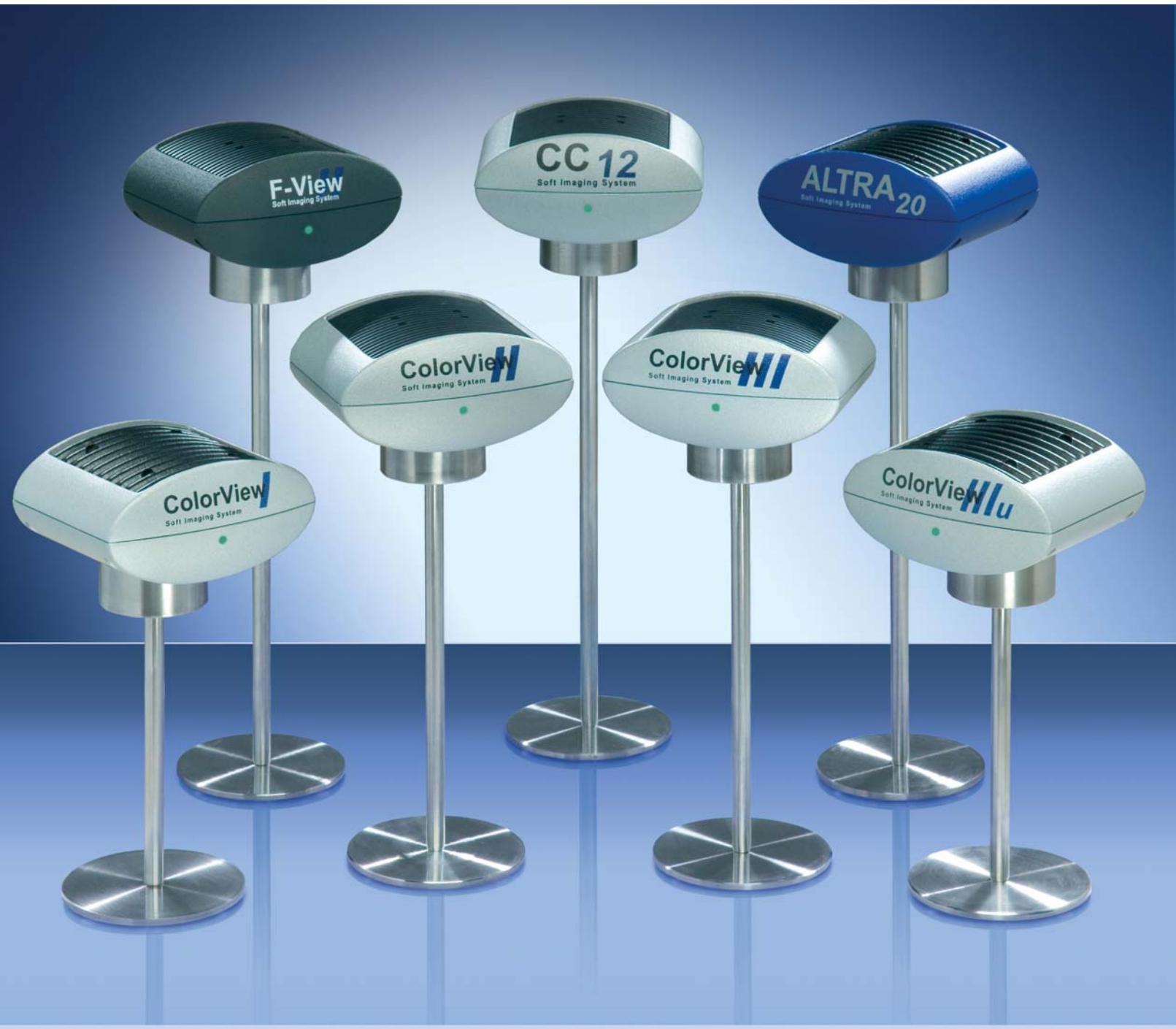
D I G I T A L I M A G I N G S O L U T I O N S

