

## PIXIS: 2K

2048 x 512 CCD array | 13.5 x 13.5- $\mu\text{m}$  pixels



The Princeton Instruments PIXIS: 2K is a fully integrated system with permanent vacuum / deep cooling. It uses a high-performance, back-illuminated, spectroscopic-format CCD. These special devices are thermoelectrically cooled (air) down to  $-75^{\circ}\text{C}$  to provide the lowest dark charge. The 2048 x 512 array with 7-mm chip height and 27-mm spectral coverage is ideal for multistripe spectroscopy and maximum light collecting area. This detector comes with a Princeton Instruments exclusive feature; the integration of two software-selectable amplifiers to achieve the highest sensitivity for low signal levels and the highest dynamic range with higher signal levels. The high system reliability is ideal for OEM and laboratory applications.

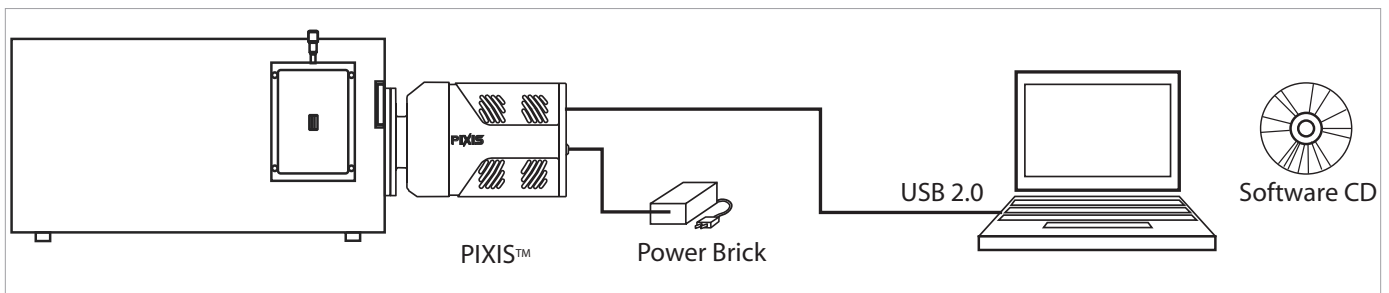
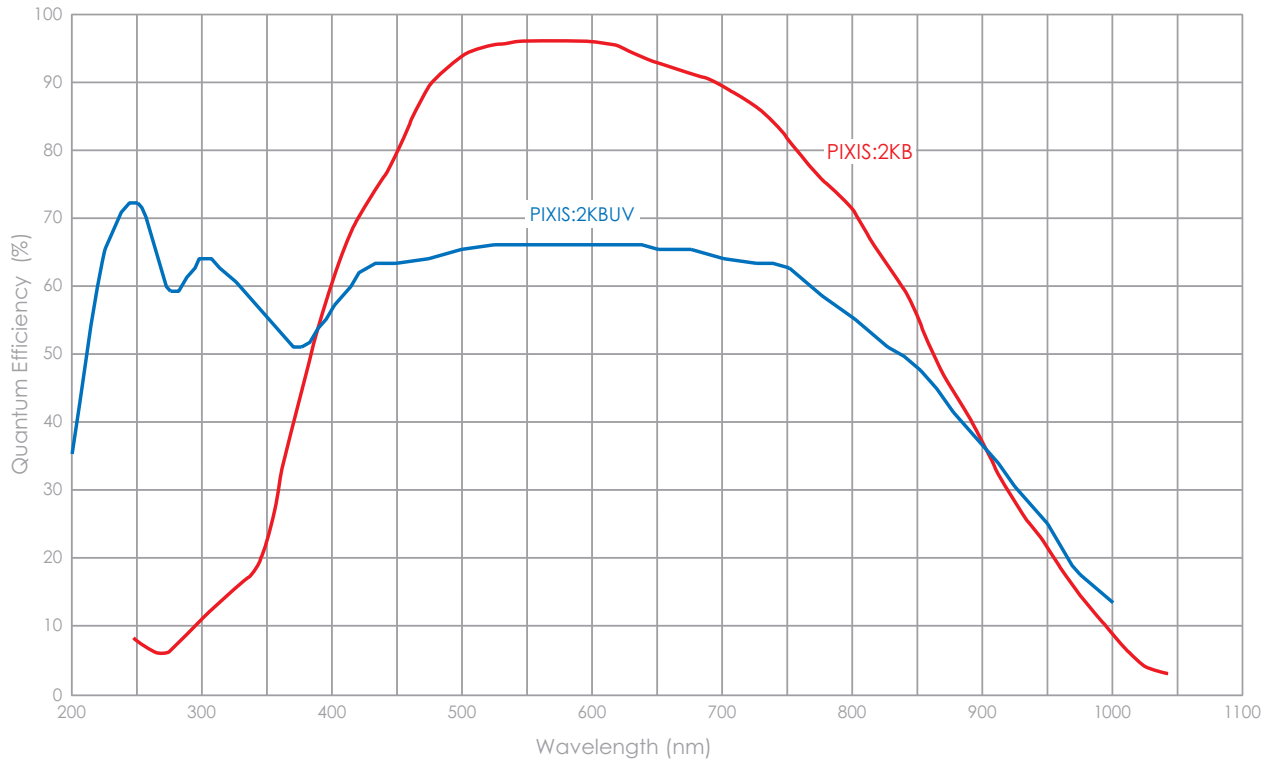
**Applications:** visible and UV Raman, Fluorescence, Luminescence, multistripe emission

