

Digital B/W Cameras

III PS 4 – 285 | 205 | 1020 FW



The digital PS cameras have been designed especially for software integration.

The matching Kappa sdk3 offers a state-of-the-art software environment based on .net and C-API. In combination with the sdk or a detailed interface description the PS cameras convince as high-performance components in all measuring and testing machines.

The camera series is based on variable camera electronics, low power consumption and advanced circuitry, providing both an extremely rugged design and excellent signal quality.

The user can choose from a range of high-quality CCD sensors with megapixel resolution by Sony and Kodak.

As standard the series comes in a block housing, but for the individual touch it is also available in a striking hexagonal design housing.

The digital Kappa camera systems comply with the highest standards and offer outstanding Kappa-specific technological highlights, such as rugged design, excellent highly linear signal quality, extraordinary signal-to-noise ratio, long-time exposure and, optionally, a second serial interface with bespoke configuration of functions. High frame rates are achieved by binning and partial scan, while the image size remains freely adjustable



FireWire

Digital camera
Black-and-white
FireWire
12 bit digital signal processing
Progressive scan
Megapixel resolution
Up to 30 fps (2 fold binning)
External trigger, reset/restart
Partial scan Binning
Gamma correction
Automatic functions
Long time integration
Cooled camera PS 4C – 285 FW

Technical Data

Sensor-specific data

III PS 4 – 285 FW | PS 4C – 285 FW

CCD sensor	2/3" interline transfer CCD progressive scan with micro lenses (Sony ICX285AL, EXview HAD)
Pixel size (H x V)	6.45 μm x 6.45 μm
Light-sensitive area (H x V)	8.93 mm x 6.66 mm
Number of pixels (H x V)	1434 x 1050, total
Spectral sensitivity (without IR-filter)	320 nm - 1100 nm
Full well capacity	23 000 e^-
A/D-conversion factor	5.6 e^- / increment
Dynamic range	63 dB (measured in dark image, at 66 ms exposure time and 0 dB gain)
Sensitivity	(measured at 18 dB gain, gamma = 1, and 50 % level, 3000 K) 0.02 lx at 100 ms exposure time 0.000017 lx at 120 s exposure time 0.0000017 lx at 20 min exposure time (Cooled camera PS 4C – 258 FW)

III PS 4 – 205 FW

CCD sensor	1/2" interline transfer CCD progressive scan with micro lenses (Sony ICX205AL, EXview HAD)
Pixel size (H x V)	4.65 μm x 4.65 μm
Light-sensitive area (H x V)	7.6 mm x 6.2 mm
Number of pixels (H x V)	1434 x 1050, total
Spectral sensitivity (without IR-filter)	320 nm - 1100 nm
Full well capacity	12 000 e^-
A/D-conversion factor	2.9 e^- / increment
Dynamic range	55 dB (measured in dark image, at 66 ms exposure time and 0 dB gain)
Sensitivity	(measured at 18 dB gain, gamma = 1, and 50 % level, 3000 K) 0.04 lx at 100 ms exposure time 0.000033 lx at 120 s exposure time

III PS 4 – 1020 FW

CCD sensor	2/3" interline transfer CCD progressive scan with micro lenses (Kodak KAI 1020 M)
Pixel size (H x V)	7.4 μm x 7.4 μm
Light-sensitive area (H x V)	7.4 mm x 7.4 mm
Number of pixels (H x V)	1028 x 1008, total
Quantum efficiency	max. 42% at 490 nm
Spectral sensitivity (without IR-filter)	320 nm - 1000 nm
Full well capacity	42 000 e^-
A/D-conversion factor	10.3 e^- / increment
Readout noise	50 e^- rms
Dynamic range	60 dB (measured in a dark image, at 33 ms exposure time and 0 dB gain)
Sensitivity	(measured at 18 dB gain, gamma = 1, and 50 % level, 3000 K) 0.06 lx at 100 ms exposure time 0.00005 lx at 120 s exposure time

