



Product Information  
Version 1.0

## **ZEISS Axiocam 702 mono**

Your 2.3 Megapixel Microscope Camera  
for Fast Low Light and Live Cell Imaging



We make it visible.

# Technical Specifications

› **Technology and Details**

› Service

## ZEISS Axiocam 702 mono

<b>Sensor Model</b>	Sony IMX174 Exmor Pregius Global Shutter Active Pixel CMOS Selected sensor quality
<b>Sensor Pixel Count</b>	2.3 MP: 1920 (H) x 1216 (V)
<b>Pixel Size</b>	5.86 $\mu\text{m}$ x 5.86 $\mu\text{m}$
<b>Sensor Size</b>	Effective sensor size: 11.3 mm x 7.1mm; image diagonal 11.3mm, equivalent to 1/1.2" sensor format
<b>Spectral Sensitivity Range</b>	Approx. 350 nm – 1000 nm, coated BK 7 protective glass
<b>Max Full Well Capacity (typical)</b>	32000 e
<b>Digitization</b>	14 bit (by data processing, native 12 bit by ADC)
<b>Readout Speed</b>	594 Mbit/s over 8 channels
<b>Readout Noise (typical)</b>	min 3.75e at gain 16x
<b>Dynamic Range (typical)</b>	Typical > 5000:1 at gain 1x, HDR Mode 25.000:1
<b>Dark Current (typical)</b>	<1.1e/p/s at 15° C sensor temperature
<b>Cooling</b>	Regulated thermoelectric cooling (power supplied through USB 2.0 ports) Delta-T 23 °C, sensor temperature 15 °C
<b>Dark Current Compensation</b>	Dark current compensation for best low light performance at long exposure times
<b>Exposure Time Range</b>	0.1ms – 60 s

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Frame Rates	Pixel Count (H x V)	FPS @ Exposure Time <1 ms	
	1920 x 1216	128	
	1920 x 720	210	
	1920 x 512	288	
	1920 x 256	534	
	1920 x 128	881	
	1024 x 112	1003	
<b>Color Interpolation Modes</b>	n.a.		
Live Frame Rates	Max. Frame Rate	Mode	Resolution / Pixel
Max. Ratings at optimum settings	>100 fps	1/slow	1920 x 1216
<b>Data-Post Processing (optional)</b>	Lens specific shading correction		
	Sharpening		
	Black reference, dark current compensation		
	Noise filter		
<b>Special Features</b>	Timing from camera for precise acquisition timing		
	Auto Bandwith Optimization for maximum image transmission speed		
	Adjustable intensity of status LED		
<b>Special Preset Modes</b>	Eight pre-loadable sets of imaging parameters for speed optimized multi modal image acquisition (internally used by ZEN)		
	Overlapping exposure and readout for fast time lapse imaging		
<b>High Dynamic Range</b>	Dynamic Range 1:25.000 at 5e read noise (equivalent full well 160.000e)		
<b>Region of Interest (ROI)</b>	User defined imaging sub area for improvement of readout speed and reduction of amount of data		
<b>Hardware Trigger</b>	Galvanically isolated I/O-signals		
	Three output signals: exposure time, readout time, trigger ready, i.e. for controlling external mechanical shutters		
	One trigger input for exposure control, 5V auxiliary voltage, GND		
<b>Status LED</b>	Top LED: camera status (acquisition, power, cooling, speed)		
	Back LED: trigger status		

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<b>Interface</b>	USB 3.0 SuperSpeed (5 Gbit/s) Bandwidth max. 300 MB/s USB 2.0 optional, with lower speed
<b>Optical Interface</b>	C-Mount (17.5 mm)
<b>Max. File Size per Image</b>	Approx. 4,7 MB per image with 1920 x 1216 Pixels at 14 Bit/Pixel
<b>Operating Systems</b>	Microsoft® Windows 7 Ultimate, Enterprise and higher
<b>Size (W x H x D) / Weight</b>	10.8 cm x 4.3 cm x 7.8 cm / 500 g
<b>Housing</b>	Blue anodized aluminum ¼" standard camera mount screw thread Zero vibration by convection-cooling, optimized cooling fins Teflon coated C-Mount thread
<b>Certificates</b>	CE
<b>Power Supply</b>	Max. 7W power consumption power by USB 2.0 and USB 3.0-Bus from PC For maximum performance connection to USB 3.0 and USB 2.0 required, dual connection cabling provided with camera
<b>Ambient Conditions (Operation)</b>	+5 °C ... +35 °C Max. 80 % relative humidity, non-condensing Free air circulation required
<b>Ambient Conditions (Storage)</b>	-15 °C ... +60 °C 90 % relative humidity at +40 °C, 80 % relative humidity at +20 °C, non-condensing

