

datasheet

# pco.panda 26 DS USB

ultra-compact double shutter sCMOS camera

**DS** double shutter

resolution  
**26.2 MPixel**

pixel size  
**2.5  $\mu\text{m}$  x 2.5  $\mu\text{m}$**

interface  
**USB 3.1 Gen 1**



high resolution  
5120 x 5120 pixels

dust-protected  
housing

double shutter  
interframing time 1  $\mu\text{s}$

ultra-compact  
design

single-cable solution  
data & power supply via USB 3.1

true charge domain  
global shutter

## technical data

### image sensor

<b>sensor technology</b>	scientific CMOS (sCMOS)
<b>color type</b>	monochrome
<b>resolution (horizontal x vertical)</b>	5120 px x 5120 px
<b>pixel size (horizontal x vertical)</b>	2.5 $\mu\text{m}$ x 2.5 $\mu\text{m}$
<b>sensor size (horizontal x vertical)</b>	12.8 mm x 12.8 mm
<b>sensor diagonal</b>	18.1 mm
<b>shutter mode</b>	global shutter <sup>1</sup> (GS) double shutter (DS)
<b>modulation transfer function (theoretical max.)</b>	200.0 lp/mm
<b>peak quantum efficiency</b>	65 % @ 500 nm
<b>spectral range</b>	320 nm - 1000 nm
<b>dark current (typ.)</b>	2.0 e <sup>-</sup> /pixel/s @ +32 °C sensor temperature
<b>fullwell capacity</b>	4500 e <sup>-</sup>
<b>readout noise (typ.)<sup>2</sup></b>	2.5 e <sup>-</sup> rms 2.3 e <sup>-</sup> med
<b>dynamic range (intra-scene)<sup>3</sup></b>	2000 : 1 (66 dB)
<b>parasitic light sensitivity</b>	1/10 000

<sup>1</sup> True Charge Domain Global Shutter for low noise, minimal dark current, and exceptionally low parasitic light sensitivity.

<sup>2</sup> The readout noise values are given as median (med) and root mean square (rms) value, due to the different noise models which can be used for evaluation. All values are raw data without any filtering.

<sup>3</sup> The dynamic range value is calculated with the median value of the readout noise and rounded.

### frame rate table

#### vertical resolution reduction

	GS	DS
<b>5120 x 5120</b>	6 fps	1 <sup>1</sup> fps
<b>5120 x 2560</b>	12 fps	6 fps
<b>5120 x 1024</b>	30 fps	15 fps
<b>5120 x 512</b>	59 fps	30 fps
<b>5120 x 256</b>	115 fps	60 fps
<b>5120 x 128</b>	216 fps	119 fps

<sup>1</sup> In double shutter mode the frame rate slows down after exceeding a ROI of 14.9 MPixel. Binning does not increase the frame rate.

#### typical resolutions

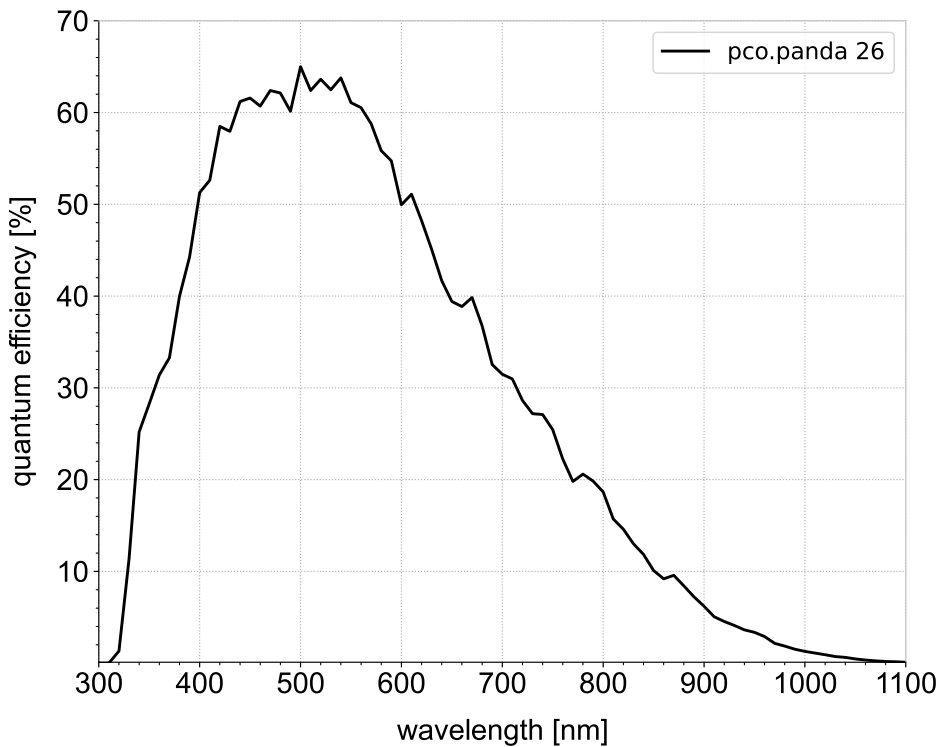
	GS	DS
<b>1920 x 1080</b>	29 fps	14 fps
<b>1600 x 1200</b>	26 fps	13 fps
<b>1280 x 1024</b>	30 fps	15 fps
<b>640 x 480</b>	63 fps	32 fps
<b>320 x 240</b>	122 fps	64 fps

