

# pco.edge 4.2 bi

cooled sCMOS camera.

bi back illuminated

up to **95%**  
quantum efficiency

deep cooled  
down to  $-25\text{ }^{\circ}\text{C}$

compact  
design

resolution  
2048 x 2048 pixel  
with  $6.5\text{ }\mu\text{m}$  pixel size

back illuminated  
sCMOS sensor

selectable  
input windows  
available



1288   
EMVA Standard Compliant

# pco.

» sCMOS image sensor

<b>type of sensor</b>	backside illuminated scientific CMOS (bi sCMOS) monochrome
<b>resolution (h x v)</b>	2048 x 2048 active pixel
<b>pixel size (h x v)</b>	6.5 µm x 6.5 µm
<b>sensor format / diagonal</b>	13.3 mm x 13.3 mm / 18.8 mm
<b>shutter mode</b>	rolling shutter (RS)
<b>MTF</b>	76.9 lp/mm (theoretical)
<b>fullwell capacity</b>	48 000 e <sup>-</sup>
<b>readout noise (typ.)<sup>1</sup></b>	1.8 <sub>med</sub> e <sup>-</sup> / 1.9 <sub>rms</sub> e <sup>-</sup>
<b>dynamic range (typ.)</b>	26 667 : 1 up to 88.5 dB
<b>quantum efficiency</b>	up to 95 %
<b>spectral range</b>	370 nm ... 1100 nm
<b>dark current (typ.)</b>	0.2 e <sup>-</sup> /pixel/s @ -25 °C sensor temperature
<b>DSNU</b>	0.9 <sub>rms</sub> e <sup>-</sup>
<b>PRNU</b>	1.2 %

» camera system

<b>frame rate</b>	40 fps @ full resolution
<b>exposure / shutter time</b>	10 µs .. 20 s
<b>dynamic range A/D<sup>2</sup></b>	16 bit
<b>A/D conversion factor</b>	0.73 e <sup>-</sup> /count
<b>pixel scan rate</b>	46.0 MHz
<b>pixel data rate</b>	184.0 Mpixel/s
<b>binning horizontal</b>	x1, x2, x4
<b>binning vertical</b>	x1, x2, x4
<b>region of interest (ROI)</b>	horizontal: steps of 32 pixels vertical: steps of 8 pixels
<b>non linearity</b>	< 0.6 %
<b>cooling method</b>	adjustable: from -25 °C to +20 °C peltier with forced air (fan) and water cooling calibration setpoint: -10 °C
<b>trigger input signals</b>	frame trigger, acquire (SMA connectors)
<b>trigger output signals</b>	exposure, busy (SMA connectors)
<b>data interface</b>	USB 3.1 Gen 1
<b>time stamp</b>	in image (1 µs resolution)



» general

<b>power delivery</b>	power over USB 3.1 Gen 1 and power connector (24 VDC +/- 10 %)
<b>power consumption</b>	typ. 4.5 W over USB 3.1 Gen 1 and typ. 10.0 W (max. 22.0 W) over power connector
<b>weight</b>	920 g
<b>operating temperature</b>	+ 10 °C ... + 40 °C
<b>operating humidity range</b>	10 % ... 80 % (non-condensing)
<b>storage temperature range</b>	- 10 °C ... + 60 °C
<b>optical interface</b>	F-mount, C-mount
<b>CE / FCC certified</b>	yes

<sup>1</sup> The readout noise values are given as median (med) and root mean square (rms) values, due to the different noise models, which can be used for evaluation.

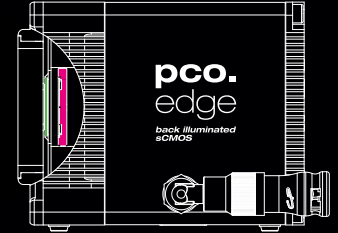
<sup>2</sup> The high dynamic signal is simultaneously converted at high and low gain by two 12 bit A/D converters and the two 12 bit values are sophisticatedly merged into one 16 bit value.

» frame rate table

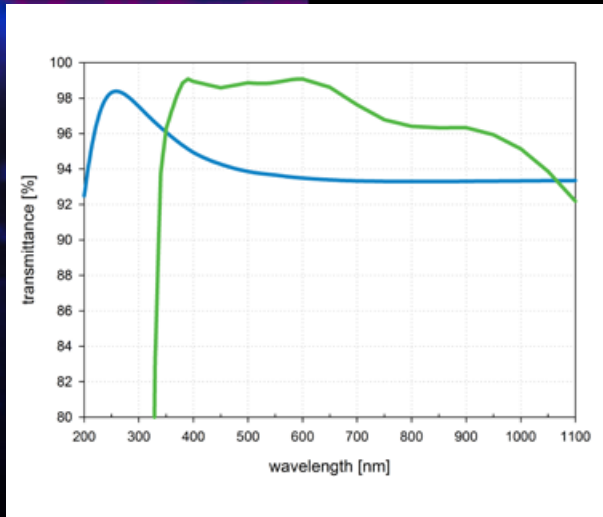
2048 x 2048	40 fps
2048 x 1024	80 fps
2048 x 512	159 fps
2048 x 256	300 fps
2048 x 128	520 fps
1920 x 1080	76 fps
1600 x 1200	68 fps
1280 x 1024	80 fps
640 x 480	170 fps
320 x 240	317 fps



