SuperGamut™ NIR Spectrometer

Covering from 900nm to 1700nm Wavelength Range

BaySpec's ***SuperGamut™*** series dispersive 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 ***SuperGamut™*** 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.

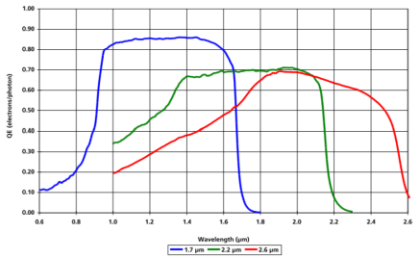
Applications:

- 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

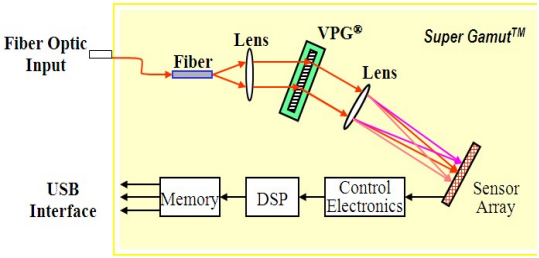
Key Features

- No moving parts reliability
- Optimally cooled for low light detection
- Real-time spectral data acquisition with fast milli-sec response time
- Athermal design for ultra-low power consumption and improved reliability
- Outstanding optical throughput is achieved with VPG and f/1.8 design
- Covers wavelength ranges from 900-1700 nm
- Designed for field battery operation

Quantum Efficiency (%)



Schematic Diagram:



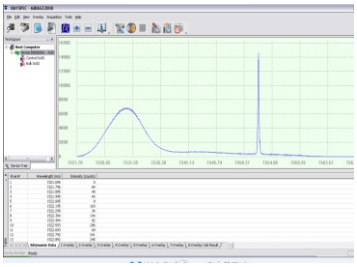
SuperGamut™ NIR Spectrometer

Covering from 900nm to 1700nm Wavelength Range

Parameter	Specification
PERFORMANCE	
Wavelength Range	900-1700nm or any fraction of range customer specified
Resolution	5-20 nm, slit dependent
Signal / Noise	6000:1
Stray Light	0.05%
Wavelength Calibration	Factory Calibrated
Integration Time	20 µs to 30 seconds
Dimensions	162 (L) x 105 (W) x 60 (H) mm^3
Weight	650 g
OPTICS	
f/ Number	f/2
Grating	Custom *Volume Phase Grating (VPG)*
Entrance Aperture Slit / Fiber Optic	Slit: 25µm, 50µm, 100µm, or none Fiber optic: SMA, or custom design
DETECTOR SPECS	
Detector Array	25µm x 512 or 50µm x 256 Pixel
Quantum Efficiency @λpk Min.	70%
Response Non-uniformity	±10%
Dark Noise	10 counts RMS
A/D Converter	16bit
Power	1A @ 12V
COMPUTER	
Data Ports	USB 2.0
Trigger Modes	Software Controlled
Software	Windows 2000/XP or later

*specifications subject to change

"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.

OEM Integration

Fiber Bundle Option

Optional Light Source

Part Number Selection:

NIRS- □□ - □□□□ - □□□□ - □□□ - □□□

Code	Type
SC	Standard
DC	Deep Cooled

Code	Starting λ
Please specify the starting wavelength i.e. :	
900	900 nm
1100	1100 nm
1250	1250 nm
xxxx	customer specify

Code	Ending λ
Please specify the ending wavelength i.e. :	
1700	1700 nm
2200	2200 nm
2500	2500 nm
yyyy	customer specify

Code	Slit Size
025	25 µm
050	50 µm
100	100 µm
200	200 µm

Code	Interface Type
SMA905	SMA
FC	FC

Note: fiber sold separately

ATTENTION
OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICES

SuperGamut™ NIR Spectrometer

Covering from 1100nm to 2200nm Wavelength Range

BaySpec's ***SuperGamut™*** series dispersive 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.

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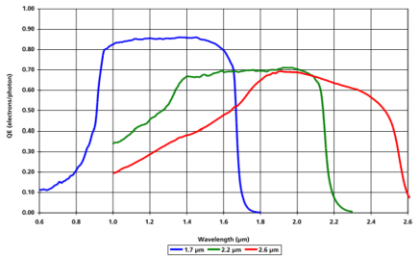
Applications:

- 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

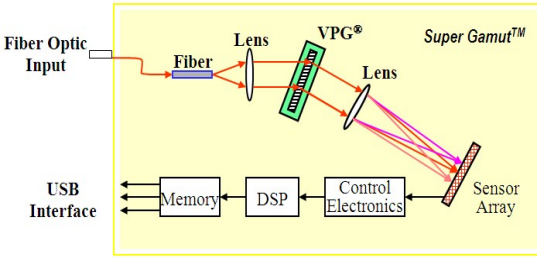
Key Features

- No moving parts reliability
- Utilizes a unique deep-cooled InGaAs detector array for 8x sensitivity over conventional systems
- Real-time spectral data acquisition with fast milli-sec response time
- Athermal design for ultra-low power consumption and improved reliability
- Outstanding optical throughput is achieved with VPG and f/2 design
- Covers wavelength ranges from 1100-2200 nm

Quantum Efficiency (%)



Schematic Diagram:



