

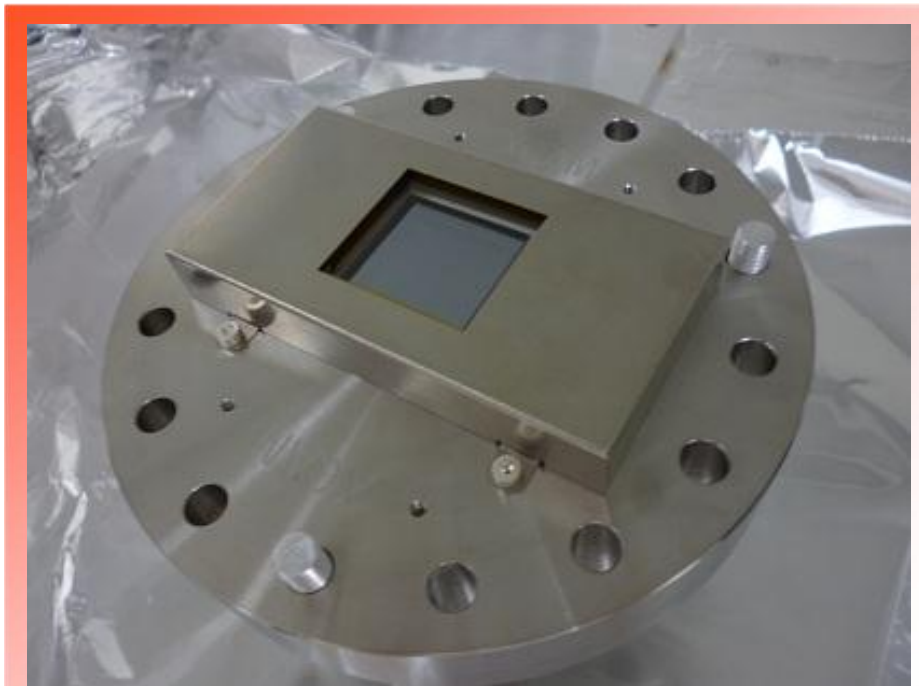


CaVA Camera System

Product Overview

Introduction

The **CaVA** Camera Systems are **C**ameras for **V**acuum **A**pplications. XCAM has developed a wealth of knowledge over the years, associated with how to build super-clean cameras for vacuum experiments which, if used correctly will guarantee not to contaminate your vacuum system or experiment.



There are two key types of **CaVA** system available:

- The '**F**' **CaVA** models are camera systems which are built on a conflat-style **F**lange. The detector and cooling system are on the vacuum side of the flange, with the electronics on the clean side of the flange. Hermetic electrical feedthroughs maintain the vacuum chamber integrity and ensure that the relatively unclean electronics (compared to UHV/XHV standard) remains safely away from your vacuum experiment.
- The '**S**' **CaVA** models are **S**ealed camera heads comprising a hermetically sealed stainless steel 'box' which keeps the 'vacuum dirty' electronics safely away from the vacuum, with the detector on the outside of the box and fully immersed in the vacuum chamber. This type of camera head can be entirely immersed inside an experimental chamber.

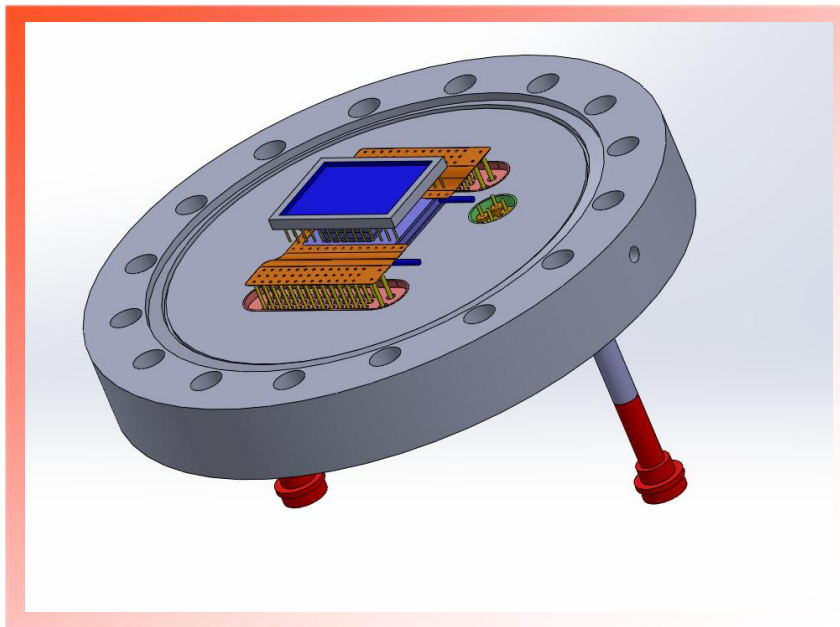


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General Features

- Clean construction to UHV, XHV or even UCV standards, depending on your requirements
- Guaranteed not to contaminate your vacuum chamber, provided operating instructions are observed
- Available with a wide range of CCD detectors, front or back-illuminated
- A choice of electronic drive systems provides systems suitable for high light levels at high frame rate with exceptional linearity, or very low noise levels at slow speeds for sensor-limited noise performance
- Systems are individually optimised for each CCD for the very best performance
- Easy customisation of your camera if required
- Water-cooled peltier cooling down to -50C if required.
- Customised vacuum solutions cryo-cooled are available – please enquire.



