

First Look™ 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*	<table border="0"> <tr> <td>Gd₂O₂S:Tb Available for 8 keV and 17 keV Resolution of 60 to 80 µm Emission wavelength ~550 nm</td> <td>CsI:Tl Available for 8, 25 and 80 keV Resolution of 20 to 40 µm Emission wavelength ~550 nm</td> </tr> </table>	Gd ₂ O ₂ S: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
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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

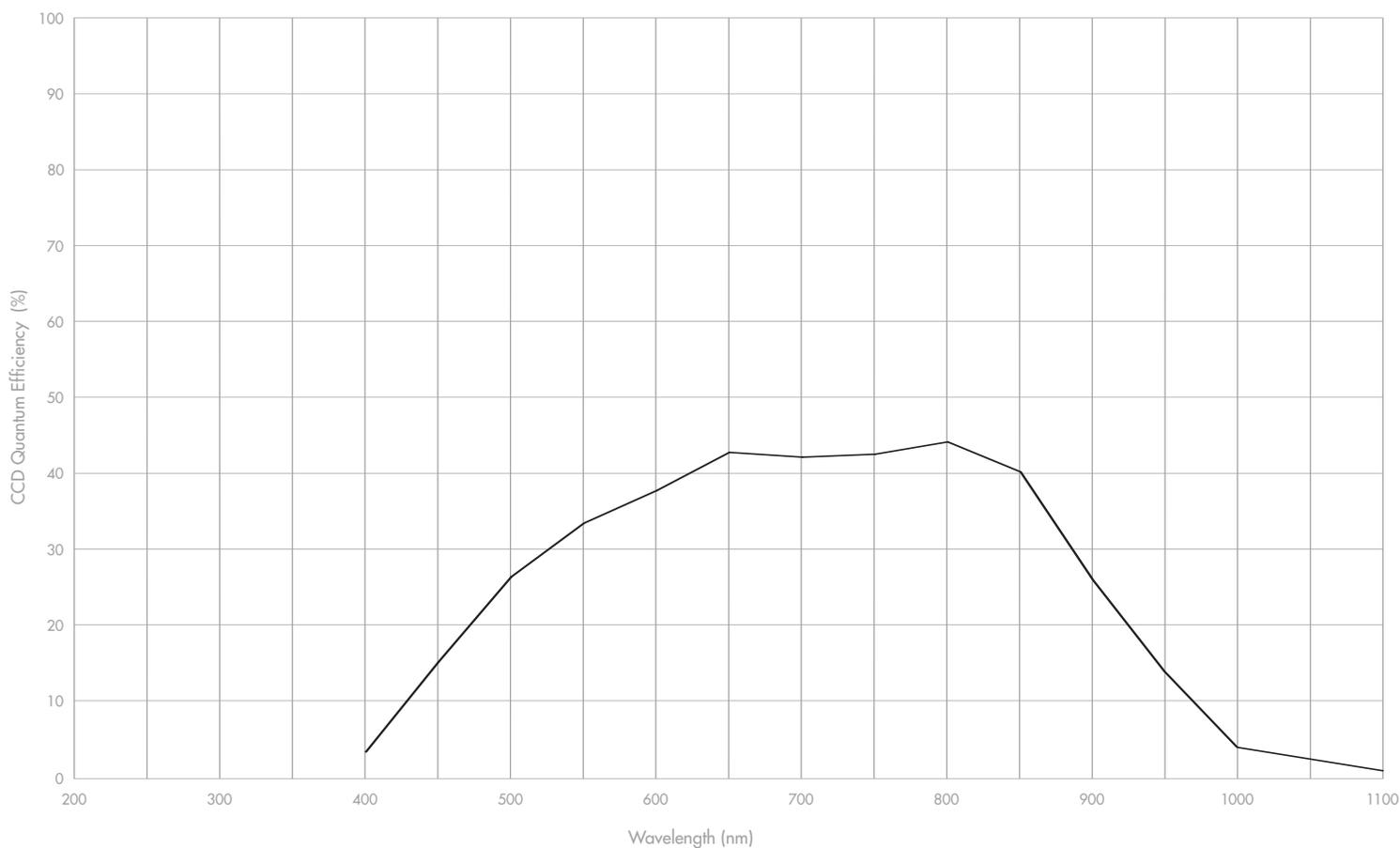
CCD image sensor	Front-illuminated, scientific-grade, MPP device		
CCD format	4096 x 4096 imaging pixels 15 x 15- μ m pixels 100% fill factor 61.44 x 61.44-mm CCD imaging area		
Grade	Grade 2*		
	Minimum	Typical	Maximum
CCD read noise		12 e- rms	16 e- rms
System read noise @ 1 MHz	10 e- rms	12 e- rms	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)			
\leq 1.5:1 fiber ratio	-45°C	-50°C	
$>$ 1.5:1 fiber ratio	-40°C	-45°C	
Nonlinearity @ 1 MHz	2%		
Dynamic range @ 1 MHz	16 bits		
Parallel shift rate	200 μ sec		
Operating environment	0 to 30°C ambient, <50% relative humidity		



Note: Specifications are preliminary and subject to change.

*Contact Princeton Instruments for information about additional CCD grades.

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