Cameras for Light Microscopy

Digital scientific-grade CCD and CMOS cameras for Light Microscopy



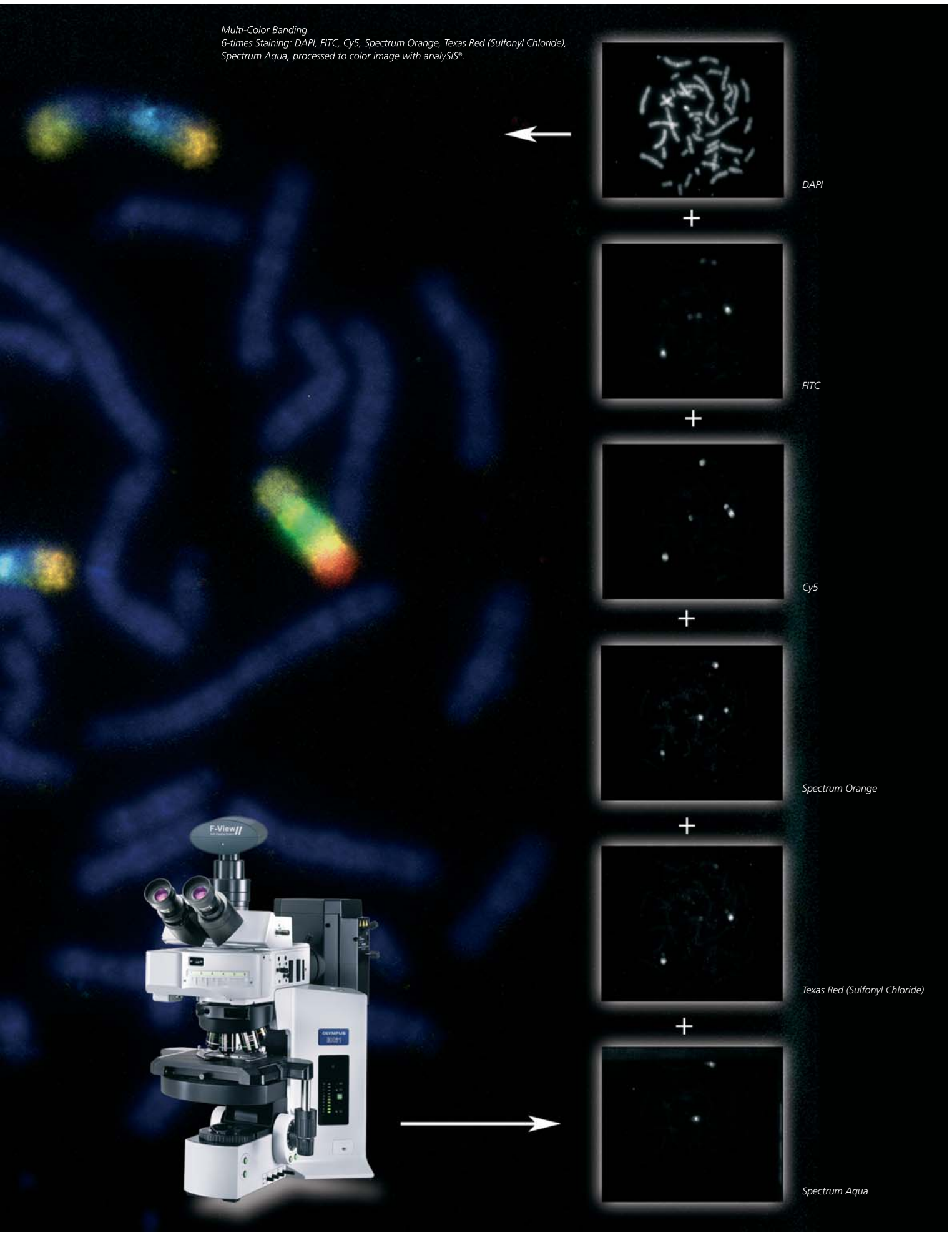
Soft Imaging System
An Olympus Company

A complete series

Soft Imaging System is the preferred source for successfully handling today's challenges in the microscopy field. The software and hardware systems provided by Soft Imaging System present powerful, innovative, and easy-to-use solutions for all applications in the life science, biomedicine, materials analysis, industrial and quality assurance sectors. Our products are designed based on the latest scientific research – meeting the needs, desires and demands of our customers. Our sophisticated products are developed to work collectively with proven methods and workflows. A proven blend of high performance and user friendliness with a long and successful track record ensures that you have the solutions you need for successfully dealing with your application, to successfully confront the challenges you face day after day.

