

PIXIS-XO:2KB

2048 x 512 imaging array | 13.5x 13.5 μm pixels | Soft X-ray detection

The PIXIS-XO series of fully integrated imaging cameras utilizes back-illuminated (BI) CCDs without AR coating, for direct detection of the widest range of X-rays between ~ 10 eV and 30 keV (AR coated CCDs are not useful for X-ray energies $< 500\text{eV}$). With a 2048 x 512 imaging array, 13.5 μm pixels, 100% fill factor, low noise electronics and -75°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 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
2048 x 512 image area, 13.5 x 13.5 μm pixels	Spectroscopy format designed for high frame rate imaging
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 Spectroscopy, EUV Lithography and X-ray Plasma Diagnostics

	PIXIS-XO: 2KB/2KBV
CCD Image Sensor	e2v CCD42-10; scientific grade 1; MPP; BI-basic process (B), BI-enhanced process (BUV); no AR coating; for sensitivity between ~10 eV to 30 keV
Dark current @ -75° C (with ambient air @ +20° C)	0.001 e-/p/sec (typical) 0.006 e-/p/sec (max)
CCD format	2048 x 512 imaging pixels; 13.5 x 13.5 µm pixels; 100% fill factor; 27.6 x 6.9 mm (optically centered)
Deepest cooling temperature, TE air cooling* (with ambient air @ +20° C)	-75° C typical; -70° C guaranteed
Thermostating precision	±0.05° C
Cooling method	Thermoelectric air or liquid cooling (CoolCUBE II required)
Full well	Single pixel: 100 ke- (typical), 60 ke- (minimum) High Sensitivity node: 250 ke- (typical), 220 ke- (minimum) High Capacity node: 750 ke- (typical), 600 ke- (minimum)
ADC speed/bits	100 kHz/16-bit and 2 MHz/16-bit
System read noise @100 kHz @2 MHz	3.5 e- rms (typical), 6 e- rms (max) 14 e- rms (typical), 20 e- rms (max)
Vertical shift speed	15.2 µsec/row (programmable)
Non-linearity	<1% @ 100 kHz <2% @ 2 MHz
Software selectable gains	1.5, 3, 6 e- (high sensitivity); 3, 6, 12 e- (high capacity); available at all speeds
Operating systems supported	Windows XP/Vista/7; 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
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 11.81 cm (4.65") x 11.45 cm (4.50") (L x W x H) / 3.2 kg (7.0 lbs)**

NOTES:

