

Ruby

135 mm CCD detector

- Ø 135 mm active area
- 2k x 2k Kodak CCD chip
- Best combination of large area and high sensitivity



The Ruby CCD provides the best combination of high sensitivity and large active area of all Oxford Diffraction CCD detectors. As such the Ruby is the ideal detector for use with both molybdenum and copper radiation and for small molecule and protein applications; providing high redundancy and high dynamic range in each image.

The Ruby's combination of high sensitivity and large area stem from its internal construction which is based around a fibre-optic taper of 2:1 demagnification mounted on a 2k x 2k Kodak CCD chip which is read-out via a 17 bit analogue-to-digital circuit.

As with all Oxford Diffraction CCD detectors the Ruby is modular for ease of service and support and utilises Oxford Diffraction's patented non-permanently bonded CCD construction.

The CCD chip within the Ruby is cooled to -40°C via a peltier pyramid. This is done to minimise the dark current noise and is achieved using refrigerated water supplied from an Oxford Diffraction closed circuit CCD chiller unit.

Electrical system

Power connection	1/ AC 230V \pm 10%,50/60Hz
Maximum power consumption	250 W
Maximum mains current	1.1 A
Main fuse	3.15 A
Ground terminal	2.5 mm ² Cu

Technical data

Overall dimensions	307 x 172 x 203 mm
Weight	17.3 kg
Active area	135 mm
CCD chip	Kodak KAF4301-E, 2048 x 2048 pixels
Pixel size on scintillator	48 μ m
Scintillator material	Gadox
Fibre optic reduction	2:1
Peltier cooling	-40°C (three stage cooler)
Temperature stability	\pm 0.05°C (micro-processorized PID)
Analogue-to-digital resolution	True 17 bit
System noise (so-called read noise)	<10 e ⁻ RMS full frame
Dark current	<0.06 e ⁻ /pix.s
Control Processor	MC 68322
Communication	2 mono-directional fibre-optic taxi channels
Correlated double sampling (CDS) Speed	1 MHz
Readout time (complete duty cycle including chip readout, CDS, analogue-to-digital conversion, transfer detector-PC, disk storage)	2 s (4x4 binning)*, 3.2 s (2x2 binning)* *readout times may be optimised within the ranges given depending on application

PC CCD interface

Communication	2 mono-directional fibre-optic taxi channels; PCI
Control processor	TMS 320C6205
Memory	32 Mb
Drivers	Win XP™
Recommended host computer	Pentium IV class PC: 2.4 GHz, 1.0 Gb RAM, 240 Gb HDD, CD-RW, DVD+RW, 21" colour display

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