Courtesy by Mr Dr. Thomas Liehr, University Jena, Inst. for Human Genetics and Anthropolgy, Kollegiengasse 10, 07743 Jena, Germany

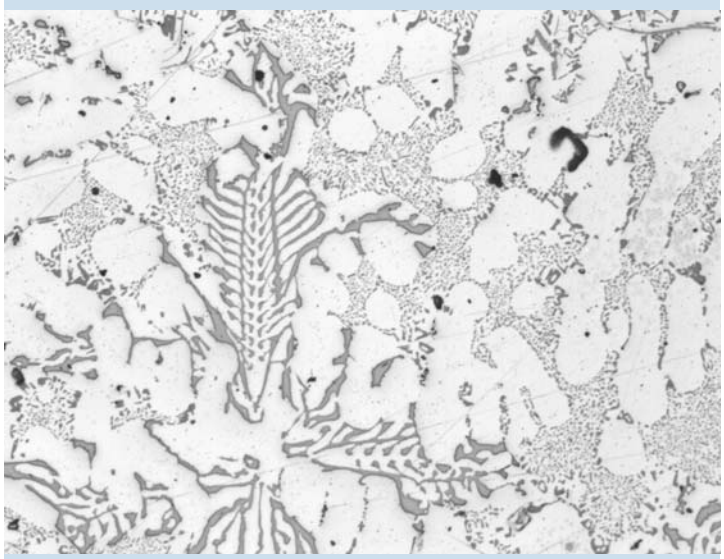
Multi-Color Banding
6-times Staining: DAPI, FITC, Cy5, Spectrum Orange, Texas Red (Sulfonyl Chloride), Spectrum Aqua, processed to color image with analySIS®.



Covering the entire spectrum

Soft Imaging System offers a sophisticated portfolio of digital color and monochrome cameras for the light microscopy field. Because one single camera is not capable of meeting today's demanding digital acquisition challenges, we offer our users a product family. A range of intercoordinated products, finely tuned to complement each other. Top priority with regard to concept, architecture and expansion of our camera family is placed on the various sectors, applications and imaging procedures of today's light microscopy field. The spectrum of our products ranges from base-level CMOS cameras for documentation purposes, products for fast image acquisition to cooled, high-sensitivity CCD cameras for in-depth fluorescence investigation in the live cell imaging sector.

1 *Daphnia longispina*



Dendritic cast iron
2 *(including 2 different eutectics in the residue melt area)*

Superior properties

Our digital cameras have numerous features in common. These include properties such as:

- high resolution
- high frame rates
- high sensitivity
- extraordinary signal-to-noise ratio
- broad dynamic range
- partial readout
- easy-to-install onto C mount adapter
- sleek design
- optimal price-performance ratio

Elegant integration

The control software for all digital cameras is integrated with a flexible and expandable software environment. This ensures easy, intuitive operation of the cameras and offers enormous image and data display capabilities, as well as guaranteeing effective image and data processing. Users have outstanding images at the click of a button, direct transfer of images onto the internet as well as image processing, image analysis, archiving and report generation directly following image acquisition.

ColorView I

The ColorView *I* is our standard color 3.2 MegaPixel CCD camera for most of standard light microscopy methods.

Features

- 3.2 MegaPixels
- Excellent color reproduction
- Full field of view up to 30 fps

Applications

- All standard light microscopy methods
- Histology, pathology, cytology
- Digital documentation

Altra$_{20}$

The Altra$_{20}$ is a color CMOS camera with an excellent price-performance ratio.

Features
- 2 MegaPixels
- Fast subsampling modes
- USB 2.0 interface

Applications
- Brightfield microscopy
- Digital documentation

F-View II

The F-View *II* is a cooled monochrome CCD camera optimized for high sensitivity.

Features
- 1.4 MegaPixels
- High frame rates up to 72 fps
- High sensitive b/w sensor
- Trigger function optional
- Peltier cooling

Applications
- Strong signal and low light fluorescence microscopy – eg, Ca^{2+}, FRET, FRAP, TIRF, etc.
- NIR imaging (extended sensitivity, optional)
- Automated materials-analysis applications – eg, wafer inspection, filter inspection, non-metallic inclusions, etc.
- Semiconductor imaging

CC-12

The cooled CC-12 is an all-around color CCD camera for a wide range of applications.

Features
- 1.4 MegaPixels
- High frame rates up to 72 fps
- High sensitive color sensor
- Trigger function optional
- Peltier cooling

Applications
- All standard light microscopy methods
- Digital documentation
- Strong signal fluorescence microscopy
- Automated materials analysis
- Applications – eg, wafer inspection, filter inspection, non-metallic inclusions, etc.

ColorView II

The ColorView *II* is the cooled version of the 3.2 MegaPixel color camera, offering longer exposure times, usable for low light imaging.

