datasheet
pco.flim X USB

fluorescence (luminescence) lifetime imaging application simplified

resolution
1.0 MPixel

pixel size
5.6 µm x 5.6 µm

interface
USB 3.0



lifetime from
0.5 ns to 100 µs

high frame rate
45 double frames/s

frequency synthesizer
5 kHz - 40 MHz

unique resolution
1008 x 1008 pixels

enhanced cooling of image sensor
down to - 5 °C (air) / - 20 °C (liquid)

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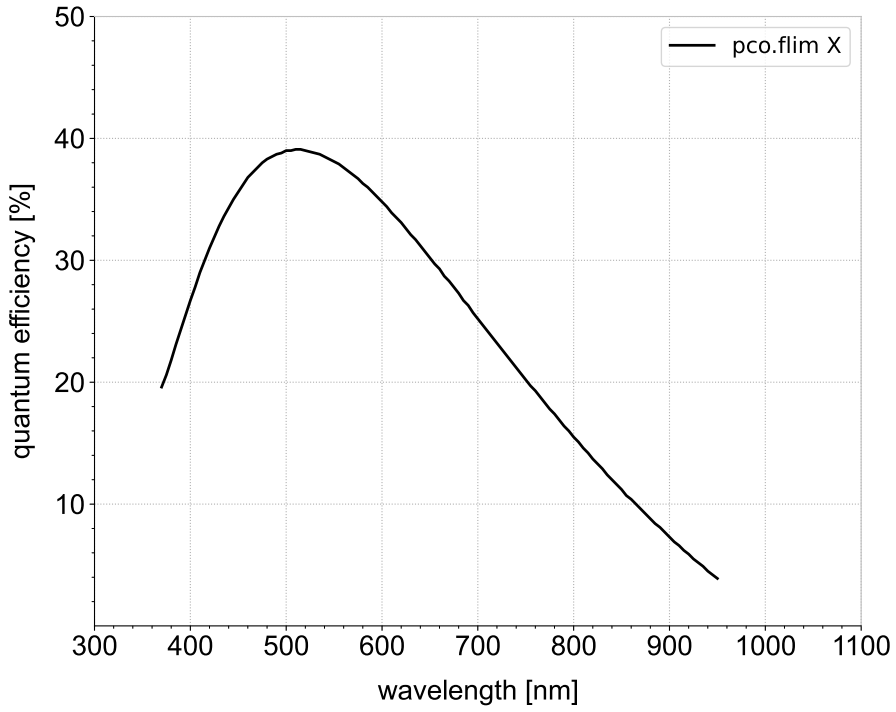
technical data

image sensor	
sensor technology	CMOS
image sensor	proprietary
color type	monochrome
resolution (horizontal × vertical)	1008 px × 1008 px
pixel size (horizontal × vertical)	5.6 µm × 5.6 µm
sensor size (horizontal × vertical)	5.7 mm × 5.7 mm
sensor diagonal	8.1 mm
shutter type	rolling reset, global exposure
modulation transfer function (theoretical max.)	108.6 lp/mm
peak quantum efficiency	39 %
spectral range	370 nm - 780 nm (FWHM)
dark current (typ.)	640 e^- /pixel/s @ -5 °C sensor temperature
fullwell capacity	52 000 e^-
readout noise (typ.)	33 e^- rms
dynamic range (intra-scene)	> 1000 : 1 (60 dB)



camera	
max. frame rate @ full resolution	45 double frames per second (2 tap readout)
exposure time range	1 ms - 4 s
modulation frequency	internal: 5 kHz - 40 MHz external: 500 kHz - 40 MHz
dynamic range A/D	14 bit
conversion factor	3.5 e^-/DN
modulation signal shape	sinusoidal, rectangular
region of interest (ROI)	steps of 16 pixels
non-linearity	< 1 %
dark signal non-uniformity (DSNU)	< 56 e^- rms
photo response non-uniformity (PRNU)	< 0.9 %
cooling temperature image sensor	adjustable: - 20 °C to + 20 °C calibration setpoint: - 5 °C
cooling method	forced air & liquid cooling
trigger input signals	exposure start (phase sequence trigger)
status output signals	exposure, busy, gate (light enable)
input / output signal connectors	SMA
time stamp	in image (1 µs resolution)
data interface	USB 3.0

