

**pco.dimax<sup>®</sup>cs**  
high-speed camera series



**pco.dimax cs1**  
**pco.dimax cs3**  
**pco.dimax cs4**

**excellent**  
light sensitivity

**12-bit**  
dynamic range

**compact &**  
shock resistant

**2128 fps**  
@ Full HD resolution

**enhanced**  
**compression mode**  
33 % more recording time



high performance for  
**car safety** applications



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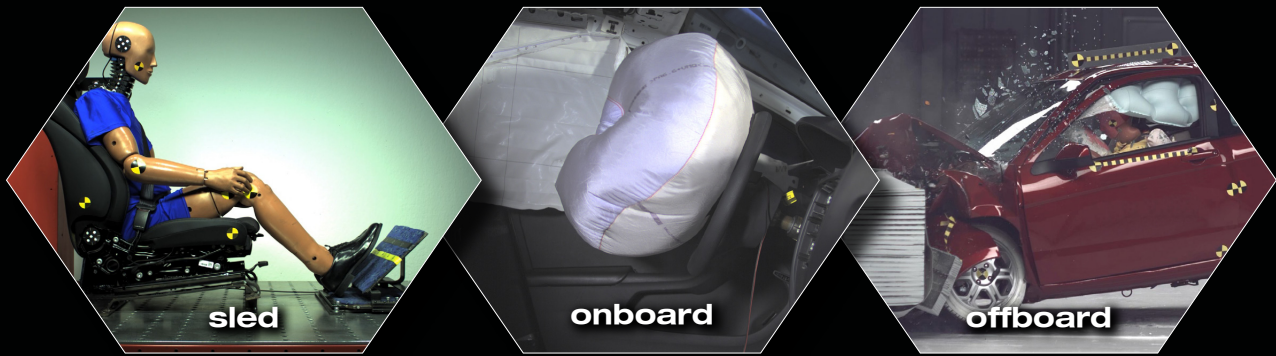
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**pco.**

An Excelitas Technologies Brand

## the high-speed camera series for all demands



The **pco.dimax cs** models are the company's latest addition to its high-speed camera family, which has been specifically designed for the demanding applications in car safety. With very high frame rates at a resolution of up to 4 Megapixels it provides magnificent light sensitivity, leading image quality and excellent color rendering.

The automotive testing sector will benefit from the variety of security features, making it ideally suited for harsh conditions appearing in applications such as crash tests or other industrial scenarios. Crashworthiness as well as compact design make the camera a true all-rounder for both, the onboard and off-board use. Individual demands can be met by a broad variety of optional but helpful accessories such

as electronic lens control for positions difficult to access, junction boxes for the use of multiple cameras or a lens cage for stabilizing the optical axis when using larger C-mount lenses.

In addition to these progressive technical specifications, the user can ease the flow of work by the automatic black referencing feature and an HD-SDI monitor connected to the associated video output for easily setting image section, aperture and focus of the lens. Last but not least, a software custom-made for controlling the camera rounds out the camera's great flexibility. This allows the user to put his focus on other things, while the camera is acting as an highly automated device in its daily routine.

**pco.camware 4** is an application-oriented camera control software allowing for

- controlling multiple cameras
- clear arrangement and ease of use
- storable and reloadable camera and test settings
- burned-in time stamp with editable text
- low light preview function
- fluent live images of all cameras
- easy playback and video export of recorded sequences



### frame rate table

	resolution [pixel]	frame rate	recording time	
			normal mode (9 GB)	enhanced compression mode (9 GB)
<b>cs4</b>	2016 x 2016	1102 fps	1.40 s	1.87 s
	2016 x 1536	1443 fps	1.40 s	1.88 s
<b>cs3</b>	1920 x 1440	1603 fps	1.41 s	1.90 s
	1920 x 1080	2128 fps	1.42 s	1.91 s
	1440 x 1440	2032 fps	1.49 s	2.00 s
<b>cs1</b>	1296 x 1024	3086 fps	1.53 s	2.05 s
	1296 x 720	4346 fps	1.54 s	2.07 s
	1008 x 952	4009 fps	1.63 s	2.19 s
	864 x 848	5010 fps	1.71 s	2.29 s
	528 x 528	10782 fps	2.08 s	2.80 s

Performance examples. Regions of interest can be individually set by users.

# technical specifications



**pco.dimax cs1**  
resolution 1296 x 1024 pixels

**pco.dimax cs3**  
resolution 1920 x 1440 pixels

**pco.dimax cs4**  
resolution 2016 x 2016 pixels

## image sensor

image sensor	proprietary
resolution	<b>cs4</b> 2016 x 2016 pixels <b>cs3</b> 1920 x 1440 pixels <b>cs1</b> 1296 x 1024 pixels
sensor size / diagonal	<b>cs4</b> 22.18 x 22.18 mm <sup>2</sup> / 31.36 mm <b>cs3</b> 21.1 x 15.8 mm <sup>2</sup> / 26.4 mm <b>cs1</b> 14.26 x 11.26 mm <sup>2</sup> / 18.17 mm
pixel size	11 x 11 μm <sup>2</sup>
shutter mode	global shutter
fullwell capacity	36 000 e <sup>-</sup>
quantum efficiency	up to 50%
sensitivity (ISO <sup>1</sup> )	ISO 160 - 6400 (color)
spectral range	400 ... 680 nm
readout noise	22 e <sup>-</sup> (typ.) 30 e <sup>-</sup> (enhanced compression mode) 18 e <sup>-</sup> (CDI) <sup>2</sup>
dynamic range	1600 : 1 / 64 dB (typ.) 1200 : 1 / 62 dB (enhanced compression mode) 2000 : 1 / 66 dB (CDI) <sup>2</sup>
dark current	530 e <sup>-</sup> /pixel/s @ +20°C
non-linearity	< 0.5% (diff.), < 0.2% (integr.)
DSNU (dark signal non-uniformity)	< 0.6 counts rms @ 90% center zone
PRNU (photo response non-uniformity)	< 1% @ 80% signal

