



# TELEDYNE PRINCETON INSTRUMENTS

Everywhereyoulook™

Part of the Teledyne Imaging Group



## PIXIS: 256

1024 pixel CCD array

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. The PIXIS: 256 uses high performance, spectroscopic-format industry standard CCDs, with deep cooling to provide the lowest dark charge. The 1024 array with 6.7 mm chip height and 26 mm spectral coverage is ideal for multistribe spectroscopy and maximum light collecting area. This detector provides excellent response from the vacuum UV to the NIR, and with its proven system reliability, is ideal for OEM and laboratory applications.

FEATURES	BENEFITS
Permanent vacuum	Our all-metal brazed seals eliminate the outgassing that occurs with epoxy seals and allows us to offer the industry's only lifetime vacuum guarantee
Deep thermoelectric cooling	Low temperature operation minimizes dark current without the need for liquid nitrogen
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
Industry standard 1024 pixel imaging array	High performance at low cost
Open electrode architecture	Provides higher QE than standard front-illuminated sensors
Back-illuminated, deep depletion sensor (BR)	Enhanced NIR response relative to conventional back-illuminated detectors, with extremely low etaloning
Extremely low bin noise	Improves signal-to-noise ratio when binning spectra over multiple rows
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
Compact design	Complete system integrated into a small footprint - NO external controller needed; Ideal for applications where space is at a premium.
TTL input and output and shuttering	External control and triggering
USB 2.0 interface	Plug-and-play operation with desktops or laptops; Optional fiber optic interface for remote operation; Easy OEM integration
<b>Optional:</b> LightField® (for Windows 8/7, 64-bit) Or WinView/Spec (for Windows 8/7/XP, 32-bit)	Flexible software packages for data acquisition, display and analysis; LightField offers intuitive, cutting edge user interface, IntelliCal® and more.
PICAM (64-bit) / PVCAM (32-bit) software development kits (SDKs)	Compatible with Windows 8/7/XP, and Linux; Universal programming interfaces for easy custom programming.

### Applications:

Raman, LIBS, Emission, Absorbance  
Reflectance, Fluorescence, PL/EL



## SPECIFICATIONS

	<b>PIXIS: 256E</b>		<b>PIXIS: 256BR</b>	
Features	Front-illuminated CCD. Open electrode architecture allows for an increased response in the UV compared to standard front-illuminated detectors.		Back-illuminated, deep depletion CCD. High QE in the NIR with minimal etaloning.	
CCD format	1024 x 256, 26 µm x 26 µm pixels with 100% fill factor, 26 mm x 6.7 mm height		1024 x 252, 26 µm x 26 µm pixels with 100% fill factor, 26 mm x 6.6 mm height	
Dark current @ -75°C (e-/p/s)	0.003 (typical)		0.3 (typical)	
System read noise @ 100 kHz readout @ 2 MHz readout	6 e- rms 22 e- rms		6 e- rms 22 e- rms	
Vertical shift rate (software adjustable)	30 µsec/row		15 µsec/row	
	<b>Minimum</b>	<b>Typical</b>	<b>Minimum</b>	<b>Typical</b>
Spectrometric well capacity* Single pixel Binned	200 ke- 500 ke-	300 ke- 800 ke-	400 ke- 750 ke-	500 ke- 1000 ke-
Optional UV phosphor coatings	Enhanced sensitivity for UV operation to below 200 nm			
Deepest cooling temperature	-75°C			
Thermostating precision	±0.05°C across entire temperature range			
Software-selectable gains	<b>High</b> 3 e-/ct	<b>Mid</b> 6 e-/ct	<b>Low</b> 12 e-/ct	
Dynamic range	16 bits			
Nonlinearity @ 100 kHz readout @ 2 MHz readout			< 1 % < 2 %	
Dimensions	Without shutter: 4.65" (118 mm) Ø x 6.43" (163 mm) With shutter: 4.65" (118 mm) Ø x 6.69" (170 mm)			

