

# Capture your sample precisely as it is.



## **ZEISS Axiocam 712 mono**

Your flexible 12 megapixel microscope camera for fast high resolution imaging of large specimen areas.

[zeiss.com/axiocam712-mono](https://zeiss.com/axiocam712-mono)



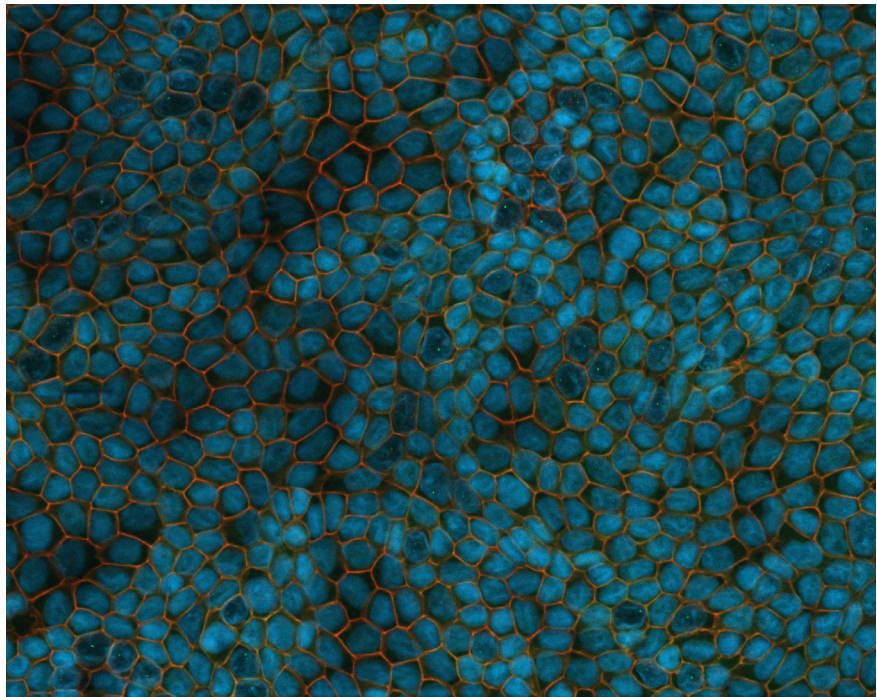
Seeing beyond



## ZEISS Axiocam 712 mono

Your flexible 12 megapixel microscope camera for fast high resolution imaging of large specimen areas.

When you need to image large specimen regions with high speed and sensitivity, Axiocam 712 mono is your ideal microscope camera. Its large 12 megapixel CMOS sensor with small pixels delivers top optical resolution.



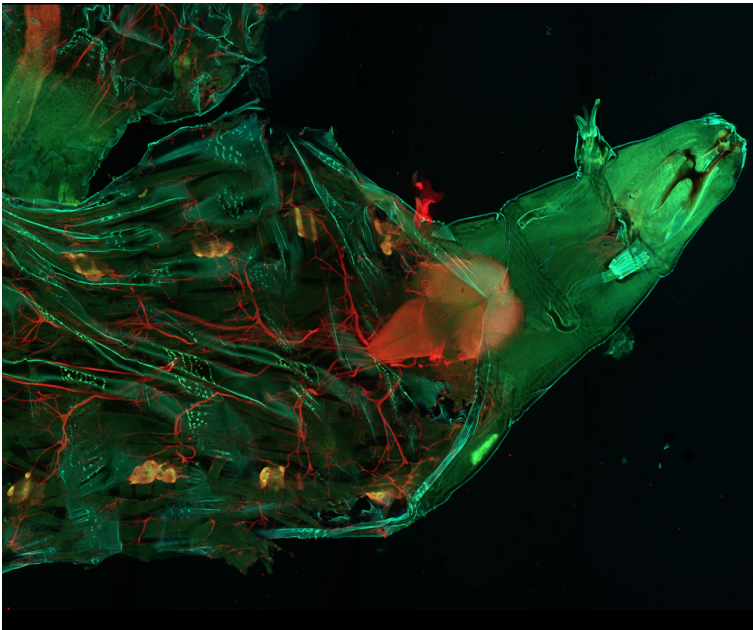
*Polarized CACO-2 cells, filter-grown for two weeks and MeOH fixed; blue: DNA (DAPI); green: cell-cell-adhesion protein, red:  $\beta$ -catenin (monoclonal antibody). Specimen courtesy of Christian Hartmann and Klaus Ebnet, Center for Molecular Biology of Inflammation, Institute of Medical Biochemistry, WWU Münster.*



Lowest noise and high quantum efficiency allow you to tackle applications needing the highest sensitivity. Combining a large sensor with an abundance of small and sensitive pixels makes your Axiocam 712 mono a very flexible camera, suitable for countless different applications.

Axiocam 712 mono's actively cooled CMOS sensor offers lowest readout noise and stable operation over long periods of time. Exposure times can range from 100  $\mu$ s for the most dynamic specimens up to 60 s for detection of the dimmest signals. This camera delivers more than 20 frames per second at full pixel count and

goes up to more than 100 frames per second with a reduced pixel count. Hardware triggering enables precise synchronization of your multidimensional imaging experiments while the global shutter camera architecture makes sure your images always stay free of motion artefacts. Peak quantum efficiency of over 72%, a broad detection spectrum and a high near-IR sensitivity complete the camera's set of excellent features. That makes Axiocam 712 mono your all-in-one tool for monochrome imaging applications, ranging from imaging of large sample regions and dynamic specimens to high-sensitivity microscopy of fragile fluorescent specimens.



