

Extremely Low Noise Liquid Nitrogen Cooled Cameras

The PyLoN®-IR is a controllerless, cryogenically-cooled photodiode array designed for quantitative scientific spectroscopy applications demanding the highest possible sensitivity. PyLoN-IR replaces the OMA V InGaAs detector linear photodiode array camera and is the ideal camera for high-performance, near-infrared and SWIR spectroscopy. Two models are available with spectral coverage from 800 nm up to 2.2 μm . PyLoN-IR is responsive in UV and visible with high sensitivity from 800 nm to 1.7 μm or 1.0 to 2.2 μm . This InGaAs detector offers 16-bit digitization and leads the industry with the fastest spectral rate (up to 6600 spectra/sec) and lowest system read noise. PyLoN-IR applications include NIR Raman and photoluminescence spectroscopy. Liquid nitrogen cooling greatly reduces dark current, while PyLoN's indium metal seals enhance its vacuum longevity. PyLoN-IR is supported by Princeton Instruments LightField® 64-bit software as well as PI's Intellical™ wavelength calibration system.

PyLoN-IR:1024

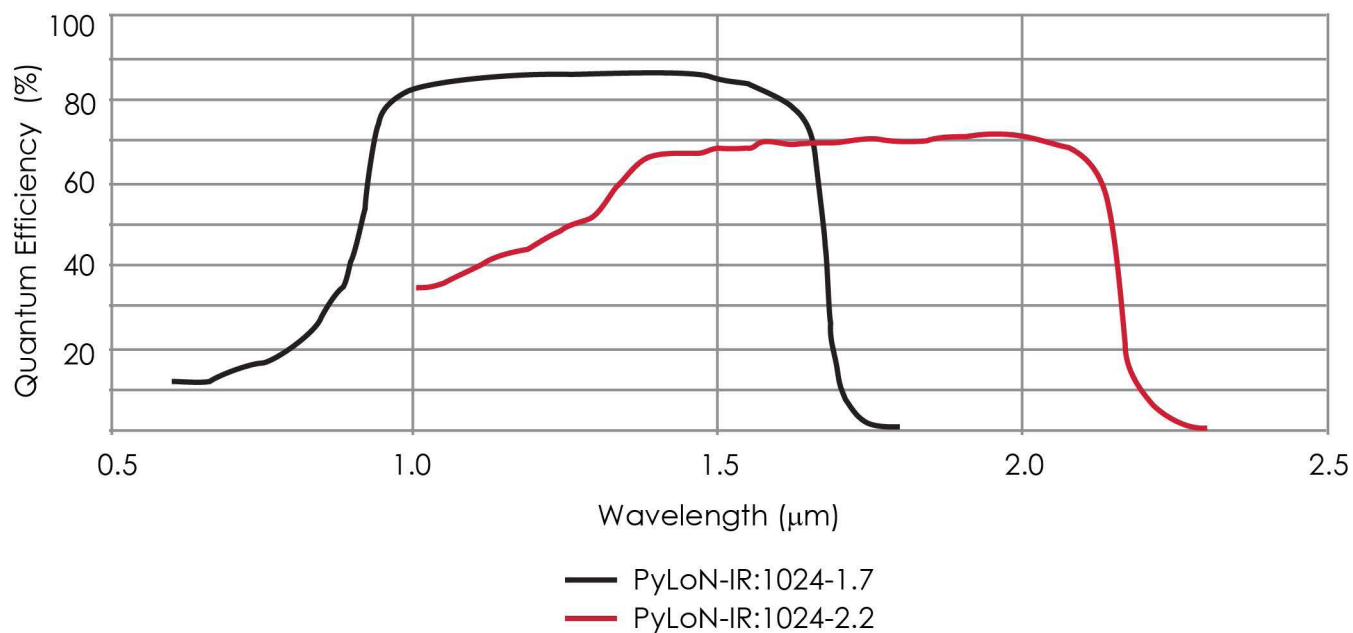


Features	Benefits
High sensitivity from 0.8 to 1.7 μm or 1.0 to 2.2 μm	Ideal for spectroscopy in SWIR region where CCD detectors are insensitive
1024 x 1 pixel linear photodiode array	26 mm wide linear sensor is ideal for spectroscopy
Cryogenic cooling to -100° C with liquid nitrogen	Effectively eliminates dark charge, permitting acquisition times from milliseconds to hours
Dual mode readout	Choose between high sensitivity and high dynamic range readout
External shutter control with available connector	For 1.7: Provides integration times from 20 μs to tens of minutes* For 2.2: Provides integration times from 20 μs to tens of seconds*
New! Highest spectral data rate of any deepcooled InGaAs spectroscopy camera	Provides up to 6600 Hz with 2 MHz ADC rate for an 8 MHz pixel read rate
Updated! Cryogenic cold shield	Reduces ambient thermal noise. Redesigned for increased background rejection
TTL input and output	Allows external control of and triggering by lasers or timing generators
Software-selectable system gain settings	High sensitivity setting reduces read noise floor for weak signals, High capacity setting increases dynamic range
Data acquisition rates of 2MHz and 8MHz	8X 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 7, 64-bit) or WinSpec (for Windows XP/7, 32-bit)	Flexible software packages for data acquisition, display and analysis. LightField provides an intuitive user interface, with features that include IntelliCal, hardware time stamping & more.
PICAM/PVCAM SDKs	Universal programming interface for software developers

Specifications

	PyLoN-IR: 1024-1.7	PyLoN: 1024-2.2
Image sensor	Linear InGaAs photodiode array	Linear InGaAs photodiode array
Format	1024 x 1 pixels, 25 μm (W) x 500 μm (H)	1024 x 1 pixels, 25 μm (W) x 250 μm (H)
Spectral range	0.8 - 1.7 μm	.0 - 2.2 μm
Typical system read noise	low gain: 5000 e- high gain: 400 e-	low gain: 6000 e- high gain: 400 e-
Typical dark signal**	low gain: 6.5 ke-/p/s high gain: 5.7 ke-/p/s	low gain: 0.55 Me-/p/s high gain: 0.6 Me-/p/s
Spectral rate	6600 spectra/sec. max	
Typical spectrometric well capacity	low gain: 120 Me-, 100Me- min. high gain: 4.5 Me-, 4 Me- min.	low gain: 110 Me-, 100 Me- min. high gain: 4.1 Me-, 4 Me- min.
Nominal gain	low gain: 2000 e/ct high gain: 75 e/ct	
Response non-linearity	low gain: <1.5% high gain: <2.5%	
Response non-uniformity	typical: +/- 5% max.: +/- 10%	
Digitization	16 bits	
Scan rate	500 kHz and 2 MHz ADC rate @ 4X = 2 MHz and 8 MHz scan rate	
Minimum exposure time	20 μs	
Thermostating precision	+/- 0.05° C across temperature range	
Operating temperature	-50° C to -100° C	
Blemish specifications	<1% defects, minimum of 5 active pixels between any two inactive pixels	<2% defects
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)	

QE Data



NOTE:

Graph shows typical Quantum Efficiency (QE) data measurement at +25°. 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.

PyLoN-IR

