

# Nunavut™ Deep Cooled InGaAs Camera

## 900nm to 1700nm Wavelength Range

### Applications:

- Raman Spectroscopy
- Fluorescence Spectroscopy
- NIR Spectroscopy
- Pharmaceuticals
- Medical Diagnostics



Confocal Raman Microscope equipped with the Nunavut™ InGaAs Detector

Nunavut™ series Deep-Cooled InGaAs cameras are designed to meet real-world challenges for best-in-class performance, long-term reliability, compact size and low power consumption. Benefiting from experience manufacturing high-volume optical devices for the telecommunications industry, BaySpec's InGaAs cameras utilize low-cost field proven components. For the first time in instrumentation history an affordable, accurate and ruggedized spectral detector is a reality.

The Nunavut™ Series employs the latest in opto-electrical components to bring you the very best capability at a very affordable price. When matched to the Nunavut™ Raman spectrograph or photoluminescence spectrograph you have a light weight, very high performance, cost effective instrument. Each camera is calibrated in the factory after extensive thermal cycling. The control electronics read out the processed digital signal to extract required information. Both the raw data and the processed data are available to the host.

### Key Features:

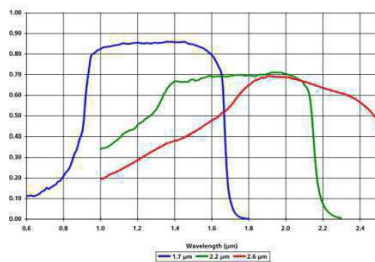
- Real-time spectral data acquisition
- Hermetic/Vacuum-sealing ensures reliable operation over time
- Air Deep-Cooling to -55°C.
- Covers wavelength ranges: 900-1700nm
- Water cooling optional
- Single 12 volt power supply design
- High sensitive (HS) and High dynamic (HD) modes
- USB2.0 output



Ramspec-1064-HR™ High Resolution 1064nm Raman spectrometer with Nunavut™ Deep-Cooled InGaAs Detectors



### Quantum Efficiency (%)



Distributor



where technologies meet solutions

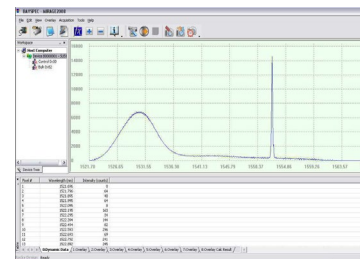
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Parameter	Specification
<b>PERFORMANCE</b>	
Wavelength Range	900-1700nm, customizable
Integration Time	20 $\mu$ s to 75 (HS) or 600 (HD) s
Dimensions	118 x 118 x 162 mm <sup>3</sup>
<b>OPTICS</b>	
Window	single window design
<b>DETECTOR SPECS</b>	
Detector Array	256 X 50 $\mu$ , 512 x 25 $\mu$ or 1024 x 25 $\mu$
Quantum Eff. @ $\lambda$ pk Typ.	85%
Resp. Non-uniformity, Max	$\pm$ 10%
Dark Noise	16 Counts RMS
Saturation Charge (Typical)	5 (HS) or 130 (HD) X 10 <sup>6</sup> electrons
Detector Gain (Typical)	400 (HS) or 15.4 (HD) nV/electron
Detector	InGaAs
Cooling	4 stage TEC (water optional)
A/D Converter	16bit
Power	3.5 A@12 V
<b>COMPUTER</b>	
Data Ports	USB 2.0
Software	BaySpec "Spec 20/20" GUI package
Operating System	Windows 2000 or later
<b>OPERATION &amp; STORAGE</b>	
Operating Temperature	0 to 40°C
Relative Humidity	75% (non condensing)
Storage Temperature	-25 to 60°C

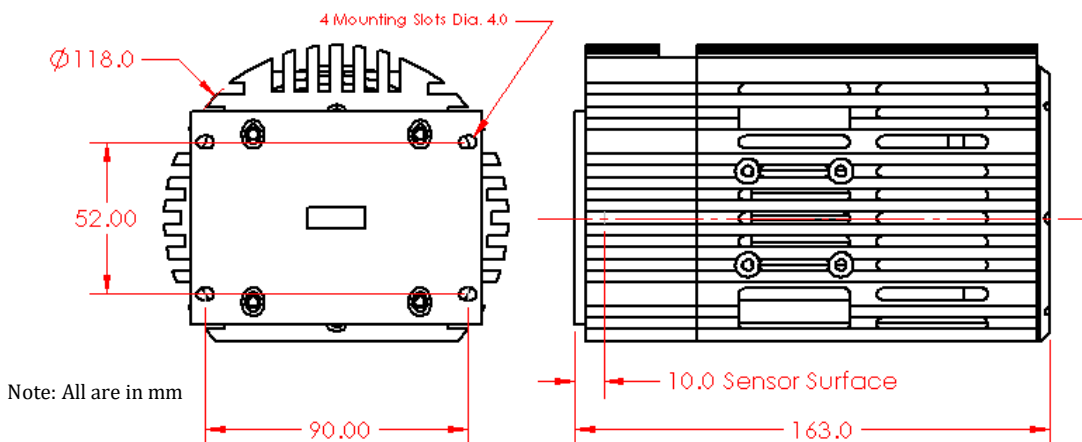
Specifications are subject to change without notice

