AxioCam MRc
Impressively Simple

Brilliant Color Images for
Materials Analysis, Biology and Medicine

ZEISS

We make it visible.

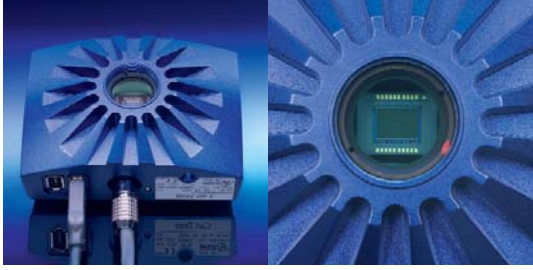
AxioCam MRc from Carl Zeiss – Distinguish Details More Precisely for More Reliable Diagnostics and Analysis

Whether it is used in materials analysis, biology or medicine – for modern routine applications a color camera needs to offer both high performance and flexibility. In complex processes, all the important steps have to be captured and analyzed quickly. Meaningful results require high-contrast images in which even the finest color gradations are visible. These are the specific requirements for which we have developed the AxioCam MRc: a high-performance color camera that offers you everything you need for simple digital documentation. And all at an astonishingly good price.

Well-conceived technology: greater efficiency in everyday laboratory practice

All the performance features of the AxioCam MRc have been designed to make documenting as simple and efficient as possible in laboratory practice. This way, reliable results can be achieved in next to no time.

- High dynamic range of 1 : 2200 makes extremely fine color gradations visible, even on reflective material surfaces
- The 2/3" CCD sensor supplies high-contrast, color-accurate images with short exposure times – even under unfavorable light conditions or with moving specimens
- With the 400 megabit fast IEEE 1394a FireWire connection, new images are transferred straight to your PC or notebook. They can then be immediately analyzed and presented using the AxioVision imaging software
- Only one cable is needed to connect the AxioCam MRc to your computer, saving space and keeping everything neat and tidy

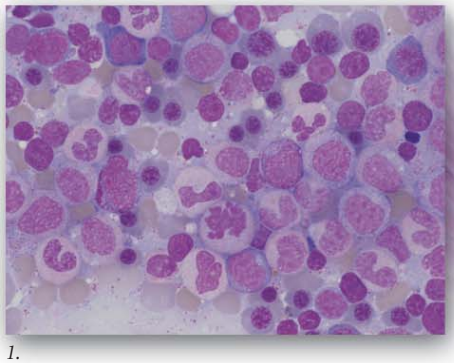


Designed for everyday practice: ease of use and fast results

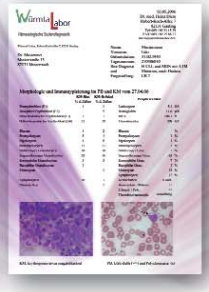
Survey large areas quickly, then choose the frame that interests you and focus with ease. The AxioCam MRc's live image, which is updated up to 38 times per second, keeps you in the picture. All the settings you need for image acquisition can be configured in AxioVision simply by clicking with your mouse, and automated step-by-step using structured workflows. This considerably simplifies not just typical material applications, such as the analysis of particle sizes, layer thicknesses or grain boundaries, but also routine biological or medical applications. Even complex acquisition techniques, like the time lapse imaging of dynamic processes, are child's play. Therefore, you will always have access to meaningful images for your scientific results.

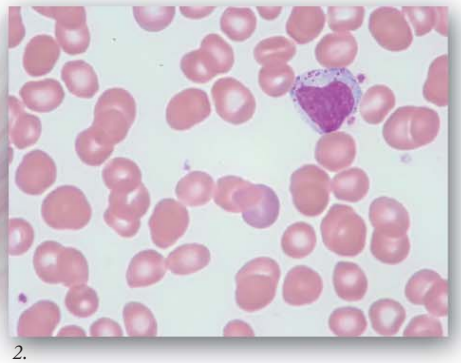
AxioCam MRc in stepwise hematological diagnostics

Easy to use, brilliant images and strong contrasts that make even the finest details visible – the AxioCam MRc is perfect for reliable hematological evaluations. There is no faster way to achieve meaningful results.



1.





2.

Hematological findings supported by meaningful images

1. *Bone marrow with megaloblastoid erythropoiesis*
2. *Peripheral blood with LGL cell and polychromasia*

Images reproduced with kind permission of Dr. med. Heinz Diem, Würmtal-Labor, Gauting, Germany

You want to	The AxioCam MRc offers
• differentiate extremely fine color gradations, even with substantial differences in brightness	• high dynamic and color range of more than 1 : 2200 at 3 x 12 bit RGB
• acquire high-quality color images for differentiated diagnoses and analyses	• a 2/3" CCD sensor with a pixel size of 6.45 µm x 6.45 µm and RGB color filters with optimized color space for extremely natural color reproduction
• focus and navigate conveniently, as well as discussion and co-observation	• a high-quality live image that is updated up to 38 times per second, with focusing aid
• acquire high-contrast, reproducible images with no disruptive image noise	• an active dark current compensation and Peltier cooling
• document living organisms and rapid processes	• a mode for rapid time lapse imaging with time-separated color computation
• work with a camera that can be operated flexibly and simply using a PC or notebook	• an IEEE 1394a FireWire interface with integrated power supply