Technical Data

Interface-specific data

II PS 4 – 285 FW | PS 4C – 285 FW

Color coding	Mono 8, Mono 16			
Camera output (IIDC format 7)*	full frames:	1434 x 1050 pixels	Mono 16	11 fps
	binning:	2 fold	4 fold	8 fold
	image size (pixels):	717 x 525	358 x 262	179 x 131
	frame rate :	25 fps	41 fps	62 fps
	partial scan:	image size freely adjustable		
Camera output (IIDC format 2)*	mode 2	1280 x 960 pixels	8 bit mono	15 fps
	mode 6	1280 x 960 pixels	16 bit mono	7.5 fps
Exposure	manual:	1 μ s to 120 s (Cooled camera: up to 20 min)		
	automatic (AE):	1 μ s to 66 ms at 1280 x 960 pixels		
Power supply	9-36 V DC, 3 W			

II PS 4 – 205 FW

Color coding	Mono 8, Mono 16			
Camera output (IIDC format 7)*	full frame:	1434 x 1050 pixels	Mono 16	11 fps
	binning:	2 fold	4 fold	8 fold
	image size (pixels):	717 x 525	358 x 262	179 x 131
	frame rate:	25 fps	41 fps	62 fps
	partial scan:	image size freely adjustable		
Camera output (IIDC format 2)*	mode 2	1280 x 960 pixels	8 bit mono	15 fps
	mode 6	1280 x 960 pixels	16 bit mono	7.5 fps
Exposure	manual:	1 μ s 120 s		
	automatic (AE):	1 μ s to 66 ms at 1280 x 960 pixels		
Power supply	9-36 V DC, 3 W			

II PS 4 – 1020 FW

Color coding	Mono 8, Mono 16			
Camera output (IIDC Format 7)*	full frame:	1028 x 1008 pixels	Mono 16	16 fps
	binning:	2 fold	4 fold	8 fold
	image size (pixels):	514 x 504	257 x 252	128 x 126
	frame rate:	36 fps	60 fps	90 fps
	partial scan:	image size freely adjustable		
Camera output (IIDC Format 1)*	Mode 2	800 x 600 pixels	8 bit mono	30 fps
	Mode 6	800 x 600 pixels	16 bit mono	30 fps
Exposure	manual:	1 μ s to 120 s		
	automatic (AE):	1 μ s to 33 ms at 800 x 600 pixels		
Power supply	9-36 V DC, 2.9 W			

