CV70 CXP Machine Vision Cameras

Compact single- or dual-link CXP 2.1 cameras built for today's high-speed, high-bandwidth challenges

Machine vision applications involving multiple cameras, high speeds, or high data rates require cameras and components that support massive data throughput without bottlenecks or latency. Available in single- or dual-link models, CV70 CoaXPress cameras can be integrated alongside Zebra frame grabbers and machine vision software to deliver a complete quality control solution.

The 35 x 35 x 49 mm CXP cameras—the smallest dual-link CXP cameras on the market—draw 4 W of power with passive cooling, allowing installations into tight spaces without sacrificing speed or resolution. Reaching frame rates up to 289 fps, CV70 CXP cameras offer the high bandwidth and frame rates needed for challenging machine vision applications at a competitive price.



Machine Vision Cameras for Modern-Day Challenges

Leverage CXP 2.1 Advancements
With CXP 2.1 supporting 12.5 Gbps link speeds, end users can combine multiple CXP-12 links into a single data stream between the cameras and frame grabber to support up to 100 Gbps with eight links. In addition, a single cable can be used for data, control, and power (PoCXP) that can run at distances of up to 50 m without signal degradation using a cost-effective coaxial cable.

A Complete Machine Vision Solution
CV70 cameras are designed to be paired with Zebra Aurora Imaging Library™, Aurora Design Assistant™, or Aurora Vision Studio™, along with Zebra CXP single/dual/quad/octo frame grabbers. This provides a comprehensive set of options to tailor a machine vision solution to meet the exact needs. In addition, for compute-intensive applications, Rapixo Pro Quad CXP-12, Rapixo Pro Octo CXP-12, and Quad Data Forwarding CXP-12 models offer FPGAs for image processing to further customize the solution.

High-Speed, High-Resolution Models
Available in 5 MP (GMAX 2505), 9 MP (GMAX 2509), 18 MP (GMAX 2518), and 25 MP (GMAX 0505) models, CV70 cameras range in frame rate options, from 41 fps to 289 fps. They offer C-mount lens interfaces, and Power over CoaXPress and 24 V DC power options.

Reliable, Robust Cameras
CV70 cameras feature industrial-grade shock and vibration ratings (80 G/10 G) and passive thermal dissipation that allows the camera to operate at low temperatures despite the compact enclosure, with an operating temperature range of 0°C/32°F to 45°C/113°F. Offering low latency and ultra-high bandwidth needed for demanding applications, they also offer a robust set of capabilities, such as region-of-interest, gain correction, counters, timers, and configurable digital I/Os for triggering and lighting control.

CV70 CXP Cameras—Tackle tough multi-camera and high-speed/high-data rate applications.
For more information, please visit www.zebra.com/cv70.

Specifications

Portfolio Specifications[1]	
Video Signal Output	Monochrome: 8/10-bits Color: 8/10-bit Bayer
Gain	Up to 8x
Acquisition Modes	Normal/single ROI, single frame, multi frames, continuous mode
Trigger Input/ Output	Two user-programmable, bidirectional I/O pins that can operate as either inputs or outputs Input conditioning and debouncing
Programmable Logic	Counters (2), timers (2), and logic blocks (2)
Exposure Modes	Timed
Operating Temperature	0°C/32°F to 45°C/113°F
Storage Temperature	–40°C/F to 70°C/158°F
Vibration	10 G (20 Hz to 200 Hz, XYZ directions)
Shock	80 G
Regulations	EN 55032:2015/A11: 2020 EN 55035:2017/A11: 2020 EN 61000-3-2: 2014 EN 61000-3-3: 2013 EN 61000-6-2: 2005 and 2019 FCC 47 CFR Part 15, Subpart B Canada ICES-003, Issue 7
Power	PoCXP and 24 V DC
Lens	C-mount
Dimensions (H x W x L)	35 mm x 35 mm x 49 mm
Weight	75 g

Model Specifications[2] 5 MP CXP 2.1 Mono (X1 Link and X2 Link)	
Sensor	5 MP
Pixels	2624 x 2160 px
Light Spectrum	Visible
Frame Rate	120 fps (X1 link), 289 fps (X2 link)
Sensor Name	GMAX 2505
Optical Format	0.5 inch
Sensor Diagonal	8.45 mm
Active Sensor Area	6.5 x 5.4 mm
Readout Modes	Full: 2624 (h) x 2160 (v) up to 289 fps ROI (single): H: 64 to 2624 pixels in 2-pixel steps, V: 32 to 2160 lines in 8-line steps
Electronic Shutter	Timed: 15 µs to 1 s in 16 ns steps

Model Specifications[2] 9 MP CXP 2.1 Color and Mono (X1 Link and X2 Link)	
Sensor	9 MP
Pixels	4224 x 2160 px
Light Spectrum	Visible
Frame Rate	120 fps (X1 link), 249 fps (X2 link)
Sensor Name	GMAX 2509
Optical Format	2.3 inches
Sensor Diagonal	11.8 mm
Active Sensor Area	10.5 x 5.4 mm
Readout Modes	Full: 4224 (h) x 2160 (v) up to 249 fps ROI (single): H: 64 to 4224 pixels in 2-pixel steps, V: 32 to 2160 lines in 8-line steps
Electronic Shutter	Timed: 15 µs to 1 s in 16 ns steps

Markets and Applications

Manufacturing

- Multi-camera imaging and machine vision applications

Automotive

- Parts inspection
- EV battery assembly
- Electronics assembly

Electronics Manufacturing

- Semiconductor inspection
- Flat panel inspection

Food and Beverage

- 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

Transportation and Logistics

- PC-based scan tunnels

Model Specifications[2] 18 MP CXP 2.1 Mono (X2 Link)	
Sensor	18 MP
Pixels	4544 x 4096 px
Light Spectrum	Visible
Frame Rate	120 fps
Sensor Name	GMAX 2518
Optical Format	1 inch
Sensor Diagonal	15.2 mm
Active Sensor Area	11.27 x 10.24 mm
Readout Modes	Full: 4544 (h) x 4096 (v) up to 120 fps ROI (single): H: 64 to 4544 pixels in 2-pixel steps, V: 32 to 4096 lines in 8-line steps
Electronic Shutter	Timed: 15 µs to 1 s in 16 ns steps
Model Specifications[2] 25 MP CXP 2.1 Color and Mono (X1 Link and X2 Link)	
Sensor	25 MP
Pixels	5120 x 5120 px
Light Spectrum	Visible
Frame Rate	41 fps (X1 link), 75 fps (X2 link)
Sensor Name	GMAX 0505
Optical Format	1.1 inches
Sensor Diagonal	18.1 mm
Active Sensor Area	12.8 x 12.8 mm
Readout Modes	Full: 5120 (h) x 5120 (v) up to 75 fps ROI (single): H: 64 to 5120 pixels in 2- pixel steps, V: 32 to 5120 lines in 8-line steps
Electronic Shutter	Timed: 15 µs to 1 s in 16 ns steps
Connector Pin-Out	
DC In/Trigger 6-Pin M8 Pin (Female) Connector T	Pin 1: DC in 24 V Pin 2: opto Line0 in+ Pin 3: opto Line0 in– Pin 4: opto Line1 out+ Pin 5: opto Line1 out– Pin 6: ground
Footnotes	
1. Specifications subject to change without notice.	
2. Tracking speeds and max. values adjustable.	

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