XCAM SCIENTIFIC

SOFT X-RAY DETECTION

RIXSCam



High performance photon counting camera to improve resolution of RIXS experiments

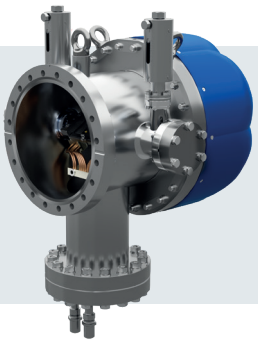
The **RIXSCam** system was originally designed in collaboration with scientists at the Paul-Scherrer Institute (PSI) for the Swiss Light Source ADRESS beamline. It was specifically developed for use on the latest coherent x-ray beamlines for Resonant Inelastic X-ray Scattering (RIXS) experiments.

Utilising EMCCDs it enables **single photon detection**, increasing the intensity of photons detected with <1 e- rms noise, suitable for a wide range of diverse material and chemical studies.

Centroiding technology combined with a unique algorithm developed by PSI gives this system an unbeatable spatial resolution, allowing energy to be resolved to an unprecedented degree. The rotatable detector bench, which holds up to three detectors, allows the operator to foreshorten the effective pixel size by changing the angle of incidence with the beam to further improve resolution.

Customisable to Individual Requirements

The **modular design** adapts to unique experimental setups, providing flexibility for cutting-edge research needs.

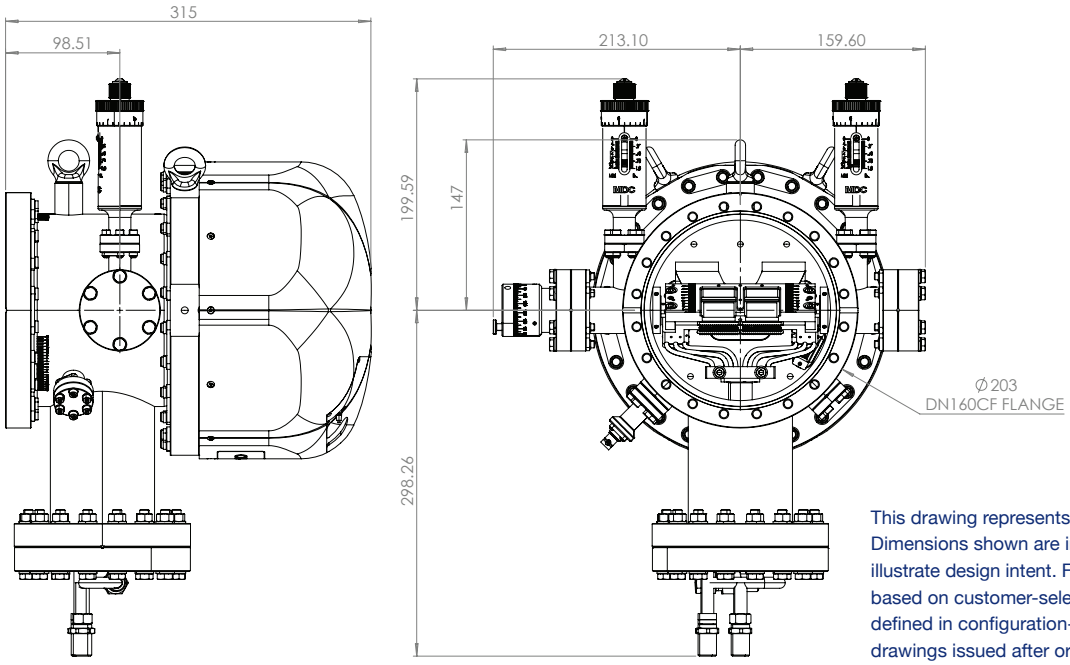


RIXSCam builds on XCAM Scientific's tradition of collaborative design, catering to the individual needs of customers who are working to the most demanding requirements, particularly where there is no existing solution available.

Features & Benefits

- **Soft X-ray Detection (250 - 3000 eV)** enables experiments across a broad range of soft x-ray energies.
- **Exceptional <5 um Spatial Resolution** provides highly detailed imaging and accurate mapping of x-ray interactions.
- **Single Photon Detection** detects extremely low-intensity signals enabling studies of weak phenomena.
- **Sub-Electron Read Noise** reduces measurement noise, enhancing signal clarity and reliability of results.
- **User-Controlled Effective Pixel Size** optimises spatial and energy resolution for specific beamline requirements.
- **Variable Detector Angle of Incidence** improves spatial and energy resolution.
- **Large Detector Area** captures multiple photons simultaneously, increasing throughput and reducing experiment time .
- **XHV-Compatible Manufacture** for the ultra-high vacuum environments typical of synchrotron beamlines and cryogenic operation
- **Up to 3 Back-Illuminated EMCCDs** increases photon collection efficiency and overall data quality for high-throughput.

Sample Technical Drawing



This drawing represents a configurable product. Dimensions shown are indicative only and illustrate design intent. Final dimensions will vary based on customer-selected options and will be defined in configuration-specific manufacturing drawings issued after order confirmation.

Key Specifications

Parameter	RIXSCam1	RIXSCam2	RIXSCam3
Number of Detectors	1	2	3
Total Active Area	26.11 x 25.73 mm	52.22 x 25.73 mm	78.33 x 25.73 mm
Active Pixels (H x V)	1632 x 1608	3264 x 1608	4896 x 1608
Pixel Size	16 x 16 µm		
Readout Rate	3 MHz		
System Noise (LS gain of 150)	≤1 e-		
System Noise (no LS gain)	≤140 e-		
System Noise HR Output	Typically <15 e- rms		
Detector Angle of Incidence	20° to 90°		
Vacuum Compatibility	10^{-9} mbar		
Detector Temperature Control	-110°C to -50°C		
Post-processed Resolution[1]	<5 µm		
Weight	25 kg		
Mechanical Interface	DN100CF		
Data Interface	Cameralink interface via fibre optic cables		
Housing Material	304L stainless steel		
Cooling	Cryogenic		
Operating Environment	2°C to 35°C temperature 20% to 90% relative humidity (non-condensing)		
Warranty	24 months		
Certification	CE		

1 The actual spatial resolution achieved will also depend on the local experimental set-up

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