

PIXIS:100

1340 x 100 CCD array | 20 x 20- μ m pixels



The PIXIS:100 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 -80°C to provide the lowest dark charge. The 1340 x 100 imaging array is ideal for spectroscopy applications, providing a small chip height for fast spectral rates along with 27-mm spectral coverage. 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.

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 100 CCD array	Exclusive format provides superior resolution over industry-standard "1024 pixel" format
2-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

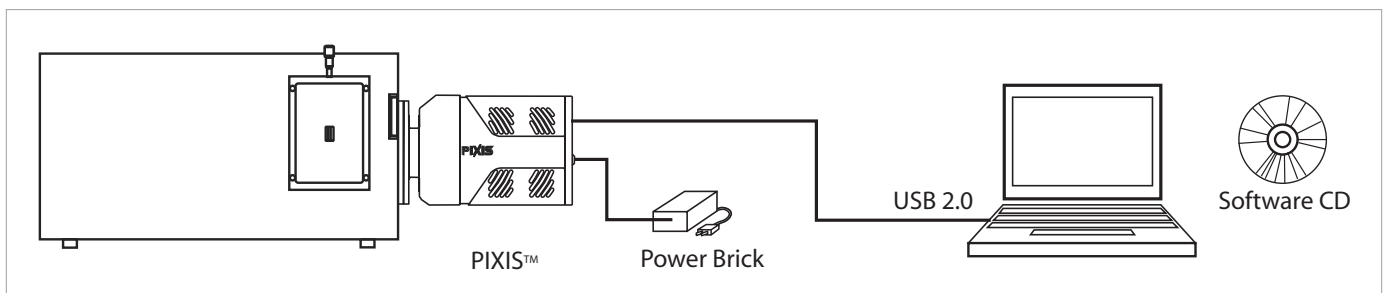
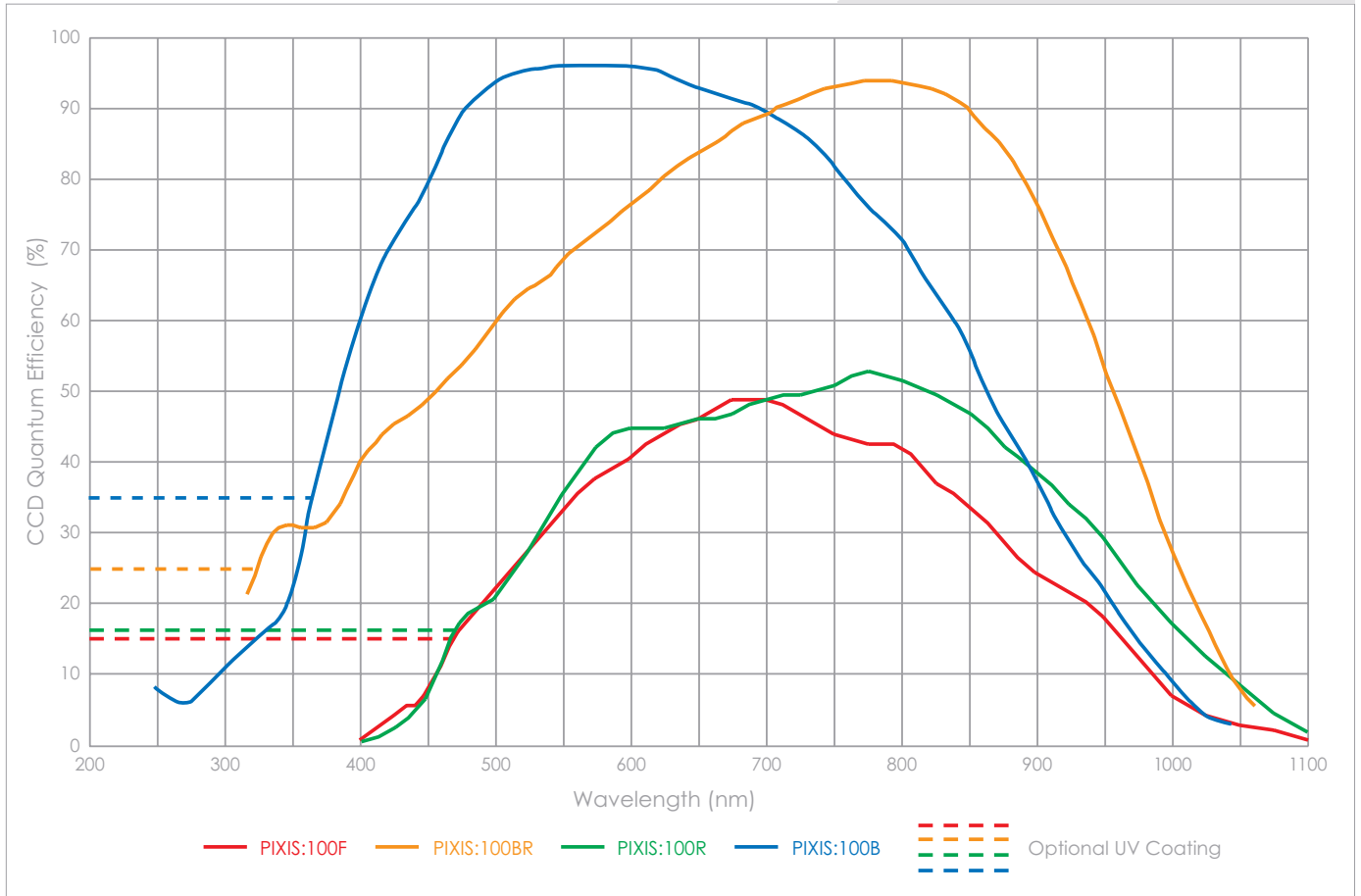
PIXIS:100 Specifications

