

PIXIS:400

1340 x 400 CCD array | 20 x 20- μ m pixels



The Princeton Instruments/Acton PIXIS:400 is a fully integrated system with permanent vacuum / deep cooling. It uses a high-performance, spectroscopic-format CCD designed exclusively for Princeton Instruments/Acton. These special devices are thermoelectrically cooled (air) down to -75°C to provide the lowest dark charge. The 1340 x 400 array with 8-mm chip height and 27-mm spectral coverage is ideal for multistripe spectroscopy and maximum light collecting area. This detector delivers much higher resolution and sensitivity than industry-standard "1024 pixel" sensors. Another exclusive feature is 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: multistripe Raman, LIBS, multistripe absorbance, emission, reflectance

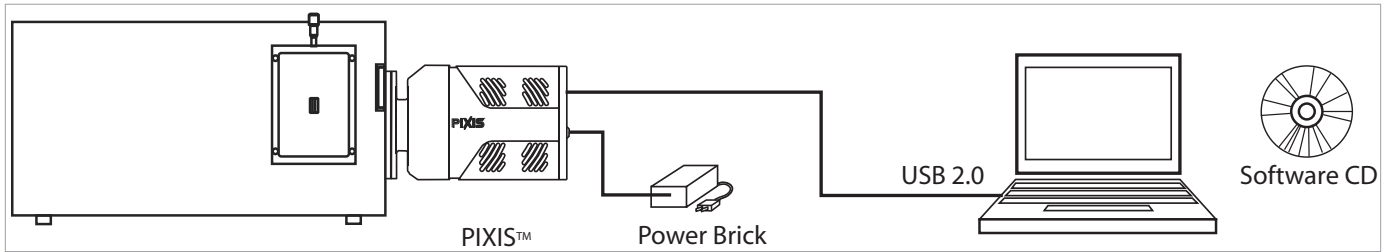
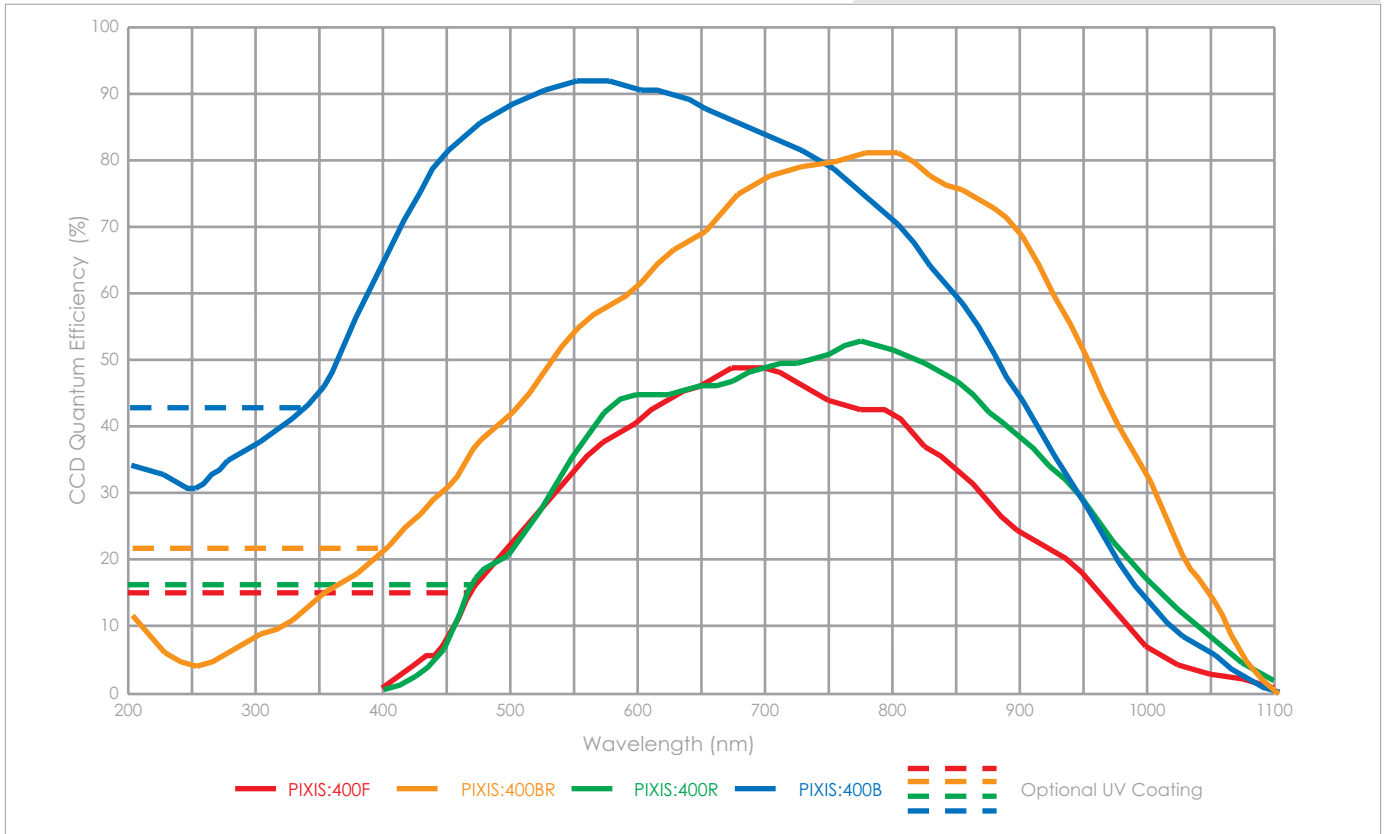
Features	Benefits
Permanent vacuum	Guaranteed temperature performance and worry free operation with all metal seals
Deep thermoelectric cooling / air	Operate without the need for circulating liquid or an additional power supply
Compact design	Complete system integrated into a small footprint Ideal for integration into applications where space is at a premium
Exclusive CCD architecture	Provides industry's lowest-noise CCD system
1340 x 400 CCD array	Exclusive format provides superior resolution over industry-standard "1024 pixel" format
8-mm chip height	Ideal for rapid spectral acquisition
Software-selectable amplifiers	Exclusive feature provides choice of superior sensitivity or superior SNR
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/Acton hardware

