

PIXIS-XO: 1024B



The Princeton Instruments/Acton **PIXIS-XO: 1024B** is a fully integrated, innovative imaging system that utilizes a CCD without AR coating for very low energy x-ray detection. With 1024 x 1024, 13 μm pixels, 100% fill factor, deep thermoelectric cooling with air or water and low noise electronics this system is ideal for worry-free operation in research and OEM environments. The Conflat flange with high-vacuum-seal design, software-selectable gains and readout speeds make the camera well suited for ultra-high vacuum applications.

Applications: X-ray imaging, X-ray microscopy, EUV lithography, X-ray plasma diagnostics

Features	Benefits
Back illuminated CCD, no AR coating, direct detection technology	Provides very low x-ray flux imaging, high sensitivity and high spatial resolution
2 Mhz / 16-bit readout 100 kHz / 16 bit readout	High speed readout for rapid image acquisition Slow speed readout for high sensitivity with wide dynamic range, high signal-to-noise ratio (SNR) and excellent energy resolution
Software selectable gains for each digitization speed	Allows optimization of system performance for lowest noise to highest SNR
1024 x 1024 image area, 13 x 13 μm pixels	Imaging area designed for high-frame-rate imaging
Ultra low noise electronics	Best possible system performance
Flexible user selectable binning and readout	Total flexibility to optimize experiments and SNR
Deep thermoelectric air cooling	Maintenance-free operation without the need for a liquid circulator or an additional power supply
Conflat vacuum interface	Industry-standard, high-vacuum compatibility
TTL input and output	External Trigger input with programmable polarity TTL output with exposure or readout monitor
"USB 2.0 interface" configuration	Seamless, plug-and-play connection to PC notebooks and desktops Easy OEM integration
WinView and PVCAM®	Offers powerful, easy-to-use set of Windows® GUI controls Automates data acquisition, analysis, and display
Linux® drivers and SITK™ plug-in for National Instruments' LabVIEW™	Extends system utility

PIXIS-XO: 1024B Specifications

CCD image sensor	E2V CCD 47-10; scientific grade 1; MPP; back-illuminated device; without AR coating		
CCD format	1024 x 1024 imaging pixels 13 x 13- μ m pixels 100% fill factor 13.3 x 13.3-mm imaging area (optically centered)		
	Minimum	Typical	Maximum
CCD read noise*		2 e- rms	4 e- rms
System read noise			
@ 100-kHz digitization		3.6e- rms	5 e- rms
@ 2-MHz digitization		9 e- rms	15 e- rms
Single-pixel full well	60 ke-	100 ke-	
Output amplifier	220 ke-	250 ke-	
Dark current @ -70°C operation <i>with ambient air @+20°C</i>		0.001 e-/p/s	0.003 e-/p/s
Cooling Method	Thermoelectric Air (standard); Water cooled (optional)		
Deepest cooling temperature TE air cooling[†] <i>with ambient air @+20°C</i>	-65°C	-70°C	
Thermostating precision	$\pm 0.05^\circ\text{C}$ across entire temperature range		
Software-selectable gains (e-/count)	1, 2, 4		
Operating system support	Windows 2000/XP; Linux		
Data interface	USB2.0 (5m interface cable provided) Optional Fiberoptic interface is available for remote operation		
I/O signals	Two MCX connectors for programmable frame readout, shutter trigger in		
Certification	CE		
Nonlinearity @100 kHz	<2%		
Vertical shift rate	30 μ sec per row		
Readout bits / speed	16 bits @ 100 kHz and 2 MHz		
Operating environment	+5 to +30°C non-condensing		
Bakeout temp.	70°C (max)		
Vacuum compatibility	10 ⁻⁸ Torr.		

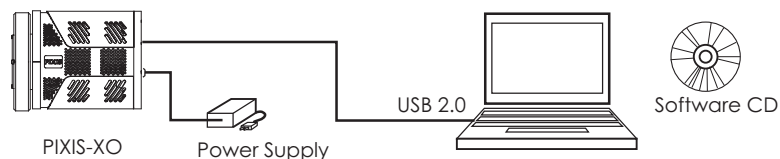
Notes: All specifications subject to change.

* See CCD manufacturer's datasheet for more details.

