Optronis

Make time visible

CamRecord: High-speed cameras
with built-in memory

Making important details visible!

Insight into new worlds

High speed cameras are optimized for recording fast action and therefore have a much higher recording frame rate than standard video cameras. In addition, they offer a much larger field for recording the complete unit, with the simultaneous imaging of very fine image details. Depending on the camera model Optronis high-speed cameras record up to 4 million pixels at a frame rate of 500 frames per second (fps).

High-speed cameras for professional use

In industry measurement accuracies up into the nano-range and production rates, which can hardly be followed by the human eye, are part of the daily routine. To optimize existing processes further, to analyze errors in the flow or obtain accurate data for the maintenance, one needs accurate technical tools.

With the high-speed cameras of the CR series from Optronis you gain insights that give you precisely here valuable support. And this not only in the industrial environment, but also in endoscopy, microscopy, or science and research.

In these applications the quick and straightforward implementation is one of the most important criteria for users of the Optronis CR cameras. The easy concept of operation and intuitive handling are essential premises for us in developing our high-tech devices.

Easy handling

The camera is positioned and recording started. All image data is stored in the internal circular buffer. From there you can analyze the data on a connected PC and save them on the hard disk if required. The sequence is played by popular video software (media player ...) as well as by the included TimeBench software.
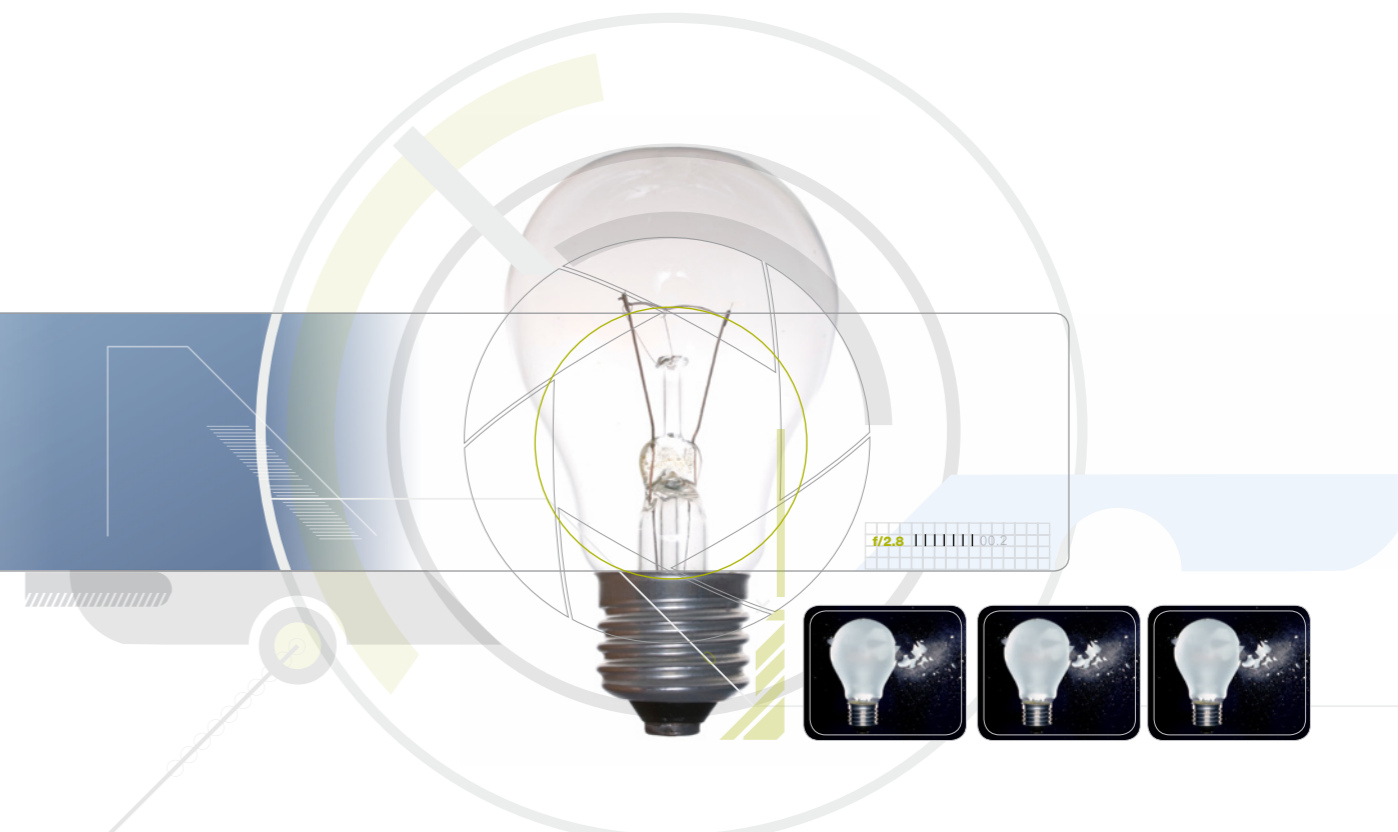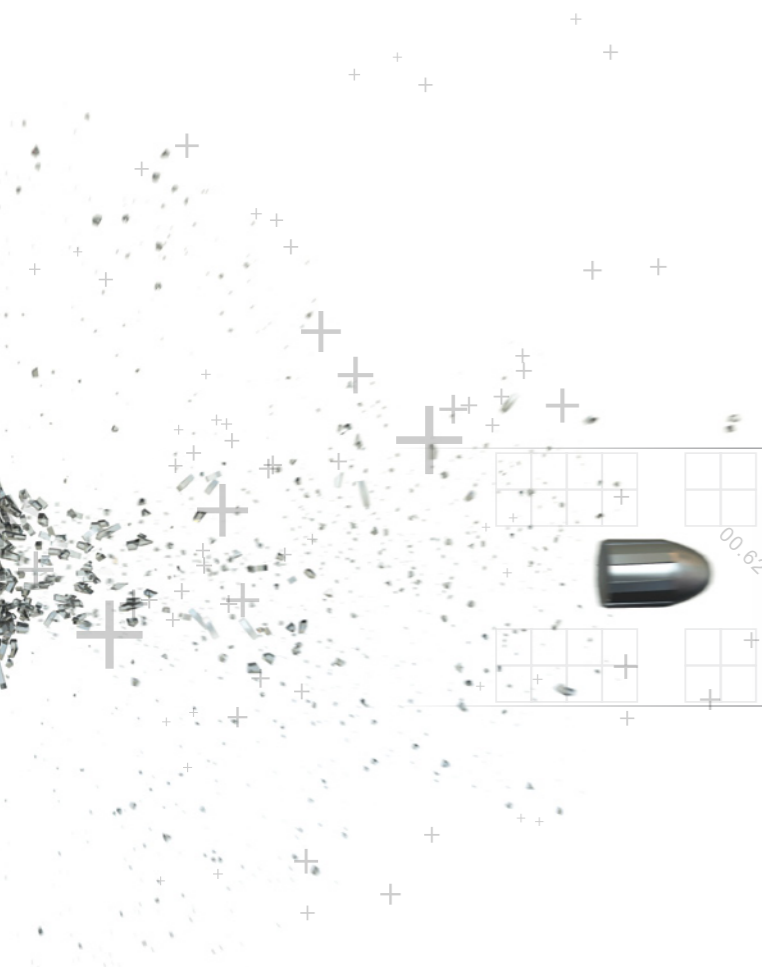
Optronis CR cameras

- extremely accurate and detailed image of processes
- high rate of image data and frames

For you: exact analysis for fault-finding

Easy access
to new perspectives

TimeBench - the intuitive analysis software

TimeBench does not only make the parametrization of your CR camera a breeze; the software also allows a detailed and accurate analysis of your image sequences. User-oriented project management and requirements-oriented overlay functions complement the features. Optronis high speed cameras are high-tech cameras for professional use, the simple operation in particular distinguishing the Optronis cameras.