## camera

exposure time	1.5 μs ... 40 ms (1 μs selectable)
dynamic range A/D	12 bit
region of interest	24 x 4 pixel steps (centered)
camera memory	9 GB
signal types	RS-485, TTL, Contact closure <sup>3</sup>
output signals	Status exposure, Status busy
multi-camera sync	Ext. Sync, PLL Sync
data interface	Gigabit Ethernet
timestamp	in image (accuracy of 1 μs)
time code input	IRIG-B unmodulated
shock	150g > 11ms (in all axes)
operating temperature	0° ... +40°C
housing	self-contained housing
power supply	15 ... 48 V DC
power consumption	27 W
camera connector	LEMO (18-pin)
available lens mounts	C-mount, F-mount, EF-mount (optional)
weight	0.985 kg
dimensions	85 x 85 x 102.5 mm <sup>3</sup>

<sup>1</sup> Determination of ISO speed according to ISO 12232.

<sup>2</sup> In correlated double image mode (CDI) the readout noise is reduced and therefore the intrascene dynamic is improved.

<sup>3</sup> Contact signal type in combination with **pco.**extension box.

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Pyramid Imaging

**pco.dimax<sup>®</sup> cs**

## qualities



### fast frame rates at high resolution

1102 fps | 2016 x 2016 pixels **pco.dimax cs4**  
1603 fps | 1920 x 1440 pixels **pco.dimax cs3**  
3086 fps | 1296 x 1024 pixels **pco.dimax cs1**



### excellent light sensitivity at true 12-bit dynamic range

outstanding low light performance requires less light and allows for reduced shutter time in order to avoid motion blur



### ruggedized camera body

camera withstands 150g for more than 11 milliseconds in all axes  
self-contained & dust tight housing



### compact & lightweight

very compact and lightweight body allowing for quick and easy setup  
even in tight spaces



### secure and smart operation

employable pulse length filter reduces risk of false triggering by interfering  
EM signals secure synchronization mode (phase-lock PLL) even if sync signal fails



### electronic lens control for Canon EF lenses

allows for remote control camera lens (focus and aperture) for use in positions  
that are hard to access (film pit, hall ceiling, crash block)



ALL IN ONE

### one camera for every application

due to size, weight and changeable lens mounts, the camera can be quickly  
swapped between onboard and off-board positions delivering high-quality images



### wide variety of helpful accessories

camera-lens cage for perfect stabilization of the optical axis for onboard applications  
ruggedized junction box with integrated battery and sync generator for multiple  
cameras



### use-oriented camera control software

pco.camware 4 allows for fast repeatability of different test scenarios  
integration in several major third-party camera control software packages



### high-quality product made in Germany

robust and reliable camera system combines German engineering  
with outstanding color quality and crisp images



### enhanced compression mode

33 % more recording time



## accessories

### HD-SDI video output

The camera's video output provides fluent live video in Full HD quality which allows to easily set camera view, focus and aperture.



### lens cage

The supportive lens cage perfectly stabilizes the optical axis when working with larger C-mount lenses in high-G applications where strong cross acceleration forces occur.



### lens remote controller

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

### camera junction box

The camera junction box is the perfect source for up to six off-board cameras providing power, Ethernet, trigger and sync signals via one solid LEMO cable.

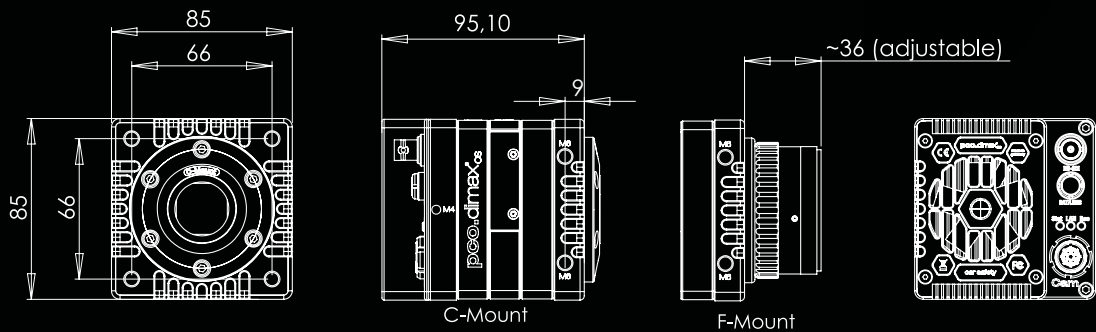


### onboard controllers

Different ruggedized onboard controllers supply up to ten cameras with power, Ethernet, trigger and sync signals. An integrated battery provides an ideal back-up power source.



### dimensions



## contact

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