pixelfly qe
high performance digital 12bit CCD camera system

- superior quantum efficiency up to 65%
- ultra compact design
- 12bit dynamic range
- high resolution (1392 x 1024pixel)
- temperature compensated
- exposure times from 5µs - 65s
- readout noise typ. 7e⁻ rms
- serial high speed data transfer up to 10m
- standard PCI or compact PCI control board
- integrated front-end processor with opto-coupler input and highside driver
- free software camware and software development kit included

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pixelfly qe

This high performance digital 12bit CCD camera system features state of the art in CCD and electronics technology. The pixelfly qe has an extraordinary quantum efficiency with up to 65%. The system consists of an ultra compact camera head, which either connects to a standard PCI or a compact PCI board via a high speed serial data link. The available exposure times range from 5µs to 65s. A digital temperature compensation is integrated instead of a space consuming thermo-electrical cooling unit. All camera functions can be remotely accessed and controlled via digital interface. This compact digital CCD camera system is perfectly suited for many scientific and industrial imaging applications, like microscopy, spectroscopy and quality control.

technical data

	unit	setpoint	pixelfly qe
resolution (hor x ver) [1]	pixel		1392 x 1024
pixel size (hor x ver)	µm²		6.45 x 6.45
sensor format / diagonal	inch / mm		2/3" / 11.14
peak quantum efficiency	%	@ 500nm typical	62
full well capacity	e^-		18 000
image sensor			ICX285AL
dynamic range	dB	CCD + camera	69.5
dynamic range A/D [2]	bit		12
readout noise	e^- rms	range / typical	6..9 / 7
imaging frequency, frame rate	fps	@ full frame @ binning 2x ver	12 23
pixel scan rate	MHz		20
A/D conversion factor	e^- / count		3.8
spectral range	nm		290..1100
exposure time	s		5µs..65s
anti-blooming factor		@ standard light mode / @ low light mode @ 100 ms exposure time	> 400 / > 4
smear	%		> 0.002
binning horizontal	pixel		1, 2
binning vertical	pixel		1, 2
region of interest			no
extinction ratio		@ 1ms exposure time	1 : 2000
non linearity (differential)	%	full temperature range	< 2
uniformity darkness DSNU [3]	count	@ 90% center zone	1
uniformity brightness PRNU [4]	%	typical	1
trigger, auxiliary signals		internal / external	software / TTL level, 24V
power consumption	W		12
power supply	VAC		via PCI
mechanical dimensions camera (w x h x l)	mm³		39 x 39 x 68

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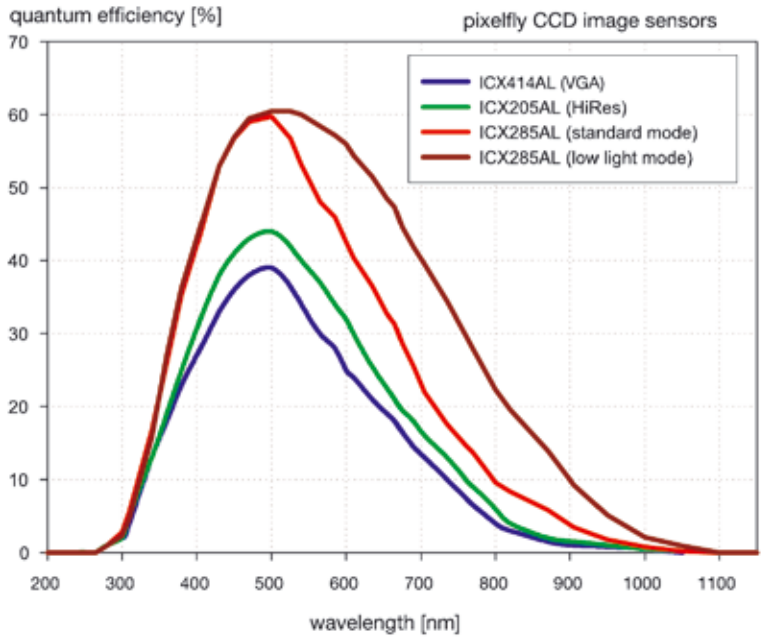
weight	kg	camera	0.27
ambient temperature range	°C		+10..+40
operating humidity range	%	non condensing	10..90
storage temperature range	°C		-20..+70
optical input			c-mount
optical input window			fused silica
data interface			PCI, compact PCI
CE certified			yes
CCD temperature control			digital compensation

[1] horizontal versus vertical
[2] Analog-to-Digital-converter
[3] dark signal non-uniformity
[4] photo response non-uniformity

data transfer to PC	high speed serial LVDS shielded ethernet patch cable RJ45 connector	
frontend processor	type speed download interface	Atmel AT90S8515 8 Mips via PCI bus 6 optocoupler input 5V, 12V or 24V TTL I/O
connector	high density DSUB 26Pin	
software	camware software for camera control, display, storage and printing of image data under Windows9x, ME, XP, WindowsNT, Windows2000; software development kit (SDK) with demo software for the above mentioned operating systems and Linux; TWAIN driver; drivers or plug-ins for popular third party image processing products	
options	color CCD sensor double shutter version with 5µs interframing time hardened against high magnetic fields custom-made versions power supply for compact PCI, 24VDC input integrated photometer for exposure control 4 highside driver 12V / 24V	

quantum efficiency



(measured by pco).

areas of application

- low light level imaging
- combustion imaging
- high resolution microscopy
- machine vision and industrial applications
- bioluminescence / chemoluminescence
- luminescence spectroscopy
- Red and NIR fluorescence applications
- spectroscopy
- imaging of bio markers (e.g. green fluorescent protein, GFP)
- quality control
- material testing
- scientific imaging

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