Qualcomm Dragonwing™
Q-8750 Processor

Bring powerful on-device AI, ultra-clear video, and multi-camera awareness to edge devices and immersive smart displays.

The Dragonwing Q-8750 processor is designed to deliver high-performance video processing and on-device AI for next-generation edge applications across enterprise drones, retail devices, AI TVs, media stations, action cameras, and collaboration systems. Its ability to perform real-time analytics and multi-camera awareness enables devices to interpret and respond to visual data locally, reducing reliance on cloud infrastructure.

With ultra-high-resolution video output, fast connectivity, and integrated AI accelerators, the Dragonwing Q-8750 is designed to support advanced features like motion detection, facial recognition, adaptive content delivery, and autonomous navigation. Its compact design and wide environmental tolerance make it ideal for space-constrained and mission-critical deployments—empowering smarter, more responsive devices that enhance situational awareness, immersive media experiences, and seamless enterprise collaboration.

Highlights

Powerful AI, CPU, and GPU

Up to 77 dense TOPS of AI powered by the Qualcomm® Hexagon™ Tensor Processor enables real-time, on-device AI inference and low-latency vision processing. Up to 4.32 GHz clock speed using our custom 7- or 8-core Qualcomm Oryon™ CPU and 1.1 GHz with our Qualcomm® Adreno™ GPU enable top-tier compute and graphics.*

Cinematic Visual Experience

Supports 4K/8K video at high frame rates, with ray tracing, advanced graphics, dual-display output, and low-latency rendering.

Multi-Camera Intelligence

Connects up to 12 physical cameras, 18 logical camera streams, and triple 48 MP ISPs for 360° visibility, depth mapping, and multi-angle recording.

Fast, Efficient Storage and Interfaces

Integrates UFS 4.0, PCIe Gen 3, and USB-C with DisplayPort to enable ultra-fast data handling and display output.

Designed for Harsh Environments

With -30 to +105 °C temperature support, it is built for ruggedized applications in automotive and outdoor edge AI systems.

* Performance may vary by SKU configuration.

Block Diagram

7- or 8-Core Qualcomm Oryon CPU	Adreno 8-Series GPU
Up to 77 Dense TOPS AI Engine	3840 x 2560 Display
LPDDR5X Memory	Audio DSP (LPASS)
Security	4K240/8K60 Decode 4K120/8K30 Encode
Triple ISP	215x GPIO

Qualcomm Dragonwing

87-94329-1 Rev. B

Target Applications

- **Smart Displays:** AI Media Stations, Commercial Displays
- **Action Cameras:** Sports Vlogging, Live Streaming
- **Enterprise Collaboration:** Video Collaboration, Multi-User AI Experiences
- **Drones & Robotics:** Home Robots, Enterprise Drones

Features

- 7- or 8-core Qualcomm Oryon CPU: High-speed multitasking and responsive application performance
- Hexagon V79 Tensor Processor: Low-power AI inference across vision, audio, and sensor workloads
- Adreno 8-Series GPU: High-performance 3D graphics and ray tracing for immersive display systems
- LPDDR5X memory @ 4800 MHz: Fast data access and efficient memory bandwidth
- 8K60 decode and 8K30 encode: Ultra-high-resolution video playback and capture
- 4K240 video decode and 4K120 encode: High-frame-rate slow-motion and action video workflows
- Triple 48 MP ZSL ISP: Simultaneous capture of multiple high-resolution image streams
- Dual MIPI-DSI and DP v1.4: Dual 4K or single 8K displays for TVs and advanced monitoring systems
- UFS 4.0 storage: Fast boot and quick data streaming for video applications
- USB 3.1 Gen 2 Type-C with DP: Unified connectivity for display, power, and data
- Audio DSP with Qualcomm Aqstic™ codec: Studio-quality audio for voice control and video sync
- Always Sensing Camera (ASC): Continuous monitoring and low-power, wake-on-motion use cases
- 215 GPIOs and 15 I/O buses: Flexible sensor, motor, and peripheral integration
- Industrial-grade temperature support: Reliability in automotive and outdoor installations

Ordering Information

Part Numbers
CQ8750S-1-AB
CQ8725S-2-AA

Specifications

Dragonwing Q-8750	
SKUs	CQ8750S, CQ8725S
CPU*	Max clock speed of 4.32 GHz powered by the custom 7- or 8-core Qualcomm Oryon CPU
AI Performance*	Up to 77 Dense TOPS; Dependent on SKU configuration
GPU*	Max speed of 1.1 GHz powered by the Adreno 8-series GPU
Memory	4x 16-bit LPDDR5X @ 4800 MHz
Addressable Memory	24 GB
Audio DSP (LPASS)	Hexagon V79 @ 4-thread DSP 5x SoundWire, 8x DMICs, 7x I2S 32-Channel TDM/PCM support @ 48 kHZ Qualcomm Aqstic Audio Technologies
Display Support*	Adreno GPU Internal panel resolution up to 3840 x 2560 @ 144 Hz 2x MIPI-DSI, DP v1.4 up to 8K60 8x DSC v1.2 on MIPI-DSI ports
Video Decode	4K @ 240 fps / 8K @ 60 fps Formats: H.264, H.265, VP9, and AV1
Video Encode	4K @ 120 fps / 8K @ 30 fps Formats: H.264 and H.265
Camera*	2x Always Sensing Camera (ASC) Qualcomm Spectra™ Image Signal Processor (ISP) 8-series 3x 48 MP at 30 fps ZSL ISP 6x 4-lane D-PHY 1.2/3-trio C-PHY 2.0 interfaces
PCIe	1x PCIe Gen 3 2-lane
USB	1x USB 3.1 Gen 2 @ 10 Gbps, support USB Type-C with DP v1.4 eUSB 2.0
Other I/O	215x GPIO UART, I2C, I3C, SPI, 10x I2C hubs via QUP Fifteen dedicated buses: 4x I3C/I2C, 3x SPI, 3x I2C, 2x UART, 2x I3C/I2C (for ASC), 1x I2C (for ASC) via sensors interfaces and supported sensors
Storage	1x UFS 4.0 2-lane gear 5 Rate B SD 3.0 4-bit for SD card
Wi-Fi/Bluetooth®/WAN	Wi-Fi 7 and Bluetooth 6 Supported with companion chips
OS	Android 15+ and Linux Yocto
Package	15.95 x 14.0 x 0.60 mm, MPSP1512 PoP
Temp. Range (Tj)	-30 to +105 °C

Specifications are subject to change.

* Performance may vary by SKU configuration.

To learn more visit: qualcomm.com

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