ReconFlex™

Patented CMOS Cameras for Sophisticated Applications

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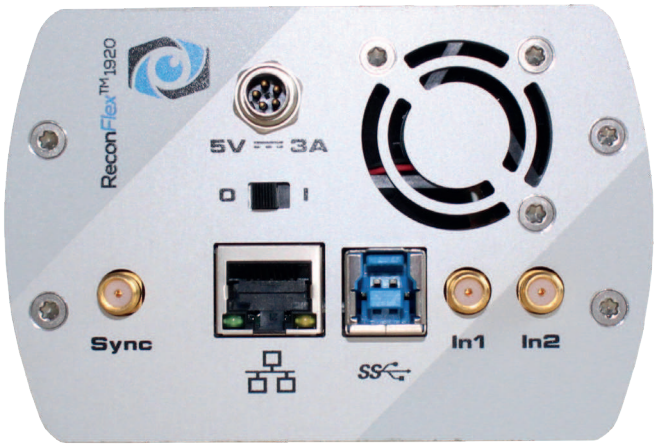
Patented Recon*Flex*™ Cameras

Recon*Flex* cameras are unique, very fast, feature rich and multi-configurable CMOS cameras for fast synchronization with a patented algorithm for fast peak coordinate counting and for very fast Super Resolution Microscopy.

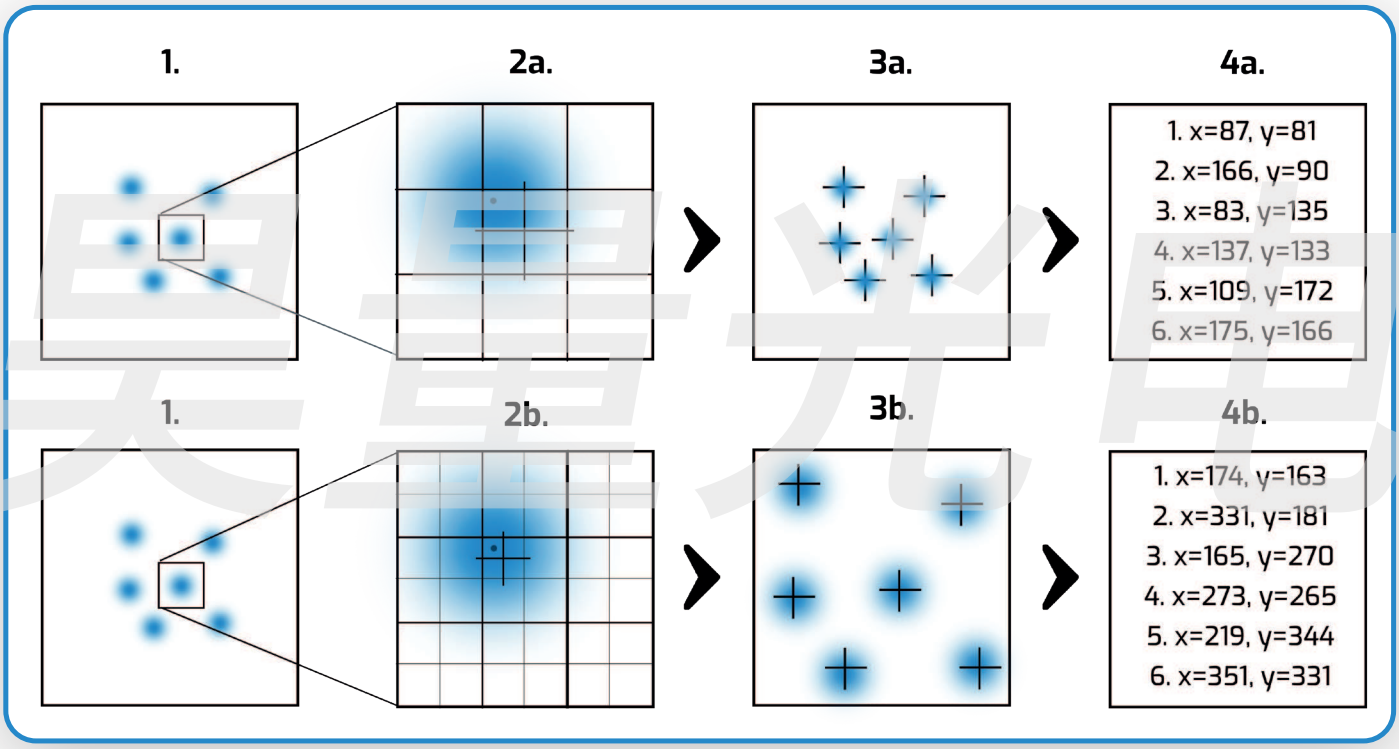
All models are easy to integrate as they are equipped with two regular and commonly available data interfaces (Gbit LAN and USB 3) and yet enable to make use of very high frame rate imaging. They were developed for the needs of scientific applications but they are well suitable to any task when automation of data analysis meets the need for excellent frame control and high frame rates.

