



# TELEDYNE PRINCETON INSTRUMENTS

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## PIXIS-XF: 2048

2048 x 2048 imaging array | 13.5 x 13.5 μm pixels

The PIXIS-XF: 2048 series of fully integrated, low noise cameras utilizes front illuminated and back illuminated CCDs, and is designed for indirect imaging X-rays using specially designed phosphor screens and other lambertian sources. The unique camera design, with a fiberoptic faceplate extended outside the vacuum, offers outstanding flexibility for optimizing system performance at any X-ray energy. Dual speed operation at 100 kHz or 2 MHz enables the camera to be used for steady state as well as high speed applications, while its 2048 x 2048 imaging array, 13.5 μm pixels (37 lp/mm), 100% fill factor, 1:1 fiberoptic ratio, ultra low-noise electronics, -30° C thermoelectric cooling with water, and its compact design make the PIXIS-XF ideal for worry-free operation in research and OEM environments.

FEATURES	BENEFITS
Back Illuminated CCD (2048B)	For highest sensitivity
Front illuminated CCD (2048F)	Affordable technology for moderate light level applications
Ultra low noise electronics	Best possible system performance for low light level applications
1:1 fiberoptic ratio*	Distortion and vignetting-free optical coupling
Deep thermoelectric water cooling	Low dark noise allows detection of faint signals. CoolCUBE II, a compact room temperature coolant circulator, is required.
Custom phosphors*	Gd2O2S:Tb; Available for 8 keV and 17 keV; Resolution of 60 to 80 mm Emission wavelength ~550 nm
2048 x 2048 imaging array, 13.5 x 13.5 μm pixels	Highest spatial resolution
Dual digitizers	Dual-speed digitization allows complete freedom to select between “slow operation” for low noise and highest SNR or “fast operation” for rapid image acquisition
Software selectable gains for each digitization speed	Allows optimization of system performance for lowest noise to highest SNR
Flexible user-selectable binning & readout	Total flexibility to optimize experiments and SNR
Flexible ROI/binning	Allows faster frame rate and/or sensitivity
USB 2.0 data interface Optional fiber optic interface	Seamless, plug-and-play connection to PC notebooks & desktops; Easy OEM integration; Ideal for remote operation
WinView/Spec software (for Windows XP/7; 32-bit) or LightField™ (for Windows 7; 64-bit)	Powerful, yet easy-to-use software packages for acquisition, display and analysis; Powerful yet intuitive interface; Direct stream to hard drive
PVCAM/PICAM interface	Universal programming interface for easy custom programming; Compatible with Windows XP/7 (32-bit), Windows 7 (64-bit) and Linux; PICAM for Windows 7 (64-bit)
LabView® Scientific Imaging ToolKit (SITK™)	Predefined VIs for easy integration of camera controls into large experiment

\* Contact your local sales representative for information about additional fiber optics, fiber ratios and phosphors



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### Applications:

X-ray Microtomography, Streak Tube and CRT Readout, Industrial & Medical Imaging



## SPECIFICATIONS

	<b>PIXIS-XF: 2048F</b>	<b>PIXIS-XF: 2048B</b>
Features	Front-illuminated CCD for moderate light level applications	Back-illuminated CCD for low light level applications.
CCD Image Sensor	e2v CCD42-40; front-illuminated; scientific grade 1; ALMO	e2v CCD42-40; back-illuminated; scientific grade 1; ALMO
Dark current @ -30° C	0.035 e-/p/sec (typical) 0.1 e-/p/sec (max)	0.035 e-/p/sec (typical) 0.1 e-/p/sec (max)
CCD format	2048 x 2048 imaging pixels; 13.5 x 13.5- $\mu$ m pixels; 100% fill factor; 27.60 x 27.60 mm (optically centered)	
Deepest cooling temperature (with ambient air @ +20° C)	-30° C typical; -25° C guaranteed	
Thermostating precision	$\pm 0.05^\circ$ C	
Cooling method	Thermoelectric liquid cooling - Standard (CoolCUBE II required). Contact factory for air-cooled option.	
Full well	Single pixel: 125 ke- (typical), 100 ke- (minimum) Output node: 270 ke- (typical), 250 ke- (minimum)	
ADC speed/bits	100 kHz/16-bit and 2 MHz/16-bit	
System read noise @100kHz @2MHz	4.0 e- rms (typical), 5.5 e- rms (max) 12.75 e- rms (typical), 16.5 e- rms (max)	
Vertical shift speed	< 32.2 $\mu$ sec/row (programmable)	
Nonlinearity	< 1% @ 100 kHz	
Software selectable gains	1, 2, 4 e-/ADU; available at all speeds	
Operating systems supported	Windows XP/Vista/7; Linux	
Data interface	USB2.0 (5m interface cable provided); Optional Fiberoptic interface is available for remote operation	
I/O signals	Two MCX connectors for programmable frame readout, shutter, trigger in	
Operating environment	+5° C to +30° C non-condensing	
Certification	CE	
Dimensions / Weight	20.45 cm (8.05") x 11.81 cm (4.65") x 11.38 cm (4.48") (L x W x H) / 2.75 kg (6 lbs)	

