datasheet
pco.edge 10 bi LT CLHS

the next-level sCMOS camera

bi back illuminated

resolution
10.4 MPixel

pixel size
4.6 µm x 4.6 µm

interface
CLHS FOL

high dynamic range
14 000 : 1

fiber-optic data
interface

high resolution
4416 x 2368 pixels

temperature-stabilized
image sensor

back illuminated sCMOS
with high MTF

low readout noise
1.3 e^- @122 fps

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technical data

image sensor

sensor technology	back illuminated scientific CMOS (bi sCMOS)
color type	monochrome
resolution (horizontal x vertical)	4416 px x 2368 px
pixel size (horizontal x vertical)	4.6 µm x 4.6 µm
sensor size (horizontal x vertical)	20.3 mm x 10.8 mm
sensor diagonal	23.0 mm
shutter mode	rolling shutter (RS)
modulation transfer function (theoretical max.)	108.6 lp/mm
peak quantum efficiency	85 % @ 500 nm
spectral range	400 nm - 1100 nm
dark current (typ.)	0.4 e^- /pixel/s @ +10 °C sensor temperature
fullwell capacity	18 000 e^-
readout noise (typ.)[1]	1.3 e^- rms 1.3 e^- med
dynamic range (intra-scene)[2]	14 000 : 1 (83 dB)

[1] 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.
[2] The dynamic range value is calculated with the median value of the readout noise and rounded.

frame rate table

vertical resolution reduction

4416 x 2368	122 fps
4416 x 2048	141 fps
4416 x 1024	281 fps
4416 x 512	557 fps
4416 x 256	1098 fps
4416 x 128	2132 fps
4416 x 64	4028 fps
4416 x 32	7252 fps
4416 x 16	12 086 fps
4416 x 8	18 130 fps

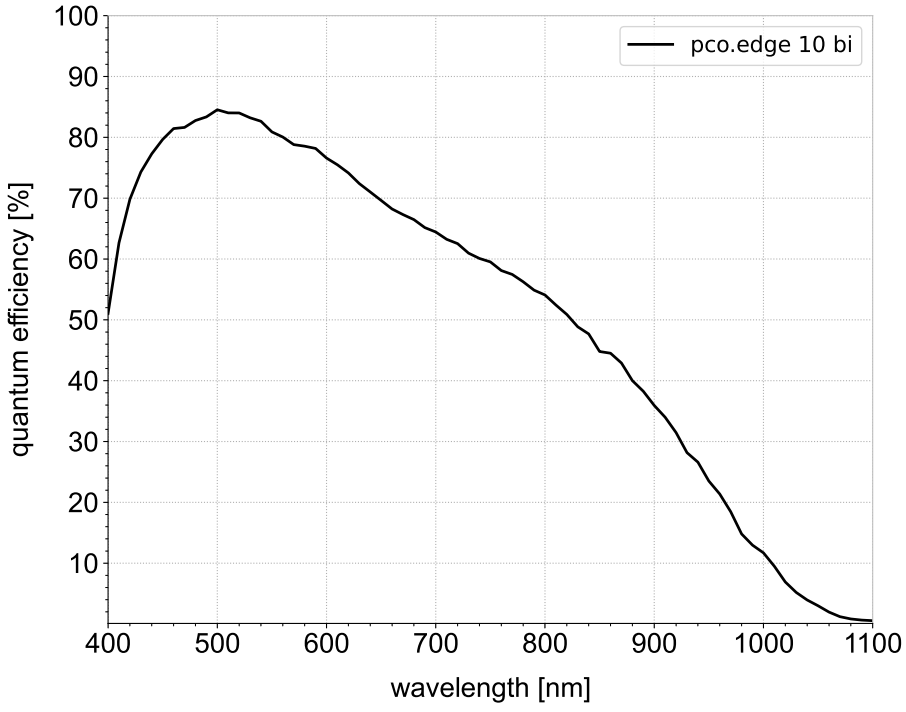
typical resolutions

2304 x 2304	125 fps
2048 x 2048	141 fps
1920 x 1080	266 fps
1280 x 1024	281 fps
640 x 512	557 fps
320 x 256	1098 fps

