Princeton Instruments

ACTON

PIXIS-XO: 2KB

The Princeton Instruments/Acton PIXIS-XO: 2KB is a fully integrated, innovative imaging system that utilizes a CCD without AR coating for very low energy x-ray detection. With 2048 x 512, 13.5 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 spectroscopy, EUV lithography, X-ray plasma diagnostics

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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
2048 x 512 image area, 13.5 x 13.5	Spectroscopy format 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

xo PIXIS™

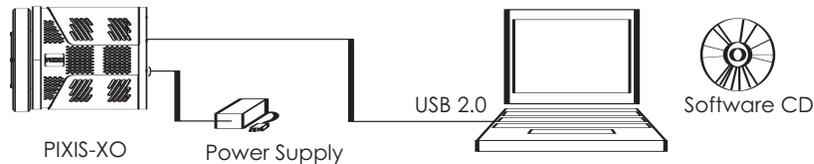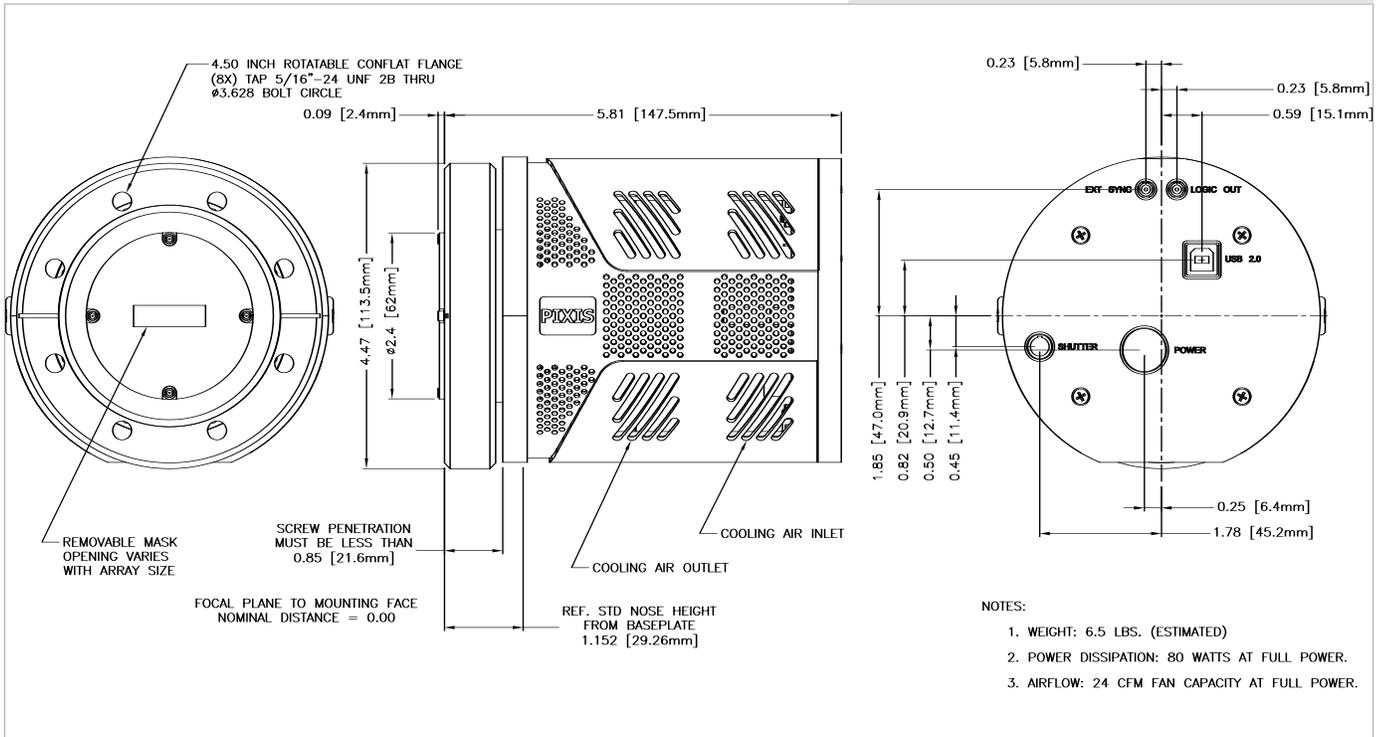|	Minimum		Typical		Maximum	
CCD image sensor	Princeton Instruments elcusive; scientific grade 1; MPP; back-illuminated device; without AR coating					
CCD format	2048 x 512 imaging pixels 13.5 x 13.5 µm pixels 100% fill factor 27.6 x 6.9-mm imaging area (optically centered)					

System read noise
  @ 100-kHz digitization
  @ 2-MHz digitization
			3.5 e- rms
			18 e- rms
					5 e- rms
					20 e- rms	

	High Sensitivity	High Capacity	High Sensitivity	High Capacity		
Spectrometric well capacity	150 ke-	600 ke-	250 ke-	800 Me-		
Dark current @ -75°C operation			0.003 e-/p/s		0.008 e-/p/s	
Deepest cooling temperature#	-70°C		-75°C			
Thermostating precision	±0.05°C across entire temperature range					
Software-selectable gains (e-/count)	1, 2, 4 (high sensitivity mode) 4, 8, 16 (high capacity mode)					
Dynamic range	16 bits					
Nonlinearity	<2% @100 kHz, <2% @ 2 MHz					
Vertical shift rate	15.2 µsec per row					