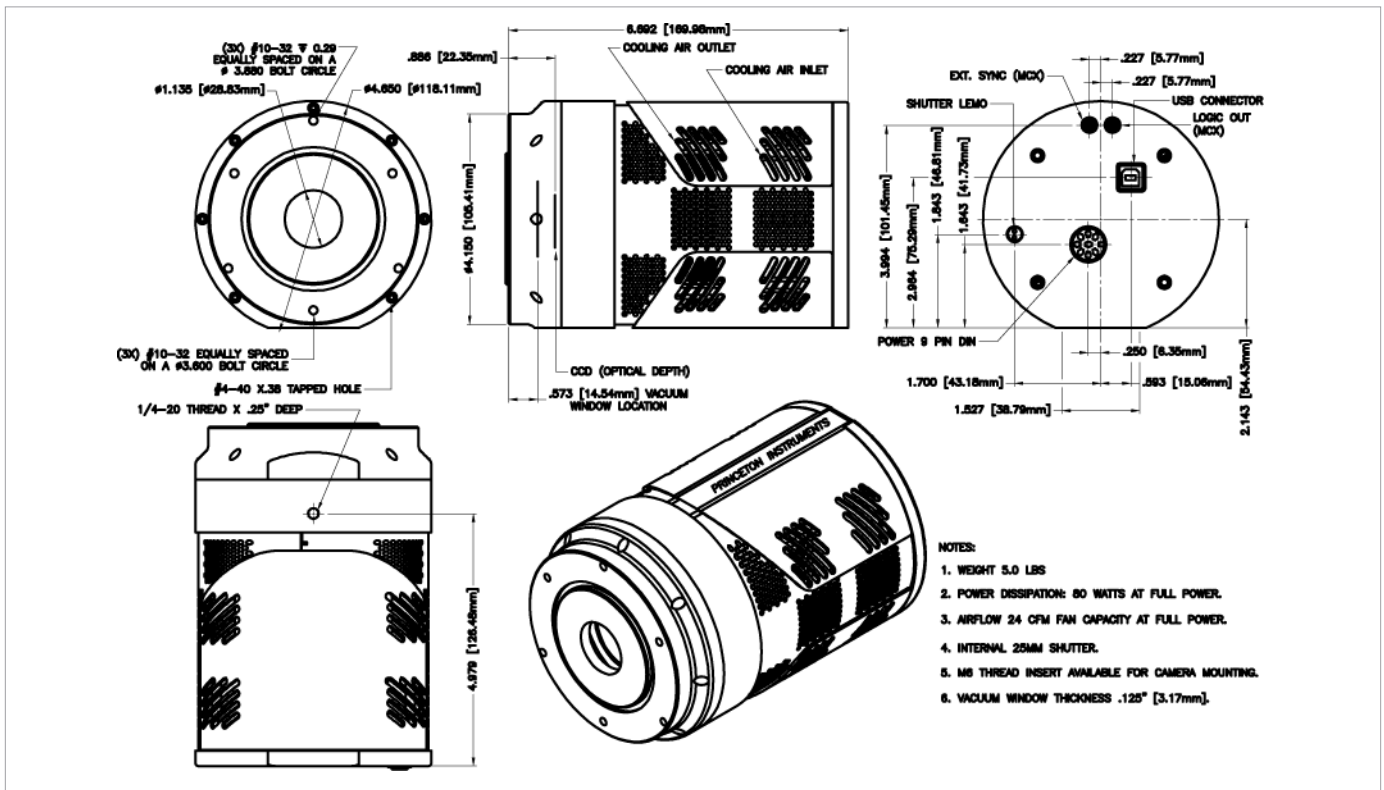
