

DU491A 1.7

SPECTROSCOPY



" New InGaAs detector array for Spectroscopy "

Andor's iDus InGaAs detector array system with USB 2.0 connectivity, low noise and high QE in the near infrared wavelength region is the latest addition to our iDus family of spectroscopy optimized detectors.

It boasts a 1024 element 25μ m pitch linear photodiode array (PDA) ideal for NIR spectroscopy and extends the advantages of multichannel detectors with a spectral response from 0.8 to 1.7 μ m.

Coupled to one of Andor's Shamrock spectrograph models, this iDus InGaAs detector array is the ideal tool for NIR spectroscopy applications such as Raman, Emission, Photoluminescence and Absorbance.

- 0.8 to 1.7 μm
- Peak QE of >70%
- Min operating temp of -85°C with TE cooling
- Guaranteed hermetic vacuum seal
- Simple USB 2.0 Connection
- Single window design
- 25 x 500 μm pixel size
- Andor Solis software
- Software selectable output amplifiers

- ... Operating wavelength range
- ... High detector sensitivity
- \ldots Reduced dark signal without the aggravation or safety concerns associated with LN_2
- ... Optimizes sensor performance (through higher QE and lower dark current) and ensures that this performance is retained year after year
- ... USB connection direct from back of the camera no controller box
- ... Delivers maximum photon throughput
- ... Optimised pixel size for high dynamic range and resolution
- ... Friendly Windows user interface offers system integration, automation and advanced data manipulation facilities
- ... Offers user to optimize operation with choice of High Dynamic Range (HDR) or High Sensitivity (HS) modes of operation

Active Pixels	1024
Pixel Size (W x H; μm)	25 x 500
Pixel Well Depth ⁺¹ (Me ⁻ , typical) HDR [HS]	130 [5]
Read Noise ⁺² (e [.] , maximum) HDR [HS]	10000 [1000]
Max spectra per second	97
Readout Rate per pixel KHz (µs)	100 (10)





Quantum Efficiency @ Room Temperature*3



Dark Signal

The "Dark Signal" of the sensor is made up from two sources: dark current of the sensor and black body emissions from the surroundings and along the optical path. The graph immediately below shows the Dark Signal level with varying ambient temperatures. Liquid cooling was used through the camera head and target to keep them both at the same temperature. Note that the temperature of the coolant should never fall below the dew point for the environment. Water cooling is always recommended for these systems as air cooling can cause the temperature of the camera body to rise to over 40°C.





System Character	istics								
Dark Signal (ke-/	oixel/second at -70°C) •	4 6200							
Sensitivity	(e-/count) typical value	S	HDR	HS					
		@ 100KHz	3000	100					
Mi	nimum Exposure (µs) •	• 5 1.4							
	Camera window typ	e Single quartz	window						
Noise				c.	uctom Do	adaut			
				3	ystem Re Typical	Ma	NOISe -		
	High	Sonsitivity Modo	(UC)		700	11/10/			
	High Dyn	amic Range Moc	(113) 1e (HDR)		8000	1	0000		
	ingi e ji				0000		0000		
 Temperatures (°C))								
					Туріса	l Minir	mum Tem	peratures	
			With PS-24 Wit		With	n PS-25			
Air cooled (ambient air @ 20°C)			-60°(°C -70°)°C * 6	_		
	Water cooled using (Chiller (@ 10°C, 0).75 l / m	in)	-75°(С	-{	35°C	
• External Trigger On receipt of an external trigger pulse, the camera will be fully responsive to light (indicated by a high Fir				dicated by a high Fire					
	pulse output) between 2.8 μ S and 3.0 μ S later								
Operating & Stora	ae Conditions								
J	Opera	ting Temperature	9			0°C to	30°C am	pient	
	Relativ	ve Humidity				< 70%	(non-cond	densing)	
	Storag	ge Temperature				-25°C	to 55°C		
Computer Require	ements								
	Minimum:								
 800MHz Pentium + 256Mbytes RAM 									
	• Minii	mum of 25MB free	e hard dis	sc to i	nstall soft	ware			
• USB 2.0									
Recommended:									
 2.4GHz Pentium (or better) + 512 Mbytes RAM 									



iDUS InGaAs

DU491A 1.7

Dimensions



NOTE: There are two mounting holes (1/4-20UNC), one located on the top of the CCD head and one on the bottom. They are positioned centrally at a distance of 22mm from the front of the front face.





SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.

Notes

- ♦1 At exposures below 20 microseconds well depth will be reduced by approximately 1/3 of typical value stated
- ♦ 2 Noise is measured on a single pixel
- ♦ 3 Quantum efficiency of the CCD sensor is measured by the sensor manufacturer.
- ♦4 Measured using 10°C water and 10°C target
- ◆5 The InGaAs sensor starts to 'open' to light up to approximately 1uS before the rising edge of the Fire pulse. It then starts to 'close' to light up to 1uS before the falling edge of Fire. This ensures that the camera is 100% responsive by the time the Fire pulse has risen and closed by the falling edge. These figures only need to be taken into account for extremely short exposures.
- ♦6 Using a PS-25 power supply in "Deep Cooling" mode is designed for water cooling only. It may, however, be possible to use this PS-25 power supply with air cooling depending on the ambient air temperature. Typically the ambient air temperature must remain below 20°C to dissipate the extra heat generated in this mode of operation.

Ordering Information

To order the camera required, please quote the following model number:

DU491A-1.7 1024 pixels, 25 μ m pitch with a 1.7 μ m cut-off wavelength

- The DU491A-1.7 is supplied with the following:
 - PS-24 Power supply
- The DU491A-1.7 also requires the following software options:
 - Andor Solis (S) A ready-to-run Windows 2000 or XP-based package with rich functionality for data acquisition and processing.
 - Andor SDK A DLL driver and software development kit that let you create your own applications for the Andor Camera. Available for Windows 2000 or XP and Linux.
- The following accessories are available for use with the DU491A-1.7:

PS-25	Switchable power supply for optimum air or water cooling
P25 Shutter	Prontor 25mm shutter
SD-166	Shutter Driver Box
SR-ASZ-0033	SR-500/SR-750 CCD Flange for InGaAs detector
SR1-ASZ-8044	SR-163 CCD Flange for InGaAs detector
XW-RECR	Re-circulator for enhanced cooling performance

Need more information? Please contact us at:					
International Office	US Office	Japanese Office	Chinese Office		
Phone +44 28 9023 7126	Phone 800.296.1579	Phone +81 3 3511 0659	Phone +86-10-5129-4977		
Fax +44 28 9031 0792	Fax 860.290.9566	Fax +81 3 3239 8264	Fax +86-10-6445-5401		