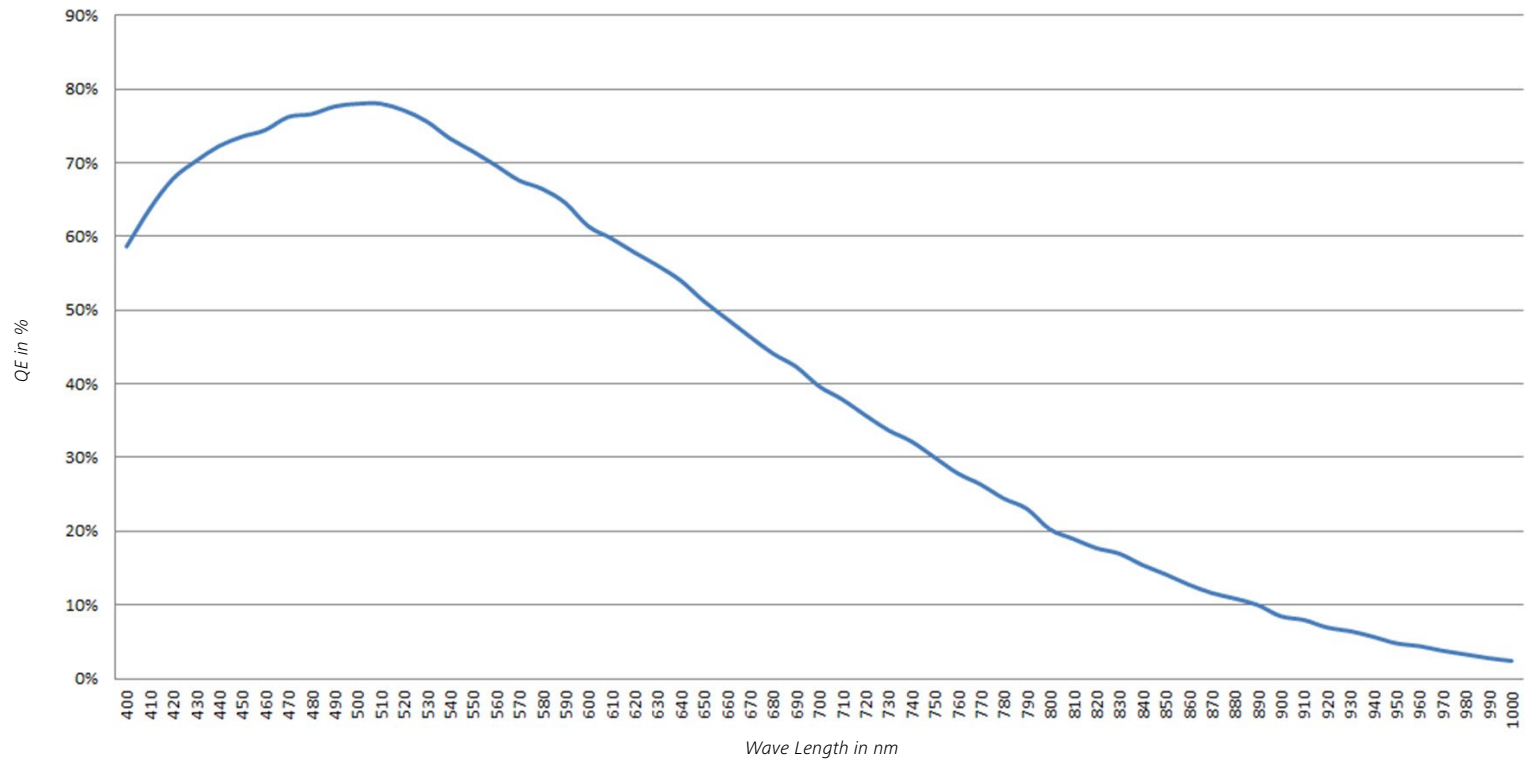
*All frame rates are maximum values at short exposure times below readout time of the sensor. Exposure time, computer hardware operating system and software can reduce the maximum achievable frame rates. By using binning or sensor sub regions (ROI), the frame rates can be further increased. Technical data is subject to changes due to technical progress.*

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**Quantum Efficiency Axiocam 702 mono**  
IMX174 without cover glass\*



\* Peak QE may be reduced by appr. 6% due to cover glass

## Count on Service in the True Sense of the Word

› Technology and Details

› **Service**

Because the ZEISS microscope system is one of your most important tools, we make sure it is always ready to perform. What's more, we'll see to it that you are employing all the options that get the best from your microscope. You can choose from a range of service products, each delivered by highly qualified ZEISS specialists who will support you long beyond the purchase of your system. Our aim is to enable you to experience those special moments that inspire your work.

### **Repair. Maintain. Optimize.**

Attain maximum uptime with your microscope. A ZEISS Protect Service Agreement lets you budget for operating costs, all the while reducing costly downtime and achieving the best results through the improved performance of your system. Choose from service agreements designed to give you a range of options and control levels. We'll work with you to select the service program that addresses your system needs and usage requirements, in line with your organization's standard practices.

Our service on-demand also brings you distinct advantages. ZEISS service staff will analyze issues at hand and resolve it – whether using remote maintenance software or working on site.

### **Enhance Your Microscope System.**

Your ZEISS microscope system is designed for a variety of updates: open interfaces allow you to maintain a high technological level at all times. As a result you'll work more efficiently now, while extending the productive lifetime of your microscope as new update possibilities come on stream.

Please note that our service products are always being adjusted to meet market needs and maybe be subject to change.



*Profit from the optimized performance of your microscope system with services from ZEISS – now and for years to come.*

>> [www.zeiss.com/microservice](http://www.zeiss.com/microservice)



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