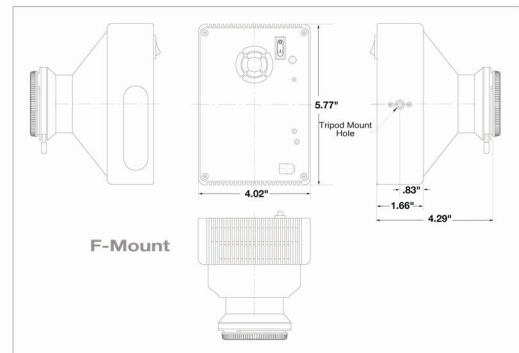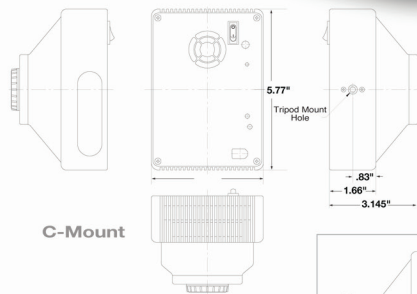# Flex™

4.0 Mp | MONOCHROME

The SPOT™ Flex Monochrome is an extreme resolution camera with a wide field of view. Deep pixel wells provide high dynamic range, and binning is supported to increase sensitivity. Cooling and 14-bit digital output reduce noise for low light level imaging. The suggested applications for this camera include widefield monochrome imaging, fluorescence, slide scanning, inspection, and phase contrast studies.

The SPOT Flex includes SPOT Basic software (Windows® and Mac® OS) which features real time image previewing, scale bar addition, report generation, time lapse, and measuring capabilities. IEEE 1394 Firewire™ connectivity enables effortless installation on computers and laptop portability. SPOT Flex cameras come with a 2-year warranty and are supported by an experienced team of imaging specialists.

C-Mount

5.77"
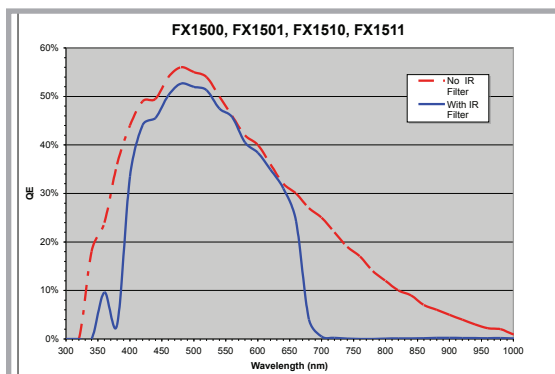Tripod Mount Hole
.83"
1.66"
3.145"

F-Mount

5.77"
Tripod Mount Hole
4.02"
.83"
1.66"
4.29"

Features	Benefits
40 MHz live mode (dual channel 20 MHz)	High speed imaging for real time viewing
4 Mp – 64 Mp	Multiple resolution options provide the ability to capture a wide range of samples
14-bit x 20 MHz capture	Extra bit depth is ideal for image enhancement
15.2 mm x 15.2 mm imaging area 21.4 mm FN	Large field of view to closely match the field of view in the microscope eyepiece
IR filter or non-filtered versions	Enhanced flexibility based upon your application needs
FireWire® interface	Allows for effortless installation, hot-swapping, and laptop connectivity for greater ease of use

SPOT Imaging Solutions™
A division of Diagnostic Instruments, Inc.

