

PI•SCX: 1300

1340 x 1300 imaging array | 20 x 20- μ m pixels



The PI•SCX:1300 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 medical and industrial x-ray imaging, x-ray microtomography, and image intensifier, streak tube, and CRT readout applications. 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.

| Features | Benefits | | |
|--|---|--|---|
| Patented fiberoptic-coupling technology | Preserves highest possible resolution | | |
| 1340 x 1300 imaging array 20 x 20- μ m 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* | <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 μ m Emission wavelength ~550 nm | CsI:Tl Available for 8, 25 and 80 keV Resolution of 20 to 40 μ m Emission wavelength ~550 nm |
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| 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 Princeton Instruments for information about additional fiberoptics, fiber ratios and phosphors.

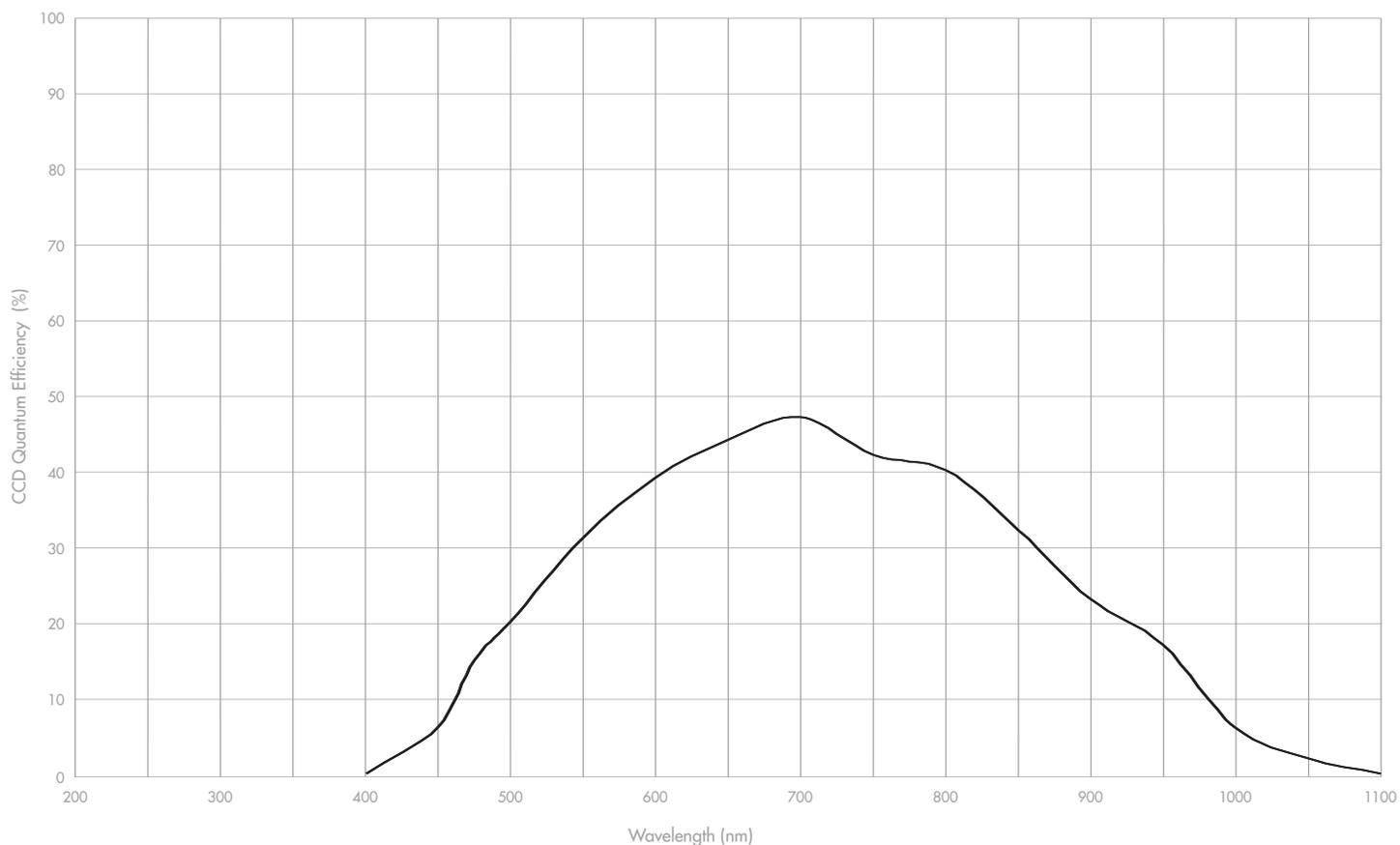
Specifications

| | | | | | |
|------------------------------------|---|----------------------|------------------|----------------------|---------------------------------------|
| CCD image sensor | Princeton Instruments exclusive; front-illuminated, scientific-grade, MPP device | | | | |
| CCD format | 1340 x 1300 imaging pixels 20 x 20- μ m 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 | | | low noise | high capacity | low noise high capacity |
| @ 50-kHz digitization | | | 4 e- rms | 6 e- rms | 5 e- rms 8 e- rms |
| @ 100-kHz digitization | | | 5 e- rms | 10 e- rms | 6 e- rms 12 e- rms |
| @ 1-MHz digitization | | | 8 e- rms | 18 e- rms | 10 e- rms 20 e- rms |
| Single-pixel full well | 200 ke- | | 300 ke- | | |
| Output amplifier | low noise | high capacity | low noise | high capacity | |
| | 200 ke- | 650 ke- | 250 ke- | 800 ke- | |
| Dark current @ -40°C | | | 0.1 e-/p/s | | 0.5 e-/p/s |
| Deepest cooling temperature | | | | | |
| thermoelectric (air) | -35°C | | -40°C | | |
| thermoelectric (+5°C liquid) | -40°C | | -45°C | | |
| Outputs | Low-noise (high-sensitivity) or high-capacity amplifier; user selectable | | | | |
| Software-selectable gains | 1/2x, 1x, 2x (low-noise mode) 1x, 2x, 4x (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 | <1.8 seconds for full frame | | | | |
| @ 100-kHz digitization | <18 seconds for full frame | | | | |
| @ 50-kHz digitization | <36 seconds for full frame | | | | |
| Thermostating precision | $\pm 0.05^\circ\text{C}$ across entire temperature range | | | | |

Note: Specifications are subject to change.



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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 |