

# HiCAM Fluo

Cooled High-speed Fluorescence Camera



**The HiCAM Fluo is a high-speed camera for fluorescence applications.**

It has an integrated fiber-optically coupled image intensifier, which offers a unique combination of high-speed imaging and increased light sensitivity. The HiCAM Fluo features overexposure protection and records high resolution images at a frame rate in excess of 2000 fps at full frame in the most challenging low-light conditions.

## High Sensitivity

HiCAM Fluo is sensitive down to single photon level.

## Ultra-short Gating

The camera's effective exposure time can be reduced to  $< 3$  ns (FWHM) for time resolved imaging, or capturing very fast events.

## Longterm Streaming

The recordings can be directly streamed to the hard drive. For optimised recorders the length is limited only by drive capacity.

## Cooled Image Intensifier

The fanless cooling ensures very low noise levels.

## Easy Coupling

Packed into a compact aluminium enclosure, it is easy to attach the HiCAM Fluo to any fluorescence microscope.

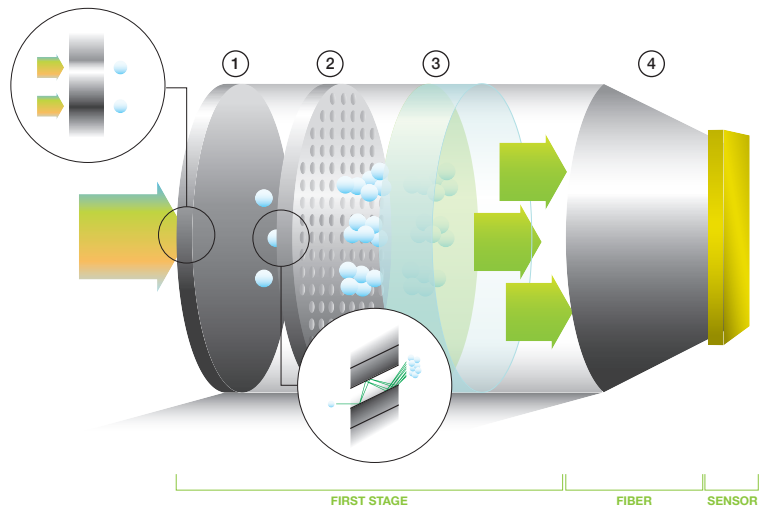
## Fast Streaming

To transfer all the high-resolution image data, the HiCAM Fluo streams live over a CoaXPress (CXP) interface. The camera has four CXP connectors, each of which has a channel speed of 6.25 Gbit/s.

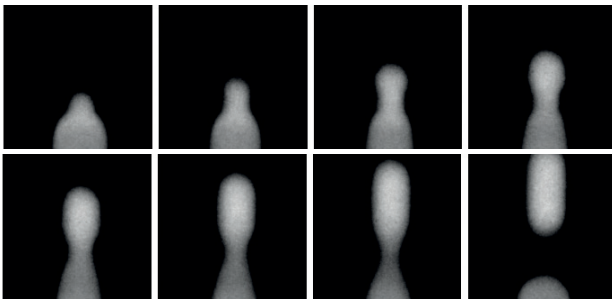
## Intensifier working principle

Photons are converted into electrons at the photocathode (1). These are accelerated towards the micro-channel plate (2) by an electric field and hit the channel walls. Depending on the voltage across the channel, multiple electrons are generated by secondary emission.

This cloud of electrons is accelerated towards the anode screen (3), where the electrons are converted back into photons by the phosphor layer, and these photons are transferred to the camera by a fiber-optic taper (4).

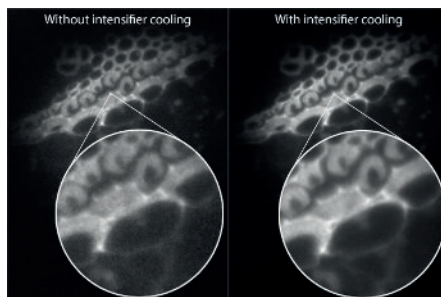


## Applications

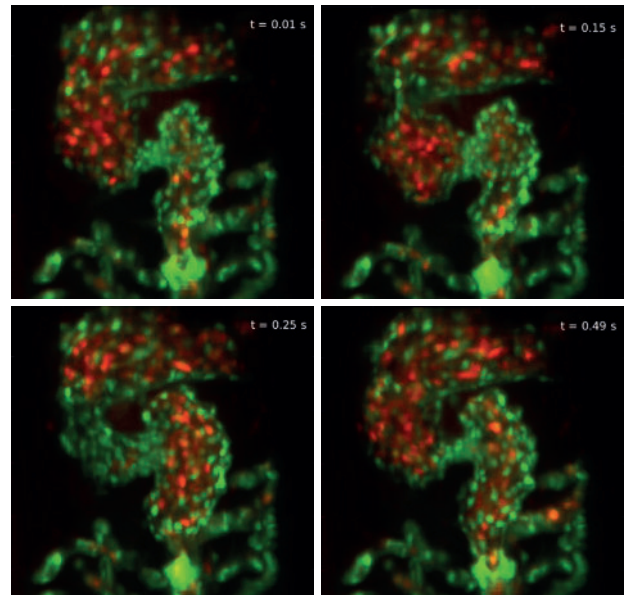


**Above: Microfluidics** - Generation of one single droplet (0.003 s) containing Cy3-labeled DNA, captured with a frame rate of 4086 frames per second.

**Opposite: Cooling** - Images of a lily of the valley sample without (left) and with (right) image intensifier cooling.



**Below: Lightsheet** - SCAPE 2.0 dual-colour, high-speed imaging of blood flow in a beating embryonic zebrafish heart acquired at 100 volumes per second over a 270 x 260 x 128 xyz micron field of view. The heart wall is shown in green (EGFP) and the red blood cells are shown in red (DsRed).



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Lambert Instruments is dedicated to development, production and worldwide sales of products for **time resolved imaging at low-light levels**.

Our mission is to enable our users to **reveal previously unseen phenomena**. Our products provide a possibility to record fast events at low-light conditions. Together with our software, we **reimagine detection** to offer complete solutions to challenging imaging problems.