pco.edge 5.5

cooled **sCMOS** cameras

high dynamic range
30 000 : 1

high resolution
2560 x 2160 pixel

shutter modes
rolling & global shutter, global reset

high speed
100 fps

low noise
1.0 electrons

1288
EMVA Standard Compliant

pco.

›› sCMOS image sensor

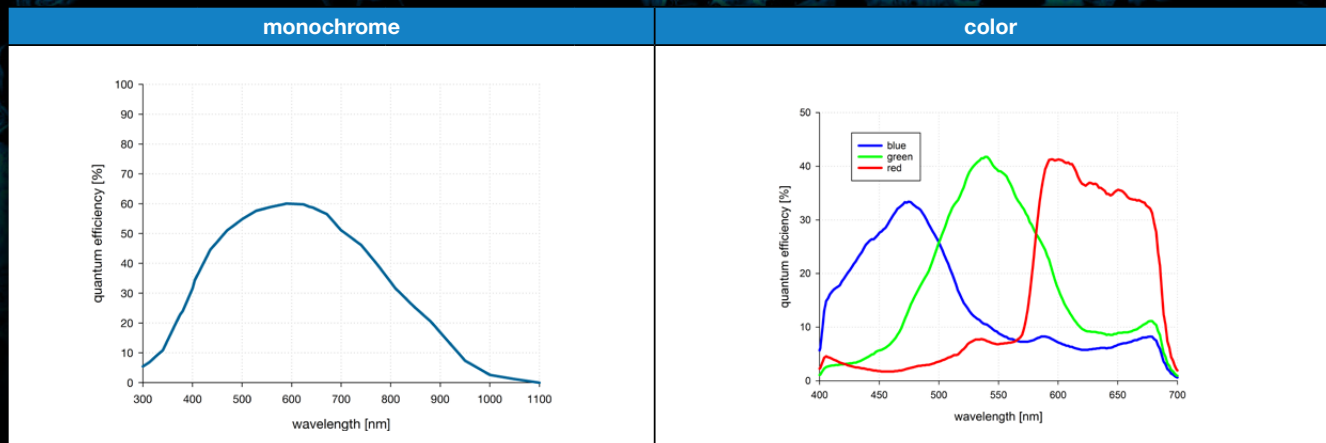| interfaces ››	Camera Link HS / 10G FOL	Camera Link	USB 3.0
type of sensor	scientific CMOS (sCMOS) monochrome or color		
resolution (h x v)	2560 x 2160 active pixel		
pixel size (h x v)	6.5 µm x 6.5 µm		
sensor format / diagonal	16.6 mm x 14.0 mm / 21.8 mm		
shutter mode	rolling shutter (RS) with selectable readout modes, global/snapshot shutter (GS), global reset - rolling readout (GR)	rolling shutter (RS) with selectable readout modes, e. g. lightsheet scanning mode[1] global/snapshot shutter (GS), global reset - rolling readout (GR)	rolling shutter (RS) with selectable readout modes, global/snapshot shutter (GS), global reset - rolling readout (GR)
MTF	76.9 lp/mm (theoretical)		
fullwell capacity	30 000 e-		
readout noise (typ.)[2]	1.0 med e- / 1.4 rms e- @ RS/GR, slow scan 1.1 med e- / 1.5 rms e- @ RS/GR, fast scan 2.2 med e- / 2.5 rms e- @ GS, fast scan	1.1 med e- / 1.5 rms e- @ RS/GR, slow scan 1.5 med e- / 1.7 rms e- @ RS/GR, fast scan 2.2 med e- / 2.5 rms e- @ GS, fast scan	1.0 med e- / 1.4 rms e- @ RS/GR 2.3 med e- / 2.6 rms e- @ GS
dynamic range (typ.)	30 000 : 1 89.5 dB RS, slow scan	27 000 : 1 88.6 dB RS, slow scan	30 000 : 1 89.5 dB RS
quantum efficiency	> 60 % @ peak		
spectral range	370 nm ... 1100 nm		
dark current (typ.)	< 0.6 e-/pixel/s RS/GR < 0.9 e-/pixel/s GS @ 7 °C sensor temperature	< 0.5 e-/pixel/s RS/GR < 0.8 e-/pixel/s GS @ 5 °C sensor temperature	
DSNU	< 0.3 rms e- RS/GR slow scan < 3.9 rms e- GS fast scan < 0.3 rms e- RS/GR fast scan	< 1.0 rms e- RS/GR slow scan < 3.9 rms e- GS fast scan < 2.0 rms e- RS/GR fast scan	< 0.3 rms e- RS/GR < 2.0 rms e- GS
PRNU	< 0.34 %	< 0.5 %	< 0.2 %

