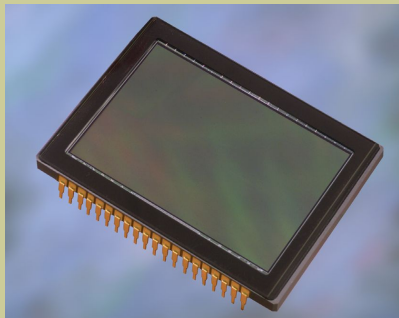


## X-ray Very High Resolution CCD arrays

PSL has supplied X-ray Very High Resolution CCD arrays for the last 3 years to end users and OEMs. A selection of high responsivity CCDs, combined with low noise characteristics, enables optimum photonic collection with best possible signal to noise ratio. Special read whilst expose mode allows 100% shutterless duty cycle and high sensitivity operation in low light level conditions.



## Applications:

- Microdiffraction
- X-ray imaging
- X-ray micro CT
- Laue imaging
- Protein crystallography at up to 50 keV
- Gisaxs
- Powder Diffraction
- Non Destructive Testing
- Phase Contrast Imaging
- Small animal imaging

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*Photonic Science Ltd*

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*Information /  
products and  
services*



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Scientific detector  
systems

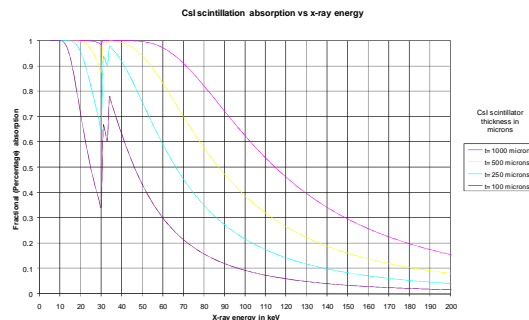
## X-ray VHR CCD arrays

Photonic Science Ltd selects premium grade CCD sensors and fibre optic bundles :

- Small pixel size less < 32 microns pixel size at the detector input
- Cooled CCD sensor with 55 degrees C delta T
- 2x20MHz multiplexed scanning frequency
- Large area sensor with slot or tiled array geometry
- Seamless large fibre optic input
- Low readout noise < 15 electrons with noise interpolation reduction
- Very low dark current with less than 0.05 electrons per pixel per second (cooling options for further noise reduction).
- Gating time from milliseconds to > 30 minutes
- Simultaneous integration / readout enabling 100% duty cycle acquisition
- Dual tap readout for fast acquisition
- GdOS polycrystalline or structured CsI scintillators
- On chip binning
- Detector synchronisation : pixel locked for dual channel acquisition
- Camera link and GigE digital interface
- Peltier / fan cut off option
- Low profile electronics
- Air cooled / water cooled option

## X-ray 22 megapixel CCD camera

- 4008 (h) x 5344 (v) CCD array
- Input pixel size: 31.18 x 31.18 microns
- 124.96 x 166.14 mm (tiled array)
- 1.8 fps at full resolution @ 20 MHz
- 5 fps in binning 4x4 @ 1002 x 1336 resolution
- Readout noise : 14-18 electrons @ 20 MHz with interpolation noise reduction
- Full well capacity : 45,000 electrons in binning 1x1; 90,000 electrons in binning 2x2
- Dark current : < 0,05 electrons / pixel / second
- 12-bit digitisation
- 16-bit extended dynamic range
- GdOS:Tb scintillator for operation from 5-55 keV with minimum feature recognition of 10lp/mm : typically 50 microns.
- CsI:Tl structured scintillator for operation from 30-100 keV
- Camera link / GigE interface
- Synchronisation / control : via TTL pulse or pixel clock



## X-ray 32 megapixel CCD camera

- 9744 (h) x 3248 (v) CCD array
- Input pixel size: 25.63 x 25.63 microns
- 250 x 83.07 mm (slot array)
- 1.1 fps at full resolution @ 2x20 MHz
- 3 fps in binning 4x4 @ 2436 x 812 resolution
- Readout noise: 12-16 electrons @ 2x20 MHz with interpolation noise reduction
- Full well capacity : 25,000 electrons in binning 1x1 - 50,000 electrons in binning 2x2
- Dark current : 0,05 electrons / pixel / second
- 12-bit digitisation
- 16-bit extended dynamic range
- Camera link / GigE interface
- Synchronisation / control : via TTL pulse or pixel clock

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