

### Features

#### NIR enhanced front-illuminated sensor

Provides the ultimate performance options with absolutely no etaloning

#### Peak QE of up to 60% @ 750nm

Optimized for VIS-NIR detection.

#### Single window design

Ensures maximum photon throughput

#### Ultravac™ guaranteed hermetic vacuum technology

Optimizes sensor performance (through lower darkcurrent) and ensures that this performance is guaranteed for years to come! No maintenance required

#### Guaranteed air cooling performance

Air cooling to -50°C at ambient of up to +40°C and -60°C at ambient of up to +25°C. No water cooling required

#### Plug & Play USB 2.0 Connection

USB connection directly from the back of the camera - no controller box or card required (unlike Firewire)

#### Ease of integration

The combination of an O-ring interface with four securing points allows camera to be attached to a wide range of optical systems

#### Ruggedized shake-proof connectors

Ensures reliable long-term system integration

#### 16-bit digitization

Available at readout speeds ranging from 35kHz to 1.48MHz

#### SDK available for Windows & Linux

Enables support of Labview, C/C++ (32 & 64-bit) & Visual Basic through Windows interface. C/C++ also available for Linux

## “Compact, Research-grade OEM Spectroscopy camera”

### Benefits

Andor's new spectroscopy camera designed for OEMs with ease of integration in mind.

The combination of high NIR sensitivity (with absolutely no etaloning), 26.6mm x 3.2mm image area, Andor's renowned no maintenance Ultravac™ cooling and USB 2.0 connectivity ensure high performance & reliability.



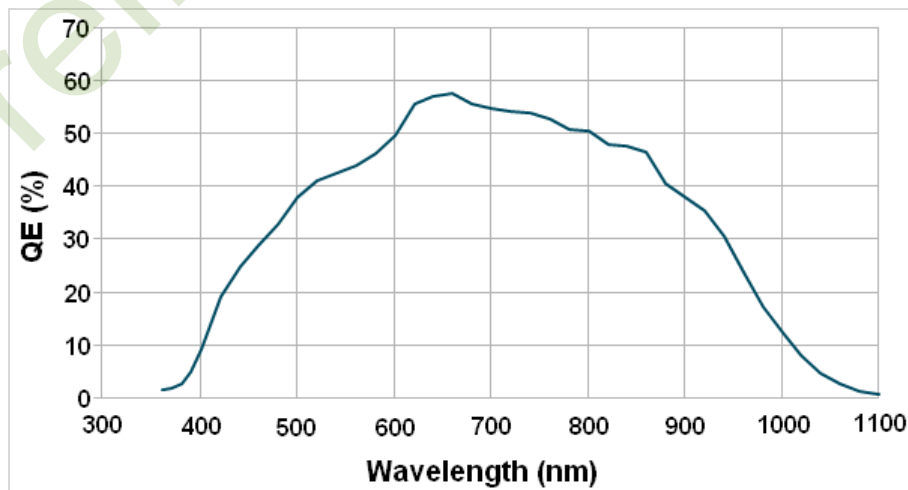
### Applications

The optimum camera for a wide range of VIS-NIR spectroscopy techniques such as Raman, Fluorescence.

#### Camera overview

Active Pixels* <sup>1</sup>	1650 x 200
Pixel Size (W x H; μm)	16 x 16
Image Area (mm)	26.6 x 3.2
Active pixel area well depth (e <sup>-</sup> , typical)	75000
Output register saturation (e <sup>-</sup> , typical) * <sup>2</sup>	500000
Max Spectra per sec with full vertical binning	> 266
Read Noise (e <sup>-</sup> )	5 @ 35 kHz

#### Quantum efficiency at room temperature



## Technical specifications

### System characteristics

Linearity (% , maximum)* <sup>3</sup>	1
Vertical Clock Speed ( $\mu$ s)	13
Readout speeds	35 kHz, 130 kHz, 400 kHz & 1.48 MHz
Sensitivity ( $e^-$ /count) typical values	9, 4.5, 2.25 at all speeds (software selectable)
Digitization	16 bit at all readout speeds
Camera window type	Single quartz window
Dark current ( $e^-$ /pixel/sec)* <sup>4</sup>	0.1 @ -50°C 0.02 @ -60°C (@ 25°C ambient)