## SPECTRAL RATE

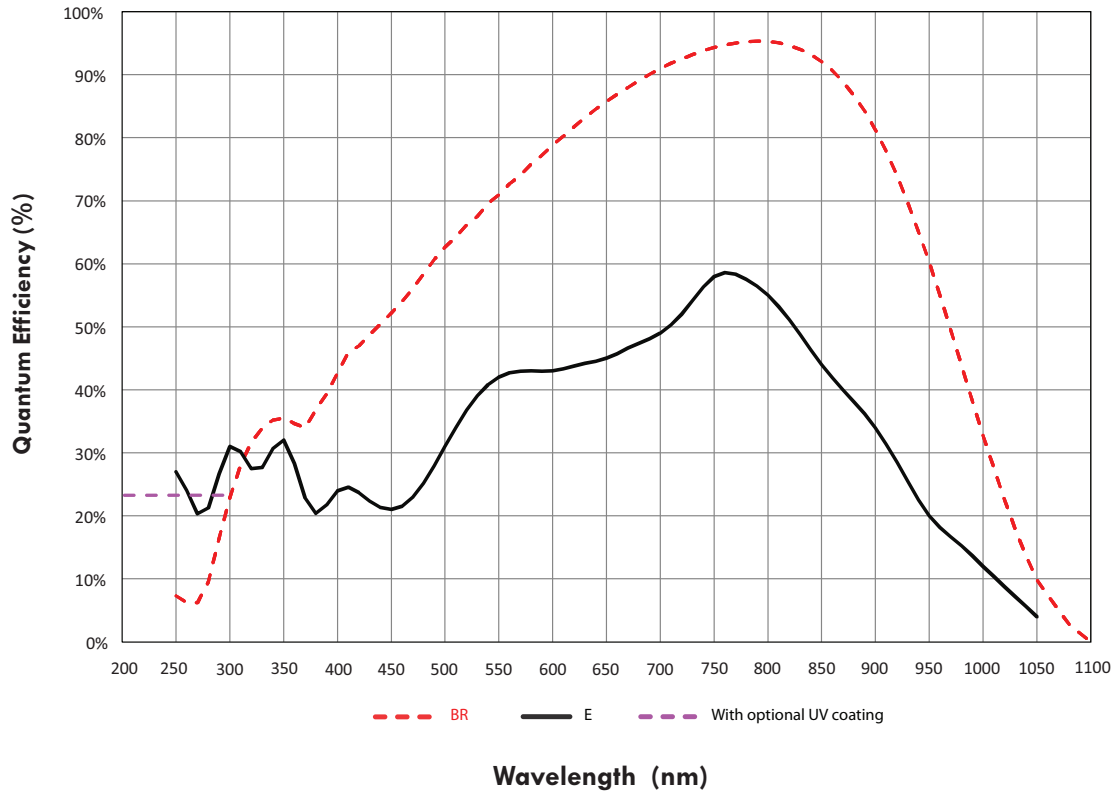
	<b>PIXIS: 256E</b>	<b>PIXIS: 256BR</b>
@ 100 kHz Full Vertical Binning (FVB)	52 spectra/sec	65 spectra/sec
@ 2 MHz Full Vertical Binning (FVB)	118 spectra/sec	190 spectra/sec

All specifications are subject to change.

\*CCD manufacturer's data. Actual full well is determined by the gain selection.



**QE DATA**



**NOTE:**

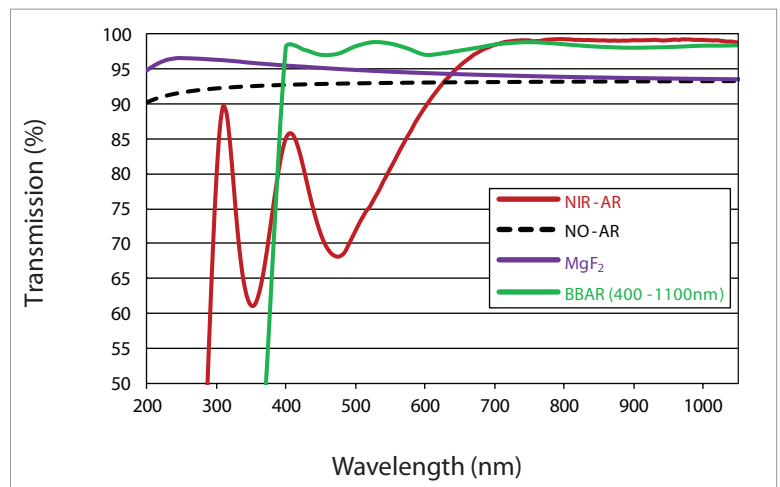
Graph shows typical Quantum Efficiency (QE) data measured at + 25°C. QE decreases at normal operating temperatures. For the best results for your application, please discuss the specific parameters of your experiment with your sales representative.

**VACUUM WINDOW AR COATINGS**

**NOTES:**

- Standard anti-reflection (AR) coating options shown on graph
- Designed by Acton Optics, our BBAR coating offers unmatched performance for 400 nm - 1100 nm
- Custom wedge window options and other AR coatings are also available