Setting the camera parameters

- picture formats
- frame repetition rate
- exposure time
- gain
- recording memory and time
- trigger position
- synchronization

- trigger source
- recording mode (Total memory or fragmented memory)
- advanced dynamics*
- ultra speed*
- automatic saving
- setting the camera's IP address, focus and iris *

* Depending on camera model
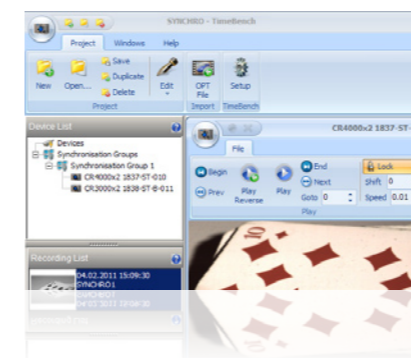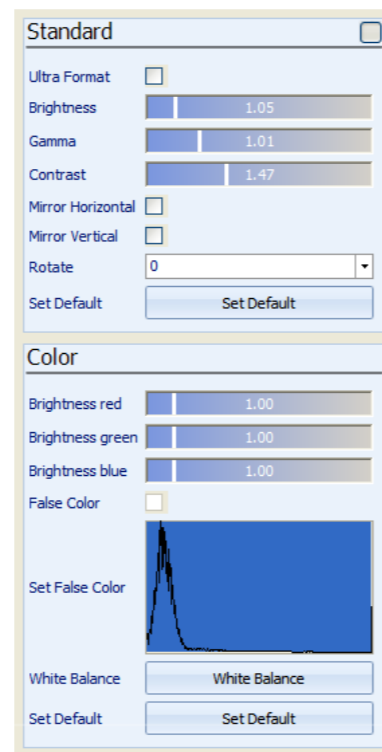
Project Management

- open, delete, save, edit, duplicate, projects
- the opt file import
- project comment
- project setup
- locate project
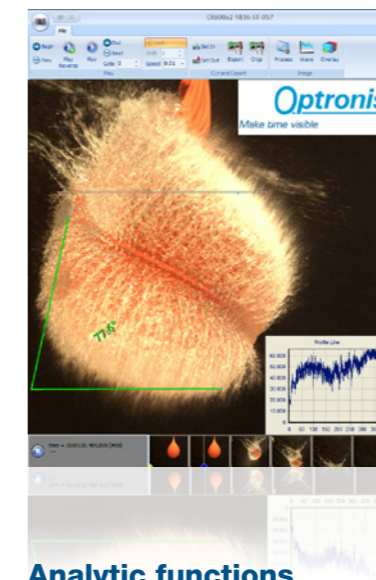
Analytic functions

- analysis tools: distance, angle, speed
- acquire and select images
- representation and highlighting of specific picture contents
- presentation of data acquisition parameters
- picture brightness distribution
- histogram
- logo and text

- recording / playback / storage
- picture recording and playback: live image, single image, ultra format *, ultra speed*
- picture optimization: FFC, white balance*, brightness, gamma, contrast, false colors*
- sequence preview: cutting sequences
- picture zoom: details saving as lossless untrimmed size
- comprehensive export capabilities: AVI (Xvid, DivX, MPEG2, MPEG4, H264…), JPG, TIFF, BMP etc

To do justice our philosophy, to offer easy-to-use yet professional high-speed cameras the analysis software TimeBench is included.

Flexible connection options

• Electrical interface
Fast access to data on industrial Gigabit Ethernet (GigE) interface
VGA port for local set of lens and lighting,
interfaces for external trigger, synchronization and low-voltage power supply

• Mechanical interface camera mount
camera mounted on three sides of the camera,
robust camera connection in stainless steel with a choice of four M4 screws or photographic thread (¼ -20 UNC),
arrangement of the connections centric to the image sensor

• Mechanical interface battery pack*
robust mechanical interface for high performance lithium-ion battery pack (30 watts) and battery charger, network-independent operation via exchangeable lithium-ion battery duration depending on camera adjustment up to 2 hours, operation of the cameras either via mains or battery operation; power failure protection

• Equipment
objective: Nikon, Canon, C-Mount etc.

camera mounting solutions: tripods, magic arm, etc.

lighting: LED, daylight lamps, halogen etc.

