

CHEETAH

RUGGEDIZED CAMERA SERIES

CXP-C4540

CMOS 20.4 MP

Dual CXP-6



Imperx: C4540

The low-power CXP-C4540 camera features the Sony Pregius S™ IMX531 Global Shutter CMOS sensor with a native resolution of 4512 x 4512 in a 1.1" optical format delivering up to 55.8 frames per second with a dual CXP-6 CoaXPress output. The Pregius S technology uses a stacked back-illuminated pixel structure offering reduced pixel size, increased peak quantum efficiency, and improved sensitivity with fast lenses. A dual ADC mode enables HDR imaging by combining high gain and low gain lines within the image sensor. Short interframe time of 100 ns makes the camera suitable for PIV applications. The camera features low power consumption and operates over an extended temperature range from -30 °C to +75 °C. Imperx puts you in control and gives you full access to raw data without corrections. Using the simple, intuitive GenICam™ compliant user interface, you can quickly apply image corrections, if desired. The CXP-C4540's flexibility, image quality, and speed make it suitable for a broad range of diverse and demanding applications, but "one size doesn't fit all," and Imperx can help optimize the camera to your exact requirements.

Specifications

Feature	Description	Feature	Description
Output Interface	2-channel CXP-6 CoaXPress w/PoCXP	PIV Mode	Available in Free run and Fast trigger modes
Resolution	4512 (H) x 4512 (V)	PIV Interframe Time	100 ns (EST)
Sensor	Sony Pregius S IMX531 CMOS Color/Mono	External Inputs/Outputs	2 IN (OPTO, LVTTTL) / 2 OUT (OPTO, TTL)
Sensor Format	12.3 mm (H) x 12.3 mm (V), 1.1" optical format	Strobe Output	2 strobes, programmable position and duration
Pixel Size	2.74 microns square	Pulse Generator	Yes, programmable
Shutter	Global shutter (GS)	Data Correction	2 LUTs pre-programmed with Gamma 0.45, 2 LUTs pre-programmed with Negative LUT; Bad and Defective pixel correction (static), 8 Flat field correction tables
Sensor Digitization	10, 12-bit	Lens Mount	C-Mount (default)
Frame Rate	55.8 fps (8-bit), 45.5 fps (10-bit), 38 fps (12-bit)	Canon EF-Mount	Optional, Active or Passive
Dynamic Range	71 dB	Power	Power over CoaXPress or 6.5 V–33 V external power supply (Optional)
Output Bit Depth	8, 10, 12-bit	Power Consumption	Typ.: 4.32 W @ 12 V, 25 °C Max.: 4.52 W @ 12 V, 75 °C
Analog/Digital Gain	Manual, Auto; 0 dB – 48 dB, 480 steps	Size - Width/Height/Length	60 mm (W) x 60 mm (H) x 47 mm (L)
Digital Gain	0x to 4x (12 dB) with a step of 1/4096	Weight	370 g
AEC/AGC	Off, Once, Auto	Vibration, Shock	20G (20 – 200 Hz XYZ) /100G
Gamma Correction	0.00 to 4.00, with a step of 0.01	Environmental	-30 °C to +75 °C Operating, -40 °C to +85 °C Storage
Black Level Offset	Manual (0 – 255), Auto	Humidity	10% to 90% non-condensing
White Balance	Manual, Auto, Once, Off	MTBF	452,000 hours @ 50 °C (EST) (Telcordia SR-332)
Shutter Speed	8 µs to 16.0 s	Military Standard	MIL-STD-810G
HDR Imaging (Dual ADC)	Available with 12-bit sensor digitization only	Regulatory	FCC Part 15 Class A, CE, RoHS UKCA
Exposure Control	Off, Internal, External, Auto		
Regions of Interest (ROI)	One Master ROI, two Processing ROI		
Binning	1 x 2, 2 x 1, 2 x 2 (Mono cameras only)		
Sub-sampling	1 x 2, 2 x 1, 2 x 2		
Trigger Inputs	External, Pulse generator, Software, Link Trigger (Trigger over CXP)		
Trigger Options	Edge, Pulse width, Trigger filter, Trigger delay, Debounce		
Trigger Modes	Free run, Standard, Fast		

Imperx: C4540 Applications

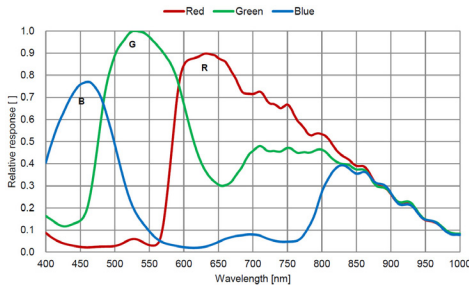
The CXP-C4540 incorporates a number of unique features tailored to reduce system complexity, maximize interface bandwidth, and expand the usable operational range.

