



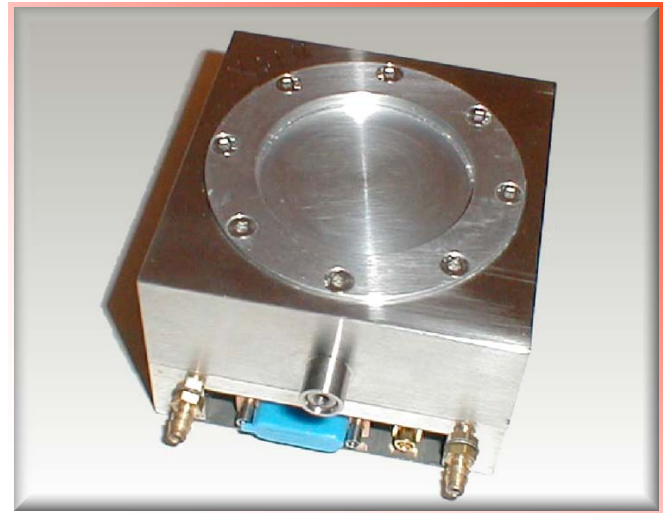
# SCIENTIFIC CCD CAMERA

## XDS 4240 Specification Notes

*X-ray Imaging*

*Dispersed X-ray Spectroscopy*

*Photon-Counting Spectroscopy*



- *Deep-depletion CCD* for high sensitivity to X-rays over extended energy range <sup>a</sup>
- Two node readout for faster frame rates
- Vacuum compatible
- Cryogen-free thermoelectric cooling, with supplementary water-cooling
- 12, 14 or 16 bit digitisation
- <5 electrons rms noise, depending on CCD type
- Full Frame 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	Full Frame
Active pixels	2048 x 2048
Pixel Size	13.5 x 13.5 $\mu\text{m}$
Image Area	27.6 x 27.6 mm
Full Well Capacity <sup>b</sup>	150,000 e <sup>-</sup>
Dark Current @ 293K <sup>c</sup>	10000 e <sup>-</sup> /pixel/s
Dark Current @ 243K <sup>c</sup>	63 e <sup>-</sup> /pixel/s
Readout Noise @ 253K <sup>b</sup>	3 rms e <sup>-</sup> /pixel

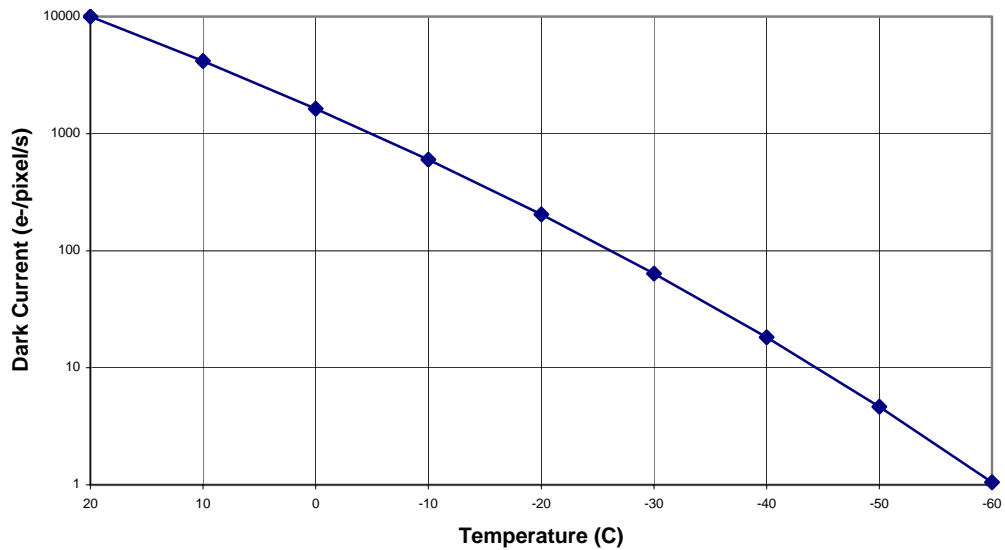
### Notes

- <sup>a</sup> Deep-depletion CCDs are sometimes available, or may be specially manufactured subject to a minimum order quantity
- <sup>b</sup> Manufacturer's data measured at 20KHz using correlated double sampling
- <sup>c</sup> Typical values