### "Spec 2020" Software

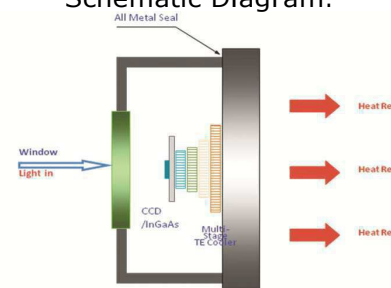


BaySpec's "Spec 2020" software included, a Windows-based package with flexible data acquisition, processing and output functionality

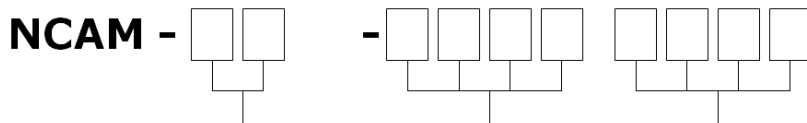
BaySpec SDK, a software development kit for new applications development and integration into to your host software systems.



### Schematic Diagram:



### Part Number Selection:



Code	Pixel Size
02	256
05	512
10	1024
xx	Custom

Code	Starting $\lambda$
0900	900 nm
xxxx	customer specify

Code	Ending $\lambda$
1700	1700 nm
yyyy	customer specify



### Applications:

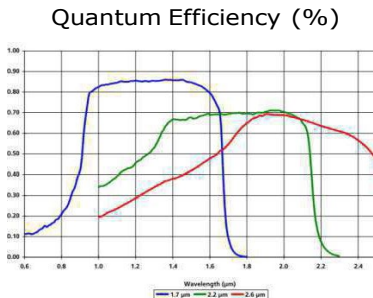
Raman Spectroscopy  
Fluorescence Spectroscopy  
NIR Spectroscopy  
Pharmaceuticals  
Medical Diagnostics



OEM Spectral Engine with Nunavut™ Deep-Cooled NIR Camera



Turn-key NIR spectrometer with Nunavut™ Deep-Cooled InGaAs Detector



Nunavut™ series Deep-Cooled InGaAs cameras are designed to meet real-world challenges for best-in-class performance, long-term reliability, compact size and low power consumption. Benefiting from experience manufacturing high-volume optical devices for the telecommunications industry, BaySpec's InGaAs cameras utilize low-cost field proven components. For the first time in instrumentation history an affordable, accurate and ruggedized spectral detector is a reality.

The Nunavut™ Series employs the latest in opto-electrical components to bring you the very best capability at a very affordable price. When matched to the Nunavut™ Raman spectrograph or photoluminescence spectrograph you have a light weight, very high performance, cost effective instrument. Each camera is calibrated in the factory after extensive thermal cycling. The control electronics read out the processed digital signal to extract required information. Both the raw data and the processed data are available to the host.

### Key Features:

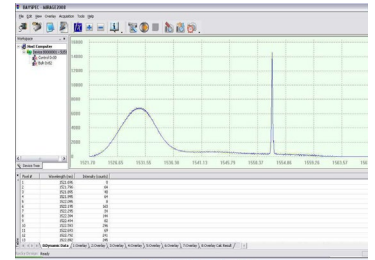
- Real-time spectral data acquisition
- Hermetic/Vacuum-sealing ensures reliable operation over time
- Air Deep-Cooling to -55°C (optional water cooling to -100°C)
- Covers wavelength ranges: 1100-2200nm
- Water cooling optional
- Single 12 volt power supply design
- High sensitive (HS) and High dynamic (HD) modes
- USB2.0 output



