

## PIXIS:100

1340 x 100 CCD array | 20 x 20- $\mu$ m pixels | Deep depletion



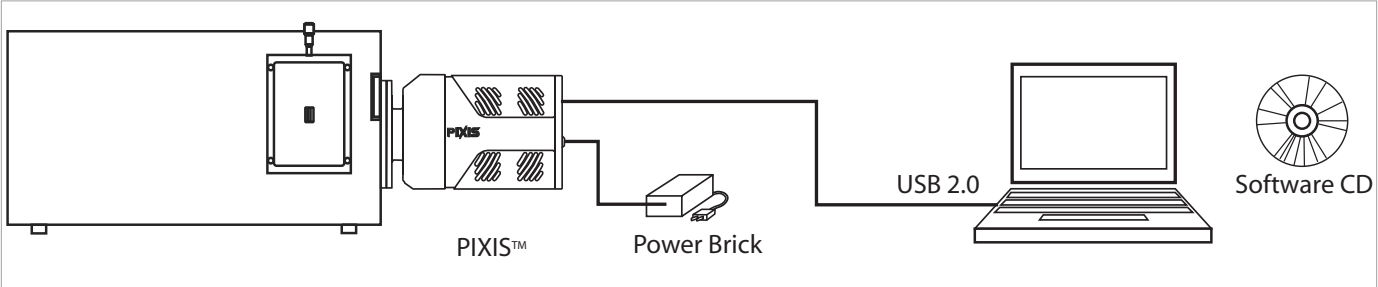
The Princeton Instruments PIXIS:100R is a fully integrated system with permanent vacuum / deep cooling. It uses a high-performance, front-illuminated, spectroscopic-format CCD designed exclusively for Princeton Instruments. The CCD incorporates deep-depletion technology to extend sensitivity in the near infrared. 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
<b>Permanent vacuum</b>	Guaranteed temperature performance and worry free operation with all metal seals
<b>Deep thermoelectric cooling / air</b>	Operate without the need for circulating liquid or an additional power supply
<b>Compact design</b>	Complete system integrated into a small footprint Ideal for integration into applications where space is at a premium
<b>Exclusive CCD architecture</b>	Provides industry's lowest-noise CCD system
<b>1340 x 100 CCD array</b>	Exclusive format provides superior resolution over industry-standard "1024 pixel" format
<b>2-mm chip height</b>	Ideal for rapid spectral acquisition
<b>Software-selectable amplifiers</b>	Exclusive feature provides choice of superior sensitivity or superior SNR
<b>Dual-digitizer option</b>	Multiple-speed digitization allows complete freedom to select between "slow operation" for low noise and highest SNR or "fast operation" for rapid spectral acquisition
<b>Single optical window</b>	No losses due to multiple optical surfaces
<b>Standard spectrometer mount</b>	Easily interfaces with most spectrometers
<b>TTL input and output</b>	External trigger input with programmable polarity TTL output with exposure or readout monitor
<b>USB 2.0 interface</b>	Seamless, plug-n-play connection to PC notebooks and desktops, no need for external control box or installing PCI cards Easy OEM integration
<b>Renowned WinSpec software</b>	Offers easy-yet-sophisticated Windows® GUI controls Automates data acquisition, analysis and display
<b>PICAM® for VB, C, C++ and Scientific Imaging Toolkit for LabVIEW™</b>	Respected application program interface provides a universal interface to all Princeton Instruments/Acton hardware

