Rapixo CXP Pro Octo CXP-12 frame grabber

Eight-channel CXP-12, performance-built for next-generation data rates and multi-camera systems

The Rapixo CXP Pro Octo CXP-12 pushes CoaXPress frame grabber performance into a new generation. Built to fully leverage the speed and bandwidth increases of the CXP 2.1 standard, it delivers eight CXP-12 connections and massive data throughput for multi-camera, high-resolution, and high-frame-rate applications.

With 16 GB of onboard memory, advanced image-processing hardware, and a PCIe Gen3 x16 interface, the Rapixo CXP Pro Octo CXP-12 keeps pace with today's fastest sensors while maintaining rock-solid reliability. This platform is engineered for demanding machine vision tasks—from inspecting electronics or electric vehicle batteries to laser line extraction and web inspection requiring uncompromising data rates.

Engineered for the latest CXP 2.1 requirements

This frame grabber is built specifically to exploit the higher speeds and expanded capabilities of CoaXPress 2.1. Whether you're pushing ultra-high data rates, optimizing system latency, or scaling camera counts, the Rapixo CXP Pro Octo CXP-12 provides a future-proof foundation for next-generation machine vision designs.

Keeps data flowing freely

A full-bandwidth PCIe Gen3 x16 interface ensures that data flows from camera to host without bottlenecks. Even in high-demand applications—large sensors, long bursts, or simultaneous multi-camera capture—the board maintains consistent throughput and deterministic performance.

Handles high data demands

Next-generation throughput for multi-camera systems

With eight independent CXP-12 connections and up to 17 streams, Zebra's Rapixo CXP Pro Octo CXP-12 handles massive aggregate bandwidth with ease. It's ideal for machine vision systems that rely on multiple high-resolution cameras running at high frame rates—delivering the performance needed for complex inspection, 3D imaging, line scan imaging, or synchronized imaging workflows.

Leverage the speeds and bandwidths available with CXP 2.1, perfect for multi-camera systems
For more information, please visit www.zebra.com/rapixo-series.

Onboard processing increases speed

Built-in image processing to offload the host
Integrated lookup tables (LUTs), Bayer interpolation, and advanced color space conversions let the board handle preprocessing tasks directly. This offloads the CPU/GPU, shortens pipelines, and improves system responsiveness—especially valuable in real-time inspection or when dealing with high-bit-depth and multi-channel imagery.

Flexible FPGA-based custom processing
Developers can embed their own accelerated processing using the AMD Vivado™ Design Suite and Zebra's FDK. Whether it's handling custom preprocessing or application-specific logic, the Rapixo CXP Pro Octo CXP-12 gives teams a fast, programmable hardware path without the need for external compute modules.

Stable high-speed capture with deep onboard memory
The 16 GB onboard DDR4 memory provides ample buffering for high-bandwidth bursts, multi-camera concurrency, or hosts under variable loads. This ensures uninterrupted acquisition even in demanding real-time systems.

Suited to complex and harsh environments

Easy system integration with robust, high-density I/O
Multiple TTL, LVDS, and opto-isolated I/Os per connector allow precise triggering, strobes, synchronization, and machine-control signaling. With support for inter-board timing and optional HD15 breakout accessories, the board integrates cleanly into complex automation environments.

PoCXP power delivery simplifies system design
With up to 96 W of combined PoCXP capability, Zebra's Rapixo CXP Pro Octo CXP-12 powers multiple cameras directly, reducing cabling, eliminating external power supplies, and simplifying machine vision buildouts—especially in space-constrained or mobile systems.

Reliable operation in manufacturing and harsh use cases
Active cooling and wide operating temperatures support deployment in industrial environments. Status LEDs provide quick diagnostics at a glance, helping reduce downtime during integration, maintenance, or troubleshooting.

Specifications

Physical characteristics	
Dimensions	9.84 inches L x 0.737 inch W x 4.39 inches H 24.99 cm L x 1.871 cm W x 11.15 cm H
Form factor	Full height, 3/4 length PCIe x16
Connectors	High-density BNC
Configuration	Eight (8) connections in
Streams	Up to seventeen (17) total
Status indicators	Connection status LEDs on inputs
Cooling	Active (fan)
Performance characteristics	
Speed	12.5 Gbps (CXP-12)
Acquisition standard	CoaXPress 2.1
GenICam support	GenICam 3.4
PC interconnect	PCIe Gen3 x16
Memory	16 GB DDR4 DRAM
Power output	PoCXP (up to 96 W total)
Image processing	
Onboard lookup tables	8/10/12 bit support
Onboard Bayer interpolation	GB, BG, GR, and RG pattern support
Onboard color space conversion	Input formats: 8/16 bit mono/Bayer, 24/48 bit packed BGR
	Output formats: 8/16 bit mono, 24/48 bit packed/planar BGR, 16 bit YUV, 16 bit YCbCr, 32 bit BGRa
Custom processing	Zebra or user developed (AMD Vivado Design Suite and Zebra FDK)

I/Os	
Per HD15 connector	Three (3) TTL I/Os
	Two (2) LVDS inputs
	One (1) LVDS output
	Two (2) opto-isolated inputs
External connectors	Four (4) HD15 connectors (via accessory brackets)
Internal connectors	One (1) 9-pin USB header
	One (1) 12-pin connector for synchronization header
User environment	
Operating temperature	32°F to 131°F (0°C to 55°C)
Relative humidity (non-condensing)	Up to 95%
Cooling	Active (fan)
Certifications	
Electromagnetic compatibility	FCC Class A
	CE Class A (EN55032, EN55024)
	ICES-003/NMB-003 Class A
	RCM Class A
Software	
Compatible software	Aurora Imaging Library (Lite) 10.70 with update 157
	Aurora Imaging Library (Lite) 11 with update 9
Operating systems	Windows 11
	Ubuntu 24.04 LTS (64 bits)

Markets and applications

General manufacturing

- Multi-camera inspection systems
- High-speed packaging and labeling verification
- Web inspection
- Inline defect detection and dimensional metrology

Electronics and semiconductors

- High-speed inspection
- PCB and IC inspection
- Wafer and die inspection
- Flat panel display (FPD) inspection
- Laser line extraction

Automotive and EV

- Weld seam and surface inspection
- Paint and finish defect detection
- EV battery cell/module inspection
- Web inspection
- High-speed component verification
- Multi-view, safety-critical inspection