Parameter	Specification
<b>PERFORMANCE</b>	
Wavelength Range	1100-2200nm, customizable
Integration Time	20 $\mu$ s to 50 (HS) or 1500 (HD) ms
Dimensions	118 x 118 x 162 mm <sup>3</sup>
<b>OPTICS</b>	
Window	single window design, AR coated
<b>DETECTOR SPECS</b>	
Detector Array	256 X 50 $\mu$ , 512 x 25 $\mu$
Quantum Eff. @ $\lambda$ pk Typ.	70%
Resp. Non-uniformity, Max	$\pm$ 10%
Dark Noise	16 Counts RMS
Saturation Charge (Typical)	5 (HS) or 130 (HD) X 10 <sup>6</sup> electrons
Detector Gain (Typical)	400 (HS) or 15.4 (HD) nV/electron
Detector	InGaAs
Cooling	4 stage TEC (water optional)
A/D Converter	16bit
Power	3.5 A@12 V
<b>COMPUTER</b>	
Data Ports	USB 2.0
Software	BaySpec "Spec 20/20" GUI package
Operating System	Windows 2000 or later
<b>OPERATION &amp; STORAGE</b>	
Operating Temperature	0 to 40°C
Relative Humidity	75% (non condensing)
Storage Temperature	-25 to 60°C

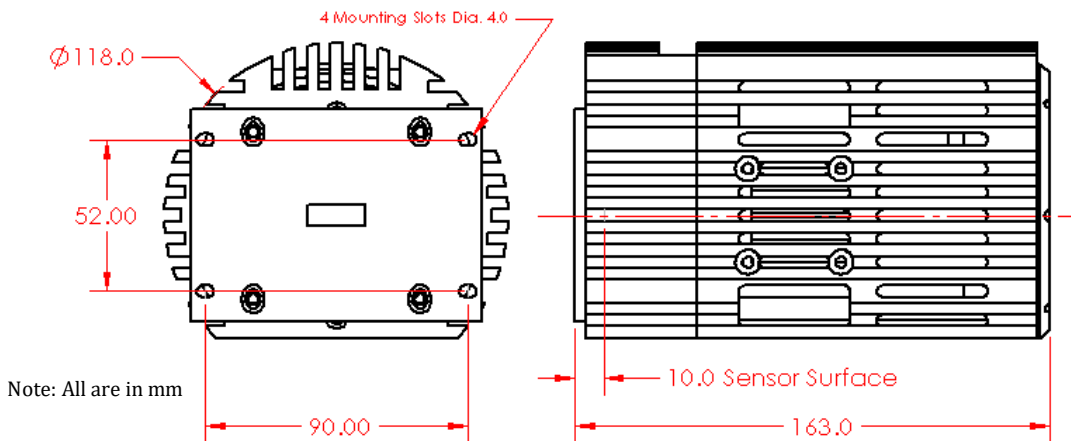
Specifications are subject to change without notice

### "Spec 2020" Software

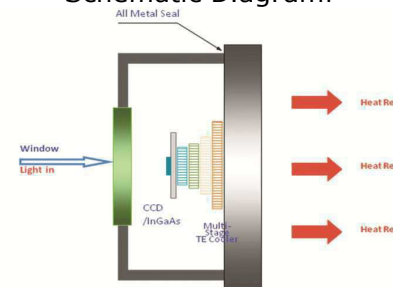


BaySpec's "Spec 2020" software included, a Windows-based package with flexible data acquisition, processing and output functionality

BaySpec SDK, a software development kit for new applications development and integration into to your host software systems.



### Schematic Diagram:



### Part Number Selection:

**NCAM** -   -

Code	Resolution	Code	Starting $\lambda$	Code	Ending $\lambda$
02	256	1100	1100 nm	2200	2200 nm
05	512	xxxx	customer specify	yyyy	customer
xx	Custom				

Please specify the Pixel counts i.e.:

Please specify the starting wavelength i.e.:

Please specify the ending wavelength i.e.:





### Applications:

Fluorescence Spectroscopy  
NIR Spectroscopy  
Pharmaceuticals  
Medical Diagnostics

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### Key Features:

- Real-time spectral data acquisition
- Hermetic/Vacuum-sealing ensures reliable operation over time
- Air Deep-Cooling to -55°C (optional water cooling to -100°C)
- Covers wavelength ranges: 1250-2500nm
- Water cooling optional
- Single 12 volt power supply design
- USB2.0 output



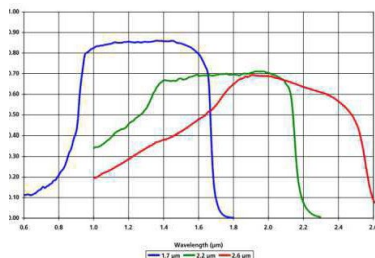
OEM Spectral Engine with Nunavut™ Deep-Cooled NIR Camera