### System Readout Noise (sensitivity of 2.25 $e^-$ /count) \*<sup>5</sup>

	Typical	Maximum
@ 35 kHz	5	7
@ 130 kHz	6	8
@ 400 kHz	10	14
@ 1.48 MHz	25	35

### Operating & storage conditions

Operating Temperature	0°C to 40°C ambient
Relative Humidity	< 70% (non-condensing)
Storage Temperature	-25°C to 50°C

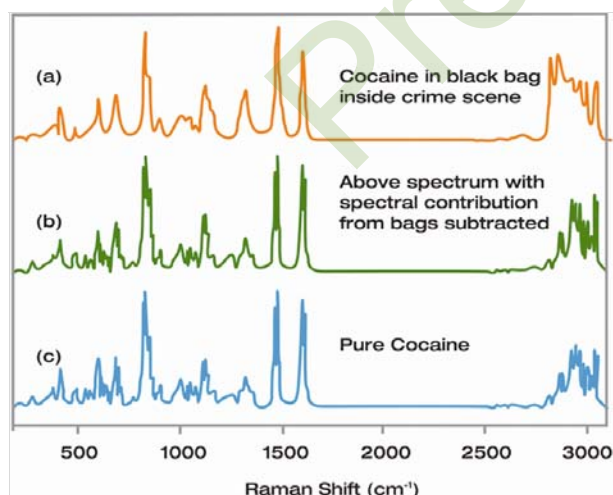
### Power requirements

- 34W maximum at peak cooling with +12V single input

### Computer requirements

To handle data transfer rates of 2.5MHz readout, over extended kinetic series, the following minimum specification is recommended:

- 2.4 GHz Pentium (or better) + 1Gbyte RAM
- 32 MB free hard disc to install software
- USB 2.0
- Windows 2000 or better



Forensic spectra of cocaine sample obtained from a real crime scene using Raman spectroscopy.

### Specifications are subject to change without notice

- ◆1 Edge pixels may exhibit a partial response.
- ◆2 The CCD output saturation is dependent upon the sensitivity setting & binning mode selected.
- ◆3 Linearity is measured from a plot of counts vs. signal up to the saturation point of the system. Linearity is expressed as a percentage deviation from a straight line fit.
- ◆4 The dark current measurement is averaged over the CCD area excluding any regions of blemishes.
- ◆5 System Readout noise is for the entire system. It is a combination of CCD readout noise and A/D noise. Measurement is for Single Pixel readout with the CCD at a temperature of -50°C and minimum exposure time under dark conditions.

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

**DR324B-FI Front illuminated device**

### The DR324B can be supplied the following options:

- Optional external Power Supply Unit (PSU)
- Lockable USB cable

### The DR324B also required the following software options:

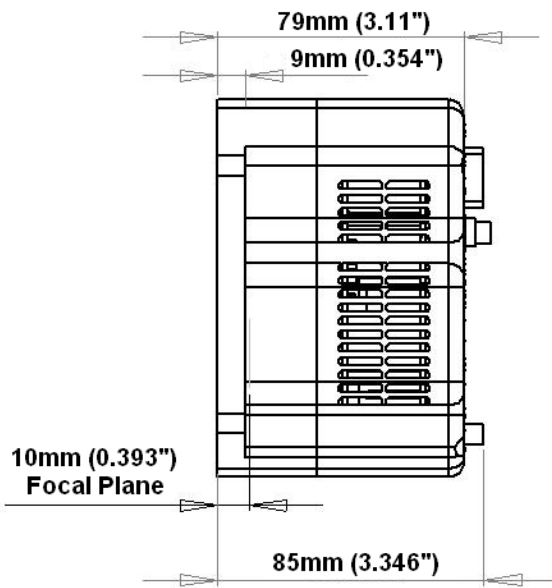
- Andor Solis (s)** A ready-to-run Windows 2000, XP and Vista based package with rich functionality for data acquisition and processing. Compatible with XP & Vista 32 & 64-bit platforms.
- Andor SDK** A DLL driver and software development kit that let you create your own applications for the Andor Camera which you have purchased. Available for Windows 2000, XP or Vista and Linux.