camera	
max. frame rate @ full resolution	122 fps
exposure time range	6.8 µs - 1 s
dynamic range A/D[1]	16 bit
conversion factor[2]	0.275 e^-/DN
pixel rate	1467 MPixel/s
region of interest (ROI)	horizontal: steps of 32 columns vertical: steps of 4 rows
binning	horizontal: x2, x4 (average, sum) vertical: x2, x4 (average, sum)
non-linearity	< 0.33 %
dark signal non-uniformity (DSNU)	< 0.37 e^- rms
photo response non-uniformity (PRNU)	< 0.72 %
cooling temperature image sensor	adjustable: 0 °C to +25 °C calibration setpoint: +10 °C
cooling method	forced air & liquid cooling
trigger input signals	external exposure start, external exposure control
status output signals	exposure, busy, line
input / output signal connectors	SMA
time stamp	in image (1 µs resolution)
data interface	Camera Link HS FOL

[1] 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.
[2] According to EMVA1288, the conversion factor equals the inverse of the system gain and can be operational mode dependent.

quantum efficiency



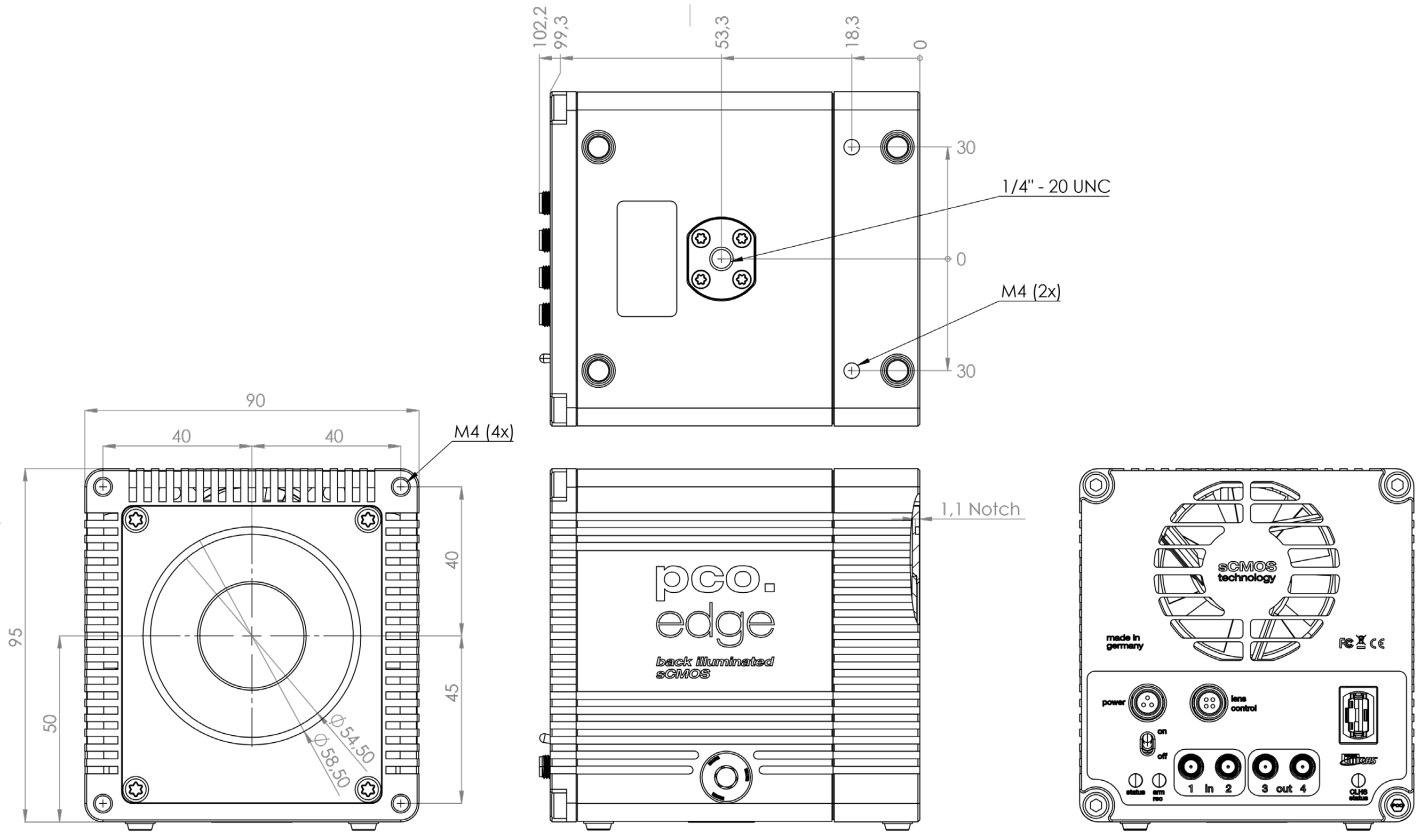
general	
power supply	24 VDC (±10 %)
power consumption	max. 40 W
weight	1.35 kg
dimensions (height x width x length[1])	95 mm x 90 mm x 109 mm
operating temperature range	+10 °C to +40 °C
storage temperature range	-10 °C to +60 °C
humidity range (non-condensing)	10 % to 80 % (recommended < 65 %)
certifications	CE, FCC, UKCA

