

PI-SCX: 1300

1340 x 1300 imaging array | 20 x 20 μm pixels



The Princeton Instruments PI-SCX: 1300 is high-performance cooled camera designed for lensless, direct imaging of phosphor screens and other Lambertian sources. With 1340 x 1300, 20 μm pixels, 100% fill factor, deep thermoelectric cooling with air or water, low noise electronics and software-selectable gains and readout speeds make this camera ideal for research environments. A fiberoptic faceplate extended outside the vacuum offers outstanding flexibility. When used with an X-ray scintillator screen and a software-programmable, high-capacity or high-sensitivity amplifier, this system can effectively provide X-ray photon-counting capability with up to 16-bit dynamic range. The 1:1 fiber ratio offers resolution of 25 lp/mm.

Applications: Medical and Industrial X-ray imaging, X-ray microtomography, Image intensifier, streak tube and CRT readout

Features	Benefits
1340 x 1300 imaging array 20 x 20 μm pixels	"Princeton Instruments exclusive" CCD provides large image area
1:1 fiber ratio*	Distortion- and vignetting-free optical coupling
Dual-speed, 16-bit digitization	High-speed readout for rapid image acquisition Slow-speed readout for high sensitivity with wide dynamic range, high signal-to-noise ratio (SNR), and excellent energy resolution
Custom phosphors*	Gd ₂ O ₂ S: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, readout speeds, and output amplifiers	Allows optimization of system performance (lowest noise to widest dynamic range)
Thermoelectric cooling	Choice of air or water cooling
"USB 2.0 interface" configuration	Seamless, plug-and-play connection to PC notebooks and desktops Easy OEM integration
"PCI interface" configuration	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 fiberoptics, fiber ratios and phosphors.

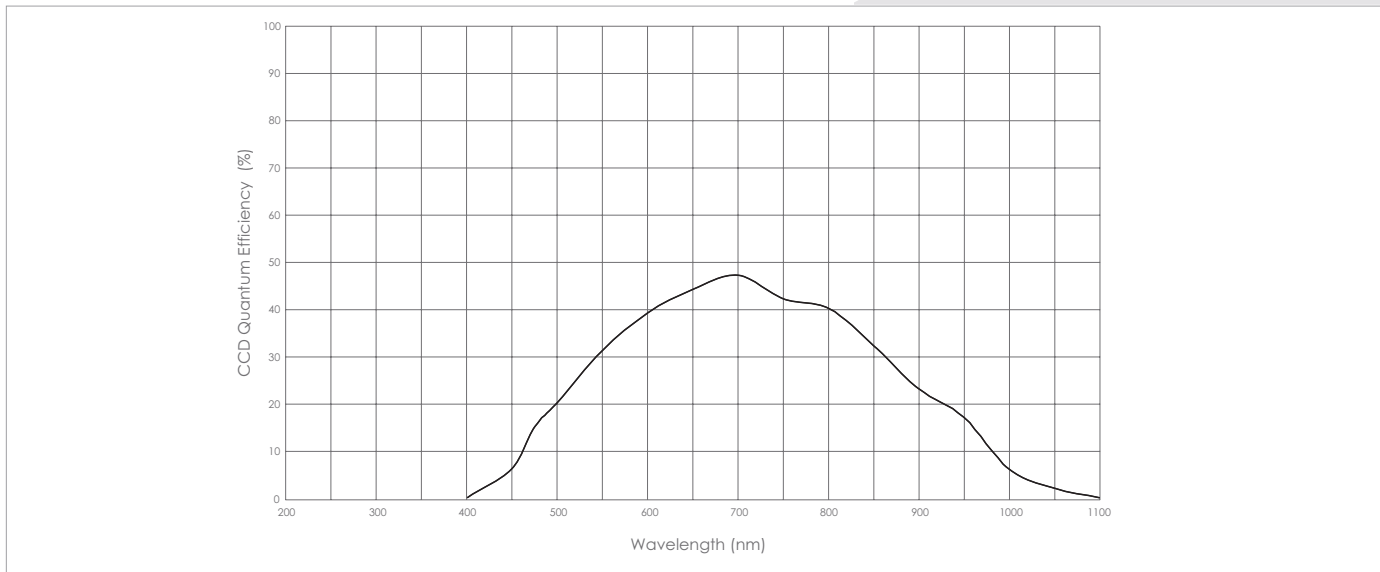
CCD image sensor	Princeton Instruments exclusive; front-illuminated, scientific-grade, MPP device				
CCD format	1340 x 1300 imaging pixels 20 x 20 μm pixels 100% fill factor 26.8 x 26.0 mm imaging area (optically centered)				
Grade	Grade 1				
	Minimum		Typical		Maximum
CCD read noise			2 e- rms		
System read noise @ 50 kHz digitization @ 100 kHz digitization @ 1 MHz digitization			low noise 4 e- rms 5 e- rms 8 e- rms	high capacity 6 e- rms 10 e- rms 18 e- rms	low noise 5 e- rms 6 e- rms 10 e- rms
Single-pixel full well	200 ke-		300 ke-		
Output amplifier	low noise 200 ke-	high capacity 650 ke-	low noise 250 ke-	high capacity 800 ke-	
Dark current @ -40°C			0.1 e-/p/s		0.5 e-/p/s
Deepest cooling temperature thermoelectric (air) thermoelectric (+5°C liquid)	-35°C -40°C		-40°C -45°C		
Outputs	Low-noise (high-sensitivity) or high-capacity amplifier; user selectable				
Software-selectable gains (e-/count)	1, 2, 4 (low noise mode) 4, 8, 16 (high capacity mode)				
Nonlinearity @ 100 kHz	< 2%				
Dynamic range	16 bits				
Scan rates	"100 kHz / 1 MHz" or "50 kHz / 1 MHz"				
Frame readouts @ 1 MHz digitization @ 100 kHz digitization @ 50 kHz digitization	< 1.8 seconds for full frame < 18 seconds for full frame < 36 seconds for full frame				
Thermo staling precision	± 0.05 °C across entire temperature range				

Notes: All specifications subject to change.

