



PIXIS-XO: 1300

1340 x 1300 imaging array | 20 x 20 μm pixels | Soft X-ray detection

The PIXIS-XO series of fully integrated imaging cameras utilizes back-illuminated (BI) and back-illuminated, deep-depletion CCDs without AR coating, for direct detection of the widest range of X-rays between ~ 10 eV and 30 keV (AR coated devices are not useful for X-ray energies < 500 eV). With a 1340 x 1300 imaging array, 20 μm pixels, 100% fill factor, low noise electronics and -55°C to -70°C thermoelectric cooling with either air or water, this system is ideal for worry-free operation in research and OEM environments. The rotatable conflat flange with high-vacuum-seal design, software selectable gains and readout speeds make these cameras well suited for ultra-high vacuum applications.

FEATURES	BENEFITS
Back-illuminated and back-illuminated, deep-depletion CCD with no AR coating	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
1340 x 1300 image area, 20 x 20 μm pixels	Wide field of view, higher dynamic range than 13.5 μm pixel
Ultra low noise electronics	Best possible system performance
Flexible user-selectable binning & readout	Total flexibility to optimize experiments and SNR
Kinetics	Custom readout mode offers microsecond resolution
Deep thermoelectric air cooling	Maintenance-free operation - No need for a liquid circulator or additional power supply
Deep thermoelectric water cooling	Vibration-free operation
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	Seamless, plug-and-play connection to PC notebooks & desktops; Easy OEM integration
Optional: LightField® (for Windows 10/8/7, 64-bit) Or WinView/Spec (for Windows 8/7/XP, 32-bit)	Flexible software packages for data acquisition, display and analysis with built in math engine; LightField offers intuitive, cutting edge user interface and more.
PICAM (64-bit) / PVCAM (32-bit) software development kits (SDKs)	Compatible with Windows 10/8/7 (64-bit), and Linux (contact factory for an update) Universal programming interfaces for easy custom programming.
LabView® Scientific Imaging ToolKit (SITK™)	Predefined VIs for easy integration of camera controls into large experiment

Applications:

X-ray Imaging, X-ray Microscopy, EUV Lithography and X-ray Plasma Diagnostics

	PIXIS-XO: 1300B	PIXIS-XO: 1300BR
CCD Image Sensor	Proprietary CCD; scientific grade 1; ALMO; BI-basic process (B); no AR coating for sensitivity between ~10 eV to 20 keV.	Proprietary CCD; scientific grade 1; NIMO; BI-deep-depletion (BR) CCD; no AR coating for sensitivity between ~ 10 eV to 30 keV.
Dark current @ -60° C (with ambient air @ +20° C)	0.01 e-/p/sec (typical) 0.05 e-/p/sec (max)	1.0 e-/p/sec (typical) 5.0 e-/p/sec (max)
CCD format	1340 x 1300 imaging pixels; 20 x 20 μm pixels; 100% fill factor; 26.8 x 26.0 mm (optically centered)	
Deepest cooling temperature, TE air cooling* (with ambient air @ +20° C)	-70° C (typical); -60° C (guaranteed) with CoolCUBE II liquid circulator -65° C (typical); -55° C (guaranteed) with air	
Thermostating precision	±0.05° C	
Cooling method	Thermoelectric air or liquid cooling (CoolCUBE II required)	
Full well	Single pixel: 250 ke- (typical), 200 ke- (minimum) High Sensitivity node: 300 ke- (typical), 250 ke- (minimum) High Capacity node: 1000 ke- (typical), 800 ke- (minimum)	
ADC speed/bits	100 kHz/16-bit and 2 MHz/16-bit	
System read noise @100 kHz @2 MHz	3.0 e- rms (typical), 5 e- rms (max) 9 e- rms (typical), 15 e- rms (max)	
Vertical shift speed	27 μsec/row (programmable)	
Non-linearity	<1% @ 100 kHz	
Software selectable gains	1, 2, 4 e-/ADU (low noise input); 4, 8, 16 e-/ADU (high capacity output)	
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	
Operating environment	+5° C to +30° C non-condensing	
Bakeout temperature	70° C (maximum)	
Vacuum Compatibility	10 ⁻⁸ Torr	
Certification	CE	
Dimensions / Weight**	15.1 cm (5.95") x 15.24 cm (6.00") x 15.24 cm (6.00") (L x W x H) / 3.86 kg (8.5 lbs)	

