



- High spectral/spatial resolution with large field of view
- All reflective concentric, f/2.8 design with original holographic gratings
- VNIR, NIR, & custom versions available
- Environmental stability for harsh environments
- Airborne-ready for military and civilian applications

Micro-Hyperspec™ Imaging Spectrometer

Headwall Photonics' Micro-Hyperspec sensors address the need for very small, lightweight, robust hyperspectral imaging instruments that are capable of being deployed in harsh environments. For a range of applications, particularly those involving Unmanned Aerial Vehicles (UAVs) and Unmanned Ground Vehicles (UGVs), spectral/spatial resolution and high dynamic range are key performance parameters. Headwall Photonics, the leading manufacturer of hyperspectral instruments based on holographic diffraction technology, continues to establish industry benchmarks for hyperspectral imaging performance with the Micro-Hyperspec™ sensor, the latest member of the Hyperspec™ family of application-specific hyperspectral instruments.

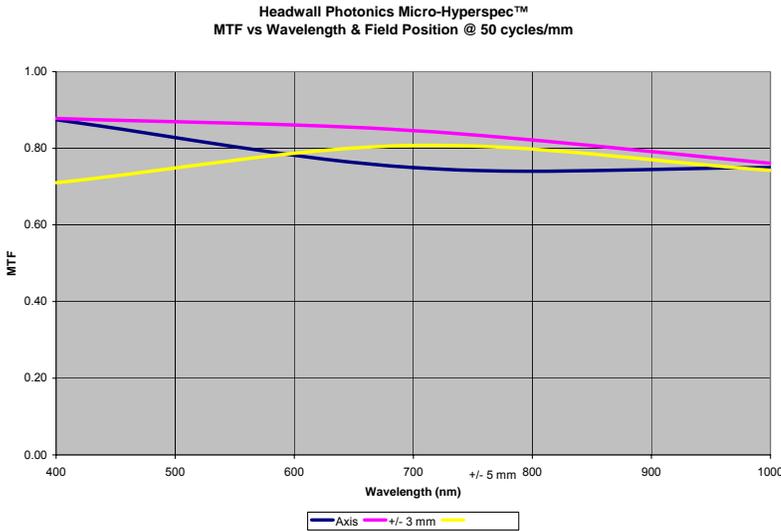
Based on Headwall's patented aberration-corrected concentric design, the Micro-Hyperspec™ features high resolution, distortion-free imaging. High signal-to-noise ratio is achieved by utilizing Headwall's high efficiency, original holographic diffraction gratings which result in minimal stray light.

The Micro-Hyperspec™ provides a superb combination of small sensor size without compromising high optical performance. Multiple configuration options (C-series and D-Series) are available depending upon the application-specific performance required.

Micro-Hyperspec™ Imaging Spectrometer

Headwall Photonics' Micro-Hyperspec™ imaging spectrometer platform is built on a totally reflective concentric, f/2.8 optical design. These products are based on Headwall's patented aberration-corrected imaging systems which feature the company's "original" high efficiency holographic gratings. In order to minimize stray light and aberrations, transmissive optical components are not used within the imaging spectrograph. The all-reflective, compact system is designed to ensure environmental stability in harsh environments.

Specifications	
Design:	Concentric spectrograph with aberration-corrected convex holographic diffraction grating
Aperture:	f/2.8
Spectral Ranges:	VNIR (350/400 - 1000 nm) SWIR (900 - 1700 nm) Custom ranges available
Keystone & Smile distortion:	< 0.1%
Dimensions:	Length 110 mm Width 93 mm Height: 50 mm
Weight (spectrograph):	~ 1 lb



Application-Specific Performance

Select the Micro-Hyperspec™ model which best satisfies spectral range, desired illumination distance, and spatial resolution. Then select the entrance slit width which best provides your desired spectral resolution; the standard slit width is 12.5 microns wide. By choosing a wider slit width, spectral resolution will be approximately broadened by a factor of the increased dimension (example: 25 μm = 2x). The objective lenses on Hyperspec imaging sensors are field interchangeable, providing the ability to vary the FOV and IFOV within the application scene.

Available spectral ranges - VNIR (400-1000 nm, 350-1000 nm), NIR (900-1700 nm), or custom wavelength ranges

Micro-Hyperspec™ Series Performance Guide			
Property	Specification	Property	Specification
Wavelength Range	350/400 – 1000 nm	F/#	2.8 - ∞
Spectral Resolution ¹	<3.5 nm	Maximum Slit Height	10mm
Spatial MTF	0.7-0.9	Slit Widths	12, 25, 40, 60, 100 μm
Maximum Smile	~0.1%	Outer Dimensions	110X93X50mm
Maximum Keystone	<0.1%	Mass	~1lb
Electronics	Integrated CP Models	Integrated DP Models	
Frame Rate	12 fps, 23 fps w/ 2x vert. binning	60 fps, 223 fps 8x8 binning	
Shutter	Electronic global	On-chip	
Exposure Time	5μs - 65s	Multiple modes, 25 μsec —1 sec	
Digital Resolution	12bit	12bit	
Data Interface	PCI, compact PCI	Base Camera Link™	
Dynamic Range	69.5 dB	66 dB	
Binning Selection	1 or 2 pixels horizontal/vertical	1x1, 2x2, 4x4, 8x8	

¹ = With 10 μm wide entrance slit; 12μm, 25 μm, 40μm, & 60μm slits optional. ² = At Nyquist limit and 12.5μm slit. ³ = At Nyquist frequency

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