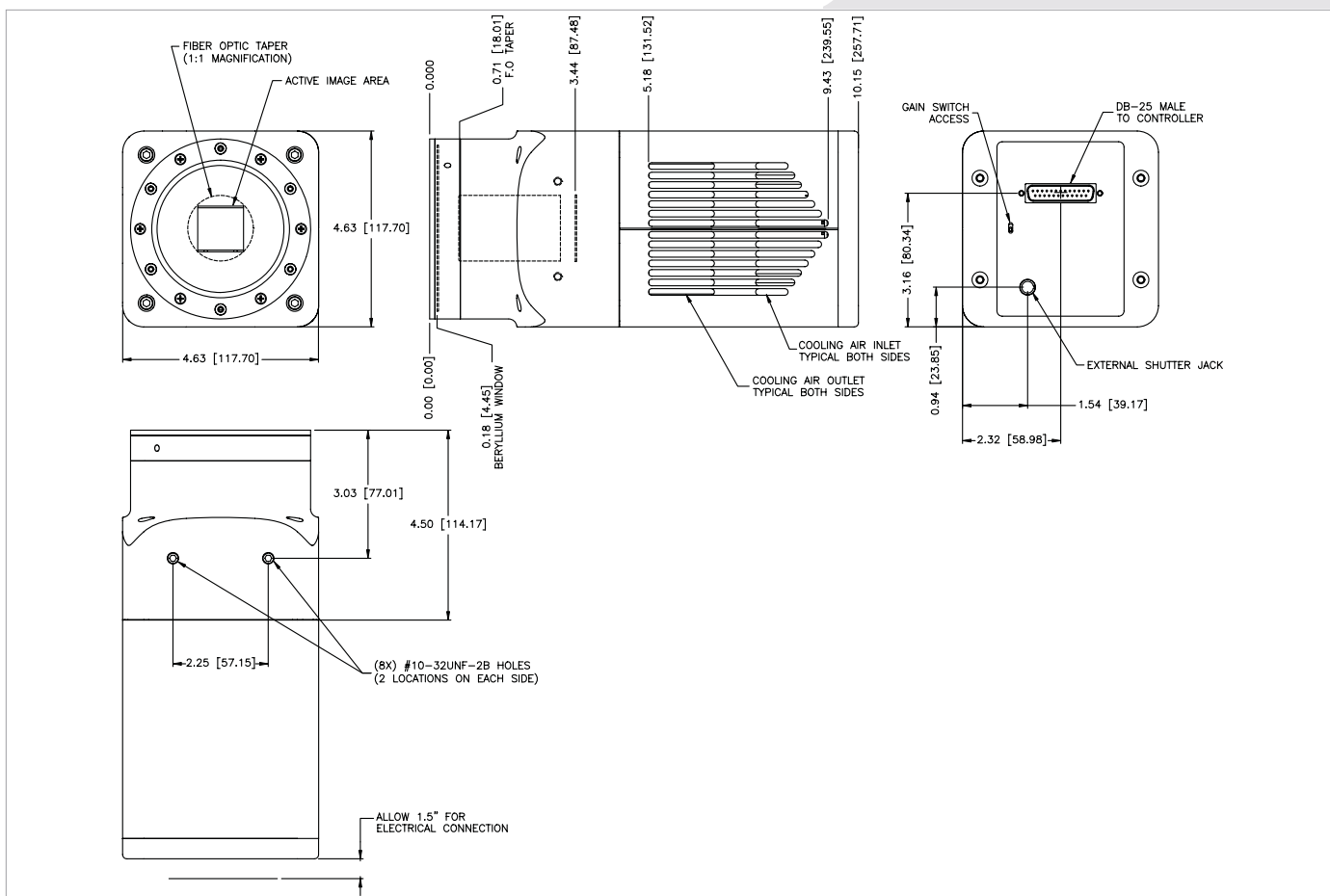
Readout Rates

Binning	@ 1 MHz	@ 100 kHz	@ 50 kHz
1 x 1	1.78 sec	17.46 sec	34.75 sec
2 x 2	0.74 sec	4.98 sec	9.14 sec
4 x 4	0.29 sec	1.46 sec	2.5 sec

Quantum Efficiency Curve



PI-SCX: 1300 Drawing



www.piacton.com

email: moreinfo@piacton.com
 USA +1.877.4 PIACTON | Benelux +31 (347) 324989
 France +33 (1) 60.86.03.65 | Germany +49 (0) 89.660.779.3
 UK +44 (0) 28.38310171 | Asia/Pacific +65.6293.3130
 China +86 135 0122 8135 | Japan +81.3.5639.2741