



## Sydor Fast CCD X-ray Detector

The Sydor Fast CCD X-ray Detector is a complete direct detection, x-ray imaging system that combines a custom, LBNL developed, in vacuum sensor module with a commercial-off-the-shelf data acquisition system. The camera head is an in-vacuum, 960 x 960 pixel, frame store, fast CCD sensor with a maximum frame readout rate of 200 frames per second. The readout system is implemented on an ATCA backbone and is used to control and readout the camera head, store raw camera data to hard disk, perform simple signal processing tasks and provide a simple user interface.

SYDOR FAST CCD X-RAY DETECTOR	KEY PERFORMANCE PARAMETERS (Specifications subject to change)
<b>SENSOR</b>	
Chip Geometry	Back-Illuminated
Chip Size	1920 x 960, 30 $\mu\text{m}$ pixels
Read Noise	<30 e-/pixel RMS
Dark Current @ -50°C	<1 e-/pixel/sec RMS
Electron Well Depth	180k e- (1000 ph/pixel @ 650 eV)
Operating Temperature	-50°C
Dynamic Range	15 Bits
Frame Rate	60 fps Full frame, 120 fps Frame Store
Efficiency (0.2-2 keV)	>60%
Binning (digital)	Up to 4 x 4
<b>MECHANICAL</b>	
Vacuum Compatibility	10 <sup>-8</sup> torr
Mass	<1.5 kg
Cooling	Recirculating Chiller
Size (L x W x H)	127 x 80 x 80 mm (excluding cooling lines and cabling)
<b>INTERFACE</b>	
Software interface	Embedded EPICS IOC
Electrical Vacuum Feedthrough	UHV compatible
Triggering	5V TTL (external and internal)
Electrical interface	Camera Power 51 pin, Camera Head to Interface 100 pin
<b>READOUT SYSTEM</b>	
Fiber Optic Transceivers	
Camera Interface Node ATCA Blade Electronics Board	
5 Slot ATCA Crate	
10 GBps ATCA Networking Switch with port replication	
ATCA RAID Storage System with 4TB Capacity at 0.8GBps	