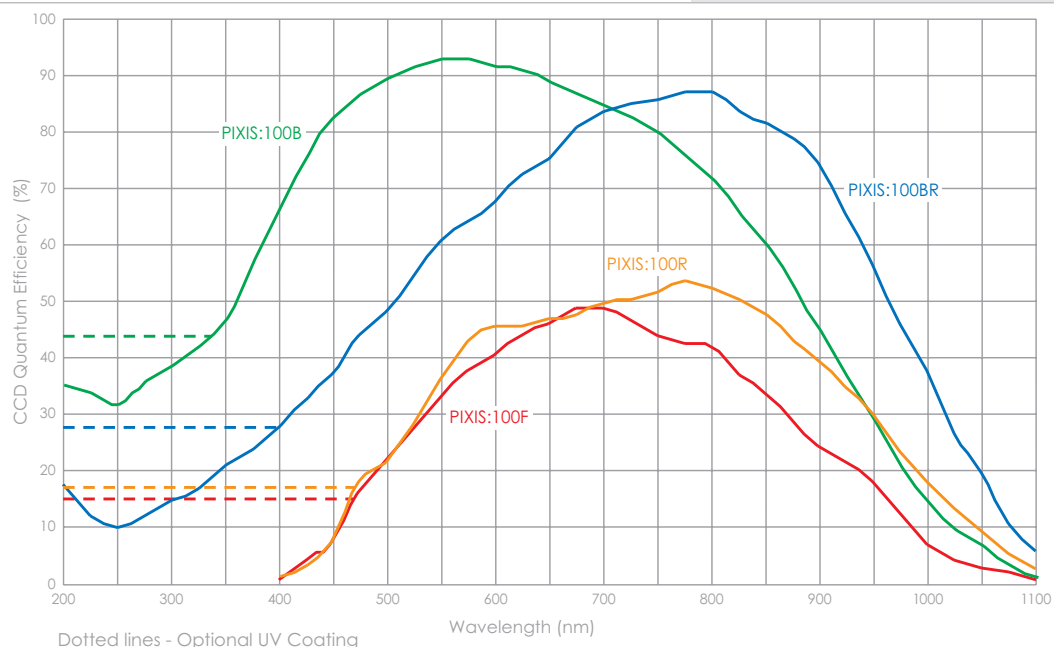
PIXIS:256 Specifications

	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) <sup>1</sup>	Typical 0.002 (0.1) <sup>1</sup>	Maximum 0.004 (0.2) <sup>1</sup>	Typical 0.05	Maximum 0.1	Typical 0.0025	Maximum 0.005	Typical 0.1	Maximum 0.2
	Front-illuminated				Back-illuminated			
	Typical				Maximum			
System Read Noise @ 100 kHz readout @ 2 MHz readout	2.5 e-rms 12 e-rms				4 e-rms 15 e-rms			
Vertical shift rate	15 μsec/row				30 μsec/row			
Spectral rate @ 100 kHz @ 2 MHz @ 2 MHz	61 spectra/sec (FVB) 505 spectra/sec (FVB) 1000 spectra/sec (1.0 mm high)				56 spectra/sec (FVB) 387 spectra/sec (FVB) 1000 spectra/sec (0.5 mm high)			
	All PIXIS:100s							
	Princeton Instruments/Acton exclusive, scientific grade 1, MPP device, optional UV coatings available							
	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	-75°C (-35°C) <sup>1</sup>				-80°C (-40°C) <sup>1</sup>			
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.  
<sup>1</sup> Specifications in parenthesis are for PIXIS:100C model only. All others are the same as the PIXIS:100F.



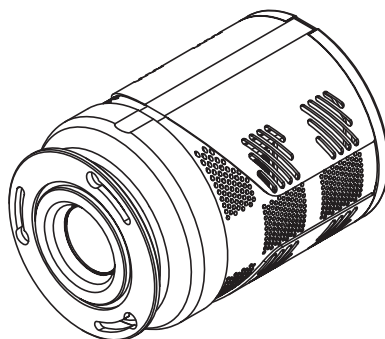
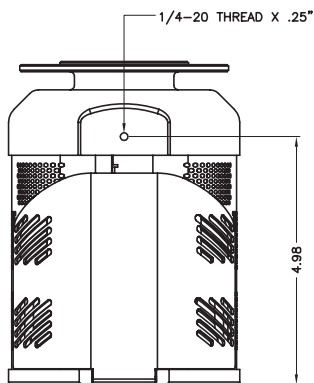
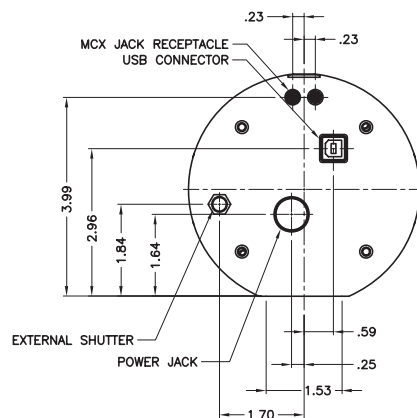
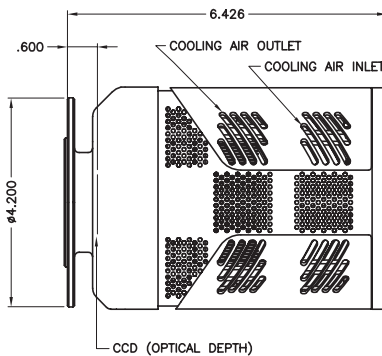
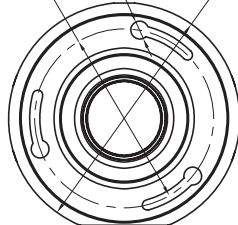
## QE Curve



## PIXIS:100 Drawing

(3X)  $\phi$ .358 TO  $\phi$ .203 SLOTS  
FOR #10-32 BOLT

$\phi$ 3.600 B.C.  $\phi$ 4.650



### NOTES:

1. WEIGHT 5.0 LBS.
2. POWER DISSIPATION: 90 WATTS AT FULL POWER
3. AIRFLOW: 24 CFM FAN CAPACITY AT FULL POWER
4. M6 THREADED INSERT SUPPLIED WITH CAMERA

**Princeton Instruments**

**PIACTON**

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