...SEE the Future

Princeton Instruments

PI-SCX: 4300

2084 x 2084 imaging array | 24 x 24 µm pixels

The PI-SCX: 4300 from Princeton Instruments is a high-performance, cooled camera designed for lensless, direct imaging of phosphor screens and other Lambertian sources. The 2.4:1 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 20 lp/mm. When used with an X-ray scintillator screen and a softwareprogrammable, high-sensitivity or high-capacity amplifier, the 1:1 fiberoptically coupled system can effectively provide X-ray photon-counting capability with up to 16-bit dynamic range.

Applications: Medical and industrial X-ray imaging, image intensifiers and streak tubes, X-ray microtomography, and X-ray phase-contrast imaging

Features	Benefits
Patented fiberoptic-coupling technology	Preserves highest possible resolution
1:1 fiber ratio*	Distortion- and vignetting-free optical coupling
2.4:1 fiber-ratio option*	Large field of view (120 x 120 mm)
2084 x 2084 imaging array 24 x 24 µm pixels	Large image area
CCD with indium tin oxide (ITO) technology	QE ~65% at 550 nm with front-illuminated CCD
Custom phosphors*	Gd_2O_2S:Tb Available for 8 keV and 17 keV Resolution of 60 to 80 µm Emission wavelength ~550 nm
Flexible binning and readout	Increases frame rate and SNR
Software-selectable gains and output amplifiers	Allows optimization of system performance (lowest noise to widest dynamic range)
16-bit digitization	Provides simultaneous wide dynamic range and SNR
Thermoelectric cooling	Chilled water provides deep cooling
USB 2.0 interface configuration	Seamless, plug-and-play connection to PC notebooks and laptops Easy OEM integration
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 PI for information about additional fiber ratios and phosphors.

PI-SCX: 4300 Specifications

CCD image sensor	Kodak® KAF4301E; front-illuminated, scientific-grade, MPP device with indium tin oxide (ITO) technology					
CCD format	2084 x 2084 imaging pixels 24 x 24 µm pixels 100% fill factor 50 x 50 mm CCD imaging area					
Grade	Grade 2*					
	Minimum		Typical		Maximum	
Linear full well	510 ke-		570 ke-		700 ke	
	low noise	**high capacity**	**low noise**	**high capacity**	**low noise**	**high capacity**
CCD read noise			13 e- rms	22 e- rms	22 e- rms	30 e- rms
System read noise @ 1 MHz	8 e- rms	19 e- rms	13 e- rms	22 e- rms	20 e- rms	30 e- rms
Output amplifier	130 ke-	1000 ke-	150 ke-	1500 ke-	200 ke-	1800 ke-
Dark current @ -50°C operation	0.02 e-/p/s		0.06 e-/p/s		0.5 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	150 µsec					
Operating environment	0 to 30°C ambient, <50% relative humidity					

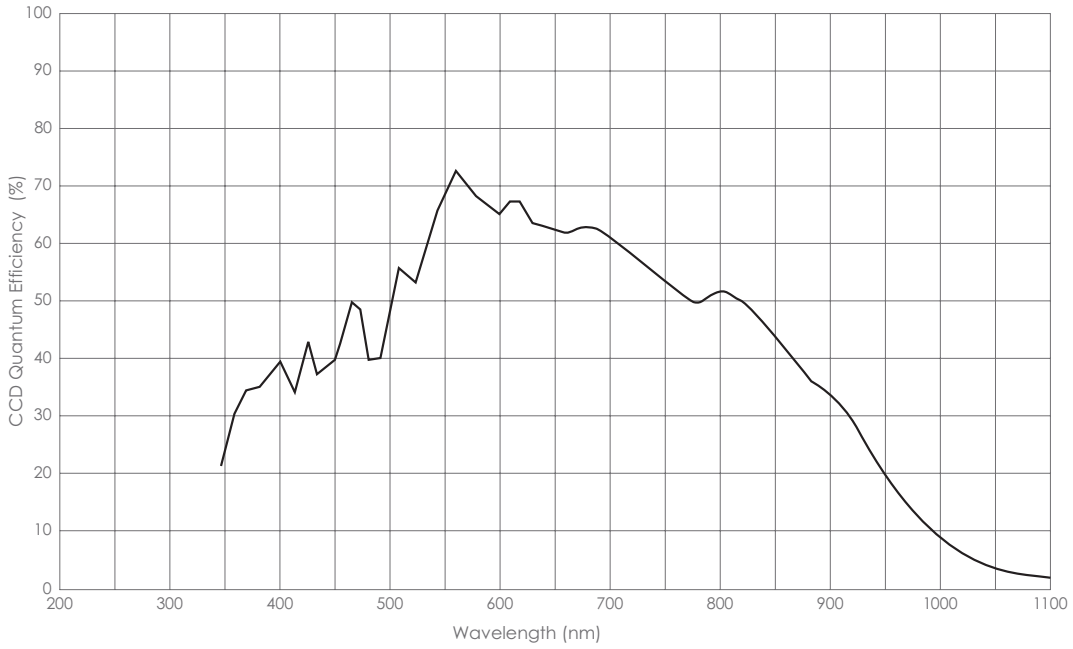
Note: Specifications are subject to change.

