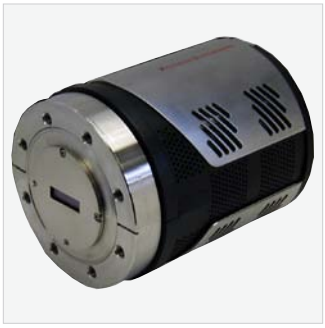
...SEE the Future

Princeton Instruments ACTON

PIXIS-XO: 512B



The Princeton Instruments/Acton PIXIS-XO: 512B is a fully integrated, innovative imaging system that utilizes a CCD without AR coating for very low energy x-ray detection. With 512 x 512, 24 µm pixels, 100% fill factor, deep thermoelectric cooling with air 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
512 x 512 image area, 24 x 24 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 inout 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: 512B Specifications

CCD image sensor	E2V CCD 77-00; scientific grade 1; MPP; back-illuminated device; without AR coating		
CCD format	512 x 512 imaging pixels 24 x 24-µm pixels 100% fill factor 12.3 x 12.3-mm imaging area (optically centered)		
	Minimum	Typical	Maximum
CCD read noise*		3 e- rms	4 e- rms
System read noise @ 100-kHz digitization @ 2-MHz digitization		 5 e- rms 12 e- rms	 9 e- rms 18 e- rms
Single-pixel full well	250 ke-	350 ke-	
Output amplifier	600 ke-	700 ke-	
Dark current @ -70°C operation *with ambient air @+20°C*		0.002 e-/p/s	0.006 e-/p/s
Deepest cooling temperature TE air cooling# *with ambient air @+20°C*	-65°C	-70°C	
Thermostating precision	±0.05°C across entire temperature range		
Software-selectable gains (e-/count)	2.5, 5, 10		
Nonlinearity @100 kHz	<1.5%		
Vertical shift rate	18 µsec per row		
Readout bits / speed	16 bits @ 100 kHz and 2 MHz		
Operating environment	+5 to +30°C non-condensing		

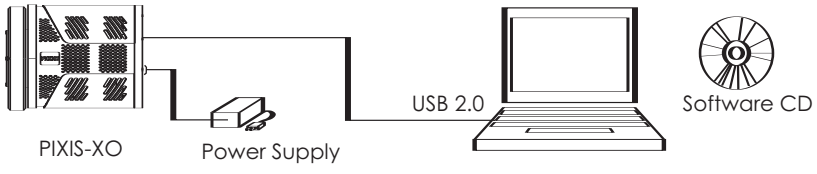
Notes: All specifications subject to change.

* See CCD manufacturer's data sheet for more details.

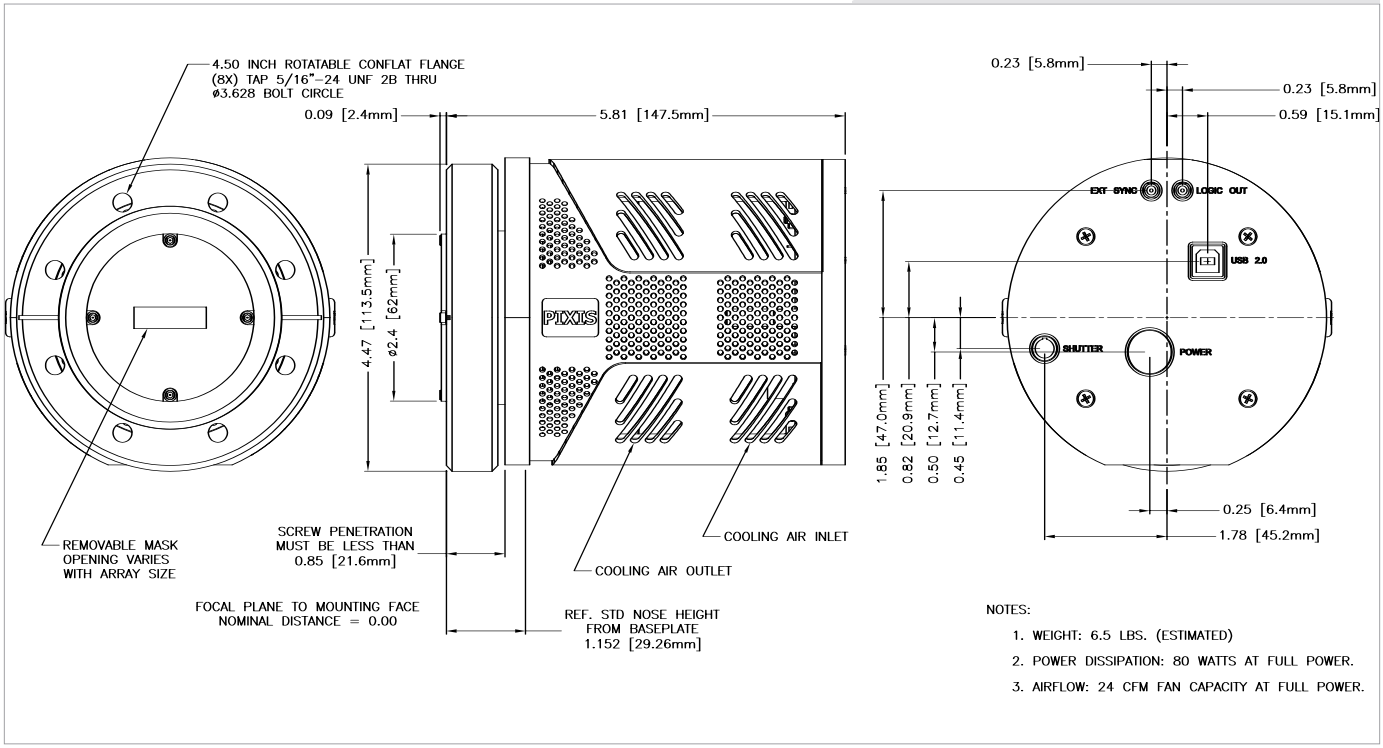
#The minimum temperature attainable is dependent on the vacuum condition (can be lowered with lower vacuum).