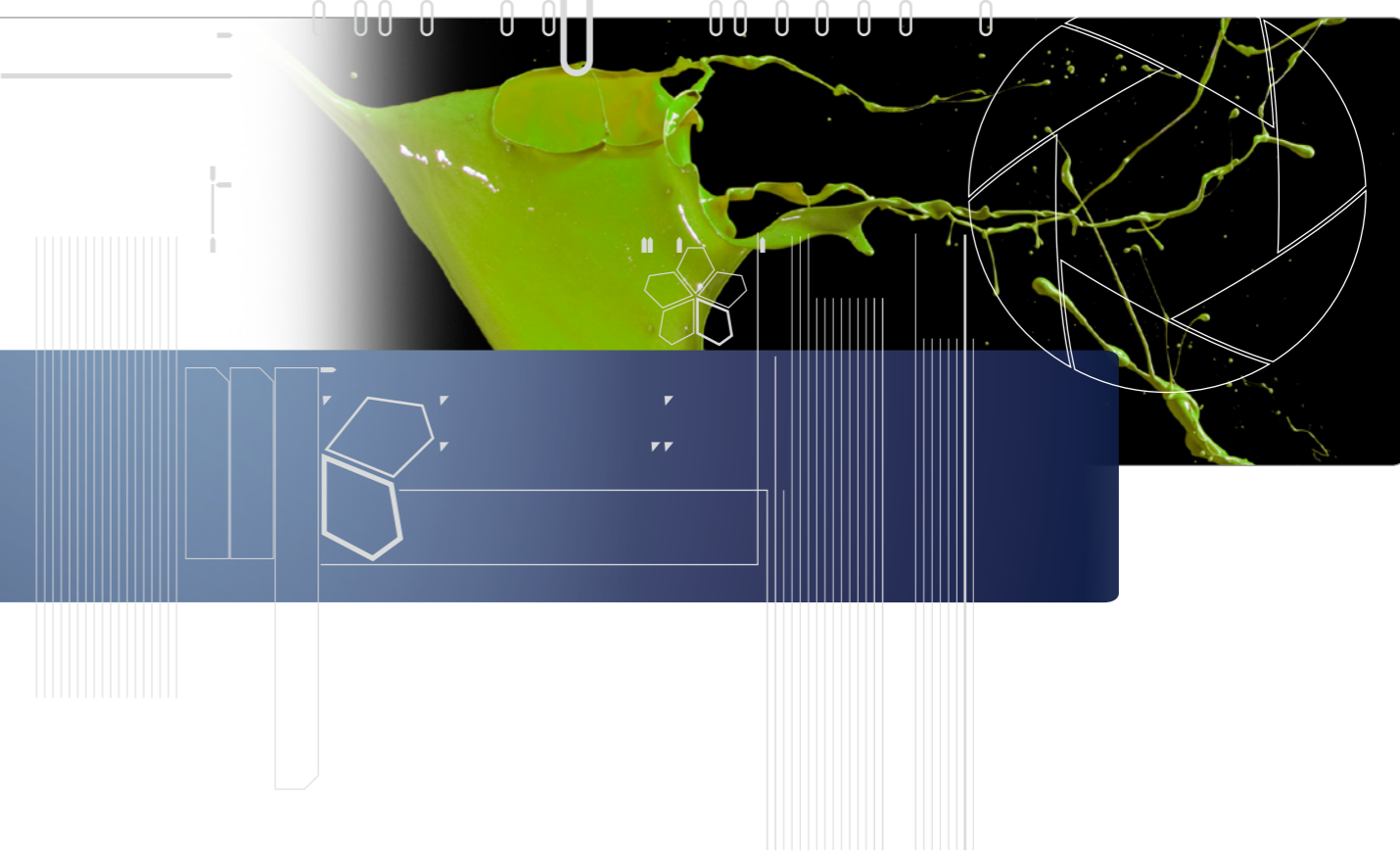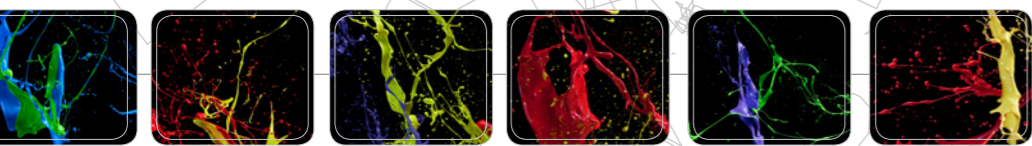**trigger units:** trigger switch, multi-trigger, light barriers etc.