Technical Data AxioCam MRc

Sensor	Sony ICX 285, progressive readout, with RGB filter mask
CCD basic resolution	1388 x 1040 = 1,4 megapixels
Pixel size	6.45 µm (h) x 6.45 µm (v)
Sensor size	Chip area 8.9 mm x 6.7 mm, equivalent 2/3"
Spectral range	Approx. 400 nm-700 nm, BG 40 IR protection glass
Dynamic range	Typical > 1 : 2200 (> 66.8 dB)
Full Well	Typical 17 Ke
Readout noise	Typical < 7.7 e
Dark current	Typical 0.7 e/pixels/s, dark current compensation for maximum low light performance
Readout speed	24.57 MHz pixel clock

Live image frame rates	H	x	V	Mode / Binning	Max. frame rate*
	1388	x	1040	slow / 1	13 images/s
	460	x	344	middle / 3	26 images/s
	276	x	208	fast / 5	38 images/s

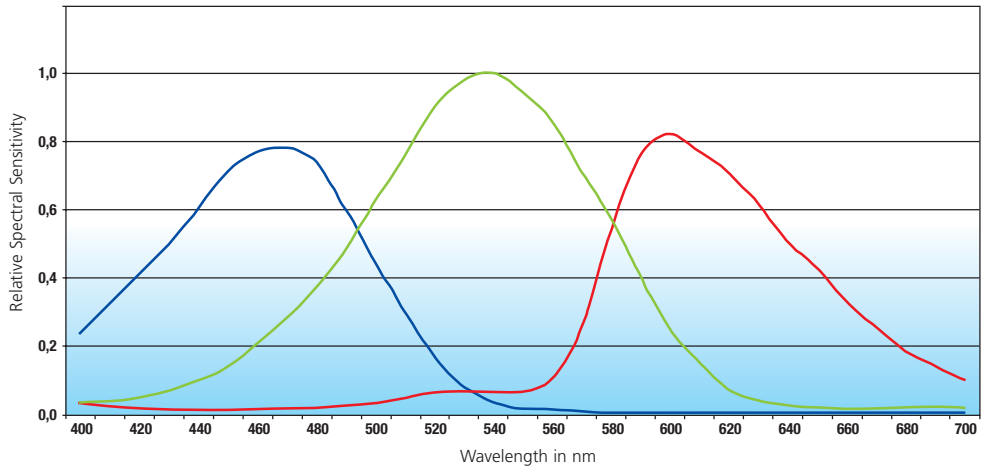
Resolution and frame rates for time lapse images in AxioVision module Fast Acquisition (High Speed Color Mode**)	H	x	V	Binning	Max. frame rate*
	1388	x	1040	1 x 1, RGB / S/W	14 images/s
	692	x	520	2 x 2, S/W	26 images/s
	460	x	344	3 x 3, RGB	35 images/s
	344	x	260	4 x 4, S/W	42 images/s
	276	x	208	5 x 5, RGB	48 images/s

Max. file size per image	Approx. 8.6 MB at 1388 x 1040 at 3 x 12 bit (36 bit color depth)
High-speed operation modes for AxioVision module Fast Acquisition	• Five preloadable exposure time parameters in camera head for high-speed multichannel acquisition*** • Continuous mode for fast triggered acquisition • Overlapping exposure and readout of the sensor in fast time lapse images****
Color interpolation	High Speed Color Mode or High Quality Color Mode selectable
Hard disk recording	Inline recording of image data directly to hard disk at all speeds with AxioVision module Fast Acquisition
Readout of subframes (ROI)	Freely selectable
Signal amplification	Analog: 2x, digital 32x
Digitization	12 bit
CCD cooling	One stage Peltier cooling
Interface	FireWire 1394a (400 megabits/s)
Range of integration time	1 ms up to 60 s
Signal output connectors	2 x TTL-Out: exposure time and readout time (i.e. for driving external electric shutters), 1 x Trigger-In to start an acquisition
Optical interface	C-Mount
Housing	Blue anodized aluminum, with cooling fins, 1/4" connection for tripod mount, 11 cm x 8 cm x 4.5 cm / 370 g
Operating system	Microsoft® Windows 2000 Professional Microsoft® Windows XP Professional
Registration	CE, cUL
Power supply	10-33 V, DC, 4 W power supply provided by FireWire bus from PC (external power supply only for notebook operation required)
Ambient condition (operation)	+5° ... +35° Celsius, max. 80% relative humidity, no condensation, free air circulation required
Order number	426508-9901-000

Above frame rates are supported by the camera electronics. Computer hardware, operating system and application software may decrease the frame rates. Selecting a part of the sensor area can increase the frame rate. All specifications are subject to change without notice.

* Frame rates depend on exposure time and readout mode.
** Image rates when recording onto hard drive in High Speed Color Mode.
*** In Continuous Mode the maximal exposure time is 819 ms per channel.
**** In basic resolution mode the sensor readout time is 69 ms. Below this value, the frame rate is only determined by readout time. Above this value, the frame rate is determined by exposure time, only. With activated binning mode, the readout time is shorter, respectively.

Relative Spectral Sensitivity



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