

High Efficiency Hyperspec® NIR (900 - 1700nm) & High Efficiency Hyperspec® SWIR (900 - 2500nm) imaging sensors offer extreme performance for the most demanding applications

Headwall's High Efficiency Hyperspec® NIR & SWIR integrated hyperspectral imaging sensors offer the highest optical performance and diffraction efficiency available in the industry. Targeting the most demanding spectral imaging applications, the High Efficiency Hyperspec® spectrometers offer diffraction efficiency greater than 90%, aberration-corrected imaging, and a completely athermalized, lightweight sensor design.

The High Efficiency Hyperspec® imagers are optimized for airborne sensor requirements. Easily mounted in a turret configuration. Key attributes of these Hyperspec sensors include superior imaging performance (greater than 90% optical efficiency), flight path efficiency with a tall image slit, and athermalized, lightweight construction - a robust design for environmental durability & measurement accuracy and repeatability.

The award-winning, Hyperspec® imaging spectrometer family is built on a totally reflective concentric, f/2.4 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 high efficiency diffraction gratings.

In order to minimize stray light and aberrations, transmissive optical components such as prisms 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.

High Efficiency Hyperspec® imaging spectrometers are available in two optimized configurations; each model providing different capabilities to support application requirements in the NIR (900-1700nm) and SWIR (900-2500nm) spectral ranges.

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

Application-Specific Solutions For Critical Environments



Applications:

- Military, defense & homeland security
- Airborne surveillance & reconnaissance
- Border patrol & base security
- Food safety & inspection
- Machine vision
- Microscopy & health sciences
- Process monitoring & control
- Remote sensing & analysis
- Small satellite environmental analysis
- Waste recycling & sorting

Key Benefits:

- Superb imaging performance
- Athermalized for harsh environments
- Exceptional spectral & spatial resolution
- Ideal for low light, low signal applications
- Accurate, consistent spectral measurement
- 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

High Efficiency Hyperspec™	NIR	SWIR
Wavelength Range (nm)	900-1700	900-2500
Aperture	F/2.4	F/2.4
Dispersion per pixel	10 nm	12nm
Slit Width (microns)	30 µm	30 µm
Slit Length	18 mm	18 mm
Spectral Resolution (30µm slit)	12 nm	14 nm
Spectral Bands	80	125
Spatial Bands	640	320
Smile - Aberration-corrected	Yes	Yes
Keystone - Aberration-corrected	Yes	Yes
Stray Light	< 0.10%	< 0.10%

Image Acquisition	NIR	SWIR
Detector	InGaAs	MCT
Dynamic Range	68 db	69 db
Frame Rates (Full Frame)	109	100
Pixel Pitch (microns)	25	30
Read A/D	14 bits	14 bits
Binning	No	No
Region of Interest	Yes	Yes
Camera Control Interface	CameraLink®	CameraLink® USB 2.0

Environmental & Mechanical	NIR	SWIR
Operational Temperature	-10°C - 40°C	0°C - 50°C
Storage Temperature	-10°C - 60°C	0°C - 70°C
Relative Humidity Non-Condensing	Yes	Yes
Weight (Est.)	7.5 lbs/3.3 kg	7.0lbs/3.0 kg

With customized performance 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	900 - 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™ 260 nm
Raman Explorer™ 532 nm
Raman Explorer™ 642 nm
Raman Explorer™ 785nm
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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