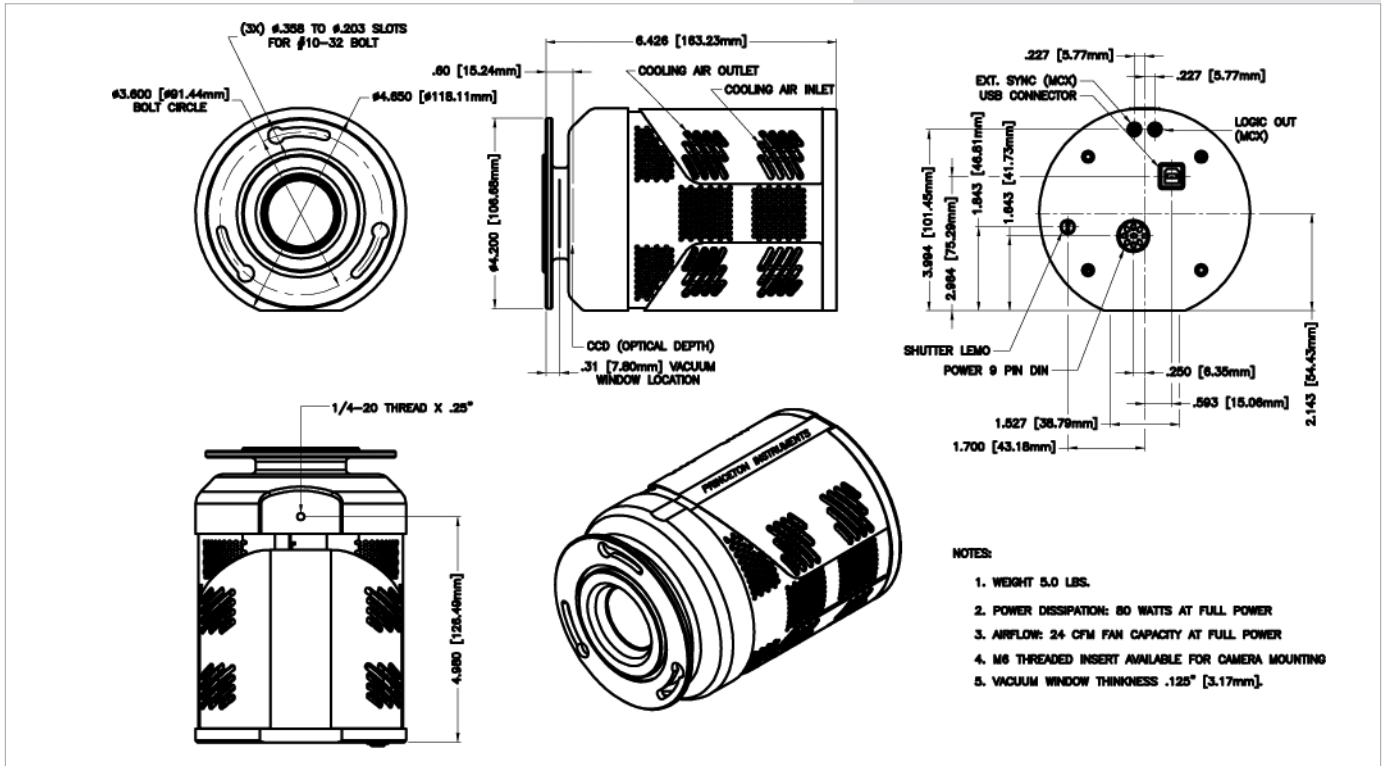
PIXIS:400 Specifications