Features
- 3.2 MegaPixels
- Excellent color reproduction
- Partial Readout
- Full field of view up to 30 fps
- Peltier cooling

Applications
- All standard light microscopy methods
- Histology, pathology, cytology
- Materials research
- Strong signal fluorescence microscopy in color

ColorView IIIu

The ColorView *IIIu* is the high resolution color camera with a bunch of features for scientific-grade imaging.

Features
- 5 MegaPixels
- Excellent color reproduction
- Partial Readout
- Full field of view up to 20 fps

Applications
- All standard light microscopy methods
- Histology, pathology, cytology
- Materials research
- Digital documentation

ColorView III

The cooled ColorView *III* is the premium high resolution color camera perfectly suited for all applications from standard documentation to low light imaging.

Features
- 5 MegaPixels
- Excellent color reproduction
- Partial Readout
- Full field of view up to 20 fps
- Sensitive b/w-mode
- Peltier cooling

Applications
- All standard light microscopy methods
- Ideal for histology, pathology, cytology
- Materials research
- Strong signal fluorescence microscopy in color and b/w

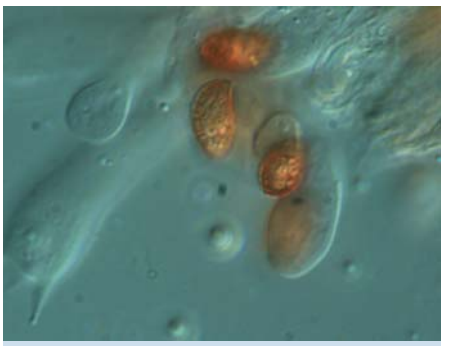
Specifications

	Altra$_{20}$	*F-View II*	*CC-12*	*ColorView I*
				
Resolution	1596 x 1196 pixels	1376 x 1032 pixels	1376 x 1032 pixels	2080 x 1544 pixels
(Color) binning / subsampling	2x, 4x	2x, 4x, 8x	2x, 4x	2x, 3x
Chip size	7.9 x 7.9 mm² (1/2")	10.2 x 8.3 mm² (2/3")	10.2 x 8.3 mm² (2/3")	8.1 x 6.64 mm² (1/1.8")
Pixel size	4.2 x 4.2 µm²	6.45 x 6.45 µm²	6.45 x 6.45 µm²	3.45 x 3.45 µm²
Effective area	6.7 x 5.0 mm²	8.9 x 6.7 mm²	8.9 x 6.7 mm²	7.1 x 5.3 mm²
Pixel clock rate	24 MHz	20 MHz	20 MHz	20 MHz
Dynamic range	3 x 10 bits	12 bits	3 x 12 bits	3 x 12 bits
Exposure times	74 µs – 1.336 s	100 µs - 160 s	100 µs - 160 s	100 µs - 10 s
Frame rates (typical)	7.5 fps @ full resolution 30 fps @ subsampling 2 80 fps @ subsampling 4	12.4 fps @ full resolution 22.9 fps @ 2x binning 39.3 fps @ 4x binning 72.3 fps @ 8x binning	12.4 fps @ full resolution 22.9 fps @ 2x binning 39.3 fps @ 4x binning	5.6 fps @ full resolution 11.1 fps @ 2x binning 29.5 fps @ 3x binning
Performance increase via Fast-SnapShot routine *,**	–	350%	275%	200%
Live-image transfer via LAN*	no	yes	yes	yes
Cooling	no	Peltier, 10° @ 25°C ambient	Peltier, 10° @ 25°C ambient	no
Temperature control	no	CCD chip, housing	CCD chip, housing	no
Partial readout	no	no	no	no
B/W mode	no	–	Binning 2x, 4x	yes
External trigger function (optional)	no	yes	yes	no
Read-out noise	–	< 10 e-	< 10 e -	< 10 e-
Non-Linearity	–	< 0.6%	< 0.6%	< 0.6%
Anti-Blooming	–	> 300	> 300	> 300
Dimensions	100 x 85 x 50 mm²	100 x 85 x 50 mm²	100 x 85 x 50 mm²	100 x 85 x 50 mm²
Weight	550 g	570 g	570 g	570 g
Camera mount	standard C mount	standard C mount	standard C mount	standard C mount
PC interface	USB 2.0	FireWire™ (IEEE 1394)	FireWire™ (IEEE 1394)	FireWire™ (IEEE 1394)
Operating system	Windows 2000 / XP	Windows 2000 / XP	Windows 2000 / XP	Windows 2000 / XP
analySIS	analySIS® Five (Build 1054) or higher	analySIS® 3.2 or higher	analySIS® 3.2 or higher	analySIS® Five (Build 1054) or higher
TWAIN	yes	yes	yes	yes