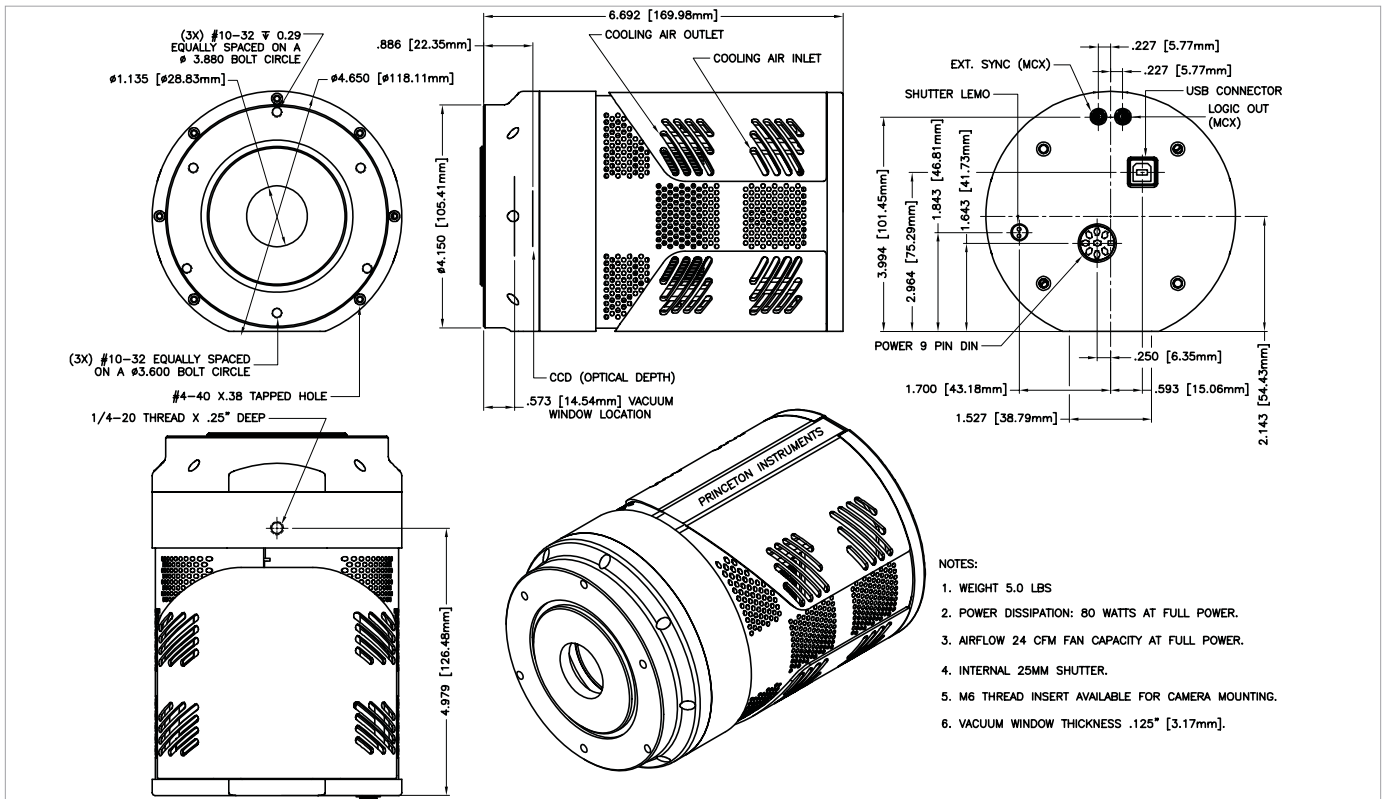
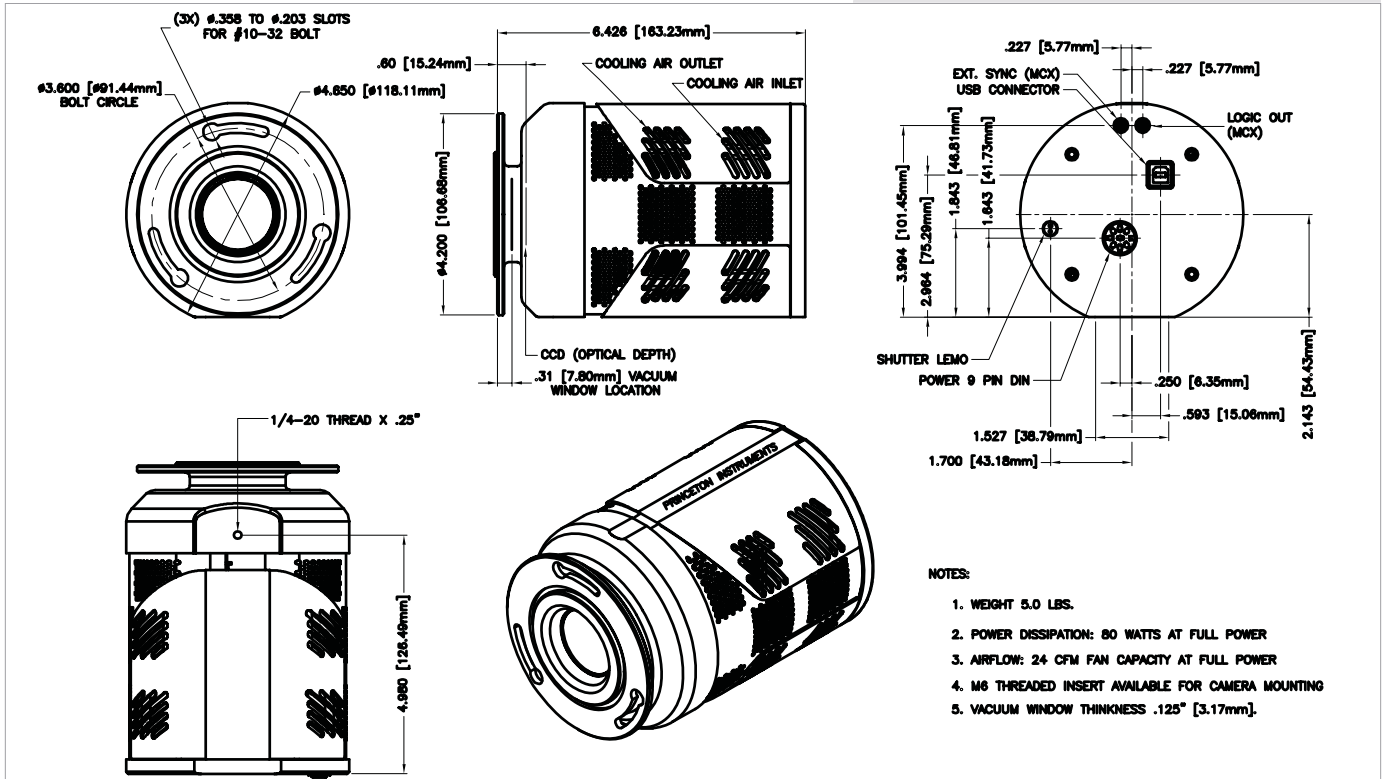
Features	Benefits
Permanent vacuum	Guaranteed temperature performance and worry free operation with all metal seals
Deep thermoelectric cooling / air	Operate without the need for circulating liquid or an additional power supply
Compact design	Complete system integrated into a small footprint Ideal for integration into applications where space is at a premium
Exclusive CCD architecture	Provides industry's lowest-noise CCD system
2048 x 512 CCD array	Exclusive format provides superior resolution over industry-standard "1024 pixel" format
7-mm chip height	Ideal for rapid spectral acquisition
Software-selectable amplifiers	Small pixel feature provides choice of superior sensitivity or superior SNR
Back-illuminated CCD	Highest performance for low light applications
Dual-digitizer option	Multiple-speed digitization allows complete freedom to select between "slow operation" for low noise and highest SNR or "fast operation" for rapid spectral acquisition
Single optical window	No losses due to multiple optical surfaces
Standard spectrometer mount	Easily interfaces with most spectrometers
TTL input and output	External trigger input with programmable polarity TTL output with exposure or readout monitor
USB 2.0 interface	Seamless, plug-n-play connection to PC notebooks and desktops, no need for external control box or installing PCI cards Easy OEM integration
Renowned WinSpec software	Offers easy-yet-sophisticated Windows® GUI controls Automates data acquisition, analysis and display
PICAM® for VB, C, C++ and Scientific Imaging Toolkit for LabVIEW™	Respected application program interface provides a universal interface to all Princeton Instruments hardware

