



## PIXIS: 2K 2048 x 512

The PIXIS series from Princeton Instruments (PI) are fully integrated, low noise cameras designed for quantitative scientific imaging optical spectroscopy applications. Designed utilizing PI's exclusive XP cooling technology, PIXIS offer thermoelectric cooling down to  $-75^{\circ}\text{C}$ , while the all-metal, hermetically sealed design, with the industry's only lifetime vacuum guarantee, ensures maintenance free operation. Choose either back-illuminated (B/BUV) or eXcelon versions of the 2048 x 512 CCD, for optimized performance from UV to NIR. High QE and ultra low-noise electronics make the PIXIS: 2K series of cameras ideal for demanding, low light applications such as Raman spectroscopy, LIBS, absorbance, emission, fluorescence and reflectance spectroscopy. Princeton Instruments' eXcelon technology delivers the highest sensitivity in the NIR while suppressing the etaloning that occurs in standard back illuminated CCDs. Dual speed operation at 100kHz or 2MHz allow these cameras to be used for steady state as well as fast kinetics studies.

FEATURE	BENEFITS
eXcelon™ technology	Increases detector sensitivity while suppressing etalon interference fringes observed in the NIR with conventional back-illuminated devices
Permanent vacuum	Our all-metal brazed seals eliminate the outgassing that occurs with epoxy seals and allow us to offer the industry's only lifetime vacuum guarantee
Deep thermoelectric cooling	Low dark noise allows detection of faint signals; CoolCUBE II, a compact room temperature coolant circulator, is available for vibration sensitive environments
Single fused silica vacuum window	Minimizes reflection losses from the UV to the NIR; Optional AR coating and wedge windows are available
Optional UV phosphor coating	Enhances sensitivity throughout the UV to below 200 nm (not available for eXcelon cameras)
2048 x 512 imaging array, 13.5 $\mu\text{m}$ x 13.5 $\mu\text{m}$ pixels	CCD format provides 6.9 mm height for rapid spectral acquisition; 13.5 $\mu\text{m}$ pixel size offers superior resolution to industry-standard detectors with a 1024 pixel format
100 kHz and 2 MHz digitization rates	Dual-speed digitization allows complete freedom to select between slow operation for low noise and highest SNR or fast operation for rapid image acquisition
Dual amplifiers with software-selectable system gains	High sensitivity amplifier reduces noise for weak signals; High capacity amplifier increases dynamic range
USB2.0 data interface	Plug-and-play operation with desktops or laptops; Optional fiber optic interface for remote operation; Easy OEM integration
LightField™ for 64-bit Windows 7 or WinSpec for 32-bit Windows OS	Flexible software packages for data acquisition, display and analysis. LightField offers intuitive, cutting edge user interface, IntelliCal™ and more
PICAM/PVCAM SDKs	Universal programming interface

### Applications:

Raman Spectroscopy, LIBS, Absorbance, Emission, Fluorescence and Reflectance Spectroscopy