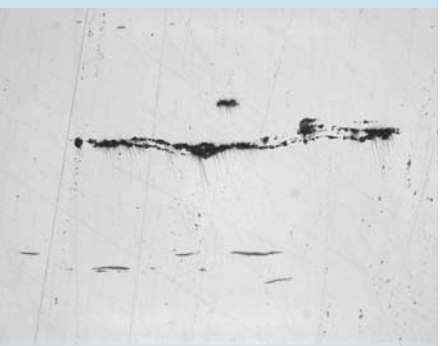
*Note: * The Fast-SnapShot functionality and the Live-image transfer via LAN are only available with analySIS® 3.2 or higher and in combination with cameras by Soft Imaging System.*

*** Increase of single image acquisition rate compared to standard snapshot routine within following applications: analySIS® stage manager, analySIS® automater, analySIS® Wellnavigator, analySIS® Filterinspector, analySIS® Waferinspector. The resulting frame rate using Fast-Snapshot depends on how PC is configured.*

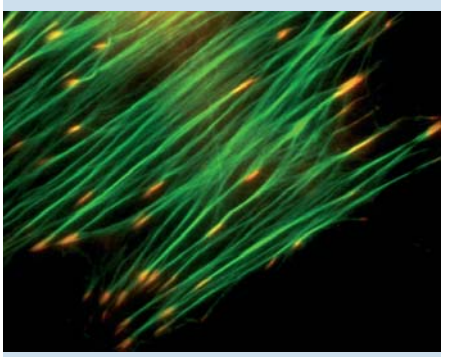
	ColorView II	ColorView IIIu	ColorView III
			
	2080 x 1544 pixels	2576 x 1932 pixels	2576 x 1932 pixels
	2x, 3x	2x, 4x, 6x	2x, 4x, 6x
	8.1 x 6.64 mm² (1/1.8“)	9.74 x 7.96 mm² (2/3“)	9.74 x 7.96 mm² (2/3“)
	3.45 x 3.45 µm²	3.4 x 3.4 µm²	3.4 x 3.4 µm²
	7.1 x 5.3 mm²	8.8 x 6.6 mm²	8.8 x 6.6 mm²
	20 MHz	20 MHz	20 MHz
	3 x 12 bits	3 x 12 bits	3 x 12 bits
	100 µs - 160 s	1 ms - 160 s	1 ms - 160 s
	5.6 fps @ full resolution 11.1 fps @ 2x binning 29.5 fps @ 3x binning	3.8 fps @ full resolution 7.3 fps @ 2x binning 14.4 fps @ 4x binning 19.2 fps @ 6x binning	3.8 fps @ full resolution 7.3 fps @ 2x binning 14.4 fps @ 4x binning 19.2 fps @ 6x binning
	200%	175%	175%
	yes	yes	yes
	Peltier, 10° @ 25°C ambient	no	Peltier, 10° @ 25°C ambient
	CCD chip, housing	no	CCD chip, housing
	yes	yes	yes
	yes	yes	yes
	no	no	no
	< 10 e-	< 10 e-	< 10 e-
	< 0.6%	< 0.6%	< 0.6%
	> 300	> 300	> 300
	100 x 85 x 50 mm²	100 x 85 x 50 mm²	100 x 85 x 50 mm²
	570 g	570 g	570 g
	standard C mount	standard C mount	standard C mount
	FireWire™ (IEEE 1394)	FireWire™ (IEEE 1394)	FireWire™ (IEEE 1394)
	Windows 2000 / XP	Windows 2000 / XP	Windows 2000 / XP
	analySIS® 3.2 or higher	analySIS® Five (Build 1054) or higher	analySIS® 3.2 or higher
	yes	yes	yes



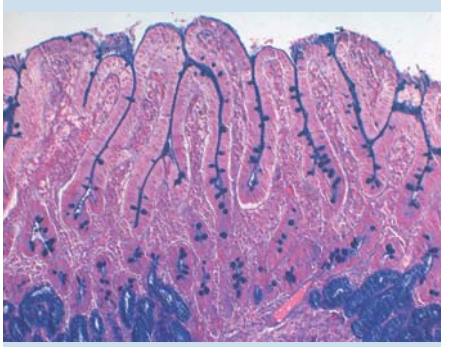
1 *Spore*



2 *Non metallic inclusion*



Fibroblast: focal adhesions (red), actin filaments (stress fibers, green)

