Princeton Instruments

OMA V

The OMA linear photodiode array (PDA) from Princeton Instruments is the ideal sensor for high-performance, near-infrared (NIR) spectroscopy. Three models are available with spectral coverage from 800 µm up to 2.2 µm. This InGaAs detector offers outstanding sensitivity with 16-bit digitization and leads the industry with the fastest spectral rate (up to 1800 spectra/sec), lowest system read noise, and software-selectable amplifiers for either high-sensitivity or high-SNR applications. Typical OMA V applications include NIR Raman, emission, and absorbance spectroscopy. Cryogenic cooling minimizes dark noise for long exposure times.

Applications: NIR spectroscopy

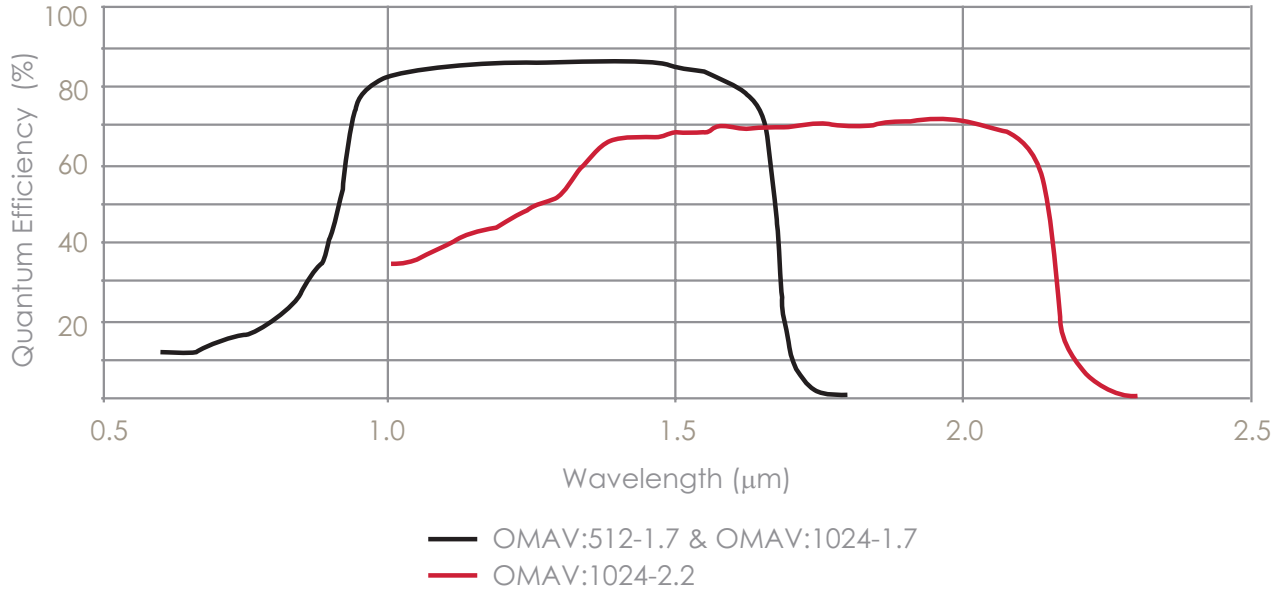
Features	Benefits
Response up to 2.2 µm	Ideal for Imaging in NIR region
Cryogenic cooling	Cools the array from -50°C to -100°C to optimize NIR response and minimize dark noise
Software-selectable amplifiers	Exclusive feature provides choice of superior sensitivity or superior signal-to-noise ratio (SNR)
Electronic shutter	Provides integration times from 20 µsec to many minutes
High spectral data rate	Provides up to 1800 spectra/second with 1-MHz digitization
Spectrometer compatibility	Easy integration with industry-standard Acton spectrometers or other leading third-party spectrometers
"USB 2.0 interface" configuration	Seamless, plug-and-play connection to PC notebooks and desktops Easy OEM integration
"PCI interface" configuration	Industry standard for fast data transfer over long distances
WinSpec and PVCAM®	Offers powerful, easy-to-use set of Windows® GUI controls Automates data acquisition, analysis, and display
Linux® drives and SITK™ plug-in for National Instruments' LabVIEW™	Extends system utility