PIXIS:2K Specifications

	PIXIS:2KB	PIXIS:2KBUV	
CCD Image Sensor	back-illuminated	back-illuminated, enhanced UV	
	All PIXIS:2Ks		
CCD Image Sensor	e2v CCD42-10, scientific grade 1, MPP device		
CCD format	2048 x 512, 13.5 x 13.5 $\mu\text{m}$ pixels, 27.6 x 6.9 mm imaging area		
	Typical	Maximum	
Dark Current @ -70°C	0.001 e/p/s	0.006 e/p/s	
System Read Noise @ 100 kHz readout @ 2 MHz readout	3.5 e-rms 14 e-rms	6 e-rms 20 e-rms	
Vertical shift rate (software adjustable)	15.2 $\mu\text{sec}/\text{row}$		
Spectral rate* @ 100 kHz @ 2 MHz	35 spectra/sec 90 spectra/sec		
	Minimum	Typical	
Spectrometric Well Capacity High Sensitivity High Capacity	150 ke- 600 ke-	250 ke- 800 ke-	
Deepest Cooling Temperature	-75°C	-70°C	
Thermostat Precision	$\pm 0.05^\circ\text{C}$ across entire temperature range		
Software-selectable gains High Sensitivity High Capacity	High 1.5 e-/ct 3 e-/ct	Mid 3 e-/ct 6 e-/ct	High 6 e-/ct 12 e-/ct
Dynamic Range	16 bits		
Nonlinearity @ 100 kHz readout @ 2 MHz readout	< 1% < 2%		

\*Spectral rates measured with all rows vertically binned.





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