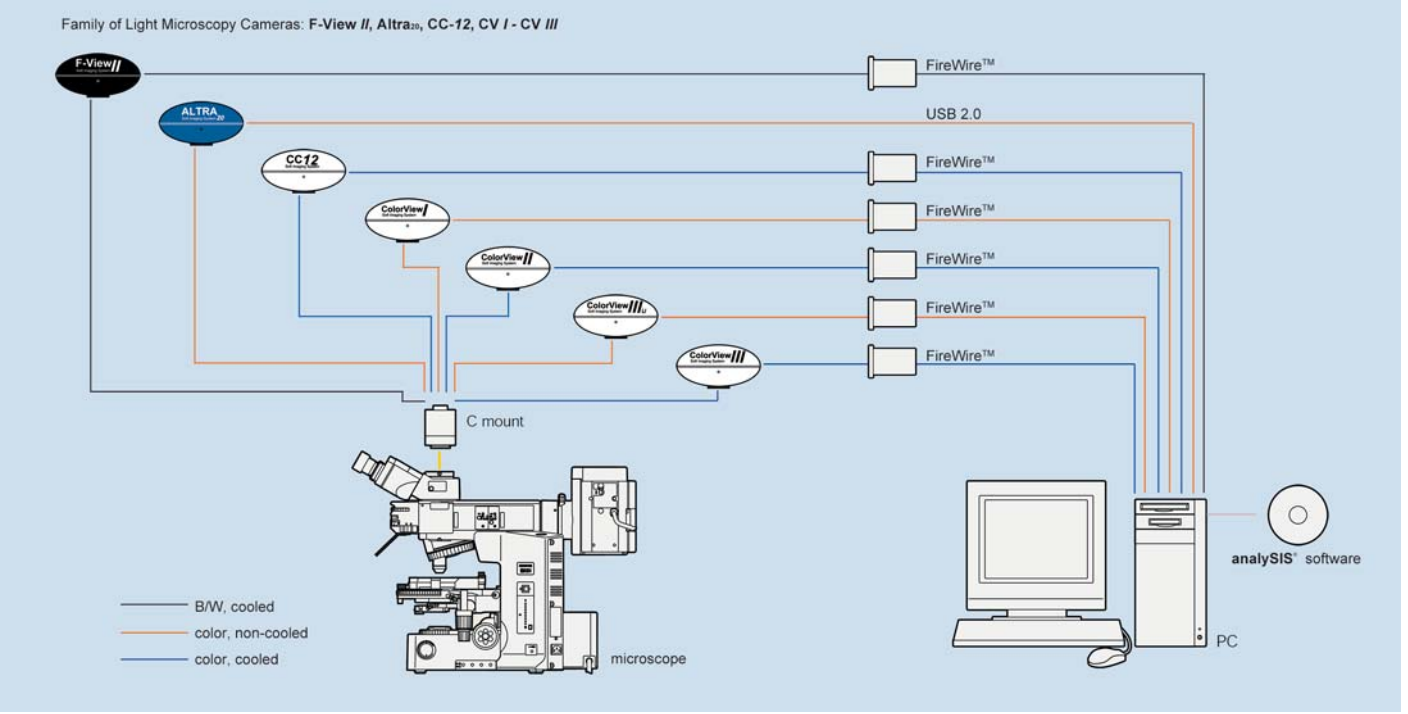


4 *Duodenum*

Overview

Application	*F-View II* 1.4 MPixel	*Altra$_{20}$* 2 MPixel	*CC-12* 1.4 MPixel	*CV I* 3.2 MPixel	*CV II* 3.2 MPixel	*CV IIIu* 5 MPixel	*CV III* 5 MPixel
Brightfield microscopy	+	+	+	+	+	+	+
Special microscopy methods – eg, darkfield, polarization, phase, contrast, DIC, etc.	+		+	+	+	+	+
Digital documentation	+	++	+	++	++	++	++
Histology, pathology and cytology				+	++	+	++
Materials research	+		+	+	++	+	++
Color digital time-lapse recording			+	+	+	+	+
Strong signal fluorescence microscopy	++		++		+		+
Low-light fluorescence microscopy	++		+				
Genetic and bioscience research	+		+				
Semiconductor imaging	+						
Automated materials-analysis applications – eg, wafer inspection, filter inspection, non-metallic inclusion, etc.	+		+				
NIR imaging	+						

System diagram



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