›› camera system

interfaces ››	Camera Link HS / 10G FOL	Camera Link	USB 3.0
maximum frame rate @ full resolution	100 fps @ RS/GR 50 fps @ GS	100 fps @ RS/GR 50 fps @ GS	30 fps @ RS/GR 28 fps @ GS
exposure / shutter time	500 µs .. 2 s RS 10 µs .. 100 ms GS 10 µs .. 2 s GR	500 µs .. 2 s RS 10 µs .. 100 ms GS 10 µs .. 2 s GR	500 µs .. 2 s RS 20 µs .. 100 ms GS 30 µs .. 2 s GR
dynamic range A/D[3]	16 bit		
A/D conversion factor	0.46 e-/DN		
pixel scan rate	286.0 MHz fast scan RS/GS/GR 100.0 MHz slow scan RS/GR	286.0 MHz fast scan RS/GS/GR 95.3 MHz slow scan RS/GR	86.0 MHz RS/GR 160.0 MHz GS
pixel data rate	572.0 Mpixel/s fast scan RS/GS/GR 200.0 Mpixel/s slow scan RS/GR	572.0 Mpixel/s fast scan RS/GS/GR 190.7 Mpixel/s slow scan RS/GR	172.0 Mpixel/s RS/GR 320.0 Mpixel/s GS
binning horizontal	x1, x2, x4		
binning vertical	x1, x2, x4		
region of interest (ROI)	horizontal: steps of 16 pixels vertical: steps of 1 pixel	horizontal: steps of 4 pixels vertical: steps of 1 pixel	
non linearity	< 0.6 %	< 1 %	< 0.6 %
cooling method	7 °C stabilized, selectable: peltier with forced air (fan) or water cooling (both up to 27 °C ambient)	5 °C stabilized, selectable: peltier with forced air (fan) or water cooling (both up to 27 °C ambient)	
trigger input signals	frame trigger, sequence trigger, programmable input (SMA connectors)		
trigger output signals	exposure, busy, line, programmable output (SMA connectors)		
time stamp	in image (1 µs resolution)		

pco.

technical specifications

pco.edge 5.5

» general

interfaces »	Camera Link HS / 10G FOL	Camera Link	USB 3.0
power delivery	24 VDC (+/- 10 %)		
power consumption	32 W max. (typ. 19 W @ 20 °C)	20 W max. (typ. 10 W @ 20 °C)	21 W max. (typ. 12 W @ 20 °C)
weight[4]	850 g air-cooled 1060 g water-cooled	720 g air-cooled 1100 g water-cooled	800 g
operating temperature	+ 10 °C .. + 40 °C		
operating humidity range	10 % .. 80 % (non-condensing)		
storage temperature range	- 10 °C .. + 60 °C		
optical interface	C-mount & F-mount		
lens remote controller	electronic control for Canon EF lenses only air-cooled camera	not available	
maximum cable length	10 km	3 m / 7 m (active cable)	5 m
CE / FCC certified	yes		

» quantum efficiency

monochrome	color

» frame rate table[5]

interfaces »	Camera Link HS / 10G FOL			Camera Link			USB 3.0	
typical examples	RS	GS	RS	RS	GS	RS	GS	RS
	fast scan		slow scan	fast scan		slow scan		
2560 x 2160	100 fps	50 fps	33 fps	100 fps	50 fps	33 fps	28 fps	30 fps
2560 x 1024	212 fps	105 fps	70 fps	212 fps	105 fps	70 fps	59 fps	63 fps
2560 x 512	422 fps	208 fps	140 fps	422 fps	208 fps	140 fps	117 fps	126 fps
2560 x 256	838 fps	409 fps	279 fps	838 fps	409 fps	279 fps	232 fps	248 fps
2560 x 128	1651 fps	789 fps	550 fps	1651 fps	789 fps	550 fps	455 fps	481 fps
1920 x 1080	201 fps	100 fps	67 fps	201 fps	100 fps	67 fps	56 fps	60 fps
1600 x 1200	181 fps	90 fps	60 fps	181 fps	90 fps	60 fps	50 fps	54 fps
1280 x 1024	212 fps	105 fps	70 fps	212 fps	105 fps	70 fps	59 fps	63 fps
640 x 480	450 fps	222 fps	150 fps	450 fps	222 fps	150 fps	125 fps	134 fps
320 x 240	893 fps	436 fps	297 fps	893 fps	436 fps	297 fps	247 fps	264 fps

[1] Selectable via SDK (software development kit).

