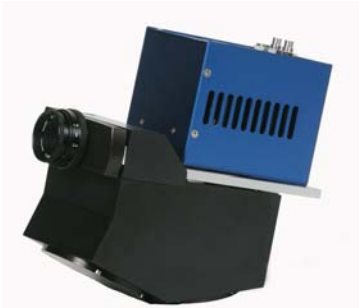


Hyperspec-SWIR™

High-Efficiency Hyperspectral Imaging Sensors



The Hyperspec-SWIR™ imaging sensor provides unparalleled spectral and spatial performance in the short wave infrared spectral region from 1000nm to 2500nm. Key attributes of this hyperspectral imager include high optical performance and throughput for superb imaging quality, wide field of view options customizable for operating efficiency and application-specific performance, and a robust architecture designed specifically for imaging in harsh environments. Being the industry's smallest SWIR hyperspectral sensor on the market, a range of new applications are enabled.

Performance For Any Application

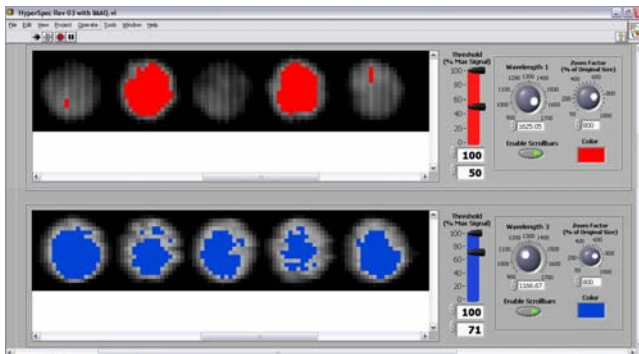
Configurability beyond expectations! Available with many other application-specific configurations, Headwall offers a hyperspectral system optimized for performance and budget.

Headwall application engineers are available to help select the best system for your application.

Headwall Photonics' Hyperspec™ imaging spectrometer platform is built on a totally reflective concentric, *f/2.0* optical design. These products are based on Headwall's patented aberration-corrected imaging systems which feature the company's "original", high efficiency holographic gratings.

The Headwall Photonics Hyperspec™ family of VNIR, NIR and SWIR integrated hyperspectral imaging sensors provide the foundation for utilizing hyperspectral imaging to achieve superior spectral sensing and chemical imaging results for a variety of industrial mission-critical applications ranging from process monitoring to moving webs of product across conveyor lines and non-invasive medical imaging.

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



Hyperspec™ software offers a range of basic functionality such as image rendering based on wavelength intensity thresholds

Application Considerations

The Hyperspec-SWIR™ model can be configured to provide optimized performance over the particular spectral region of interest. Headwall Photonics application engineers offer performance modeling and engineering tools to work with our customers to deliver predictable application performance based on over ten years of hyperspectral sensor deployment experience.

Among the customizable options are aberration-corrected holographic or diamond turned gratings for specific spectral ranges, image slit sizes and widths, and fore-optics.

Headwall can also provide standard system components such as industrial lighting options and moving stages for sample analysis and prototyping as well as a hyperspectral starter kit.

Hyperspec-SWIR™ Series Performance Guide	
Spectral / Optical	XF Series
Wavelength Coverage	1000 - 2500 nm
Spectral Resolution	10-15 nm
Spectral Dispersion	7.6 nm/pixel
Electronics	
Array Type	HgCdTe
Frame Rate	60 Hz / 100 Hz / 150 Hz
Cooling	4 Stage TE cooled, forced convection
Camera Control	USB 2.0
Image Acquisition	CameraLink™
Trigger Interface	TTL triggers
Ambient Temperature Range	-40 to 70 degrees C
Power Consumption	< 4 W, cooler: 30 W max
Power Supply	12V – 5A
CE Certified	Yes



Headwall Photonics' Integrated Hyperspectral Sensors

Headwall's Hyperspec™ family of integrated imaging spectrometers are based on a patented, reflective design and include the following instrument components: application-specific spectrograph with high efficiency optics, detector, robust detector mount, fore-optics, and Hyperspec™ software that provides for image capture and display providing application interfaces to the industry's most common imaging software.

Interchangeable Objective Lenses

HS-SWIR objective lens is designed for 1000–2500 nm precision imaging. Premium optical performance is achieved through a sophisticated design using ultra low dispersion glass and special broadband anti-reflection coatings. These optimized lenses further enhance the signal throughput and low stray light performance of the Hyperspec™ imaging platform.

Lens Number	f/Stop Range	Min Objective Distance (w/o ext. tube)
HS-SWIR-Lens-50	2.5 - 16	0.5 m

Control Interface

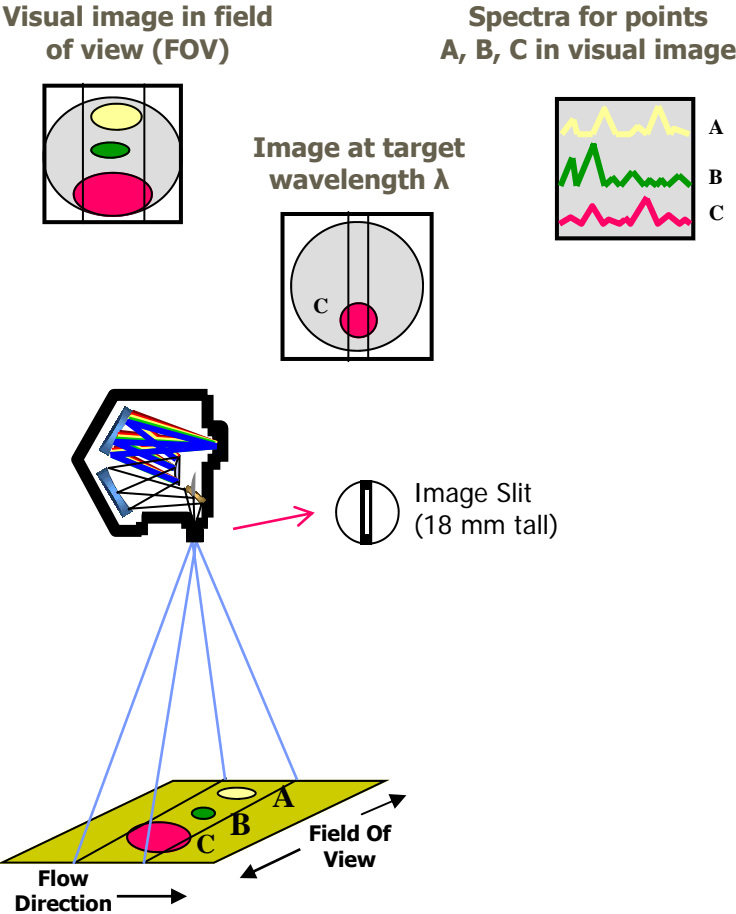
The HS-SWIR-XF series Hyperspectral Imaging Camera interfaces to a PC via a standard USB 2.0, CameraLink or a parallel LVDS bus.

Hyperspec™ Software

Hyperspec™ software provides functionality in three areas:

- 1) camera control and linear stage control,
- 2) capture of .bil image files and creation of hyperspectral datacubes, and
- 3) data image rendering, per pixel spectra, wavelength intensities with threshold values.

Hyperspec™ software allows for the export of image data in standard file formats for use with image rendering application software.



Conveyor / Moving Web Process Flow Scanning

The Hyperspec™ starter kit is available with the Hyperspec-SWIR™ configuration.

For more information contact:
 Headwall Photonics, Inc.
 Tel: 978-353-4100
 Information@HeadwallPhotonics.com

www.HeadwallPhotonics.com