	Recon*Flex*™ 1920	Recon*Flex*™ 800
Image Sensor Type	CMOS (2/3)"	CMOS (1/1.7)"
Shutter Type	Global	Global
Pixel Numbers	1920 x 1440	800 x 624
Pixel Size	4.5µm x 4.5µm	9µm x 9µm
Typical Sensor Noise	< $3e^-$	< $6e^-$
Dynamic Range	80dB	80dB
Frame Exposure Time Range	4µs - 10s	2µs - 10s
Sensor Readout Dynamics	8bit & 12bit	8bit & 12bit
Data Readout Formats	8bit & 12bit	8bit & 12bit
Max. Image Dynamics (accu.)	32bit	32bit
Frame Rate @Full-Frame	up to 417fps (8bit)	up to 1577fps (8bit)
Frame Rate @hardware ROI	up to 5555fps (8bit)	up to 7092fps (8bit)
Camera Frame Buffer Size	500MB	500MB
Max. Full Frames in Buffer	> 200	> 800
Shutter Trigger Input/Output	Available	Available
16bit ADC-Option	Option A, B, S	Option A, B, S
Blob Finder Mechanism-Option	Option B, S	Option B, S
Super Resolution Mechanism	Option S	Option S
Data Interfaces	USB 3 & Gbit LAN	USB 3 & Gbit LAN

Ideal For

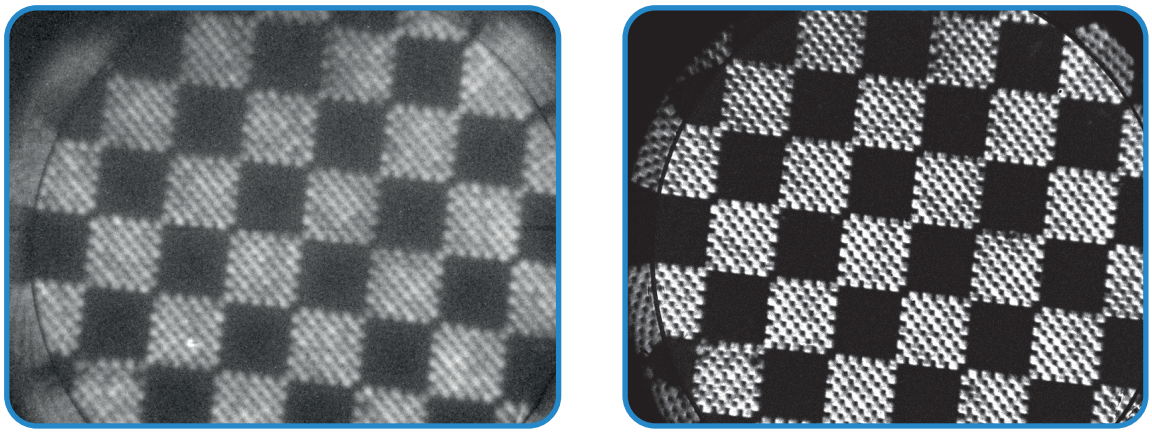


- Direct Super Resolution Microscopy
  LIKE STORM, dSTORM, PALM
- Peak Coordinate Counting in Particle Detectors
- Monitoring of Fast Dynamic Processes
- Analysis of Weak Contrasts
  LIKE MICRO-DAMAGE ANALYSIS

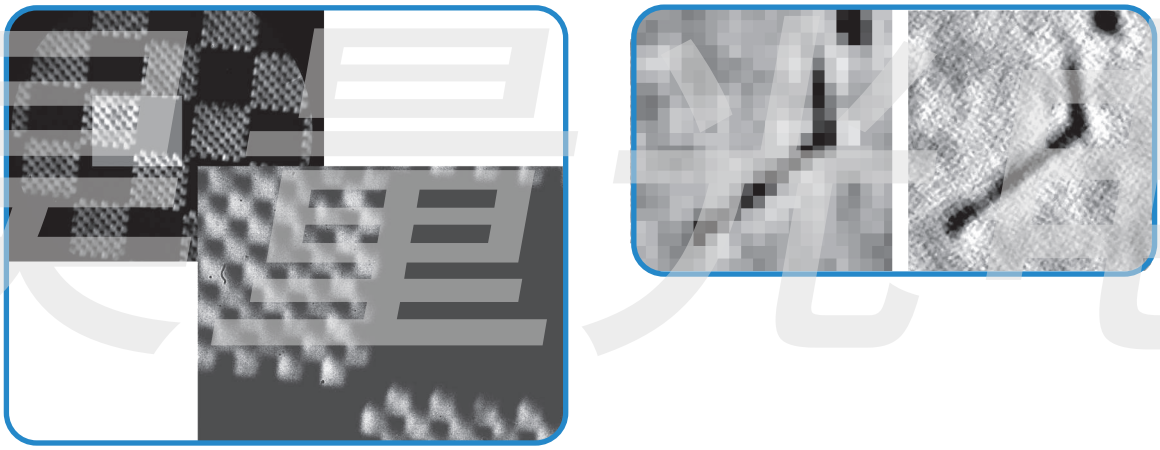


The blob finder mechanism enables precise and fast finding of peak coordinates and their counting. It recognises single peak intensities and their coordinates (no. 1, 2a and 3a) directly on the hardware and provides a coordinate list (4a) on the fly. Coordinate lists can be streamed directly assigned to frame time stamps and ADC values. The software assembles virtually noise free images from the coordinates.
The super resolution mechanism increases the resolution of the measurement by determining the peak positions with sub-pixel precision. It upscales the obtained images by a user-defined factor (e.g. upscale factor of 2 for no. 2b and 3b) providing a more precise coordinate list (4b) and a higher resolved coordinate image.

Measurement Examples



Phosphor screen detector image of a chessy sample taken with a Recon*Flex* 800 in normal camera mode (left) and same image using the blob finder mechanism at 1577fps (right). The blob finder returns true count rates and suppresses any background or stray light very efficiently."



Left image: Foreground image is a 4x upscaled section of the background image (highlighted area).
Right image: Super resolution visualized by comparison of an image part taken in normal mode (left) and in the super resolution mode upscaled 16x (right).

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