power failure protection: built-in or external rechargeable battery pack

software development environment: SDK, LabView drivers

* Option

Large data memory

In addition to long recording times the Optronis calibratable data memory storage device offers another advantage: To map several images without annoying interim storing, the video data memory can easily be fragmented. Thus you can write individual sequences into the video memory and subsequently play them directly or store them.

Robust construction

The camera is particularly suited for the use in harsh industrial environments and in the clean room: the casings of the CR camera series are made of resilient, surface-treated „Made in Germany" aluminum with precision stainless steel inserts for mounting the camera. The image sensor is protected by a removable glass cover. Generated heat is dissipated through the aluminum housings to the outside without a fan.

Multi-functional interfaces

The CR camera series offers a multi-functional optical interface. You have four free configurable ports for standard lens selection: Nikon F, Nikon F (G Series), Canon EF/EFS and C-Mount. Depending on your requirements, you can equip the optical interface with wide-angle, standard, telephoto, macro or zoom lenses.

The Canon interface is fully opto-electronic. Focus and aperture are set by remote control.


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Trigger

Trigger-release mechanism either by hand, externally (switch), externally electrically or optically via a sensitive, freely selectable field in the image. Free choice of the trigger position in the storage ring at the beginning (pre-trigger), at the end (post-trigger) or within the image sequence. Free choice of the trigger position even with fragmented memory.
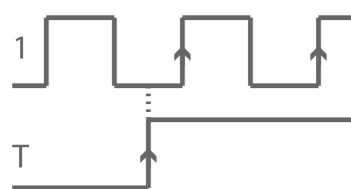
Synchronization

Internal quartz exact synchronization with a fixed frame rate dependent on image resolution. Large selection of frame rates: external synchronization – i.e. flexible adjustment of the frame rate - on an externally supplied TTL signal. As a result frame-accurate synchronization is carried out with the incoming TTL signal. This can also be used for frame synchronous interconnection of several CR cameras.
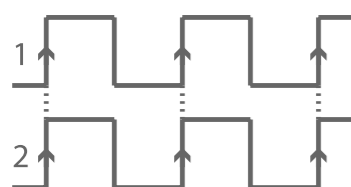
Ring memory/fragmentation

Large video memory, which works according to the ring memory principle: continuous recording and storage till the trigger time and the automatic termination of data storage corresponding to the setting of the trigger timing (pre-or post-trigger).
The video memory can be fragmented for the timely recording of multiple events in quick succession (2-65000 fragments adjustable according to requirement), while maintaining the storage ring principle.
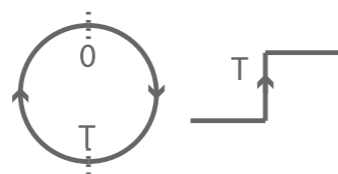
ROI (Region of Interest)

ROI stands for the centric reduction of image resolution to increase speed and for the placement of an image field anywhere for the image trigger.
Sensors of the CR series reach a speed increase by vertical and horizontal * reduction of the image resolution.
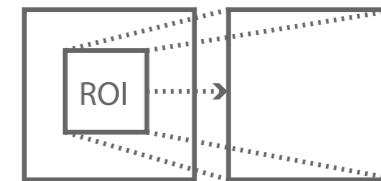
Picture recording play