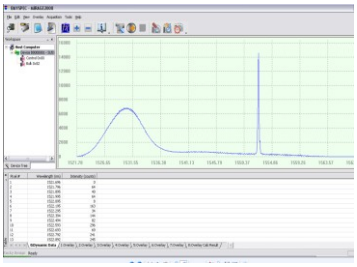
SuperGamut™ NIR Spectrometer

Covering from 1100nm to 2200nm Wavelength Range

Parameter	Specification
PERFORMANCE	
Wavelength Range	1100-2200nm or any fraction of range customer specified
Resolution	3-20 nm, slit and pixel number dependent
Signal / Noise	3000:1
Stray Light	0.05%
Wavelength Calibration	Factory Calibrated
Integration Time	20 µs to 1s
Dimensions	162 (L) x 105 (W) x 60 (H) mm^3
Weight	650 g
OPTICS	
f/ Number	f/2
Grating	Custom *Volume Phase Grating (VPG)*
Entrance Aperture Slit / Fiber Optic	Slit: 25µm, 50µm, 100µm, or none Fiber optic: SMA, or custom design
DETECTOR SPECS	
Detector Array	256, 512 or 1024 Pixel
Quantum Efficiency @λpk Min.	60%
Response Non-uniformity	±10%
Dark Noise	16 counts RMS
A/D Converter	16bit
Power	1A @12V
COMPUTER	
Data Ports	USB 2.0
Trigger Modes	Software Controlled
Software	Windows 2000/XP or later

*specifications subject to change

"Spec 2020" Software



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OEM Integration

Fiber Bundle Option

Optional Light Source

Part Number Selection:

NIRS- □□ - □□ - □□□□ - □□□□ - □□□ - □□□

Code	Type
SC	Standard
DC	Deep Cooled

Code	Pixel No.
02	256
05	512
10	1024

Code	Starting λ
Please specify the starting wavelength i.e. :	
900	900 nm
1100	1100 nm
1250	1250 nm
xxxx	customer specify

Code	Ending λ
Please specify the ending wavelength i.e. :	
1700	1700 nm
2200	2200 nm
2500	2500 nm
yyyy	customer specify

Code	Slit Size
025	25 µm
050	50 µm
100	100 µm
200	200 µm

Code	Interface Type
SMA905	SMA
FC	FC

Note: fiber sold separately

ATTENTION
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SuperGamut™ NIR Spectrometer

Covering from 1250nm to 2500nm Wavelength Range

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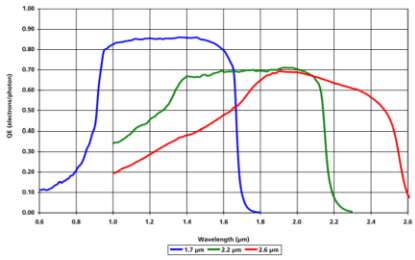
- Petrochemical
- Law Enforcement
- Pulp & Paper
- Mining
- Oil Exploration
- Biomedical Research
- Homeland Security

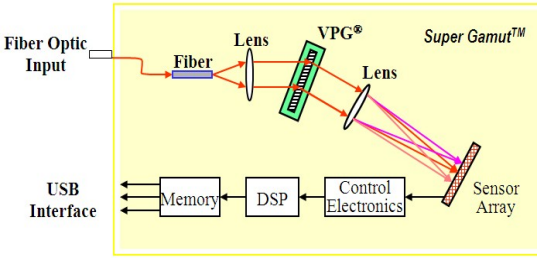
Key Features

- No moving parts reliability
- Optimally cooled for low light detection
- Real-time spectral data acquisition with fast milli-sec response time
- Athermal design for ultra-low power consumption and improved reliability
- Outstanding optical throughput is achieved with VPG and f/2 design
- Covers wavelength ranges from 1250-2500 nm
- Designed for field battery operation

Quantum Efficiency (%)



Schematic Diagram:



SuperGamut™ NIR Spectrometer

Covering from 1250nm to 2500nm Wavelength Range

Parameter	Specification
PERFORMANCE	
Wavelength Range	1250-2500nm or any fraction of range customer specified
Resolution	10-20 nm, slit dependent
Signal / Noise	500:1
Stray Light	0.05%
Wavelength Calibration	Factory Calibrated
Integration Time	20 µs to 400ms
Dimensions	268 (L) x 122 (W) x 84 (H) mm^3
Weight	1200 g
OPTICS	
f/ Number	f/2
Grating	Custom *Volume Phase Grating (VPG)*
Entrance Aperture Slit / Fiber Optic	Slit: 25µm, 50µm, 100µm, or none Fiber optic: SMA, or custom design
DETECTOR SPECS	
Detector Array	50µm x 256 Pixel
Quantum Efficiency @λpk Min.	70%
Response Non-uniformity	±10%
Dark Noise	65 counts RMS
A/D Converter	16bit
Power	1A @12V
COMPUTER	
Data Ports	USB 2.0
Trigger Modes	Software Controlled
Software	Windows 2000/XP or later

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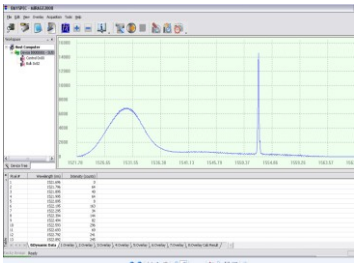
"Spec 2020" Software



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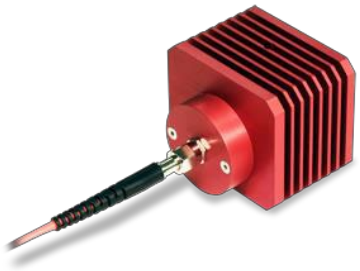

Optional Light Source

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Code	Ending λ
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Code	Slit Size
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Code	Interface Type
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FC	FC

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