

# Atlas

## Fast readout 135 mm CCD detector

- Ø 135 mm active area
- 2k x 2k Kodak 4-port readout CCD chip
- NEW 'Super plus' scintillator
- True 18 bit detector

The Atlas CCD is the newest and fastest CCD detector from Oxford Diffraction. At 135 mm in diameter the Atlas combines large active area with high sensitivity making it the ideal detector for experiments using both molybdenum and copper radiation in both small molecule and protein applications. The Atlas CCD provides extremely fast data collections up to 3.5 times faster than other CCD detectors.

This speed increase stems from the overall design and construction of the Atlas CCD which utilises entirely new state-of-the-art electronics designed around a 2k x 2k Kodak CCD chip of 4-port design. Each of these 4-ports operates at 1.4 MHz providing a total pixel sampling rate of 5.6 MHz and read-out is via an 18 bit analogue-to-digital circuit. Inside the Atlas detector the CCD chip is coupled via a fibre-optic taper of 2:1 demagnification to our new design of 'Super plus' scintillator which provides greater than 70% greater conversion efficiency resulting in high sensitivity and high dynamic range.

Data collected by the Atlas CCD are read-out as fast as 0.22 sec and transferred to the control PC whilst data collection proceeds, thus removing any additional dead-time associated with other CCD detectors. This unique feature is achieved using Oxford Diffraction's proprietary multi-threaded, parallel data pipelining technology (PDPT) and use of a dedicated fast 1 Gb ethernet communication channel between the CCD and control PC.



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

In order to achieve ultra-low noise all image conversion is carried out inside the Atlas CCD detector and the CCD chip itself is cooled to -40°C via a peltier system.

*Patented CCD design*

## Electrical system

Power consumption	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 <sup>2</sup> Cu

## Technical data

Overall dimensions	243 x 178 x 234 mm
Weight	16 kg
Active area	Ø 135 mm
CCD chip	Kodak KAF4320 2048 x 2048 pixels
Pixel size on scintillator	48 $\mu$ m
Scintillator material	'Super plus'
Fibre optic reduction	2:1
Peltier cooling	-40°C
Temperature stability	$\pm$ 0.05°C (micro-processorised PID)
Analogue-to-digital resolution	True 18 bit
System noise (so-called read noise)	<10 e-RMS full frame
Dark current	<0.19 e-/pix.s
Communication	1 Gb ethernet
Gain	140 e-/X-ray (Mo)
Pixel sampling rate	5.6 MHz
Readout time	0.22s (4x4 binning), 0.46s (2x2 binning), 1.59s (1x1 binning)

## PC CCD interface

Communication	1 Gb ethernet
Drivers	Win XP™
Recommended host computer	Intel Core2 Duo PC: 2.13 GHz, 1.0 Gb RAM, 320 Gb HDD, DVD+/-RW, LCD monitor

For more information on Oxford Diffraction or its products please contact us at:

### Europe

Oxford Diffraction Ltd  
68 Milton Park  
Abingdon  
Oxfordshire  
OX14 4RX  
UK

Tel: +44 (0)1235 443630  
Fax: +44 (0)1235 443631

### Production facility

Oxford Diffraction Poland Sp. z o. o.  
Rogowska 117B  
54-440 Wrocław  
Poland

Tel: +48 71 7835380  
Fax: +48 71 7835381

### North America

Oxford Diffraction, Inc.  
2000 Kraft Drive, Suite 1103  
Blacksburg  
VA 24060  
USA

Tel: +1 540 443 9272  
Fax: +1 540 443 3672

### Hong Kong

Oxford Diffraction (Hong Kong) Limited  
Room 1303, 13/F,  
Kwai Hung Holdings Centre  
89 King's Road  
North Point  
Hong Kong

Tel: +852 2571 9188  
Fax: +852 2571 9855