	PIXIS:400F		PIXIS:400R		PIXIS:400B		PIXIS:400BR	
CCD Image Sensor	front-illuminated		front-illuminated; deep depletion		back-illuminated		back-illuminated; deep depletion	
Dark Current @ -75°C (e/p/s)	Typical 0.0025	Maximum 0.005	Typical 0.15	Maximum 0.3	Typical 0.005	Maximum 0.01	Typical 0.25	Maximum 0.5
	Front-illuminated				Back-illuminated			
	Typical		Maximum		Typical		Maximum	
System Read Noise @100kHz readout @2MHz readout	3 e- rms 12 e- rms		4 e- rms 15 e- rms		3.5 e- rms 13 e- rms		5 e- rms 16 e- rms	
Vertical shift rate (software adjust option)	15 μsec/row				30 μsec/row			
Spectral rate¹ @100kHz @2MHz @2MHz	54 spectra/sec (FVB) 134 spectra/sec (FVB) 1000 spectra/sec (1.0 mm high)				41 spectra/sec (FVB) 74 spectra/sec (FVB) 1000 spectra/sec (0.5 mm high)			
	All PIXIS:400s							
CCD Image Sensor	Princeton Instruments/Acton exclusive, scientific grade 1, MPP device, optional UV coatings available							
CCD format	1340 x 400, 20 x 20 μm pixels, 26.8 x 8.0 mm imaging area							
	Minimum				Typical			
Spectrometric Well Capacity High Sensitivity High Capacity	250 ke- 800 ke-				300 ke- 1 Me-			
Deepest Cooling Temperature	-70°C				-75°C			
Thermostat Precision	±0.05°C across entire temperature range							
Software-selectable gains High Sensitivity High Capacity	High 1 e-/ct 4 e-/ct		Mid 2 e-/ct 8 e-/ct		Low 4 e-/ct 16 e-/ct			
Dynamic Range	16 bits							
Nonlinearity @ 100 kHz readout @ 2 MHz readout	<1% <2%							

Notes: All specifications subject to change.
¹ Faster spectral rates may require the use of custom timing modes.

QE Curve





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