

Hyperspec NIR® imaging sensor for the 900nm to 1700nm spectral range

Headwall's Hyperspec® NIR family of integrated hyperspectral imaging sensors provides the foundation for utilizing hyperspectral imaging to achieve superior spectral sensing and chemical imaging results for mission-critical applications ranging from process monitoring to moving webs of product across conveyor lines to pharmaceutical manufacturing where precise spectral measurement is critical to the application.

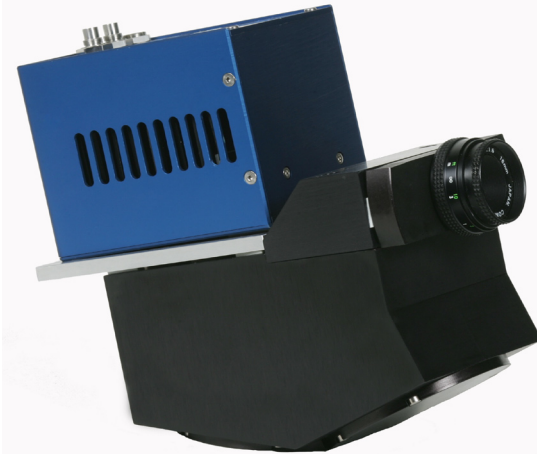
The award-winning, Hyperspec® imaging spectrometer family is built on a totally reflective concentric, f/2.0 optical design and optimized for imaging in harsh environments. All Hyperspec® instruments are based on Headwall's patented aberration-corrected, imaging design which feature the company's "original", high efficiency holographic diffraction gratings.

In order to minimize stray light and aberrations, the use of transmissive optical components are not used within the imaging spectrometer. This platform is further enhanced by a telecentric optical input design which enables superior spectral and spatial imaging.

The Hyperspec® NIR imaging spectrometer is available in four configurations; each model providing different capabilities to support application requirements such as frame rates, dynamic range, region of interest binning, price, and more. In addition, Hyperspec® NIR sensors can be configured as multi-channel, fiber-based spectrometers for multi-point spectral analysis.

The Hyperspec® NIR sensors are also available with the Hyperspec® Starter Kit and in pan/tilt configurations for stationary deployment.

Application-Specific Solutions For Critical Environments



Applications:

- Food safety & quality
- Machine vision
- Moving webs of product
- Pharmaceutical manufacturing
- Pulp & paper
- Process control of biomass/biofuels
- Remote sensing & analysis
- Photovoltaic/semiconductor manufacturing
- Waste recycling & sorting

Key Benefits:

- Superb imaging performance
- Exceptional spectral & spatial resolution
- Ideal for low light, low signal applications
- Compact with very wide field of view
- Extremely high signal-to-noise
- Low scatter or stray light
- Rugged design for durability & stability
- Cost effective deployment

Hyperspec™ NIR Model	XS-60	XS-100	XS-350	S-109
Wavelength Range (nm)	900-1700	900-1700	900-1700	900-1700
Aperture	F/2.0	F/2.0	F/2.0	F/2.0
Dispersion per pixel	4.8 nm	4.8	4.8	4.0
Slit Width (Interchangeable) Optional - 12, 16, 40, 60, 100	25 µm	25 µm	25 µm	25µm
Slit Length	18 mm	18 mm	18 mm	18 mm
Spectral Resolution (25µ slit)	5 nm	5 nm	5 nm	5 nm
Spectral Bands	167	167	167	200
Spatial Bands	320	320	320	640
Smile - Aberration-corrected	Yes	Yes	Yes	Yes
Keystone - Aberration-corrected	Yes	Yes	Yes	Yes
Stray Light	< 0.02%	< 0.02%	< 0.02%	< 0.02%

Image Acquisition	XS-60	XS-100	XS-350	S-109
Detector	InGaAs	InGaAs	InGaAs	InGaAs
Dynamic Range	68 db	68 db	68 db	68 db
Frame Rates (Full frame)	60	100	350	109+
Pixel Pitch (microns)	30	30	30	25
Read A/D	14 bits	14 bits	14 bits	14 bits
Binning	No	No	No	No
Region of Interest	Yes	Yes	Yes	Yes
Camera Control Interface	USB 2.0	USB 2.0/12 bit	USB 2.0	USB 2.0
Image Acquisition	CameraLink	USB 2.0 or CameraLink	CameraLink	CameraLink

Environmental & Mechanical	XS-60	XS-100	XS-350	S-109
Operational Temperature	0°C - 50°C	0°C - 50°C	0°C - 50°C	0°C - 50°C
Storage Temperature	0°C - 70°C	0°C - 70°C	0°C - 70°C	-10°C - 60°C
Relative Humidity Non-Condensing	Yes	Yes	Yes	Yes
Weight	8.8 lbs/4.1 kg	8.8 lbs/4.1 kg	8.8lbs/4.1k	8.8lbs/4.1kg

Optimized for every application, Hyperspec® imaging spectrometers offer industry leading spectral imaging performance..

Headwall Photonics is the leading designer and manufacturer of imaging spectrometers.

Hyperspectral Sensors	Spectral Range
Hyperspec® VIS	380 - 825 nm
Hyperspec® VNIR	400 - 1000 nm
Hyperspec® Extended VNIR	600 - 1600 nm
Hyperspec® NIR	900 - 1700 nm
Hyperspec® SWIR	1000 - 2500 nm
High Efficiency Hyperspec® NIR	900 - 1700 nm
High Efficiency Hyperspec® SWIR	1000 - 2500 nm

Information on UV, MWIR, and LWIR Hyperspec® sensors are available upon request.

Raman Imaging Instruments

Raman Explorer™ 266 nm
Raman Explorer™ 532 nm
Raman Explorer™ 642nm
Raman Explorer™ 785 nm
Raman Explorer™ 830 nm
Raman Explorer™ 1064 nm



Visit www.HeadwallPhotonics.com for more information on end-user and OEM spectral imaging solutions.

About Headwall Photonics:

Headwall Photonics is the leading designer and manufacturer of imaging spectrometers and spectral instrumentation for industrial, commercial, and government markets. Headwall's high performance spectrometers, spectral engines, and holographic diffraction gratings have been selected by OEM and end-user customers around the world for use in critical application environments. As a pioneer in the development of innovative spectrographs and imaging spectrometers based on optical technologies, Headwall enjoys a market leadership position through the design and manufacture of patented spectral instrumentation that is customized for application-specific performance. Headwall Photonics was formed in 2003 as the result of a management buy-out from Agilent Technologies. **For more information please call 978.353.4100 or email us at Information@HeadwallPhotonics.com.**



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