PHOTONIC
SCIENCE

X-ray sCMOS 37.7MP 1:1 Detector

High resolution X-ray imaging

The detector offers a 61.44mm x 61.44mm square active area, with straight 1:1 fibre optic coupling to a 37.7 megapixel resolution sCMOS sensor. A custom scintillator is deposited onto the camera in order to allow 1keV up to 100keV.

The X-ray sCMOS detector delivers up to 11 fps full resolution allowing real time acquisition routine.

A built in electronic shutter allows smear free, shutterless acquisition even with exposure time down to millisecond range. Frame rate of >100 fps can be achieved when used in local sub area mode or line scan mode.

A device server driver control allows remote acquisition through existing GUI interface. The detectors have a native 16-bit acquisition mode.

Key Features

- **Input sizes**
  61.44mm x 61.44mm straight rad hard fibre optic plate imaged on to a square large area sCMOS sensor
- **Vacuum flange version**
  Operation from 1 to 5keV
- **Scintillator**
  Gadox:Tb for operation from 1-55 keV, structured CsI scintillator from 20-300 keV
- **Simultaneous integration / readout enabling 100% duty cycle acquisition**
- **Ultra low noise**
- **Fast readout**
- **Very low dark current**

Applications

Ultra Small Angle X-ray Scattering

Single Crystal Diffraction

Phase Contrast Imaging

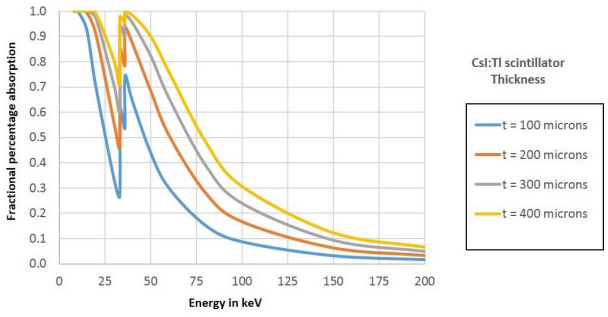
X-ray Microscopy

High resolution MicroCT

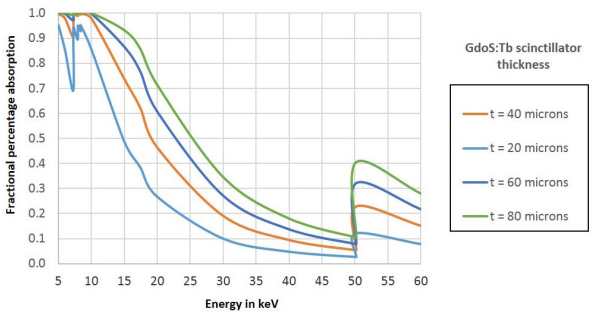
Coherent Diffraction Imaging

X-ray sCMOS 37.7MP 1:1

Characteristics	sCMOS 37.7MP_1:1
Resolution	6144 x 6144
Input Size (mm)	87mm diameter 61.44mm x 61.44mm
Input Size (µm)	10µm
Dynamic Range	30,000:1 in binning 1x1
Frame Rate	11 fps at full resolution in binning 1x1
Full Well Capacity	>120,000 electrons in binning 1x1
Read Out Noise	<4 electrons in binning 1x1
Quantum gain	21 electron/8keV X-ray photon
Dark Current	<0.1 electron/pixel/second
Sensor Temperature (°C)	Operating at -40°C with water cooling
Digitization	16-bit
Peak QE	72% at scintillator emission wavelength (without microlens)
Exposure	80 microseconds up to 600 seconds
Spatial Resolution (µm)	<30µm FWHM with GdOS:Tb & <70µm FWHM with CsI:Tl
Detector Interface	10 Gigabit Ethernet / Genicam compliant
Energy Range	1keV-55keV with Gadox:Tb/20keV-300keV with CsI



X-ray absorption efficiency CsI:Tl



X-ray absorption efficiency GdOS:Tb

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