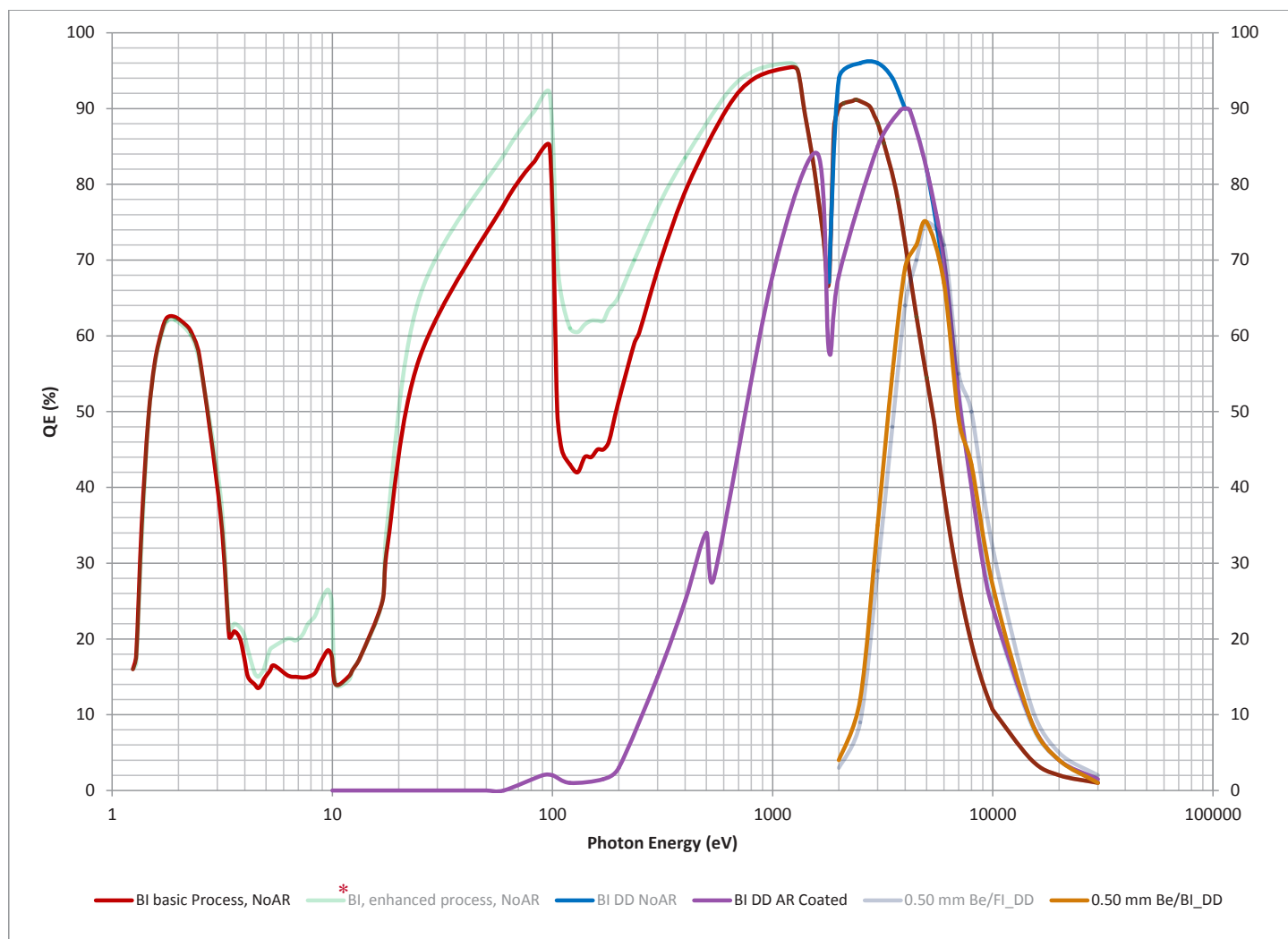
NOTES: All specifications subject to change

* The minimum temperature attainable is dependent on the vacuum condition - temperature can be lowered w/lower vacuum.