quantum efficiency



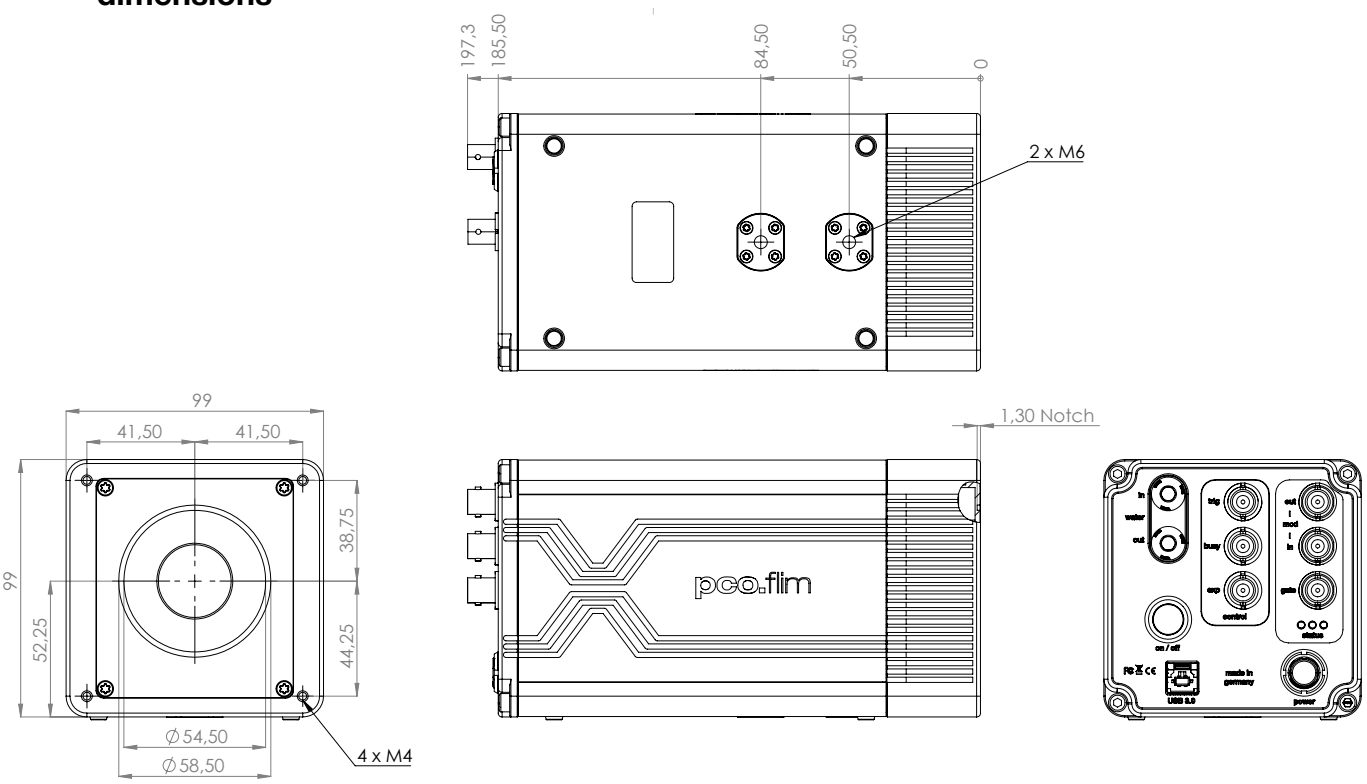
general	
power supply	24 VDC
power consumption	max. 50 W
weight	2.4 kg
dimensions (height × width × length[1])	99 mm × 99 mm × 195 mm
operating temperature range	+5 °C to +40 °C
storage temperature range	-10 °C to +60 °C
humidity range (non-condensing)	10 % to 80 % (recommended < 65 %)
certifications	CE, FCC, UKCA

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

optical interface	
direct mounting	7.4 mm ± 10 %
lens mounting	C-mount
optional lens mounting	F-mount, TFL-mount

Configure your optical setup with our **MachVis™ System Configurator** online tool.

dimensions



outlines of pco.flim X 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:

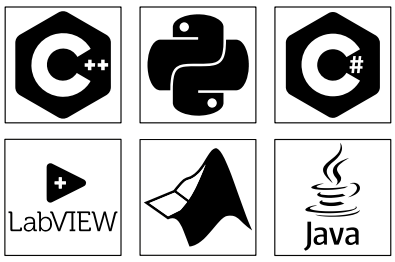
We feature a wide range of software development kits (SDK) for various programming languages, such as C++, Python, C#, LabVIEW, Matlab, and Java.

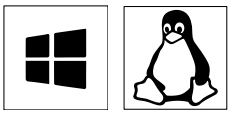
If you are looking for more general SDKs, we present pco.sdk and pco.recorder, our low-level SDKs with C interface.

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

2D measurements with optical chemical sensors | biochip reading | brightfield microscopy | digital pathology | digital staining by using the endogenous fluorescence lifetime | environmental microplastic detection | fluorescence microscopy | Förster resonance energy transfer (FRET) | high-speed brightfield ratio imaging | improved classification of used wood | industrial quality inspection | inspection | lightsheet fluorescence microscopy (LSFM) | material testing | pressure sensitive paint (PSP) and temperature sensitive paint (TSP) measurements | selective plane illumination microscopy (SPIM) | solar cell research and quality control (perovskite) | total internal reflection fluorescence microscopy (TIRF) | use of optical chemical sensors in microfluidics

ordering information

pco.flim X USB	85108021002	camera system, 1008 x 1008 pixel, monochrome, sensor temperature -5 °C (air cooling)/-20 °C (liquid cooling) , USB interface

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