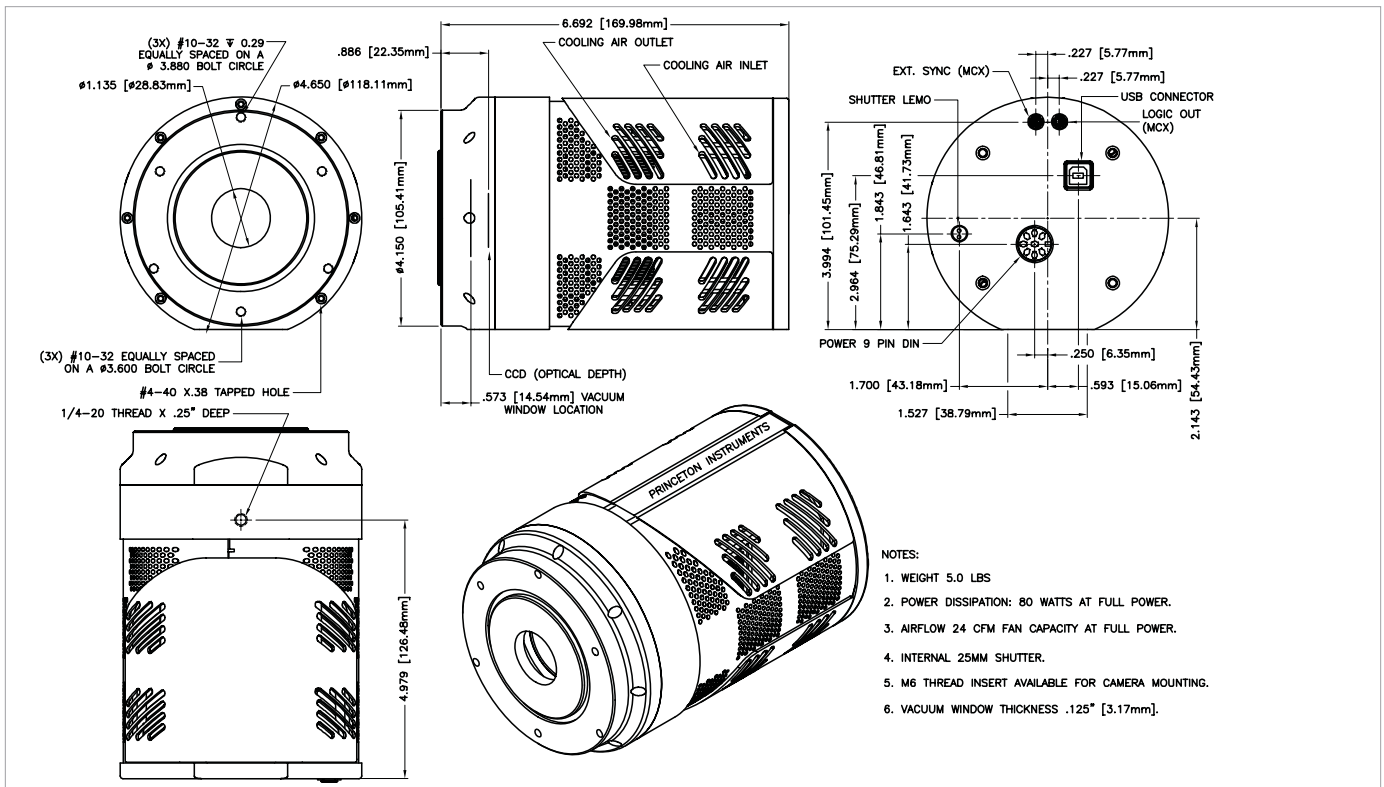
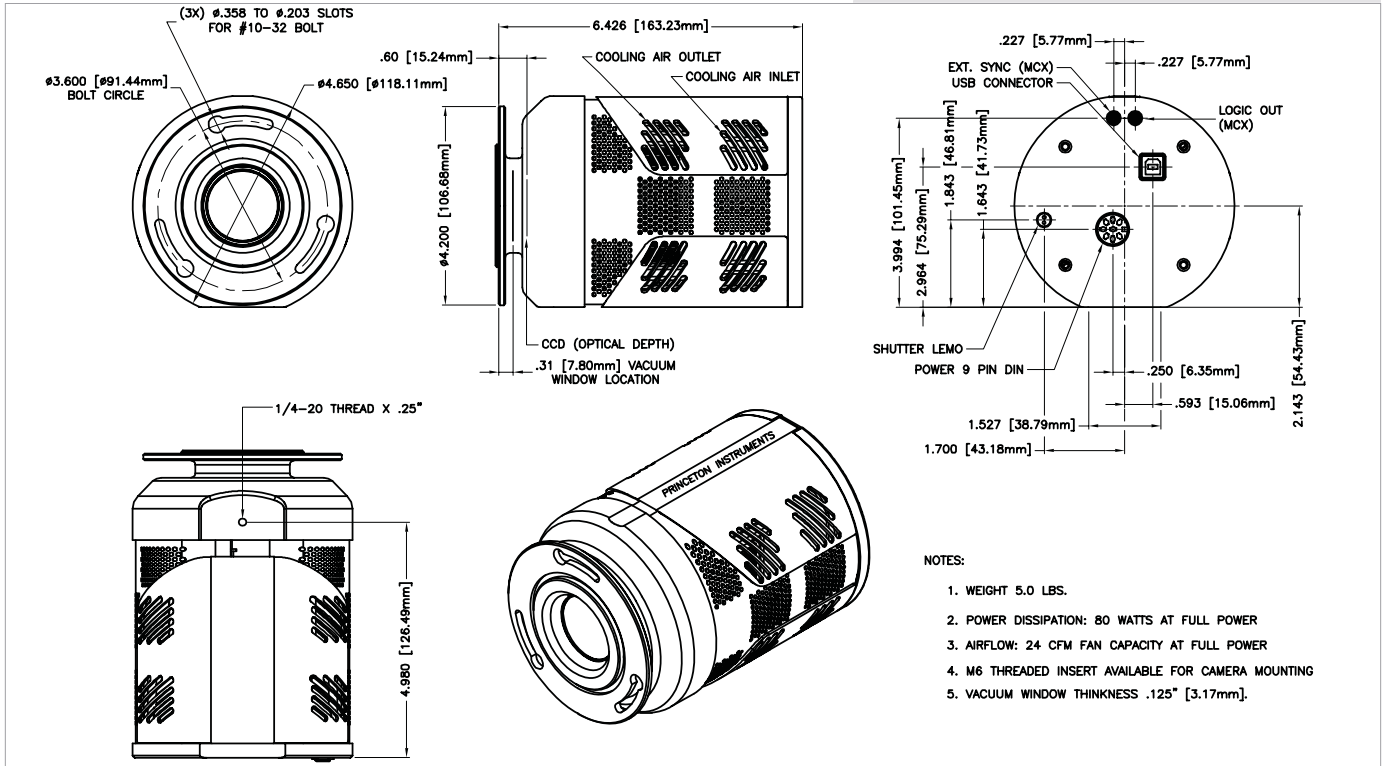
	PIXIS:100F	PIXIS:100R	PIXIS:100B	PIXIS:100BR
CCD Image Sensor	front-illuminated	front-illuminated; deep depletion	back-illuminated	back-illuminated; deep depletion
Dark Current @ -80°C (e/p/s) (-40°C) ¹	Typical Maximum 0.002 0.004 (0.1) ¹ (0.2) ¹	Typical Maximum 0.05 0.1	Typical Maximum 0.0025 0.005	Typical Maximum 0.02 0.04
	Front-illuminated		Back-illuminated	
	Typical	Maximum	Typical	Maximum
System Read Noise @ 100 kHz readout @ 2 MHz readout	2.5 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 adjustable option)	15 μsec/row			
Spectral rate² @ 100 kHz @ 2 MHz @ 2 MHz	65 spectra/sec (FVB) 450 spectra/sec (FVB) 700 spectra/sec (0.5 mm high)			
	All PIXIS:100s			
CCD Image Sensor	Princeton Instruments/Acton exclusive, scientific grade 1, MPP device, optional UV coatings available			
CCD Format	1340 x 100, 20 x 20 μm pixels, 26.8 x 2.0 mm imaging area			
	Minimum		Typical	
Spectrometric Well Capacity High Sensitivity High Capacity	250 ke- 800 ke-		300 ke- 1 Me-	
Deepest Cooling Temperature	-80°C (-35°C) ¹		-80°C (-40°C) ¹	
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 Specifications in parenthesis are for PIXIS:100C model only. All others are the same as the PIXIS:100F.

² Typical spectral rates using custom timing modes.





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