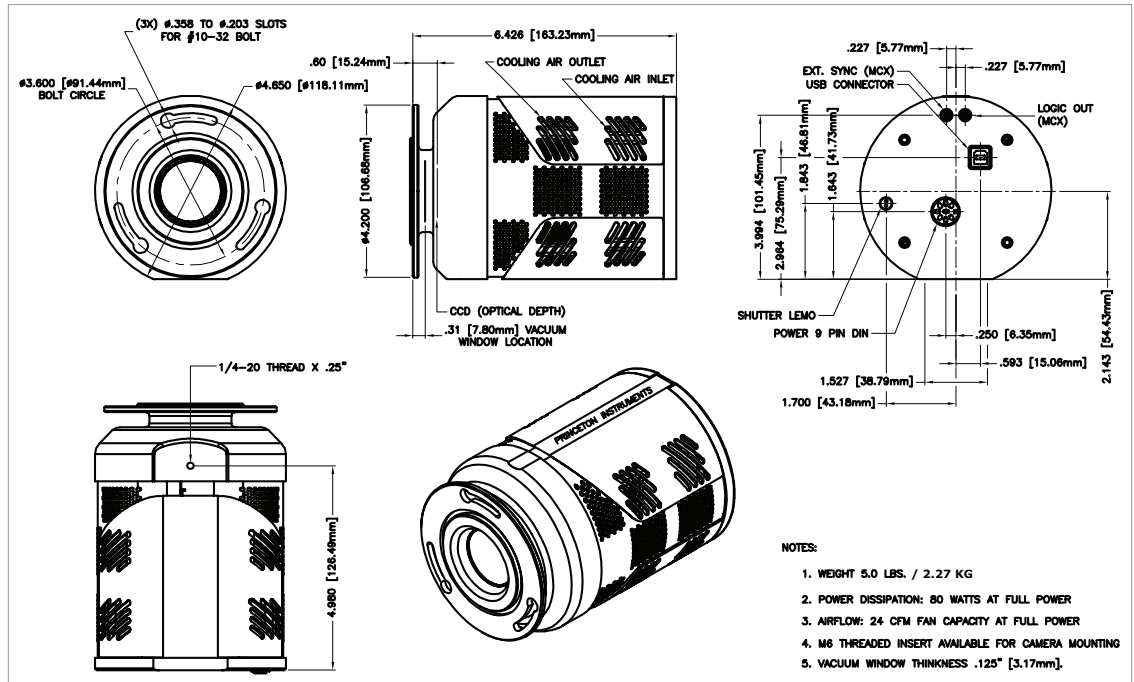
Contact your local sales representative for more information



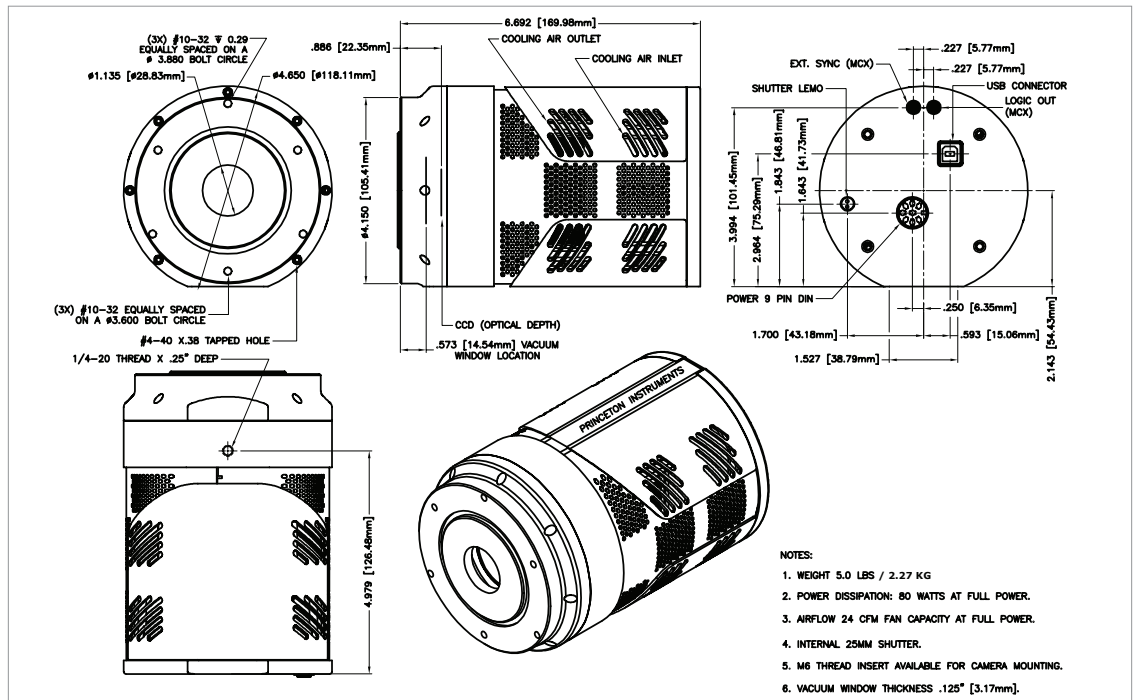


**PIXIS DRAWINGS (AIR COOLED)**

PIXIS with Spectroscopy Mount



PIXIS with Spectroscopy Mount; with Shutter





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## PIXIS DRAWINGS (LIQUID COOLED)

