



ClearXCam™ 2304 | Detector Module

The **Detector Module** and **Readout Electronics** form the ClearXCam™ 2304 - a compact and easy-to-use in-beam imaging system. This system is effective for X-ray beamline scientists across various use cases: discovery of in-beam features, position monitoring, simplifying focusing events, and more. Key system features include:

- + **Transparent and robust diamond sensor**
- + **High Resolution Imaging with 2304-pixel readout**
- + **Video-Rate Capture (up to 100 Hz)**
- + **Plug-and-Play Design: powerful, easy-to-use software with built-in EPICS integration**

Technical Specifications

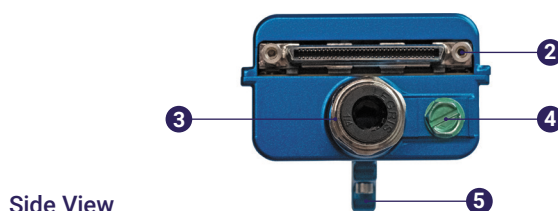
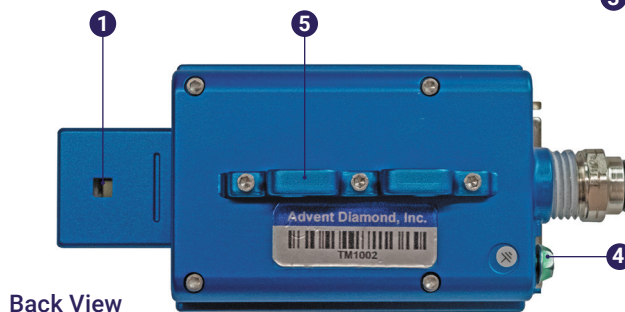
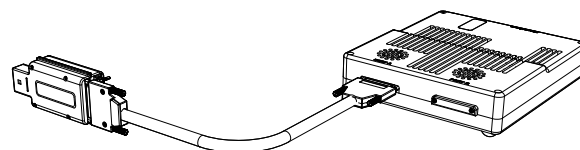
Sensor Material	Electronic Grade Single Crystal Diamond	
Diamond Thickness	50 $\mu\text{m} \pm 5 \mu\text{m}$ ¹	
Sensor Active Area	2.373 mm x 2.373 mm ²	
Contact Material	Au ³ or Al ³	
Pitch/Digital Pixel Size	50 μm ⁴	
Pixels	2304 (48 channels x 48 channels)	
Total Sensor Transparency (30 and 50 μm diamond)	30 μm with Al >90% at 6.3 keV >95% at 7.9 keV	50 μm with Au >90% at 8.4 keV >95% at 10.9 keV
PCB Material	Aerospace Ceramic Composite (Rogers 4003C™)	
Connection Type	68-pin Serial Cable	
Enclosure Materials	Anodized Aluminium	
Aperture Size	3.8 mm x 3.8 mm	
Dimensions (L x W x D)	96 mm x 50 mm x 31 mm 3.78 in x 1.97 in x 1.22 in	
Inert Gas Port	1/2" tube fitting	
Mounting Hardware	Alum. Bracket with 1/4-20 threads	

¹ Thinner diamond available upon request.

² Contact distributor about availability of larger active areas.

³ Thin proprietary interface material capped with contact metal comes standard. Contact distributor for additional metal capping layer options.

⁴ Pitch/pixel size customizable upon request (10 μm - 200 μm).



- 1 Pixelated Diamond Sensor
- 2 68-pin Serial Cable Port
- 3 Inert Gas Port
- 4 Grounding Screw
- 5 Mounting Bracket





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Technical Specifications

Bias (adjustable)	10 V to 40 V	
Sensitivity Range ²	100 μm beam	1.5 mm beam
Detectable [phs/sec]	10 ⁵ - 10 ¹⁶	10 ⁶ - 10 ¹⁶
Imaging [phs/sec]	10 ⁶ - 10 ¹⁶	10 ⁷ - 10 ¹⁶
Position Resolution ¹	0.01% for 1.5 mm beam, 10nm or less	
Frame Rate ³ (adjustable)	0.5 Hz - 40.0 Hz typical Up to 100 Hz in fast capture mode	
Detector Connection	68-pin Serial Cable	
Data Port	Ethernet	
Power Supply	48V PoE or 12V Barrel Jack	
Cable	Off-the-self, non-proprietary	
Enclosure Materials	Anodized Aluminium	
Dimensions (L x W x D)	190 mm x 170 mm x 24 mm 7.48 in x 6.69 in x 0.94 in	

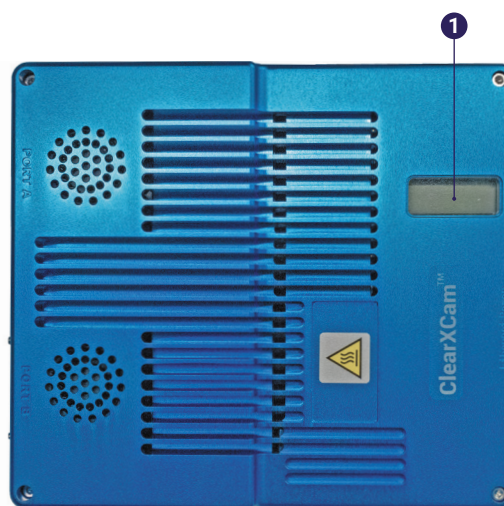
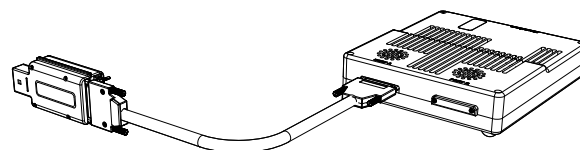
Software Features

- + Real time beam image display with x- and y- current profiles
- + x- and y- position coordinate tracking
- + Plug-and-Play browser interface (no installation required)
- + API data streaming with built-in EPICS compatibility

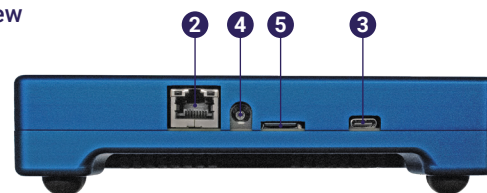
¹ Beam position resolution depends on beam size and flux. Please visit www.adventdiamond.com/clearxcam for more information.

² Specifications are based on testing using a pink beam. Sensitivity Range can vary depending on type and size of beam used.

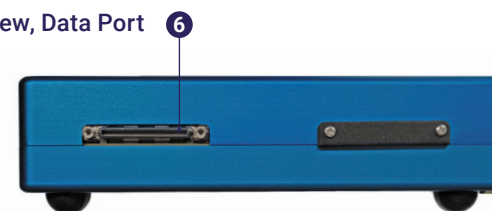
³ Image size reduces from 48x48 channels to 24x48 channels for frame rates above 40.0 Hz.



Top View



Side View, Data Port



Side View, Detector Connection

- 1 LCD Screen
- 2 POE port
- 3 USB-C port
- 4 12V Barrel Jack
- 5 SD card slot
- 6 68-pin Cable Port

