

Marana-X

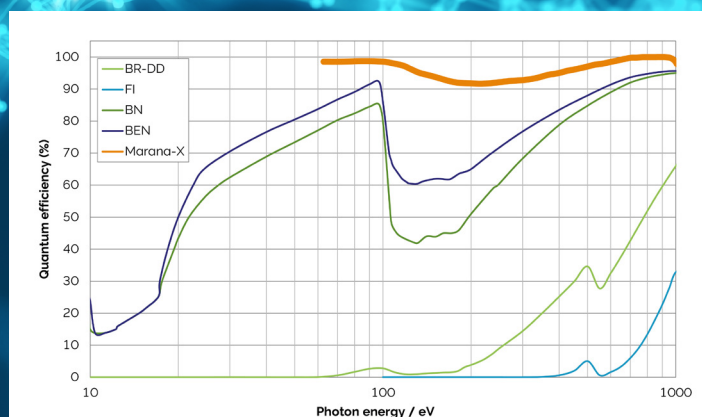
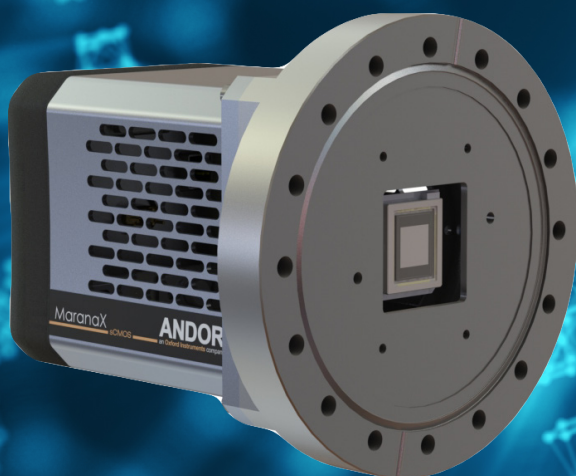
The Fastest sCMOS Camera for Direct EUV and Soft X-ray Detection

Key Specifications

- ✓ High Resolution: 4.2 Megapixel
- ✓ High Sensitivity: Up to 99% QE
- ✓ Fast Speeds: Up to 74 fps
- ✓ High Dynamic Range: Up to 16-bit
- ✓ EMP Resistant: CoaXPress data interface
- ✓ Deep Cooled: -45°C cooling
- ✓ No mechanical shutter required

Key Applications

- ✓ *In situ* Radiography
- ✓ Tomography
- ✓ Spectroscopy
- ✓ Hyperspectral Imaging
- ✓ HHG Source Characterisation
- ✓ EUV Ptychography
- ✓ EUV Lithography



Model	Marana-X 4.2B-6
Sensor Type	Back-illuminated Scientific CMOS
Array Size	2048 (W) x 2048 (H) 4.2 Megapixel
Pixel Size	6.5 x 6.5 μm
Image Area	13.3 mm x 13.3 mm (18.8 mm diagonal)
Readout Modes	Rolling Shutter
Pixel Readout Rates	310 MHz (Fast High Dynamic Range mode, 16-bit) 180 MHz (Low Noise mode, 12-bit)
Quantum Efficiency*2	up to 99%
Read Noise (e-) median*3	1.6 e- (Fast High Dynamic Range mode, 16-bit) 1.2 e- (Low Noise mode, 12-bit)
Sensor operating temperature*4 Air cooled Water/liquid cooled	-25°C (up to 30°C ambient) -45°C (@16°C water)
Dark Current Air cooled (@-25°C) Water/liquid cooled (@ -45°C)	0.15 e-/pixel/s 0.10 e-/pixel/s
Active area pixel well depth	55 000 e- (Fast High Dynamic Range mode, 16-bit) 1800 e- (Low Noise mode, 12-bit, bit depth limited)
Dynamic Range	34 000:1 (Fast High Dynamic Range mode, 16-bit)
Data Range	16-bit (Fast High Dynamic Range mode) 12-bit (Low Noise mode)
Linearity*5	> 99.7%

I Imaging Mode 4.2B-6

Frame rate table

ROI Size (W x H)	Max Frame Rate (fps)				ROI area (of sensor)
	USB 3.0		CoaXPress		
	16-bit	12-bit (Low Noise)	16-bit	12-bit (Low Noise)	
2048x2048	40	43	74	44	13.3 mm x 13.3 mm
1400x1400	85	63	108	64	9.1 mm x 9.1 mm
1200x1200	116	74	126	74	7.8 mm x 7.8 mm
1024x1024	148	87	148	87	6.7 mm x 6.7 mm
512x512	295	174	295	174	3.3 mm x 3.3 mm
256x256	587	346	587	346	1.7 mm x 1.7 mm
128x128	1165	686	1166	687	0.8 mm x 0.8 mm

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