[2] 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. All values are raw data without any filtering.

[3] The high dynamic signal is simultaneously converted at high and low gain by two 11 bit A/D converters and the two 11 bit values are sophistically merged into one 16 bit value.
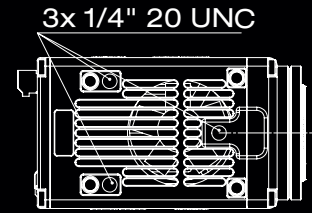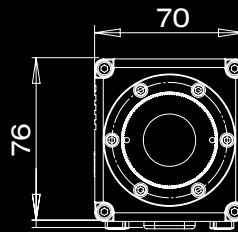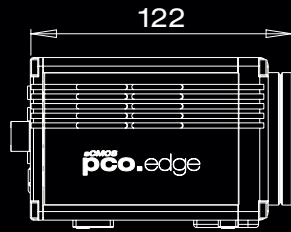
[4] Measured with C-mount interface.

[5] Max. fps with centered ROI.

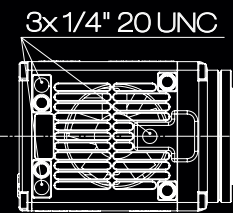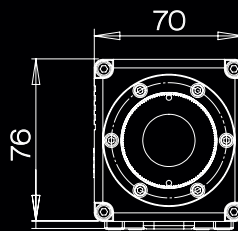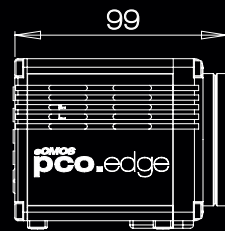# pco.

technical specifications

pco.edge 5.5

》 dimensions

pco.edge Camera Link HS

pco.edge Camera Link/USB 3.0

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

》 camera rear view

Camera Link HS
air-cooled   water-cooled

Camera Link
air-cooled / water-cooled

USB 3.0
air-cooled / water-cooled

》 lens remote controller

The optional Canon lens control adapter enables the user to connect electronic EF- and EF-S Canon lenses allowing to remote control focus and aperture of those lenses.
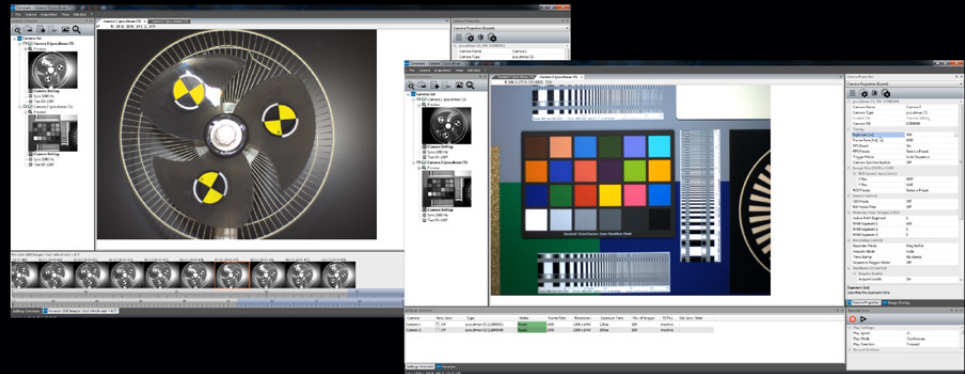

pco.

pco.edge 5.5

» 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 | desaster recovery | tunnel inspection

» 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.

» third party integrations

pco.

find us

europe
PCO AG
Donaupark 11
93309 Kelheim, Germany

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

america
PCO-TECH Inc.
1000 N West Street, Suite 1200
Wilmington, DE 19801

+1 866 678 4566
info@pco-tech.com
pco-tech.com

asia
PCO Imaging Asia Pte.
3 Temasek Ave
Centennial Tower, Level 34
Singapore, 039190
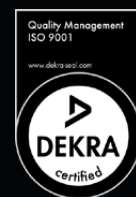
+65 6549 7054
info@pco-imaging.com
pco-imaging.com

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

for application stories
please visit our website

Quality Management
ISO 9001
www.dekra-seal.com

DEKRA
certified

ISO 9001:2015

pco.