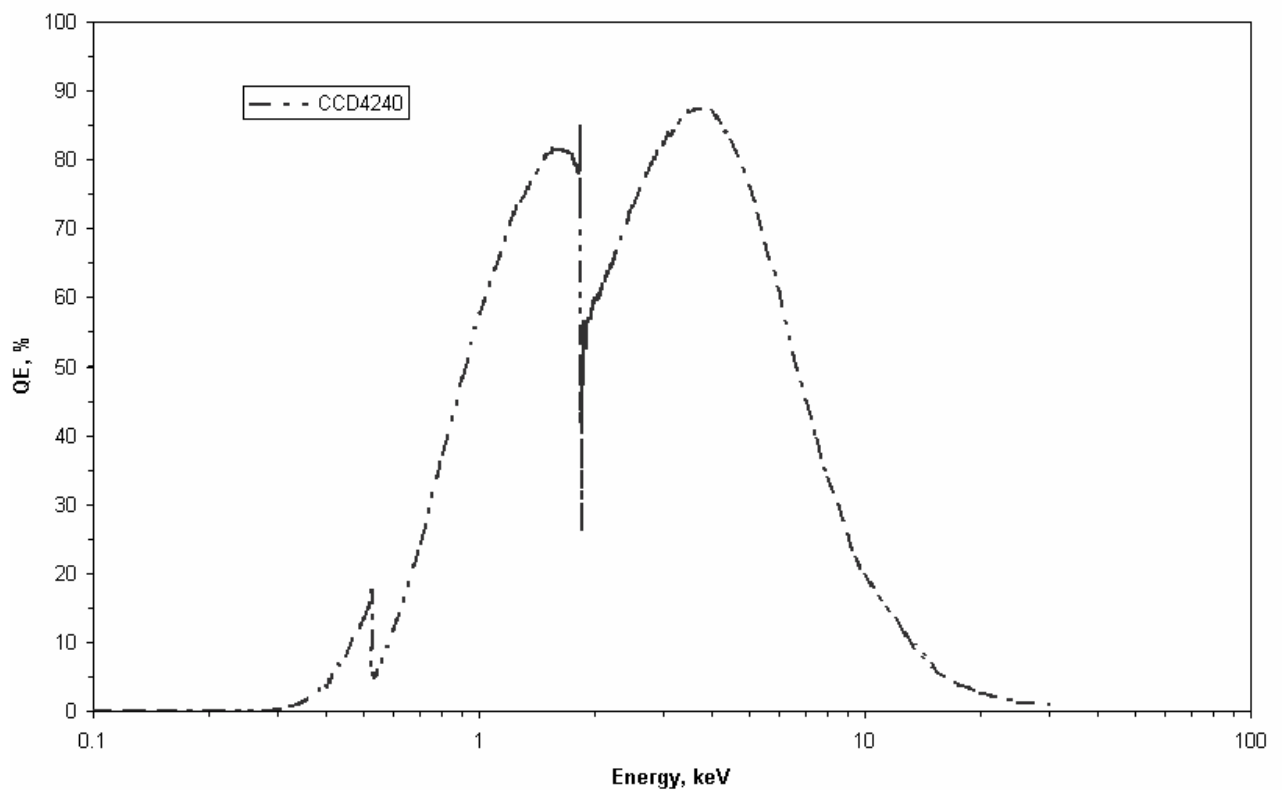
# XDS 4240

## Specification Notes

### Typical Dark Current Characteristics



### Typical X-ray Quantum Efficiency



# XDS 4240

## Specification Notes

### System Specifications

System noise @ 200KHz <sup>c</sup>	5 e <sup>-</sup>
System noise @ 800KHz <sup>c</sup>	15 e <sup>-</sup>
Blank pixels (underscan)	Minimum 8 each side of 2048, but user programmable
Frame rate <sup>d</sup> (2 node readout)	0.4 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>	3 W
TE cooler power @ -50°C (vacuum) <sup>2</sup>	12 W

### Accessories

The XDS 4240 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 XDS 4240 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>d</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