## SPECIFICATIONS

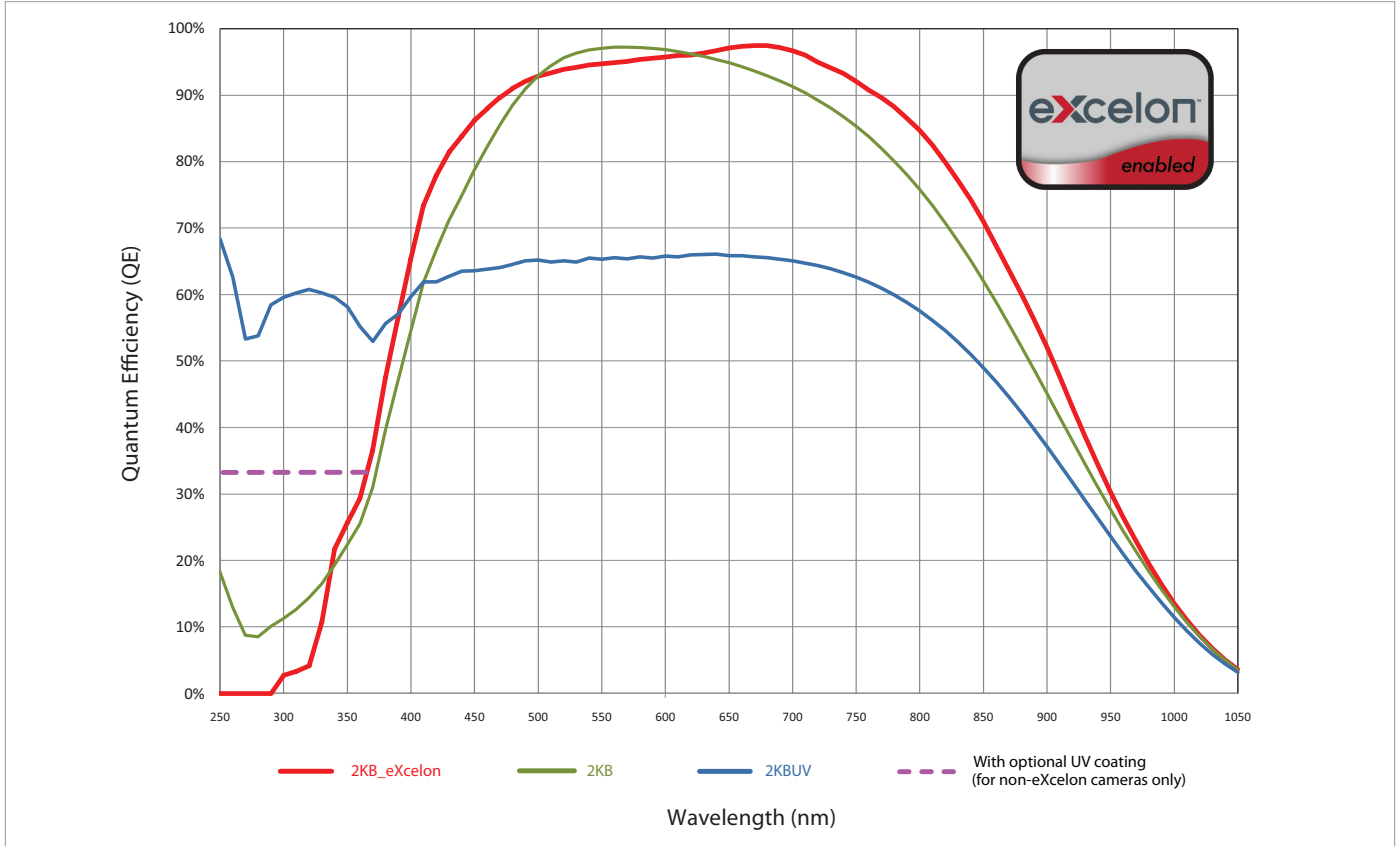


	<b>PIXIS: 2KB_eXcelon</b>	<b>PIXIS: 2KB/BUV</b>
Features	Back-illuminated CCD with eXcelon technology. Enhanced sensitivity in the UV and the NIR with low etaloning.	Back-illuminated CCD. High sensitivity in both the visible and UV regions. Special BUV version offers the highest sensitivity in the UV region.
Dark current @ -75°C (e-/p/sec)	0.001 (typical)	0.001 (typical)
CCD format	2048 x 512 imaging pixels; 13.5 x 13.5-µm pixels with 100% fill factor	
Imaging area	27.6 x 6.9 mm (optically centered)	
Optical mount	Princeton Instruments Acton spectrometer adapter with optional shutter	
Deepest cooling temperature	-75°C guaranteed	
Thermostating precision	±0.05°C	
Cooling method	Thermoelectric air or liquid cooling (CoolCUBE II required)	
Spectrometric well capacity: High Sensitivity High Capacity	250 ke- (typical), 150 ke- (min) 750 ke- (typical), 600 ke- (min)	
ADC speed/bits	100kHz/16-bit and 2MHz/16-bit	
System read noise @100 kHz @2 MHz	3.5 e- rms (typical), 6 e- rms (max) 14 e- rms (typical), 20 e- rms (max)	
Vertical shift speed	15.2 µsec/row	
Non-linearity	<1% @ 100 kHz	
Software selectable gains	1.5, 3, 6 e- (high sensitivity); 3, 6, 12 e- (high capacity); available at all speeds	
Operating systems supported	Windows XP/7 (32-bit), Windows 7 (64-bit) and Linux	
Data interface	Gigabit Ethernet	
I/O signals	Two MCX to BNC connectors for programmable frame readout, shutter, trigger in	
Operating environment	+5 to +30°C non-condensing	
Certification	CE	
Dimensions / Weight	16.59 cm (6.53") x 11.81 cm (4.65") x 11.38 cm (4.48") (L x W x H) / 2.27kg (5lbs)	

All specifications are subject to change.

