



PyLoN:256

1024 pixel CCD array

The PyLoN[®]: 256 is a controllerless, cryogenically-cooled CCD camera designed for quantitative scientific spectroscopy applications demanding the highest possible sensitivity. Princeton Instruments has completely redesigned the industry-leading Spec-10 family of cameras to eliminate the external controller, increasing experimental flexibility while further improving the ultralow noise electronics. Liquid nitrogen cooling virtually eliminates dark current, while PyLoN's indium metal seals enhance its vacuum longevity. PyLoN:256 cameras are fully supported by LightField[®], powerful 64-bit data acquisition software, and IntelliCal[™] wavelength and intensity calibration packages. PyLoN features ADC rates of up to 4 MHz, with digital bias stabilization and correlated double sampling for decreased read noise and improved linearity.

FEATURE	BENEFITS
1024 x 256 26 μm pixel array	Inexpensive sensor offers good performance at moderate cost.
Cryogenic cooling to -120°C using liquid nitrogen	Effectively eliminates dark charge, permitting acquisition times from milliseconds to hours.
Open Electrode or Deep Depletion sensor architecture	Choose an Open Electrode camera for moderate sensitivity from the UV to NIR, or Deep Depletion for higher QE in the visible and NIR.
Single fused silica vacuum window	Minimizes reflection losses from UV-IR; Optional AR coatings & wedge windows are available.
Optional UV phosphor coatings	Extends CCD sensitivity to below 200 nm.
TTL input and output	Allows external control of and triggering by lasers or timing generators.
Kinetics & Custom Sensor modes	Standard on all PyLoN cameras, Kinetics mode allows microsecond-resolved kinetic spectral acquisition, while Custom Sensor mode increases control over the camera readout, permitting spectral rates of over 1000 fps.
Data acquisition rates of 50 kHz to 4 MHz	Up to 4X as fast as its predecessor - Choose low speed digitization to reduce noise, or high speed for rapid spectral acquisition.
Optional end-on and all-directional dewar mounts	Allows for easy and flexible camera positioning.
GigE data interface	Reliable data transmission over 50 m for remote operation.
Optional: 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 Spectroscopy, Absorbance,
Emission, Fluorescence and
Reflectance Spectroscopy

	PyLoN:256E	PyLoN:256BR
Features	Front-illuminated CCD. Open electrode architecture improves sensitivity over conventional front-illuminated devices. No etaloning.	Back-illuminated, deep depletion CCD. High QE in the NIR with minimal etaloning.
Typical dark current @ -120°C	<1* e ⁻ /pixel/hour	8 e ⁻ /pixel/hour
CCD format	1024 x 253 26 μm x 26 μm pixels with 100% fill factor	1024 x 252 26 μm x 26 μm pixels with 100% fill factor
Imaging area	26.6 x 6.6 mm (optically centered)	
Typical system read noise @ 50 kHz @ 1 MHz	5 e ⁻ rms (single pixel), 7 e ⁻ rms (FVB) 15 e ⁻ rms (single pixel)	
Operating temperature	-80°C to -120°C with ±0.05°C thermostating precision	
Typical Spectrometric well capacity	> 700 ke ⁻	
ADC rates	50, 100, 200, 500 kHz and 1, 2, 4 MHz; 16 bits	
Non-linearity	< 1% @ 100 kHz	
Vertical shift times	10-40 μsec/row (programmable)	
Typical analog gain	2, 4, 8 e ⁻ /ADU	
Data interface	Gigabit Ethernet	
I/O signals	Trigger In, TTL Out, Readout Monitor, Expose Monitor, Shutter Monitor	
Optical mount	Princeton Instruments' Acton spectrometer adapter with optional 40 mm shutter	
Operating environment	+5°C to +30°C, non-condensing atmosphere	
Certification	CE	
Dimensions Weight	14.6 inches (371 mm) x 8.2 inches (208 mm) x 10.5 inches (267 mm) (H x W x D) Approximately 10 lbs (4.5 kg)	

