Data Sheet

MICRO-HYPERSPEC®

Hyperspectral Sensor

The Micro-Hyperspec® family of hyperspectral sensors provides superb spectral/spatial imaging and high sensitivity in a small, lightweight, power-efficient package. Versions covering VNIR, Extended VNIR, NIR and SWIR are available.

Headwall's Micro-Hyperspec® sensors address the need for very small, lightweight, and robust hyperspectral imaging instruments capable of being deployed in harsh airborne environments and where payload restrictions are critical. The sensors are particularly well suited for applications where high spectral/spatial resolution, high dynamic range, and measurement stability over wide temperature ranges are key performance parameters.

Micro-Hyperspec® is built on a totally reflective concentric f/2.5 optical design optimized for imaging in harsh environments. It can weigh as little as 1.5 lb. depending on configuration. Headwall's imaging sensors minimize stray light and aberrations by eliminating transmissive optical components such as prisms. In addition to airborne deployment, these sensors are also suited for a wide range of other imaging applications. Headwall's 'airborne package' comprises GPS/IMU, optional LiDAR, control software, and data processing and storage. Designed and optimized for airborne deployment, it can be added to any of Headwall's hyperspectral sensors.

Application-Specific Solutions For Critical Environments

FEATURES

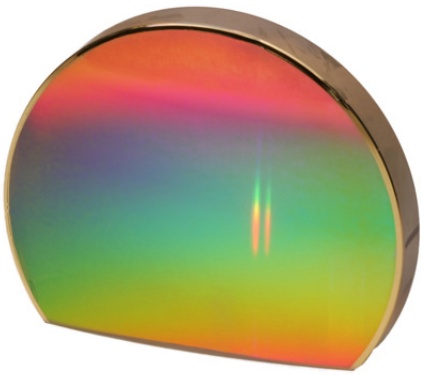
- **VNIR**: 1004/325 Spatial/Spectral bands (Base CameraLink) or 1600/370 Spatial/Spectral bands (Full CameraLink)
- **Extended VNIR**: 525 Spatial bands, 199 Spectral bands, Gig-E
- **NIR**: 525 Spatial bands, 100 Spectral bands, Gig-E
- **SWIR**: 384 Spatial bands, 166 Spectral bands, base CameraLink & RS232.
- SWaP optimized for small UAVs
- High SNR
- Wide field of view
- GPS/IMU, software, storage, & data processing available in a compact, airborne package

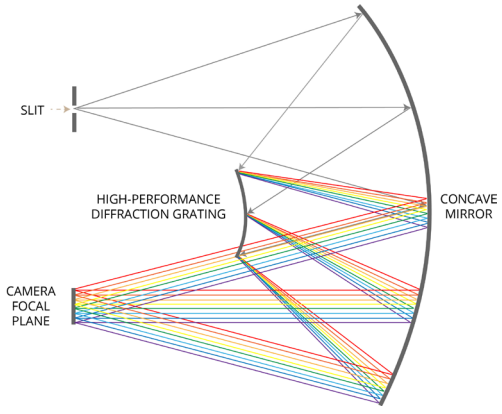
SPECIFICATIONS (ALL VERSIONS)

Configuration	VNIR A-Series	VNIR E-Series	NIR B-Series	Ext. VNIR B-Series	SWIR M-Series
Wavelength Range (nm)	400 - 1000		900 - 1700	600 - 1700	900-2500
Focal Plane Array	Silicon CCD	Scientific CMOS	InGaAs		MCT
Pixel Pitch (microns)	7.4	6.5	20	20	24
Aperture	F/2.5				
Slit Length (mm)	10.5				
Dispersion/Pixel (nm per pixel)	1.9	1.6	8	5.5	9.6
Entrance Slit Width (µm)	20	20	25	20	25
FWHM Slit Image (nm)	5		10	8.5	10
Spectral Bands	324	369	100	199	166
Spatial Bands	1004	1600	525	525	384
Aberration-Corrected Design	Yes				
Maximum Frame Rate (Hz)	90	250	650	300	450
ADC Bit Depth	12	16	14		16
Cooling	No		TE Cooled		Stirling Cooled
Digital Output Format	Base CameraLink	Full CameraLink, 80-bit	Gig-E	Gig-E	RS232/Base CameraLink
Weight without lens (lb / kg)	1.6 / 0.7	2.4 / 1.1	1.9 / 0.9	1.9 / 0.9	4.4 / 2.0
Max Power (W)	6.6	13.2	9	9	14.4

All-Reflective Concentric Optical Design

Headwall's hyperspectral sensors deliver aberration-corrected imaging characterized by high spatial and spectral resolution, a wide field of view, and very high signal throughput. Headwall's own application-specific diffraction gratings are fundamental to these key specifications, which are crucial for airborne hyperspectral sensors. Headwall's all-reflective, concentric sensor design is robust and thermally stable.





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