## SPECTRAL RATE

@ 100 kHz Full Vertical Binning (FVB)	35 spectra/sec
@ 2 MHz Full Vertical Binning (FVB)	90 spectra/sec



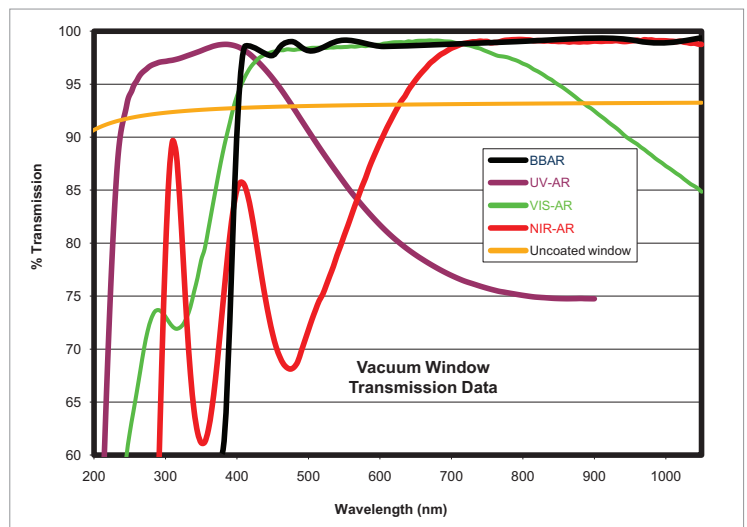
**NOTE:**

Graph shows typical Quantum Efficiency (QE) data measured at + 25°C. QE decreases at normal operating temperatures. For the best results for your application, please discuss the specific parameters of your experiment with your sales representative.

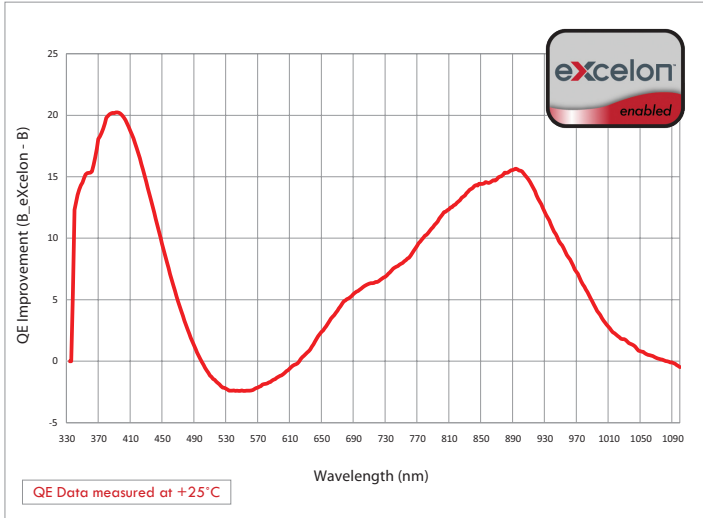
## VACUUM WINDOW AR COATINGS

**NOTE:**

Standard anti-reflection (AR) coatings shown. Custom AR coatings and wedge window options are also available. Contact your local sales representative for more information.

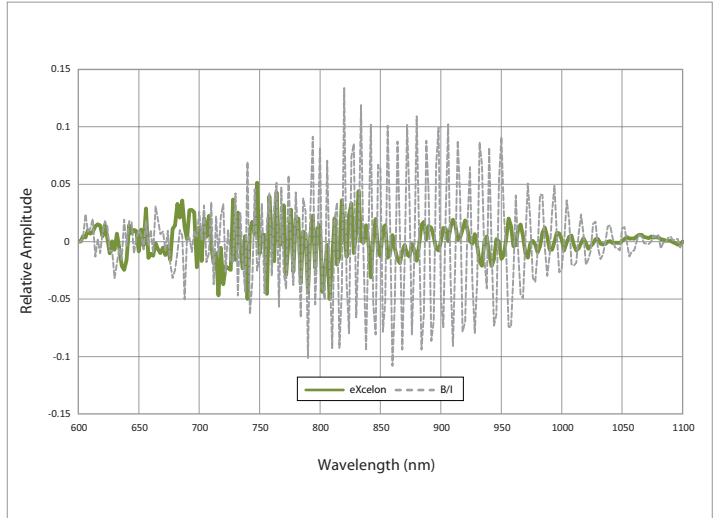


QE Improvement (B\_eXcelon vs. B)