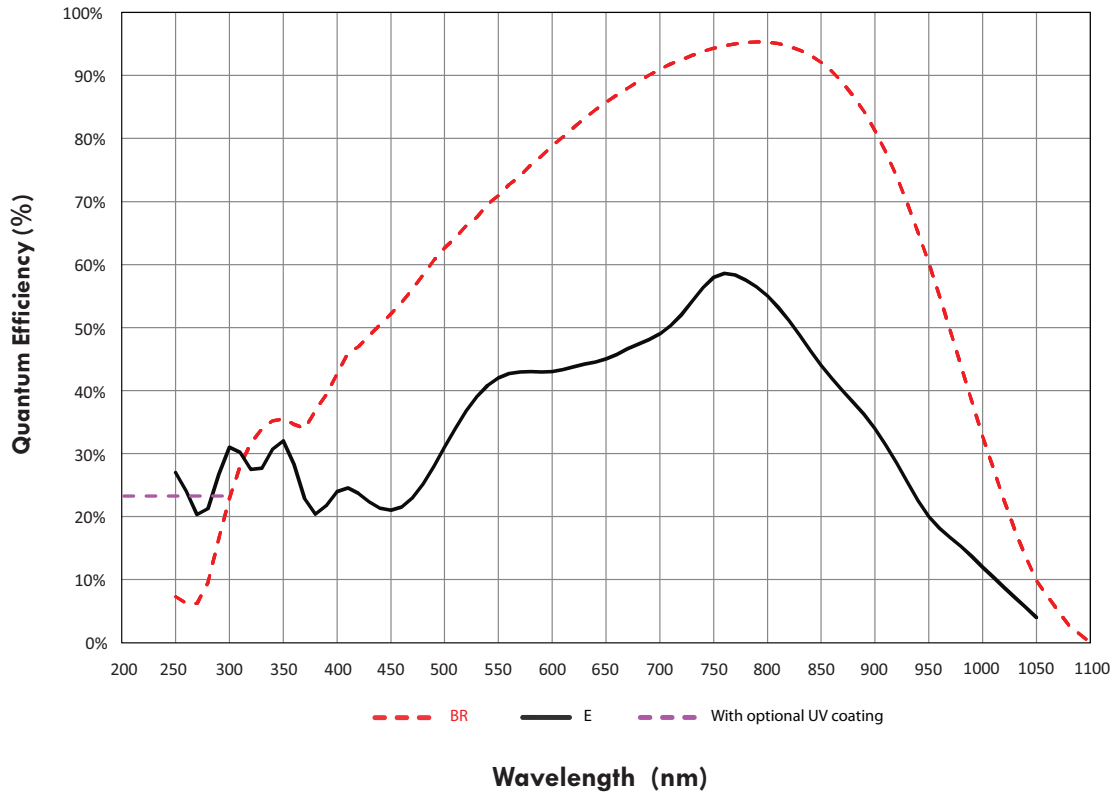
* Limited by cosmic ray background

All specifications are subject to change.

SPECTRAL RATES

@ 4 MHz Full Frame	11.5 fps
@ 4 MHz Full Vertical Bin	285 fps
@ 4 MHz, 20 rows (0.52 mm high) Custom Chip	1850 fps

QE DATA



NOTE:

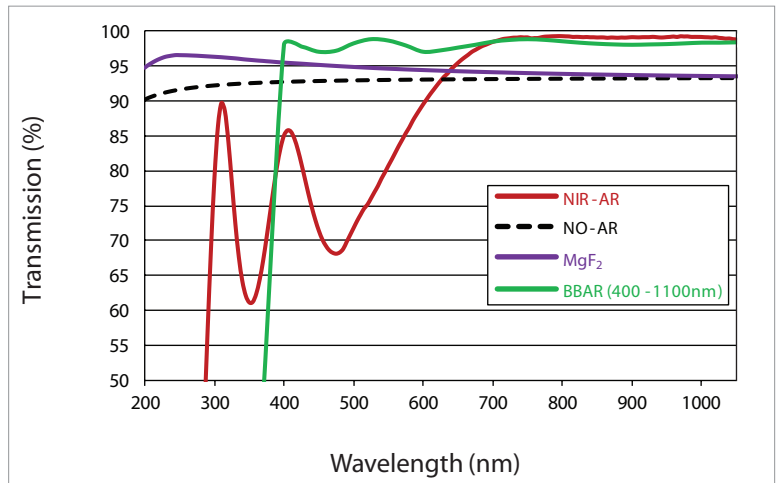
Graph shows typical Quantum Efficiency (QE) data measured at + 25°C. QE decreases at normal operating temperatures. For the best results for your application, please discuss the specific parameters of your experiment with your sales representative.