OMA V Specifications

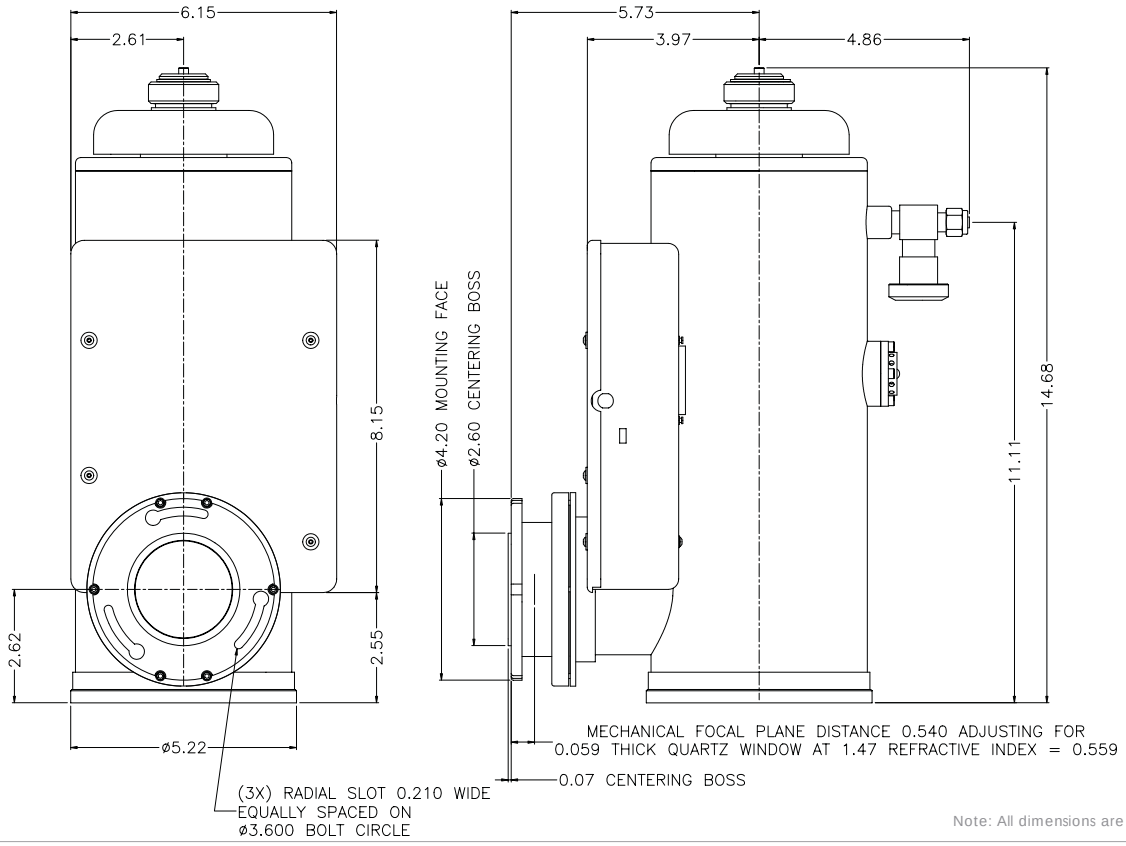
Image sensor	Linear InGaAs photodiode array			
	OMAV:512-1.7	OMAV:1024-1.7	OMAV:1024-2.2	
Format	512 x 1, 50 x 500 µm	1024 x 1, 25 x 500 µm	1024 x 1, 25 x 500 µm	
Spectral Rate	1800 spectra/sec	900 spectra/sec	900 spectra/sec	
	1.7 µm		2.2 µm	
Spectral range	0.8 - 1.7 µm		1.0 - 2.2 µm	
	Minimum	**Typical**	**Minimum**	**Typical**
System read noise **low gain** **high gain**	5000 e- 500 e-	6000 e- 650 e-	7000 e- 520 e-	8000 e- 650 e-
	Typical	**Maximum**	**Typical**	**Maximum**
Dark Signal* **low gain** **high gain**	2.3 ke-/p/s 3.2 ke-/p/s	3 ke-/p/s 5 ke-/p/s	1.2 Me-/p/s 1.5 Me-/p/s	1.8 Me-/p/s 2.0 Me-/p/s
	All OMA-V models			
	Minimum		**Typical**	
Spectrometric Well Capacity **low gain** **high gain**	100 Me- 4 Me-		130 Me- 4.7 Me-	
	Minimum	**Typical**	**Maximum**	
Nominal Gain **low gain** **high gain**	1525 e-/ct 61 e-/ct	1750 e-/ct 65 e-/ct	2000 e-/ct 76 e-/ct	
Response Non-linearity **low gain** **high gain**	<1.5% <2.5%			
	Typical		**Maximum**	
Response non-uniformity	+/- 5%		+/- 10%	
Digitization	16 bits			
Scan Rate	1 MHz			
Minimum Exposure time	20 µsec			
Thermostating precision	+/- 0.05 across temperature range			
Operating Temperature	-50°C to -100°C			
Blemish specifications	Grade A: <1% defects, minimum of 5 active pixels between any two inactive pixels			

Notes: All specifications subject to change.
*includes devices dark current @ -100°C looking at a 77K scene.

QE Curve



OMA V Drawing



Note: All dimensions are in inches.

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