Signal processing | Development tools

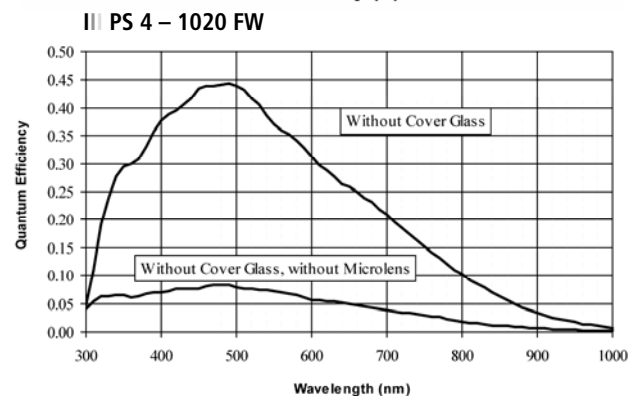
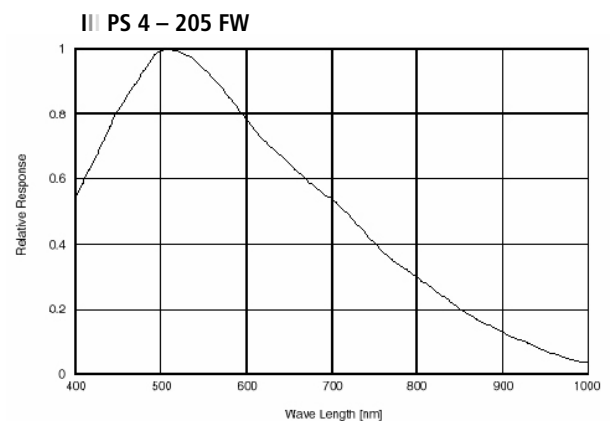
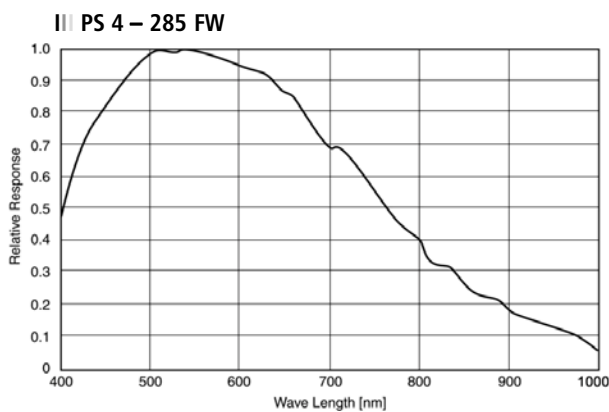
Development tool	software development kit, Kappa sdk3 (.Net-class library/C-function library, API) order-no.: 771-5757			
System	12 bit digital			
Gain	manual/automatic (AGC): 0 to 18 dB			
Enhancement	contrast:	1.0 to 8.0 fold		
	brightness:	subtraction, 0 to 4095 LSB, max. 50% of the output level		
	edge:	adjustable		
Gamma	0.3 to 2.2			
Diagnostics	camera name, serial number, revision number, temperature of sensor and camera, built-in test image size, frame rate, test pattern			
Line generator	2 reticles: position, color and style adjustable			
Measuring window	position and size adjustable			
Synchronization	intern/extern, reset/restart (delay < 10 μ s)			
Hardware Trigger	Minimum trigger delay 4.2 μ s - 8.2 μ s depending on the sensor type Frame on Demand			
Software Trigger	via IIDC register			

* Format and mode according to "IIDC 1394-based specification for digital camera version 1.3"

General Technical Data

Interfaces	IEEE 1394a / FireWire, 2 ports (6-pin) with 400 Mbit/s system connector (power supply, additional RS 232, control and trigger signals)	
Lens mount	C-mount, focal plane adjustable, CS-mount on request	
Filter	IR-filter, removable	
Temperature	operating temperature -20°C to +60°C, storage temperature -30°C to +70°C	
Dimensions Weight	block housing:	60 x 60 x 55 mm; 275 g
	design housing:	diameter 75 mm, length 55 mm; 410 g
	cooled camera:	73 x 69 x 115 mm; 860 g
System requirements	hardware: connection 1394a OHCI (6 pin) or equivalent, minimum 1.8 GHz, minimum 512 MB RAM, DirectX9-enabled graphics card with at least 64 MB operating system: Microsoft Windows 2000®, Microsoft Windows XP® (32 Bit Edition), Microsoft Windows Vista® (32 Bit Edition)	
Cable length	FireWire cable up to 10 m	
Order-no. block housing	PS 4-285 FW	953-1719
	PS 4-205 FW	953-1718
	PS 4-1020 FW	953-1703
Order-no. design housing (red)	PS 4-285 FW	953-1719R
	PS 4-205 FW	953-1718R
	PS 4-1020 FW	953-1703R
Order-no. Cooled camera	PS 4C-285 FW	953-1725
Standard equipment	camera	
In addition for cooled version	power supply ACC 2 (incl. control cable 4 m and power supply cable)	

Spectral Sensitivity Characteristics (without IR-filter)



We are constantly checking the accuracy of the technical data. We are prepared to provide more detailed information on request. Technical data are subject to change without notice!