**camera**

<b>max. frame rate @ full resolution</b>	6 fps (GS) 1 fps (DS)
<b>double shutter interframing time</b>	1 $\mu$ s
<b>exposure time range</b>	6 $\mu$ s - 350 ms
<b>dynamic range A/D</b>	12 bit
<b>conversion factor<sup>1</sup></b>	1.1 e-/DN
<b>pixel rate</b>	187 MPixel/s
<b>region of interest (ROI)</b>	horizontal: steps of 8 columns (min. 24) vertical: steps of 2 rows (min. 8)
<b>binning</b>	horizontal: x2, x4 (average, sum) vertical: x2, x4 (average, sum)
<b>non-linearity</b>	< 0.6 %
<b>dark signal non-uniformity (DSNU)</b>	< 1 e- rms
<b>photo response non-uniformity (PRNU)</b>	< 1.2 %
<b>cooling method</b>	passive cooling
<b>trigger input signals</b>	external exposure start, acquire enable
<b>status output signals</b>	exposure, busy
<b>input / output signal connectors</b>	SMA
<b>time stamp</b>	in image (1 $\mu$ s resolution)
<b>data interface</b>	USB 3.1 Gen 1

<sup>1</sup> According to EMVA1288, the conversion factor equals the inverse of the system gain and can be operational mode dependent.

**quantum efficiency**



## general

<b>power supply</b>	power over USB 3.1 Gen 1
<b>power consumption</b>	max. 6 W
<b>weight</b>	0.6 kg
<b>dimensions (height x width x length<sup>1</sup>)</b>	65 mm x 65 mm x 72 mm
<b>operating temperature range</b>	+10 °C to +40 °C
<b>storage temperature range</b>	-10 °C to +60 °C
<b>humidity range (non-condensing)</b>	10 % to 80 % (recommended: < 65 %)
<b>certifications</b>	CE, FCC, UKCA