* Contact PI for information about additional CCD grades.

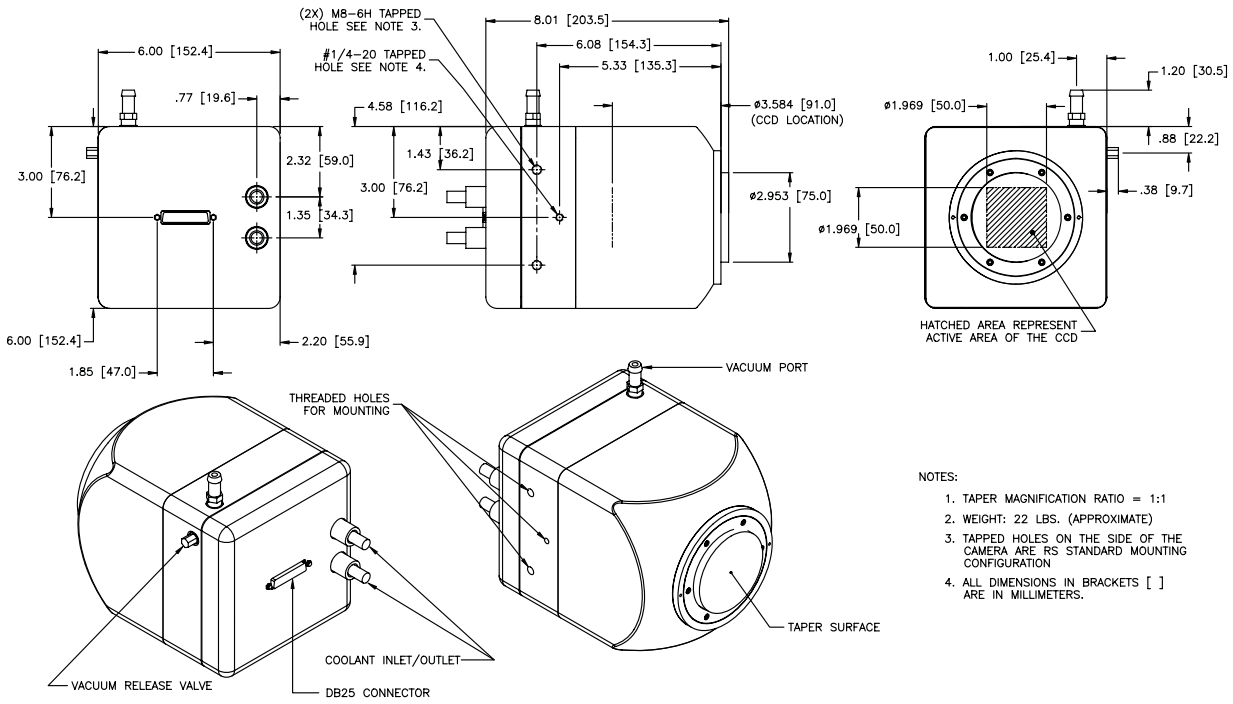
Readout Rates

Binning	@ 1 MHz
1 x 1	4.7 sec
2 x 2	2.68 sec
4 x 4	1.5 sec

Quantum Efficiency Curve



PI-SCX Drawings



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