

# pco.edge 4.2 bi

cooled sCMOS camera

bi back illuminated

up to 95%  
quantum efficiency

deep cooled  
down to -25 °C

compact  
design

resolution  
2048 x 2048 pixel  
with 6.5 µm pixel size

back illuminated  
sCMOS sensor

input windows  
selectable



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 $\mu\text{m}$ x 6.5 $\mu\text{m}$
<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 190 nm ... 1100 nm <b>UV version</b>
<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 $\mu\text{s}$ ... 20 s
<b>dynamic range A/D<sup>2</sup></b>	16 bit
<b>A/D conversion factor</b>	0.8 e <sup>-</sup> /DN
<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 $\mu\text{s}$ resolution)

<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 sophistically merged into one 16 bit value.



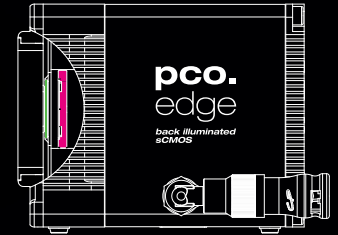
» general

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

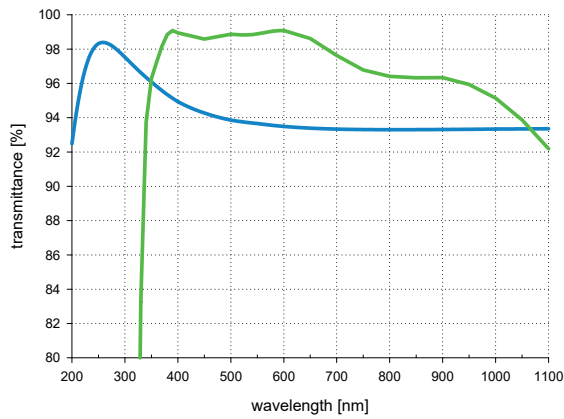
» frame rate table

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

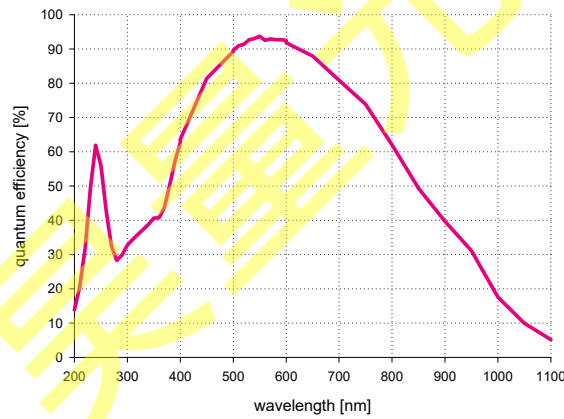




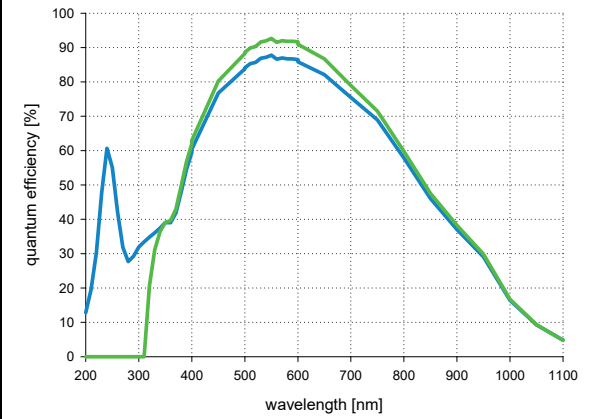
UV+ input window VIS+



sensor

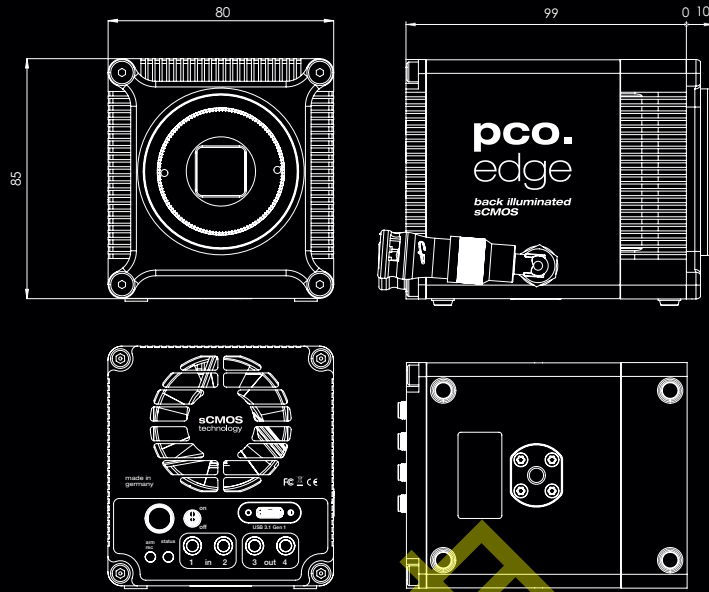


pco.edge 4.2 bi UV camera pco.edge 4.2 bi





» dimensions



F-mount and C-mount lens adapter are changeable. All dimensions are given in millimeter.

» camera view



» 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

» software



With pco.camware you control all camera settings, the image acquisition and the storage of your image data. The pco.sdk is the complementary software development kit. It includes dynamic link libraries for user customization and integration on Windows-PC platforms. Drivers for popular third party software packages are also available for you.

All this items like pco.camware, pco.sdk and third party drivers, are free-to-download at [www.pco.de](http://www.pco.de).

» third party integrations