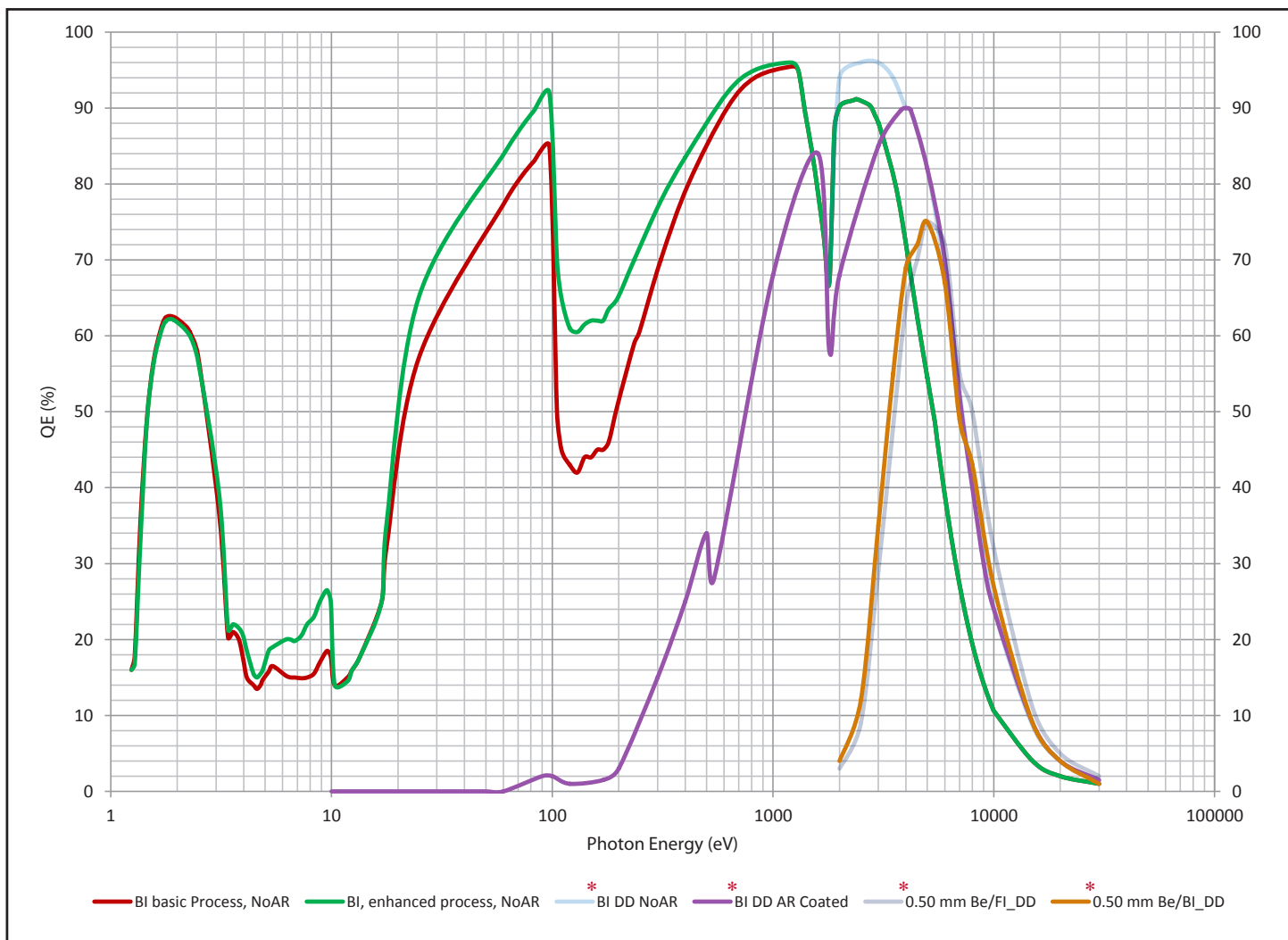
All specifications subject to change

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