Particle Image Velocimetry • Aerospace • Satellites • Surveillance • Ball Grid Array • Printed Circuit Board Inspection • Motion Analysis • Unmanned Aerial Vehicles • Machine Vision • Intelligent Traffic Systems • Aerial Imaging • Situational Awareness

Absolute Quantum Efficiency

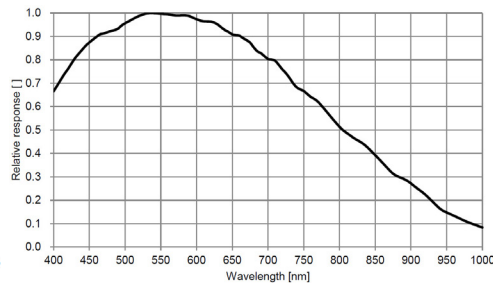
Color Spectral Response

Sony IMX531



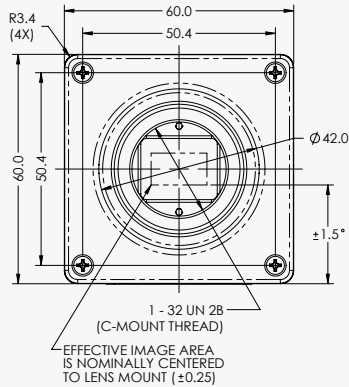
Mono Spectral Response

Sony IMX531

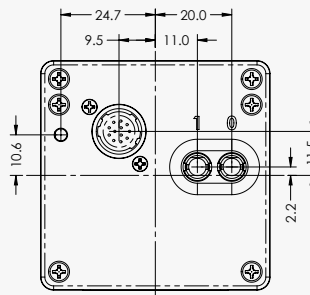


Dimensions

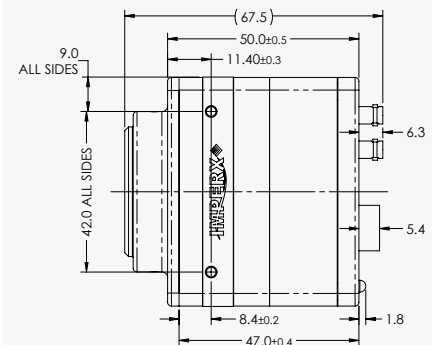
FRONT



BACK



TOP



Ordering Information

Output Interface

2-channel CXP-6 CoaXPress w/PoCXP (CXP)

Sensor Types available

Monochrome
Bayer Color

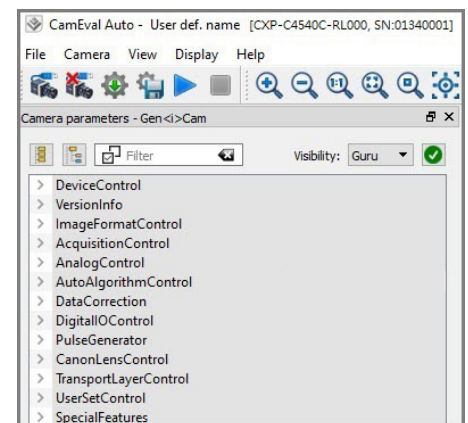
Lens Mounts

C-Mount (Default) M42 (Optional)
F-Mount (Optional) Canon EF Mount (Optional)

Accessories (Sold separately)

PS12V14A: Power Supply w/1 input and 1 output
CBL-PWIO01: Cable Power; Hirose 12p (F) to loose end; 2 meters

Gen<I>Cam Compliant Camera Configurator



Connectors

Power and I/O Interface



1. 12/24 VDC Return
2. +12/24 VDC
3. Reserved
4. Reserved
5. OUT2 RTN (OPTO)
6. OUT1 RTN
7. OUT1 (TTL)
8. IN1 (OPTO)
9. IN2 (LVTTTL)
10. IN1 RTN
11. IN2 RTN
12. OUT2 (OPTO)

Connector: Hirose HR 10A-10R-12PB(71)

CXP-connectors

Two micro-BNC (HD-BNC)
75 Ohm jacks

Rev: cxp_c4540_r3_2024

Quality Management System ISO 9001:2015 Registered
Environmental Management System ISO 14001:2015 Registered
DDTC Registered (Directorate of Defense Trade Controls, US Department of State)

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Industrial Cameras & Imaging Systems