Sensor

Resolution	4.0 Mp
Sensor Type	Kodak KAI-4020-M with cover glass progressive scan interline CCD
Active Pixels	2048 x 2048
Pixel Size	7.4µm x 7.4µm
Optical Format	4/3" (4:3)
Active Imager Size	15.16 mm x 15.16 mm 21.43 mm diagonal
Exposure Time	1 ms to 536 seconds
Binning	1x1, 2x2, 3x3, 4x4
Cooling	-20°C differential from ambient via thermoelectric cooler with hermetically sealed, fan cooled heat sink
Read Noise	15 e⁻ rms
Dark current	0.103 e/p/s mean value
Full Well Depth	33,333 e⁻
Non-linearity	<1%
Bit Depth	14-bit
Sensor Readout Frequency	40 MHz

Camera

Lens Mount	C-mount (F-mount available)
Computer Interface	FireWire® IEEE 1394a interface
Trigger Connectors	Camera ready (TTL) External trigger input (TTL) Exposure sync output (TTL)
Tripod Mount	1/4"-20 UNC
Weight	C-Mount 2.4lbs. (1.09kg) F-Mount 2.4lbs. (1.09kg)
Size	(C-Mount) 5.77" x 4.02" x 3.15" (147mm x 102mm x 80mm) (F-Mount) 5.77" x 4.02" x 4.29" (147mm x 102mm x 109mm)
Power Requirements	100-240 VAC, 47/63Hz
Operating Environment	0 to 30°C ambient, 0 to 80% relative humidity (non-condensing)
Certifications	CE, FCC Class A, EN60950, RoHS

Quantum Efficiency

FX1500, FX1501, FX1510, FX1511

Captured Frame Rates Captured Frames per Second *

Binning level	Region of interest				
	2048 x 2048	1024 x 1024	512 x 512	256 x 256	50 x 50
1 x 1	3.5	6.32	10.7	16.3	28.5
2 x 2	6.2	10.6	16.1	21.7	30.5
3 x 3	8.5	13.5	19.0	23.9	30.3
4 x 4	10.2	15.3	20.4	24.5	

*1ms exposure with post-processing deferred, taken with 2.6 Ghz Xeon processor running Windows XP. Single shot mode. Capture rates on other computers OS platforms may vary.

SPOT Software

SPOT Basic Software Features	Live mode viewing window with controls
	Image capture window
	Image capture setups are user defined, named and saved
	Auto or manual exposure for Live and captured images
	Zoom control on Live and captured images
	Auto white balance
	Spot or average metering
	Flatfield correction
	Annotation
	Calibration mark
	Measurement tools
	Image enhancement tools
	Sequential image capture and playback
	Report generator
	Interactive print dialog
	Help menu
	3rd Party Software Interface: Standard Twain for Windows®, SPOT Image Capture Application & AppleEvent for Mac®
Computer Operating System Compatibility	Windows®: XP SP3 (32-bit), Vista (32 or 64-bit), 7 (32 or 64-bit) and 8 (32 or 64-bit) Mac®: OS 10.6 - 10.8
Minimum Computer Requirements	PC: 1GHz Pentium 4 (or equivalent x86 SSE2 processor), 1 GB RAM, IEEE 1394a port Mac®: Intel processor, 1 GB RAM, IEEE 1394a port Mac® and PC video: 24-bit color @ 1024 x 768 resolution
SPOT Advanced Software	Available (includes macro feature, floating taskbars, custom dialogs and image archiving database)
SPOT Advanced Software Modules (Optional)	Available (adds image display intensity scaling, peripheral device control, extended depth of focus and extended third party interface)
Software Development Kit	Available for Mac® and Windows®
Native Drivers for 3rd Party Software	Available (call or visit our website)

Items Included

Camera Head	With lens cap
FireWire® cables	Data cables (6-pin and 6 to 9 pin)
Power supply	With power cord, 2.29" (58mm) x 5.20" (132mm) x 1.18" (30mm), 0.70 lbs. (0.32kg)
Quick Start Installation Guide	Instructions on how to get up and running quickly
Software CD	Includes SPOT Basic software and User Guide
Warranty	2 years from date of purchase

Catalog Number

		C-Mount	F-Mount
Flex Mono	No IR filter	FX1500	FX1501
Flex Mono	With IR filter	FX1510	FX1511

Specifications are typical and subject to change.

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