Nunavut™ Deep-Cooled InGaAs Detector with water cooled to -100°C



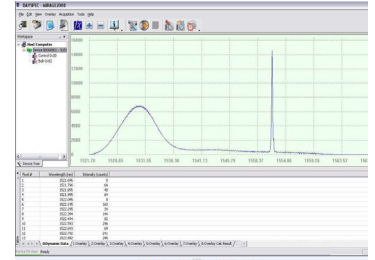
### Quantum Efficiency (%)



Parameter	Specification
<b>PERFORMANCE</b>	
Wavelength Range	1250-2500nm, customizable
Integration Time	20 $\mu$ s to 400 ms
Dimensions	118 x 118 x 162 mm <sup>3</sup>
<b>OPTICS</b>	
Window	single window design, AR coated
<b>DETECTOR SPECS</b>	
Detector Array	256 X 50 $\mu$
Quantum Eff. @ $\lambda$ pk Typ.	70%
Resp. Non-uniformity, Max	$\pm$ 5%
Dark Noise	60 Counts RMS
Saturation Charge (Typical)	187.5 X 10 <sup>6</sup> electrons
Detector Gain (Typical)	16 nV/electron
Detector	InGaAs
Cooling	4 stage TEC (water optional)
A/D Converter	16bit
Power	3.5 A@12 V
<b>COMPUTER</b>	
Data Ports	USB 2.0
Software	BaySpec "Spec 20/20" GUI package
Operating System	Windows 2000 or later
<b>OPERATION &amp; STORAGE</b>	
Operating Temperature	0 to 40°C
Relative Humidity	75% (non condensing)
Storage Temperature	-25 to 60°C

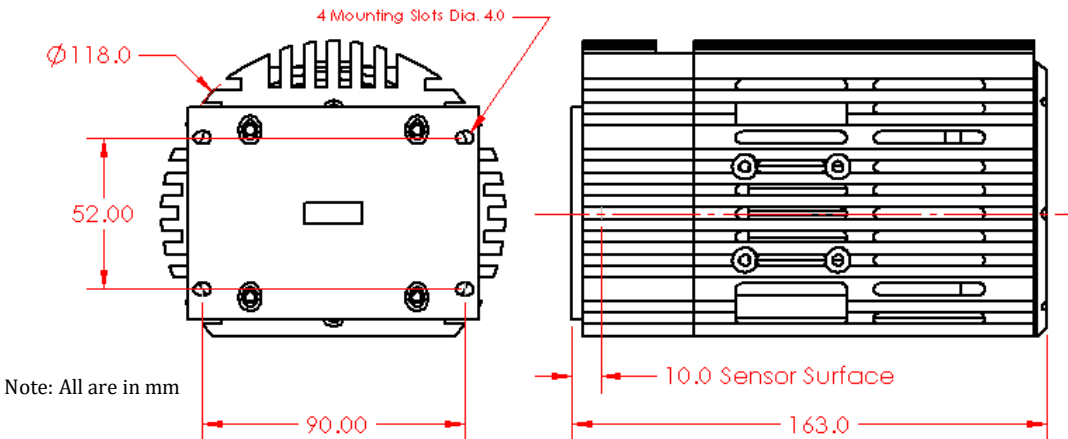
Specifications are subject to change without notice

### "Spec 2020" Software

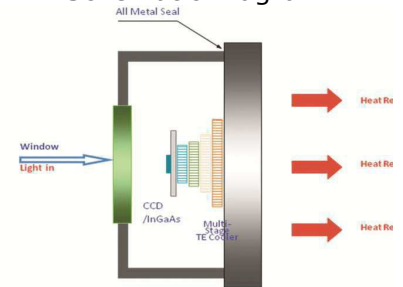


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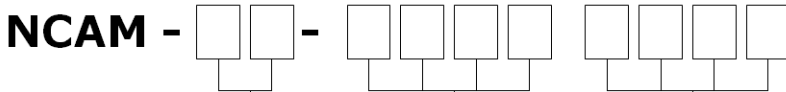
BaySpec SDK, a software development kit for new applications development and integration into to your host software systems.



### Schematic Diagram:



### Part Number Selection:



Code	Resolution	Code	Starting $\lambda$	Code	Ending $\lambda$
Please specify the pixel count, i.e.:		Please specify the starting wavelength i.e. :		Please specify the ending wavelength i.e. :	
02	256 nm	1250	1250 nm	2500	2500 nm
		xxxx	customer specify	yyyy	customer specify



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