*Drosophila larval fillet. Blue, green: autofluorescence, red: neural network.  
The image is a mosaic of 37 optical sectioned tiles acquired with ZEISS Apotome.2.*

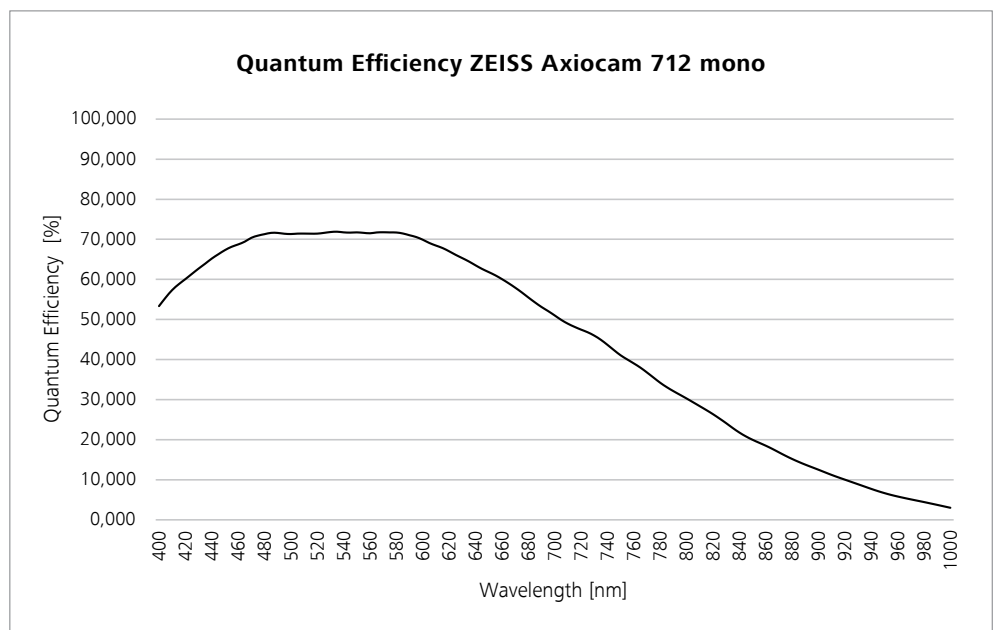
### Highlights

- 12-megapixel cooled global-shutter CMOS sensor
- Large sensor for extended field of view
- Wide sensitivity spectrum 350 nm – 1000 nm
- 20 frames per second in full 12-megapixel resolution\*
- 30 frames per second of the entire field of view in live image mode\*
- Low readout noise and analogue signal amplification
- Exclusive noise inhibition technology for low-light imaging
- Dynamic range of 1:25,000 in high-dynamic range (HDR) mode
- Small 3.45  $\mu\text{m}$  pixels for high-resolution imaging
- Hardware triggering

### Recommended for:

- High-resolution fluorescence microscopy
- Large region imaging
- Research
- Live cell imaging
- Macroscopic imaging

\* specified framerate assumes a sufficiently performant computer and a short camera exposure time



# Technical Specifications

Technical Data			
Sensor type	Sony CMOS image monochrome sensor, global shutter architecture		
Sensor size	Image diagonal 17.5 mm, equivalent to 1.1" sensor format (14.1 mm × 10.4 mm)		
Pixel count	4096 (H) × 3008 (V) = 12 megapixel		
Hardware sensor subsampling	2048 (H) × 1504 (V) = 3 megapixel @ full field of view		
Pixel size	3.45 μm × 3.45 μm		
Bit depth	14 bit, 12 bit or 8 bit		
Exposure range	from 0.1 ms to 60 s		
Gain	1x, 2x, 4x, 8x, 16x,		
Binning	1×1, 2×2, 3×3, 4×4, 5×5 (combined analog and digital binning)		
Dark current signal	< 0,5 e/pixel/s at sensor temperature 18 °C		
Frame rate	30 fps live image		
	H × V (ROI)	Frame Rate (fps)	
	4096 × 3008	23	
	2048 × 1504	46 (2×2 subsampling, full field of view)	
	1920 × 1080	63	
	1024 × 1024	66	
	1920 × 256	241	
	1920 × 128	431	
Dynamic range	Read Noise (gain)	Full Well	Dynamic Range
	2.20 e (1×)	11,000 e	1:5,000
	1.74 e (2×)	5,000 e	1:3,100
	1.48 e (4×)	2,700 e	1:1,800
	1.29 e (8×)	1,300 e	1:1,300
	1.15 e (16×)	690 e	1:600
High dynamic range (HDR) mode	Extended dynamic range 1:25.000		
Cooling system	Active thermoelectric cooling, regulated sensor temperature 18 °C		
Spectral sensitivity	Approx. 350 nm – 1000 nm, protection glass (coated)		
Interfaces	USB 3.0 (data & power) and USB 2.0 (power only)		
Trigger ports	Trigger-in, trigger-out, status readout		
Power supply	From PC through USB connections, max. power consumption: 7 W		
Operation system	Windows 10 Pro / Ultimate		
Software	ZEN 3.1 (blue edition) or newer, ZEN core 2.7 or newer		
Image enhancement functions	Denoise, unsharp mask, shading correction, dark current compensation, blemish removal		
Automatic features	Automatic exposure time optimization		
Optical/mechanical interface	C-Mount		
Dimensions and weight	10.8 cm × 7.8 cm × 4.3 cm (2.3" × 3.2" × 1.7"), 580 g		
Order number	426560-9090-000		



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