** The weight of the camera is with 4.5" Conflat flange and air cooling.

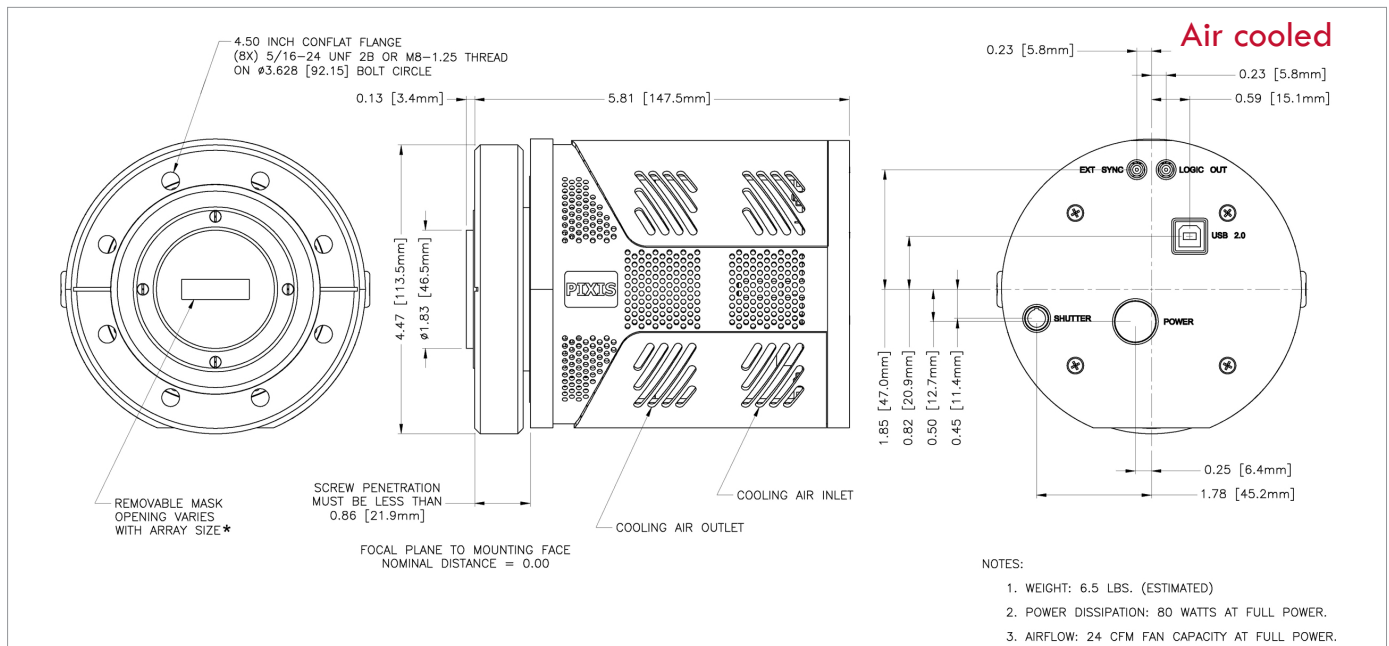
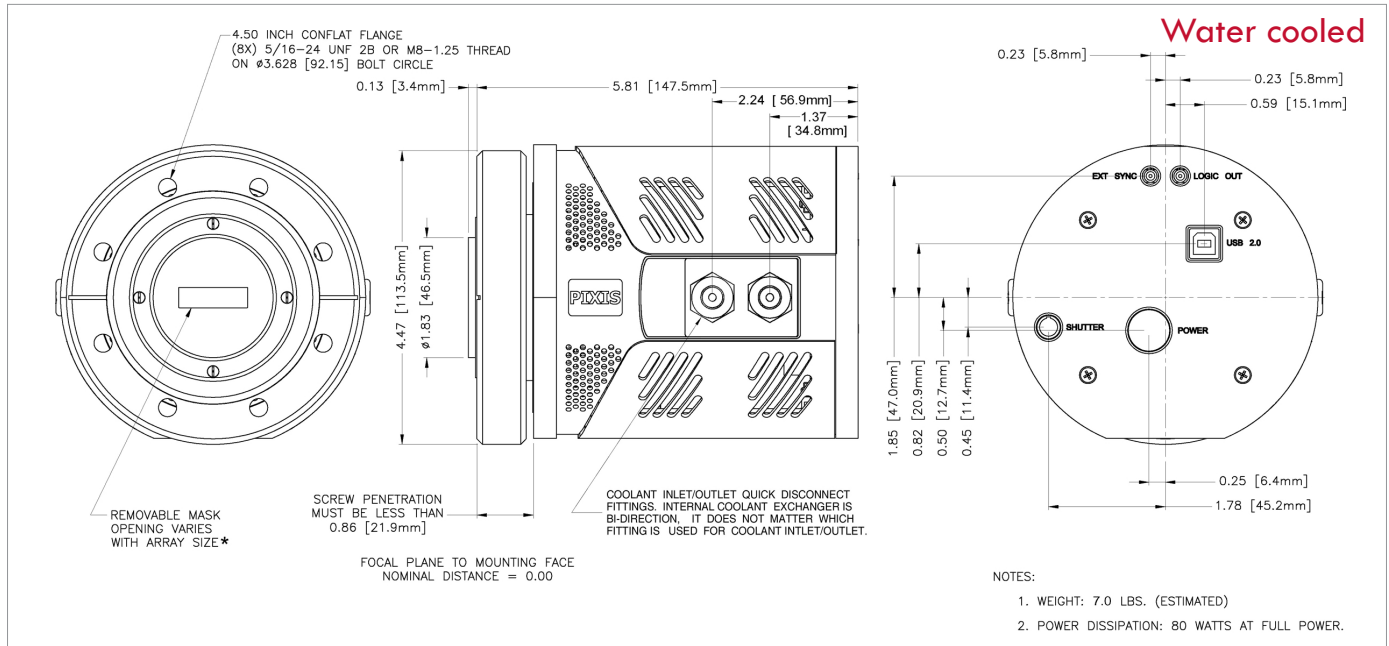
Spectral Rates