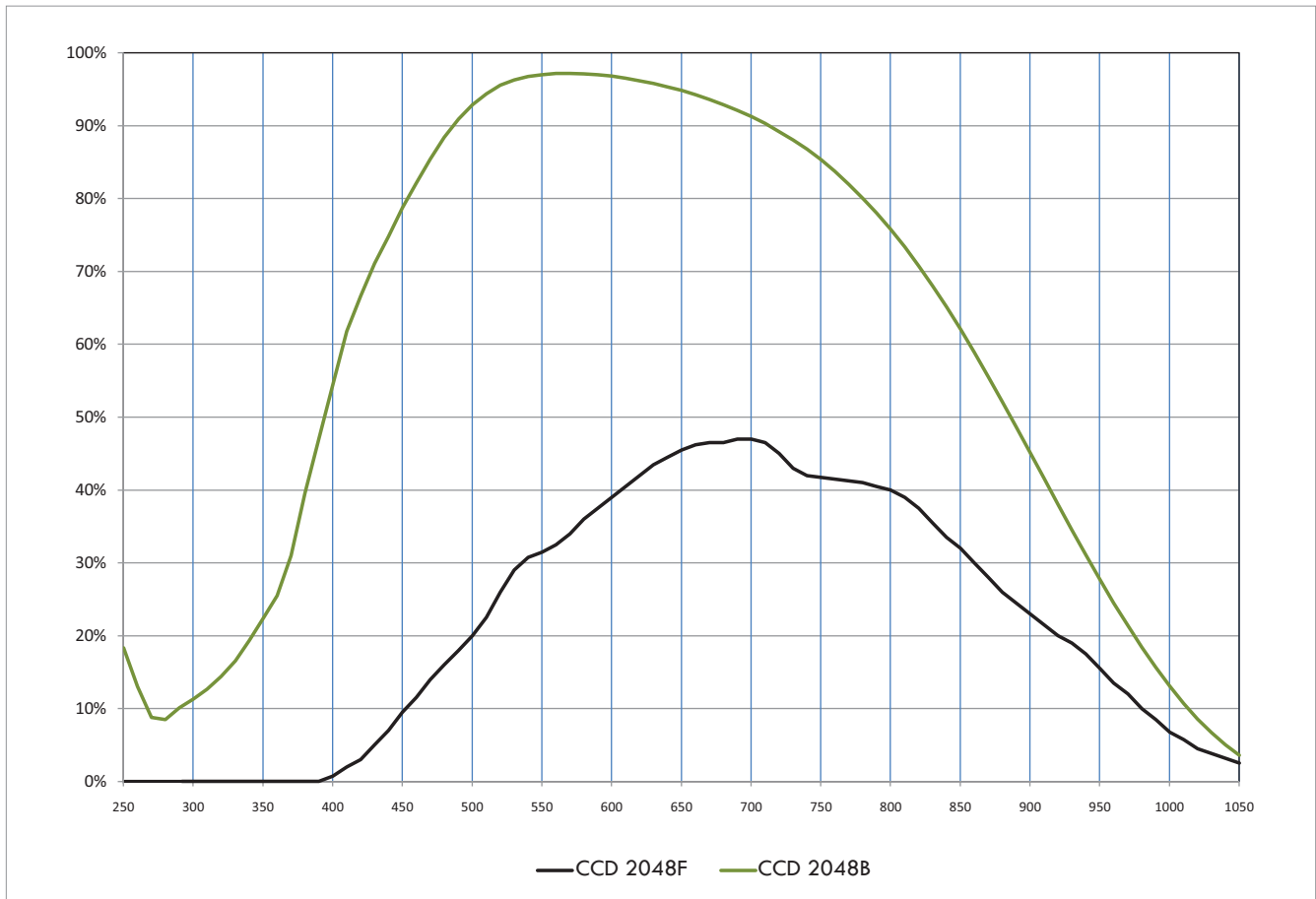
**NOTES:** All specifications subject to change

### Readout Rates

Binning	@ 2 MHz	@100 kHz
1 x 1	2.265 sec	36.45 sec
2 x 2	0.956 sec	9.521 sec
4 x 4	0.458 sec	2.595 sec



## Quantum Efficiency Curve







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## With Phosphor Kit

