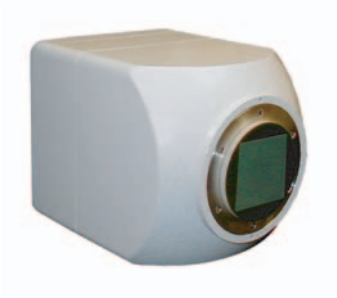
...SEE the Future

Princeton Instruments



PI•SCX:4096

4096 x 4096 imaging array | 15 x 15-µm pixels

The PI•SCX:4096 from Princeton Instruments is a high-performance, cooled camera designed for lensless, direct imaging of phosphor screens and other Lambertian sources. This advanced system is ideal for use in medical and industrial x-ray imaging, electron imaging, crystallography, x-ray microtomography, and x-ray phase-contrast imaging. The 1.9:1 fiberoptically coupled configuration with a 165-mm taper is an attractive choice for protein crystallography and other applications where a large field of view is important. The 1:1 fiberoptically coupled option — with the fiberoptic extended outside the vacuum — provides flexibility, as well as resolution of 33 lp/mm. When used with an x-ray scintillator screen, the 1:1 fiberoptically coupled system can effectively provide x-ray photon-counting capability with up to 16-bit dynamic range.

Features	Benefits	
Patented fiberoptic-coupling technology	Preserves highest possible resolution	
1:1 fiber-ratio option*	Distortion- and vignetting-free optical coupling	
1.9:1 fiber-ratio option*	Large field of view (120 x 120 mm)	
4096 x 4096 imaging array 15 x 15-µm pixels	Large image area	
Custom phosphors*	Gd_2O_2S:Tb Available for 8 keV and 17 keV Resolution of 60 to 80 µm Emission wavelength ~550 nm	CsI:Tl Available for 8, 25 and 80 keV Resolution of 20 to 40 µm Emission wavelength ~550 nm
Flexible binning and readout	Increases frame rate and signal-to-noise ratio (SNR)	
16-bit digitization	Provides simultaneous wide dynamic range and SNR	
Thermoelectric cooling	Chilled water provides deep cooling	
PCI interface	Industry standard for fast data transfer over long distances	
WinView and PVCAM®	Offers powerful, easy-to-use set of Windows® GUI controls Automates data acquisition, analysis, and display	
Linux® drivers and SITK™ plug-in for National Instruments' LabVIEW™	Extends system utility	

*Contact Princeton Instruments for information about additional fiber ratios and phosphors.

Specifications

CCD image sensor	Front-illuminated, scientific-grade, MPP device		
CCD format	4096 x 4096 imaging pixels 15 x 15-µm pixels 100% fill factor 61.44 x 61.44-mm CCD imaging area		
Grade	Grade 2*		
	Minimum	Typical	Maximum
CCD read noise		12 e- rms	16 e- rms
System read noise @ 1 MHz	10 e- rms	12 e- rms	16 e- rms
Linear full well	70 ke-	85 ke-	100 ke-
Output amplifier (MPP)	400 ke-	450 ke-	
Dark current @ -50°C operation	0.03 e-/p/s	0.06 e-/p/s	0.2 e-/p/s
Deepest cooling temperature thermoelectric (+5°C liquid) ≤1.5:1 fiber ratio >1.5:1 fiber ratio	 -45°C -40°C	 -50°C -45°C	
Nonlinearity @ 1 MHz	2%		
Dynamic range @ 1 MHz	16 bits		
Parallel shift rate	200 µsec		
Operating environment	0 to 30°C ambient, <50% relative humidity		

PI·SCX®
PRINCETON INSTRUMENTS

Note: Specifications are preliminary and subject to change.
*Contact Princeton Instruments for information about additional CCD grades.