VACUUM WINDOW AR COATINGS

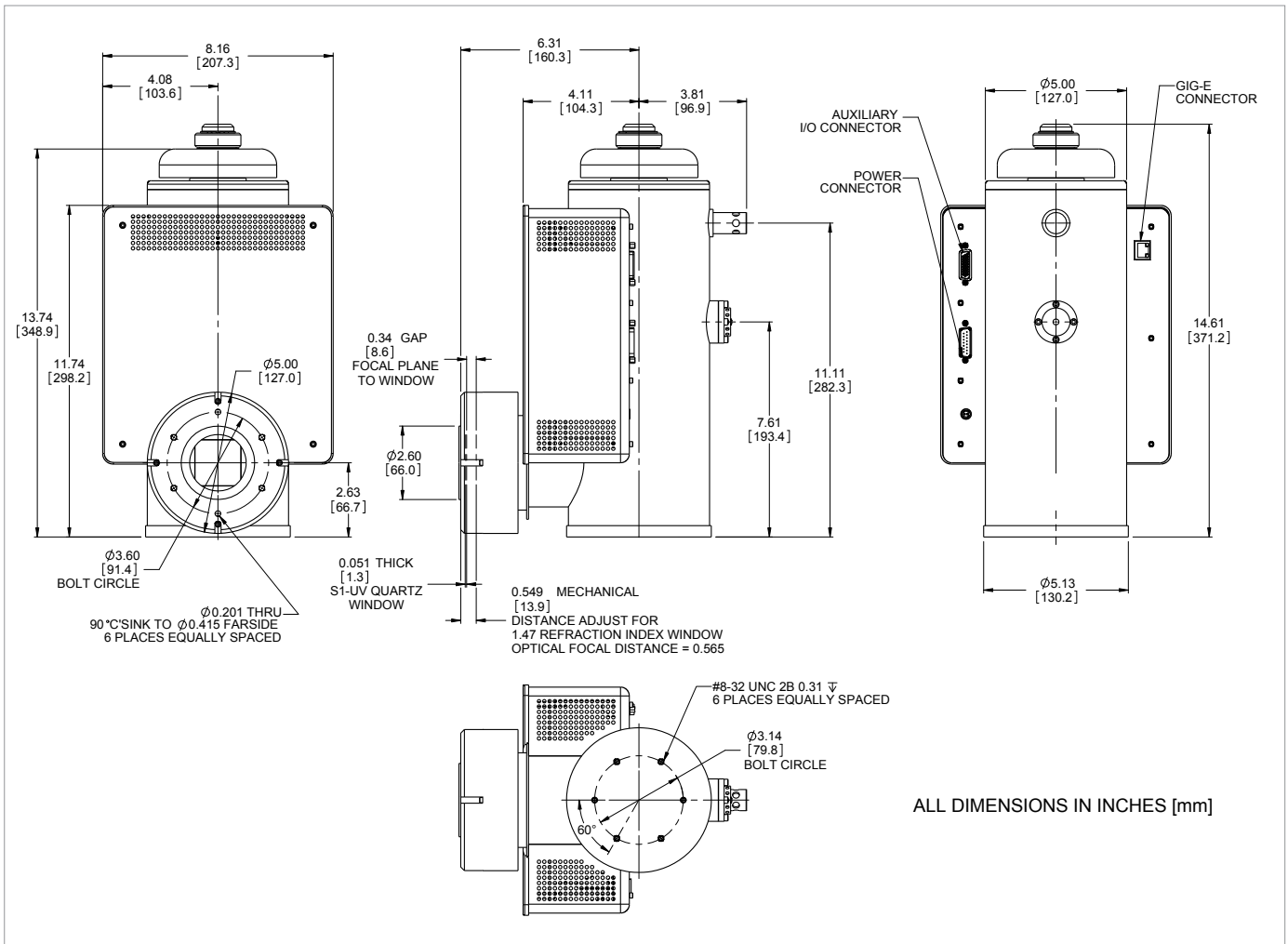
NOTES:

- 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



PyLoN without shutter



PyLoN with 40 mm shutter

