Princeton Instruments
a division of Roper Scientific, Inc.

OMA V:512-1.7

Cryogenic cooling | 512 linear array (InGaAs) | 50 x 500-µm pixels

The OMA V:512-1.7 from Princeton Instruments is a 512-element, linear photodiode array (PDA) that is excellent for high-performance, near-infrared (NIR) spectroscopy from 0.8 to 1.7 µm. This InGaAs detector offers outstanding sensitivity with 16-bit digitization and leads the industry with the fastest spectral rate (1800 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
512 x 1 array	Good spectroscopic format with 25-mm spectral coverage
50 x 500-µm pixels	Large pixels provide large full well and high signal-to-noise ratio (SNR)
Response from 0.8 to 1.7 µm with >80% 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 SNR
Electronic shutter	Provides integration times from 20 µsec to many minutes
High spectral data rate	Provides 1800 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	512 x 1		
Pixel pitch (µm)	50 wide x 500 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		 5000 520	 6000 650
Nominal gain (e-/count) low gain high gain	 1525 61	 1750 65	 2000 76
Dark signal* low gain (ke-/p/s) high gain (ke-/p/s)		 15 26	 25 30
Response nonlinearity low gain high gain			 <1% <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)	1800		
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		

OMA V™
PRINCETON INSTRUMENTS

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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