Readout Rates

Binning	@ 2 MHz	@ 100 kHz
1 x 1	152.1 msec	2.52 sec
2 x 2	77.4 msec	0.7 sec
4 x 4	41.6 msec	219.3 msec



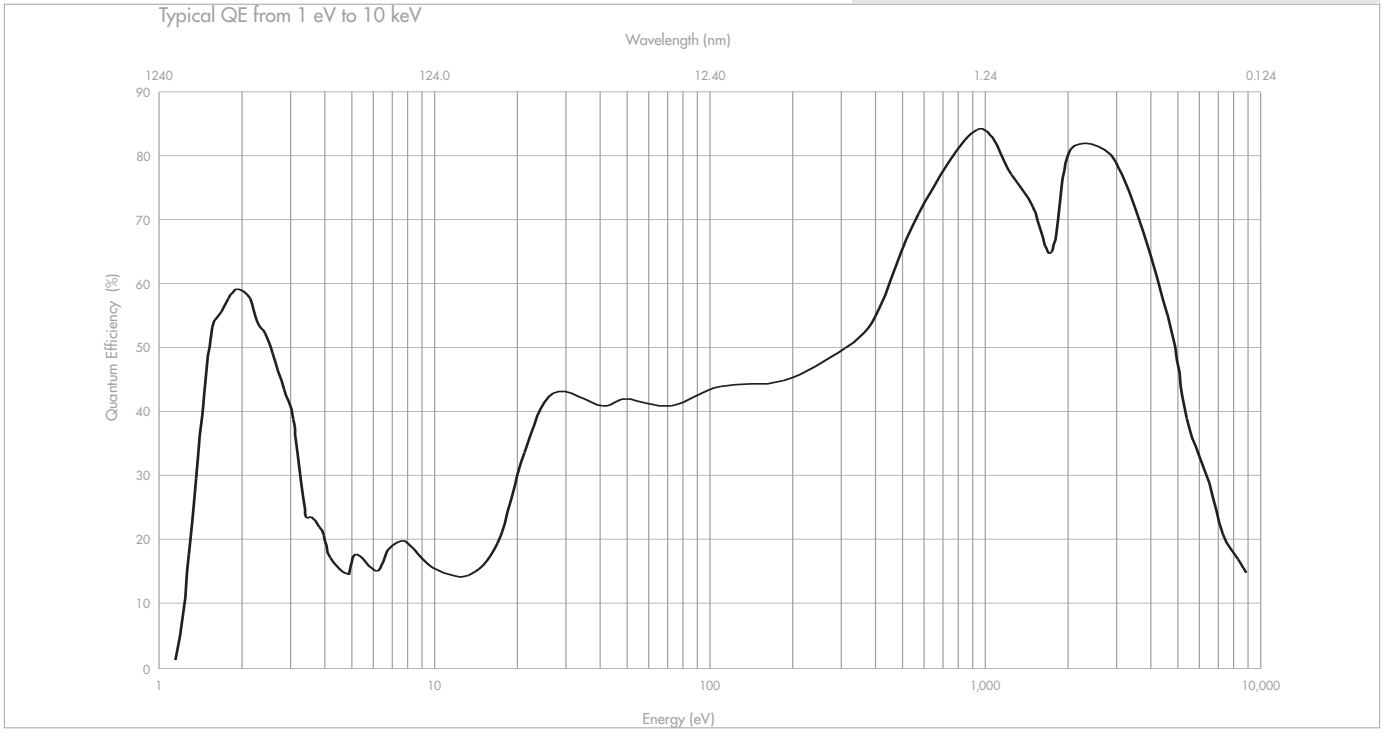
PIXIS-XO Drawing



NOTES:

1. WEIGHT: 6.5 LBS. (ESTIMATED)
2. POWER DISSIPATION: 80 WATTS AT FULL POWER.
3. AIRFLOW: 24 CFM FAN CAPACITY AT FULL POWER.

Quantum Efficiency Curve



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