Spectral rates*
  @ 100 kHz digitization
  @ 2 MHz digitization
	35 Hz
	90Hz					

Operating environment	+5 to +30°C non-condensing					

Notes: All specifications subject to change.
* Spectral rates measured with all rows vertically binned.
# The minimum temperature attainable is dependent on the vacuum condition (can be lowered with lower vacuum).
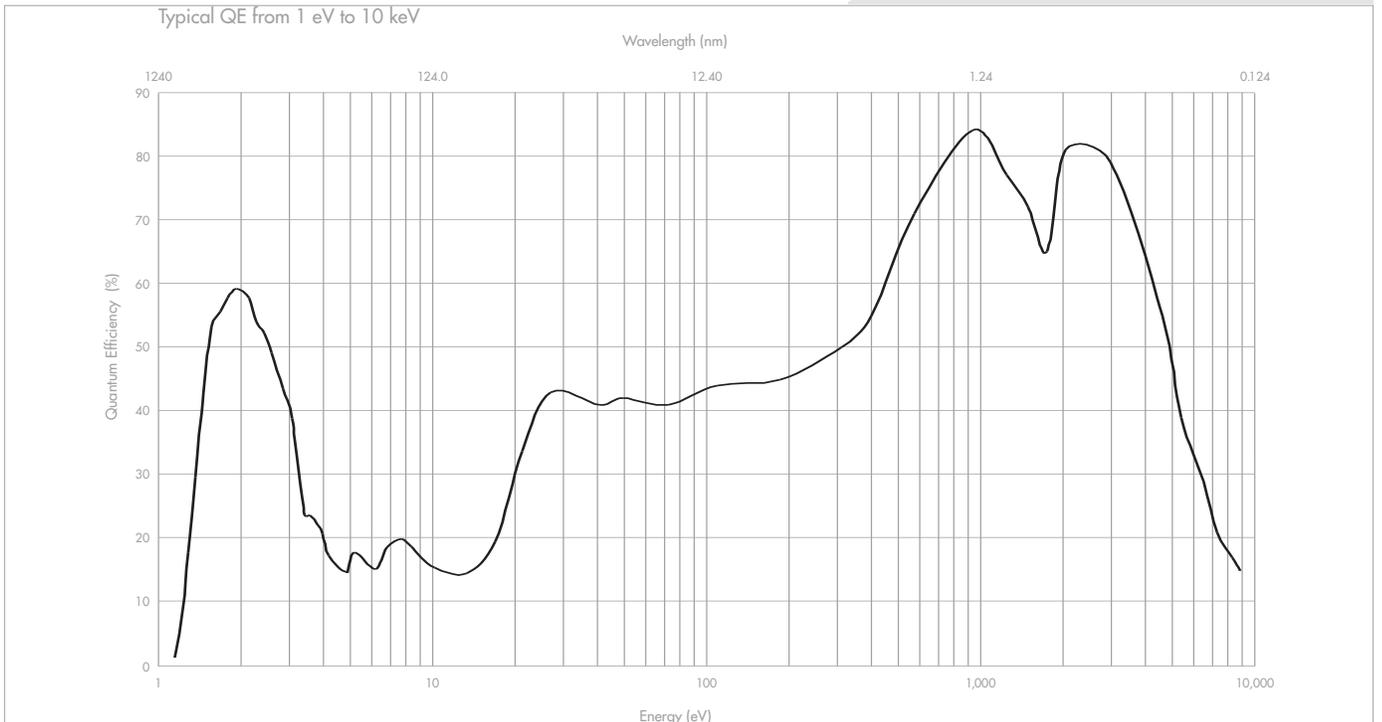
Readout Rates

Binning	@ 2 MHz	@ 100 kHz
1 x 1	560 msec	9.1 sec
2 x 2	233 msec	2.5 sec
2048 x 1	11.1 msec	27.8 msec

PIXIS-XO   Power Supply   USB 2.0   Software CD

4.50 INCH ROTATABLE CONFLAT FLANGE
(8X) TAP 5/16"-24 UNF 2B THRU
ø3.628 BOLT CIRCLE

0.09 [2.4mm]

5.81 [147.5mm]

0.23 [5.8mm]

0.23 [5.8mm]

0.59 [15.1mm]

4.47 [113.5mm]

ø2.4 [62mm]

EXT SYNC   LOGIC OUT

USB 2.0

SHUTTER   POWER

1.85 [47.0mm]
0.82 [20.9mm]
0.50 [12.7mm]
0.45 [11.4mm]

0.25 [6.4mm]

1.78 [45.2mm]

REMOVABLE MASK
OPENING VARIES
WITH ARRAY SIZE

SCREW PENETRATION
MUST BE LESS THAN
0.85 [21.6mm]

COOLING AIR INLET

COOLING AIR OUTLET

FOCAL PLANE TO MOUNTING FACE
NOMINAL DISTANCE = 0.00

REF. STD NOSE HEIGHT
FROM BASEPLATE
1.152 [29.26mm]

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

Typical QE from 1 eV to 10 keV

Wavelength (nm)

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