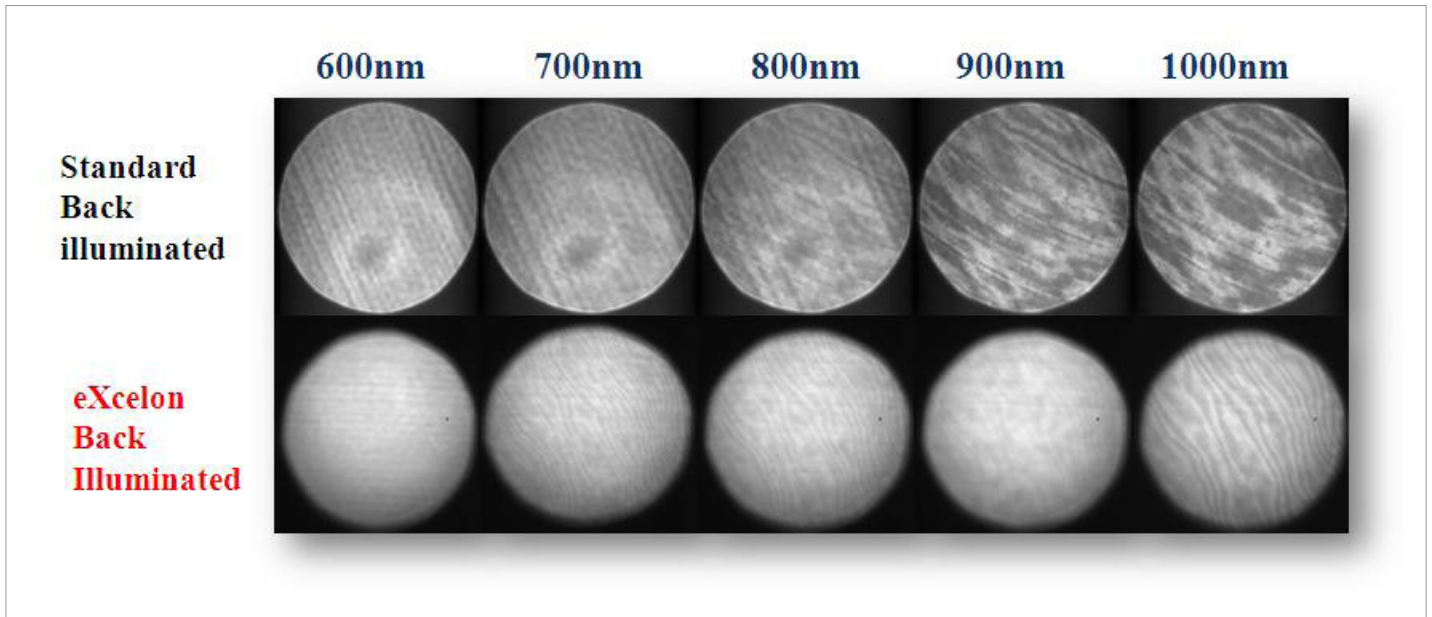


B\_eXcelon provides superior QE over the standard back illuminated (“B”) version in the UV-NIR range.

Etalon Oscillations (B\_eXcelon vs. B)



