



OMA V:1024-2.2

Cryogenic cooling | 1024 linear array (InGaAs) | 25 x 250- μ m pixels

The OMA V:1024-2.2 linear photodiode array (PDA) from Princeton Instruments is the ideal sensor for high-performance, near-infrared (NIR) spectroscopy from 1.0 to 2.2 μ m. The 1024-element format with 25- μ m-wide pixels provides twice the resolution of industry-standard 512 x 1, 50- μ m-wide-pixel PDAs. This InGaAs detector offers outstanding sensitivity with 16-bit digitization and leads the industry with the fastest spectral rate (900 Hz), 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.

Features	Benefits
1024 x 1 array	Twice the resolution of industry-standard 512 x 1 format
25 x 250- μ m pixels	Smaller pixels provide high resolution while maintaining well capacity
Response from 1.0 to 2.2 μ m with >65% peak quantum efficiency	Excellent NIR sensitivity for demanding spectroscopy applications
Cryogenic cooling	Cools the array from -50 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 μ sec to many minutes
High spectral data rate	Provides 900 spectra/second with 1-MHz digitization
Spectrometer compatibility	Easy integration with industry-standard Acton Research SpectraPro® 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® drivers and SITK™ plug-in for National Instruments' LabVIEW™	Extends system utility

Specifications

Sensor	Linear InGaAs photodiode array		
Format	1024 x 1		
Pixel pitch (µm)	25 wide x 250 tall		
	Minimum	Typical	Maximum
Spectrometric well capacity (Me) low gain high gain	100 4	120 4.5	
System read noise (e-) low gain high gain		7000 520	8000 650
Nominal gain (e-/count) low gain high gain	1525 61	1750 65	2000 76
Dark signal* low gain (Me-/p/s) high gain (Me-/p/s)		4.2 3.7	
Response nonlinearity low gain high gain			<1.5% <2.5%
Response nonuniformity			<10%
Blemish specification	Grade A: <1% defects, minimum of 5 active pixels between any 2 inactive pixels		
Digitization (bits)	16		
Scan rate (MHz)	1		
Spectral rate (Hz)	900		
Minimum exposure time (µsec)	20		
Thermostating precision	±0.05°C across entire temperature range		
Operating temperature standard range enhanced option	-50 to -100°C -70 to -120°C		

Note: Specifications are preliminary and subject to change.

* includes device's dark current @ -100°C and ambient background signal @ +25°C



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