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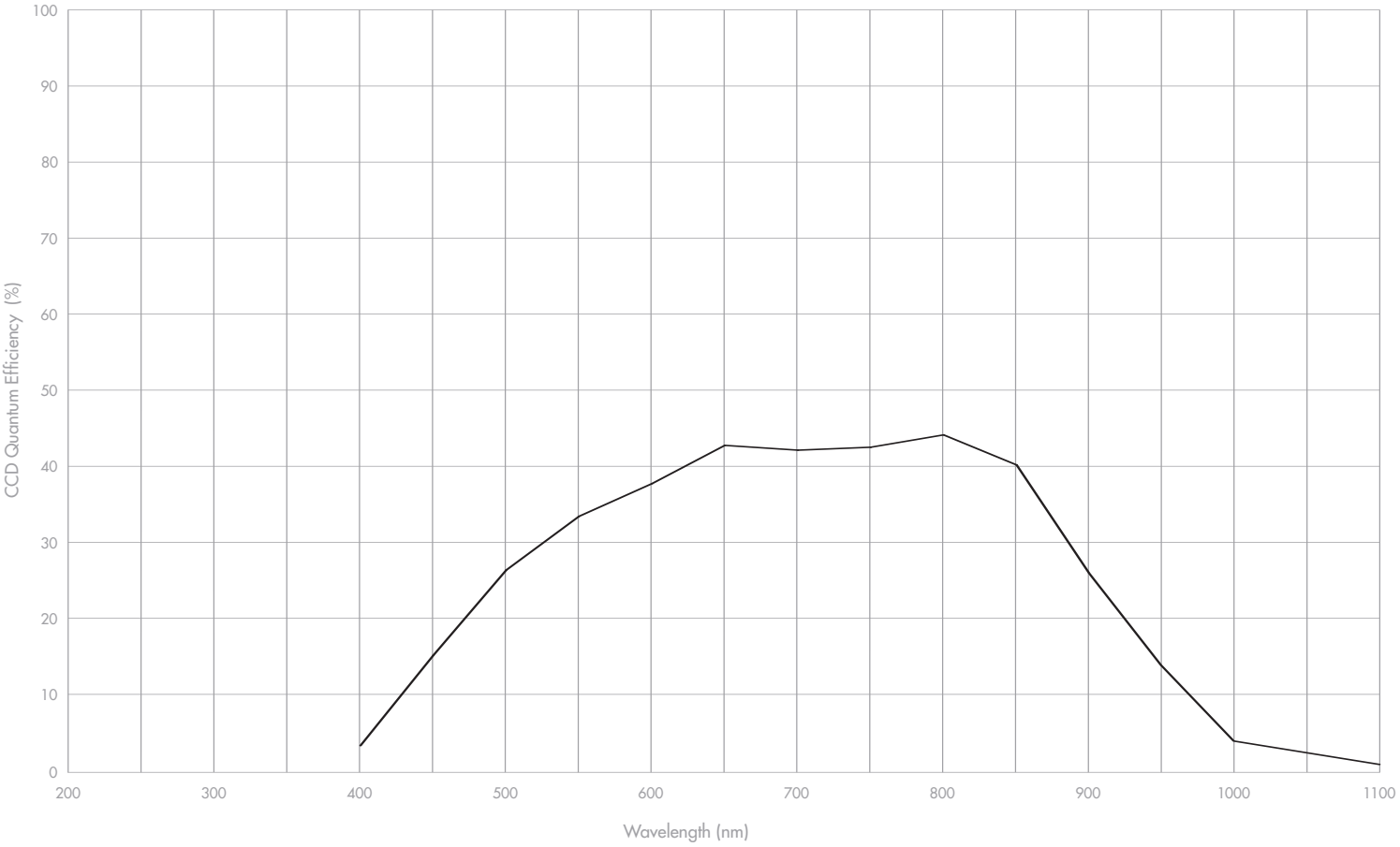
PI•SCX:4096 Rev C0 (First Look)

Princeton Instruments PI•SCX:4096



Readout Rates

Binning	@ 1 MHz
1 x 1	17.61 sec
2 x 2	6.72 sec
4 x 4	3.05 sec

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