G and Wi-Fi 7, including HBS Multi-Link, boosting real-time responsiveness and system flexibility
- USB4 and 16-lane PCIe support for high-bandwidth connectivity with external storage, sensors, and expansion modules
- Integrated UFS 4.0 and SD Express for fast and flexible on-board storage
- 4K120 video decode, 4K60 encode (AV1, VP9), and up to four 4K display outputs; eDP 1.4b and DisplayPort 1.4a over USB-C deliver advanced display options for modern HMI and operator interface panels
- Dual Qualcomm Spectra™ 780 ISPs support up to six simultaneous camera inputs, including 2x 36 MP ZSL and RGB + IR configurations
- Up to 221 GPIOs with UART, SPI, I2C, and I3C via QUP for system-level interfacing
- Supports Windows LTSC for maximum software portability and legacy compatibility
- Industrial temperature support from -40 to 105 °C for harsh deployment environments

To learn more visit: qualcomm.com

Specifications

Features	Dragonwing IQ-X7181	Dragonwing IQ-X5121
CPU	Custom Qualcomm Oryon 12-core CPU	Custom Qualcomm Oryon 8-core CPU
	Max speed of 3.4 GHz	
AI Performance	45 TOPS	
GPU	Adreno 1.25 GHz GPU	Adreno 1.1 GHz GPU
Memory	8x 16-bit LPDDR5X @ 4.2 GHz (up to 64 GB)	
Display Support	Adreno DPU 1x 4-lane eDP (eDP 1.4b) up to 4096 x 2160 at 60 Hz, 30 bpp or 3240 x 2160 at 120 Hz, 30 bpp; DisplayPort 1.4a over USB up to 5120 x 2880 at 60 Hz 10-bit	
Video Decode	4K120; Formats: VP9, AV1	4K60; Formats: VP9, AV1
Video Encode	4K60; Formats: AV1	4K30; Formats: AV1
Camera	Qualcomm Spectra ISP	
	Up to 6 cameras (DPHY), 1x RGB camera + IR, 2x 36 MP @ 30 fps ZSL dual ISP	Up to 4 cameras (DPHY), 1x RGB + 1x IR concurrently, 1x 36 MP @ 30 fps ZSL single ISP
	4x 4-lane CSI	2x 4-lane CSI
PCIe	8-lane Gen4 + 4-lane (2+2) Gen4, 2x 2-lane Gen3	2x 4-lane Gen4, 2x 2-lane Gen3
USB	2x USB 3.1: Gen2 10 Gbps 3x USB 4.0 Type-C with DisplayPort 1.4a 6x eUSB 2.0	
Networking	Ethernet and PCIe expansion supported via QPS615 companion chip	
Other I/O	221x GPIO; supports UART, SPI, I3C, I2C via QUP	
Storage	1x UFS 4.0 gear 5 – 2 lanes for on-board memory 4-bit port for SD 3.0 SD/MMC card	1x UFS 4.0 gear 5 – 2 lanes for on-board memory 4-bit port for SD 3.0 SD/MMC card 8-bit port, for reserved use eMMC 5.1
Wireless Connectivity	Support for M.2-based WLAN/Bluetooth® wireless technology modules over PCIe External Wi-Fi/5G via WCN785/WCN6856 and SDX65	
OS	Windows LTSC	
Package	FCBGA, 1747-ball BGM, 58.0 x 58.0 x 2.76 mm, 0.40 mm ball pitch	
Temp. Range (Tj)	-40 to 105 °C	-40 to 105 °C (IoT)
Longevity	2036*	

Specifications are subject to change.

* Product longevity dates are subject to change without notice. Refer to the product longevity page for details.

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