CR Series cameras store the image data of the image sensor first in the internal video memory. From there, the image data can be played, analyzed and evaluated in advance via the GigE interface of the camera. If necessary, the image data are then stored by the camera's memory to the hard disk of the connected PC.
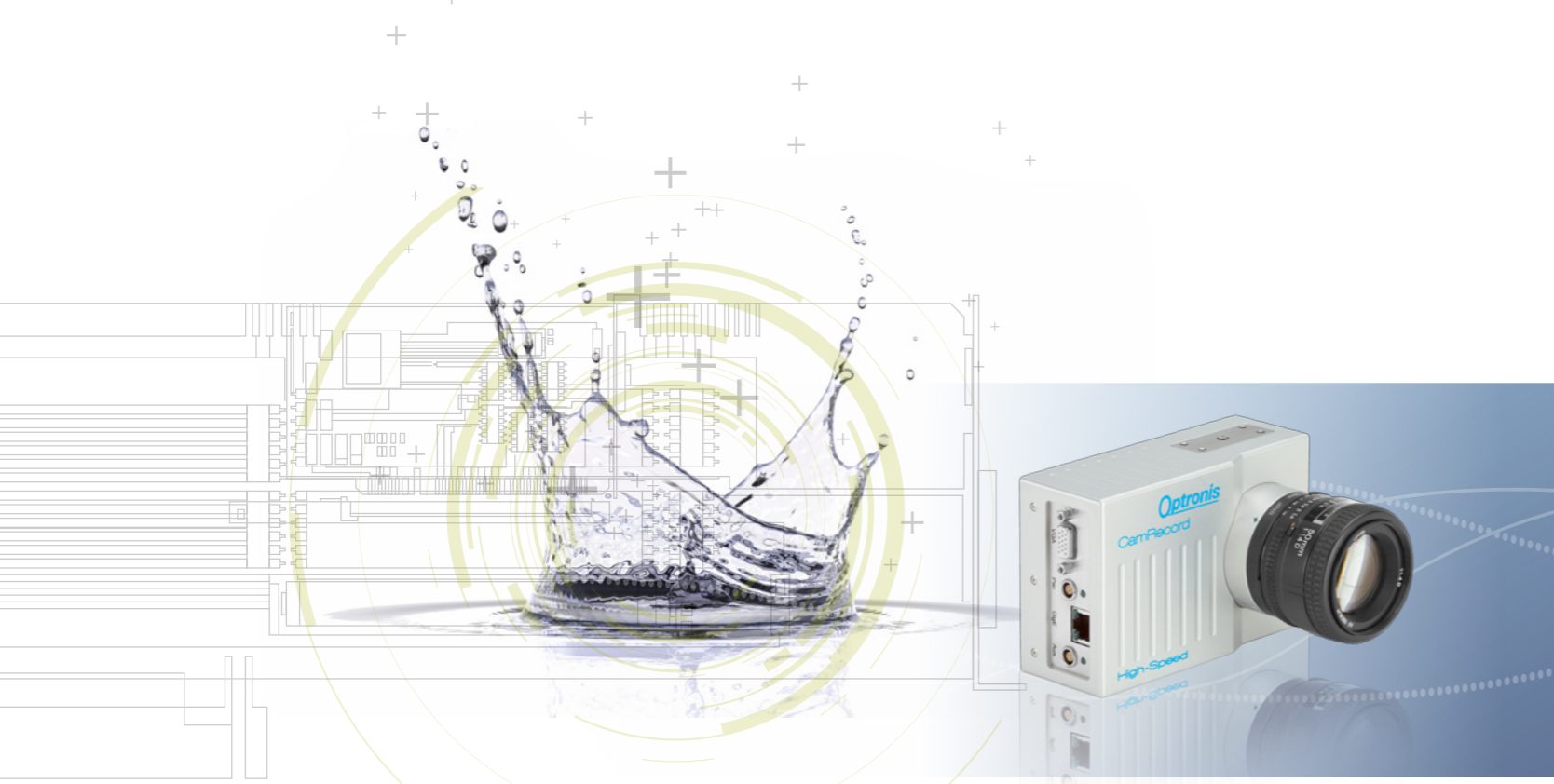
HDR (High Dynamic Range)*

