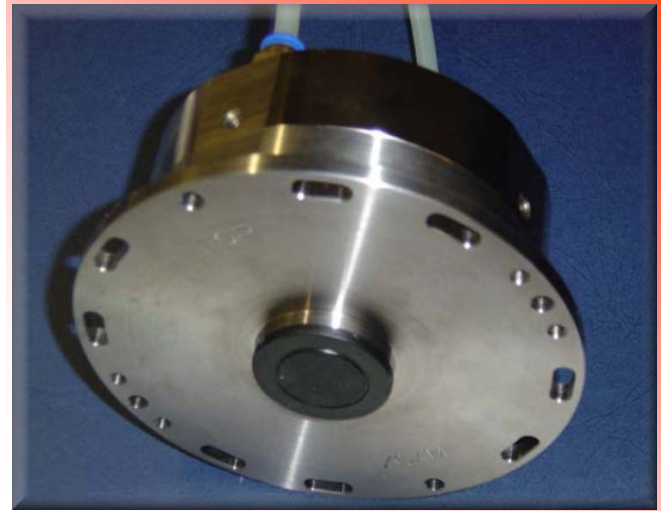




# SCIENTIFIC CCD CAMERA

## XI 4720 Specification Notes

*X-ray Imaging*  
*Dispersed X-ray Spectroscopy*



- *Deep-depletion CCD for high sensitivity to X-rays over an extended energy range*
- Two node readout for faster frame times
- Vacuum compatible
- Cryogen-free thermoelectric cooling, with supplementary water-cooling
- 12, 14 or 16 bit digitisation
- <5 electrons rms noise, depending on CCD type and operating mode
- Frame Transfer architecture
- Full software control of your system including, readout parameters, binning and windowing modes
- High-speed readout for rapid spectral acquisition or slow-speed readout for highest sensitivity and greatest dynamic range

### CCD specifications

Architecture	Frame Transfer
Active pixels	1024 x 1024
Pixel Size	13 x 13 $\mu\text{m}$
Image Area	13.3 x 13.3 mm
Full Well Capacity <sup>a</sup>	100,000 e <sup>-</sup>
Dark Current @ 293K <sup>b</sup>	100 e <sup>-</sup> /pixel/s
Dark Current @ 243K <sup>b</sup>	1 e <sup>-</sup> /pixel/s
Readout Noise @ 253K <sup>a</sup>	3 rms e <sup>-</sup> /pixel

### Notes

<sup>a</sup> Manufacturer's data measured at 20KHz using correlated double sampling

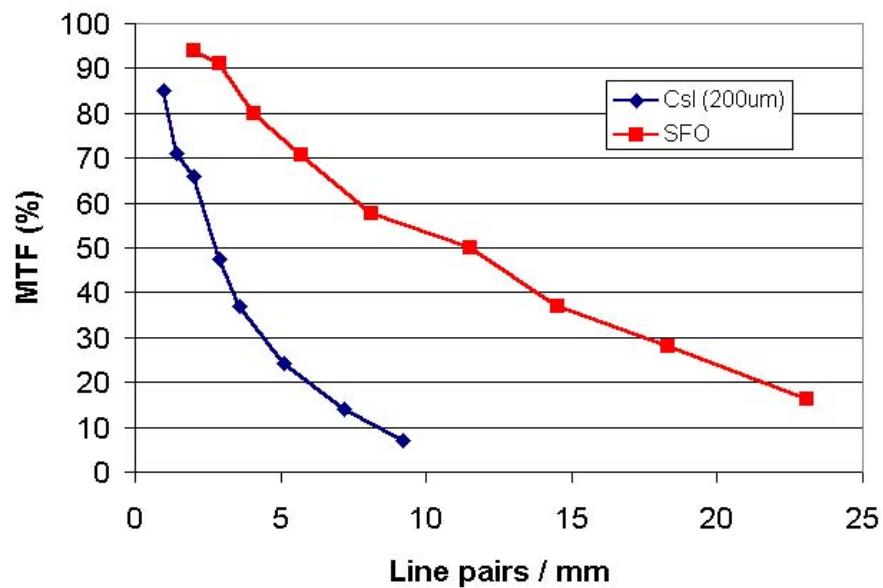
<sup>b</sup> Typical values at <100 kHz pixel rate

# XI 4720

## Specification Notes

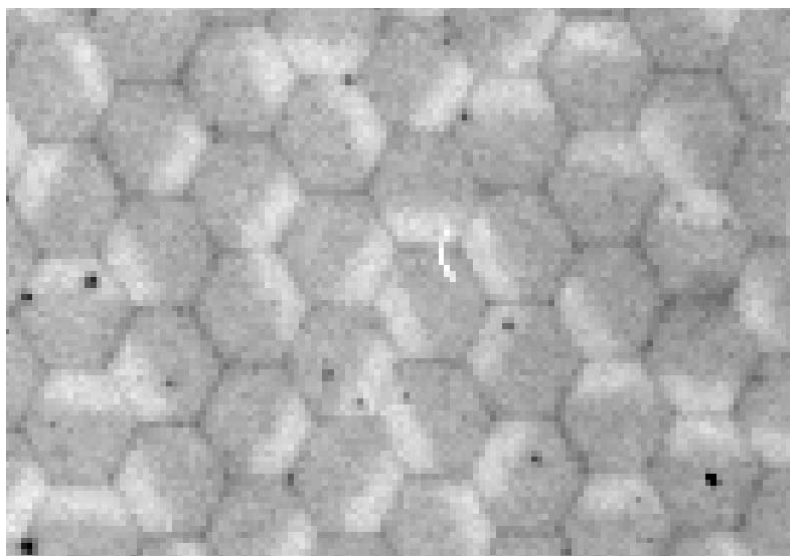
### Typical X-ray MTF

MTF measured for different scintillator options:



### Pixel Uniformity

Pixel response non-uniformity (PRNU) arises from the packing and uniformity of the fiber optic faceplate and can be around +/- 20%, requiring flat fielding for some applications.



# XI 4720

## Specification Notes

### System Specifications

System noise @ 200KHz <sup>b</sup>	5 e <sup>-</sup>
System noise @ 800KHz <sup>b</sup>	15 e <sup>-</sup>
Blank pixels (underscan/overscan)	Minimum 23 each side of 1024, but user programmable
Frame rate <sup>c</sup> (2 node readout)	1.3 per second @ 800KHz

### Computer and Power Requirements

Recommended PC Requirements	-
Minimum PC requirements	500 MHz, 256 Mb RAM
TE cooler power @ -20°C (vacuum) <sup>2</sup>	4 W
TE cooler power @ -50°C (vacuum) <sup>2</sup>	15 W

### Accessories

The XI 4720 requires the following components to function:

*CCDREM2/USB or CCDREM2/HiP controller unit*

Either (a) *vacuum interface details*, or  
(b) *a vacuum feedthrough kit*

The XI 4720 also requires software to enable image display:

Either (a) **Xcam** Image Display software, or  
(b) **Xcam** Software Developers Kit, consisting of dll drivers and a manual, allowing you to write your own software to control the camera

Additionally, the following accessories are available:

Temperature controller  
Water Chiller

### Notes

<sup>c</sup> Much faster frame rates can be achieved if reading out vertically binned, windowed spectra, as the unwanted rows can then be dumped fast, and the vertically binned spectra constitute few pixels. Please enquire with details of your application for more information

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## Specification Notes

### Mechanical Specifications

