...SEE the Future

Princeton Instruments ACTON

PIXIS:1024

The **PIXIS: 1024** series of cameras from Princeton Instruments/Acton are fully integrated, low noise cameras designed expressly for quantitative scientific imaging applications. Choose front illuminated (F), back illuminated (B/BUV) or back illuminated deep depletion (BR) versions of the 1024x1024 CCD for optimized performance from UV to NIR wavelength range. Designed based on PI/Acton's exclusive XP cooling technology, PIXIS is the only camera in the market that offers cooling up to -75°C and **lifetime vacuum guarantee**. The all-metal, hermetically sealed vacuum design ensures maintenance free operation for OEM and research applications. This, coupled with high QE and ultra low-noise electronics, PIXIS: 1024 can be used for demanding low light level applications such as chemiluminescence and fluorescence. The dual speed operation at 100kHz or 2MHz means that the camera can be used for steady state as well as fast kinetic studies.

Applications: semiconductor failure analysis, astronomy, photometry, laser beam profiling, luminescence and fluorescence imaging, Bose-Einstein Condensate (BEC)

Features	Benefits
All-metal, hermetic vacuum seals	No out-gassing that compromises vacuum performance
Lifetime vacuum guarantee	Worry free operation
Deep cooling	Low dark noise allows detection of faint signals No need for bulky chilled water circulators CoolCUBE, a compact room temperature coolant circulator is available for vibration sensitive environments
Single vacuum window	No optical losses due to multiple optical surfaces AR coated to match the wavelength of interest
1024 x 1024 imaging array, 13µm x 13µm pixels	High spatial resolution
Scientific grade CCD	Low noise, few defects, linear response
Front illuminated CCD (1024F) **Back Illuminated CCD (1024B/BUV)** **Back illuminated, deep depletion CCD (1024BR)**	Affordable technology for moderate light level applications. No etaloning. Highest sensitivity in the visible region. Special BUV version offers highest sensitivity in UV region Ideal for NIR applications.
Low noise electronics	Best performance for low light level applications
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 system gains	Flexibility to optimize signal-to-noise ratio and dynamic range
Kinetics	Custom readout mode offers microsecond resolution
Flexible ROI/binning	Allows faster frame rate and/or sensitivity
USB2.0 data interface **Optional fiber optic interface**	Plug-n-play operation. Use it with laptops Ideal for remote operation
Renowned WinView/Spec software	Powerful, yet easy-to-use software packages for acquisition, display and analysis
PVCAM interface	Universal programming interface for easy custom programming. Compatible with Windows 2000/XP and Linux
LabView® Scientific Imaging ToolKit (SITK™)	Predefined vis for easy integration of camera controls into large experiment

PIXIS:1024 Specifications

	PIXIS: 1024F	PIXIS: 1024B/BUV	PIXIS: 1024BR
CCD Image Sensor	e2v CCD47-10 front illuminated, grade 1, AIMO	e2v CCD47-10 back illuminated, grade 1, AIMO	e2v CCD47-10 back illuminated deep depletion, grade 1, NIMO
CCD UV coating	Optional UV coating (not needed for BUV version)		
Quantum efficiency	See graphs below		
CCD format	1024 x 1024 imaging pixels; 13 x 13-µm pixels; 100% fill factor		
Imaging area	13.3 x 13.3-mm (optically centered)		
Lens mount	c-mount with integral 25mm shutter		
Deepest cooling temperature	-75°C typical; -65°C guaranteed, Specified at ambient temperature of +20°C		
Thermostating precision	±0.05 °C		
Cooling method	Thermoelectric Air (standard); Water cooling option available		
Dark current @-70°C	0.001 e-/p/sec (typical) 0.003 e-/p/sec (max)	0.001 e-/p/sec (typical) 0.003 e-/p/sec (max)	0.02 e-/p/sec (typical) 0.05 e-/p/sec (max)
Full well **Single pixel** **Output node**	 100 ke- (typical); 60 ke- (min) 250 ke-(typical); 220 ke- (min)		
ADC speed/bits	100kHz/16-bit and 2MHz/16-bit		
System read noise **@100kHz** **@2MHz**	 3.6 e- rms (typical), 5 e- rms (max) 9.0 e- rms(typical), 15 e- rms (max)		
Vertical shift speed	18 µsec/row; variable via software		
Non-linearity	<2% @ 100kHz		
Software selectable gains	1, 2, 4 e-/ADU; available at all speeds		
Operating systems supported	Windows 2000/XP; 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 to +30°C non-condensing		
Certification	CE		
Dimensions **Weight**	16.77cm (6.602") x 11.81cm (4.65") x 11.38cm (4.48") (L x W x H) 2.27 kg (5lb)		