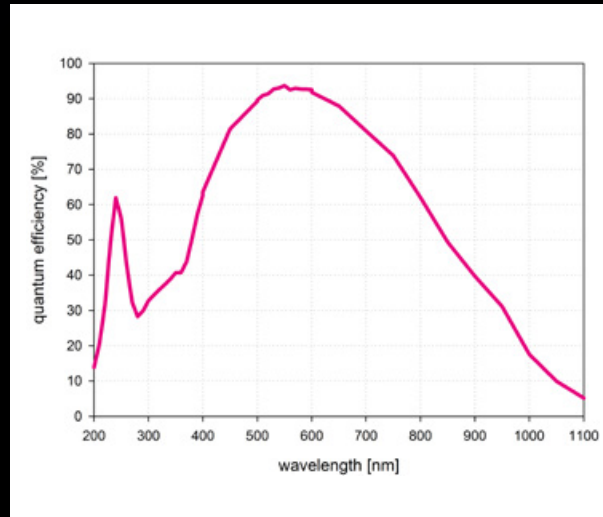
selectable input windows available



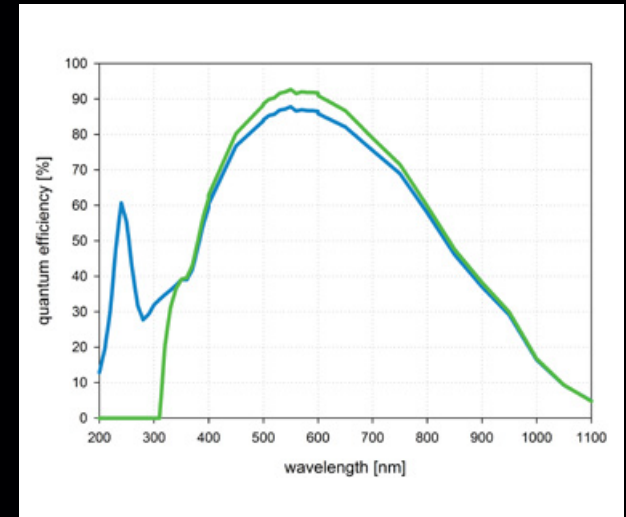
UV+ input window VIS+



sensor



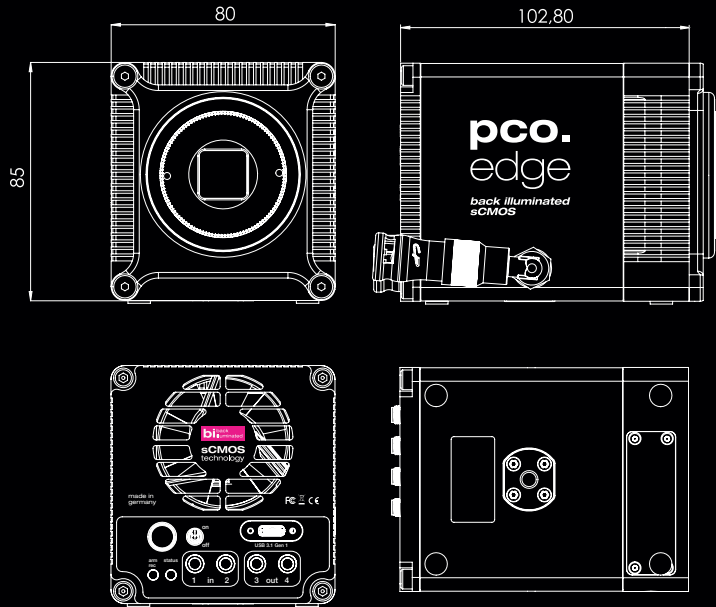
pco.edge 4.2 bi UV camera pco.edge 4.2 bi





» dimensions

F-mount and C-mount lens changeable adapter.



All dimensions are given in millimeter.

» camera view



» software

Camware is the application software for camera control, image acquisition and archiving of images in various file formats (Microsoft Windows®). A camera SDK (software development kit) including a 32 / 64 bit dynamic link library for user customization and integration on Microsoft Windows and Linux platforms is available for free. Please visit our [website](#) to get the latest camera interface drivers and software.

» applications

brightfield microscopy | fluorescence microscopy | digital pathology | single molecule localization microscopy | lightsheet fluorescence microscopy (LSFM) | calcium imaging | FRET | FRAP | structured illumination microscopy (SIM) | high-speed bright field ratio imaging | high throughput screening | high content screening | biochip reading | TIRF microscopy | spinning disk confocal microscopy | 3D metrology | ophthalmology | photovoltaic inspection | industrial quality inspection | lucky astronomy | bio luminescence | chemo luminescence

» third party integrations

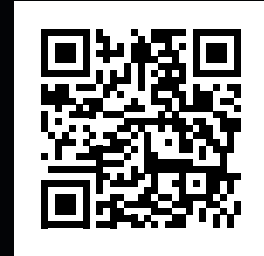


**find us**

**europe**

PCO AG  
Donaupark 11  
93309 Kelheim, Germany

+49 9441 2005 50  
info@pco.de  
pco.de



**america**

PCO-TECH Inc.  
6930 Metroplex Drive  
Romulus, Michigan 48174, USA

+1 248 276 8820  
info@pco-tech.com  
pco-tech.com

**asia**

PCO Imaging Asia Pte.  
3 Temasek Ave  
Centennial Tower, Level 34  
Singapore, 039190

+65 6549 7054  
info@pco-imaging.com  
pco-imaging.com



**china**

Suzhou PCO Imaging Technology Co., Ltd.  
Room A10, 4th Floor, Building 4  
Ascendas Xinsu Square, No. 5 Xinghan Street  
Suzhou Industrial Park, China 215021

+86 512 67634643  
info@pco.cn  
pco.cn



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