[1] This value refers to the length including the camera flange.

optical interface	
direct mounting distance (no camera flange)	6.2 mm (±10 %)
lens mounting	C-mount, F-mount
optional lens mounting	TFL-mount
optional lens remote control	EF-mount, EF-S-mount (Canon)

Configure your optical setup with our **MachVis Lens Selector** online tool.

dimensions



outlines of pco.edge 10 bi LT CLHS without camera flange (all dimensions given in mm)

software

Your first choice is pco.camware:

Our main camera control software enables control of most camera settings and facilitates image acquisition and storage.

You can customize it exactly to your needs using different layouts, styles and features.

You want to create your own application:

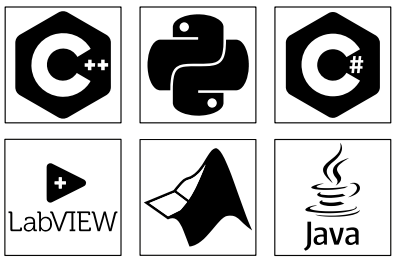
We feature a wide range of software development kits (SDK) for various programming languages, such as C++, Python, C#, LabVIEW, Matlab, and Java.

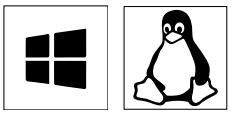
If you are looking for more general SDKs, we present pco.sdk and pco.recorder, our low-level SDKs with C interface.

You prefer to use a different software:

Our cameras integrate with a range of third-party software applications.

In microscopy we offer dedicated support for µManager, while ensuring compatibility with other software maintained by their providers.





Our software is available for Windows and Linux platforms.

Visit our **website** for detailed information, installation guidance, and Github projects.

areas of application

3D metrology | biochip reading | biometrics | brightfield microscopy | calcium imaging | digital pathology | fluorescence microscopy | fluorescence recovery after photobleaching (FRAP) | Förster resonance energy transfer (FRET) | high-speed brightfield ratio imaging | high-throughput screening | image intensifier imaging | in vivo microscopy | industrial quality inspection | intravital microscopy | lightsheet fluorescence microscopy (LSFM) | material testing | ophthalmology | raman spectroscopy | selective plane illumination microscopy (SPIM) | single molecule localization microscopy (SMLM) – PALM, STORM, dSTORM, GSDIM | structured illumination microscopy (SIM) | total internal reflection fluorescence microscopy (TIRF) | wafer inspection

ordering information

pco.edge 10 bi LT CLHS	85108076025	camera system, 4432 x 2368 pixel, monochrome, back illuminated, rolling shutter, fast scan mode only, CLHS interface, air & liquid cooling

pco.®

address:	Excelitas PCO GmbH Donaupark 11 93309 Kelheim, Germany
phone:	(+49) 9441-2005-0 (+1) 866-662-6653 (+86) 0512-6763-4643
mail:	pco@excelitas.com
web:	www.excelitas.com/pco

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