CaVA Camera System Types Available

The following options are currently available, but our system can be modified to accommodate any other detector type so please enquire if you do not see a suitable detector.



CaVA Camera System

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Model 2008 Series

2008 Series Models offer

- Extremely low noise at slower readout speeds
- CCDs can be front or back-illuminated, and without AR coating if required, subject to supplier availability of detector.
- Full frame or frame transfer
- Up to 4 channels/output nodes for readout speeds of up to 180KHz (lowest possible readout noise)
- Up to 2 channels/output nodes for slightly higher readout speeds of 1-2MHz
- Clean contamination-free assembly
- Easily customisable on request

Model Number	Pixel Size μm	No Pixels	Image Area mm	Key Features
F-200803 And S-200804	13.5	2064x2048	27.8x27.6	Flange or Sealed camera. Large area square full frame device which can also be operated in frame transfer mode. Readout out of 4 output nodes enables slightly higher frame rates at slow speeds for best noise performance
F-200809 and S-200810	13.5	2048x2048	27.6x27.6	Flange or Sealed camera. Large area square full frame device with
F-200805 and S-200806	13.5	512x2048	6.9x27.6	Flange or Sealed camera. Rectangular spectroscopy format full frame device with one output node
F-200807 and S-200808	26	256x1024	6.6x26.6	Flange or Sealed camera. Rectangular spectroscopy format full frame device with one output node



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Model 2010 Series

2010 Series Models offer

- 4-channel operation at up to 3MHz out of each output node (5MHz coming soon)
- CCDs can be front or back-illuminated, and without AR coating if required, subject to supplier availability of detector.
- Multiple camera heads can be operated synchronously or for semi-customised larger flanges, multiple detectors can be operated synchronously on a single camera head (eg 12 output node 3 detector system(4 output nodes each) as created for one customer
- Full frame or frame transfer
- Ideal for high flux, high frame rate applications
- Excellent linearity over whole range
- Clean contamination-free assembly
- Easily customisable on request

Model Number	Pixel Size μm	No Pixels	Image Area mm	Key Features
F-201001 and S-201002	13.5	2064x2048	27.8x27.6	Flange or Sealed camera. Large area square full frame device which can also be operated in frame transfer mode. Readout out of 4 output nodes enables high frame rates for high signal levels
F-201003 and S-201004	13.5	512x2048	6.9x27.6	Flange or Sealed camera. Rectangular spectroscopy format full frame device with one output node



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2011 Model Series

2011 Series Models offer

- Ideal for photon-starved applications where single photon detection is required
- Individual photon-centroiding to within a fifth of a pixel for relevant applications
- 4-channel operation at up to 3MHz out of each output node (5MHz coming soon)
- CCDs can be front or back-illuminated, and without AR coating if required, subject to supplier availability of detector.
- Multiple camera heads can be operated synchronously or for semi-customised larger flanges, multiple detectors can be operated synchronously on a single camera head eg 3 detector system (as our RIXS-Cam System)
- Full frame or frame transfer
- Excellent linearity over whole range
- Clean contamination-free assembly
- Easily customisable on request

Model Number	Pixel Size μm	No Pixels	Image Area mm	Key Features
F-201101 and S-201102	13	1024x1024	13.3x13.3	Flange or Sealed camera head available. Square frame transfer detector. This has 2 output nodes – one is a low noise high responsivity output enabling the use of the detector as a ‘standard’ CCD camera and the other uses EM gain to provide reduced noise for very low signal levels
F-201103 and S-201104	16	512x512	8.19x8.19	Flange or Sealed camera head available. Square frame transfer detector. This has 2 output nodes – one is a low noise high responsivity output enabling the use of the detector as a ‘standard’ CCD camera and the other uses EM gain to provide reduced noise for very low signal levels
F-201105 and S-201106	16	1632x1608	26.11x25.73	Flange or Sealed camera head available. Very large format full frame detector. This has 2 output nodes – one is a low noise high responsivity output enabling the use of the detector as a ‘standard’ CCD camera and the other uses EM gain to provide reduced noise for very low signal levels