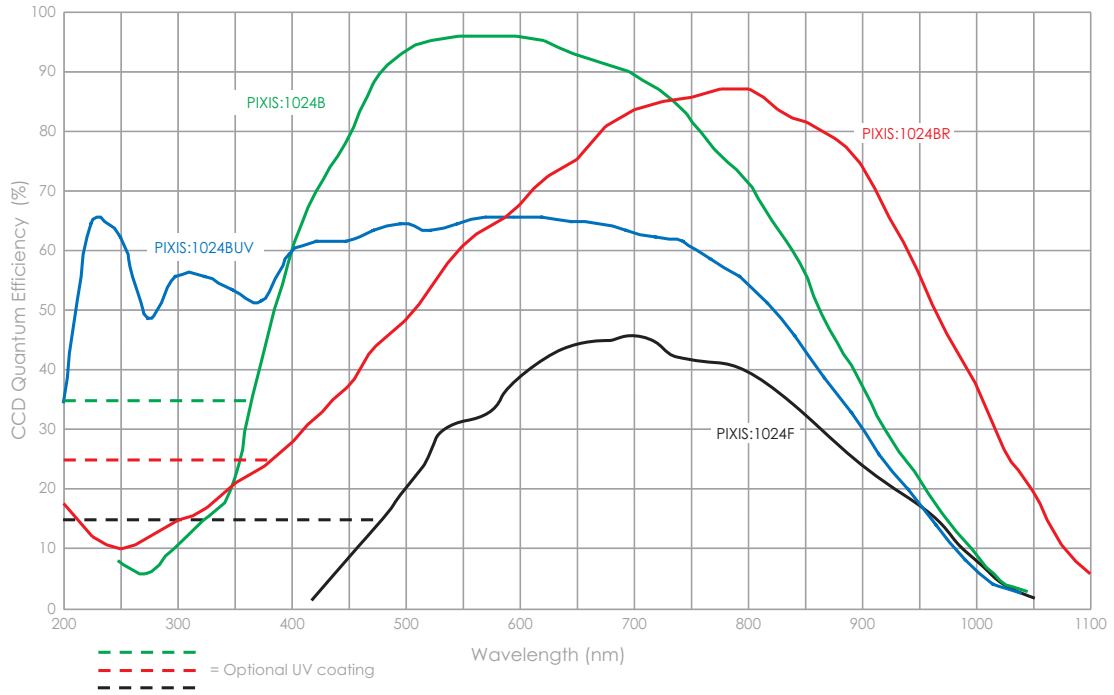
Notes: All specifications subject to change.

Frame Rate

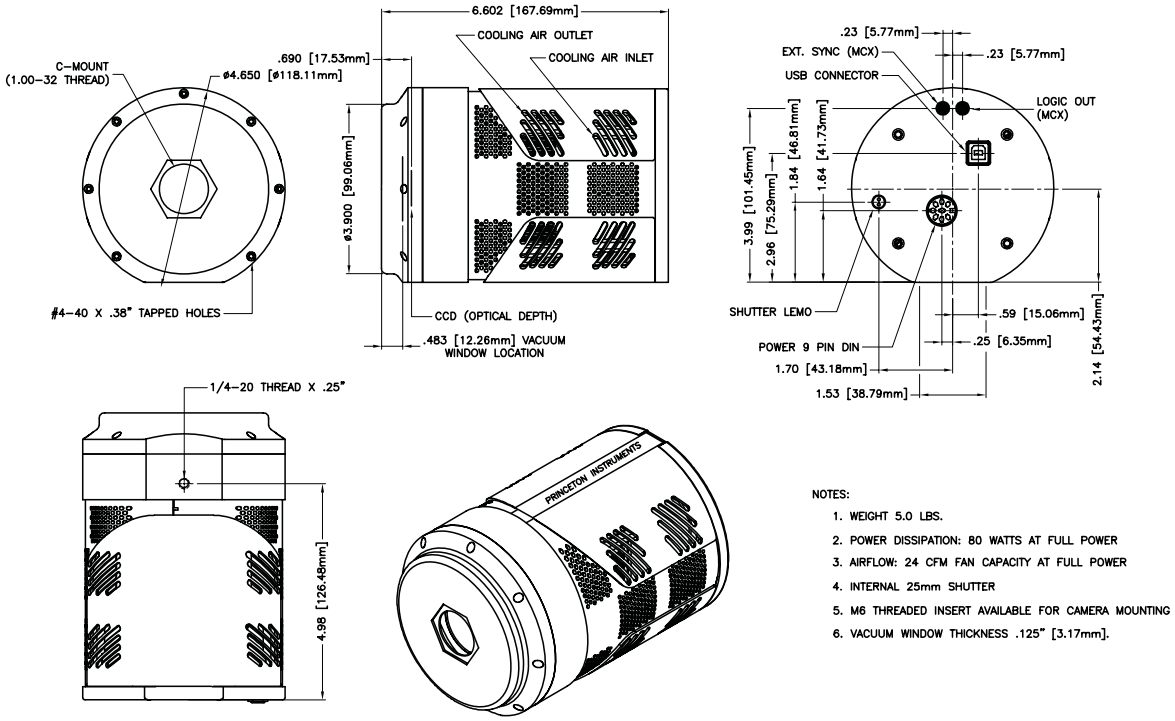
Readout Time

Binning	@ 2 MHz	@ 100 kHz
1 x 1	0.58 sec	10.0 sec
2 x 2	0.28 sec	2.8 sec
8 x 8	0.14 sec	0.85 sec

QE Curve



PIXIS:1024 Drawing



NOTES:

1. WEIGHT 5.0 LBS.
2. POWER DISSIPATION: 80 WATTS AT FULL POWER
3. AIRFLOW: 24 CFM FAN CAPACITY AT FULL POWER
4. INTERNAL 25mm SHUTTER
5. M6 THREADED INSERT AVAILABLE FOR CAMERA MOUNTING
6. VACUUM WINDOW THICKNESS .125" [3.17mm].

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