

X-Ray Collimator 240

Compact Aperture Control for X-Ray Collimation

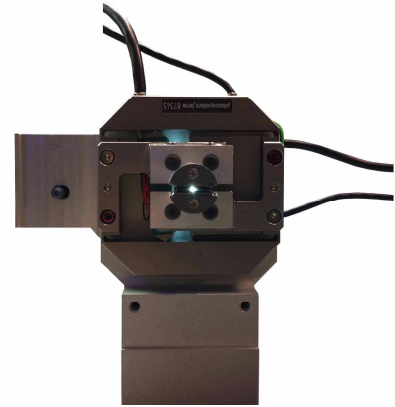
Concept:

The X-Ray Collimator 240 was developed in cooperation with Lawrence Berkeley National lab as part of an upgrade to beamline 12.3.1 of the Advanced Light Source. Crystal samples of varying sizes should be matched to a corresponding aperture size to optimize signal to noise ratio during data acquisition. The concept behind this development is to replace the tedious process of swapping in different size pinhole apertures with a controllable dual slit design. The design had to be stable and offer an improvement in x-ray scatter. An imaging system which aids in the alignment is also part of the new collimation concept.

Specials:

Our unique patented parallelogram construction actuates edge positions symmetrically referenced from a central point. The X-Ray Collimator 240 concept minimizes scatter using a proprietary edge preparation and mounting method. The configuration of the edges also allows the blades to overlap to a totally closed position without touching. A Unique edge holder design allows both edges to be positioned < 1cm from the sample to be studied. If power is accidentally lost, the slits snap closed within 1ms. Additionally, these slits can be run at up to 10Hz over their full motion and much faster over smaller travel ranges. The ScatterGuard Viewport alignment accessory allows simultaneous viewing of the sample and aperture while at the same time providing a redundant tungsten protection against stray Xrays that might degrade an image.

Please ask about our options for vacuum use!



Product highlights:

- accurate parallel motion using
- FEA optimized guidance
- patented solid state hinges offer motion without mechanical play (0 backlash)
- independent aperture control of 2 edge pairs up to 240 μm with closed loop
- 16 bit or 20 bit control options
- Extremely low-scatter
- Accessory holder with ViewPort alignment option

Application examples:

- X-Ray crystallography
- X-Ray collimation
- Small Angle Xray Scatter (SAXS)

X-Ray Collimator 240

Technical data

	unit	X-Ray Collimator 240
part no.	-	O-905-01D
axes	-	X,Y
aperture maximum open loop (±10%) ¹	µm	300
aperture maximum closed loop	µm	240
capacitance (±20%) ²	µF	2.5
measurement system	-	strain gauge
resolution ³	open loop	nm
resolution ⁴	closed loop	8
repeatability	nm	20
frequency Bandwidth (full motion) ⁵	Hz	10
voltage range	V	-20...130V
connector voltage	voltage	- LEMO 0S.302
cable length	m	1
min. bend radius of cable	mm	15
material ⁶	-	aluminum alloy (casing) stainless steel (flexure system)
dimensions (l x w x h)	mm	120 x 120 x 30
weight	g	560

- 1 typical value measured with NV 40/3 amplifier. Edges may be adjusted for different ranges (i.e 40um-280um closed loop)
- 2 typical value for small electrical field strength
- 3 the resolution is only limited by the noise of the power amplifier and metrology.
- 4 with 16bit controller
- 5 limited by amplifier current and PID settings – may be tuned for higher frequency and smaller travel upon request
- 6 INVAR or Titanium available upon request

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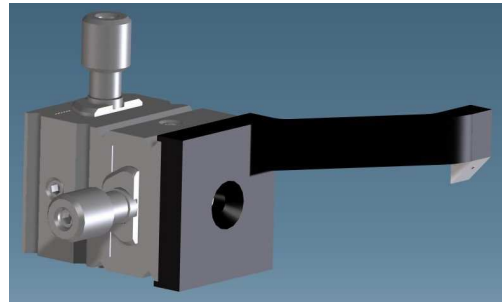
accessories:

ViewPort Scatterguard with X-Y alignment

P/N

O-905-01-001

The Viewport scatterguard incorporates a tungsten 500 μ m pinhole aperture with a 90 degree right angle mirror prism with a clear aperture through the center. This serves the dual purpose of allowing simultaneous viewing of the sample, and slit aperture with a protection against scatter due to contaminants in the x-ray path.



graphic courtesy Lawrence Berkeley National Lab

X-align imaging system

P/N

O-905-01-002

The X-align imaging system incorporates a long working distance microscope objective coupled to a CCD camera. It works in conjunction with the Viewport Scatterguard to simultaneously image the sample, variable PureEdge slits and Scatterguard pinhole aperture to bring everything into optical alignment for final data acquisition.

Rights reserved to change specifications as progress occurs without notice!