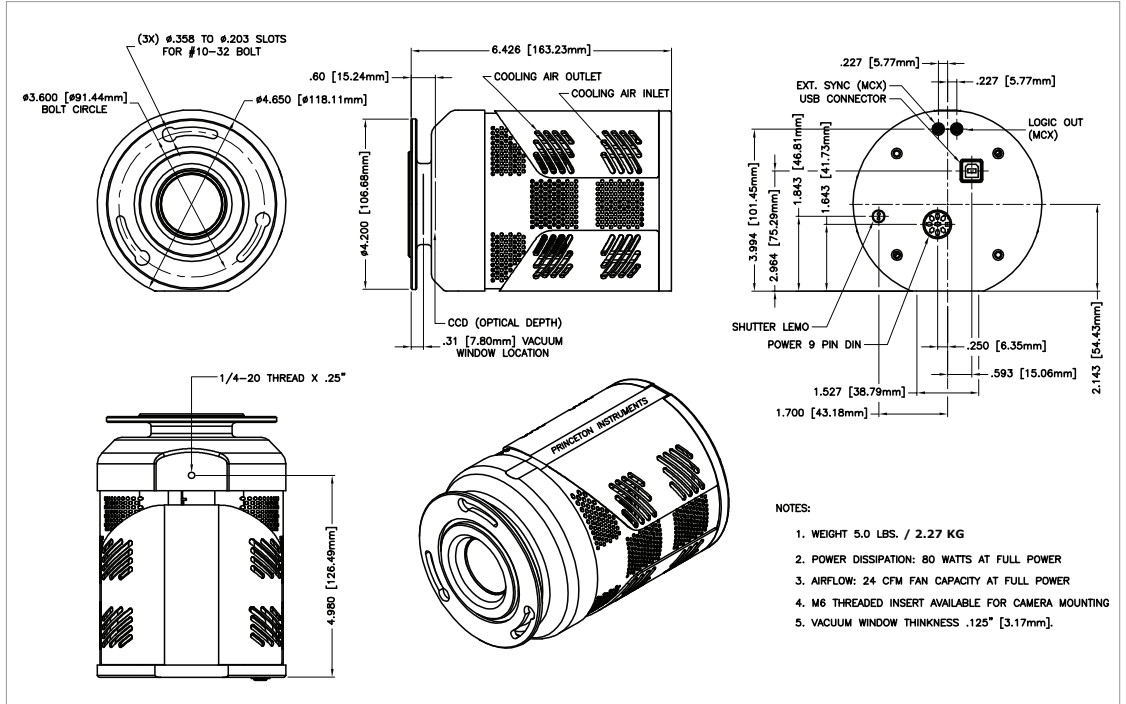
B\_eXcelon provides significantly lower etaloning (unwanted fringes) compared to standard back illuminated (“B”) version.



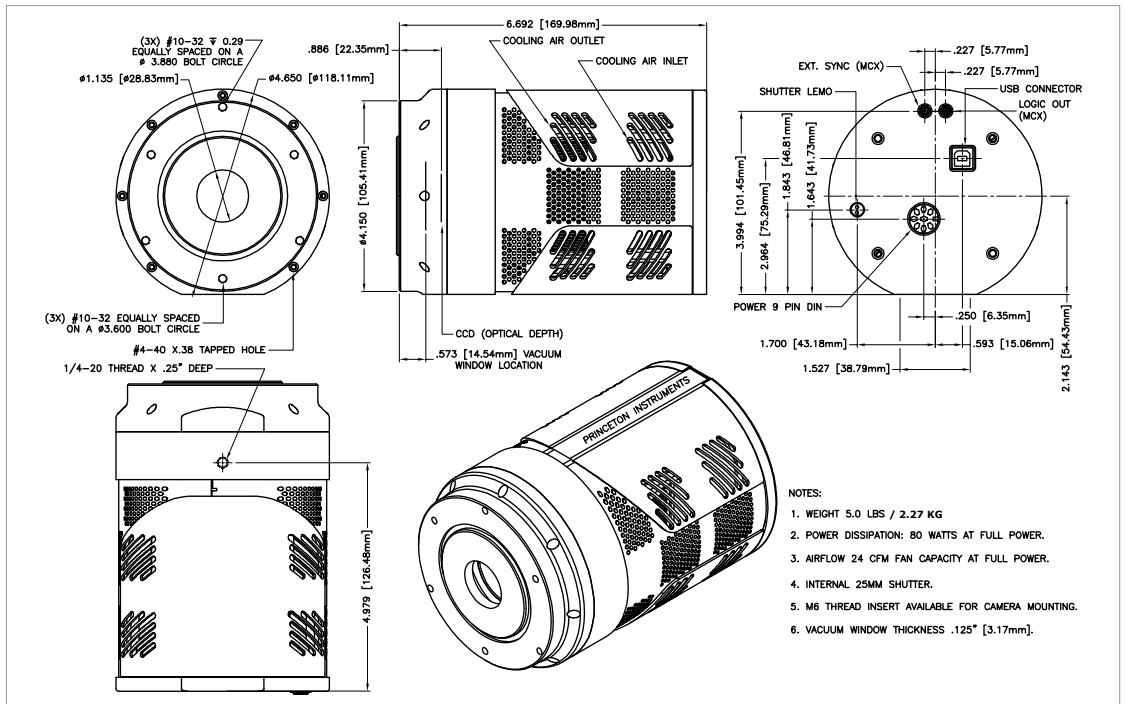
Data taken with white light source through a monochromator, comparing etaloning performance of eXcelon vs. back-illuminated CCDs.

## PIXIS DRAWINGS (AIR COOLED)

PIXIS with Spectroscopy Mount



PIXIS with Spectroscopy Mount; with Shutter



## PIXIS DRAWINGS (LIQUID COOLED)