** The weight of the camera is with 6.00" Conflat flange and air cooling.

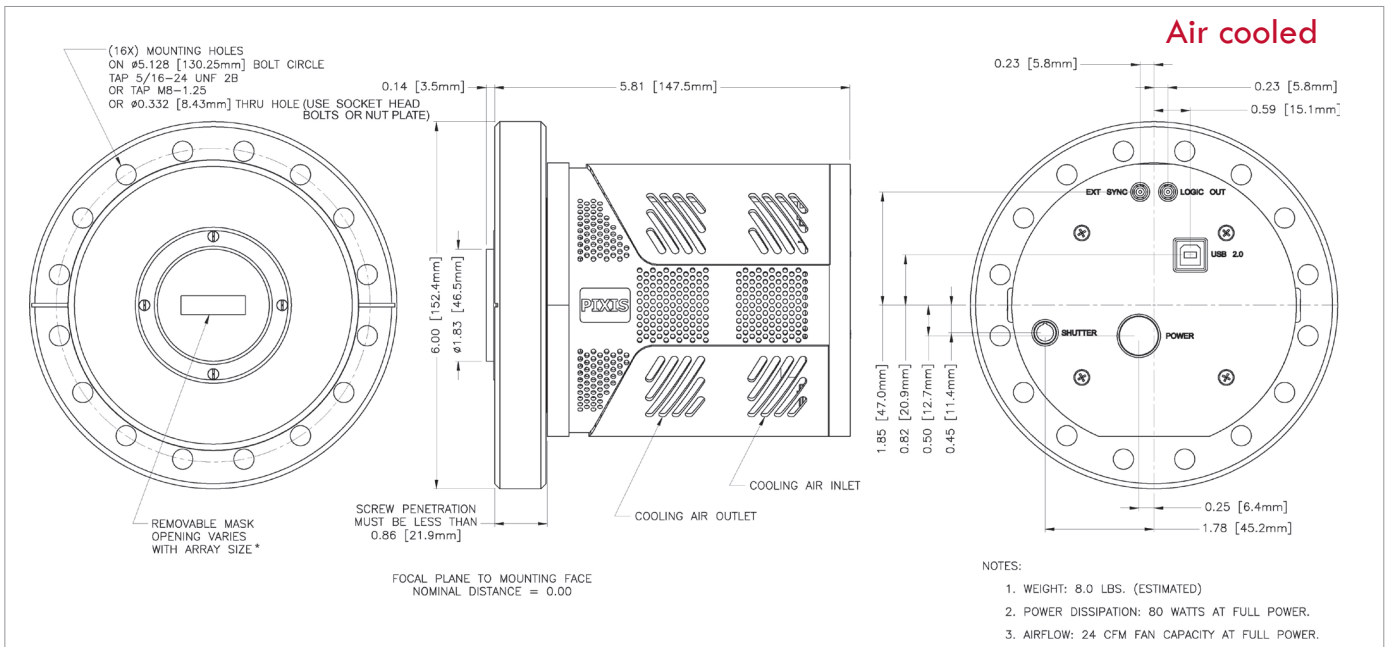
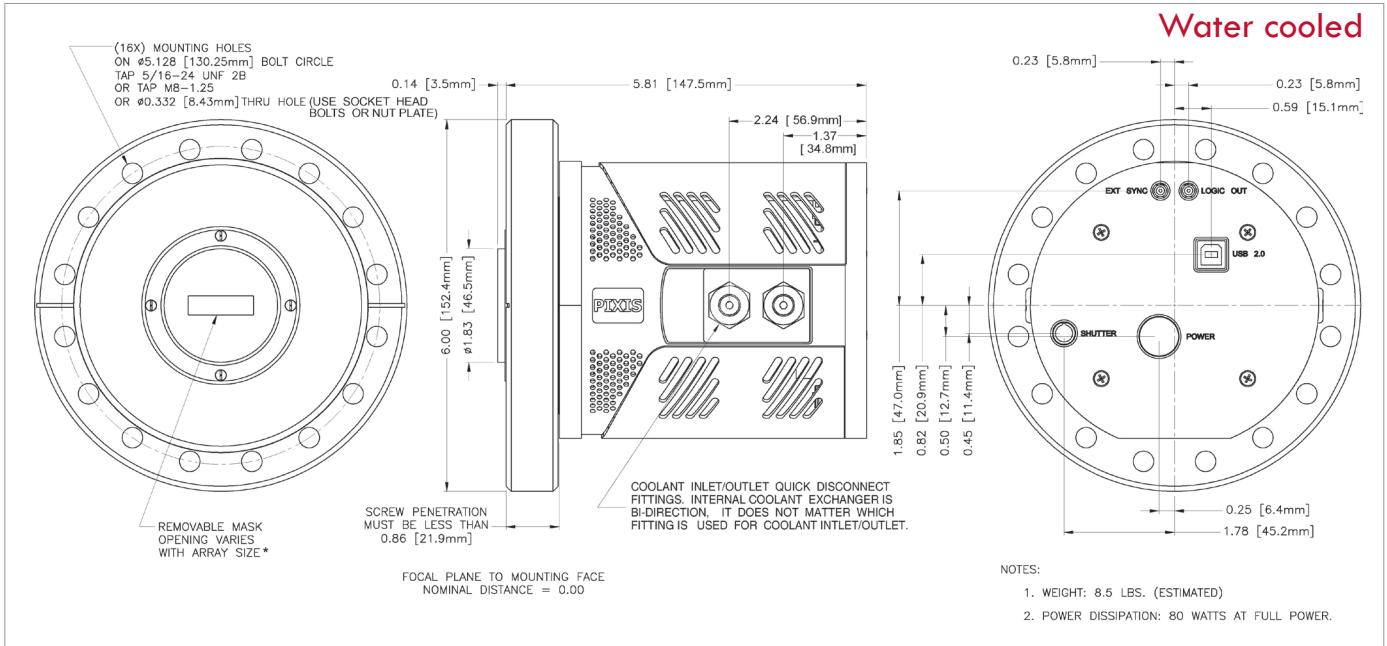
Readout Rates

Binning	@ 2 MHz	@100 kHz
1 x 1	0.93 sec	16 sec
2 x 2	0.402 sec	4.762 sec
8 x 8	0.12 sec	0.491 sec



* - For reference purpose only

6" Conflat



CCD Array	CCD Image Area inches (mm)	Mask Opening ± .001 inches (± .0254 mm)
1340 x 1300	1.055 x 1.024 (26.8 x 26.0)	1.051 x 1.020 (26.698 x 25.898)