### Need more information? Please contact us at:

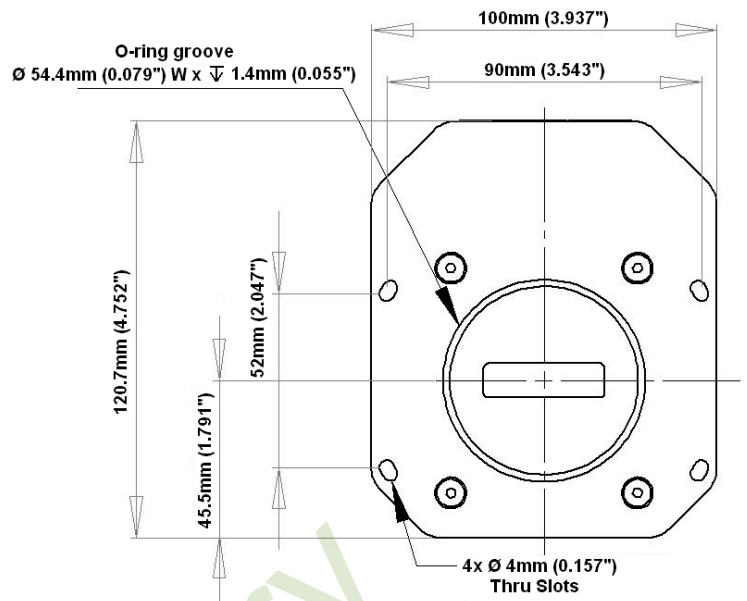
International Office	US Office
Phone: +44 28 9023 7126	Phone: 800.296.1579
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Japanese Office	Chinese Office
Phone: +81 3 3511 0659	Phone: +86-10-5129-4977
Fax: +81 3 3511 0662	Fax: +86-10-6445-5401

## Dimensions

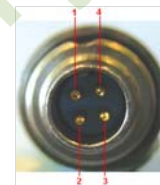
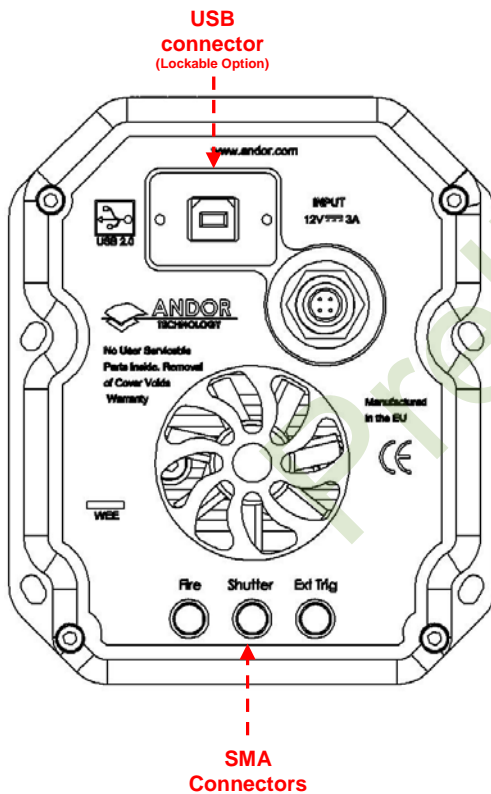
### Side dimensions



### Front dimensions



### Connectors



Power connector pin-outs

Pin	Function
1	+12V
2	+12V
3	GROUND
4	GROUND

Matching socket:  
Tyco T01-0550-S04

### Cable clearances required at rear

Exit Connector Type	Clearance
USB CABLE	60mm (2.36")
RIGHT-ANGLED USB CABLE	30mm (1.18")