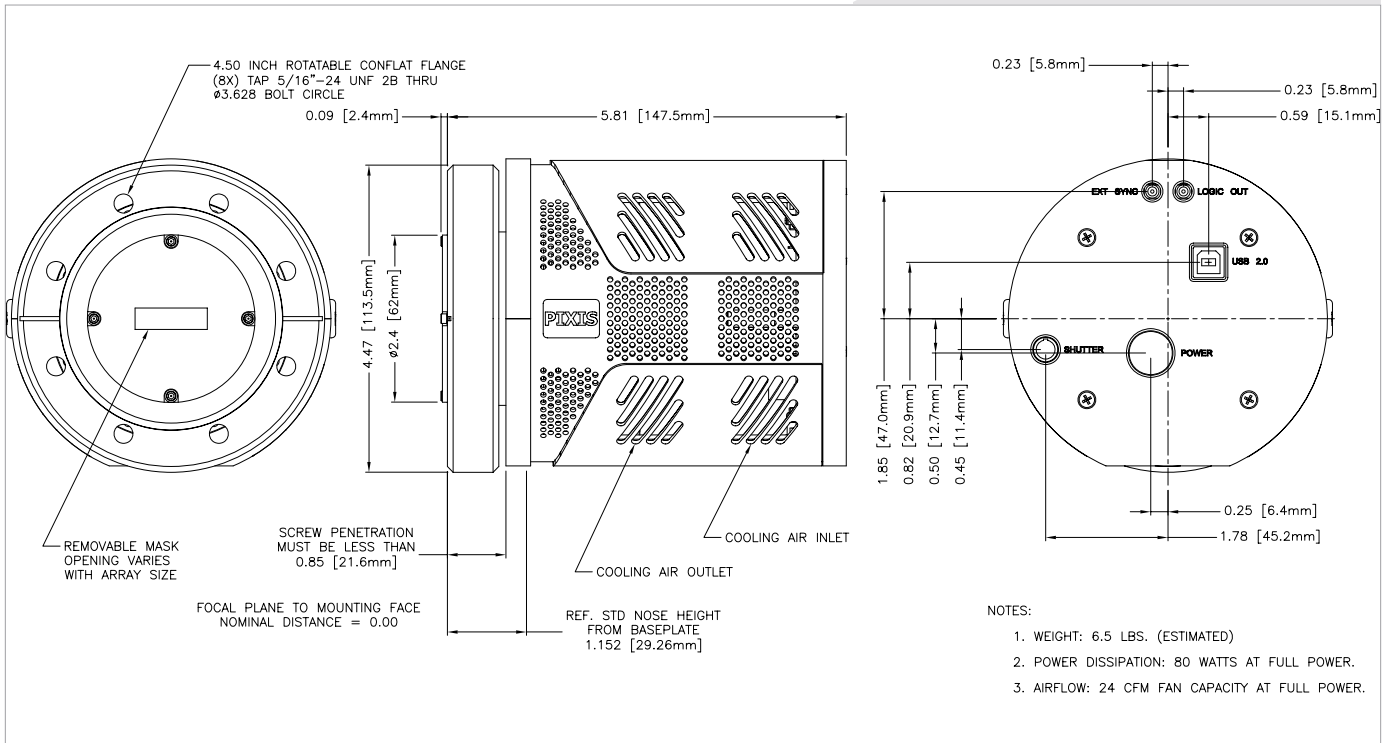
[†]The minimum temperature attainable is dependent on the vacuum condition (can be lowered with lower vacuum).

Readout Rates

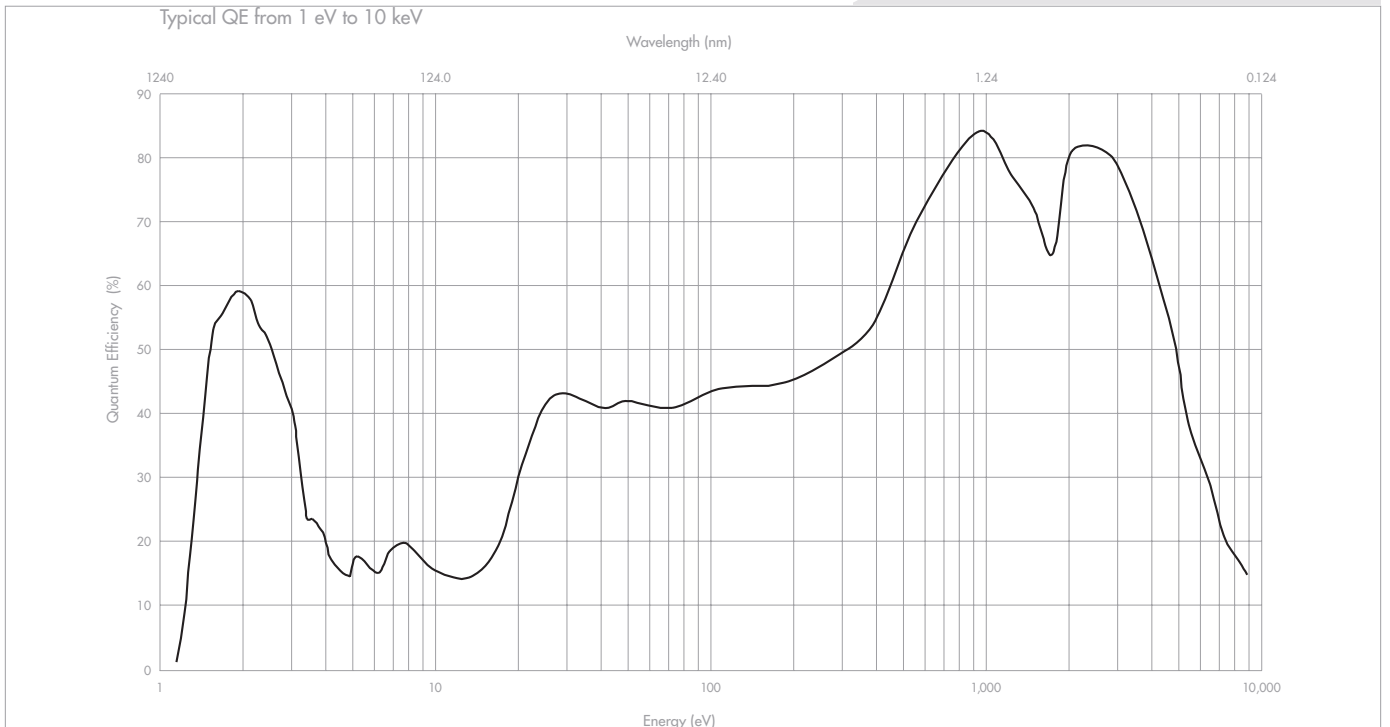
Binning	@ 2 MHz	@ 100 kHz
1 x 1	583 msec	10.05 sec
2 x 2	282.3 msec	2.8 sec
4 x 4	138.4 msec	0.85 sec



PIXIS-XO Drawing



Quantum Efficiency Curve



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