The „extended dynamic range" describes the feature of the camera to display very bright and very faint details in the image simultaeously.
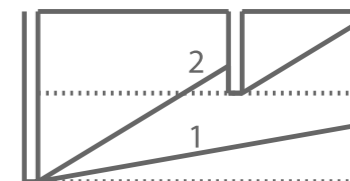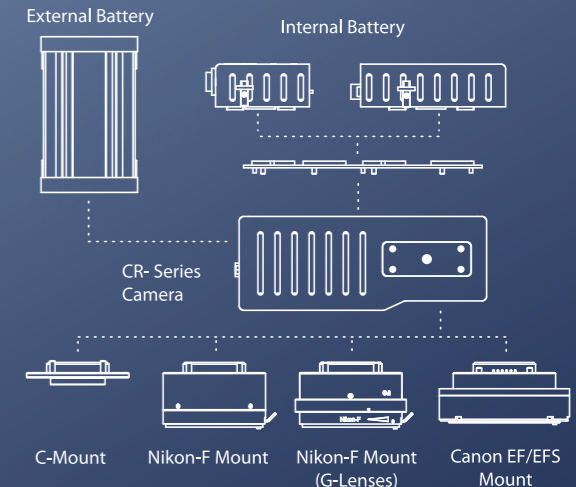
* Depending on camera model

Optronis CR Series:
The answer to every requirement

The image sensors of the CR series have been perfectly matched to the compact design of the camera. Above all, the 3-megapixel sensor of the CR3000x2 for maximum flexibility in frame rate and resolution and the 4 megapixel sensor CR4000x2 in the representation of many image details. The Optronis CR-camera series offers the right solution for every requirement, even in low light or for extremely rapid movements.
When it comes to high-speed cameras you are in always well advised to choose Optronis.

Please direct your inquiries to:
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External Battery Internal Battery

CR- Series Camera

C-Mount Nikon-F Mount Nikon-F Mount (G-Lenses) Canon EF/EFS Mount

	CR450x2	CR600x2	CR1000x2
sensor resolution / physical resolution	800 horizontal 600 vertical	1.280 horizontal 1.024 vertical	1.280 horizontal 1.024 vertical
frame rate / resolution sensor case	1.000 frames per second	500 frames per second	1.000 frames per second
increase the frame rate / reduction of sensor resolution	Yes limited	Yes horizontal / vertical	Yes vertical
maximum frame rate	2.000 frames per second	76.000 frames per second	250.000 frames per second
sensor	color or black and white	color or black and white	color or black and white
sensor pixel / distance between pixels	14 µm square	14 µm square	12 µm square
sensor size	14 mm	22,95 mm	19,67 mm
memory (option)	1 GB – 16 GB	2 GB – 16 GB	2 GB – 16 GB
objective mount (option)	C–Mount Nikon F-Mount Nikon F-Mount (for G-series) Canon EF/EFS-AutoFocus Mount	C–Mount Nikon F-Mount Nikon F-Mount (for G-series) Canon EF/EFS-AutoFocus Mount	C–Mount Nikon F-Mount Nikon F-Mount (for G-series) Canon EF/EFS-AutoFocus Mount
equipment (option)	- external battery pack - internal battery pack	- external battery pack - internal battery pack	- external battery pack - internal battery pack

	CR3000x2	CR4000x2	CR5000x2
sensor resolution / physical resolution	1.696 horizontal 1.710 vertical	2.304 horizontal 1.720 vertical	512 horizontal 512 vertical
frame rate / resolution sensor case	540 frames per second	500 frames per second	5.000 frames per second
increase the frame rate / reduction of sensor resolution	Yes horizontal / vertical	Yes vertical	Yes vertical
maximum frame rate	100.000 frames per second	100.000 frames per second	600.000 frames per second
sensor	color or black and white	color or black and white	color or black and white
sensor pixel / distance between pixels	8 µm square	7 µm square	16 µm square
sensor size	19,27 mm	20,12 mm	11,58 mm
memory (option)	2 GB – 8 GB	2 GB – 8 GB	2 GB – 16 GB
objective mount (option)	C–Mount Nikon F-Mount Nikon F-Mount (for G-series) Canon EF/EFS-AutoFocus Mount	C–Mount Nikon F-Mount Nikon F-Mount (for G-series) Canon EF/EFS-AutoFocus Mount	C–Mount Nikon F-Mount Nikon F-Mount (for G-series) Canon EF/EFS-AutoFocus Mount
equipment (option)	- external battery pack - internal battery pack	- external battery pack - internal battery pack	- external battery pack - internal battery pack

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