sensicam uv
uv sensitive digital 12bit CCD camera system

- excellent quantum efficiency in UV (QE~10% @ 193nm)
- electron multiplication gain from 1 to 500
- high resolution of 1004 x 1002 pixel
- extremely low noise < $1e^-$ @ gain > 50
- 12bit dynamic range @ gain = 1
- shutter / exposure times from 75µs to 1h
- thermoelectrical cooling down to -12°C

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This uv sensitive cooled digital 12bit camera system comprises advanced CCD and electronics technology. With this on-chip multiplication of the light signal the readout noise of the camera can be neglected (< 1 e- rms @ gain > 50). With its excellent resolution of 1004x1002pixel this high performance cooled digital 12 bit CCD camera system is best suited for extreme low light applications. The system features thermo-electrical cooling of the image sensor (down to – 16 °C) and an outstanding quantum efficiency in the UV range of the spectrum (QE ≈ 15% @ 254nm and QE ≈ 10% @ 193nm). Exposure time modes (software selectable) range from 75 µs - 1h. A high speed serial data link connects the system to the PC (fiber optic link available).

technical data

	unit	setpoint	sensicam uv
resolution (hor x ver)[1]	pixel		1004x1002
pixel size (hor x ver)	µm²		8.0 x 8.0
sensor format/ diagonal	mm²/ mm		8.03 x 8.02/ 11.35
quantum efficiency	%	@ 610nm typ. @ 254nm typ. @ 193nm appr.	65 15 10
full well capacity	e⁻		40 000
image sensor			TC285SPD
dynamic range	dB	@ CCD + camera	65
dynamic range A/D[2]	bit		12
readout noise	e⁻ rms	@em gain = 1 @em gain > 50	22 <1
imaging frequency, frame rate	fps	@full frame	13
pixel scan rate	MHz		16
A/D conversion factor	e⁻/count	@em gain = 1	9.8
spectral range	nm		190..1100
exposure time	s		75µs..1h
anti-blooming factor		typical	1000
smear	%		0.6
binning horizontal	pixel		1, 2, 4, 8
binning vertical	pixel	full resolution for 992pixel ver	1, 2 1, 2, 4, 8, 16, 32
dark current	e⁻/pixel·s	@-15 °C typical	0.9
region of interest	pixel	for 992pixel ver	down to 32
charge multiplication		9 steps	1, 2, 5, 10, 20, 50, 100, 200, 500

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technical data

non linearity	%	full temperature range @gain=1	<1
uniformity darkness DSNU[3]	e^- rms	@ 90% center zone & gain=1	2
uniformity brightness PRNU[4]	% rms	typical @ 610nm	0.6
trigger, auxiliary signals		internal/ external	software / TTL level
power consumption	W	typical	36
power supply	VAC		90..260
mechanical dimensions camera (w x h x l)	mm^3		93 x 78 x 210
mechanical dimensions power supply (w x h x l)	mm^3		84 x 50 x 155
weight	kg		1.6
operating temperature range	°C		+5..+40
operating humidity range	%		10..90
storage temperature range	°C		-20..+70
optical input			c-mount, Nikon f-mount
optical input window			fused silica
data interface			PCI local bus, Rev 2.1, burst rate 132 MByte/s
CE certified			yes
cooled CCD[5]	°C		-12
cooling method			2 stage Peltier cooler with forced air cooling

software: Camware software for camera control, image acquisition and archiving of images in various file formats, WindowsNT, 2K and XP, 32bit-dynamic link library (DLL) is available for user customisation and integration on PC platforms (software development kit - SDK), software is operational in either single mode or with built-in recorder functions, drivers for popular third party software packages are available (see website)

options: custom-made versions

[1] horizontal versus vertical
[2] Analog-to-Digital-converter
[3] dark signal non-uniformity
[4] photo reponse non-uniformity
[5] default setting, programmable to -20°C

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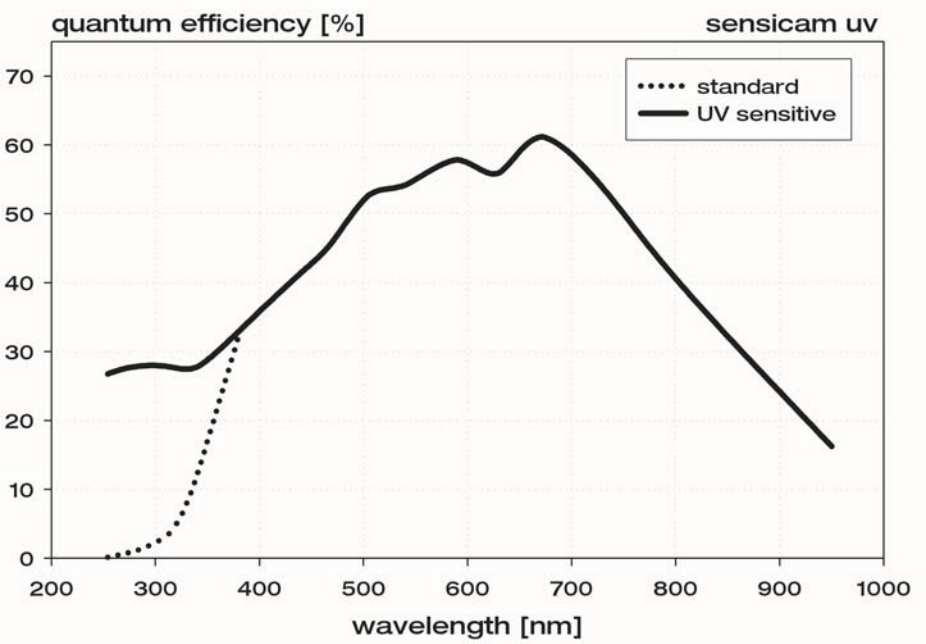
frame rate table [frames per second]

vertical resolution [pixel]	vertical binning	frame rate [fps]
1002	1	12.9
501	2	25.2
248	4	47.9
124	8	86.6
62	16	86.6
31	32	108.4

quantum efficiency



(TC285SPD qe curves as measured by PCO AG)

areas of application

laser induced fluorescence ■ metrology ■ fluorescence spectroscopy (down to UV) ■ bioluminescence ■ chemoluminescence ■ low light level imaging

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