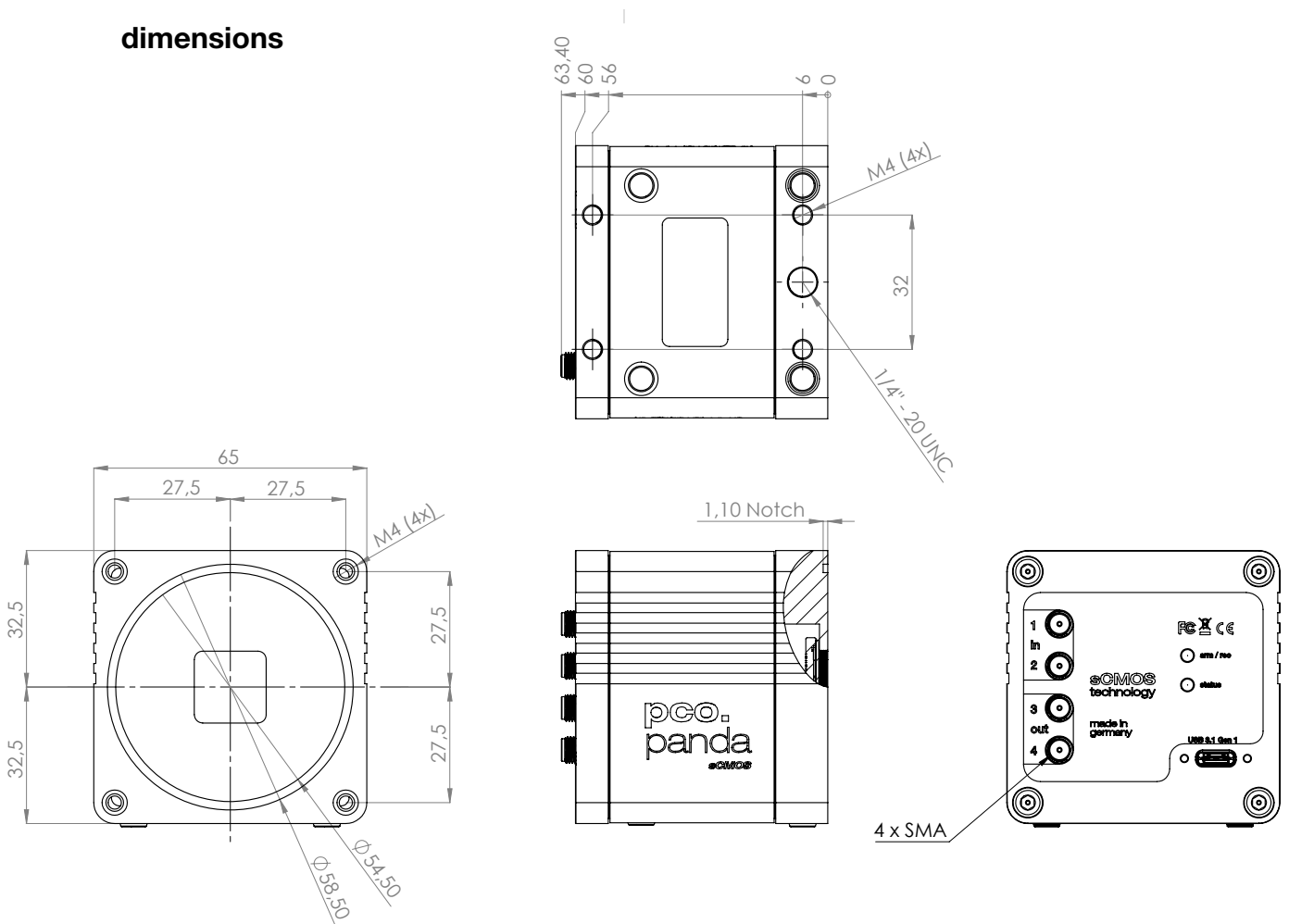
<sup>1</sup> This refers to the length including the camera flange.

## optical interface

<b>direct mounting distance (no camera flange)</b>	3.4 mm (±10 %)
<b>lens mounting</b>	C-mount
<b>optional lens mounting</b>	F-mount, TFL-mount

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

## dimensions



outlines of pco.panda 26 DS USB 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 prefer to use a different software:

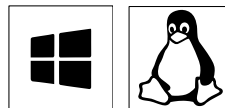
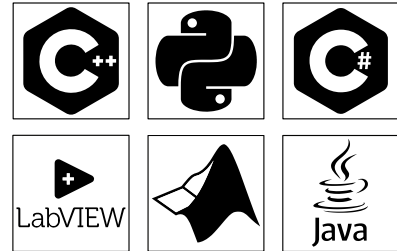
Our cameras integrate with a range of third-party software applications.

In microscopy we offer dedicated support for  $\mu$ Manager, while ensuring compatibility with other software maintained by their providers.

### 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.



Our software is available for Windows and Linux platforms.

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

## areas of application

ballistics | combustion analysis | flow visualization | fluid dynamics | fuel injection research | particle image velocimetry (PIV) | particle tracking velocimetry (PTV) | spray analysis | wind tunnel studies

### ordering information

pco.panda 26 DS USB

85108075016

camera system, 5120 x 5120 pixel, monochrome, global shutter, double shutter feature and 1 $\mu$ s interframing time, USB 3.1 interface

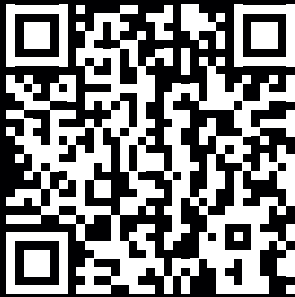
**pco.**<sup>®</sup>

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](mailto:pco@excelitas.com)

web: [www.excelitas.com/pco](http://www.excelitas.com/pco)



[excelitas.com](http://excelitas.com)

**excelitas**<sup>®</sup>