



## Near Infrared (NIR) Spectral Engines

The Super Gamut™ 1100nm to 2200nm



Standalone

BaySpec's *Super Gamut*™ series NIR spectral engines are designed to meet real-world challenges for best-in-class performance, long-term reliability, compact size and ultra-low power consumption. Benefiting from experience manufacturing high-volume optical channel performance monitoring devices for the telecommunications industry, BaySpec's NIR spectral devices utilize low-cost field proven components. For the first time in instrumentation history an affordable, accurate and ruggedized spectral device is a reality.

The *Super Gamut*™ Series employs a highly efficient *Volume Phase Grating* (VPG®) as the spectral dispersion element and an ultra sensitive InGaAs array detector as the detection element, thereby providing high-speed parallel processing and continuous spectrum measurements. As an input, the device uses a fiber optic input or slit optics arrangement based on customer preferences. The signal is spectrally dispersed with the VPG® and the diffracted field is focused onto an InGaAs array detector. 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.



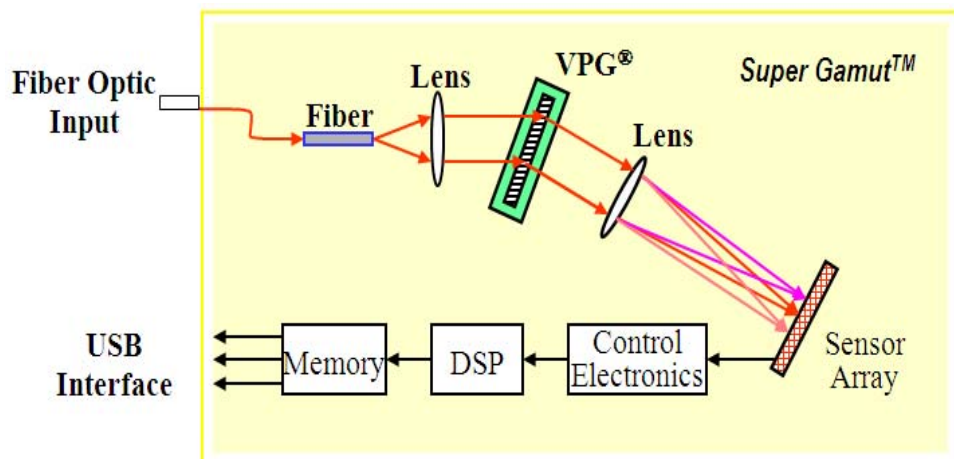
OEM example

### Key Features

- Real-time spectral data acquisition with fast milli-sec response time
- Athermal design for ultra-low power consumption and improved reliability
- Hermetic-sealing ensures reliable operation in harsh environments
- Outstanding optical throughput is achieved with VPG® and f/2 design.
- Covers wavelength ranges from 1100-2200 nm
- Designed for field battery operation

### Applications

- Pharmaceuticals
- Medical diagnostics
- Agriculture
- Semiconductors
- Beverage & Brewery
- Cosmetics
- Explosives detection
- Counterfeit detection
- Water quality
- Food safety
- Petrochemical
- Law Enforcement
- Pulp & Paper
- Mining
- Oil Exploration
- Biomedical Research
- Homeland security



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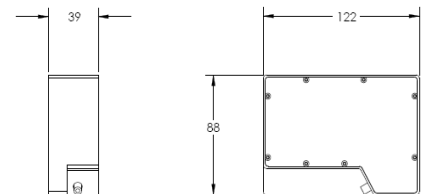
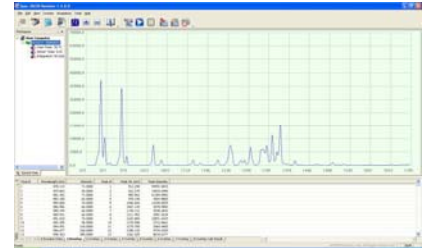


Parameter	Specification
<b>PERFORMANCE</b>	
Wavelength Range	1100-2200nm or customer specified
Spectral Resolution	5 -20nm slit dependent
Peak wavelength( $\lambda_{pk}$ ) nom.	2.0 $\mu$ m
Signal / Noise	8000:1
Wavelength Calibration	Factory Calibrated, independent of operating temperature
Integration time	20 $\mu$ s to 30 seconds
Weight	650g
Dimensions	88mm x 122mm x 39 mm <sup>3</sup>
<b>OPTICS</b>	
f/ number	f/2
Grating	Custom Volume Phase Grating (VPG) <sup>®</sup>
Entrance Aperture -Slit	10 $\mu$ , 25 $\mu$ , 50 $\mu$ , 100 $\mu$ , 200 $\mu$ , Fiber, or custom design
<b>DETECTOR SPECS</b>	
Detector array	50 $\mu$ m x256 Pixel
Avg. array response @ $\lambda_{pk}$ Min.	9.0nV/photon
Quantum Efficiency @ $\lambda_{pk}$ Min.	60%
Response non-uniformity, max.	10%
Readout noise	800 electrons/scan typical
Max Dark Current	5.0nA
Max Dark Voltage Rate	500V/s
Saturation charge (Typical)	5X10 <sup>6</sup> electrons
Detector Gain	400nV/electron typical
Stray light	0.05%Yes
Detector	TE cooled InGaAs
A/D converter	16bit
Power	1A@5v
<b>COMPUTER</b>	
Scan rate / Transfer rate Full Scan	6kHz / 50Hz Raw data is available
Data Ports	USB 2.0 (inquire on others)
Trigger modes	Software Controlled
Software	BaySpec "20/20" GUI package
Operating System	Windows 2000 or later

### Key design benefits:

- No moving parts
- Ultra reliable Volume Phase Grating (VPG)<sup>®</sup>
- Athermal (TEC off) or Temperature controlled
- Solid-state electronics
- Hermetically sealed

BaySpec 20/20 GUI Software included for ease of integration.



Specifications are subject to change without notice

### Ordering Information

**NIRS** -     -     -

Code	Starting $\lambda$	Code	Ending $\lambda$	Code	Interface Type
	Please specify the starting wavelength i.e. :		Please specify the ending wavelength i.e. :	SMA	SMA905
850	850.00 nm	1700	1700.00 nm	025	25 $\mu$ m
1100	1100.00nm	2200	2200.00 nm	050	50 $\mu$ m
1250	1250.00 nm	2500	2500.00 nm	100	100 $\mu$ m
xxxx	customer specify	yyyy	customer specify	200	200 $\mu$ m

Note: fiber sold separately