@ 100 kHz	35 spectra/sec (FVB)
@ 2 MHz	90 spectra/sec (FVB)



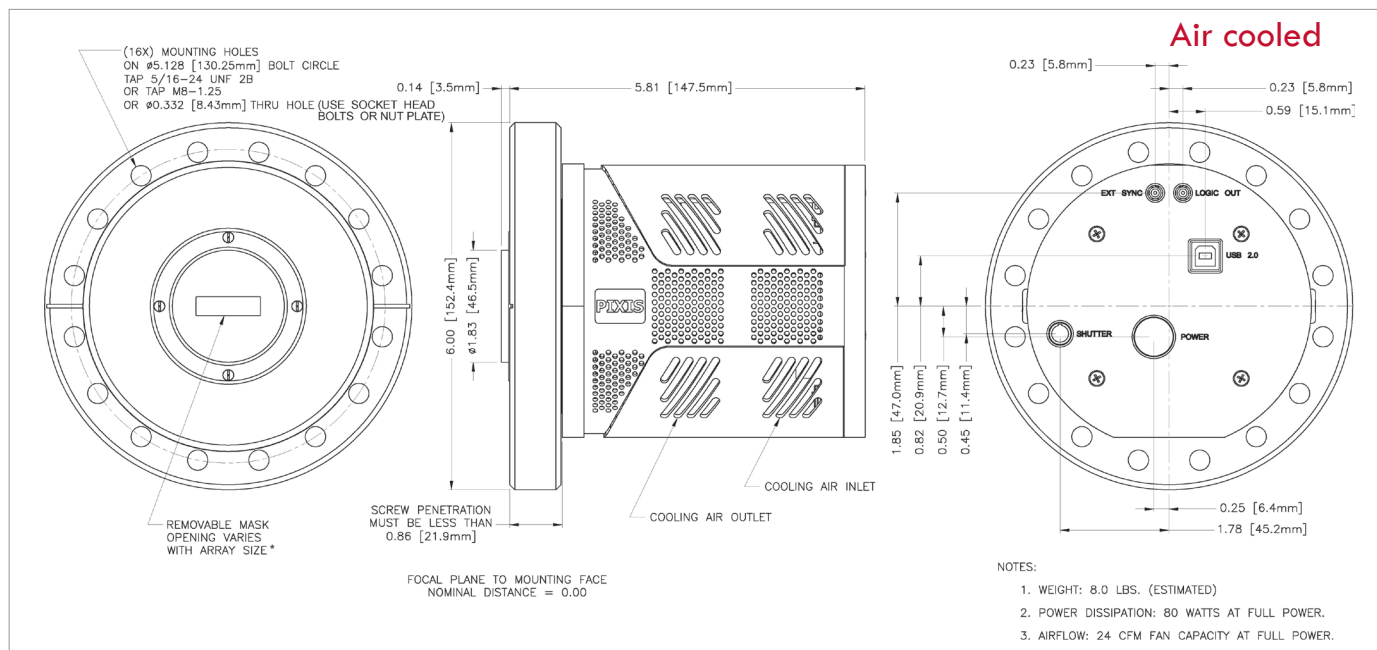
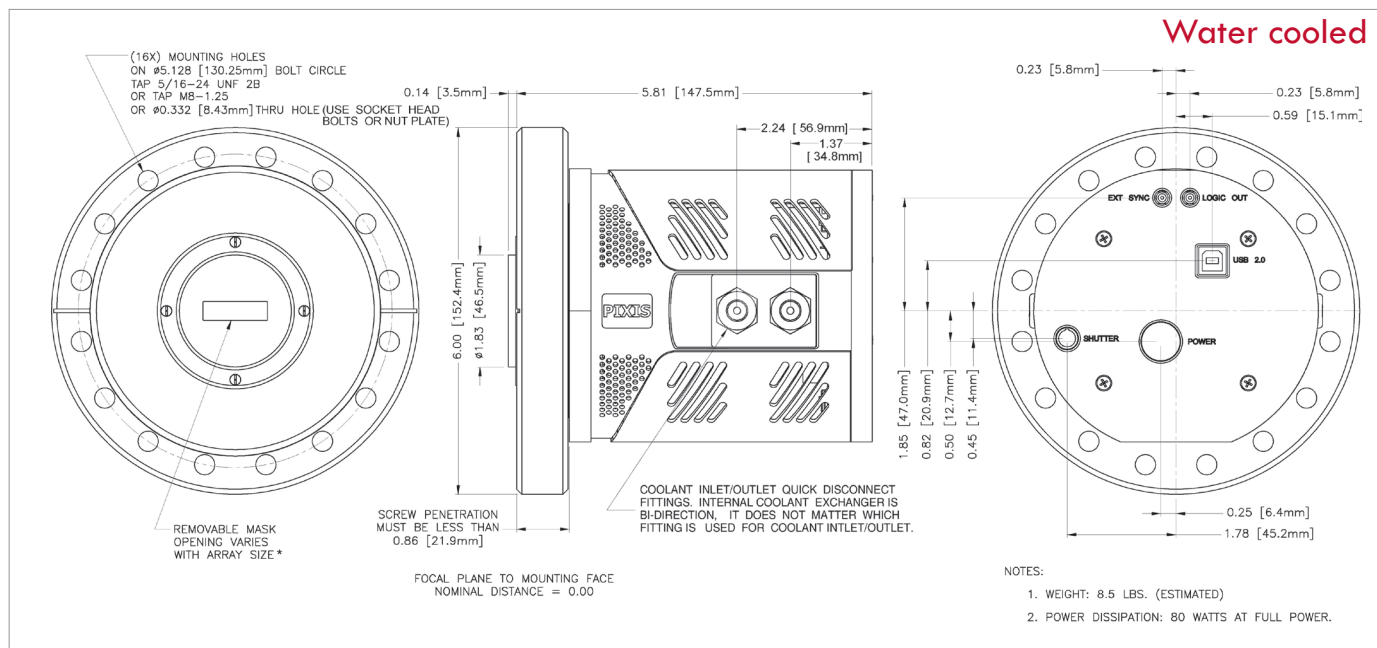
* - For reference purpose only

4.5" Conflat



CCD Array	CCD Image Area inches (mm)	Mask Opening ± .001 inches (± .0254 mm)
2048 x 512	1.086 x 0.271 (27.6 x 6.9)	1.083 x 0.266 (27.508 x 6.756)

6" Conflat



CCD Array	CCD Image Area inches (mm)	Mask Opening $\pm .001$ inches ($\pm .0254$ mm)
2048 x 512	1.086 x 0.271 (27.6 x 6.9)	1.083 x 0.266 (27.508 x 6.756)